



TRINITY VALLEY CONSULTING ENGINEERS, INC

Engineering – Surveying – Land Planning – Construction Management

HUMBOLDT LOW IMPACT DEVELOPMENT (LID)

FOR:

**1820 Pickett Road
McKinleyville, CA
APN: 515-381-021**

OWNER:

**Dane Valadao
1904 Pickett Road
McKinleyville, CA**

**November 2021
Revised December 2023**

Eric Keyes, P.E.
Job No. 873.01



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SECTION 1

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1.0 APPLICABILITY

Table 1 provides an overview of the various project types and required submittals for projects within the boundaries of the County of Humboldt's Municipal Separate Storm Sewer System (MS4) permit area and the cities of Arcata, Eureka, Fortuna, and Trinidad, which are subject to the MS4 General Permit. MS4 General Permit Boundary Maps are attached and can also be obtained from the County or City Department with project location jurisdiction. The requirements for stormwater management are determined by the type and scale of the project.

Table 1 - Applicable Post-Construction Standards Based on Project Type

Type of Project	Required Submittals:
Exempt Projects Exempt Projects include: <ul style="list-style-type: none"> Projects that create or replace less than 2,500 square feet (SF) of impervious surface; Interior remodels and routine maintenance or repair such as exterior wall surface replacement; Reroofing of an existing building; Asphalt or paving overlays and resurfacing of existing surfaces. "Replacement, Development, or Redevelopment" is defined as work that replaces existing surfaces down to subgrade and are not exempt; and Linear Underground Projects (LUPs) unless the LUP has a discreet location that has greater than or equal to 5,000 SF of newly constructed impervious surface 	<ul style="list-style-type: none"> Stormwater Information Sheet
Small Projects Small Projects include: <ul style="list-style-type: none"> Single-Family Homes, not part of a larger plan of development, that create or replace greater than or equal to 2,500 SF of impervious surface; and Projects that create or replace greater than or equal to 2,500 SF and less than 5,000 SF of impervious surface 	<ul style="list-style-type: none"> Stormwater Information Sheet Follow instructions in Part B of this manual. Small Project Stormwater Control Plan (SCP)
Regulated Projects Regulated Projects include: <ul style="list-style-type: none"> Projects other than Single-Family Homes that create or replace greater than or equal to 5,000 SF of impervious surface. 	<ul style="list-style-type: none"> Stormwater Information Sheet Follow instructions in Part C of this manual. Preliminary SCP (discretionary projects) Final SCP (all regulated projects)
Regulated Redevelopment, Roads, and Linear Underground Projects Regulated Redevelopment, Roads, and Linear Underground Projects include: <ul style="list-style-type: none"> See MS4 Permit, Section E.12.c for additional description and details of applicable Redevelopment, Road, and Linear Underground Project requirements. 	<ul style="list-style-type: none"> Requirements vary; contact County or City department with project jurisdiction.
Hydromodification Projects: Hydromodification projects are: <ul style="list-style-type: none"> Specific Regulated Projects, projects that create and/or replace greater than or equal to 1 acre of impervious surface and create a net increase in impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project (MS4 permit Sec. E.12.f). Projects with greater than or equal to 1 acre of Land Surface Disturbance may be subject to the State Construction General Permit (CGP) Post-Construction Standards and shall comply with the Humboldt Low Impact Development (LID) Stormwater Manual, Regulated Project Post-Construction Standards in lieu of CGP Post-Construction Standards, if project location falls within the MS4 General Permit areas. 	<ul style="list-style-type: none"> Requirement is: post-project runoff shall not exceed estimated pre-project flow rate for the 2-year, 24-hour storm. See Regulated Projects above Follow instructions in Part C of this manual
<p>Definition of Impervious Surface: A surface covering or pavement of a developed parcel of land that prevents the land's natural ability to absorb and infiltrate rainfall/stormwater. Impervious surfaces include, but are not limited to: roof tops, walkways, patios, driveways, parking lots, storage areas, impervious concrete and asphalt, and any other continuous watertight pavement or covering. Landscaped soil and pervious pavement, including pavers with pervious openings and seams, underlain with pervious soil or pervious storage material, such as a gravel layer sufficient to hold the specified volume of rainfall runoff, are not impervious surfaces.</p> <p>Definition of Land Surface Disturbing Activities: Any construction or demolition activity, including, but not limited to: clearing of vegetation, grading, grubbing, and disturbance to the ground such as stripping of top soils, soil compaction, excavation, and stockpiling or any other activity that results in a land disturbance that changes the physical condition of land forms, soils, vegetation, and hydrology.</p>	

The following flow chart is designed to aid in determining your project type (Figure 1).

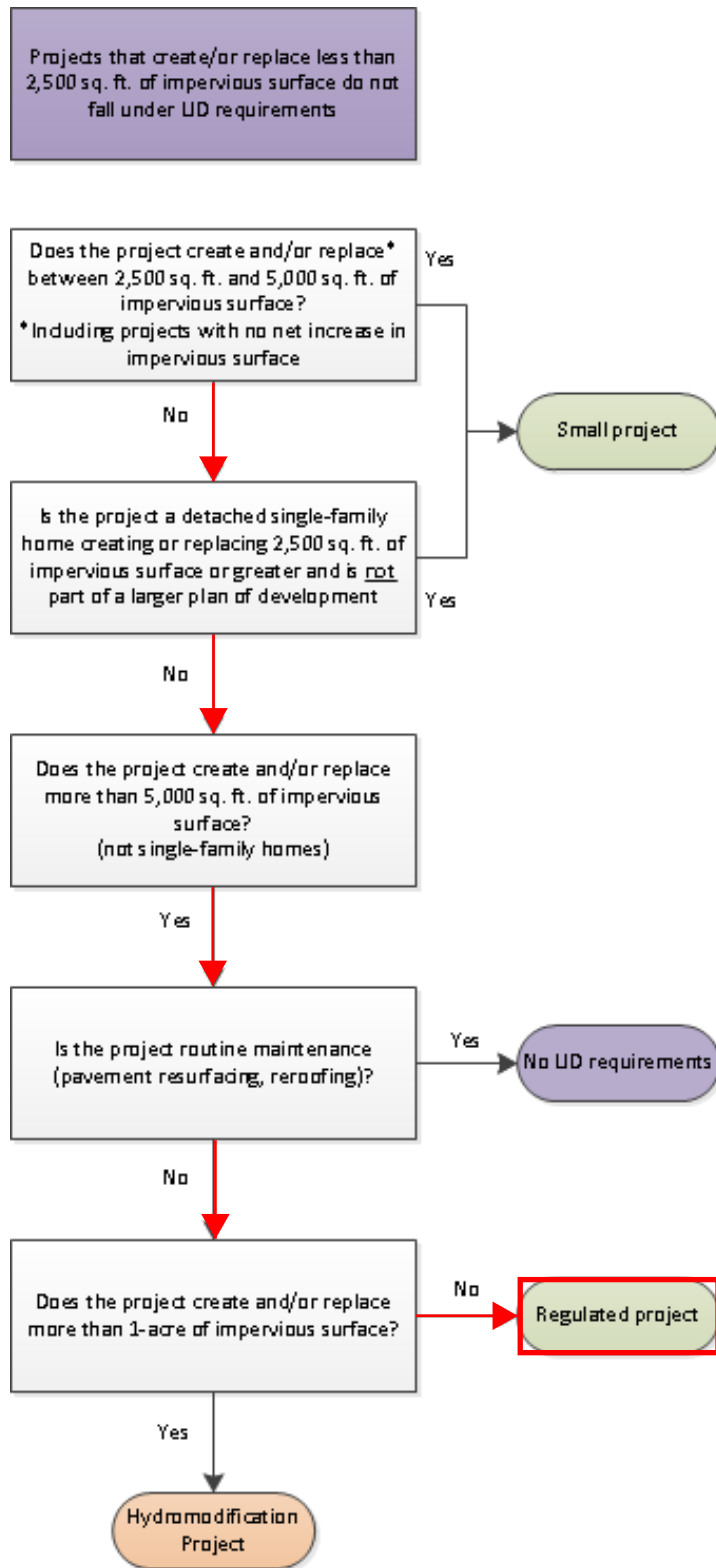


Figure 1. Project Type Identification

STORMWATER INFORMATION SHEET

Instructions

Construction and development projects within portions of unincorporated Humboldt County (McKinleyville, the greater Eureka area, and Shelter Cove) and the Cities of Eureka, Arcata, Fortuna, and Trinidad are subject to stormwater runoff and pollution control requirements of State Water Resources Control Board Water Quality Order No. 2013-0001-DWQ; NPDES General Permit No. CAS0000004 [Municipal Separate Storm Sewer (MS4) General Permit].

The following checklist is to be completed by you (the applicant) to determine which plans and specifications for stormwater runoff control are required as part of a Building or Development Permit application for projects located in areas subject to MS4 requirements.

I. Construction Project Information and Checklist (Completed by Applicant)

Site Location Address:

1820 Pickett Road, McKinleyville, CA

Assessor Parcel Number (APN):

510-381-021

Anticipated Construction Start

Date: **Spring 2025**

Anticipated Construction Completion

Date: **Fall 2026**

Total area of Land Surface Disturbance:

107,777 square ft. or **2.47** acres

If project disturbs ≥ 1 acre of land surface then provide the State Construction General Permit WDID No.: **TBD- at time of construction**

Check and/or list all applicable permits directly associated with project construction or grading activity:

☐ State Construction General Permit (CGP)

☒ Other (list):

☐ State 401 Water Quality Certification

Humboldt Co. Building Permit

☐ U.S. Army Corps 404 Permit

☐ CA Fish and Wildlife 1600

Is the construction site part of larger common plan of development or sale (check as applicable)?

☐ YES

☒ NO

☐ Unknown

Name of larger common plan/project (if applicable):

Impervious Surface Area:

Pre-Project

Impervious Surface: **5000** square ft.

New or Replaced

Impervious Surface: **70592** square ft.

Total Post-Project

Impervious Surface: **75592** square ft.

Check Project Type as determined from LID Manual Part A, Table 1 - Applicable Post-Construction Standards Based on Project Type

Project Type:

Notes:



Exempt

Sign and Certify this form.



Small Project

Sign and Certify this form.

Follow instructions in Part B of LID Manual.



Regulated Project

Sign and Certify this form.

Follow instructions in Part C of LID Manual



Regulated Project with ≥ 1 acre of created or replaced impervious surface

Sign and Certify this form.

Follow instructions in Part C of LID Manual.



Regulated Redevelopment, Roads, or Linear Underground Project

Sign and Certify this form.

Requirements vary; contact County or City Department with project jurisdiction.

Stormwater runoff from the project site discharges to (check as applicable):



Storm Drain System (including road side ditches and other conveyances)



Directly to waters of the State or U.S. (e.g. river, lake, stream, ocean, wetland)

Name of Waterbody: _____

Name of nearest waterbody receiving runoff from site: **Unknown**

Indicate distance from project site to nearest watercourse: **Unknown** ft.

If your project is covered under the State Water Resources Control Board Construction General Permit (CGP), attach a copy of the submitted Stormwater Pollution Prevention Plan (SWPPP) including the Notice of Intent and WDID Number.

If a CGP is not required for your project, submit appropriate construction site BMP plans as required by County or City Department with project jurisdiction.

II. Certification (Completed by Owner or Authorized Applicant/Agent)

I, the below signed, confirm that I have accurately described my project to the best of my ability, and that I have not purposely omitted any detail affecting my project's classification for stormwater regulation

Printed Name:

Signature:

Date:

III. For Official Use Only

Permit No.:

Submittal Date:

Received By:

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

For Office Use Only

Application No. _____

Received By: _____

Instructions

Based on the Stormwater Information Sheet in Humboldt LID Stormwater Manual – Part A, you have determined that your project is classified as a Regulated Project. Use this form to assist you in designing your project to comply with the MS4 General Permit post-construction requirements for Regulated Projects. This completed and signed Stormwater Control Plan for Regulated Projects including additional supporting documents as required, must be submitted with your project application to the applicable PBS department with project location jurisdiction.

A. Project Information and Description

Project Name: <u>Proposed Subdivision</u>	
Physical Site Address: <u>1820 Pickett Road, McKinleyville, CA</u>	
Assessor's Parcel Number: <u>510-381-021</u>	
Project Applicant: <u>Dane Valadao</u>	
Mailing Address: <u>1904 Pickett Road, McKinleyville, CA</u>	
Phone: <u>707-834-6282</u>	
Email: <u>Dane@reprop.net</u>	
Name, email and address of project consultant, if any (e.g., engineer, architect, designer):	
Name: <u>Eric Keyes, PE</u>	
Firm: <u>Trinity Valley Consulting Engineers, Inc.</u>	
Address: <u>2200 Main Street, Weaverville, CA 96093</u>	
Phone: <u>530-623-4446</u>	
Email: <u>eric@tvce.biz</u>	
Type of Application/Project: What type of application is this checklist accompanying?	
<input type="checkbox"/> Grading Permit	<input type="checkbox"/> Use Permit
<input type="checkbox"/> Building Permit	<input type="checkbox"/> Design Review
<input checked="" type="checkbox"/> Subdivision	<input type="checkbox"/> Other (please specify) _____

Project Type and Description:	Subdivision
Total Pre-Project Impervious Surface Area (square feet)	5000
Total New or Replaced Impervious Surface Area (square feet) <small>[Sum of impervious area that will be constructed as part of the project]</small>	70592
Total Post-Project Impervious Surface Area (square feet)	75592

This Regulated Projects Stormwater Control Plan provides guidelines and methods for assessing site conditions, determining runoff values for site DMAs, implementing site design measures with the goal of reducing stormwater runoff values from impervious surfaces, and determining the size of bioretention facilities (if required). Strategic use of site design measures may enable compliance without the need for bioretention facilities or equivalent.

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

B. Site Assessment (Opportunities and Constraints)

1. Soil Characteristics

I. Soil characterization method as outlined by the soils report

II. Were infiltration rates assessed for the site? ☒ Yes ☐ No

If Yes, please attach soils testing report

2. Depth to Groundwater

I. What is the depth (below ground surface) to groundwater (in feet)? >10'

II. How was this determined? soil exploration as outlined in the soils report

3. Existing Vegetation and Natural Areas

I. Are there any key natural vegetation areas, sensitive habitats, or mature trees on the site?

☐ Yes ☒ No

If yes, please draw and label these features on the existing conditions site plan map and attach to this document.

4. Drainage and Hydrograph

I. Are there any natural drainage or wet area features such as: natural ponds, springs, vernal pools, marshes, and wet meadows on the site or directly adjacent to the site?

☐ Yes ☒ No

If yes, consult with applicable PBS department staff with jurisdiction for project location as additional project area restrictions may apply.

5. Potential Contamination

I. Is the project site within or near to a registered contaminated site, according to the State Water Resources Control Board Geotracker Website (<http://geotracker.waterboards.ca.gov/>)?

☐ Yes ☒ No

If yes, please attach the applicable contaminated site report from the Geotracker website, and note the location of the contaminated site on the existing conditions site plan map. Please attach a description explaining how this contamination will affect your project design.

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

C. Project Layout Optimization

Optimizing the site layout can be done through the following methods:

1. Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be left undisturbed.
2. Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.
3. Limit overall impervious coverage of the site from paving and roofs.
4. Set back development from creek, wetlands, and riparian habitats, to maximize vegetative buffer widths.
5. Preserve significant trees.
6. Conform the site layout along natural landforms.
7. Avoid excessive grading and disturbance of vegetation and soils.
8. Replicate the site's natural drainage patterns.
9. Detain and retain runoff throughout the site.

Based on the features included in the existing conditions site plan, please ensure your project site plan applies project layout optimization measures to the greatest extent practicable, while still meeting the objectives of your project.

Have you attached a short description of how site optimization techniques have been integrated into the project design?

☒ Yes

☐ No

D. Source Controls

Does your project contain potential pollutant-generating activities or sources?

☐ Yes

☒ No

If Yes, please complete the Source Control Worksheet (Appendix 7) and list and identify the source or treatment control measure and locations and include as an attachment to the SCP document.

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

E. Drainage Management Areas

On the project site plan please delineate and label all drainage management areas (refer to Sec. 6 of the manual).

For each Drainage Management Area identified on the project site plan, complete the Regulated Projects Runoff Worksheets (attached) to document runoff values, implementation of Site Design Measures, and bioretention facility sizing (if required). Every DMA within the project shall be listed in Worksheet 1 (attached)

In accordance with section E.12 of the MS4 General Permit, Site Design Measures shall be implemented based on the objective of capturing (retaining) stormwater runoff from the 85th percentile 24-hour storm event, to the extent technically feasible. Any remaining runoff, from impervious DMAs, may then be directed to one or more bioretention facilities or equivalent. Projects over 1 acre must adhere to hydromodification standards if applicable. (refer to Sec. 5.8 of the manual).

F. Runoff Reduction Measures

Worksheet 1 provides a method for project applicants to document compliance with runoff reduction requirements through a site design methodology that directs stormwater runoff from impervious surface areas to pervious self-retaining areas for capture and infiltration (as detailed in LID Manual – Section 6.0). Using this methodology, all stormwater runoff from the 85th percentile 24-hour storm event for each DMA can be captured and retained on site and compliance with the MS4 General Permit runoff reduction requirements can be met.

Capturing stormwater runoff using the site design methodology where runoff from impervious surface areas is directed to pervious self-retaining areas is a convenient alternative for achieving compliance with the MS4 General Permit runoff reduction requirements, while avoiding the need for bioretention facilities. Worksheet 1 provides a simple calculation for determining if stormwater runoff reduction measures have been met using this design methodology.

Due to site constraints, not all projects or project DMAs may be able to achieve compliance with runoff reduction requirements by directing impervious surface stormwater runoff to pervious self-retaining areas. The project applicant will need to complete Worksheet 2 for each DMA (*6.0 Documenting Your Design*) that cannot meet compliance with runoff reduction measures as determined using Worksheet 1.

Worksheet 2 will be used to apply Site Design Measures in addition to any pervious self-retaining areas with the goal of reducing stormwater runoff values from impervious surfaces such that a no net stormwater runoff value (using the design storm) for each DMA is achieved. The worksheet process is an iterative exercise. If compliance cannot be met during the first iteration of calculations alter the site design measures to increase capturing capacity and rerun the calculator.

Site Design Measures include the following:

- | | | |
|---|---|--|
| <input checked="" type="checkbox"/> 1. Tree Planting and Preservation | <input type="checkbox"/> 5. Green Roof | <input type="checkbox"/> 8. Stream Setbacks and Buffers |
| <input checked="" type="checkbox"/> 2. Rain Barrels or Cisterns | <input checked="" type="checkbox"/> 6. PPPP (alternative engineered hardscapes) | <input checked="" type="checkbox"/> 9. On-site Infiltration (trench, dry well, gallery, or system) |
| <input checked="" type="checkbox"/> 3. Impervious Area Disconnection | <input type="checkbox"/> 7. Vegetated Swales | |
| <input type="checkbox"/> 4. Soil Quality Improvement | | |

Multiple Site Design Measures may be applied to best meet site conditions in order to reduce stormwater runoff values from impervious surface areas.

After application of Site Design Measures, any remaining stormwater runoff from each DMA, must then be directed to one or more bioretention facilities or equivalent in accordance with Section 6.3 of the manual and the MS4 General Permit.

G. Bioretention Facility

Indicate whether a Bioretention Facility or equivalent is required for this project.

☒ Yes ☐ No

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

H. Operation and Maintenance in Perpetuity

Indicate whether an *Operation and Maintenance Plan* is accompanying this document, required for bioretention facilities or equivalent).

☒ Yes

☐ No

I. Signature and Certification:

This Stormwater Control Plan is required for all Regulated Projects. This document will be used by the plan checker to confirm that adequate stormwater control measures are being implemented on the project.

Indicate whether all supporting materials and worksheets are accompanying this document, Stormwater Control *Plan*

☒ Yes

☐ No

I, the below signed, confirm that I have accurately described my project to the best of my ability, and that I have not purposely omitted any detail affecting my project's classification for storm water regulation. I hereby certify that the site design measures and storm water flow treatment measures identified herein as being incorporated into my project have been designed in accordance with the Site Design Measure sheets or equivalent and are included in the final site plans submitted to the applicable Planning and/or Building Services Department with project location jurisdiction. I also hereby certify that my project meets the storm water runoff reduction criteria identified in the SCP, or as determined through other approved means.

Signature

Date

Print Name

I am the:

☐ Property Owner

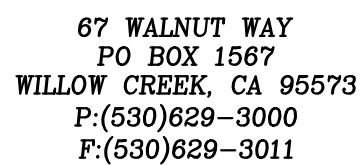
☐ Contractor

☐ Applicant

SECTION 2

LOCATION MAP SHEETS 1
SITE MAP SHEETS 1





REV	DATE	DESCRIPTION	DOWN BY	DESS BY	CHK BY	APP BY
A	12/12/23	REVISED LOT LID VALUES PER AGENCY REVIEW	NRC	EEL	EEL	JTM

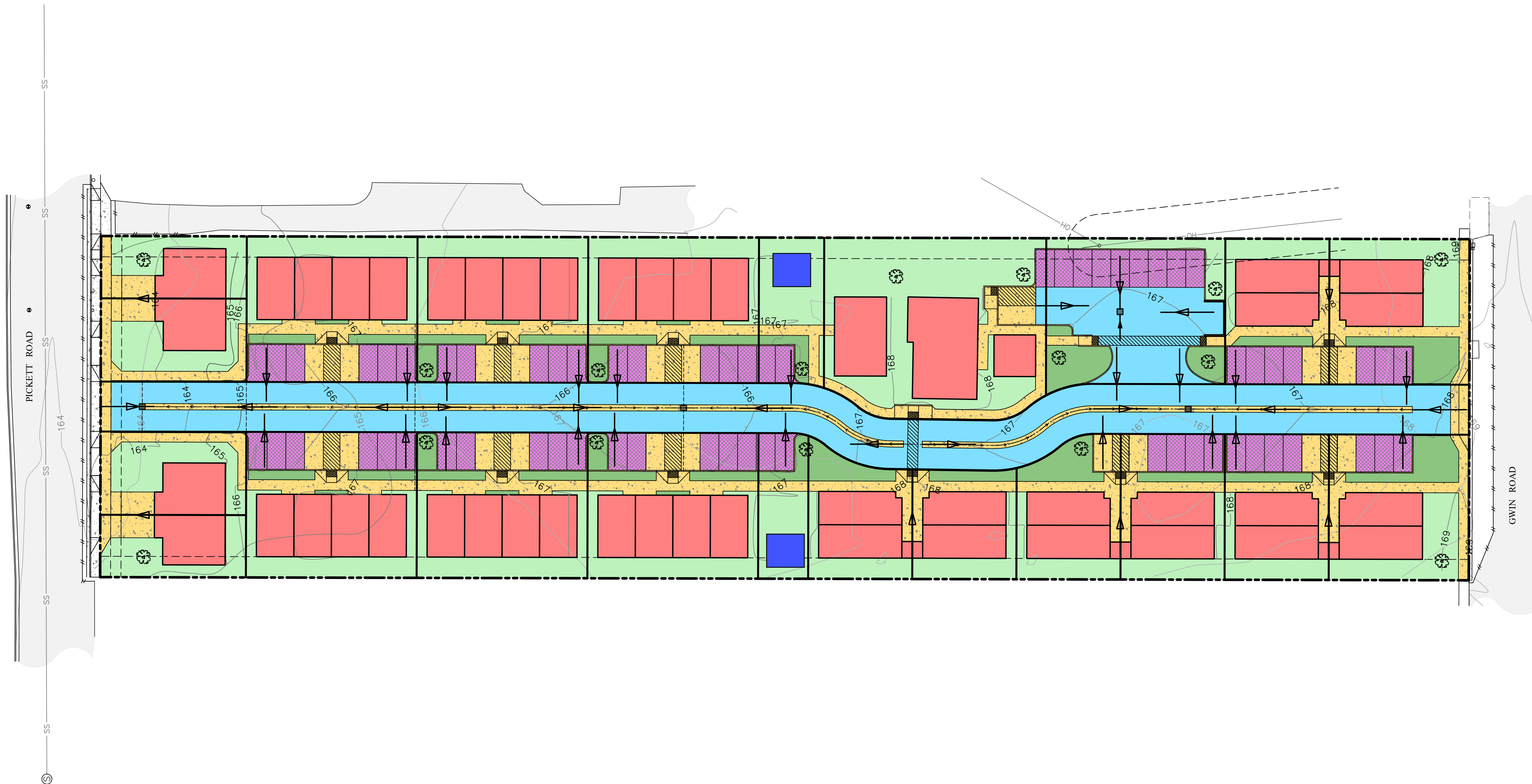
LID PLAN

HUMBOLDT, CALIFORNIA

DRAWING NO:



SCALE: 1" = 30'



1. **STREAM SETBACK AND BUFFERS:**
A STREAM SETBACK OR BUFFER IS AN AREA ALONG A SHORELINE, WETLAND, OR STREAM WHERE DEVELOPMENT IS RESTRICTED OR PROHIBITED. THE PRIMARY FUNCTION OF SETBACKS AND BUFFERS IS TO PHYSICALLY PROTECT AND SEPARATE A STREAM, LAKE OR WETLAND FROM FUTURE DISTURBANCE OR ENVOICHMENT. IF PROPERLY DESIGNED, SETBACKS AND BUFFERS CAN PROVIDE STORM WATER MANAGEMENT AND ACT AS A RIGHT-OF-WAY DURING FLOODS, SUSTAINING THE INTEGRITY OF STREAM ECOSYSTEMS AND HABITATS.
2. **SOIL QUALITY IMPROVEMENT**
IN AREAS SUBJECT TO GRADING/CLEARING NOT COVERED BY IMPERVIOUS SURFACE, CREATE/AMEND PERVIOUS AREAS WITH A 12" LAYER OF TOPSOIL. SOIL QUALITY IMPROVEMENT OPTIONS INCLUDE THE FOLLOWING:

OPTION 1: LEAVE NATIVE VEGETATION AND SOIL UNDISTURBED AND PROTECT FROM COMPACTION DURING CONSTRUCTION IDENTIFY AREAS OF THE SITE THAT WILL NOT BE STRIPPED, LOGGED, GRADED, OR DRIVEN ON, AND FENCE OFF THOSE AREAS TO PREVENT IMPACTS DURING CONSTRUCTION. IF NEITHER SOILS NOR VEGETATION ARE DISTURBED, THESE AREAS DO NOT REQUIRE AMENDMENT.










OPTION 2: AMEND EXISTING SITE TOPSOIL OR SUBSOIL.
SCARIFY OR TILL SUBGRADE TO 8 INCH DEPTH (OR TO DEPTH NEEDED TO ACHIEVE A TOTAL DEPTH OF 12 INCHES OF UN-COMPACTED SOIL AFTER CALCULATED AMOUNT OF AMENDMENT IS ADDED). ENTIRE SURFACE SHOULD BE DISTURBED BY SCARIFICATION. AMEND SOIL TO MEET DESIRED ORGANIC CONTENT.

OPTION 3: STOCKPILE EXISTING TOPSOIL DURING GRADING. REPLACE TOPSOIL BEFORE PLANTING. STOCKPILE AND COVER SOIL WITH WEED BARRIER MATERIAL THAT SHEDS MOISTURE YET ALLOWS AIR TRANSMISSION. STOCKPILE TOPSOIL PRIOR TO PLANTING AND ENSURE THAT REPLACED SOIL PLUS ADDITIONAL COMPOST AS NEEDED WILL AMOUNT TO AT LEAST 12 INCHES OF DEPTH.

3. TREE PLANTING AND PRESERVATION
TREES INTERCEPT RAIN WATER ON THEIR LEAVES AND BRANCHES, ALLOWING WATER TO EVAPORATE OR RUN DOWN THE BRANCHES AND TRUNK WHERE IT READILY INFILTRATES INTO THE SOIL. TREE ROOTS ALSO INCREASE INFILTRATION OF THE SOIL.
4. ROOFTOP AND IMPERVIOUS AREA DISCONNECTION
DISCONNECTION OF ROOFTOP AND IMPERVIOUS AREAS FROM THE STORM DRAIN SYSTEM HELPS REDUCE RUNOFF AND PROVIDE POLLUTANT REMOVAL AS THE RE-DIRECTED WATER TRAVELS OVER AND THROUGH VEGETATION AND SOIL INSTEAD OF BEING DIRECTLY PIPED AND DISCHARGED INTO THE STORM DRAIN. ROOF RUNOFF IS DIRECTED TO SPREAD OVER A PERVIOUS AREAS SUCH AS A STREAM SETBACK AND BUFFERS, AREAS OF SOIL QUALITY IMPROVEMENT, OR OTHER APPROPRIATE INFILTRATION AREAS.
5. PERVIOUS PAVEMENT
THIS OPTION CAN BE EASY TO INSTALL AND MAINTAIN, COST EFFECTIVE, AND CAN ADD AESTHETIC VALUE TO YOUR PROJECT. PERMEABLE PAVEMENTS MAY INCLUDE PERVIOUS CONCRETE, PERVIOUS ASPHALT, POROUS PAVERS, CRUSHED AGGREGATE, OPEN PAVERS WITH GRASS OR PLANTINGS, OPEN PAVERS WITH GRAVEL, OR SOLID PAVERS.
6. GREEN ROOFS
A GREEN ROOF IS A MULTI-LAYERED, VEGETATED ROOFTOP SYSTEM DESIGN FOR FILTERING, ABSORBING, AND RETAINING STORM WATER. A GREEN ROOF CAPTURES STORM WATER WITHIN THE PORE SPACE OF THE GROWTH MEDIUM AND THEN RELEASES THE WATER SLOWLY VIA EVAPORATION, TRANSPIRATION, AND DISCHARGE TO THE ROOF DRAINS.
7. VEGETATED SWALES
A VEGETATED SWALE IS A BROAD, SHALLOW CHANNEL WITH DENSE VEGETATION COVERING THE BOTTOM AND SIDE SLOPES. VEGETATION IN THE CHANNEL PROVIDES FILTRATION AND SOLIDS REMOVAL AND REDUCES FLOW VELOCITIES AS STORM WATER IS CONVEYED THROUGH THE SYSTEM. DEPENDING ON SOIL TYPE, SOME INFILTRATION MAY ALSO OCCUR, DECREASING RUNOFF VOLUME AND PROVIDING ADDITIONAL FILTRATION.

DOWNSPOUTS:

1. DIRECT DOWNSPOUT RAINWATER AWAY FROM BUILDING TO PREVENT SATURATION OF FOUNDATION.
2. PROVIDE SPLASH BLOCKS OR OTHER MEANS TO PREVENT SOIL EROSION.
3. DOWNSPOUT RAINWATER SHALL NOT DISCHARGE ONTO A SIDEWALK. CONTRACTOR TO PROVIDE UNDER-WALK DRAINS IN THESE AREAS.

ON-SITE LID LEGEND		
	IMPERVIOUS ASPHALT	16,733 SF
	IMPERVIOUS CONCRETE	19,139 SF
	IMPERVIOUS ROOF SURFACING	29,484 SF
	PERMEABLE ASPHALT	10,236 SF
	PERVIOUS LANDSCAPING	25,163 SF
	SELF RETAINING AREA	6,985 SF
	ROOF DRAIN	
	TREE	17 EA
	BIORETENTION	
	IMPERVIOUS SURFACE TOTALS:	65,356 SF
	PERVIOUS SURFACE TOTALS:	42,384 SF



SECTION 3

REGULATED PROJECTS WORKSHEET 1 SHEETS 1

REGULATED PROJECTS WORKSHEET 2 SHEETS 1



Regulated Projects Worksheet 1 - Humboldt Low Impact Development Stormwater Manual

[illegible]

1: Self-Retaining Areas where impervious surface runoff is directed to the Pervious Self-Retaining Area in accordance with Humboldt LID Manual - Part C, Section 6.0

2: If "Yes", Ratio of Impervious Surface Area to Self-Retaining Pervious Surface Area is equal to 3.5:1 or better (1.3:1 or better in the Shelter Cove MS4 area), then compliance with runoff reduction measures have been met for DMA.

If "No", Ratio of Impervious Surface Area to Self-Retaining Pervious Surface Area does not achieve 3.5:1 or better (1.3:1 in Shelter Cove), then compliance with runoff reduction measures have not been met for DMA (Complete Worksheet 2).

Regulated Projects Worksheet 2
Humboldt Low Impact Development Stormwater Manual

Project Information		Kyle Boughton		Formulas/Notes	
DMA Name:		DMA#1			
Total Post-Project Impervious Surface Area (square feet)	A	75592	square feet		
24 hour - 85th Percentile Design Storm	B	0.65	inch	B = Select Design Storm Value (0.65-inch Humboldt Bay Area, 1.3-inch Shelter Cove)	
Impervious Surface Runoff Value (Potential Stormwater Runoff due to impervious surface area and design storm value)	C	30505	Gallons per 24 hours	C = A x B x 0.083 x 7.48	
Pervious Self-Retaining Area (SRA) Credit (if applicable, if none enter 0)					
Self-Retaining Area (square feet)	6985	3.5	SRA Credit	24448	square feet
				SRA Credit = Self-Retaining Area x Multiplier Select Multiplier (3.5 Humboldt Bay Area, 1.3 Shelter Cove)	
Site Design Measure Credits					
Tree Planting and Preservation					
New Trees					
# of trees					
100 square feet per deciduous tree	D	7	E	700	square feet
E = D x 100					
200 square feet per evergreen tree	F	10	G	2000	square feet
G = F x 200					
Existing Trees (Credit for 50% of existing canopy area)					
Canopy diameter (feet)					
Tree #1	H ₁		J ₁	0	square feet
J ₁ = 3.14 x (H ₁ /2) ² x 0.50					
Tree #2	H ₂		J ₂	0	square feet
J ₂ = 3.14 x (H ₂ /2) ² x 0.50					
Tree #3	H ₃		J ₃	0	square feet
J ₃ = 3.14 x (H ₃ /2) ² x 0.50					
Rain Barrel or Cisterns (55 gallon minimum)					
Square foot credit per gallon based on 24-hour, 85th Percentile Design Storm	K	2.48			
K = Select square foot credit per gallon (2.48 Humboldt Bay Area, 1.24 Shelter Cove)					
Gallons					
Rain Barrels	L	0	M	0	square feet
M = L x K					
Cisterns	N	0	O	0	square feet
O = N x K					
Infiltration Trench/Basin (55 gallon minimum - 21 ft³)					
volume (ft³) = length x width x depth					
porosity (approximate %)	P	0	Q	0	square feet
Q = P x R x K x 7.48					
Subsurface Infiltrators (55 gallon minimum)					
Proprietary units vary, insert estimated storage in ft³					
	S	0	T	0	square feet
T = S x 7.48					
Impervious Area Disconnection					
Credit per square foot of impervious area feeding into pervious area	U	25163	square feet	U = Enter square foot value	
Soil Quality Improvement					
Credit per square foot of soil quality improvement	V	0	square feet	V = Enter square foot value	
Green Roof					
Credit per square foot of green roof installation	W	0	square feet	W = Enter square foot value	
PPPP (Alternative engineered hardscaping surfaces)					
Credit per square foot of PPPP	X	10236	square feet	X = Enter square foot value	
Vegetated Swales					
Credit per square foot of vegetated swale	Y	0	square feet	Y = Enter square foot value	
Stream Setbacks and Buffers					
Credit per square foot of stream setback and buffer [#]	Z	0	square feet	Z = Enter square foot value	
Credits Total					
	AA	62547	square feet	AA = SRA Credit + E + G + J ₁ + J ₂ + J ₃ + M + O + Q + T + U + V + W + X + Y + Z	
Post-Project Impervious Surface Area minus Site Design Measure Credits	BB	13046	square feet	BB = A - AA	
NEW Impervious Surface Runoff Value (Potential Stormwater Runoff due to impervious surface area and design storm after implementation of Site Design Measures)					
	CC	5264	Gallons per 24 hours	CC = BB x B x 0.083 x 7.48	
Percent reduction in Impervious Surface Runoff Value*	DD	82.7	%	DD = ((C - CC) / C) x 100%	
*If value for DD is not greater than or equal to %100 then bioretention is required for treating remaining runoff from impervious area indicated by value BB. Design and implement bioretention facility in accordance with Humboldt LID Stormwater Manual - Part C.					
**Infiltration Trench/Basin calculations are based on porosity (35%); increased trench dimensions (volume) are required to meet 55 gallon minimum capacity.					

Green Fill In [Enter Value]

Red Calculated Value

Black Fixed Value/Selectable Value

Conversions Used:

1 inch = 0.083 feet

1 cubic foot = 7.48 gallons

check with agency with project area jurisdiction for requirements

3.5 2.48 0.65
1.3 1.24 1.3

SECTION 4

STORM WATER CONTROL PLAN SHEETS 5



Stormwater Control Plan for Regulated Project Attachment (Template provided by Humboldt County)

Project Owner:

Dane Valadao
Assessor Parcel Number: 515-381-021
Address: 1820 Pickett Road, McKinleyville, CA

Project Narrative:

Trinity Valley Consulting Engineers, Inc. (TVCE) was secured by Dane Valadao (client) to evaluate the existing conditions for the above referenced parcel. The client is proposing the development of the existing parcel for residential use. At the present, stormwater from the site is not mitigated. The following statistics describe present conditions at the project site:

Table 1: Pre-Construction Existing Site Conditions (ft²)	
Impervious Surface(s)	
Rooftop(s)	3500
Paved Surface(s)	750
Sidewalk/Patio	750
Total	5000
Pervious Surface(s)	
Lawn	5000
Landscaping	500
Vacant Land	97277
Total	107777

The proposed project site is located in the central part of McKinleyville, CA. Latitude and Longitude of the project site is N40.94350°, -124.09586°W. The Humboldt County assessors' parcel number is APN 515-381-021. The parcel is approximately 2.47 acres in size (County of Humboldt GIS webpage). The project parcel is currently developed with a driveway, residence, garage, and associated utilities. Surrounding the parcel are residential properties. Access to the site is provided by Pickett Road and Gwin Road. Elevation on site is 170 feet above mean sea level. Slopes are gentle to flat.

Site design measures are included to minimize or eliminate site runoff and encourage infiltration on site. These measures include the following: new landscaping that will encourage infiltration/filtration, tree planting, new lawns, and subsurface infiltration storm chamber. The following statistics describe estimated post-construction conditions at the project site:

Table 2: Post-Construction Proposed Site Conditions (ft²)	
Impervious Surface(s)	
Rooftop(s)	29484
Paved Surface(s)	16733
Sidewalk/ADA parking (concrete)	19139
Total	65356
Pervious Surface(s)	
Lawn/ Landscaping	25163
SRA	6985
Pervious asphalt	10236
Undisturbed	0
Total	42384

The project site has been assigned one Drainage Management Areas (DMA), where certain design measures have allowed credits to be applied to reducing impervious surfaces and quantifies as runoff reduction. These design measures include consideration of pervious asphalt, tree planting, landscape areas, pervious disconnect, and new lawn area.

Soil Characteristics:

Soils were not characterized as SM-silty sand as outlined in the soils report. Typical design Infiltration rates for hydrologic soil groups A, B, C, and D corresponding to USDA soil classification and Unified soil classifications are as followed:

Table #4 Design Infiltration Rates – Adopted from the Minnesota Stormwater Manual			
Hydrologic soil group	Infiltration rate (inches/hr)	Soil Textures	Corresponding Unified Soil Classification
A	1.63	gravel, sandy gravel, silty gravel	GW – well-graded gravels, sandy gravels GP – gap-graded or uniform gravels, sandy gravels GM – silty gravels, silty sandy gravels SW – well-graded gravelly sand
	0.8	sand, loamy sand, sandy loam	SP – gap-graded or uniform sands, gravelly sands
B	0.45		SM – silty sands, silty gravelly sands
	0.3	loam, silt loam	MH – micaceous silts, diatomaceous silts, volcanic ash
C	0.2	sandy clay loam	ML – silts, very fine sands, silty or clayey fine sands
D	0.06	clay loam, silty clay loam, sandy clay, silty clay, clay	GC – clayey gravels, clayey sandy gravels SC – clayey sands, clayey gravelly sands CL – low plasticity clays, sandy or silty clays OL – organic silts and clays of low plasticity CH – highly plastic clays and sandy clays OH – organic silts and clays of high plasticity

Existing Vegetation and Natural Areas:

The subject property is mostly open grassy area that make up most of the subject parcel. Slopes on site are relatively flat with a gentle north aspect towards Pickett Road. The proposed development is surrounded by mostly developed residential properties. As per the County of Humboldt GIS website, slopes are relatively flat (less than 5%). There were no indications of slope failure or evidence of faulting during site visitation.

Project Layout Optimization:

Site design measures are included to minimize or eliminate site runoff and encourage infiltration on site. These measures include consideration of the following: pervious asphalt, tree planting, landscape areas, roof top disconnect, lawn areas, and subsurface stormwater chambers that will encourage infiltration/filtration. In the case of roof top disconnect, the release rate of storm runoff to adjacent lands shall not exceed the natural rate of storm runoff for a 50-year storm with a 10-minute duration. This will be achieved by only directing half the roof top stormwater from the proposed building into the area. The drainage system will utilize pop up emitters to release the stormwater in a controlled system. Additionally, strategic tree and shrub planting will be used to promote infiltration and root uptake of water prior to entering the receiving areas. This area will support native plants and to act as a natural stormwater filtration area before the water leaves the site. See the attached landscape plan for planting and maintenance requirements.

Source Controls (Additional Information):

This section is additional information associated with Appendix 6 “Stormwater Pollutant Sources/Source Controls Checklist”.

A3. It is required to mark all inlets with the words “No Dumping! Flows to River/Ocean” at the two proposed area drains.

A4. It is the owner’s responsibility to maintain and periodically repaint or replace the inlet markings.

It is the owner’s responsibility to include in rental/lease agreement(s): “Tenant shall not allow anyone to discharge anything to the storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”

D13. Building design features should discourage entry of any pests.

D14. It is the owner’s responsibility to provide an integrated Pest Management information to present and future tenants.

D23. The final landscape plans will accomplish the following:

- Preserve existing native trees, shrubs, and ground cover to the maximum extent as possible;
- Landscaping will be designed to 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;
- Within areas that may retain or detain stormwater, plants that are tolerant of saturated soil conditions must be utilized;
- Vegetation adjacent to hardscapes should be pest-resistant plants;

- To insure successful establishment, selected plants must be appropriate for site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.

D₂4. It is the owner's responsibility to maintain landscaping using minimum or no pesticides.

G3. Site refuse will be contained in one location onsite. This refuse enclosure is a 8' x 12' concrete pad that is enclosed by a wooden fence, screened and approximately 6' in height. A 6" tall by 6" wide curb will be constructed on the outside edge (3/4 around the enclosure) to control run-on and minimize runoff of any stormwater.

It is required to post a sign in the designated refuse enclosure on or near dumpsters that states "Do not dump hazardous materials here" or similar.

G4. One dumpster will be provided to tenants within the enclosed refuse areas. It will be the responsibility of the property manager to inspect these receptacles regularly; repair or replace leaky receptacles. The dumpster will be equipped with swinging covers that must be shut at all times. Prevent/prohibit dumping of liquid and hazardous waste must be included dialogue within the lease/rental agreement that explicitly prohibits these activities. It will be the responsibility of the property management to inspect and pick up litter daily and clean up any spills immediately. Spill control materials must be located on site and easily accessed.

J1-3. Any vehicular and equipment cleaning will be prohibited. This will be enforced within the rent/lease agreement.

K1-3. Any vehicular and equipment repair and maintenance will be prohibited. This will be enforced within the rent/lease agreement.

N3. Fire sprinkler test water will be disposed of into the existing sanitary sewer system. These waters cannot be discharged into a stormwater system. Water should be piped/hosed to the existing sanitary system insuring no spills.

P4. It is the owner's responsibility to sweep sidewalks and parking areas regularly to prevent accumulation of litter and debris. All debris from pressure washing activities must be collected to prevent entry into the storm drain system. Any wash water containing cleaning agent or degreaser must be discharged into the sanitary sewer and never allowed to enter the storm drain.

Best Management Practices (Pollutant Source/Source Controls) – CASQA:

The following applicable operational BMPs are required at this site as per the Appendix 6 checklist:

Operational BMPs

- Drainage System Maintenance (SC-74) - Section A
- Building and Ground Maintenance (SC-41) – Sections D₂ and N
- Waste Handling and Disposal (SC-34) – Section G

Best Management Practices (During Construction) – CASQA:

Before and during construction activities commence the following best management practices (BMPs) may be employed to control stormwater runoff and eliminate potential for sedimentation and construction

materials from entering waterways. The placement of these BMPs will be per the project engineer's direction. Refer to Attachment A details.

Erosion and Sediment Control BMPs

- Scheduling (EC-1)
- Preservation of Existing Vegetation (EC-2)
- Straw Mulch (EC-6)
- Geotextile & Mats (EC-7)
- Temporary Silt Fencing (SE-1)
- Temporary Fiber Rolls (SE-5)
- Temporary Gravel Bag Berm (SE-6)
- Street Sweeping and Vacuuming (SE-7)
- Storm Drain Inlet Protection (SE-10)
- Wind Erosion Control (WE-1)
- Temporary Construction Entrance (TC-1)
- Temporary Concrete Washout Facility (WM-8)

Non-Stormwater Management and Material Management BMPs

- Water Conservation Practices (NS-1)
- Paving and Grinding Operations (NS-3)
- Illicit Connection/Discharge (NS-6)
- Potable Water/Irrigation (NS-7)
- Vehicle and Equipment Cleaning (NS-8)
- Vehicle and Equipment Fueling (NS-9)
- Vehicle and Equipment Maintenance (NS-10)
- Concrete Curing (NS-12)
- Material Delivery and Storage (WM-1)
- Material Use (WM-2)
- Stockpile Management (WM-3)
- Spill Prevention and Control (WM-4)
- Hazardous Waste Management (WM-6)
- Contaminated Soil Management (WM-7)
- Concrete Waste Management (WM-8)
- Sanitary/Septic Waste Management (WM-9)
- Liquid Waste Management (WM-10)

Details regarding these best management practices can be located within the California Stormwater Quality Association's *Stormwater Best Management Practice Handbook*, dated July 2012.

SECTION 5

OPERATION AND MAINTENANCE CERTIFICATION SHEETS 4



For Office Use Only

Received By: _____

Physical Site Address and/or APN: APN: 510-381-021

- An annual self-certification letter will be mailed to the RI. This letter will serve as verification that all the storm water facilities on the property are being maintained and remain operational. The letter should be signed and returned within 30 days.

O&M Plan Checklist and Certification for Regulated Projects

C. Updates to the O & M Plan

Contact information for the Responsible Individual should be current. If the RI changes, the PBS departments with project location jurisdiction should be notified with the appropriate revisions.

D. O & M plans for other Facility Types

If your project included a non-standard storm water treatment facility that was approved by the Planning and Building Services Department, such as a tree-box type system, than the O & M should reflect the manufacturer's recommended maintenance scheduling.

E. Signature and Certification:

"I, the RI/applicant accept responsibility for operation and maintenance of storm water treatment and flow-control facilities until such time as this responsibility is transferred to a subsequent owner." Furthermore, a condition on the property deed will be recorded with the County Recorder's office indicating that a storm water facility is present on the property and that the maintenance responsibility will transfer with property ownership in perpetuity.

Signature of the RI

Date

Print Name

I am the:

☐ Property Owner

☐ Applicant

☐ Contractor

Responsible Individual:_____

Facility Name:_____

Date of Inspection:_____

Item	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed; and if any needed maintenance was not conducted, note what is needed and when it will be done)	Results Expected When Maintenance Is Performed
General				
Trash and Debris	Trash and debris accumulated in basin Visual evidence of dumping			Trash and debris cleared from site.
Contaminants and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants			No contaminants or pollutants present.
Vegetation	When the planted vegetation becomes excessively tall. When nuisance weeds and other vegetation start to take over.			Vegetation mowed per specifications or maintenance plan, or nuisance vegetation removed so that flow is not impeded. Vegetation should never be mowed lower than the design flow depth. Remove clippings from the area and dispose appropriately.

O and M: Inspection and Maintenance Checklist: Bioretention Facility

Item	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed; and if any needed maintenance was not conducted, note what is needed and when it will be done)	Results Expected When Maintenance Is Performed
Tree/Brush Growth and Hazard Trees	Growth does not allow maintenance access or interferes with maintenance activity Dead, diseased, or dying trees			
Erosion	Eroded over 2 in. deep where cause of damage is still present or where there is potential for continued erosion.			Cause of erosion is managed appropriately. Areas remulched to fill in void areas.
Sediment	Accumulated sediment affects inletting or outletting condition of the facility.			Sediment removed and area reseeded if necessary to control erosion.
Damaged Pipes	Any part of the piping that is crushed or deformed more than 20% or any other failure to the piping.			Pipe repaired or replaced.
Rodent Holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.			The design specifications are not compromised by holes. Any rodent control activities are in accordance with applicable laws and do not affect any protected species

This or a similar document should remain with the facility. Inspection and maintenance records should be available upon request from the PBS departments with project location jurisdiction.

