Project Name: 1405 Rabb Rd - Water Quality Site Plan

Case Manager: Benny Ho

Team:

Case Number: SP-2016-0111DS

Date Filed: Mar 02, 2016

Update #: **0**

Date Dist: Mar 03, 2016

Comment Due Date: Mar 9, 2016

Discipline	Name
Drainage Construction Review	Benny Ho
Water Quality Review	Benny Ho

Report run on: 3/2/2016

TO:

FROM: SITE PLAN REVIEW DIVISION CASE #: SP-2016-0111DS

TYPE/SUBTYP Site Plan Administrative Small Project/Bldg/Prkg,Clring,Cut/Fill,Spoil Disposal

PROJECT: 1405 Rabb Rd - Water Quality Site Plan

LOCATION: 1405 RABB RD

CASE MANAGER: Benny Ho PHONE: 512-974-3402

FILED FOR UPDATE: Mar 02, 2016 COMMENT DUE DATE Mar 9, 2016

TENTATIVE PC DATE: REPORT DATE: Mar 11, 2016

TENTATIVE CC DATE:

LANDUSE:

AREA: 0.027 ACRES (SQ FT) 1176.12 LOTS

EXISTING ZONING:

EXISTING USE: Single Family

TRACT	ACRES/SQFT	PROPOSED ZONING	PROPOSED USE
	0.027 /1176.12		Streets and Dra

WATERSHED: Town Lake, ,

COUNTY: TRAVIS

JURISDICTIO FULL PURPOSE Full-Purpose Barton Springs Zone

GRIDS: WATER:

GRIDS: ELECTRIC:

GRIDS: SEWERAGE:

GRIDS:

PROPERTY DESCRIPTION:

PLAT 0102071216

DEED REFERENCE:

VOL./PAGE 2015004072TR/

LEGAL DESCRIPTION:

Lot: 1 Block: Subdivision: PESCHKA SUBD

RELATED CASES (if any):

CONTACTS:

Applicant	JP CUSTOM HOMES LLC 401 CONGRESS AVE SUITE 1540 AUSTIN TX 78701 CONTACT: Justin Poses	512-791-0932
Billed To	1501 BARTON SPRINGS #234 AUSTIN TX 78704 CONTACT: Lauren Poses	512--
Other	JP CUSTOM HOMES LLC 401 CONGRESS AVE SUITE 1540 AUSTIN TX 78701 CONTACT: Justin Poses	512-791-0932

#11493256

CITY OF AUSTIN
Development Services Department
One Texas Center | Phone: 512.978.4000
505 Barton Springs Road, Austin, Texas 78704

Consolidated Site Plan Application
Administrative and Land Use Commission (C Plan)

PURPOSE: This application is for obtaining a consolidated site plan permit within the City of Austin jurisdiction (full-purpose and limited-purpose city limits). For the following information, please visit http://www.austintexas.gov/page/land-use-applications#site: See Consolidated Site Plan Overview and Review Procedures for site plan general information and review procedures; see Consolidated Site Plan Application Instructions for instructions on completing this application and submittal requirements.

This application is a fillable PDF that can be completed electronically. To ensure your information is saved, click here to Save the form to your computer, then open your copy and continue.

The Tab key may be used to navigate to each field; Shift + Tab moves to the previous field. The Enter key activates links, emails, and buttons. Use the Up & Down Arrow keys to scroll through drop-down lists and check boxes, and hit Enter to make a selection.

The application must be complete and accurate prior to submittal. ***If more space is required, please complete the last section as needed***, and check the Additional Space box at the top or end of this application.

All information is required (if applicable).

For Office Use Only

Development Review Type: _____

Application Accepted By: _____

Application Type: _____

Case Manager: _____

☐ Additional space was required to complete this application. I have completed the Additional Space section. (This check box is also at end of the application.)

Section 1: Project Information

Project Name: 1405 RABB RD - WATER QUALITY SITE PLAN

Project Street Address (or range):

1405 RABB RD

Zip: 78704

Description of Proposed Development:

SITE WORK REQUIRED PER OUR WATER QUALITY MANAGEMENT PLAN; GRADING AND BIORETENTION BED

Provide either Legal Description or Subdivision Reference:

◉ Legal Description:

RESUBDIVISION OF LOT 1 OF THE RESUBDIVISION OF LOTS 1 THRU 4 INCLUSIVE OF PESCHKA SUBDIVISION

○ Subdivision Reference

Name:

Block(s): Lot(s): Outlot:

Plat Book: Page Number:

Document Number: Case Number:

Deed Reference of Deed Conveying Property to the Present Owner

Volume: 6 Document Number: 2015004072TR

Page(s): 92 Sq. Ft.: ~~24,755.15~~ 24720 or Acres:

* Tax Parcel Number(s):

Section 2: Applicant/Agent Information

Applicant Name: JUSTIN POSES

Firm: JP CUSTOM HOMES, LLC

Applicant Mailing Address: 401 CONGRESS SUITE 1540

City: AUSTIN State: TX Zip: 78701

Email: JP@PREMIERTEXASREALTY.COM Phone 1: (512) 791-0932 Type 1: Mobile

Phone 2: Type 2: Select Phone 3: Type 3: Select

Section 3: Owner Information

■ Same as Applicant Owner Name:

Owner Signature:

Firm:

Owner Mailing Address:

City: State: Zip:

Email: Phone 1: Type 1: Select

Phone 2: Type 2: Select Phone 3: Type 3: Select

Section 4: Engineer Information

☐ Not Applicable NOT ■ Same as Applicant Name: DAVID VENHUIZEN

Firm: DAVID VENHUIZEN, P.E.

Mailing Address: 5803 GATESHEAD DR

City: AUSTIN State: TX Zip: 78745

Email: WATERGUY@IX.NETCOM.COM Phone 1: (512) ~~440-4047~~ 442-4047 Type 1: Mobile

Phone 2: Type 2: Select Phone 3: Type 3: Select

Section 5: Other Professional/Trade Information

■ Not Applicable ☐ Same as Applicant Type: Select an Option

Name:

Firm:

Mailing Address:

City: State: Zip:

Email: Phone 1: Type 1: Select

Phone 2: Type 2: Select Phone 3: Type 3: Select

Section 6: Property Attributes

Is this a S.M.A.R.T. Housing Project? ☐Yes ■ No (If Yes, submit a copy of the Pre-Certification letter from Neighborhood Housing and Community Development.)

○ Smart Growth Zone -OR- ○ Drinking Water Protection Zone

Watershed: Town Lake Watershed Class: Barton Springs Zone

In City of Austin Edwards Aquifer Recharge Zone? ■ Yes ☐ No

Land Development Jurisdiction: ◉ Full-Purpose ○ Limited-Purpose

Is your project subject to all current watershed protection regulations? ■ Yes ☐ No

School District: AUSTIN INDEPENDENT SCHOOL DISTRICT

On a Hill Country Roadway? ☐ Yes ■ No

Specify Hill Country Roadway: _____

Principal Street Type (Full-Purpose): ○ Core Transit Corridor ◉ Urban Roadway

○ Internal Circulation Route ○ Suburban Roadway ○ Hill Country Roadway ○ Highway

In a Neighborhood Plan? ☐ Yes ■ No

If Yes, name of Neighborhood Plan: _____

In a Transit-Oriented Development (TOD) District, the North Burnet/Gateway (NBG), the East Riverside Corridor (ERC), or Other? ☐ Yes ■ No

If Yes, name of TOD, NBG, ERC, or Other: _____

Is a Vertical Mixed Use building proposed? ☐ Yes ■ No

(See Consolidated Site Plan Application Instructions for important pre-submittal requirements.)

Electric Utility Provider: AUSTIN ENERGY

Water Provider: CITY OF AUSTIN UTILITIES

Wastewater Disposal Provider: CITY OF AUSTIN UTILITIES

Section 7: Application Assessment

Large Retail Use, as defined in Sec. 25-2-813? ☐ Yes ■ No

Is a Traffic Impact Analysis (TIA) required? ☐ Yes ■ No (See Section 12: TIA Determination Worksheet.)

Is this use Conditional within the site's zoning district? ☐ Yes ■ No

Has there been a Development Assessment? ☐ Yes ■ No File Number: _____

Small Project? ■ Yes ☐ No

If residential, are there other Tax Credits or State/Federal funding? ☐ Yes ■ No

Will all parking be located on site? ■ Yes ☐ No (If No, an Off-Site/Shared Parking Application and fees are required.)

Shared parking? ☐ Yes ■ No (If Yes, an Off-Site/Shared Parking Application and fees are required.)

Section 8: Site Area Information

Gross Site Area: Acres _____ -OR- Sq. Ft. ~~24,755.15~~ 1210 SF

Net Site Area: Acres _____ -OR- Sq. Ft. ~~24,755.15~~ 1210 SF

(~~0.567~~)

1,210 · Sq-Ft (0.027) LOC

Is Demolition proposed? NO If Yes, how many residential units will be demolished? _____

Number of Newly Proposed Residential Units (if applicable): _____

EXISTING ZONING	EXISTING USE	TRACT #	ACRES / SQ FT	PROPOSED USE
SF-3	SINGLE FAMILY		/ ~~24,755.15~~ 24,320	~~RESIDENTIAL~~ POND
			/	
			/	
			/	

- Existing Impervious Cover (%): ~~16.4~~ 0 Proposed Impervious Cover (%): 0

Are any underground storage tanks existing or proposed? ☐Yes ■No

Section 9: Related Cases

	FILE NUMBERS
Zoning Case? ☐Yes ■No	
Restrictive Covenant? ☐Yes ■No	
• Subdivision? ■Yes ☒No	C8-2015-0001.0A
Land Status Report? ☐Yes ■No	
Existing Site Plan? ☐Yes ■No	

Section 10: Land Use Site Plan Data - as applicable

Subject to Compatibility Standards? ☐Yes ■No

In Combining District/Overlay Zone? (NCCD, CVC, WO, AO, etc.): ☐Yes ■No

If Yes, please specify: _____

Requires a Green Building Program Rating? ☐Yes ■No (If Yes, attach Letter of Intent.)

Section 11: Waiver / Variance / Etc. - as applicable

☐ Compatibility Standards Waiver - Section(s): N/A

☐ Driveway Spacing - Section(s): N/A

☐ Hill Country - Section(s): N/A

☐ Waterfront Overlay District - Section(s): N/A

☐ Environmental - Section(s): N/A

☐ Shared Parking Analysis ☐ Off-Site or Remote Parking

☐ Detention Pond Waiver ☐ Alternative Landscape Compliance

Section 12: Traffic Impact Analysis (TIA) Determination Worksheet

Applicant must complete this worksheet.

Project Name: 1405 RABB RD - WATER QUALITY SITE PLAN

Location: 1405 RABB RD, AUSTIN, TX 78704

Applicant: JP CUSTOM HOMES, LLC (JUSTIN POSES) Telephone No: (512) 791-0932

Application Status: ○ Development Assessment ○ Zoning ◉ Site Plan

EXISTING: **FOR OFFICE USE ONLY**

Tract Number	Tract Acres	Bldg. Sq. Ft.	Zoning	Land Use	I.T.E. Code	Trip Rate	Trips Per Day
1	0.57		SF-3	RESIDENTIAL			

PROPOSED: **FOR OFFICE USE ONLY**

Tract Number	Tract Acres	Bldg. Sq. Ft.	Zoning	Land Use	I.T.E. Code	Trip Rate	Trips Per Day
1	0.57		SF-3	RESIDENTIAL			

ABUTTING ROADWAYS: **FOR OFFICE USE ONLY**

Street Name	Proposed Access?	Pavement Width	Classification
RABB	YES		
MELRIDGE	NO		

FOR OFFICE USE ONLY

☐ A traffic impact analysis is required. The consultant preparing the study must meet with a Transportation planner to discuss the scope and requirements of the study before beginning the study.

☐ A traffic impact analysis is NOT required. The traffic generated by the proposal does not exceed the thresholds established in the City of Austin Land Development Code.

☐ The traffic impact analysis has been waived for the following reason:

_____

_____

☐ A neighborhood traffic analysis will be performed by the City for this project. The applicant may have to collect existing traffic counts. See a Transportation planner for information.

Reviewed By: _____ Date: _____

Distribution: ☐ File ☐ Cap. Metro ☐ TxDOT ☐ DSD ☐ Travis Co. ☐ ATD Total Copies: _____

NOTE: A TIA Determination must be made prior to submittal of any Zoning or Site Plan application, therefore, this completed and reviewed worksheet MUST ACCOMPANY any subsequent application for the IDENTICAL project. CHANGES to the proposed project will REQUIRE a new TIA Determination.

Section 13: Submittal Verification

My signature attests to the fact that the attached application package is complete and accurate to the best of my knowledge. I understand that proper City staff review of this application is dependent upon the accuracy of the information provided and that any inaccurate or inadequate information provided by me/my firm/etc., may delay the proper review of this application.

Please type or print Name below Signature, and indicate Firm represented, if applicable:

Justin Poses	February	23	2016
Signature	Month	Day	Year

JUSTIN POSES
Name (Typed or Printed)

JP CUSTOM HOMES, LLC
Firm

Section 14: Inspection Authorization

As owner or authorized agent, my signature authorizes staff to visit and inspect the property for which this application is being submitted.

Please type or print Name below Signature, and indicate Firm represented, if applicable:

Justin Poses	February	23	2016
Signature	Month	Day	Year

JUSTIN POSES
Name (Typed or Printed)

JP CUSTOM HOMES, LLC
Firm

Section 15: Acknowledgment Form

I, JP CUSTOM HOMES, LLC (JUSTIN POSES) have checked for any information that may
(Printed Name of Applicant)

affect the review of this project, including but not limited to: subdivision plat notes, deed notes, deed restrictions, restrictive covenants, zoning conditional overlays, and/or Subchapter E design standards prohibiting certain uses and/or requiring certain development restrictions (height, access, screening, etc.) on this property, located at:

(Address or Legal Description):

1405 RABB RD, AUSTIN, TX 78704

If a conflict should result with the request I am submitting to the City of Austin due to any of the aforementioned information, it will be my responsibility to resolve it. I also acknowledge that I understand the implications of use and/or development restrictions that are a result of the aforementioned information.

I understand that if requested I must provide copies of any and all of the aforementioned information that may apply to this property.

Justin Poses	February	23	2016
Applicant's Signature	Month	Day	Year

For Submittal Requirements and Exhibits

Please see Consolidated Site Plan Application Instructions at
http://www.austintexas.gov/page/land-use-applications#site

Section 16: Additional Space (if necessary)

Please use the space below to provide additional information as needed. To ensure the information is referenced to the proper item, include the Section and Field names as well. In addition, please check the Additional Space box below.

☐ Additional space was required to complete this application.

SAVE

City of Austin

P.O. Box 1088, Austin, Texas 78767

RECEIPT

Receipt No.: 6276353 **Payment Date:** 03/02/2016 **Invoice No.:** 6310444

Payer Information

Company/Facility Name: JP Custom Homes LLC

Payment Made By: Justin Poses
401 CONGRESS AVE SUITE 1540
AUSTIN TX 78701

Phone No.: (512) 791-0932

Payment Method: Check

Payment Received: $200.00

Amount Applied: $200.00

Cash Returned: $0.00

Comments: ck 1021

Additional Information

Department Name: Development Services Department

Receipt Issued By: Micaela Acosta

Receipt Details

FAO Codes	Fee Description	Internal Ref. No.	Address	Permit/Case No.	Amount
1000 5300 9770 4250	Completeness Check Fee	11493256	1405 RABB RD	2016-022923-SP	$200.00
				Total	**$200.00**

City of Austin

P.O. Box 1088, Austin, Texas 78767

RECEIPT

Receipt No.: 6276594 **Payment Date:** 03/02/2016 **Invoice No.:** 6310666

Payer Information

Company/Facility Name:

Payment Made By: Lauren Poses
1501 BARTON SPRINGS #234
AUSTIN TX 78704

Phone No.: (512) -

Payment Method: Visa

Payment Received: $982.80

Amount Applied: $982.80

Cash Returned: $0.00

Comments: AUTH 08559D-1043

Additional Information

Department Name: Development Services Department

Receipt Issued By: Micaela Acosta

Receipt Details

FAO Codes	Fee Description	Internal Ref. No.	Address	Permit/Case No.	Amount
1000 5300 9770 4250	Sm Proj-Const Only Dev Review Bldg/Prkg	11493256	1405 RABB RD	2016-022923-SP	$672.00
5100 6300 9700 4250	Sm Proj-Const Only Env Review Bldg/Prkg	11493256	1405 RABB RD	2016-022923-SP	$107.00
5100 6300 9700 4271	Sm Proj-Const Only Env Insp	11493256	1405 RABB RD	2016-022923-SP	$166.00
8131-6807-1113-4066	Development Services Surcharge	11493256	1405 RABB RD	2016-022923-SP	$37.80
				Total	**$982.80**

SECTION 10 – PROJECT DESCRIPTION FORM

A project description form, attached as Exhibit A, must be submitted with a subdivision, site plan, and building permit application. A project description form must also be submitted with a water or wastewater service extension request.

EXHIBIT A
PROJECT DESCRIPTION FORM

The purpose of this form is to provide information that may clarify the nature of the project. Clarification may affect the City's determination on the application of Chapter 245 to the project. However, the form is not intended to affect the status of a project in progress, unless there are changed circumstances. This form does not preclude presentation of additional information to assist in the Chapter 245 determination. The information contained in this form will not result in any waiver of a Chapter 245 claim. The right to make a Chapter 245 claim, notwithstanding the information below, is reserved to the applicant.

Is the property currently developed? NO If yes, how _____

_____

_____

Permit number: _____ **Submittal Date:** _____

Permit type: Preliminary Plan ☐; Final Plat ☐; Site Plan ☐;

Building Permit ☐; Water or wastewater service extension request ☐

Legal Description/Subdivision Reference: _____

_____

Lot(s) ID_____

Please check the appropriate project description for this lot within the city limits:

☐ No defined project

☐ Residential Mixed Use (contains a mixture of residential uses)

☐ Commercial Mixed Use (contains a mixture of one or more commercial, industrial and/ or civic uses)

☐ Commercial and Residential Mixed Use (contains a mixture of one or more residential, commercial, industrial and/ or civic uses)

☐ Residential Class I (one or more of the residential uses permitted in the SF-5 or more restrictive base zoning districts)

☐ Residential Class II (one or more of the residential uses permitted in the SF-4A or less restrictive base zoning districts)

☐ Commercial Class I (commercial uses containing at least 50% Administrative and Business Office, Medical Offices, Professional Office ("Office Uses")

☐ Commercial Class II (commercial uses containing no more than 50% Office Uses)

☐ Industrial

☐ Civic

☐ Other use not listed. Specify: _____

Please check the appropriate project description for this lot within the city's ETJ:

☐ Mixed Use ☐ Commercial ☐ Civic

☐ Residential ☐ Industrial

FURTHER COMMENTS DESCRIBING PROJECT (OPTIONAL):

Water Quality Pond

Owner or Authorized Representative:

I certify that this Project Description Form is true and accurate

Print Name Justin Pyles

Signature _____ **Date:** 3-2-16

Address 401 Congress Suite 1540, Austin, TX 78701

Phone/Fax 512 791 0932

Exhibit D
PROJECT APPLICATION H.B. 1704/Chapter 245 DETERMINATION

(Chapter 245, Texas Local Government Code)

(This completed form must accompany all subdivision and site plan applications)

FOR DEPARTMENTAL USE ONLY

File # Assigned:_____ Date Filed:_____

Original Application Date:_____ Signature:_____ Date:_____

Comments:

Insufficient Information to establish Chapter 245 rights.

Proposed Project Name: 1405 Rabb Rd-Water Quality Site Plan

Address/Location: 1405 Rabb Rd, Austin, TX 78704

Legal Description: Resubdivision of LOT 1 of The Resubdivision of LOTS 1 Thru 4 inclusive of Peschka Subdivision

A) The proposed application is for a **New Project** and is submitted under regulations in effect.

NOTE: If A is checked above, proceed to signature block below.

B. The proposed application is for an **ongoing project not requesting House Bill 1704 consideration**. The choice of this option does not constitute a waiver of any rights under Chapter 245.

C. The proposed application is for a **project requesting review under regulations other than those currently in effect, but not on the basis of House Bill 1704**. All appropriate supporting documentation must be attached to this request. Provide a brief description of the basis for this request here: _____

_____

D. The proposed application is for a project requesting **review under a specific agreement, not on the basis of House Bill 1704**. All appropriate supporting documentation must be attached to this request. Provide a brief description of the basis for this request here: _____

_____

E. Original Application Filing Date: _____ File #: _____

The propose application is submitted as a Project In progress under Chapter 245 (HB 1704) and should be reviewed under the applicable regulations pursuant to state laws. The determination will be based on information submitted on and with this form.

The following information is required for Chapter 245 Review:

Attached supporting documentation, including a summary letter with a complete project history from the Original Application to the present, with a copy of the original subdivision or site plan approval by the City and subsequent application approvals. Specify project information for date claiming 1704 grandfathering; include a copy of the relevant permit upon which chapter 245 vesting is claimed.

Project Application History	**File #**	**Application date**	**Approval Date**
Annexation/zoning (if applicable to history)			
Preliminary Subdivision			
Final Subdivision			
Site Plan/Development Permit			

Proposed Project Application *(check one):* **Preliminary** **Subdivision** **Final Plat** **Site Plan**

Proposed Project Land Use. *Specify acreage in each of the following land use categories:*

Single family/Duplex _____ **Townhouse/Condo/Multi-family** _____ **Office**_____

Commercial _____ **Industrial/R&D** _____ **Other (Specify)** _____

Total acreage:_____ **Watershed:**_____ **Watershed Classification:**_____

This proposed project application will still be reviewed under those rules and regulations that are not subject to chapter 245, such as those to prevent imminent destruction of property or injury to person, including regulation dealing with stormwater detention, temporary erosion and sedimentation controls, and regulations to project critical/significant recharge features.

Signature Property - owner or agent _____ Date: 3-2-16

Printed Name Justin Poses Phone/Fax: 512 791 0932

CM = Benny Ho
# 11493256

INTAKE SUBMITTAL CHECKLIST
BUILDINGS/ PARKING, CLEARING FOR SITES, CUT & FILL FOR SITES

City Of Austin Development Services Department
505 Barton Springs Blvd. Austin, TX 78704 PH 974-2681, 974-7208 or 974-2350
Fax 974-2620

Departmental Use Only:

File Number:_____ Date Issued:_____

Intake Specialist:_____ Date:_____

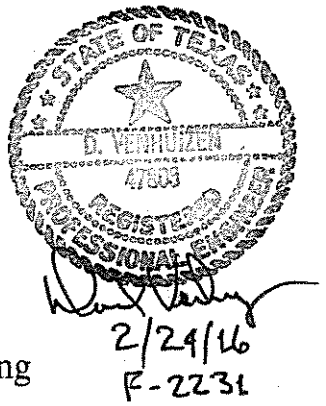
Information Required for Submittal:

✓ 1. Completed application form with all appropriate signatures
___2. Subject to Big Box Ordinance YES / NO (Ordinance No. 20070215-072)
___3. * Engineering Reports (Refer to completeness check results for required #)
___Two (2) for completeness check
___4. *Full size tax maps (1"=100') showing properties within **500'** of the red-lined site area (limits of construction) **or** For projects located outside of Travis County, submit a list of names and addresses of *all property owners within a 500' radius of the site.*
___5. Current Tax Certificate will provide later per Lynda Courtney
✓ 6. Signed Submittal Verification and Inspection Authorization Form
___7. *Legible 4"x4" location map on a separate sheet
___8. *Sealed Engineer's Summary Letter (same engineer as sealed on plans)
___9. Plans, 24" x 36"; larger will not be accepted. (Refer to completeness check results for required #)
____Two (2) for completeness check (only 1 plan Required per Benny Ho
____One (1) additional set if on State Highway
✓ 10. Application Fee
✓ 11. 1704 Determination Form
___ (If B-E is checked provide 1 extra copy of plans & additional fee required @ completeness check)
✓ 12. Project Description Form
___13. Flashdrive @ formal submittal (Exhibit VII of application must be on flashdrive w/ names of files/layers)

(SM - Proj. DS) If any Questions Call Benny Ho

Infrastructure, Per Benny do not need Items on Checklist, Take what he provide

David Venhuizen, P.E.
Planning and Engineering as if Water
and Environmental Values Matter
512/442-4047
5803 Gateshead Drive
Austin, Texas 78745
e-mail: waterguy@venhuizen-ww.com
website: www.venhuizen-ww.com
blog: www.waterblogue.com



2/24/16
F-2231

1405 Rabb Road – Pollutant Load Calculations and SCM Sizing

The total area of the site, listed on the project plat, is 24,720 sq. ft. = 0.567 acre.

The site is divided into DA-1, which would drain into a proposed bioretention bed, and DA-2, which would remain free of development and would not drain into the bioretention bed. See the proposed general layout of the post-development condition on Drawing No. 2. Pollution flow off DA-2 will be the same post-development as it is pre-development, so only DA-1 pollutant flow change needs to be calculated.

The area of DA-2, based on planned location of bioretention bed, is 1,210 sq. ft. (see Drawing No. 3)
➔ Area of DA-1 = 24720 – 1210 = 23,510 sq. ft. = 0.540 acre

As illustrated on Drawing No. 1, to calculate pollutant loads, DA-1 is further subdivided into the following areas for calculation pollutant load reductions imparted by rainwater "harvesting" off each house roof:

- DA-R1, roofprint of the house on Lot 1B, measured at 1,975 sq. ft. = 0.045 acre, 100% impervious
- DA-R2, roofprint of the house on Lot 1C, measured at 1,300 sq. ft. = 0.030 acre, 100% impervious
- DA-R3, roofprint of the house on Lot 1D, measured at 1,950 sq. ft. = 0.045 acre, 100% impervious
- DA-G1, the remainder of the DA-1 area = 23510 – 1975 – 1300 – 1950 = 18,285 sq. ft. = 0.420 acre

Maximum post-development impervious cover = 25% of site area = 0.25 x 24720 = 6,180 sq. ft.
Measured impervious cover in DA-1 (see Drawing No. 1) = 6,165 sq. ft.
Allowable ground level impervious cover is total I.C. less I.C. of the house roofprints
➔ Impervious cover allowed DA-G1 = 6180 – 1975 – 1300 – 1950 = 955 sq. ft.
➔ Although measured impervious cover in DA-G1 = 940 sq. ft., use 955 sq. ft. in these calculations
➔ % I.C. = 955/18285 = 5.2%

The runoff flows through this site are illustrated schematically in Figure 1. Rooftop runoff would be partially captured in the rainwater tanks (see Drawing No. 4). The Water Quality Volume (WQV) of these tanks would be infiltrated into surface soils around each house, removing the pollutants carried in that water.

The volume of the tank below the overflow pipe would be held in the tank until whenever the owner chose to use that water for landscape irrigation, so whatever amount of that portion of the tank which had been evacuated would have to be filled before water would start to pond into the WQV portion of the tank. This will make the actual pollutant retention somewhat greater than is reflected in the calculations below. This is neglected for purposes of this analysis, but is noted as adding conservatism to the proposed water quality management scheme.

Rooftop runoff in excess of this would overflow the tank and join runoff from DA-G1, the ground level area of DA-1, running into the bioretention bed. There, the pollutants entrained in the bed's WQV would be removed/assimilated by infiltrating that water through the bioretention media and a 1-foot layer of soil scavenged from the surface, placed below the media. Presuming this process provides equivalent protection

as would be obtained if the underflow from a lined bioretention bed were withdrawn and spread over surface soils, the only pollution exiting the site is that carried in the overflow of the bioretention bed.

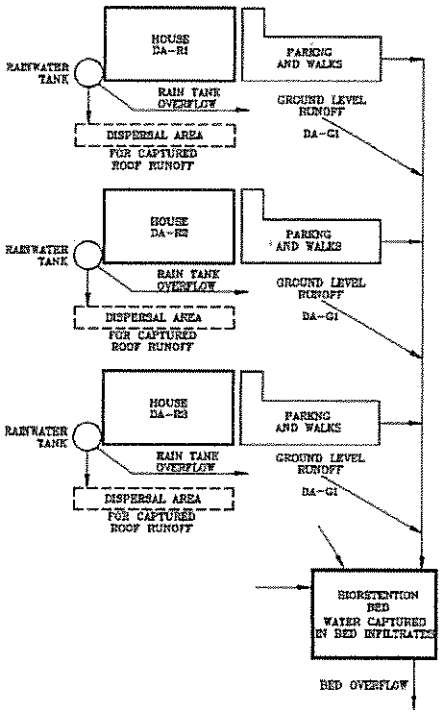


Figure 1

Existing Pollutant Loads

Per City of Austin fiat, for calculation of existing pollutant loads, presume existing impervious cover is only the portion of the actual areas with existing impervious cover that would remain as impervious cover on the post-development site. As shown on Drawing No. 1, this area totals to 1,995 sq. ft. All "qualifying" impervious cover lies in DA-1, and an "apples-to-apples" comparison requires pollutant load calculations off DA-1 only, as DA-2 will not be developed and is not included in the developed area that will be modeled.

➔ Existing impervious cover % in DA-1 = 1995/23510 = 8.5%

From ECM 1.6.9.3.B.4, Table 1-9, with I.C. at 8.5%

➔ Existing annual runoff is interpolated to be 2.51 in/yr.

Existing pollutant concentrations in DA-1 (from ECM 1.6.9.3.B.5, Table 1-10):

COD = 38.9 + 66.6 x 0.085 = 44.6 mg/L

E. coli = 25,000 CFU/100 mL

Pb = $0.00428 \times e^{(2.42 \times 0.085)} = 0.00526$ mg/L

TN = 2.22 mg/L

TOC = 13.03 mg/L

TP = 0.396 mg/L

TSS = 166 mg/L

Zn = $0.0236 \times e^{(2.18 \times 0.085)} = 0.0284$ mg/L

Existing pollutant loads from DA-1 (from ECM 1.6.9.3.B.6, Equation 1):

L_{COD} = 44.6 x 2.51 x 0.540 x 0.2267 = 13.7 lb/yr

$L_{E.coli}$ = 25,000 x 2.51 x 0.540 x 1.0279 = 34,830 x 10^6 CFU/yr

L_{Pb} = 0.00526 x 2.51 x 0.540 x 0.2267 = 0.00162 lb/yr

L_{TN} = 2.22 x 2.51 x 0.540 x 0.2267 = 0.682 lb/yr

L_{TOC} = 13.03 x 2.51 x 0.540 x 0.2267 = 4.00 lb/yr

L_{TP} = 0.396 x 2.51 x 0.540 x 0.2267 = 0.122 lb/yr

L_{TSS} = 166 x 2.51 x 0.540 x 0.2267 = 51.0 lb/yr

L_{Zn} = 0.0284 x 2.51 x 0.540 x 0.2267 = 0.00873 lb/yr

These are the pollutant loads exiting the site which may not be exceeded off the developed site.

Developed State Pollutant Loads

DA-R1, DA-R2, DA-R3:

From ECM 1.6.9.3.B.4, Table 1-9, with I.C. at 100%

➔ Annual runoff is read to be 22.91 in/yr.

Post-development pollutant concentrations in DA-R1, DA-R2 & DA-R3 (ECM 1.6.9.3.B.5, Table 1-10):

COD = 38.9 + 66.6 x 1.0 = 105.5 mg/L

E. coli = 25,000 CFU/100 mL

Pb = 0.00428 x $e^{(2.42 \times 1.0)}$ = 0.0481 mg/L

TN = 2.22 mg/L

TOC = 13.03 mg/L

TP = 0.396 mg/L

TSS = 166 mg/L

Zn = 0.0236 x $e^{(2.18 \times 1.0)}$ = 0.209 mg/L

Developed state pollutant loads in DA-R1 (from ECM 1.6.9.3.B.6, Equation 1):

L_{COD} = 105.5 x 22.91 x 0.045 x 0.2267 = 24.7 lb/yr

$L_{E.coli}$ = 25000 x 22.91 x 0.045 x 1.0279 = 26,493 x 10^6 CFU/yr

L_{Pb} = 0.0481 x 22.91 x 0.045 x 0.2267 = 0.0112 lb/yr

L_{TN} = 2.22 x 22.91 x 0.045 x 0.2267 = 0.519 lb/yr

L_{TOC} = 13.03 x 22.91 x 0.045 x 0.2267 = 3.05 lb/yr

L_{TP} = 0.396 x 22.91 x 0.045 x 0.2267 = 0.0926 lb/yr

L_{TSS} = 166 x 22.91 x 0.045 x 0.2267 = 38.8 lb/yr

L_{Zn} = 0.209 x 22.91 x 0.045 x 0.2267 = 0.0488 lb/yr

Developed state pollutant loads in DA-R2 (from ECM 1.6.9.3.B.6, Equation 1):

L_{COD} = 105.5 x 22.91 x 0.030 x 0.2267 = 16.4 lb/yr

$L_{E.coli}$ = 25000 x 22.91 x 0.030 x 1.0279 = 17,662 x 10^6 CFU/yr

L_{Pb} = 0.0481 x 22.91 x 0.030 x 0.2267 = 0.0075 lb/yr

L_{TN} = 2.22 x 22.91 x 0.030 x 0.2267 = 0.346 lb/yr

L_{TOC} = 13.03 x 22.91 x 0.030 x 0.2267 = 2.03 lb/yr

L_{TP} = 0.396 x 22.91 x 0.030 x 0.2267 = 0.0617 lb/yr

L_{TSS} = 166 x 22.91 x 0.030 x 0.2267 = 25.9 lb/yr

L_{Zn} = 0.209 x 22.91 x 0.030 x 0.2267 = 0.0326 lb/yr

Developed state pollutant loads in DA-R3 (from ECM 1.6.9.3.B.6, Equation 1):

L_{COD} = 105.5 x 22.91 x 0.045 x 0.2267 = 24.7 lb/yr

$L_{E.coli}$ = 25000 x 22.91 x 0.045 x 1.0279 = 26,493 x 10^6 CFU/yr

L_{Pb} = 0.0481 x 22.91 x 0.045 x 0.2267 = 0.0112 lb/yr

L_{TN} = 2.22 x 22.91 x 0.045 x 0.2267 = 0.519 lb/yr

L_{TOC} = 13.03 x 22.91 x 0.045 x 0.2267 = 3.05 lb/yr
L_{TP} = 0.396 x 22.91 x 0.045 x 0.2267 = 0.0926 lb/yr
L_{TSS} = 166 x 22.91 x 0.045 x 0.2267 = 38.8 lb/yr
L_{Zn} = 0.209 x 22.91 x 0.045 x 0.2267 = 0.0488 lb/yr

DA-G1:

From ECM 1.6.9.3.B.4, Table 1-9, with I.C. at 5.2%

➔ Annual runoff is interpolated to be 1.97 in/yr.

Post-development pollutant concentrations in DA-G1 (from ECM 1.6.9.3.B.5, Table 1-10):

COD = 38.9 + 66.6 x 0.052 = 40.6 mg/L
E. coli = 25,000 CFU/100 mL
Pb = 0.00428 x $e^{(2.42 \times 0.052)}$ = 0.00485 mg/L
TN = 2.22 mg/L
TOC = 13.03 mg/L
TP = 0.396 mg/L
TSS = 166 mg/L
Zn = 0.0236 x $e^{(2.18 \times 0.052)}$ = 0.0264 mg/L

Developed state pollutant loads in DA-G1 (from ECM 1.6.9.3.B.6, Equation 1):

L_{COD} = 40.6 x 1.97 x 0.420 x 0.2267 = 7.6 lb/yr
$L_{E.coli}$ = 25000 x 1.97 x 0.420 x 1.0279 = 21,262 x 10^6 CFU/yr
L_{Pb} = 0.00485 x 1.97 x 0.420 x 0.2267 = 0.00091 lb/yr
L_{TN} = 2.22 x 1.97 x 0.420 x 0.2267 = 0.416 lb/yr
L_{TOC} = 13.03 x 1.97 x 0.420 x 0.2267 = 2.44 lb/yr
L_{TP} = 0.396 x 1.97 x 0.420 x 0.2267 = 0.0743 lb/yr
L_{TSS} = 166 x 1.97 x 0.420 x 0.2267 = 31.1 lb/yr
L_{Zn} = 0.0264 x 1.97 x 0.420 x 0.2267 = 0.0050 lb/yr

Total post-development pollutant loads:

L_{COD} = 24.7 + 16.4 + 24.7 + 7.6 = 73.4 lb/yr
$L_{E.coli}$ = 26,493 + 17,662 + 26,493 + 21,262 = 91,910 x 10^6 CFU/yr
L_{Pb} = 0.0112 + 0.0075 + 0.0112 + 0.00091 = 0.03081 lb/yr
L_{TN} = 0.519 + 0.346 + 0.519 + 0.416 = 1.80 lb/yr
L_{TOC} = 3.05 + 2.03 + 3.05 + 2.44 = 10.57 lb/yr
L_{TP} = 0.0926 + 0.0617 + 0.0926 + 0.0743 = 0.321 lb/yr
L_{TSS} = 38.8 + 25.9 + 38.8 + 31.1 = 134.6 lb/yr
L_{Zn} = 0.0488 + 0.0326 + 0.0488 + 0.0050 = 0.135 lb/yr

Rainwater "Harvesting" Runoff Capture Efficiency and Pollution Overflowing Tanks

Rooftop runoff, up to the WQV, will be sequestered in rain tanks, to be infiltrated into surface soils. Runoff in excess of the WQV will overflow the tank and join runoff from DA-G1, flowing into the bioretention bed. The average annual percentage of water to be captured is related to the WQV, the drawdown time (DDT) of that WQV, and the impervious cover in the drainage area, through rainfall-runoff ratio R_v and the depression storage S_d, with the following equation:

$$RCE = 1 - \frac{td}{td + \frac{t * WQV}{v * Rv}} * \left(\frac{td}{b * WQV}\right) + \left(\frac{1}{v * Rv}\right) * \frac{\exp\left[-\left(\frac{td}{b * WQV} + \frac{1}{v * Rv}\right) * WQV\right]}{\frac{td}{b * WQV} + \frac{1}{v * Rv}} * \exp\left(-\frac{Sd}{v}\right)$$

where:

t_d = time to drain the WQV from the SCM = 48 hours (gravity drainage, no lag time)
t = mean annual rainfall event duration = 5.77 hours
WQV = water quality volume capture depth (inches)
v = mean annual rainfall event volume = 0.40 inches
R_v = runoff-rainfall ratio (unitless), interpolated from Table 1-9
b = inter-event time = 103.63 hours
Sd = depression storage (inches), interpolated from Table 1-9

The nominal arrangement is provide a minimum of 600 gallons of storage (= 80.2 ft^3) for rooftop runoff, so the WQV capture depth for each rooftop is as follows:

DA-R1 – 80.2/1975 = 0.041 ft = 0.49 inch
DA-R2 – 80.2/1300 = 0.062 ft = 0.74 inch
DA-R3 – 80.2/1950 = 0.041 ft = 0.49 inch

For all rooftops, at 100% I.C.:

R_v = 0.781 (from Table 1-9 for 100% I.C.)
S_d = 0.031 inch (from Table 1-9 for 100% I.C.)

DA-R1 & DA-R3:

$$RCE = 1 - \frac{48}{48 + \frac{5.77 * 0.49}{0.40 * 0.781}} * \frac{\left(\frac{48}{103.63 * 0.49}\right) + \left(\frac{1}{0.40 * 0.781}\right) * \exp\left[-\left(\frac{48}{103.63 * 0.49} + \frac{1}{0.40 * 0.781}\right) * 0.49\right]}{\frac{48}{103.63 * 0.49} + \frac{1}{0.40 * 0.781}} * \exp\left(-\frac{0.031}{0.40}\right)$$

RCE = 1 – 0.8414*(0.9453+3.2010*exp(-(0.9453+3.2010)*0.49)/(0.9453+3.2010)*exp(-0.0775)

RCE = 1–0.8414*(0.9453+3.2010*0.1311)/4.1463*0.9254 = 1–0.8414*1.365/4.1463*0.9254 = 0.744

Runoff intercepted and treated by SCM 1:

$V_{T.1} = RCE * V_D$ = 0.744 x 22.91 = 17.05 in/yr

By design, this runoff volume is to be infiltrated in SCM 2, which will be the soil over which drip irrigation lines are laid, with gravity flow into the drip lines from the rain tanks.
The remainder of the runoff volume bypasses SCM 1

$V_{by.1} = V_D - V_{T.1}$ = 22.91 – 17.05 = 5.86 in/yr

SCM 1 designed so it is "on-line" – runoff "mixes" within the rain tank before it overflows

From ECM 1.6.9.3.E.2, Table 1-12, bypass concentrations for each pollutant are the minimum of that derived below or the post-development condition pollutant concentration:

$COD_{by.1}$ = exp(4.916 – 0.545*WQV) = 104.5 mg/L
E. coli$_{by.1}$ = exp(10.79 – 0.624*WQV) = 35,748 x 10^6 CFU/100 mL
$Pb_{by.1}$ = 0.001*exp(3.522 – 0.529*WQV) = 0.0261 mg/L
$TN_{by.1}$ = exp(1.322 – 0.236*WQV) = 3.34 mg/L
$TOC_{by.1}$ = exp(3.112 – 0.282*WQV) = 19.6 mg/L
$TP_{by.1}$ = exp(-0.223 – 0.400*WQV) = 0.658 mg/L
$TSS_{by.1}$ = exp(5.862 – 0.765*WQV) = 242 mg/L
$Zn_{by.1}$ = 0.001*exp(5.200 – 0.531*WQV) = 0.140 mg/L

Bypass concentrations:

$COD_{by.1}$: 104.5 < 105.5 ➔ $COD_{by.1}$ = 104.5 mg/L
E. coli$_{by.1}$: 35,748 > 25,000 ➔ *E. coli*$_{by.1}$ = 25,000 x 10^6 CFU/100 mL

$Pb_{by,1}$: 0.0261 mg/L < 0.0481 → $Pb_{by,1}$ = 0.0261 mg/L
$TN_{by,1}$: 3.34 mg/L > 2.22 → $TN_{by,1}$ = 2.22 mg/L
$TOC_{by,1}$: 19.6 mg/L > 13.03 → $TOC_{by,1}$ = 13.03 mg/L
$TP_{by,1}$: 0.658 mg/L > 0.396 → $TP_{by,1}$ = 0.396 mg/L
$TSS_{by,1}$: 242 mg/L > 166 → $TSS_{by,1}$ = 166 mg/L
$Zn_{by,1}$: 0.140 mg/L < 0.209 → $Zn_{by,1}$ = 0.140 mg/L

Pollutant load exiting DA-R1 & DA-R3 in total:

L_{COD} = 104.5 x 5.86 x 0.045 x 0.2267 = 6.25 lb/yr x 2 = 12.5 lb/yr
$L_{E.coli}$ = 25,000 x 5.86 x 0.045 x 1.0279 = 6,776 x 10^6 CFU/yr x 2 = 13,553 x 10^6 CFU/yr
L_{Pb} = 0.0261 x 5.86 x 0.045 x 0.2267 = 0.00156 lb/yr x 2 = 0.00312 lb/yr
L_{TN} = 2.22 x 5.86 x 0.045 x 0.2267 = 0.133 lb/yr x 2 = 0.265 lb/yr
L_{TOC} = 13.03 x 5.86 x 0.045 x 0.2267 = 0.779 lb/yr x 2 = 1.56 lb/yr
L_{TP} = 0.396 x 5.86 x 0.045 x 0.2267 = 0.0237 lb/yr x 2 = 0.0473 lb/yr
L_{TSS} = 166 x 5.86 x 0.045 x 0.2267 = 9.92 lb/yr x 2 = 19.8 lb/yr
L_{Zn} = 0.140 x 5.86 x 0.045 x 0.2267 = 0.00837 lb/yr x 2 = 0.0167 lb/yr

DA-R2:

$$RCE = 1 - \frac{48}{48 + \frac{5.77 * 0.74}{0.40 * 0.781}} * \frac{\left(\frac{48}{103.63 * 0.74}\right) + \left(\frac{1}{0.40 * 0.781}\right) * \exp\left[-\left(\frac{48}{103.63 * 0.74} + \frac{1}{0.40 * 0.781}\right) * 0.74\right]}{\frac{48}{103.63 * 0.74} + \frac{1}{0.40 * 0.781}} * \exp\left(-\frac{0.031}{0.40}\right)$$

RCE = 1 – 0.7784*(0.6259+3.2010*exp(-(0.6259+3.2010)*0.74)/(0.6259+3.2010)*exp(-0.0775)

RCE = 1–0.7784*(0.6259+3.2010*0.0589)/3.827*0.9254 = 1–0.7784*0.8144/3.827*0.9254 = 0.847

Runoff intercepted and treated by SCM 1:

$V_{T,1}$ = RCE*V_D = 0.847 x 22.91 = 19.40 in/yr

By design, this runoff volume is to be infiltrated in SCM 2, which will be the soil over which drip irrigation lines are laid, with gravity flow into the drip lines from the rain tanks.
The remainder of the runoff volume bypasses SCM 1

$V_{by,1} = V_D - V_{T,1}$ = 22.91 – 19.40 = 3.51 in/yr

SCM 1 designed so it is "on-line" – runoff "mixes" within the rain tank before it overflows

From ECM 1.6.9.3.E.2, Table 1-12, bypass concentrations for each pollutant are the minimum of that derived below or the post-development condition pollutant concentration:

$COD_{by,1}$ = exp(4.916 – 0.545*WQV) = 91.2 mg/L
E. coli$_{by,1}$ = exp(10.79 – 0.624*WQV) = 30,584 x 10^6 CFU/100 mL
$Pb_{by,1}$ = 0.001*exp(3.522 – 0.529*WQV) = 0.0229 mg/L
$TN_{by,1}$ = exp(1.322 – 0.236*WQV) = 3.15 mg/L
$TOC_{by,1}$ = exp(3.112 – 0.282*WQV) = 18.2 mg/L
$TP_{by,1}$ = exp(-0.223 – 0.400*WQV) = 0.595 mg/L
$TSS_{by,1}$ = exp(5.862 – 0.765*WQV) = 200 mg/L
$Zn_{by,1}$ = 0.001*exp(5.200 – 0.531*WQV) = 0.122 mg/L

Bypass concentrations:

$COD_{by,1}$: 91.2 < 105.5 → $COD_{by,1}$ = 91.2 mg/L
E. coli$_{by,1}$: 30,584 > 25,000 → *E. coli*$_{by,1}$ = 25,000 x 10^6 CFU/100 mL
$Pb_{by,1}$: 0.0229 mg/L < 0.0481 → $Pb_{by,1}$ = 0.0229 mg/L
$TN_{by,1}$: 3.15 mg/L > 2.22 → $TN_{by,1}$ = 2.22 mg/L

$TOC_{by,1}$: 18.2 mg/L > 13.03 → $TOC_{by,1}$ = 13.03 mg/L
$TP_{by,1}$: 0.595 mg/L > 0.396 → $TP_{by,1}$ = 0.396 mg/L
$TSS_{by,1}$: 200 mg/L > 166 → $TSS_{by,1}$ = 166 mg/L
$Zn_{by,1}$: 0.122 mg/L < 0.209 → $Zn_{by,1}$ = 0.122 mg/L

Pollutant load exiting DA-R2:

L_{COD} = 91.2 x 3.51 x 0.030 x 0.2267 = 2.2 lb/yr
$L_{E.coli}$ = 25,000 x 3.51 x 0.030 x 1.0279 = 2,706 x 10^6 CFU/yr
L_{Pb} = 0.0229 x 3.51 x 0.030 x 0.2267 = 0.0006 lb/yr
L_{TN} = 2.22 x 3.51 x 0.030 x 0.2267 = 0.053 lb/yr x
L_{TOC} = 13.03 x 3.51 x 0.030 x 0.2267 = 0.31 lb/yr
L_{TP} = 0.396 x 3.51 x 0.030 x 0.2267 = 0.0095 lb/yr
L_{TSS} = 166 x 3.51 x 0.030 x 0.2267 = 4.0 lb/yr
L_{Zn} = 0.122 x 3.51 x 0.030 x 0.2267 = 0.0029 lb/yr

NOTE: Drip field sizing for receiving WQV from rain tanks. Need to determine tank configuration and vertical placement relative to location of drip lines, and need to determine how level area covered by drip lines will be, so that head range over drip emitters can be set. Once these are determined, a spreadsheet analysis will run to determine the number of drip emitters to be installed to receive tank drainage to create a 48-hour drawdown.

Total post-development pollutant loads issuing from DA-R1, DA-R2, DA-R3 & DA-G1:

L_{COD} = 12.5 + 2.2 + 7.6 = 22.3 lb/yr
$L_{E.coli}$ = 13,553 + 2,706 + 21,262 = 37,521 x 10^6 CFU/yr
L_{Pb} = 0.00312 + 0.00055 + 0.00091 = 0.00458 lb/yr
L_{TN} = 0.265 + 0.053 + 0.416 = 0.734 lb/yr
L_{TOC} = 1.56 + 0.31 + 2.44 = 4.31 lb/yr
L_{TP} = 0.0473 + 0.0095 + 0.0743 = 0.131 lb/yr
L_{TSS} = 19.8 + 4.0 + 31.1 = 54.9 lb/yr
L_{Zn} = 0.0167 + 0.0029 + 0.0050 = 0.0246 lb/yr

Compare these loads with those that would flow into the bioretention bed without the rain tanks in place. The post-development impervious cover in DA-1 is 26.2% (see Drawing No. 1).
From ECM 1.6.9.3.B.4, Table 1-9, with I.C. at 26.2%

→ Existing annual runoff is interpolated to be 5.76 in/yr.

Post-development pollutant concentrations in DA-1 (from ECM 1.6.9.3.B.5, Table 1-10):

COD = 38.9 + 66.6 x 0.262 = 56.4 mg/L
E. coli = 25,000 CFU/100 mL
Pb = 0.00428 x $e^{(2.42 \times 0.262)}$ = 0.00807 mg/L
TN = 2.22 mg/L
TOC = 13.03 mg/L
TP = 0.396 mg/L
TSS = 166 mg/L
Zn = 0.0236 x $e^{(2.18 \times 0.262)}$ = 0.0418 mg/L

Developed state pollutant loads from DA-1 (from ECM 1.6.9.3.B.6, Equation 1):

L_{COD} = 56.4 x 5.76 x 0.540 x 0.2267 = 39.8 lb/yr vs. 22.3 lb/yr with rain tanks
$L_{E.coli}$ = 25000 x 5.76 x 0.540 x 1.0279 = 79,930 x 10^6 CFU/yr vs. 37,521 x 10^6 CFU/yr w/ rain tanks
L_{Pb} = 0.00807 x 5.76 x 0.540 x 0.2267 = 0.00569 lb/yr vs. 0.00458 lb/yr with rain tanks
L_{TN} = 2.22 x 5.76 x 0.540 x 0.2267 = 1.565 lb/yr vs. 0.734 lb/yr with rain tanks

L_{TOC} = 13.03 x 5.76 x 0.540 x 0.2267 = 9.19 lb/yr vs. 4.31 lb/yr with rain tanks
L_{TP} = 0.396 x 5.76 x 0.540 x 0.2267 = 0.279 lb/yr vs. 0.131 lb/yr with rain tanks
L_{TSS} = 166 x 5.76 x 0.540 x 0.2267 = 117.1 lb/yr vs. 54.9 lb/yr with rain tanks
L_{Zn} = 0.0418 x 5.76 x 0.540 x 0.2267 = 0.0295 lb/yr vs. 0.0246 lb/yr with rain tanks

Note that the effluent concentrations out of the bioretention bed (see below) presume that the pollutant loads *into* the bed are those *without* the rain tanks. This shows that the pollutant removal outcomes for the bioretention bed operating independently, without the rain tanks, that are modeled below will be a somewhat conservative representation of the overall water quality performance expected from the proposed water quality management plan.

Bioretention Bed Runoff Capture Efficiency and Pollution Exiting Site

Again, the average annual percentage of water to be captured is related to the water quality volume (WQV), the drawdown time (DDT) of that WQV, and the impervious cover in the drainage area, through rainfall-runoff ratio R_v and the depression storage S_d, with the following equation:

$$RCE = 1 - \frac{td}{td + \frac{t * WQV}{v * Rv}} * \left(\frac{td}{b * WQV}\right) + \left(\frac{1}{v * Rv}\right) * \frac{\exp\left[-\left(\frac{td}{b * WQV} + \frac{1}{v * Rv}\right) * WQV\right]}{\frac{td}{b * WQV} + \frac{1}{v * Rv}} * \exp\left(-\frac{Sd}{v}\right)$$

where:

t_d = time to drain the WQV from the SCM = 63.5 hours (see bioretention bed sizing calcs below)
t = mean annual rainfall event duration = 5.77 hours
WQV = water quality volume (inches)
v = mean annual rainfall event volume = 0.40 inches
R_v = runoff-rainfall ratio (unitless), interpolated from Table 1-9
b = inter-event time = 103.63 hours
Sd = depression storage (inches), interpolated from Table 1-9

DA-1: WQV = 0.56 inch (see bioretention bed sizing calcs below)
R_v = 0.781 (from Table 1-9 for 100% I.C.)
S_d = 0.031 inch (from Table 1-9 for 100% I.C.)

$$RCE = 1 - \frac{63.5}{63.5 + \frac{5.77 * 0.56}{0.40 * 0.781}} * \frac{\left(\frac{63.5}{103.63 * 0.56}\right) + \left(\frac{1}{0.40 * 0.781}\right) * \exp\left[-\left(\frac{63.5}{103.63 * 0.56} + \frac{1}{0.40 * 0.781}\right) * 0.56\right]}{\frac{63.5}{103.63 * 0.56} + \frac{1}{0.40 * 0.781}} * \exp\left(-\frac{0.031}{0.40}\right)$$

RCE = 1 – 0.8599*(1.094+3.201*exp(-(1.094+3.201)*0.56)/(1.094+3.201)*exp(-0.0775)

RCE = 1–0.8599*(1.094+3.201*0.0902)/4.295*0.9254 = 1–0.8599*1.383/4.295*0.9254 = 0.744

Runoff intercepted and treated by SCM 1:
$V_{T.1}$ = RCE*V_D = 0.744 x 5.76 = 4.29 in/yr

By design, this runoff volume is to be infiltrated in SCM 2, which is functionally the soil beneath the SCM 1 (bioretention bed) media.
The remainder of the runoff volume bypasses SCM 1, and the pollutants it carries exit the site.
$V_{by.1}$ = V_D – $V_{T.1}$ = 5.76 – 4.29 = 1.47 in/yr

SCM 1 designed so it is "on-line" – the overflow has to "run through" the ponded depth to exit the bed.

From ECM 1.6.9.3.E.2, Table 1-12, bypass concentrations for each pollutant are the minimum of that derived below or the post-development condition pollutant concentration:

$COD_{by,1}$ = exp(4.916 – 0.545*WQV) = 100.6 mg/L
E. coli$_{by,1}$ = exp(10.79 – 0.624*WQV) = 34,220 x 10^6 CFU/100 mL
$Pb_{by,1}$ = 0.001*exp(3.522 – 0.529*WQV) = 0.0252 mg/L
$TN_{by,1}$ = exp(1.322 – 0.236*WQV) = 3.29 mg/L
$TOC_{by,1}$ = exp(3.112 – 0.282*WQV) = 19.2 mg/L
$TP_{by,1}$ = exp(-0.223 – 0.400*WQV) = 0.640 mg/L
$TSS_{by,1}$ = exp(5.862 – 0.765*WQV) = 229 mg/L
$Zn_{by,1}$ = 0.001*exp(5.200 – 0.531*WQV) = 0.135 mg/L

Bypass concentrations are therefore as follows:

$COD_{by,1}$: 100.6 > 56.4 → $COD_{by,1}$ = 56.4 mg/L
E. coli$_{by,1}$: 34,220 > 25,000 → *E. coli*$_{by,1}$ = 25,000 x 10^6 CFU/100 mL
$Pb_{by,1}$: 0.0252 mg/L > 0.00807 → $Pb_{by,1}$ = 0.00807 mg/L
$TN_{by,1}$: 3.29 mg/L > 2.22 → $TN_{by,1}$ = 2.22 mg/L
$TOC_{by,1}$: 19.2 mg/L > 13.03 → $TOC_{by,1}$ = 13.03 mg/L
$TP_{by,1}$: 0.640 mg/L > 0.396 → $TP_{by,1}$ = 0.396 mg/L
$TSS_{by,1}$: 229 mg/L > 166 → $TSS_{by,1}$ = 166 mg/L
$Zn_{by,1}$: 0.135 mg/L > 0.0418 → $Zn_{by,1}$ = 0.0418 mg/L

Pollutant load exiting DA-1 and comparison with predevelopment load:

L_{COD} = 56.4 x 1.47 x 0.540 x 0.2267 = 10.1 lb/yr < 13.7 lb/yr – OK
$L_{E.coli}$ = 25,000 x 1.47 x 0.540 x 1.0279 = 20,399 x 10^6 CFU/yr < 34,830 x 10^6 CFU/yr – OK
L_{Pb} = 0.00807 x 1.47 x 0.540 x 0.2267 = 0.00145 lb/yr < 0.00162 lb/yr – OK
L_{TN} = 2.22 x 1.47 x 0.540 x 0.2267 = 0.399 lb/yr < 0.682 lb/yr – OK
L_{TOC} = 13.03 x 1.47 x 0.540 x 0.2267 = 2.34 lb/yr < 4.00 lb/yr – OK
L_{TP} = 0.396 x 1.47 x 0.540 x 0.2267 = 0.071 lb/yr < 0.122 lb/yr – OK
L_{TSS} = 166 x 1.47 x 0.540 x 0.2267 = 29.9 lb/yr < 51.0 lb/yr – OK
L_{Zn} = 0.0418 x 1.47 x 0.540 x 0.2267 = 0.00752 lb/yr < 0.00873 lb/yr – OK

→ DA-1 is compliant with non-degradation standard if we presume all the pollutants flowing into the bioretention bed "go away" in the process of infiltrating through soil mantle under the bed.

If we presume that the bioretention bed effluent imparts additional pollutant load exiting the site – that is, there is NO further treatment imparted by infiltrating through the soil mantle under the biofiltration media – we can calculate those loads as follows, presuming the effluent quality flowing out the bottom of the biofiltration media layer is what is listed for "Biofiltration" in ECM Table 1-11:

L_{COD} = 22.4 x 4.29 x 0.540 x 0.2267 = 11.8 lb/yr
$L_{E.coli}$ = 4895 x 4.29 x 0.540 x 1.0279 = 11,656 x 10^6 CFU/yr
L_{Pb} = 0.00574 x 4.29 x 0.540 x 0.2267 = 0.00301 lb/yr
L_{TN} = 1.07 x 4.29 x 0.540 x 0.2267 = 0.562 lb/yr
L_{TOC} = 7.33 x 4.29 x 0.540 x 0.2267 = 3.85 lb/yr
L_{TP} = 0.099 x 4.29 x 0.540 x 0.2267 = 0.0520 lb/yr
L_{TSS} = 20.62 x 4.29 x 0.540 x 0.2267 = 10.8 lb/yr
L_{Zn} = 0.0230 x 4.29 x 0.540 x 0.2267 = 0.0121 lb/yr

The total pollutant load exiting the site under this presumption and a comparison with the pre-development pollutant loads are shown below:

L_{COD} = 11.8 + 10.1 = 21.9 lb/yr > 13.7 lb/yr – exceeds existing load by 60%

$L_{E.coli}$ = 11,656 + 20,399 = 32,055 x 10^6 CFU/yr < 34,830 x 10^6 CFU/yr – OK
L_{Pb} = 0.00301 + 0.00145 = 0.00446 lb/yr > 0.00162 lb/yr – exceeds existing load by 175%
L_{TN} = 0.562 + 0.399 = 0.961 lb/yr > 0.682 lb/yr – exceeds existing load by 41%
L_{TOC} = 3.85 + 2.34 = 6.19 lb/yr > 4.00 lb/yr – exceeds existing load by 55%
L_{TP} = 0.052 + 0.071 = 0.123 lb/yr < 0.122 lb/yr – exceeds existing load by <1%
L_{TSS} = 10.8 + 29.9 = 40.7 lb/yr < 51.0 lb/yr – OK
L_{Zn} = 0.0121 + 0.0075 = 0.0196 lb/yr > 0.0087 lb/yr – exceeds existing load by 125%

For this concept to be deemed compliant with "non-degradation" standard, further treatment must be presumed to be imparted to bioretention bed underflow by the soil mantle and along the route this water follows to the point it joins environmental waters. The process by which water infiltrates through, and thus is treated by, the soil mantle is the same process to which it would be subjected if the biofiltration underflow were collected and spread over the land surface, except that the driving head is the height of the water column in the bioretention bed. Therefore, essentially similar treatment can be presumed. Since this process is deemed to comply when bioretention bed underflow is spread over the land surface (indeed even when "raw" runoff from the retention pond of a retention-irrigation system is spread), the proposed process in which the underflow infiltrated directly through a 1-foot thick soil mantle composed of those same surface soils is also deemed to comply.

Noting that this process is to be implemented in parallel with a rainwater "harvesting" strategy, which as reviewed above will significantly decrease the pollutant load into the bioretention bed, intercepting a significant portion of the annual runoff off of the rooftops and treating that by settling in the rain tank and dispersal in the surface soils, any perceived deficiency of treatment effectiveness due to infiltration of the bioretention bed underflow through the soil mantle will be "made up for" by that process. Also, with the rooftops being intercepted by the rain tanks, a larger portion of the ground surface area runoff would be intercepted by the bioretention bed, thus imparting a larger amount of annual pollutant reduction in this ground level runoff than is modeled here.

Therefore, this bioretention bed is presumed to attain compliance with the "non-degradation" standard.

Bioretention Bed Sizing

Bioretention bed characteristics (see Drawing No. 3):
Working media depth = 18 inches = 1.5 feet
Mulch layer = 2 inches → Total water storage depth in bed = 20 inches = 1.67 feet
→ 1.67 cu. ft. media volume/sq. ft. bed area
At (0.3 x 80%) 0.24 cu. ft. water volume in media and mulch per sq. ft. of bed area
→ Water volume in media and mulch voids per sq. ft. of bed area = 0.24 x 1.67 = 0.4 cu. ft.
Ponding depth over surface of media = 6 inches = 0.5 foot
→ Water volume ponded per sq. ft. of bed area = 0.5 cu. ft.
→ Total water volume contained per sq. ft. of bed area = 0.4 + 0.5 = 0.9 cu. ft.

Bed configuration – trapezoidal, length = 44', short base = 12.5', long base = 41.5' → ~1,188 sq. ft.
Configuration shown increases this slightly – measured polyline around bed perimeter yields 1,210 sq. ft.
→ Water volume contained in bed at overflow = 0.9 x 1210 = 1,089 cu. ft.

Capture area = DA-1 = 23,510 sq. ft.
Actual WQV capture depth = 1089/23510 = 0.046 ft = 0.56 inch

With a deep soil infiltration rate = 0.17 in/hr (from Amoozemeter test)
Time to drain WQV = 0.9/(0.17/12) = 63.5 hours

100-Year Flow and Bed Overflow Weir Calculations

The 100-year peak flow rate off of DA-1 is calculated and the flow depth over the bioretention bed overflow weir is determined below.

Use Rational Method → Q = *Ci*A
where: C = Rational Method runoff coefficient (dimensionless)
i = Rational Method rainfall intensity (inches)
A = drainage area (acres)

DA-1 is composed of 3 basic types of surfaces, each having its 100-year runoff coefficient (obtained from Table 2-1, DCM 2.4.1), as follows:

Rooftop area: Total area = 5,225 sq. ft. (see Drawing No. 1) = 0.120 ac.
C-value for rooftops = 0.97
Paved area: Total area = 955 sq. ft. (see Drawing No. 1) = 0.022 ac.
C-value for paved areas = 0.95
Pervious: Total area = 17,330 sq. ft. (residual of DA-1 minus 2 above areas) = 0.398 ac.
C-value for pervious areas = 0.46 (good condition, average slope)

Composite C-value: (0.120x0.97 + 0.022x0.95 +0.398x0.46)/(0.120+0.022+0.398)
= 0.3204/0.540 = 0.59

Time of Concentration:
Sheet flow L = 75 ft flow path (estimated from Drawing No. 2)
Slope (s) = 0.05 ft/ft (estimated from Drawing No. 2)
Manning's n = 0.24 (from Table 2-2, dense grass – lawn)
P = 3.44 inches – 2-year, 24-hour value from Table 2-3
$T_t = 0.42(nL)^{0.8}/(P^{0.5}S^{0.4})$ = 7.5 minutes
Shallow concentrated flow – most of flow path is unpaved
L = 180 ft flow path (measured on Drawing No. 2)
Slope (s) = 0.042 ft/ft (estimated from Drawing No. 2)
Unpaved $T_t = L/(60(16.1345)s^{0.5})$ = 0.9 minutes
→ Total T_t = 7.5 + 0.9 = 8.4 minutes – use 10 minutes

100-year *i* = 10.0 inches (interpolated from Table 2-4, DCM 2.4.3, for T_c = 10 minutes)

100-year Q = 0.59 x 10.0 x 0.54 = 3.19 cfs

Length of bioretention bed overflow weir = 39 ft (from Drawing No. 3)

Consider as broad-crested weir – $Q = CLH^{3/2}$
where: Q = flow rate = 3.19 cfs
C = weir coefficient = 2.80 (dimensionless)
From Table 21-15, Standard Handbook for Civil Engineers
Presuming breadth of weir crest = 6" = 0.5 ft, flow depth = 0.2 ft
L = width of flow over weir = 39 ft

H = depth of flow over weir, feet

Transposing the equation, $H = [Q/(CL)]^{2/3}$

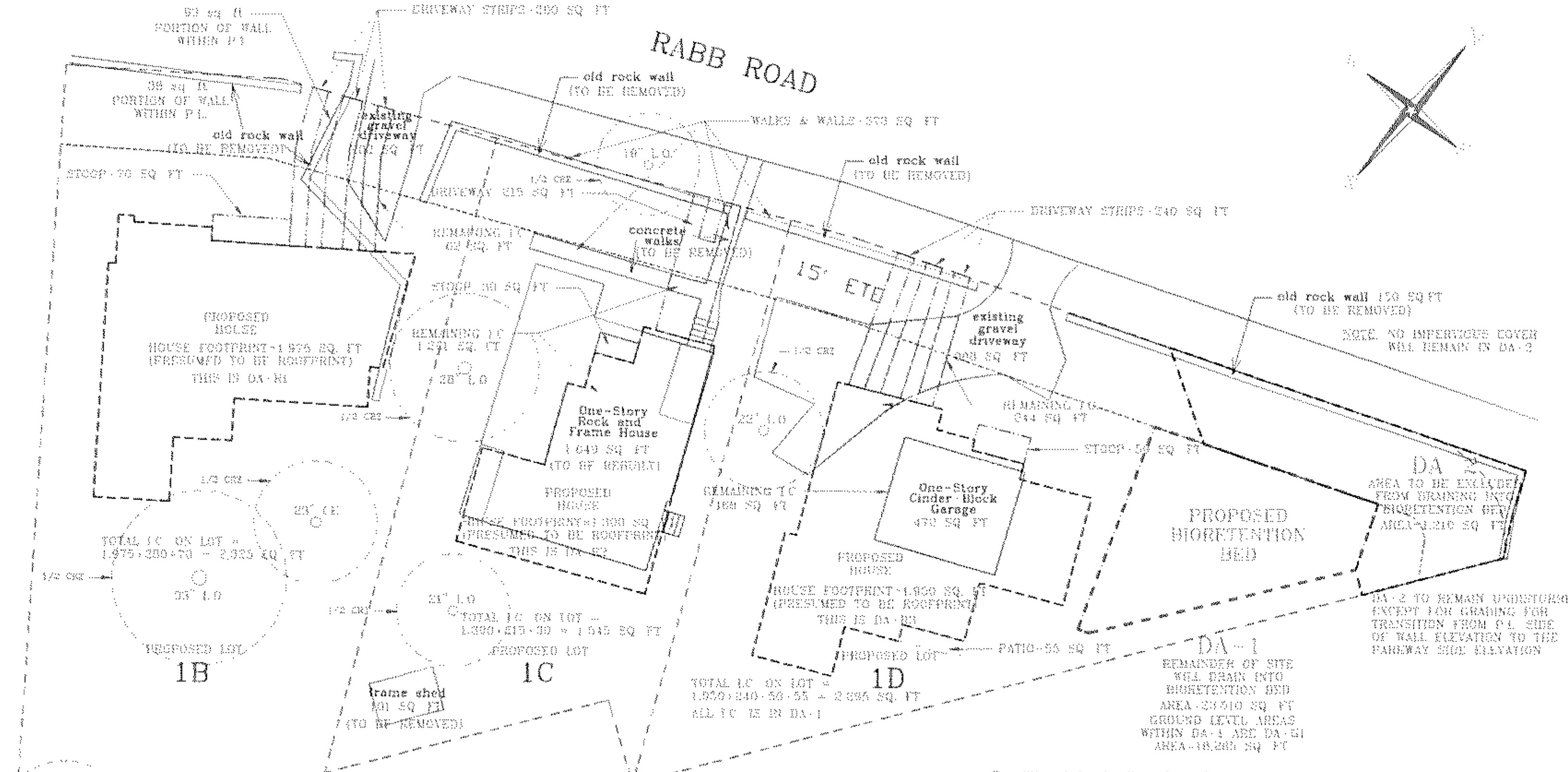
H = 0.095 ft = 1.1 inches

Average flow velocity:

Flow x-section = 39' x 0.095' = 3.705 ft^2

Flow velocity = 3.19 ft^3/sec/3.705 ft^2 = 0.86 ft/sec

This will be a non-erosive flow, which will disperse over the vegetated surface beyond the bioretention bed wall (overflow weir).



TOTAL EXISTING IMPERVIOUS COVER

83 WALL (TO BE REMOVED)
38 WALL (TO BE REMOVED)
202 DRIVEWAY (TO BE PARTIALLY REMOVED)
373 WALL & WALKS (PARTIALLY BUILT OVER)
1,649 HOUSE (TO BE REBUILT)
101 SHED (TO BE REMOVED)
998 DRIVEWAY (TO BE PARTIALLY REMOVED)
472 GARAGE (TO BE BUILT OVER)
150 WALL (TO BE REMOVED)

4,066 TOTAL I.C.

TOTAL PROJECT AREA = 24,720 SQ FT.
TOTAL EXISTING IMPERVIOUS COVER = 4,066 SQ FT
EXISTING % IMPERVIOUS COVER = 4066/24720 = 16.4%
CITY-DEFINED EXISTING IMPERVIOUS COVER = 1,995 SQ FT
CITY-DEFINED EXISTING % IMPERVIOUS COVER = 1995/24720 = 8.1%

NET AREA OF DA-1 = 24,720 - 1,210 = 23,510 SQ FT
CITY-DEFINED EXISTING I.C. % BASED ON DA-1 ONLY = 1995/23510 = 8.5%
TOTAL I.C. IN DA-1 = 2325+1545+2295 = 6,165 SQ FT
ALLOWABLE I.C. = 25% OF SITE AREA = 0.25x24720 = 6,180 SQ FT
TOTAL % I.C. IN DA-1 = 6165/23510 = 26.2%
ROOFPRINT I.C. IN DA-1 = 1975+1300+1950 = 5,225 SQ FT
GROUND LEVEL AREA IN DA-1 = 23510 - 5225 = 18,285 SQ FT.
ACTUAL GROUND LEVEL I.C. IN DA-1 = 6165 - 5225 = 940 SQ FT
ALLOWABLE GROUND LEVEL I.C. IN DA-1 = 6180 - 5225 = 955 SQ FT
ASSUMED GROUND LEVEL % I.C. IN DA-1 = 955/18285 = 5.2%

Per City of Austin fiat the existing impervious cover to be used for calculating the pollutant load issuing from the existing site is only the existing area with impervious cover that would as impervious area on the site after development has modified the site. As shown on this plan, the extent of existing impervious cover under that definition is
62 + 1,231 + 469 + 244 = 1,995 sq. ft.
NOTE: Minor areas, like wall footprints that will be new I.C., are ignored

Since I must place my seal upon this drawing, it is incumbent upon me to note that this does not appear to be how the applicable rules actually read, rather that they clearly state that ALL the existing impervious cover is to be used for calculation of the existing pollutant load, as that is the only basis on which the underlying dictate – LDC 25-8-514, requiring "no increase" in pollutant loads imparted by development – can be reasonably imparted. Therefore, the water quality management plan that results from using the City-imposed definition of existing impervious cover will be very conservative, since as this plan shows, the actual existing impervious cover level is 16.4%, while the city-defined impervious cover level is 8.1%. Since only DA-1 will be developed and developed state pollutant loads will be calculated over DA-1 only, DA-1 is the proper area to use to calculate existing condition pollutant load. Therefore, the city-defined impervious cover level to be used is 1995/23510 = 8.5%

No	By	Date	Correction/Revision

Peschka Resubdivision Water Quality Management Plan

Existing and Proposed Impervious Cover

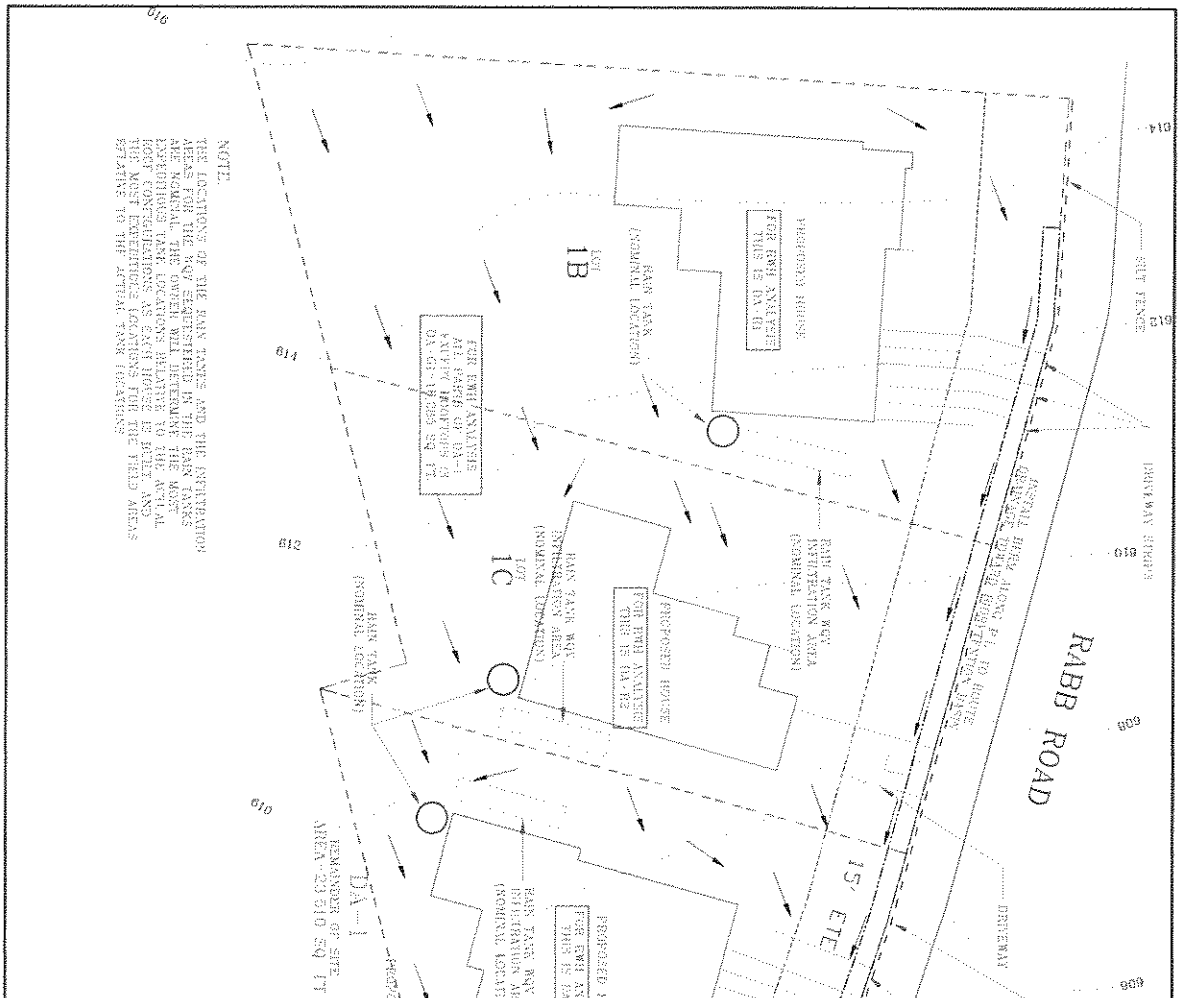
1405 Rabb Road, Austin, Texas 78704

Client: JP Custom Homes	Drawn by: DV	Drawing ID: EXSITE	Date Drawn: Feb. 2016
	Checked by: DV		Scale: 1" = 10'

David Venhuizen, P.E.
Planning and Engineering as if Water and Environmental Values Matter
512/442-4047
5803 Gateshead Drive, Austin, Texas 78745
e-mail: waterguy@venhuizen-ww.com
website: www.venhuizen-ww.com
T.S.P.E. #F2231

State of Texas — D. VENHUIZEN — 47602 — Professional Engineer
2/24/16

Drawing No. 1 of 4



No	By	Date	Correction/Revision

Peschka Resubdivision Water Quality Management Plan

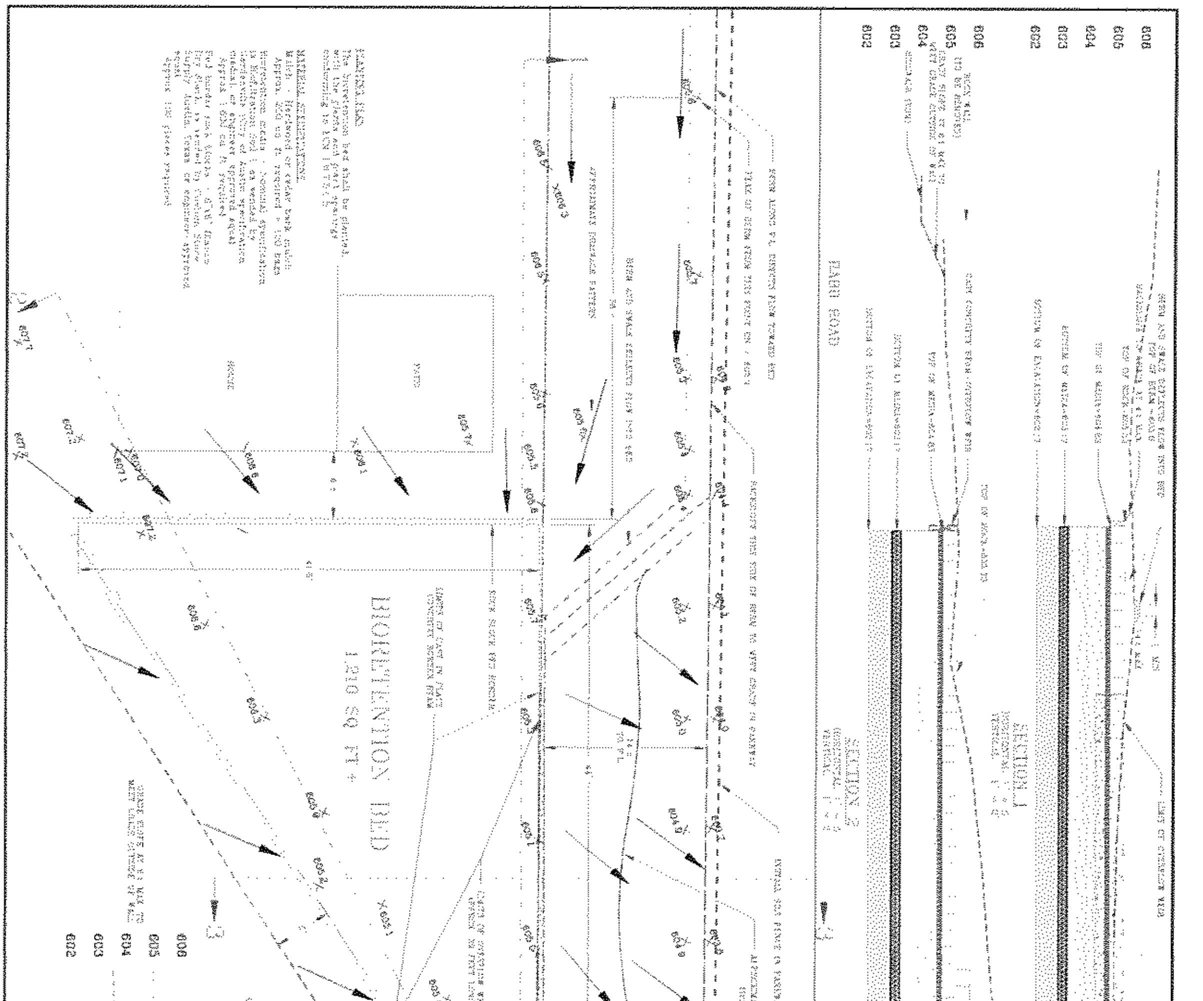
Post-Development Drainage Plan

1405 Rabb Road, Austin, Texas 78704

Client: JP Custom Homes	Drawn by: DV	Drawing ID: DRAINPLAN	Date Drawn: Feb 2016
	Checked by: DV		Scale: 1" = 10'

David Venhuizen, P.E.
Planning and Engineering of \[illegible\]
512/442-4047
5803 Gateshead Drive
Austin, Texas 78745
T.S.P.E. #F2231

Drawing No. 2 of 4



Peschka Resubdivision Water Quality Management Plan

Bioretention Bed Layout & Details

1405 Rabb Road, Austin, Texas 78704

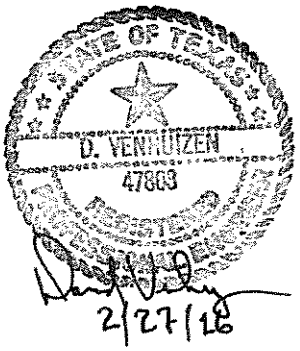
Client:	Drawn by: DV	Drawing ID.	Date Drawn: Feb. 2015
JP Custom Homes	Checked by: DV	BEDDETL	Scale: 1" = 5'

No	By	Date	Correction/Revision

David Venhuizen, P.E.
Planning and Engineering as if Water and Environmental Values Matter
512/442-4047
5803 Gateshead Drive
Austin, Texas 78745
T.S.P.E. #F2231

Drawing No. 3 of 4

Drawing No. 4 of 4	David Venhuizen, P.E. Planning and Engineering as a Water and Environmental Values Matter 512/442-4047 5805 Gateshead Drive Austin, Texas 78745 e-mail: watergirl@venhuizen-pe.com website: www.venhuizen-pe.com T.S.P.E. #F2231	Peschka Subdivision Water Quality Management Plan Rainwater Harvesting Strategy Details 1405 Rabb Road, Austin, Texas 78704			No. | By | Date | Correction/Revision
		Client: JP Custom Homes	Drawn by: DV Checked by: DV	Drawing ID: RWHPLAN	Date Drawn: Feb 2016 Scale: 1" = 2'



2/27/18

F-2231

APPENDIX R-11
RAIN GARDEN CALCULATIONS
FOR DEVELOPMENT PERMITS

DRAINAGE AREA DATA:

Drainage Area to Control (DA - Maximum 2.0 Ac.)	0.540 Ac.	
Drainage Area Percent Impervious Cover	26.2 %	
Capture Depth (CD)	0.56 in.	

WATER QUALITY CONTROL CALCULATIONS:

	Required	Provided
Water Quality Volume	1,089 cf.	1,089 cf.
100 Year Peak Flow Rate to Control (Q100)	3.19 cfs.	
Filtration Pond Area (Af)	1,210 sf.	1,210 sf.
Depth of Ponding (D)	Maximum 1.0 ft.	0.5 ft.
Depth of Filtration Media (L)	Minimum 1.5 ft.	1.67 ft. including mulch
Effective Porosity Water Quality Volume (WQV_{ae} = 0.24 * Af * L)		484 cf.
Ponded Water Quality Volume (WQV_{ponded} = WQV - WQV_{ae})		605 cf.
	Total WQV	1,089 cf.
Water Quality Elevation (WQE)		606.33 ft. MSL
Elevation of Splitter/Overflow Weir (Minimum WQE)		606.33 ft. MSL
Length of Splitter Weir		39 ft.
Required Head to Pass Q100	Maximum 0.5 ft.	0.095 ft.
Pond Freeboard Provided to Pass Q100	Minimum 0.25 ft.	> 0.25 ft.

FOR FILTRATION RAIN GARDENS:

Rain Garden Pond Drawdown Time	Minimum 48 hr.	_____ hr.
Underdrain Orifice Size (Diameter)		_____ in.
Underdrain Orifice Size (Area)		_____ sq. in.

FOR INFILTRATION RAIN GARDENS:

Infiltration Rate (in/hr)	0.17 in./hr.
Rain Garden Pond Drawdown Time	63.5 hr.

Land Use Review
Site Plan Completeness Check

Planning and Development Review Dept.

3/9/2016

Completeness Check Results Due:

A completeness check application must be deemed complete before formal application can be submitted.

Completeness Check Results:		45 Day Expiration date: 04/16/2016
Tracking #: **11493256**	Revision #: **00**	Watershed: **Town Lake**
Project Name: **1405 Rabb Rd - Water Quality Site Plan**		
Ch.245 Team Review Req'd: **No**	Orig. Submittal Date: **03/02/2016**	Resubmittal Date:
Date Sent to Ch.245:	Current Results to Applicant:	
Date Rec'd.back in LUR:		

Checked for Completeness by the following reviewers:			**Complete/Incomplete**	**Initials**
Drainage Construction	Joydeep Goswami	974-3568		JG
DRD Transportation	Sangeeta Jain	974-2219		SJ
Site Plan	Lynda Courtney	974-2810		LC
Environmental	Sue Barnett	974-2711		SB
Water Quality Eng.	Joydeep Goswami	974-3568		JG
Env.Res.Mgmt.		974		
Floodplain	Henry Price	974-1275		HP
ORES	Andy Halm	974-3185		AH
Utility Coord.	Reza Sedghy	974-7912		RS
AWU-DPR	Ben Sanders	972-9161		BS
AWU Development	Neil Kepple	972-0077		NK
UST	Craig Carson	974-3024		
ATD ROW.	Reza Sedghy	974-7912		RS
ATD Traffic Control	Eva Moore	974-7671		EMM

CC Waived per Lynda Courtney

Mandatory Distribution:		**Case Manager: Benny Ho**	
Rosemary Avila (SP)	Jim Dymkowski (EV)	Natalia Rodriguez (TR)	David Marquez (DR/WQ)
Christine Barton-Holmes (SP)	Taylor Horton (EV)	Jay Baker (DR/WQ)	John Powell (DR/WQ)
Donna Galati (SP)	Mike McDougal (EV)	Ron Czajkowski (DR/WQ)	Tomas Rodriguez (DR/WQ)
Scott Grantham (SP)	Atha Phillips (EV)	Leslie Daniel (DR/WQ)	RSMP
Nikki Hoelter (SP)	Amanda Couch (TR)	Michael Duval (DR/WQ)	
Brad Jackson (SP)	Bryan Golden (TR)	Benny Ho (DR/WQ)	Keith Mars (HT)
Michael Simmons-Smith (SP)	Sangeeta Jain (TR)	Danielle Guevara (DR/WQ)	
Pamela Abee-Taulli (EV)	Ivan Naranjo (TR)	Joydeep Goswami (DR/WQ)	
Partner Department Mandatory Distribution:			
ATD ROW	ATD Traffic Control	AWU Development Services	AWU Pipeline Services
Electric (3)	Fire	Floodplain	Mapping
Plumbing			
Optional Distribution: Circle to receive distribution			
AWU Facilities Engineering	Hydrogeologist	Industrial Waste	PARD
Wetlands Biologist			
ERM Review Comment (Functional Assessment):			

A formal application must be filed within 45 calendar days of the initial completeness check (by04/16/2016) or the application will expire and a new completeness check application must be filed.

Applicants must pick up the completeness check packet at the Intake office within 72 hours of receiving a response. The City is not responsible for lost or stolen packets. **The applicant must schedule an appointment with the Intake office for formal application submittal**. Please call 974-2681, 974-2350, or 974-7208 for more information.

RSMP: Yes/No Waiver: Yes/No Onsite Drainage: Yes/No
Offsite Drainage: Yes/ No

Additional Copies to:

Small Project: Yes/No

Fees:

Total # of Plans ___/ Engineering Reports ___ required at formal

The City of Austin encourages applicants to contact neighborhood organizations prior to formal submittal. To find out contact information for neighborhood associations visit our web page at http://www.ci.austin.tx.us/neighborhoodservices/ or contact our Neighborhood Liaisons for more information: Carol Gibbs @ 974-7219 or Jody Zemel @ 974-7117.

This project will require an Electronic Submittal (flash drive) at time of formal submittal as described in Exhibit VII of application packet. Exhibit VII Worksheet also due at time of formal submittal.

Comments: (***Please respond to each comment in letter form)***