

PRELIMINARY STORMWATER CONTROL PLAN

for

**The Collection
Tract Map 9479
Danville, CA**

January 16, 2019

Prepared for:

TH Danville Investors LLC
3001 Bishop Drive, Suite 100

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Attachments

- Attachment A: Stormwater Control Plan Exhibit (Sheet 10 from Vesting Tentative Map No. 9479)
- Attachment B: IMP Sizing Calculator Output for Regions A, B, D, and E
- Attachment C: IMP Sizing Calculator Output for Region C
- Attachment D: Existing Conditions Exhibit (Sheet 2 from Vesting Tentative Map No. 9479)
- Attachment E: Contra Costa County Mean Seasonal Isohyets showing Project Location and Mean Annual Precipitation used in IMP Calculator

I. PROJECT DATA**Table 1. Project Data**

Project Name/Number	Tract Map 9479, The Collection, 19929.000
Application Submittal Date	Preliminary Stormwater Control Plan submitted January 16, 2019
Project Location	2550 Camino Tassajara, Danville, CA 94506
Name of Developer	TH Danville Investors LLC
Project Phase No.	NA
Project Type and Description	Residential; 18 single-family, detached homes
Project Watershed	Sycamore Creek
Total Project Site Area (acres)	5.05 Acres
Total Area of Land Disturbed (acres)	5.03 Acres
Total New Impervious Surface Area (sq. ft.)	71,541 sf
Total Replaced Impervious Surface Area	32,304 sf (0.02 Acres = 1,028 sf Pre-Project Impervious Surface Remaining in Parcel F)
Total Pre-Project Impervious Surface Area	33,332 sf
Total Post-Project Impervious Surface Area	104,873 sf
50% Rule [*]	Applies
Project Density	3.6 Dwelling Units/Acre
Applicable Special Project Categories [Complete even if all treatment is LID]	None
Percent LID and non-LID treatment	100% LID treatment
HM Compliance [†]	Applies

[*50% rule applies if:

Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area]

[†HM required (unless project meets one of the exemptions on *Guidebook* p. 9) if:

(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre]

II. SETTING

II.A. Project Location and Description

The site is located on Camino Tassajara in the town of Danville within Contra Costa County. This project proposes to subdivide the existing parcel into 18 single-family, detached homes.

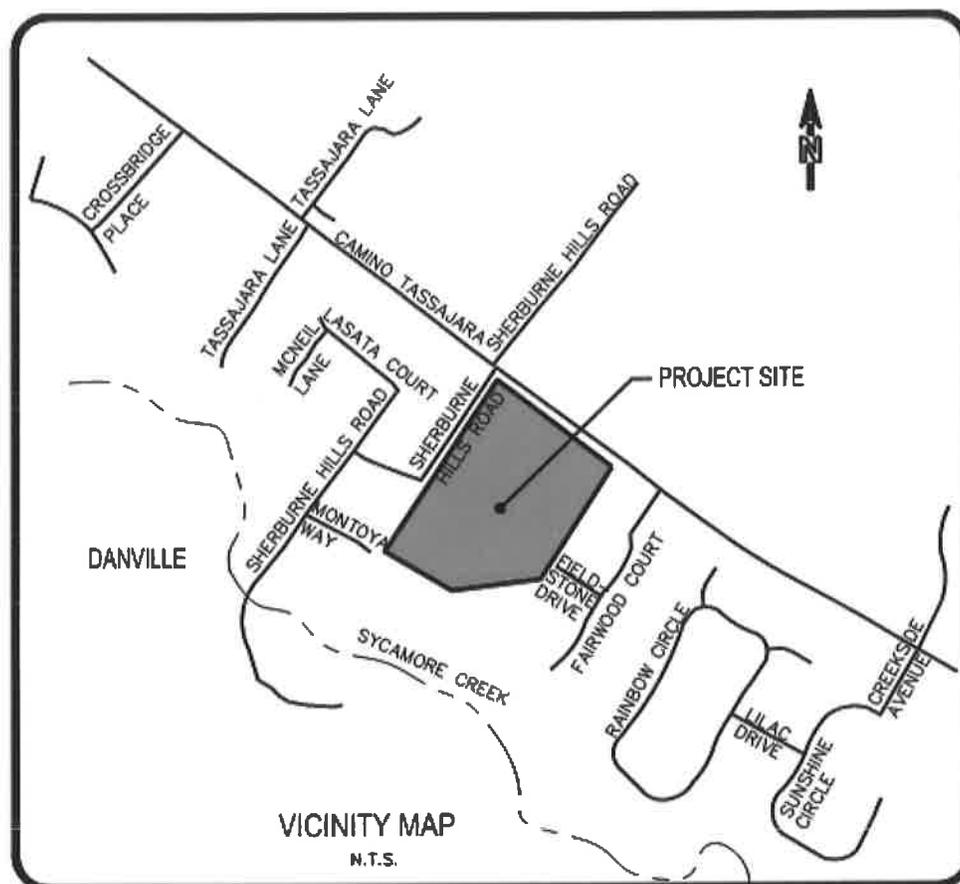


Figure 1. Vicinity Map

II.B. Existing Site Features and Conditions

The 5.05-acre, roughly rectangular site is currently operating as a retail nursery that is occupied by several small to moderately sized buildings, an asphalt parking lot, gravel access roads, mulch and landscaping areas. Grades across the site range from an elevation of 500 feet near Camino Tassajara to an elevation of 509 feet near the rear of the property. The site drains to an inlet on the northwestern side of the property that is connected to the storm drain system in Sherburn Hills Road. The site is bordered by Camino Tassajara and Sherburne Hills Road, but is otherwise surrounded by existing single-family residential homes. Sycamore Creek is located between 150 to 250 feet south of the project boundary. Surficial soils are Holocene-aged alluvium likely consisting of clay interbedded with localized layers of sand and gravel. The shallow clay soils are typically highly to very expansive. The Geotechnical Feasibility Review suggests a preliminary design ground water level of 10 feet below design grade.

II.C. Opportunities and Constraints for Stormwater Control

The existing on-site soils consist of clays that do not allow for infiltration, which is a site constraint in applying LID strategies. The required development density to meet the PD-1 zoning also constrains the site for maintaining open space.

Site opportunities include the landscape areas along Sherburne Hills Road, Camino Tassajara, Private Alley 3, and Fieldstone Drive, which provide good locations for landscape buffers and/or bioretention treatment basins.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

III.A.1. Limitation of development envelope

The architecture and site plan have been designed to maximize open space/landscape yard space with minimum rear yard depths of 25', front setbacks staggered between 15' and 20', minimum side setbacks of 10', and provide for landscaping along Camino Tassajara, Sherburne Hills Road, and Fieldstone Drive.

III.A.2. Preservation of natural drainage features

There are no existing drainage features on the property. The property drains ultimately to the nearby Sycamore Creek via the adjacent storm drain system in Sherburne Hills Road. The proposed hydromodification basins in Parcels A and B will maintain the pre-development runoff conditions, thereby helping to preserve the condition of Sycamore Creek.

III.A.3. Setbacks from creeks, wetlands, and riparian habitats

The nearest creek or riparian habitat is Sycamore Creek, which is approximately 150' to 200' south of the property.

III.A.4. Minimization of imperviousness

The architecture and site plan have been designed to maximize landscape yard space while meeting the required density. The project frontages along Camino Tassajara and Sherburne Hills Road have been maintained as open/landscape buffer areas. Additional landscaping areas have been provided along Fieldstone Drive.

III.A.5. Use of drainage as a design element

The proposed placement of bioretention/hydromodification facilities in Parcels A and B allow for additional landscape areas that also provide buffers between Fieldstone Drive and the proposed homes on Alley 1. Similarly, the bioretention facility in Parcel C allows for an additional landscape area that provides a buffer between the project and the existing single-family development to the east.

III.B. Use of Permeable Pavements

Permeable pavers will not be used in this development.

III.C. Dispersal of Runoff to Pervious Areas

Runoff from lots, alleys, and streets will surface drain into the three project bioretention/hydromodification facilities. Landscaped frontage areas along Sherburne Hills Road and Camino Tassajara are self-treating areas.

III.D. Bioretention or other Integrated Management Practices

Three bioretention facilities have been designed to treat and control the flow of the resultant surface drainage for this project. The basins have been designed to meet the criteria set forth in the Stormwater C.3 Guidebook, 7th Edition.

Region A: The combined runoff from lots 1 thru 4 and 7 thru 13, a portion of lot 14, a portion of Parcel A, Private Alleys 1 and 2, and a portion of Fieldstone drive including sidewalk is routed through curb-cut gutter and storm drain system into Basin A in Parcel A. Basin A is a stormwater quality treatment and flow-control bioretention basin.

Region B: The combined runoff from lots 5 and 6, a portion of Parcel B, Parcel F, a portion of lot 15, the remainder of lot 14, and the remainder of Fieldstone Drive including sidewalk is routed through curb-cut gutter into Basin B in Parcel B. Basin B is a stormwater quality treatment and flow-control bioretention basin.

Region C: The combined runoff from lots 16 thru 18, the remaining portion of lot 15, a portion of Parcel C, and Private Alley 3 sheet-flows into Basin C in Parcel C. Basin C is a stormwater quality treatment only bioretention basin, see IV.B for description.

Regions D and E, Parcels D and E, are self-treating areas.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table 2. Drainage Management Areas

<i>DMA Name</i>	<i>Area (SF)</i>	<i>Surface Type/Description</i>	<i>DMA Type/Drains to</i>
Region A			
Pervious	60,952	Pervious Landscaping	Basin A, a treatment and flow control facility
Roof	35,824	Conventional Roof	
Street	21,361	Asphalt or Concrete	
Driveway	6,694	Asphalt or Concrete	
Sidewalk	495	Asphalt or Concrete	
Region B			
Pervious	17,149	Pervious Landscaping	Basin B, a treatment and flow control facility
Roof	5,324	Conventional Roof	
Street	10,554	Asphalt or Concrete	
Driveway	804	Asphalt or Concrete	
Sidewalk	1,016	Asphalt or Concrete	
Region B			
Pervious	18,734	Pervious Landscaping	Basin C, a treatment only facility
Roof	11,424	Conventional Roof	
Street	9,405	Asphalt or Concrete	
Driveway	1,954	Asphalt or Concrete	
Region D			
Pervious	888	Pervious Landscaping	Portion of Parcel D, self-treating
Region E			
Pervious	6,393	Pervious Landscaping	Parcel E and Portion of Parcel D, self-treating

IV.A.2. Drainage Management Area Descriptions

Region A:

Pervious drains to Basin A and includes the pervious areas of lots 1 thru 4 and 7 thru 13, a portion of the pervious area of lot 14, and the pervious portion of Parcel A outside of Basin A.

Roof drains to Basin A and includes the roof areas of lots 1 thru 4 and 7 thru 14.

Street drains to Basin A and includes the street area of Private Alleys 1 and 2 and a portion of Fieldstone Drive.

Driveway drains to Basin A and includes the driveway areas of lots 1 thru 4 and 7 thru 14.

Sidewalk drains to Basin A and includes the sidewalk area adjacent to the portion of Fieldstone Drive included in "Street" above.

Region B:

Pervious drains to Basin B and includes the pervious areas of lots 5 and 6, a portion of lot 15, the pervious portion of Parcel F, and the pervious portion of Parcel B outside of Basin B.

Roof drains to Basin B and includes the roof areas of lots 5 and 6.

Street drains to Basin B and includes the street area of Parcel F, a portion of Private Alley 3, and the remaining portion of Fieldstone Drive.

Driveway drains to Basin B and includes the driveway areas of lots 5 and 6.

Sidewalk drains to Basin B and includes the sidewalk area adjacent to the portion of Fieldstone Drive included in "Street" above.

Region C:

Pervious drains to Basin C and includes the pervious areas of lots 16 thru 18, the remaining portion of lot 15, and the pervious portion of Parcel C outside of Basin C.

Roof drains to Basin C and includes the roof areas of lots 15 thru 18.

Street drains to Basin C and includes the remaining portion of Private Alley 3 street area.

Driveway drains to Basin C and includes the driveway areas of lots 15 thru 18.

Region D:

Pervious includes a portion of the Parcel D landscaping area and is self-treating.

Region E:

Pervious includes the Parcel E landscaping area and a portion of the Parcel D landscaping, and is self-treating.

IV.B. Integrated Management Practice Descriptions

Dan Cloak's Technical Memo entitled "Guidance on Flow Control for Development Projects on Sites that are Already Partially Developed", dated March 10, 2009, has been applied to this project. Region C, which has an equivalent area less than the existing impervious surface area of 33,332 sf, drains to Basin C in Parcel C. See Attachment D, Existing Conditions, and Attachment C, IMP Sizing Calculator for Region C. Per the Technical Memo, Basin C has been designed for treatment only. Treatment and flow control has been applied to Regions A and B, which drain to Basins A and B, respectively. Regions D and E are landscape buffer areas that are self-treating areas.

IV.C. Tabulation and Sizing Calculations

See Attachments B and C, output from the IMP Sizing Calculator for Regions A, B, C, D, and E.

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

This project will create a few potential sources of stormwater pollutants.

Sources to be controlled include:

- On-site storm drain inlets
- Need for future indoor and structural pest control
- Landscape/outdoor pesticide use
- Vehicle and equipment cleaning
- Vehicle/equipment repair and maintenance
- Fire sprinkler test water

V.B. Source Control Table

Table 3. Sources and Source Control Measures

Potential Source	Permanent BMPs	Operational BMPs
On-Site Storm Drain Inlets	Inlets that are accessible from driveways will be marked with Town approved "No Dumping – Drains to Creek" curb markers	Inlet markings will be inspected annually and replaced or renewed as needed.
Need for Future Indoor and Structural Pest Control	Standard building design minimizes potential need for future pest control.	Buyers will receive integrated pest management information.
Landscape/Outdoor Pesticide Use	Any native trees, shrubs, and ground cover on the site will be preserved to the maximum extent possible. Landscaping will be designed to minimize required irrigation and runoff, to promote surface infiltration, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution. Where possible, pest-resistant plants will be selected, especially for locations adjacent to hardscape. Plants will be selected appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	All open space landscaping is to be maintained by a professional landscaping contractor utilizing integrated management methods. Pesticides will only be applied by appropriately licensed contractors.
Vehicle and Equipment Cleaning		Car washing on-site is discouraged. Car washing will be deferred to car wash outlets.
Vehicle/Equipment Repair and Maintenance		Vehicle/equipment repair on-site is prohibited.
Fire Sprinkler Test Water	Fire sprinkler test valves will be equipped with a means to divert test water to the sanitary sewer.	
Construction Related Pollutants		Regular street sweeping to control pollutants. Controlled construction wash down areas.

VI. STORMWATER FACILITY MAINTENANCE

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

Ownership and maintenance responsibility for the stormwater facilities lies with the resident Homeowner’s Association. Operation and Maintenance Agreement and Plan will be recorded with the recording of the Final Map.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

- Inspect **inlets** for channels, exposure of soils, or other evidence of erosion. Clear any obstructions and remove any accumulation of sediment. Examine rock or other material used as a splash pad and replenish if necessary.
- Inspect **outlets** for erosion or plugging.
- Inspect **side slopes** for evidence of instability or erosion and correct as necessary.
- Observe soil at the bottom of the swale or filter for uniform **percolation** throughout. If portions of the swale or filter do not drain within 48 hours after the end of a storm, the soil should be tilled and replanted. Remove any debris or accumulations of sediment.
- Examine the **vegetation** to ensure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. When mowing, remove no more than 1/3height of grasses. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove noxious and invasive vegetation.
- Abate any potential **vectors** by filling holes in the ground in and around the swale and by insuring that there are no areas where water stands longer than 48 hours following a storm. If mosquito larvae are present and persistent, contact the Contra Costa Mosquito and Vector Control District for information and advice. Mosquito larvicides should be applied only when necessary and then only by a licensed individual or contractor.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

Table 4. Construction Plan C.3 Checklist

<i>Stormwater Control Plan Page #</i>	<i>BMP Description</i>	<i>See Plan Sheet #s</i>
3 and Attachment A	Site Layout – Maximize yard landscape areas and landscape buffers.	
3 and Attachment A	Integrated management design utilizing open space Parcels A, B, and C for flow control and/or treatment and as landscape buffers.	
5 and Attachment A	Combined treatment and flow control basin.	
Attachment A	SWQ treatment/hydromodification design details.	

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2015-0049.

IMP SIZING CALCULATOR OUTPUT FOR REGIONS A, B, D, AND E

Project Name: The Collection - Proposed Developed Condition

Project Type: Treatment and Flow Control

Location: Danville, California

APN: 217-010-008-1

Drainage Area: 176101 sf

Mean Annual Precipitation: 19.1 in

I. Self-Treating Areas

DMA Name	Area (sq ft)
Pervious D	888
Pervious E	6393

IV. Areas Draining to IMPs

IMP Name: Basin A (Soil Type: C)

IMP Type: Bioretention Facility

Soil Type: C

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
					IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Pervious A	60,952	Landscape	0.50	30,476				
Roof A	35,824	Conventional Roof	1.00	35,824				
Driveway A	6,694	Concrete or Asphalt	1.00	6,694				
Sidewalk A	495	Concrete or Asphalt	1.00	495				
Street A	21,361	Concrete or Asphalt	1.00	21,361				
Total				94,850				
Area					0.060	1.040	5,921	6,518
Surface Volume					0.050	1.040	4,934	5,184
Subsurface Volume					0.066	1.040	6,513	6,515
Maximum Underdrain Flow (cfs)								0.17
Orifice Diameter (in)								2.62

IMP Name: Basin B (Soil Type: C)

IMP Type: Bioretention Facility

Soil Type: C

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
					IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Pervious B	17,149	Landscape	0.50	8,575				
Roof B	5,324	Conventional Roof	1.00	5,324				
Driveway B	804	Concrete or Asphalt	1.00	804				
Sidewalk B	1,016	Concrete or Asphalt	1.00	1,016				
Street B	10,554	Concrete or Asphalt	1.00	10,554				
Total				26,273				
Area					0.060	1.040	1,640	2,129
Surface Volume					0.050	1.040	1,367	1,588
Subsurface Volume					0.066	1.040	1,804	1,851
Maximum Underdrain Flow (cfs)								0.05
Orifice Diameter (in)								1.38

Software Tool Warnings

No warnings to report.

IMP SIZING CALCULATOR OUTPUT FOR REGION C

Project Name: The Collection - Proposed Developed Condition

Project Type: Treatment Only

Location: Danville, California

APN: 217-010-008-1

Drainage Area: 43977 sf

Mean Annual Precipitation: 19.1 in

IV. Areas Draining to IMPs

IMP Name: BASIN C (Soil Type: C)

IMP Type: Bioretention Facility

Soil Type: C

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
					IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Pervious	18,734	Landscape	0.10	1,873				
Roof	11,424	Conventional Roof	1.00	11,424				
Driveway	1,954	Concrete or Asphalt	1.00	1,954				
Street	9,405	Concrete or Asphalt	1.00	9,405				
Total				24,656				
				Area	0.040	1.000	986	2,460

Software Tool Warnings

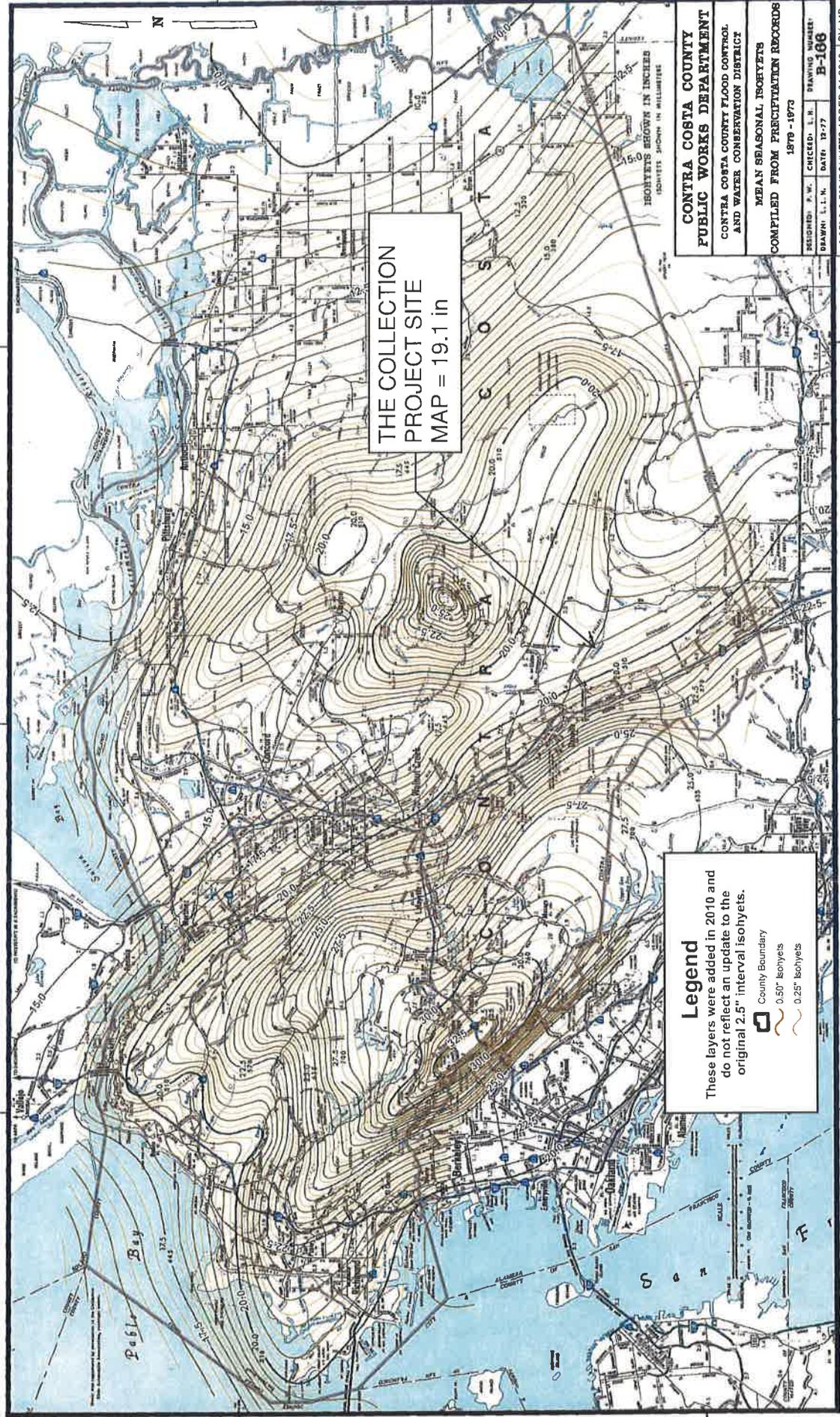
No warnings to report.

Report generated on 1/16/2019 12:00:00 AM by the [Contra Costa Clean Water Program](#) IMP Sizing Tool software (version 1.3.1.0).

122°15'

122°00'

122°15'



THE COLLECTION
PROJECT SITE
MAP = 19.1 in

Legend
 These layers were added in 2010 and do not reflect an update to the original 2.5" interval isohyets.

- County Boundary
- 0.50" Isohyets
- 0.25" Isohyets

**CONTRA COSTA COUNTY
PUBLIC WORKS DEPARTMENT**
 CONTRA COSTA COUNTY FLOOD CONTROL
 AND WATER CONSERVATION DISTRICT

MEAN SEASONAL ISOHYETS
 1979 - 1973
 COMPILED FROM PRECIPITATION RECORDS

DESIGNED: P. W. CHICKEL, L.S.	DRAWING NUMBER: B-106
DRAWN: L. L. N. DATE: 12-77	

ISOHYETS SHOWN IN INCHES
 (ISOHYETS SHOWN IN MILLIMETERS)

0.25" & 0.50" ISOHYETS ADDED 01-20-10 BY: MB