Stantec

Drainage Study for
5617 Price Avenue – Hangar Expansion

Level 3 Analysis
Magpie Creek Watershed

Design Review No. PLNP2021-00237

Vertical Datum: NAVD88

August 23, 2022

Prepared for:

SBM
5241 Arnold Avenue
McClellan, CA 95652

Prepared by:

Stantec Consulting Services Inc.
38 Technology Drive, Suite 200
Irvine, CA 92618

REGISTERED PROFESSIONAL ENGINEER
NO. 51031
Exp 9/30/23
CIVIL
STATE OF CALIFORNIA

9/23/2022

Table of Contents

LIST OF FIGURES

1.0 INTRODUCTION

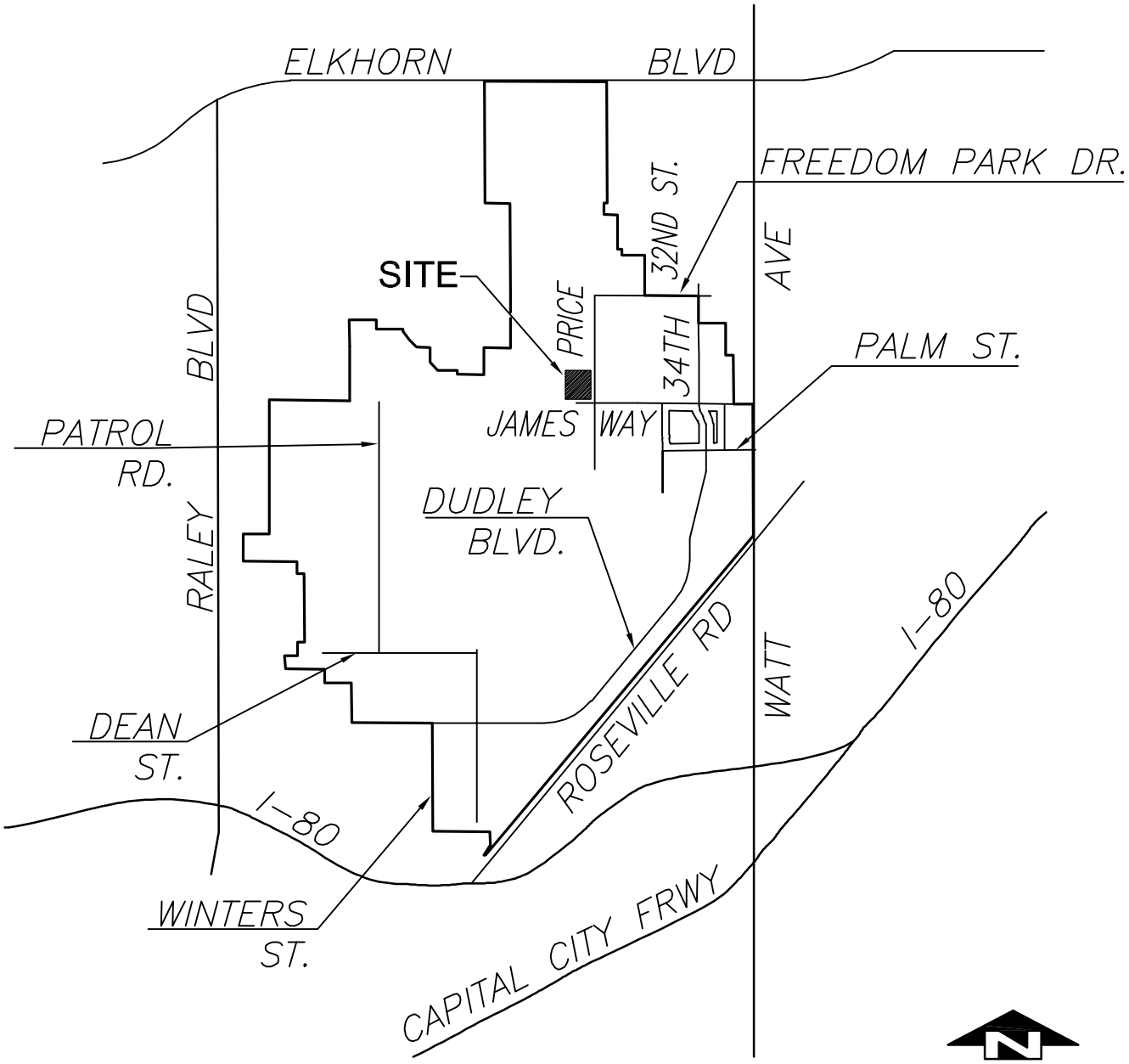
1.1 EXISTING SITE DESCRIPTION

The 5617 Price Avenue project is located within the eastern portion of McClellan Park, on the airfield, in Sacramento County. The project is bounded by an aircraft hangar to the north, aircraft staging area to the west, James Way to the south, and Price Avenue to the east. The project site is approximately 2.46 acres, see Figures 1-1 and 1-2. Historically, the project site was part of the McClellan Air Force Base that was deactivated in 2001 and the site has not changed since then. For purposes of this drainage study, the existing condition development will be considered an industrial land use, and as such, the existing storm drain system was designed for this purpose. The site is relatively flat with a grade change of approximately 3 feet. Per the Preliminary Geotechnical Engineering Report SBM Hangar Expansion, prepared by Mid Pacific Engineering, Inc., the project site is composed of sandy silts overlying cemented soils. The cemented soil indicates a hydrologic soil group D classification.

1.2 PROPOSED SITE DESCRIPTION

The proposed project will consist of an aircraft hangar, garage, office area, and parking. Pedestrian and vehicular access to the project site will be from James Way and Price Avenue, see Figures 1-3 and 1-4. The existing asphalt and concrete pavements in the parking area and concrete sidewalk along the perimeter of the existing hangar will be removed. The existing private backbone storm drain system will remain in place and continue to convey stormwater runoff from onsite and offsite areas to the north. Proposed onsite storm drain infrastructure will connect to the existing private storm drain system. The proposed development land use will be industrial. The existing offsite developments to the north and east of the project site have industrial land uses as well.

The purpose of this drainage report is to assess the stormwater impact of the proposed project on the existing storm drain and comply with Sacramento County drainage and stormwater quality criteria.

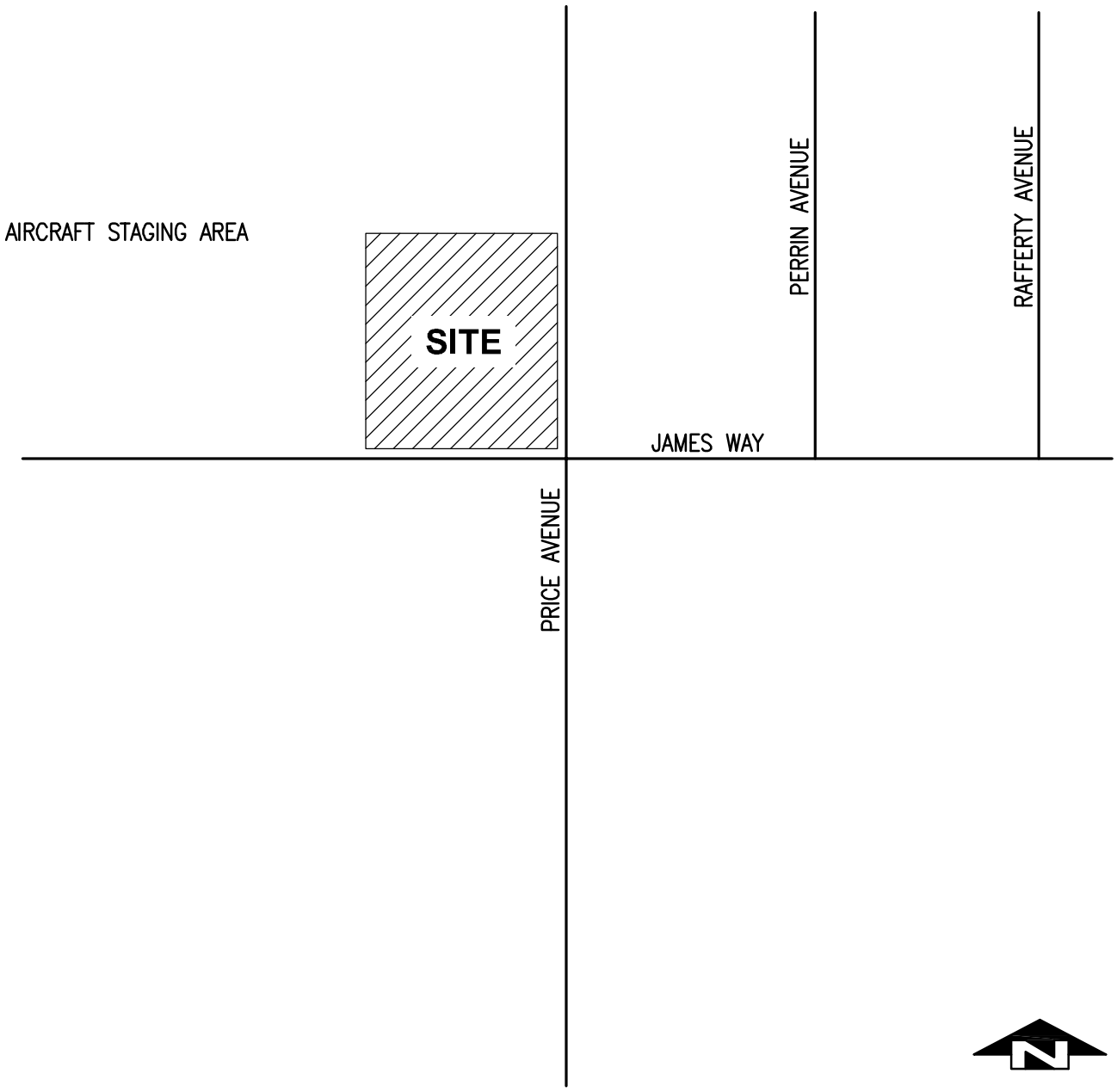


VICINITY MAP

NOT TO SCALE

FIGURE 1-1

PREPARED BY:	PREPARED FOR:	
Stantec 38 TECHNOLOGY DRIVE, SUITE 200 IRVINE, CA 92618 949.923.6000 stantec.com	**SBM** **5241 ARNOLD AVENUE** **McCLELLAN, CA 95652**	**VICINITY MAP** **5617 PRICE AVENUE**

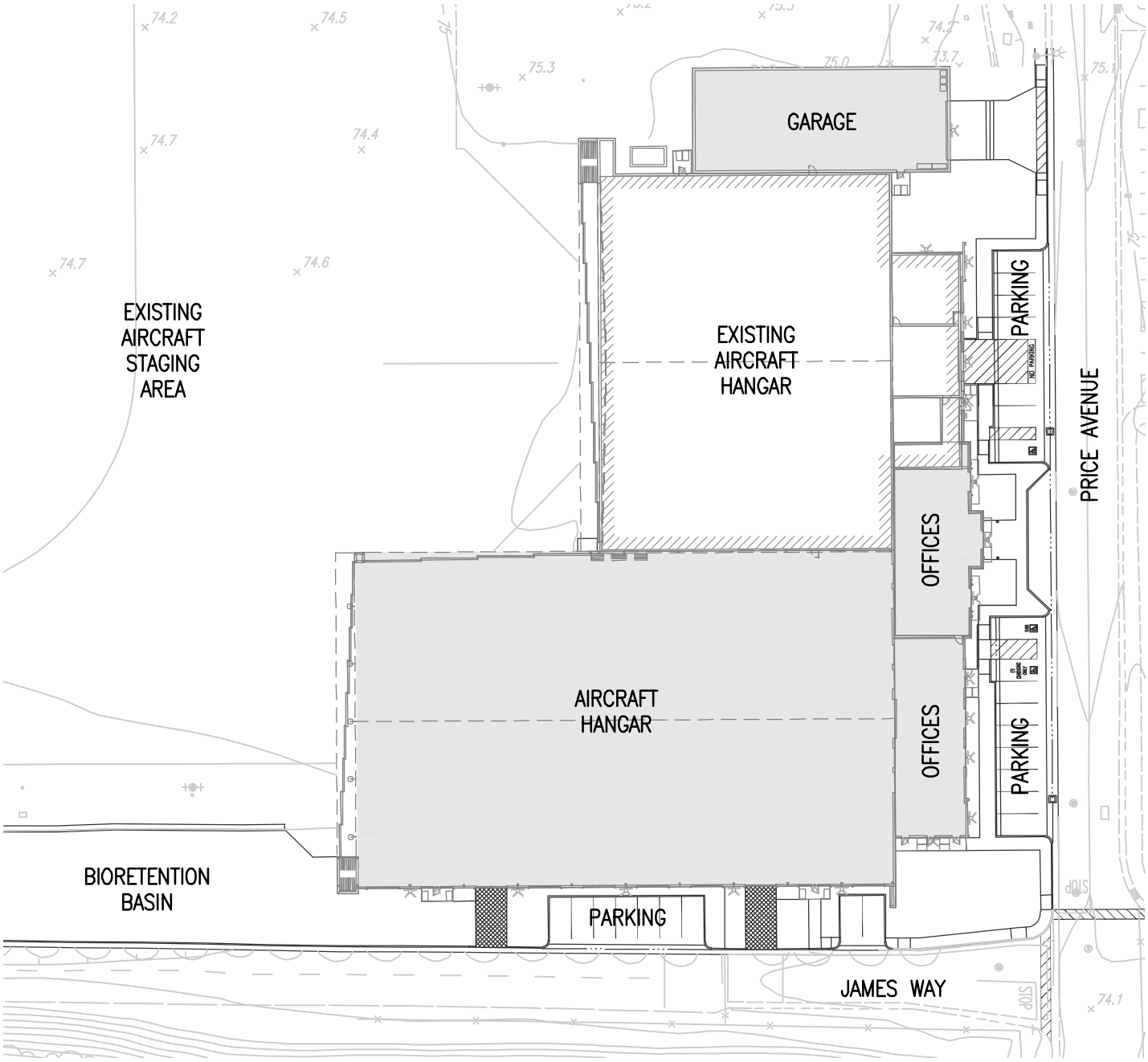


LOCATION MAP

NOT TO SCALE

FIGURE 1-2

PREPARED BY:	PREPARED FOR:	
Stantec 38 TECHNOLOGY DRIVE, SUITE 200 IRVINE, CA 92618 949.923.6000 stantec.com	**SBM** **5241 ARNOLD AVENUE** **McCLELLAN, CA 95652**	**LOCATION MAP** **5617 PRICE AVENUE**



SITE PLAN

NOT TO SCALE

FIGURE 1-3

PREPARED BY:

Stantec

38 TECHNOLOGY DRIVE, SUITE 200
IRVINE, CA 92618
949.923.6000 stantec.com

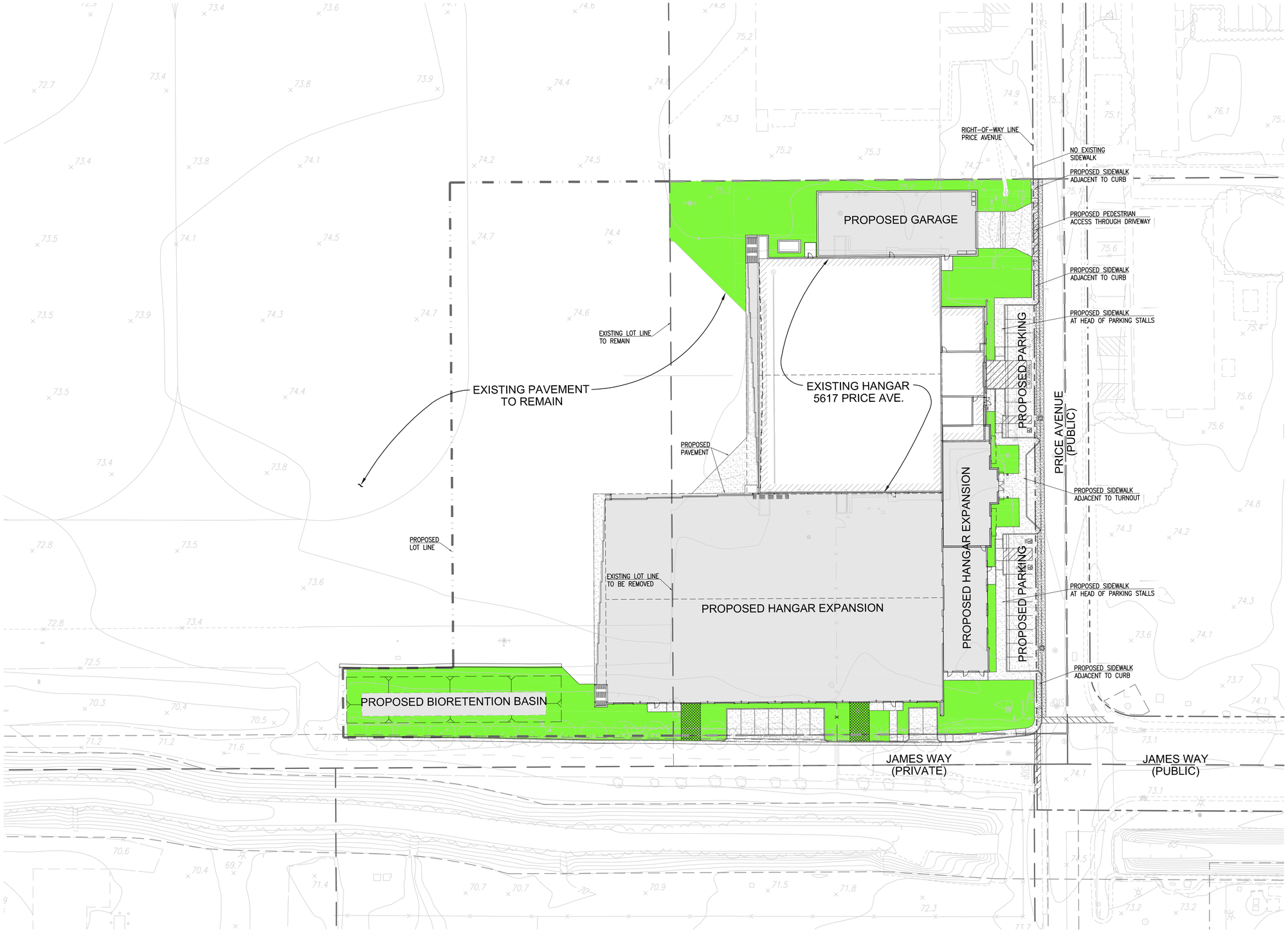
PREPARED FOR:

SBM

5241 ARNOLD AVENUE
McCLELLAN, CA 95652

SITE PLAN

5617 PRICE AVENUE



LEGEND
PROPOSED IMPROVEMENTS

PERVIOUS AREA ONSITE:
0.48 ACRES LANDSCAPE

IMPERVIOUS AREA ONSITE:
1.75 ACRES PROPOSED HANGAR, GARAGE, PARKING, BIORETENTION BASIN, AND EXISTING HANGAR

IMPERVIOUS AREA PRICE AVENUE (OFFSITE):
0.05 ACRES HARDSCAPE

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

FIGURE 1-4

PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 200
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR:

sbm
5241 ARNOLD AVE
McCLELLAN, CA 95652

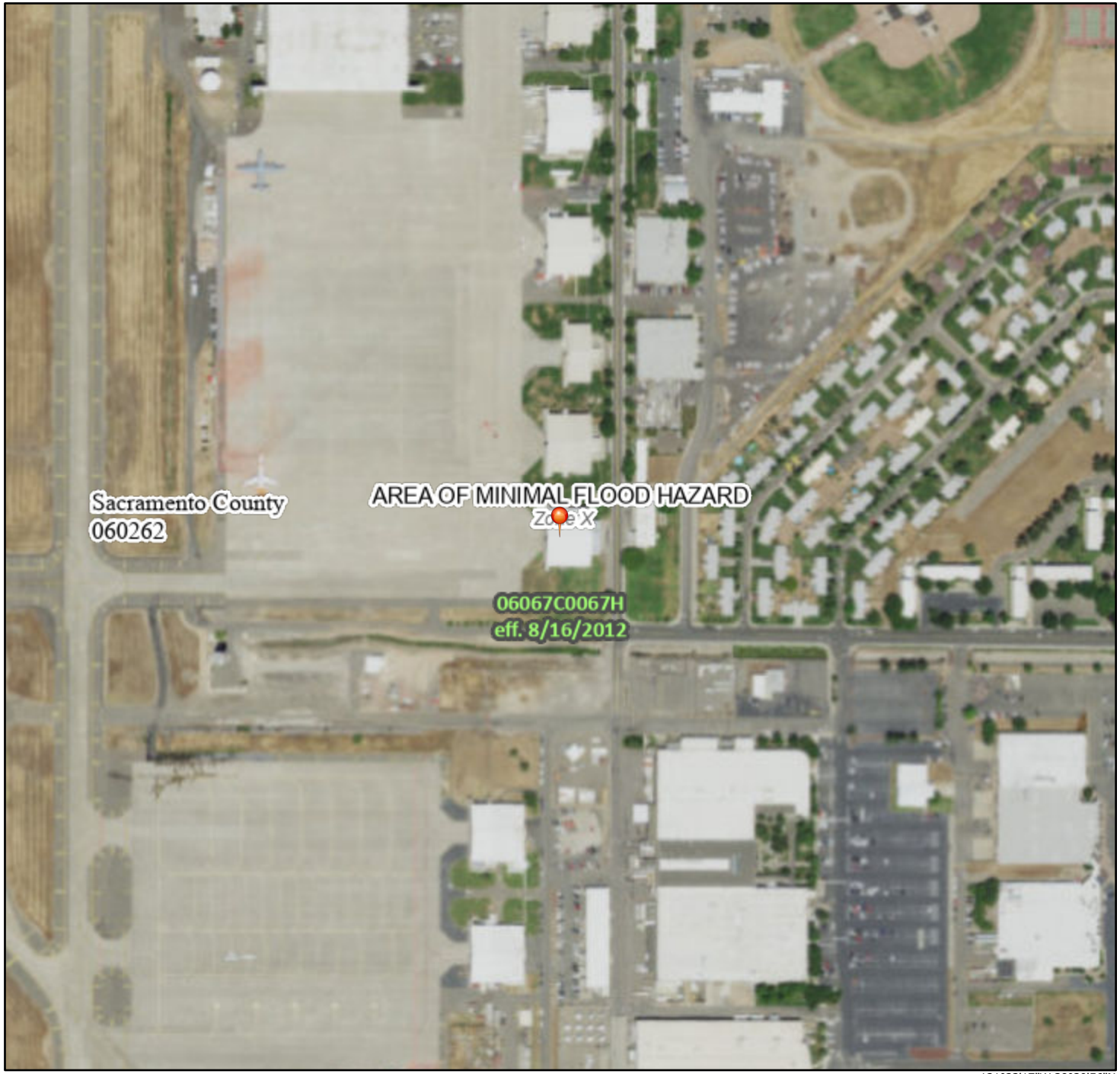
ENLARGED SITE PLAN
HANGAR EXPANSION
5617 PRICE AVENUE

DRAWING: v:\2042\active\204259220\drawing\exhibit_files\595220c-ex7009.dwg PLOTTED: 7/18/2022 9:21 PM BY: McLellan, Mark

National Flood Hazard Layer FIRMette

FEMA

121°23'55"W 38°40'24"N



121°23'17"W 38°39'56"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/19/2022 at 7:33 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

FIGURE 1-5

2.0 PROPOSED SITE IMPROVEMENTS

The proposed grading for the project site will generally be flat. The minimum and maximum elevations will be 70.30 (bioretention basin bottom) and 74.50 (hangar finish floor), respectively. The finish floor elevation of the proposed hangar and garage will join and match that of the existing hangar at elevation 74.50. The parking area in front of the existing hangar will have a uniform surface gradient and slope in one direction. The parking areas at the front and side of the proposed hangar will have uniform surface gradients and slope in one direction as well. The parking areas will be available for employee and visitor parking.

The project site is in proximity to the existing Magpie Creek drainage channel. The minimum floor elevation of the proposed hangar and garage will join and match that of the existing hangar at elevation 74.50. It is not feasible nor make sense to rebuild the existing hangar to an elevation above 74.50. The flood hazard information presented on the FEMA map (see Figure 1-5) indicates the project site is in an area of minimal flood hazard.

Stormwater will sheet flow across the parking areas and will be intercepted by curb and gutter. The curb and gutter will convey the stormwater to grated inlets. The stormwater captured by the inlets will be piped to either a bioretention basin or a Contech StormFilter. Outlet pipes from the StormFilter and bioretention basin will connect to the existing private 24" storm drain system onsite.

The bioretention basin and StormFilter will treat the required amount of stormwater while allowing higher stormwater flow rates to bypass treatment. Up to 0.48 cfs (Nolte flow minus treatment flow) will bypass the bioretention basin and up to 0.30 cfs (Nolte flow minus treatment flow) will bypass the StormFilter. See Table 5-1 for Nolte flow rates and Table 8-1 for the StormFilter's treatment flow rate. Although a volume-based BMP, the bioretention basin will have an equivalent treatment flow rate of 0.20 cfs (Q_T=CiA, where C=0.95, i=0.18 in/hr, and A=1.19 ac of impervious area). The bioretention basin will have a 24" square grated inlet with the inlet grate elevated 12" above the basin bottom. See Appendix C LID & SWQ Treatment exhibit for the grated inlet configuration of the bioretention basin. The inlet will intercept and allow the higher flow rates to bypass treatment. The treated stormwater will be intercepted by perforated pipe within the basin's gravel layer and conveyed to the invert of the grated inlet. The StormFilter will allow higher flow rates to flow over its internal weir. Both treated and high flow stormwater will exit the StormFilter via its outlet pipe.

3.0 METHODOLOGY

3.1 HYDROLOGY

3.1.1 Existing Condition Hydrology

The Nolte Method was utilized for the analysis of the existing storm drain system. An industrial land use was designated for the existing condition development. Sacramento County Figure 2-5 was used to determine the Nolte Method design runoff. The project site resides in Zone 2.

3.1.2 Proposed Condition Hydrology

The Nolte Method was utilized for the analysis of the existing and proposed storm drain systems. An industrial land use was designated for the proposed condition development. The SacCalc program was used for determining the onsite Nolte Method design runoff. The project site resides in Zone 2.

3.2 HYDRAULICS

Hydraulic calculations will be included in the Level 4 drainage study.

4.0 DRAINAGE SHEDS – EXISTING CONDITION

4.1 NOLTE METHOD DESIGN RUNOFF

The project site is divided into two drainage sheds, E1 and E2, and are tributary to the existing private 24" storm drain system onsite, see Appendix A for Nolte Method Runoff Existing Condition exhibit. The 24" storm drain system is adjacent and parallel to Price Avenue and flows in a southerly direction. Drainage shed E1 has six grated inlets scattered throughout its drainage boundary and connect directly or indirectly to the 24" storm drain system. Drainage shed E2 has two grated inlets along its northerly boundary and a trench drain adjacent to the sliding hangar doors of the existing hangar. One of the inlets connects directly to the 24" storm drain system. The remaining inlet and trench drain connect indirectly to the 24" storm drain system. Sacramento County Figure 2-5 was used to determine the Nolte Method design runoff for drainage sheds E1 and E2. Table 4-1 below summarizes the runoff for the drainage sheds.

Table 4-1 Drainage Shed Runoff Flow Rates

Drainage Shed	Drainage Shed Area (acres)	Nolte Method Design Runoff, Q_N (cfs)
E1	1.39	0.70
E2	0.72	0.36

5.0 DRAINAGE SHEDS – PROPOSED CONDITION

5.1 NOLTE METHOD DESIGN RUNOFF

The project site is divided into three drainage sheds, P1, P2, and EXSD1, and will have proposed storm drain to convey the Nolte Method runoff flow rate to the existing private 24" storm drain onsite. See Appendix B for Nolte Method Runoff Proposed Condition exhibit. The drainage shed, EXSD1, will be directly tributary to the existing onsite 24" storm drain system. Drainage sheds P1 and P2 will be indirectly tributary to the existing 24" storm drain system. The SacCalc program was used for determining the onsite Nolte Method design runoff for all three drainage sheds. Table 5-1 summarizes the runoff for the drainage sheds. Table 5-2 summarizes the runoff at the onsite private junction.

Table 5-1 Drainage Shed Runoff Flow Rates

Drainage Shed	Drainage Shed Area (acres)	Nolte Method Design Runoff, Q_N (cfs)
P1	1.40	0.68
P2	0.91	0.44
EXSD1	0.15	0.07

Table 5-2 Runoff Flow Rate at Onsite Private Junction

Drainage Sheds Tributary to Junction	Total Tributary Area (acres)	Nolte Method Design Runoff, Q_N (cfs)
P1 & P2	2.31	1.12

6.0 DRAINAGE SHEDS - LOW IMPACT DEVELOPMENT (LID)

The project site is divided into three drainage sheds for low impact development design purposes. These drainage sheds are P1, P2, and EXSD1, see Appendix C for Low Impact Development (LID) exhibit. The LID Credit Calculation Worksheet for commercial projects, from the Stormwater Quality Design Manual (SQDM) for the Sacramento Region and as modified by the Department of Water Resources, was utilized to calculate the LID points for each drainage shed. The project site must reach a total of 100 points to satisfy the SQDM requirements for new development. The drainage shed points are weighted against the total project site area. Table 6-1 on page 10 summarizes the LID points and the weighted points for each drainage shed.

Table 6-1 Drainage Shed LID Points and Weighted Points

Drainage Shed	Drainage Shed Area (acres)	Percentage (%) of Total Project Site Area	LID Points	Weighted Points
P1	1.40	56.91%	158.1	90.0
P2	0.91	36.99%	13.2	4.9
EXSD1	0.15	6.10%	100.0	6.1
TOTALS	2.46	100.00%		101.0

The weighted LID points add up to 101 total points. Therefore, the project site meets the requirements of the SQDM for LID implementation.

7.0 HYDROMODIFICATION

According to the latest Applicability Map from the Sacramento Stormwater Quality Partnership website, the project site resides in an area exempt for hydromodification analysis. Therefore, no hydromodification analysis was performed.

8.0 STORMWATER QUALITY

Source control measures and treatment control measures are required per the SQDM. Both types of measures are to be implemented to prevent pollutants from reaching municipal storm drain systems or local waterways. The LID Credit Calculation Worksheet for commercial projects calculates LID points and required stormwater quality treatment flow rates/volumes for drainage sheds. The LID worksheet will let the user know if stormwater quality treatment has been satisfied or if additional treatment is necessary. Table 8-1 below summarizes the stormwater treatment required for each drainage shed.

Table 8-1 Drainage Shed Stormwater Quality Treatment

Drainage Shed	Treatment Required	Treatment Provided	Treatment Control Measure	Treatment Control Measure Sizing
P1	0.075 ac-ft	0.075 ac-ft	Bioretention basin	1,800 sq-ft (15’ x 120’) with 33” gravel depth
P2	0.14 cfs	0.167 cfs	Contech StormFilter	8’ x 6’ vault with 5 cartridges (18” tall)
EXSD1	not applicable	not applicable	not applicable	not applicable

The drainage sheds P1 and EXSD1 satisfy the LID worksheet for stormwater quality treatment (see Appendix C). Drainage shed P1 will have a bioretention basin for its treatment control measure. Drainage shed EXSD1 will not

require treatment control measures, it will be 100% pervious. Both drainage sheds will have the following source control measures: efficient irrigation and landscaping.

Drainage shed P2 will require additional stormwater treatment. Its stormwater will be treated by a Contech StormFilter. The StormFilter will be its treatment control measure. The source control measures for drainage shed P2 will be efficient irrigation, landscaping, and storm drain inlet markings and signage.

9.0 TRASH CAPTURE

Trash particles that are 5mm or larger in size are required to be captured during a 1-year, 1-hour storm event and not allowed to enter the municipal storm drain systems or local waterways.

Drainage shed P1 will have a bioretention basin. The bioretention basin will have a 24" square grated inlet structure fitted with a screening device to provide full trash capture. The screening device will be bolted to the wall of the inlet structure at the opening of the outlet pipe.

Drainage shed P2 will have a Contech StormFilter as a treatment control measure. A screening device providing full trash capture will be installed at the outlet pipe of the StormFilter.

10.0 CONCLUSION

The Nolte Method design stormwater runoff rates for the existing and proposed conditions will not be identical. The proposed condition runoff is anticipated to be more than the existing condition runoff due to more area proposed to be tributary to the existing private 24" storm drain system. A hydraulics analysis will be performed during the Level 4 drainage study and conclude what required mitigation, if any, is necessary to address the anticipated additional runoff of 0.13 cfs.

For the 100-yr storm event, the existing and proposed conditions have similar overland release discharge points from the project site. These discharge points are at James Way and Price Avenue. The existing and proposed building finish floor elevations are above the ponding water surface elevations expected to occur onsite during a 100-yr storm event. The maximum flooding depth possible within the parking areas will be less than 1 foot. The project site is in proximity to the existing Magpie Creek drainage channel. The minimum floor elevation of the proposed hangar and garage will join and match that of the existing hangar at elevation 74.50. It is not feasible nor make sense to rebuild the existing hangar to an elevation above 74.50. The flood hazard information presented on the FEMA map (see Figure 1-5) indicates the project site is in an area of minimal flood hazard.

The LID credit points calculated for the project site exceed the minimum 100 points. The project site resides in an area exempt for hydromodification analysis. Therefore, no hydromodification analysis was performed. Stormwater

quality treatment will be provided by a bioretention basin and a Contech StormFilter. Trash capture devices will be installed in the StormFilter and the outlet structure of the bioretention basin.

11.0 APPENDIX A – EXISTING CONDITION NOLTE METHOD DESIGN RUNOFF

PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 200
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR:

sbm
5241 ARNOLD AVE
McCLELLAN, CA 95652

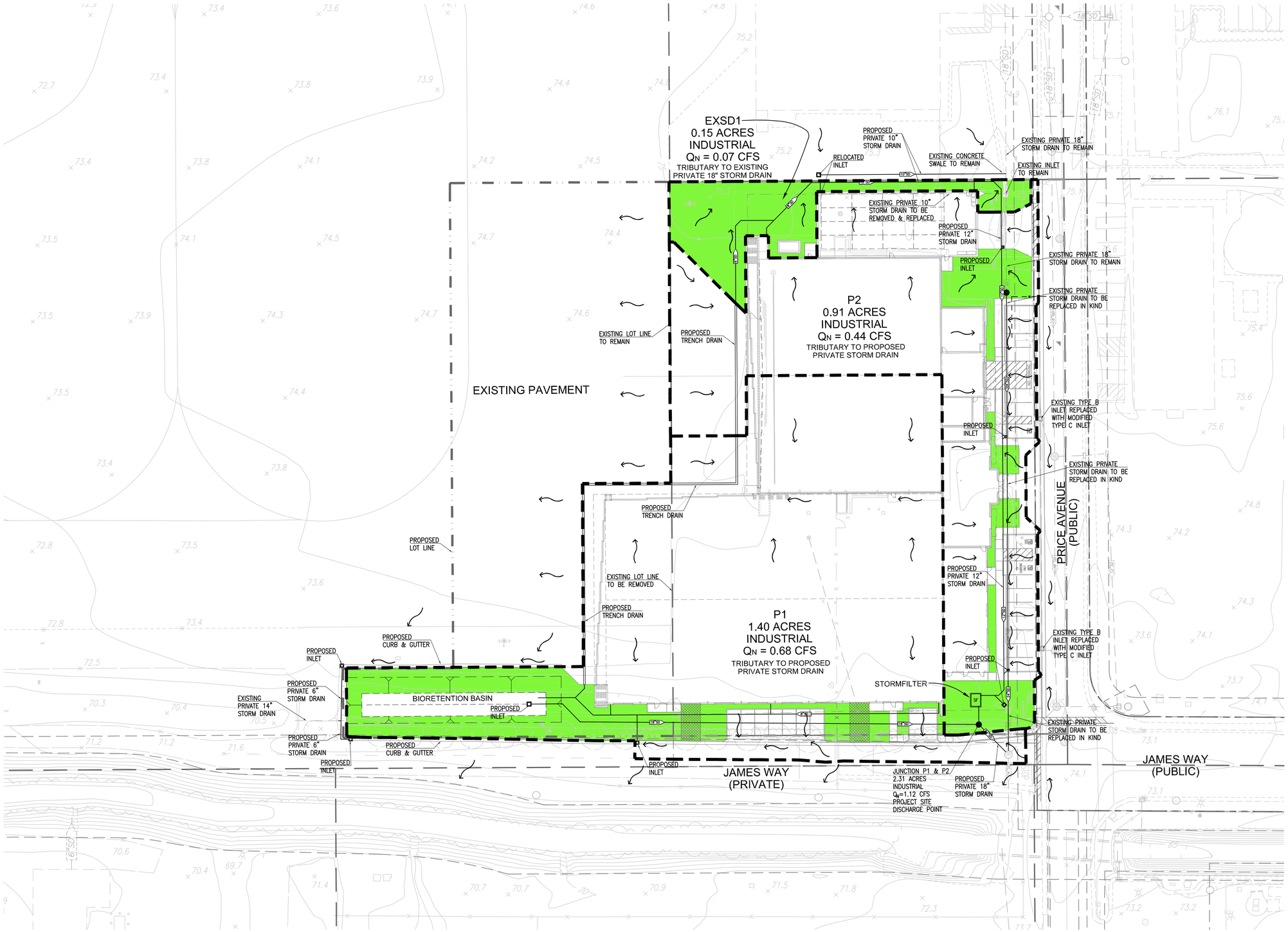
NOLTE METHOD RUNOFF
EXISTING CONDITION
5617 PRICE AVENUE

DATE: 7/18/2022

SHEET 1 OF 1

JOB NO. 2042 595220

12.0 APPENDIX B – PROPOSED CONDITION NOLTE METHOD DESIGN RUNOFF



DRAWING: v:\2042\active\2042595220\drawing\exhibit_files\595220c-ex7007.dwg PLOTTED: 7/18/2022 4:03 PM BY: McLellan, Mark

PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 200
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR:

sbm
5241 ARNOLD AVE
McCLELLAN, CA 95652

NOLTE METHOD RUNOFF
PROPOSED CONDITION
5617 PRICE AVENUE

DATE: 7/18/2022

SHEET 1 OF 1

JOB NO. 2042 595220

Nolte method results
(Project: Somers Hangar Nolte Flows - Proposed Condition)
(Hydrologic zone 2)

ID	Drainage area (acres)	Impervious area (%)	Design Q (cfs)
P1	1.40	85.00	0.68
P2	0.91	85.00	0.44
EXSD1	0.15	85.00	0.07

Sacramento Hydrologic Calculator Report

July 11, 2022 17:18

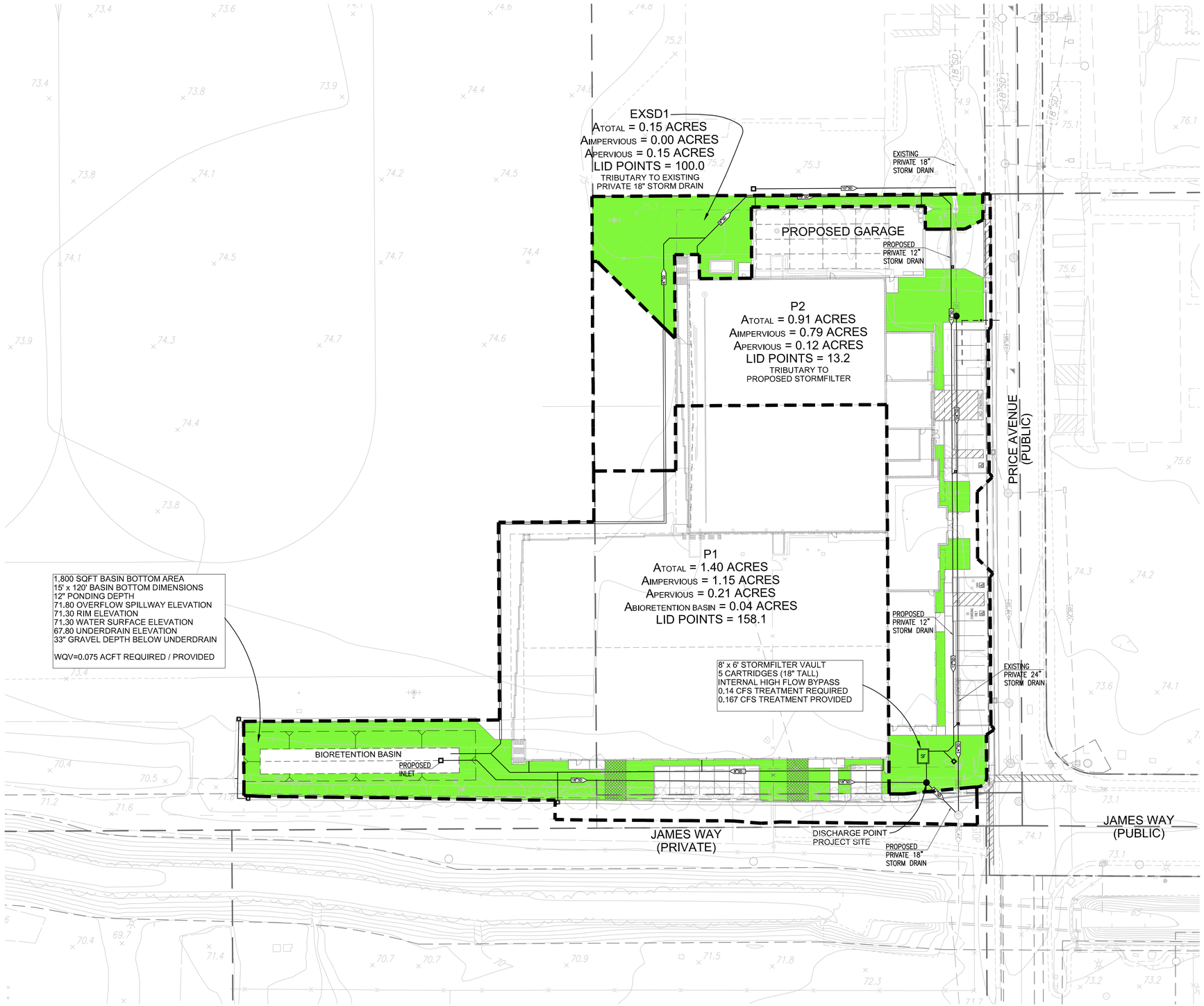
Project Title: Somers Hangar Nolte Flows - Proposed Condition
Comments: Nolte Method for proposed condition drainage sheds
Prepared by: mbm
Method: Nolte method
Date: 7/11/2022

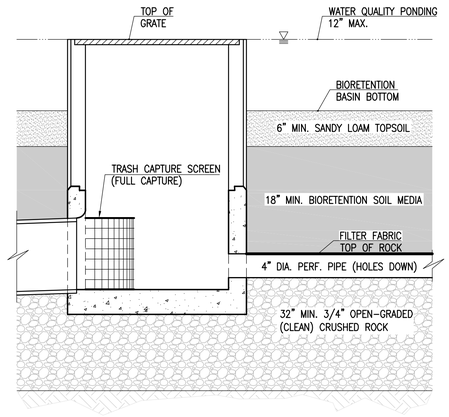
Watershed Hydrologic Summary Data

Watershed	Area (acres)	Area Percent											
		Given as	90	85	80	75	70	60	50	40	30	25	20
P1	1.4	fraction		1									
P2	0.91	fraction		1									
EXSD1	0.15	fraction		1									

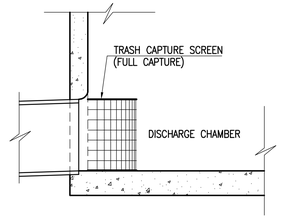
Refer to the Drainage manual for Land Use Impervious Area Percent

13.0 APPENDIX C – LID/SWQ/TRASH CAPTURE EXHIBIT & LID CREDIT CALCULATION WORKSHEET





BASIN OUTLET STRUCTURE — A
N.T.S. —



TRASH CAPTURE SCREEN STORMFILTER — B
N.T.S. —

LEGEND

PERVIOUS AREA

SHED BOUNDARY

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 200
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR:
sbm
5241 ARNOLD AVE
McCLELLAN, CA 95652

LID & SWQ TREATMENT
HANGAR EXPANSION
5617 PRICE AVENUE

DATE: 7/19/2022
SHEET 1 OF 1
JOB NO. 2042 595220

This portion is to use a variable depth of gravel below the underdrain

A new worksheet is being done to consider this.

1:1 points for pervious + WQV

RED text is calculated

50% = 100 points
(max 200 points)

C=0.95
i=0.18 in/hr
A= AAT

			Contributes to runoff			do not include the diameter of underdrain								**AAT**	Flow = CiA		
Shed	Watershed (AC)	Pervious (AC)	Impervious (AC)	Bioretention Area (sq-ft)	Points for pervious (1:1 ratio)	*Depth of gravel below underdrain (in)*	*Ponding Depth (in)*	*Infiltrated (ac) Assumed 0.40 void space	*Treated (ac)	Points for Bioretention Infiltration	TOTAL LID points	% of site	**Weighted LID points**	Adjusted Area for Flow-Based, Non-LID Treatment	Additional Flow that needs to be treated (cfs)	Additional treatment required?	Number of StormFilter cartridges required
P1	1.40	0.21	1.15	1,800	15.0	33	12	0.852	0.775	143.1	158.1	57%	90.0	-0.437	-0.075	no	
Sub-total		0.21		1.19													
Totals	1.40																
		verify Sub-total		*1.40*													

project total	**2.46**

*chart in Appendix E for 12-hr drawdown - assumed 100% impervious since the pervious area is already being credited

LID Credit Calculation Worksheet (for commercial projects) as modified by the Department of Water Resources, Storm Water Quality division

DRAINAGE SHED P1

Appendix D-2: Commercial Sites: Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations

Name of Drainage Shed: P2
Location of project: Sacramento

Fill in Blue Highlighted boxes

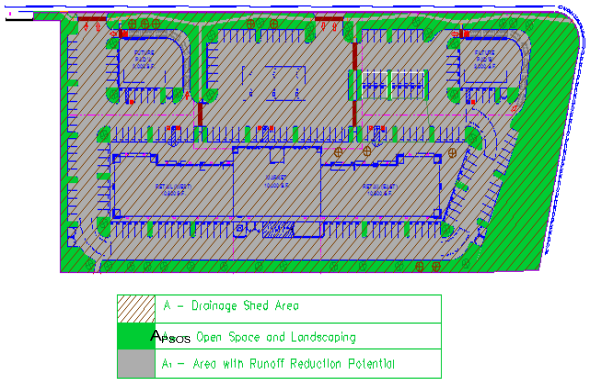
Step 1 - Open Space and Pervious Area Credits

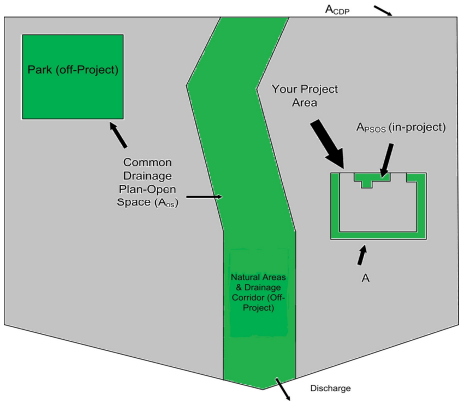
Is your project within the drainage area of a common drainage plan that includes open space? If not, skip to 1 b.

1 a. Common Drainage Plan Area	0	acres	A_{CDP}	
Common Drainage Plan Open Space (Off-project)	0	acres	A_{OS}	**see area example below**
a. Natural storage reservoirs and drainage corridors	0	acres		
b. Buffer zones for natural water bodies	0	acres		
c. Natural areas including existing trees, other vegetation, and soil	0	acres		
d. Common landscape area/park	0	acres		
e. Regional Flood Control/Drainage basins	0	acres		
1 b. Project Drainage Shed Area (Total)	0.91	acres	A	
Project-Specific Open Space (In-project, communal)**	0.12	acres	A_{PSOS}	
a. Natural storage reservoirs and drainage corridors	0.00	acres		
b. Buffer zones for natural water bodies	0.00	acres		
c. Natural areas including existing trees, other vegetation, and soil	0.00	acres		**see area example below**
d. Landscape area/park	0.12	acres		
e. Flood Control/Drainage basins	0.00	acres		

** Doesn't include impervious areas within individual lots and surrounding individual units. That is accounted for below using Form D-1a in Step 2.

Area with Runoff Reduction Potential	$A - A_{PSOS}$ =	0.79	acres	A_T
Assumed Initial Impervious Fraction	A_T / A =	0.87		I
Open Space & Pervious Area LID Credit (Step 1)	$(A_{OS}/A_{CDP}+A_{PSOS}/A)x100$ =	13	pts	





Step 2 - Runoff Reduction Credits

Runoff Reduction Treatments	Impervious Area Managed			Efficiency Factor		Effective Area Managed (A_C)	
Porous Pavement:							
Option 1: Porous Pavement (see Fact Sheet, excludes porous pavement used in Option 2)		acres	x		=	0.000	acres
Option 2: Disconnected Pavement (see Fact Sheet, excludes porous pavement used in Option 1)	use Form D-2a for credits →					0.00	acres
Landscaping used to Disconnect Pavement (see Fact Sheet)	0.0000	acres			=	0.00	acres
Disconnected Roof Drains (see Fact Sheet and/or Table D-2b for summary of requirements)	0	acres			=	0.00	acres
Ecoroof (see Fact Sheet)	0	acres			=	0.00	acres
Interceptor Trees (see Fact Sheet)	use Form D-2b for credits →					0.00	acres
Total Effective Area Managed by Runoff Reduction Measures				A_C		0.00	acres
Runoff Reduction Credit (Step 2)				$(A_C / A_T)*100$ =		0	pts

DRAINAGE SHED P2

Table D-2a

Porous Pavement Type	Efficiency Multiplier
Cobblestone Block Pavement	0.40
Pervious Concrete/Asphalt	0.60
Modular Block Pavement &	0.75
Reinforced Grass Pavement	1.00

Table D-2b

Maximum roof size	Minimum travel distance
≤ 3,500 sq ft	21 ft
≤ 5,000 sq ft	24 ft
≤ 7,500 sq ft	28 ft
≤ 10,000 sq ft	32 ft

Form D-2a: Disconnected Pavement Worksheet

See Fact Sheet for more information regarding Disconnected Pavement credit guidelines

Effective Area Managed (A_C)

Pavement Draining to Porous Pavement

2. Enter area draining onto Porous Pavement	0.00	acres	Box K1
3. Enter area of Receiving Porous Pavement (excludes area entered in Step 2 under Porous Pavement)	0.00	acres	Box K2
4. Ratio of Areas (Box K1 / Box K2)	0.00		Box K3

5. Select multiplier using ratio from Box K3 and enter into Box K4

Ratio (Box D)	Multiplier
Ratio is ≤ 0.5	1.00
Ratio is > 0.5 and < 1.0	0.83
Ratio is > 1.0 and < 1.5	0.71
Ratio is > 1.5 and < 2.0	0.55

Box K4: 1

6. Enter Efficiency of Porous Pavement (see table below) — Box K5

Porous Pavement Type	Efficiency Multiplier
Cobblestone Block Pavement	0.40
Pervious Concrete Asphalt Pavement	0.60
Modular Block Pavement Porous Gravel Pavement	0.75
Reinforced Grass Pavement	1.00

7. Multiply Box K2 by Box K5 and enter into Box K6	0.00	acres	Box K6
8. Multiply Boxes K1,K4, and K5 and enter the result in Box K7	0.00	acres	Box K7

9. Add Box K6 to Box K7 and multiply by 60%, and enter the Result in Box K8 — 0.00 acres
This is the amount of area credit to enter into the "Disconnected Pavement" Box of Form D-2

Form D-2b: Interceptor Tree Worksheet

See Fact Sheet for more information regarding Interceptor Tree credit guidelines

New Evergreen Trees

1. Enter number of new evergreen trees that qualify as Interceptor Trees in Box L1.		trees	Box L1
2. Multiply Box L1 by 200 and enter result in Box L2	0	sq. ft.	Box L2

New Deciduous Trees

3. Enter number of new deciduous trees that qualify as Interceptor Trees in Box L3.		trees	Box L3
4. Multiply Box L3 by 100 and enter result in Box L4	0	sq. ft.	Box L4

Existing Tree Canopy

5. Enter square footage of existing tree canopy that qualifies as Existing Tree canopy in Box L5.	0	sq. ft.	Box L5
6. Multiply Box L5 by 0.5 and enter the result in Box L6	0	sq. ft.	Box L6

Total Interceptor Tree EAM Credits

Add Boxes L2, L4, and L6 and enter it into Box L7	0	sq. ft.	Box L7
Divide Box L7 by 43,560 and multiply by 20% to get effective area managed and enter result in Box L8 This is the amount of area credit to enter into the "Interceptor Trees" Box of Form D-2	0.00	acres	Box L8

DRAINAGE SHED P2

Step 3 - Runoff Management Credits

Capture and Use Credits

Impervious Area Managed by Rain barrels, Cisterns, and automatically-emptied systems

(see Fact Sheet) - enter gallons, for simple rain barrels | 0.00 | acres

Automated-Control Capture and Use System

(see Fact Sheet, then enter impervious area managed by the system) | 0.00 | acres

Bioretention/Infiltration Credits

Impervious Area Managed by Bioretention BMPs

(see Fact Sheet)

Bioretention Area ____ sq ft
Subdrain Elevation ____ inches
Ponding Depth, inches ____ inches | 0.00 | acres

Impervious Area Managed by Infiltration BMPs

(see Fact Sheet)

Drawdown Time, hrs ____ drawdown_hrs_inf
Soil Infiltration Rate, in/hr ____ soil_inf_rate

Sizing Option 1: Capture Volume, acre-ft ____ capture_vol_inf | 0.00 | acres

Sizing Option 2: Infiltration BMP surface area, sq ft ____ soil_surface_area | 0.00 | acres

Basin or trench? ____ approximate BMP depth 0.00 ft

Impervious Area Managed by Amended Soil or Mulch Beds

(see Fact Sheet) Mulched Infiltration Area, sq ft ____ mulch_area | 0.00 | acres

Total Effective Area Managed by Capture-and-Use/Bioretention/Infiltration BMPs | 0.00 | A_{LIDc}

Runoff Management Credit (Step 3) A_{LIDC}/A_T*200 = | 0.0 | pts

Total LID Credits (Step 1+2+3) Warning: More LID Is Required 13.2

Does project require hydromodification management? If yes, proceed to using SacHM.

Adjusted Area for Flow-Based, Non-LID Treatment $A_T - A_C - A_{LIDC}$ = 0.79 A_{AT}

Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment A_{AT} / A = 0.87 I_A

Further treatment is required, see choose flow-based or volume-based sizing in Step 4

Step 4a Treatment - Flow-Based (Rational Method)

Calculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Area

Look up value for i in Table D-2c (Rainfall Intensity) | 0.18 | i

Obtain A_{AT} from Step 3 | 0.79 | A_{AT}

Use C = 0.95 | 0.95 | C

Flow = 0.95 * i * A_{AT} | 0.14 | cfs

Table D-2c

Rainfall Intensity			
Roseville	i =	0.20	in/hr
Sacramento	i =	0.18	in/hr
Folsom	i =	0.20	in/hr

Step 4b Treatment - Volume-Based (ASCE-WEF)

Calculate water quality volume (Acre-Feet): WQV = Area x Maximized Detention Volume (P_0)

Obtain A from Step 1 | 0.91 | A | ____ hrs | Specified Draw Down time

Obtain P_0: Maximized Detention Volume from figures E-1 to E-4 in Appendix E of this manual using I_A from Step 2. | 0.73 | P_0

Calculate treatment volume (acre-ft):

Treatment volume = A x (P_0 / 12) | 0.06 | Acre-Feet

v06232012

DRAINAGE SHED P2

DRAINAGE SHED P2 Additional Treatment Required

Media Filter - Flow-Based BMP

Contech StormFilter

from Step 4a Treatment - Flow-Based (previous LID spreadsheet for P2)

0.14 cfs additional treatment required

Sizing of StormFilter® Vault and Cartridge Count

According to Contech® Stormwater Solutions:

$$\#_{cartridges} = \frac{Q[cfs] \times 449\ [gpm/cfs]}{15\ [gpm/cartridge]}$$

15 gpm per 18" high cartridge

$$= \frac{0.14\ [cfs] \times 449\ [gpm/cfs]}{15\ [gpm/cartridge]}$$

= 4.2 cartridges

8'x6' StormFilter® with 5 cartridges required

5 req. cartridges x 15 gpm = 75 gpm

75 / 449 gpm/cfs = 0.167 cfs

0.167 cfs treatment provided

DRAINAGE SHED P2

Appendix D-2: Commercial Sites: Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations

Name of Drainage Shed: EXSD1
Location of project: Sacramento

Fill in Blue Highlighted boxes

Step 1 - Open Space and Pervious Area Credits

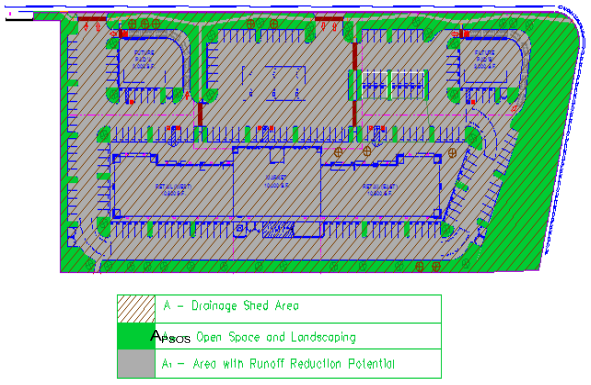
Is your project within the drainage area of a common drainage plan that includes open space? If not, skip to 1 b.

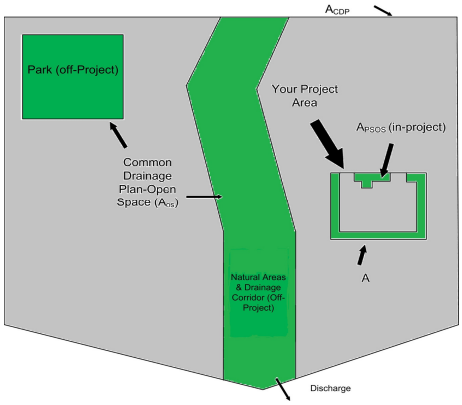
1 a. Common Drainage Plan Area	0	acres	A_{CDP}	
Common Drainage Plan Open Space (Off-project)	0	acres	A_{OS}	**see area example below**
a. Natural storage reservoirs and drainage corridors	0	acres		
b. Buffer zones for natural water bodies	0	acres		
c. Natural areas including existing trees, other vegetation, and soil	0	acres		
d. Common landscape area/park	0	acres		
e. Regional Flood Control/Drainage basins	0	acres		
1 b. Project Drainage Shed Area (Total)	0.15	acres	A	
Project-Specific Open Space (In-project, communal)**	0.15	acres	A_{PSOS}	
a. Natural storage reservoirs and drainage corridors	0.00	acres		
b. Buffer zones for natural water bodies	0.00	acres		
c. Natural areas including existing trees, other vegetation, and soil	0.00	acres		**see area example below**
d. Landscape area/park	0.15	acres		
e. Flood Control/Drainage basins	0.00	acres		

** Doesn't include impervious areas within individual lots and surrounding individual units. That is accounted for below using Form D-1a in Step 2.

Area with Runoff Reduction Potential	$A - A_{PSOS}$ =	0.00	acres	A_T
Assumed Initial Impervious Fraction	A_T / A =	0.00		I

Open Space & Pervious Area LID Credit (Step 1)
$(A_{OS}/A_{CDP}+A_{PSOS}/A)x100$ = 100 pts





Step 2 - Runoff Reduction Credits

Runoff Reduction Treatments	Impervious Area Managed			Efficiency Factor		Effective Area Managed (A_C)	
Porous Pavement:							
Option 1: Porous Pavement (see Fact Sheet, excludes porous pavement used in Option 2)		acres	x		=	0.000	acres
Option 2: Disconnected Pavement (see Fact Sheet, excludes porous pavement used in Option 1)	use Form D-2a for credits →					0.00	acres
Landscaping used to Disconnect Pavement (see Fact Sheet)	0.0000	acres			=	0.00	acres
Disconnected Roof Drains (see Fact Sheet and/or Table D-2b for summary of requirements)	0	acres			=	0.00	acres
Ecoroof (see Fact Sheet)	0	acres			=	0.00	acres
Interceptor Trees (see Fact Sheet)	use Form D-2b for credits →					0.00	acres
Total Effective Area Managed by Runoff Reduction Measures				A_C		0.00	acres
Runoff Reduction Credit (Step 2)				$(A_C / A_T)*100$ =		#DIV/0!	pts

DRAINAGE SHED EXSD1

Table D-2a

Porous Pavement Type	Efficiency Multiplier
Cobblestone Block Pavement	0.40
Pervious Concrete/Asphalt	0.60
Modular Block Pavement &	0.75
Reinforced Grass Pavement	1.00

Table D-2b

Maximum roof size	Minimum travel distance
≤ 3,500 sq ft	21 ft
≤ 5,000 sq ft	24 ft
≤ 7,500 sq ft	28 ft
≤ 10,000 sq ft	32 ft

Form D-2a: Disconnected Pavement Worksheet

See Fact Sheet for more information regarding Disconnected Pavement credit guidelines

Effective Area Managed (A_C)

Pavement Draining to Porous Pavement

2. Enter area draining onto Porous Pavement	0.00	acres	Box K1
3. Enter area of Receiving Porous Pavement (excludes area entered in Step 2 under Porous Pavement)	0.00	acres	Box K2
4. Ratio of Areas (Box K1 / Box K2)	0.00		Box K3

5. Select multiplier using ratio from Box K3 and enter into Box K4

Ratio (Box D)	Multiplier
Ratio is ≤ 0.5	1.00
Ratio is > 0.5 and < 1.0	0.83
Ratio is > 1.0 and < 1.5	0.71
Ratio is > 1.5 and < 2.0	0.55

Box K4: 1

6. Enter Efficiency of Porous Pavement (see table below) — Box K5

Porous Pavement Type	Efficiency Multiplier
Cobblestone Block Pavement	0.40
Pervious Concrete Asphalt Pavement	0.60
Modular Block Pavement Porous Gravel Pavement	0.75
Reinforced Grass Pavement	1.00

7. Multiply Box K2 by Box K5 and enter into Box K6	0.00	acres	Box K6
8. Multiply Boxes K1,K4, and K5 and enter the result in Box K7	0.00	acres	Box K7

9. Add Box K6 to Box K7 and multiply by 60%, and enter the Result in Box K8 — 0.00 acres
This is the amount of area credit to enter into the "Disconnected Pavement" Box of Form D-2

Form D-2b: Interceptor Tree Worksheet

See Fact Sheet for more information regarding Interceptor Tree credit guidelines

New Evergreen Trees

1. Enter number of new evergreen trees that qualify as Interceptor Trees in Box L1.	0	trees	Box L1
2. Multiply Box L1 by 200 and enter result in Box L2	0	sq. ft.	Box L2

New Deciduous Trees

3. Enter number of new deciduous trees that qualify as Interceptor Trees in Box L3.		trees	Box L3
4. Multiply Box L3 by 100 and enter result in Box L4	0	sq. ft.	Box L4

Existing Tree Canopy

5. Enter square footage of existing tree canopy that qualifies as Existing Tree canopy in Box L5.	0	sq. ft.	Box L5
6. Multiply Box L5 by 0.5 and enter the result in Box L6	0	sq. ft.	Box L6

Total Interceptor Tree EAM Credits

Add Boxes L2, L4, and L6 and enter it into Box L7	0	sq. ft.	Box L7
Divide Box L7 by 43,560 and multiply by 20% to get effective area managed and enter result in Box L8 This is the amount of area credit to enter into the "Interceptor Trees" Box of Form D-2	0.00	acres	Box L8

DRAINAGE SHED EXSD1

Step 3 - Runoff Management Credits

Capture and Use Credits

Impervious Area Managed by Rain barrels, Cisterns, and automatically-emptied systems

(see Fact Sheet) - enter gallons, for simple rain barrels | 0.00 acres

Automated-Control Capture and Use System

(see Fact Sheet, then enter impervious area managed by the system) | 0.00 acres

Bioretention/Infiltration Credits

Impervious Area Managed by Bioretention BMPs

(see Fact Sheet)

Bioretention Area ____ sq ft
Subdrain Elevation ____ inches
Ponding Depth, inches ____ inches | 0.00 acres

Impervious Area Managed by Infiltration BMPs

(see Fact Sheet)

Drawdown Time, hrs ____ drawdown_hrs_inf
Soil Infiltration Rate, in/hr ____ soil_inf_rate

Sizing Option 1: Capture Volume, acre-ft ____ capture_vol_inf | 0.00 acres

Sizing Option 2: Infiltration BMP surface area, sq ft ____ soil_surface_area | 0.00 acres

Basin or trench? ____ approximate BMP depth 0.00 ft

Impervious Area Managed by Amended Soil or Mulch Beds

(see Fact Sheet) Mulched Infiltration Area, sq ft ____ mulch_area | 0.00 acres

Total Effective Area Managed by Capture-and-Use/Bioretention/Infiltration BMPs | 0.00 A_{LIDc}

Runoff Management Credit (Step 3) A_{LIDC}/A_T*200 = #DIV/0! pts

Total LID Credits (Step 1+2+3) LID compliant, check for treatment sizing in Step 4 100.0

Does project require hydromodification management? If yes, proceed to using SacHM.

Adjusted Area for Flow-Based, Non-LID Treatment $A_T - A_C - A_{LIDC}$ = 0.00 A_{AT}

Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment A_{AT} / A = 0.00 I_A

STOP: No additional treatment needed

Step 4a Treatment - Flow-Based (Rational Method)

Calculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Area

Look up value for i in Table D-2c (Rainfall Intensity): 0.18 i

Obtain A_{AT} from Step 3: 0.00 A_{AT}

Use C = 0.95: 0.95 C

Flow = 0.95 * i * A_{AT}: 0.00 cfs

Table D-2c

Rainfall Intensity			
Roseville	i =	0.20	in/hr
Sacramento	i =	0.18	in/hr
Folsom	i =	0.20	in/hr

Step 4b Treatment - Volume-Based (ASCE-WEF)

Calculate water quality volume (Acre-Feet): WQV = Area x Maximized Detention Volume (P_0)

Obtain A from Step 1: 0.15 A ____ hrs Specified Draw Down time

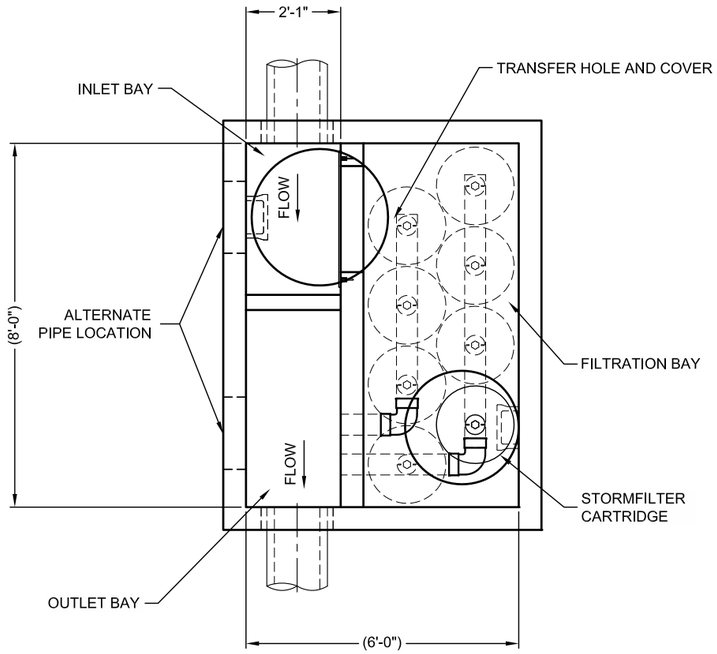
Obtain P_0: Maximized Detention Volume from figures E-1 to E-4 in Appendix E of this manual using I_A from Step 2.: 0.00 P_0

Calculate treatment volume (acre-ft):

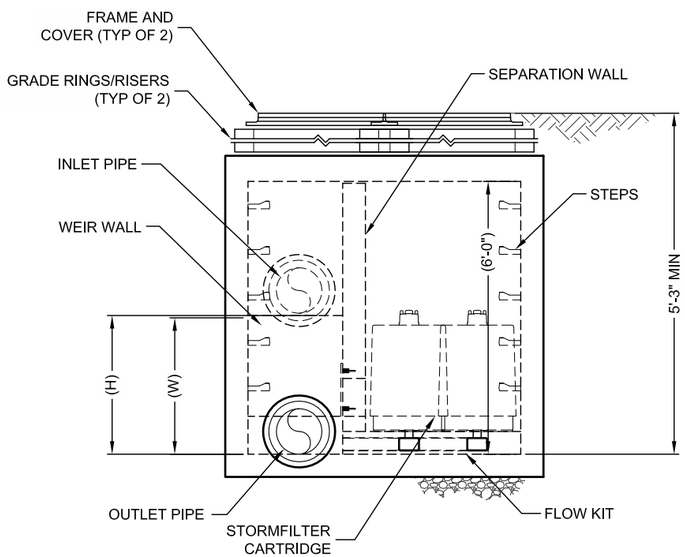
Treatment volume = A x (P_0 / 12): 0.00 Acre-Feet

v06232012

DRAINAGE SHED EXSD1



PLAN



ELEVATION

The Stormwater Management StormFilter®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,324,570; 5,707,527; 5,985,157; 6,027,639; 6,045,047; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

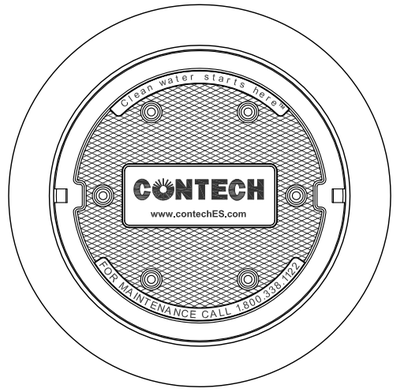
STORMFILTER DESIGN NOTES

- THE 8' x 6' PEAK DIVERSION STORMFILTER TREATMENT CAPACITY VARIES BY CARTRIDGE COUNT AND LOCALLY APPROVED SURFACE AREA SPECIFIC FLOW RATE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.
- THE PEAK DIVERSION STORMFILTER IS AVAILABLE IN A LEFT INLET (AS SHOWN) OR RIGHT INLET CONFIGURATION.
- ALL PARTS AND INTERNAL ASSEMBLY PROVIDED BY CONTECH UNLESS OTHERWISE NOTED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
HEIGHT OF WEIR (W)	3.00'			2.25'			1.75'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB ® (PSORB) MEDIA ONLY



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

PERFORMANCE SPECIFICATION

FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7-INCHES**. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **38 SECONDS**. SPECIFIC FLOW RATE SHALL BE **2 GPM/SF (MAXIMUM)**. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM).**

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE THE TRANSFER HOLE COVER WHEN THE SYSTEM IS BROUGHT ONLINE.

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

THE STORMWATER MANAGEMENT STORMFILTER 8' x 6' PEAK DIVERSION STORMFILTER STANDARD DETAIL

14.0 APPENDIX D – PRELIMINARY GRADING PLAN & OVERLAND RELEASE PATH

NOTE:

THE PROJECT SITE IS IN PROXIMITY TO THE EXISTING MAGPIE CREEK DRAINAGE CHANNEL. THE MINIMUM FLOOR ELEVATION OF THE PROPOSED HANGAR AND GARAGE WILL JOIN AND MATCH THAT OF THE EXISTING HANGAR AT ELEVATION 74.50. IT IS NOT FEASIBLE NOR MAKE SENSE TO REBUILD THE EXISTING HANGAR TO AN ELEVATION ABOVE 74.50. THE FLOOD HAZARD INFORMATION PRESENTED ON THE FEMA MAP (SEE PAGE 6) INDICATES THE PROJECT SITE IS IN AN AREA OF MINIMAL FLOOD HAZARD.

215-0300-084

215-0300-014

215-0300-096

215-0300-095

215-0300

EXISTING LOT LINE TO REMAIN

74.30 WATER SURFACE ELEVATION

74.00 TG

74.50 FF
73.00 PAD

74.4 FG

LIMITS OF PONDING (TYP.)

EXISTING LOT LINE TO BE REMOVED

(74.30) FS
OVERLAND RELEASE CONTROL POINT

TRENCH DRAIN

EXISTING HANGAR
5617 PRICE AVE.
(74.50 FF)

PROPOSED LOT LINE

74.09 WATER SURFACE ELEVATION

74.28 WATER SURFACE ELEVATION

74.28 FS
OVERLAND RELEASE CONTROL POINT

HIGH POINT AT RIGHT-OF-WAY LINE

(74.29) FL

(74.19) FL

(74.09) FL

(73.72) FL
INLET

(73.95) FL

(73.95) FL
OVERLAND RELEASE CONTROL POINT

74.09 FS/HP
OVERLAND RELEASE CONTROL POINT

(73.91) FL

(73.89) FL

(73.85) FL

(73.44) FL
INLET

(73.72) FL

PRICE AVENUE
(PUBLIC)

PROPOSED HANGAR EXPANSION

74.50 FF
73.00 PAD

74.30 FS
OVERLAND RELEASE CONTROL POINT

3:1 SLOPE

73.80 TOP

BIO-RETENTION POND
70.30 BOTTOM

71.80 TOP

72.0 WATER SURFACE ELEVATION

71.30 TG

3:1 SLOPE

(72.0) FS
OVERLAND RELEASE CONTROL POINT
HISTORIC LOW POINT
PROJECT SITE

ACCESS EASEMENT

LIMITS OF PONDING (TYP.)

EXISTING EASEMENT
PVT-RD-UTILS-20070828or1323

EXISTING LOT LINE TO REMAIN

72.78 FL

73.05 FL

(73.33) FL

(73.46) FL

(73.93) FL
OVERLAND RELEASE CONTROL POINT

JAMES WAY
(PRIVATE)

JAMES WAY
(PUBLIC)

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 200
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR:

sbm
5241 ARNOLD AVE
McCLELLAN, CA 95652

PRELIMINARY GRADING PLAN
HANGAR EXPANSION
5617 PRICE AVENUE

DATE: 8/22/2022

SHEET 1 OF 1

JOB NO. 2042 595220

DRAWING: v:\2042\active\2042595220\drawing\exhibit_files\595220c-ex7010.dwg PLOTTED: 8/22/2022 5:58 PM BY: McLellan, Mark