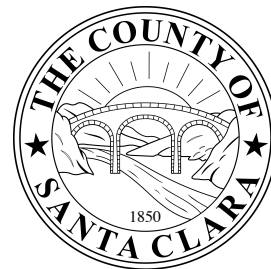


County of Santa Clara

Department of Planning and Development

County Government Center, East Wing
70 West Hedding Street, 7th Floor
San Jose, California 95110



CLEAN WATER QUESTIONNAIRE

Which Projects Must Comply with Stormwater Requirements? (READ THIS FIRST)

All projects that create and/or replace **10,000 sq. ft.** or more of impervious surface on the project site must fill out this worksheet and submit it with the development project application.

All restaurants, auto service facilities, retail gasoline outlets, and uncovered parking lot projects (stand-alone or part of another development project, including the top uncovered portion of parking structures) that create and/or replace **5,000 sq. ft.** or more of impervious surface on the project site must also fill out this worksheet.

Interior remodeling projects, routine maintenance or repair projects such as re-roofing and re-paving, and single family homes that are not part of a larger plan of development are **NOT** required to complete this worksheet.

What is an Impervious Surface?

An impervious surface is a surface covering or pavement that prevents the land's natural ability to absorb and infiltrate rainfall/stormwater. Impervious surfaces include, but are not limited to rooftops, walkways, paved patios, driveways, parking lots, storage areas, impervious concrete and asphalt, and any other continuous watertight pavement or covering. Pervious pavement, underlain with pervious soil or pervious storage material (e.g., drain rock), that infiltrates rainfall at a rate equal to or greater than surrounding unpaved areas OR that stores and infiltrates the water quality design volume specified in Provision C.3.d of the Municipal Regional Stormwater Permit (MRP), is not considered an impervious surface.

For More Information

For more information regarding selection of Best Management Practices for stormwater pollution prevention or stormwater treatment contact: **Clara Spaulding (408) 299-5737 or clara.spaulding@pln.sccgov.org**

1. Project Information

Project Name: _____ **APN #** _____

Project Address: _____

Cross Streets: _____

Applicant/Developer Name: _____

Project Phase(s): _____ **of** _____ **Engineer:** _____

Project Type (Check all that apply): ☐ New Development ☐ Redevelopment

☐ Residential ☐ Commercial ☐ Industrial ☐ Mixed Use ☐ Public ☐ Institutional

☐ Restaurant ☐ Uncovered Parking ☐ Retail Gas Outlet ☐ Auto Service (SIC code) _____
(5013-5014, 5541, 7532-7534, 7536-7539)

☐ Other _____

Project Description: _____

Project Watershed/Receiving Water (creek, river or bay): _____

2. Project Size

a. Total Site Area: _____ acre	b. Total Site Area Disturbed: _____ acre (including clearing, grading, or excavating)			
	Existing Area (ft²)	Proposed Area (ft²)		Total Post-Project Area (ft²)
		Replaced	New	
Impervious Area				
Roof				
Parking				
Sidewalks and Streets				
c. Total Impervious Area				
d. Total new and replaced impervious area				
Pervious Area				
Landscaping				
Pervious Paving				
Other (e.g. Green Roof)				
e. Total Pervious Area				
f. Percent Replacement of Impervious Area in Redevelopment Projects (Replaced Total Impervious Area ÷ Existing Total Impervious Area) x 100% = _____ %				

3. State Construction General Permit Applicability:

a. Is #2.b. equal to 1 acre or more?

- ☐ Yes, applicant must obtain coverage under the State Construction General Permit (i.e., file a Notice of Intent and prepare a Stormwater Pollution Prevention Plan) (see www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml for details).
- ☐ No, applicant does not need coverage under the State Construction General Permit.

4. MRP Provision C.3 Applicability:

a. Is #2.d. equal to **10,000** sq. ft. or more, or **5,000** sq. ft. or more for restaurants, auto service facilities, retail gas outlets, and uncovered parking?

- ☐ Yes, C.3. source control, site design and treatment requirements apply
- ☐ No, C.3. source control and site design requirements may apply – check with local agency

b. Is #2.f. equal to 50% or more?

- ☐ Yes, C.3. requirements (site design and source control, as appropriate, and stormwater treatment) apply to entire site
- ☐ No, C.3. requirements only apply to impervious area created and/or replaced

5. Hydromodification Management (HM) Applicability:

a. Does project create and/or replace one acre or more of impervious surface AND is the total post-project impervious area greater than the pre-project (existing) impervious area?

- ☐ Yes (continue) ☐ No – exempt from HM, go to page 3

b. Is the project located in an area of HM applicability (green area) on the HM Applicability Map? (www.scvurppp-w2k.com/hmp_maps.htm)

- ☐ Yes, project must implement HM requirements
- ☐ No, project is exempt from HM requirements

6. Selection of Specific Stormwater Control Measures:

Site Design Measures

- ☐ Minimize land disturbed
- ☐ Minimize impervious surfaces
- ☐ Minimum-impact street or parking lot design
- ☐ Cluster structures/pavement
- ☐ Disconnected downspouts
- ☐ Pervious pavement
- ☐ Green roof
- ☐ Microdetention in landscape
- ☐ Other self-treating area
- ☐ Self-retaining area
- ☐ Rainwater harvesting and use (e.g., rain barrel, cistern connected to roof drains)¹
- ☐ Preserved open space: _____ ac. or sq. ft.
(circle one)
- ☐ Protected riparian and wetland areas/buffers (Setback from top of bank: _____ ft.)
- ☐ Other _____

Source Control Measures

- ☐ Alternative building materials
- ☐ Wash area/racks, drain to sanitary sewer²
- ☐ Covered dumpster area, drain to sanitary sewer²
- ☐ Sanitary sewer connection or accessible cleanout for swimming pool/spa/fountain²
- ☐ Beneficial landscaping (minimize irrigation, runoff, pesticides and fertilizers; promotes treatment)
- ☐ Outdoor material storage protection
- ☐ Covers, drains for loading docks, maintenance bays, fueling areas
- ☐ Maintenance (pavement sweeping, catch basin cleaning, good housekeeping)
- ☐ Storm drain labeling
- ☐ Other _____

Treatment Systems

- ☐ None (all impervious surface drains to self-retaining areas)

LID Treatment

- ☐ Rainwater harvest and use (e.g., cistern or rain barrel sized for C.3.d treatment)
- ☐ Infiltration basin
- ☐ Infiltration trench
- ☐ Exfiltration trench
- ☐ Underground detention and infiltration system (e.g. pervious pavement drain rock, large diameter conduit)

Biotreatment³

- ☐ Bioretention area
- ☐ Flow-through planter
- ☐ Tree box with bioretention soils
- ☐ Other _____

Other Treatment Methods

- ☐ Proprietary tree box filter⁴
- ☐ Media filter (sand, compost, or proprietary media)⁴
- ☐ Vegetated filter strip⁵
- ☐ Dry detention basin⁵
- ☐ Other _____

Flow Duration Controls for Hydromodification Management (HM)

- ☐ Detention basin
- ☐ Underground tank or vault
- ☐ Bioretention with outlet control
- ☐ Other _____

¹ Optional site design measure; does not have to be sized to comply with Provision C.3.d treatment requirements.

² Subject to sanitary sewer authority requirements.

³ Biotreatment measures are allowed only with completed feasibility analysis showing that infiltration and rainwater harvest and use are infeasible. Fill out Forms 1, 2 and 3 to determine feasibility, as applicable.

⁴ These treatment measures are only allowed if the project qualifies as a "Special Project".

⁵ These treatment measures are only allowed as part of a multi-step treatment process.

7. Treatment System Sizing for Projects with Treatment Requirements

Indicate the hydraulic sizing criteria used and provide the calculated design flow or volume:

Treatment System Component	Hydraulic Sizing Criteria Used ³	Design Flow or Volume (cfs or cu.ft.)

³Key: 1a: Volume – WEF Method
1b: Volume – CASQA BMP Handbook Method
2a: Flow – Factored Flood Flow Method
2b: Flow – CASQA BMP Handbook Method
2c: Flow – Uniform Intensity Method
3: Combination Flow and Volume Design Basis

8. Operation & Maintenance Information

- A. Property Owner's Name _____
- B. Responsible Party for Stormwater Treatment/Hydromodification Control O&M:
- a. Name: _____
- b. Address: _____
- c. Phone/E-mail: _____

DEPT. OF PLANNING AND DEVELOPMENT, LDE STAFF USE ONLY

Questionnaire reviewed:

LDE: _____
Date

Project Watershed

- ☐ San Francisco Bay
☐ Monterey Bay

Project Category (check one):

- ☐ Regulate project
☐ Regulated + HMP project
☐ Exempt

O&M Responsibility Mechanism

- ☐ O&M Agreement
☐ Other mechanism that assigns responsibility (describe below): _____

Send copy of Form to: Clean Water Program

Form 1: Infiltration/Harvesting and Use Feasibility Screening Worksheet

Apply these screening criteria for **C.3 Regulated Projects*** required to implement Provision C.3 stormwater treatment requirements. See the Glossary (Attachment 1) for definitions of terms marked with an asterisk (*). Contact Land Development Engineering staff to determine whether the project meets **Special Project*** criteria. If the project meets Special Project criteria, it may receive LID treatment reduction credits.

1. Applicant Info

Site Address: _____ APN: _____

Applicant Name: _____ Phone No.: _____

Mailing Address: _____

2. Feasibility Screening for Infiltration

Do site soils either (a) have a **saturated hydraulic conductivity*** (Ksat) that will NOT allow infiltration of 80% of the annual runoff (that is, the Ksat is LESS than 1.6 inches/hour), or, if the Ksat rate is not available, (b) consist of Type C or D soils?¹

☐ Yes (do not fill out Form 2)

☐ No – complete the Form 2. If infiltration of the C.3.d amount of runoff is found to be feasible, there is no need to complete the rest of this screening worksheet.

3. Recycled Water Use

Check the box if the project is installing and using a recycled water plumbing system for non-potable water use.

☐ The project is installing a recycled water plumbing system, and installation of a second non-potable water system for harvested rainwater is impractical, and considered infeasible due to cost considerations. Skip to Section 6.

4. Calculate the Potential Rainwater Capture Area* for Screening of Harvesting and Use

Complete this section for the entire project area. If rainwater harvesting and use is infeasible for the entire site, and the project includes one or more buildings that each have an individual roof area of 10,000 sq. ft. or more, then complete Sections 4 and 5 of this form for each of these buildings.

4.1 Table 1 for (check one): ☐ The whole project ☐ Area of 1 building roof (10,000 sq.ft. min.)

Table 1: Calculation of the Potential Rainwater Capture Area*				
The Potential Rainwater Capture Area may consist of either the entire project area or one building with a roof area of 10,000 sq. ft. or more.				
	1	2	3	4
	Pre-Project Impervious surface ² (sq.ft.), if applicable	Proposed Impervious Surface ² (IS), in sq. ft.		Post-project landscaping (sq.ft.), if applicable
		Replaced ³ IS	Created ⁴ IS	
a. Enter the totals for the area to be evaluated:				
b. Sum of replaced and created impervious surface:	N/A			N/A
c. Area of existing impervious surface that will NOT be replaced by the project.		N/A		N/A

¹ Base this response on the site-specific soil report, if available. If this is not available, consult soil hydraulic conductivity maps in Attachment 3.

² Enter the total of all impervious surfaces, including the building footprint, driveway(s), patio(s), impervious deck(s), unroofed porch(es), uncovered parking lot (including top deck of parking structure), impervious trails, miscellaneous paving or structures, and off-lot impervious surface (new, contiguous impervious surface created from road projects, including sidewalks and/or bike lanes built as part of new street). Impervious surfaces do NOT include vegetated roofs or pervious pavement that stores and infiltrates rainfall at a rate equal to immediately surrounding, unpaved landscaped areas, or that stores and infiltrates the **C.3.d amount of runoff***.

³ "Replaced" means that the project will install impervious surface where existing impervious surface is removed.

⁴ "Created" means the project will install new impervious surface where there is currently no impervious surface.

* For definitions, see Glossary (Attachment 1).

- 4.2 Answer this question ONLY if you are completing this section for the entire project area. If existing impervious surface will be replaced by the project, does the area to be replaced equal 50% or more of the existing area of impervious surface? (Refer to Table 1, Row "a". Is the area in Column 2 > 50% of Column 1?)

- ☐ Yes, C.3. stormwater treatment requirements apply to areas of impervious surface that will remain in place as well as the area created and/or replaced. This is known as the 50% rule.
- ☐ No, C.3. requirements apply only to the impervious area created and/or replaced.

- 4.3 Enter the square footage of the **Potential Rainwater Capture Area***. If you are evaluating only the roof area of a building, or you answered "no" to Question 4.2, this amount is from Row "b" in Table 1. If you answered "yes" to Question 4.2, this amount is the sum of Rows "b" and "c" in Table 1.:

_____ square feet.

- 4.4 Convert the measurement of the **Potential Rainwater Capture Area*** from square feet to acres (divide the amount in Item 4.3 by 43,560):

_____ acres.

5. Feasibility Screening for Rainwater Harvesting and Use

- 5.1 Use of harvested rainwater for landscape irrigation:

Is the onsite landscaping LESS than 2.5 times the size of the **Potential Rainwater Capture Area*** (Item 4.3)?
(Note that the landscape area(s) would have to be contiguous and within the same Drainage Management Area to use harvested rainwater for irrigation via gravity flow.)

- ☐ Yes (do not fill out Form 3) ☐ No – Direct runoff from impervious areas to **self-retaining areas***
OR refer to Table 11 and the curves in Appendix F of the LID Feasibility Report to evaluate feasibility of harvesting and using the C.3.d amount of runoff for irrigation.

- 5.2 Use of harvested rainwater for toilet flushing or non-potable industrial use:

- a. Residential Projects: Proposed number of dwelling units: _____
Calculate the dwelling units per impervious acre by dividing the number of dwelling units by the acres of the **Potential Rainwater Capture Area*** in Item 4.4. Enter the result here:

_____)

Is the number of dwelling units per impervious acre LESS than 100 (assuming 2.7 occupants/unit)?

- ☐ Yes (do not fill out Form 3) ☐ No – complete Form 3

- b. Commercial/Industrial Projects: Proposed interior floor area: _____ (sq. ft.)

Calculate the proposed interior floor area (sq.ft.) per acre of impervious surface by *dividing the interior floor area (sq.ft.) by the acres of the **Potential Rainwater Capture Area*** in Item 4.4. Enter the result here:*

Is the square footage of the interior floor space per impervious acre LESS than 70,000 sq. ft.?

- ☐ Yes (do not fill out Form 3) ☐ No – complete the Form 3

- c. School Projects: Proposed interior floor area: _____ (sq. ft.)

Calculate the proposed interior floor area per acre of impervious surface by *dividing the interior floor area (sq.ft.) by the acres of the **Potential Rainwater Capture Area*** in Item 4.4. Enter the result here:*

Is the square footage of the interior floor space per impervious acre LESS than 21,000 sq. ft.?

- ☐ Yes (do not fill out Form 3)) ☐ No – complete Form 3

* For definitions, see Glossary (Attachment 1).

d. Mixed Commercial and Residential Use Projects

- Evaluate the residential toilet flushing demand based on the dwelling units per impervious acre for the residential portion of the project, following the instructions in Item 5.2.a, except you will use a prorated acreage of impervious surface, based on the percentage of the project dedicated to residential use.
- Evaluate the commercial toilet flushing demand per impervious acre for the commercial portion of the project, following the instructions in Item 5.2.a, except you will use a prorated acreage of impervious surface, based on the percentage of the project dedicated to commercial use.

e. Industrial Projects: Estimated non-potable water demand (gal/day): _____

Is the non-potable demand LESS than 2,400 gal/day per acre of the Potential Rainwater Capture Area?

- ☐ Yes (do not fill out Form 3)) ☐ No – refer to the curves in Appendix F of the LID Feasibility Report to evaluate feasibility of harvesting and using the C.3.d amount of runoff for industrial use.

6. Use of Biotreatment

If only the “Yes” boxes were checked for all questions in Sections 2 and 5, or the project will have a recycled water system for non-potable use (Section 3), then the applicant may use appropriately designed bioretention facilities for compliance with C.3 treatment requirements. The applicant is encouraged to maximize infiltration of stormwater if site conditions allow.

7. Results of Screening Analysis

Based on this screening analysis, the following steps will be taken for the project (check all that apply):

- ☐ Implement biotreatment measures (such as an appropriately designed bioretention area).
- ☐ Conduct further analysis of infiltration feasibility by completing the Infiltration Feasibility Worksheet.
- ☐ Conduct further analysis of rainwater harvesting and use (check one):
 - ☐ Complete the Rainwater Harvesting and Use Feasibility Worksheet for:
 - ☐ The entire project
 - ☐ Individual building(s), if applicable, describe: _____
 - ☐ Evaluate the feasibility of harvesting and using the C.3.d amount of runoff for irrigation, based on Table 11 and the curves in Appendix F of the LID Feasibility Report
 - ☐ Evaluate the feasibility of harvesting and using the C.3.d amount of runoff for non-potable industrial use, based on the curves in Appendix F of the LID Feasibility Report.

* For definitions, see Glossary (Attachment 1).

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Form 2: Infiltration Feasibility Worksheet

Complete this worksheet for **C.3 Regulated Projects*** for which the soil hydraulic conductivity (Ksat) exceeds 1.6. Use this checklist to determine the feasibility of treating the **C.3.d amount of runoff*** with infiltration. Where it is infeasible to treat the C.3.d amount of runoff* with infiltration or rainwater harvesting and use, stormwater may be treated with **biotreatment*** measures. See Glossary (Attachment 1) for definitions of terms marked with an asterisk (*).

1. Enter Project Data.

- 1.1 Project Name: _____
- 1.2 Project Address: _____
- 1.3 Applicant/Agent Name: _____
- 1.4 Applicant/Agent Address: _____
- 1.5 Applicant/Agent Email: _____ Applicant / Agent Phone: _____

2. Evaluate infiltration feasibility.

Check "Yes" or "No" to indicate whether the following conditions apply to the project. If "Yes" is checked for any question, then infiltration is infeasible, and you can continue to Item 3.1 without answering any further questions in Section 2. If all of the answers in Section 2 are "No," then infiltration is feasible, and you may design **infiltration facilities*** for the area from which runoff must be treated. Items 2.1 through 2.3 address the feasibility of using **infiltration facilities***, as well as the potential need to line bioretention areas.

- | | Yes | No |
|--|--------------------------|--------------------------|
| 2.1 Would infiltration facilities at this site conflict with the location of existing or proposed underground utilities or easements, or would the siting of infiltration facilities at this site result in their placement on top of underground utilities, or otherwise oriented to underground utilities, such that they would discharge to the utility trench, restrict access, or cause stability concerns? (If yes, attach evidence documenting this condition.) | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.2 Is there a documented concern that there is a potential on the site for soil or groundwater pollutants to be mobilized? (If yes, attach documentation of mobilization concerns.) | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.3 Are geotechnical hazards present, such as steep slopes, areas with landslide potential, soils subject to liquefaction, or would an infiltration facility need to be built less than 10 feet from a building foundation or other improvements subject to undermining by saturated soils? (If yes, attach documentation of geotechnical hazard.) | <input type="checkbox"/> | <input type="checkbox"/> |

Respond to Questions 2.4 through 2.8 only if the project proposes to use an **infiltration device***.

- | | | |
|---|--------------------------|--------------------------|
| 2.4 Do local water district or other agency's policies or guidelines regarding the locations where infiltration may occur, the separation from seasonal high groundwater, or setbacks from potential sources of pollution prevent infiltration devices from being implemented at this site? (If yes, attach evidence documenting this condition.) | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.5 Would construction of an infiltration device require that it be located less than 100 feet away from a septic tank, underground storage tank with hazardous materials, or other potential underground source of pollution? (If yes, attach evidence documenting this claim.) | <input type="checkbox"/> | <input type="checkbox"/> |

Infiltration Feasibility Worksheet

	Yes	No
2.6		
Is there a seasonal high groundwater table or mounded groundwater that would be within 10 feet of the base of an infiltration device* constructed on the site? (If yes, attach documentation of high groundwater.)	<input type="checkbox"/>	<input type="checkbox"/>
2.7		
Are there land uses that pose a high threat to water quality – including but not limited to industrial and light industrial activities, high vehicular traffic (i.e., 25,000 or greater average daily traffic on a main roadway or 15,000 or more average daily traffic on any intersecting roadway), automotive repair shops, car washes, fleet storage areas, or nurseries? (If yes, attach evidence documenting this claim.)	<input type="checkbox"/>	<input type="checkbox"/>
2.8		
Is there a groundwater production well within 100 feet of the location where an infiltration device would be constructed? (If yes, attach map showing the well.)	<input type="checkbox"/>	<input type="checkbox"/>

3. Results of Feasibility Determination

	Infeasible	Feasible
3.1 Based on the results of the Section 2 feasibility analysis, infiltration is (check one):	<input type="checkbox"/>	<input type="checkbox"/>

→ If "FEASIBLE" is indicated for Item 3.1, then the amount of stormwater requiring treatment must be treated with infiltration (or rainwater harvest and use, if feasible). **Infiltration facilities*** may be designed for the area from which runoff must be treated.

→ If "INFEASIBLE" is checked for item 3.1, then the applicant may use appropriately designed **biotreatment facilities*** for compliance with C.3 treatment requirements. The applicant is encouraged to maximize infiltration of stormwater if site conditions allow.

Name of Applicant (Print)

Name of Applicant (Sign)

Date

Form 3: Rainwater Harvesting and Use Feasibility Worksheet

Complete this worksheet for all **C.3 Regulated Projects*** for which the project density exceeds the **screening density*** provided by municipal staff. Use this worksheet to determine the feasibility of treating the **C.3.d amount of runoff*** with rainwater harvesting and use for indoor, non-potable water uses. Where it is infeasible to treat the C.3d amount of runoff with either harvesting and use or infiltration, stormwater may be treated with **biotreatment*** measures. See Glossary (Attachment 1) for definitions of terms marked with an asterisk (*).

Complete this worksheet for the entire project area. If the project includes one or more buildings that each individually has a roof area of 10,000 square feet or more, complete a separate copy of this form for each of these buildings.

1. Enter Project Data.

- 1.1 Project Name: _____
- 1.2 Project Address: _____
- 1.3 Applicant/Agent Name: _____
- 1.4 Applicant/Agent Address: _____

(For projects with a potential non-potable water use other than toilet flushing, skip to Question 5.1)

- 1.5 Project Type: _____ If residential or mixed use, enter # of dwelling units: _____
- 1.6 Enter square footage of non-residential interior floor area.: _____
- 1.7 Potential rainwater capture area*: _____ sq.ft.
- 1.8 If it is a **Special Project***, indicate the percentage of **LID treatment*** reduction: _____ percent
(Item 1.8 applies only to entire project evaluations, not individual roof area evaluations.)
- 1.9 Total potential rainwater capture area that will require LID treatment: _____ sq.ft.
(This is the total rain capture area remaining after any Special Project LID treatment reduction is applied.)

2. Calculate Area of Self-Treating Areas, Self-Retaining Areas, and Areas Contributing to Self-Retaining Areas.

(For areas within the Potential Rain Capture Area only)

- 2.1 Enter square footage of any **self-treating areas*** in the area that is being evaluated: _____ sq.ft.
- 2.2 Enter square footage of any **self-retaining areas*** in the area that is being evaluated: _____ sq.ft.
- 2.3 Enter the square footage of areas contributing runoff to **self-retaining area***: _____ sq.ft.
- 2.4 TOTAL of Items 2.1, 2.2, and 2.3: _____ sq.ft.

3. Subtract credit for self-treating/self-retaining areas from area requiring treatment.

- 3.1 Subtract the TOTAL in Item 2.4 from the potential rainwater capture area in Item 1.9: _____ sq.ft.
- 3.2 Convert the remaining area required for treatment in Item 3.1 from square feet to acres: _____ acres

4. Determine feasibility of use for toilet flushing based on demand

- 4.1 Project's dwelling units per acre of adjusted potential rain capture area (Divide the number in 1.5 by the number in 3.2) _____ dwelling units/acre
- 4.2 Non-residential interior floor area per acre of adjusted potential rain capture area (Divide the number in 1.6 by the number in 3.2) _____ Int. non-res. floor area/acre

Note: formulas in Items 4.1 and 4.2 are set up, respectively, for a residential or a non-residential project. Do not use these pre-set formulas for mixed use projects. For mixed use projects, evaluate the residential toilet flushing demand based on the dwelling units per acre for the residential portion of the project (use a prorated acreage, based on the percentage of the project dedicated to residential use). Then evaluate the commercial toilet flushing demand per acre for the commercial portion of the project (use a prorated acreage, based on the percentage of the project dedicated to commercial use).

Rainwater Harvesting and Use Feasibility Worksheet

- 4.3

Refer to the applicable countywide table in Attachment 2. Identify the number of dwelling units per impervious acre needed in your Rain Gauge Area to provide the toilet flushing demand required for rainwater harvest feasibility.

dwelling
units/acre
- 4.4

Refer to the applicable countywide table in Attachment 2. Identify the square feet of non-residential interior floor area per impervious acre needed in your Rain Gauge Area to provide the toilet flushing demand required for rainwater harvest feasibility.

int. non-res.
floor
area/acre

Check "Yes" or "No" to indicate whether the following conditions apply. If "Yes" is checked for any question, then rainwater harvesting and use is infeasible. As soon as you answer "Yes", you can skip to Item 6.1. If "No" is checked for all items, then rainwater harvesting and use is feasible and you must harvest and use the C.3.d amount of stormwater, unless you infiltrate the C.3.d amount of stormwater*.

- 4.5

Is the project's number of dwelling units per acre of adjusted area requiring treatment (listed in Item 4.1) LESS than the number identified in Item 4.3?

☐ Yes

☐ No
- 4.6

Is the project's square footage of non-residential interior floor area per acre of adjusted area requiring treatment (listed in Item 4.2) LESS than the number identified in Item 4.4?

☐ Yes

☐ No

5. Determine feasibility of rainwater harvesting and use based on factors other than demand.

- 5.1

Does the requirement for rainwater harvesting and use at the project conflict with local, state, or federal ordinances or building codes?

☐ Yes

☐ No
- 5.2

Would the technical requirements cause the harvesting system to exceed 2% of the Total Project Cost, or has the applicant documented economic hardship in relation to maintenance costs? (If so, attach an explanation.)

☐ Yes

☐ No
- 5.3

Do constraints, such as a slope above 10% or lack of available space at the site, make it infeasible to locate on the site a cistern of adequate size to harvest and use the C.3.d amount of water? (If so, attach an explanation.)

☐ Yes

☐ No
- 5.4

Are there geotechnical/stability concerns related to the surface (roof or ground) where a cistern would be located that make the use of rainwater harvesting infeasible? (If so, attach an explanation.)

☐ Yes

☐ No
- 5.5

Does the location of utilities, a septic system and/or **heritage trees*** limit the placement of a cistern on the site to the extent that rainwater harvesting is infeasible? (If so, attach an explanation.)

☐ Yes

☐ No

Note 1: It is assumed that projects with significant amounts of landscaping will either treat runoff with landscape dispersal (self-treating and self-retaining areas) or will evaluate the feasibility of harvesting and using rainwater for irrigation using the curves in Appendix F of the LID Feasibility Report.

6. Results of Feasibility Determination

- 6.1

Based on the results of the feasibility analysis in Item 4.4 and Section 5, rainwater harvesting/use is (check one):

Infeasible

☐

Feasible

☐

→ If "FEASIBLE" is indicated for Item 6.1 the amount of stormwater requiring treatment must be treated with harvesting/use, unless it is infiltrated into the soil.

→ If "INFEASIBLE" is checked for Item 6.1, then the applicant may use appropriately designed **bioretention***¹ facilities for compliance with C.3 treatment requirements. If Ksat > 1.6 in./hr., and infiltration is unimpeded by subsurface conditions, then the bioretention facilities are predicted to infiltrate 80% or more average annual runoff. If Ksat < 1.6, maximize infiltration of stormwater by using bioretention if site conditions allow, and remaining runoff will be discharged to storm drains via facility underdrains. If site conditions preclude infiltration, a lined bioretention area or flow-through planter may be used.

Applicant (Print)

Applicant (Sign)

Date

LID Feasibility Worksheet
Attachment 2: Toilet-Flushing Demand for Harvested Rainwater¹ Required for Rainwater Harvesting Feasibility per Impervious Acre (IA)²

Table 1 - Alameda County:

Rain Gauge ³	Required Demand (gal/day/IA) ⁴	Residential		Office/Retail ⁵		Schools ⁶	
		No. of residents per IA ⁷	Dwelling Units per IA ⁸	Employees per IA ⁹	Interior Floor Area (sq.ft./IA) ¹⁰	Employees ¹¹ per IA	Interior Floor Area (sq.ft./IA) ¹²
Berkeley	5,900	690	255	860	172,000	170	51,000
Dublin	4,100	480	177	590	118,000	120	36,000
Hayward	4,800	560	207	700	140,000	140	42,000
Palo Alto	2,900	340	125	420	84,000	90	27,000
San Jose	2,400	280	103	350	70,000	70	21,000

Table 2 - Santa Clara County:

Rain Gauge ³	Required Demand (gal/day/IA) ⁴	Residential		Office/Retail ⁵		Schools ⁶	
		No. of residents per IA ⁷	Dwelling Units per IA ⁸	Employees per IA ⁹	Interior Floor Area (sq.ft./IA) ¹⁰	Employees ¹¹ per IA	Interior Floor Area (sq.ft./IA) ¹²
Morgan Hill	6,500	760	260	940	188,000	190	57,000
Palo Alto	2,900	340	116	420	84,000	90	27,000
San Jose	2,400	280	96	350	70,000	70	21,000

Table 3 – San Mateo County:

Rain Gauge ³	Required Demand (gal/day/IA) ⁴	Residential		Office/Retail ⁵		Schools ⁶	
		No. of residents per IA ⁷	Dwelling Units per IA ⁸	Employees per IA ⁹	Interior Floor Area (sq.ft./IA) ¹⁰	Employees ¹¹ per IA	Interior Floor Area (sq.ft./IA) ¹²
Palo Alto	2,900	340	124	420	84,000	90	27,000
San Francisco	4,600	530	193	670	134,000	140	42,000
SF Oceanside	4,300	500	182	620	124,000	130	39,000

Table 4 – Contra Costa County:

Rain Gauge ³	Required Demand (gal/day/IA) ⁴	Residential		Office/Retail ⁵		Schools ⁶	
		No. of residents per IA ⁷	Dwelling Units per IA ⁸	Employees per IA ⁹	Interior Floor Area (sq.ft./IA) ¹⁰	Employees ¹¹ per IA	Interior Floor Area (sq.ft./IA) ¹²
Berkeley	5,900	690	254	860	172,000	170	51,000
Brentwood	4,200	490	180	610	122,000	120	36,000
Dublin	4,100	480	176	590	118,000	120	36,000
Martinez	5,900	690	254	860	172,000	170	51,000

Table 5 – Solano County:

Rain Gauge ³	Required Demand (gal/day/IA) ⁴	Residential		Office/Retail ⁵		Schools ⁶	
		No. of residents per IA ⁷	Dwelling Units per IA ⁸	Employees per IA ⁹	Interior Floor Area (sq.ft./IA) ¹⁰	Employees ¹¹ per IA	Interior Floor Area (sq.ft./IA) ¹²
Lake Solano	9,000	1,050	362	1,300	260,000	270	81,000
Martinez	5,900	690	238	860	172,000	170	51,000

Notes:

1. Demand thresholds obtained from the “Harvest and Use, Infiltration and Evapotranspiration Feasibility/Infeasibility Criteria Report” (LID Feasibility Report) submitted to the Regional Water Board on May 1, 2011.
2. Toilet flushing demands assume use of low flow toilets per the California Green Building Code.
3. See Attachment 3 to identify the rain gauge that corresponds to the project site.
4. Required demand per acre of impervious area to achieve 80% capture of the C.3.d runoff volume with the maximum allowable drawdown time for cistern of 50,000 gallons or less, from Table 9 of the LID Feasibility Report.
5. “Office/Retail” includes the following land uses: office or public buildings, hospitals, health care facilities, retail or wholesale stores, and congregate residences.
6. “Schools” includes day care, elementary and secondary schools, colleges, universities, and adult centers.
7. Residential toilet flushing demand identified in Table 10 of the LID Feasibility Report.
8. Residential toilet flushing demand divided by the countywide average number of persons per household (US Census data reported on www.abag.org), as follows: Alameda County: 2.71 persons per household; Santa Clara County: 2.92; San Mateo County: 2.74; Contra Costa County: 2.72; Solano County: 2.90.
9. Office/retail employee toilet flushing demand identified in Table 10 of the LID Feasibility Report.
10. Interior floor area required for rainwater harvest and use feasibility per acre of impervious area is based on the number of employees in Column 5 multiplied by an occupant load factor of 200 square feet per employee (reference: 2010 California Plumbing Code, Chapter 4, Plumbing Fixtures and Fitting Fixtures, Table A, page 62.)
11. School employee toilet flushing demand identified in Table 10 of the LID Feasibility Report. Each school employee represents 1 employee and 5 “visitors” (students and others).
12. Interior floor area required for rainwater harvest and use feasibility per acre of impervious area is based on the number of employees in Column 7 multiplied by 6 to account for visitors, then multiplied by an occupant load factor of 50 square feet per employee (reference: 2010 California Plumbing Code).

LID Feasibility Worksheet

Attachment 1: Glossary

Biotreatment

A type of low impact development treatment allowed under Provision C.3.c of the *MRP**, if infiltration, evapotranspiration and rainwater harvesting and use are infeasible. As required by Provision C.3.c.i(2)(vi), biotreatment systems shall be designed to have a surface area no smaller than what is required to accommodate a 5 inches/hour stormwater runoff surface loading rate and shall use biotreatment soil as specified in the biotreatment soil specifications submitted by the MRP co-permittees to the Regional Water Quality Control Board on May 1, 2011, or equivalent.

C.3 Regulated Projects:

Development projects as defined by Provision C.3.b.ii of the *MRP**. This includes public and private projects that create and/or replace 10,000 square feet or more of impervious surface, and restaurants, retail gasoline outlets, auto service facilities, and uncovered parking lots (stand-alone or part of another use) that create and/or replace 5,000 square feet or more of impervious surface. Single family homes that are not part of a larger plan of development are specifically excluded.

C.3.d Amount of Runoff

The amount of stormwater runoff from C.3 Regulated Projects that must receive stormwater treatment, as described by hydraulic sizing criteria in Provision C.3.d of the *MRP**.

Heritage Tree

An individual tree of any size or species given the 'heritage tree' designation as defined by the municipality's tree ordinance or other section of the municipal code.

Infiltration Devices

Infiltration facilities that are deeper than they are wide and designed to infiltrate stormwater runoff into the subsurface and, as designed, bypass the natural groundwater protection afforded by surface soil. These devices include dry wells, injection wells and infiltration trenches (includes French drains).

Infiltration Facilities

A term that refers to both infiltration devices and measures.

Infiltration Measures

Infiltration facilities that are wider than they are deep (e.g., bioinfiltration, infiltration basins and shallow wide infiltration trenches and dry wells).

Low Impact Development (LID) Treatment

Removal of pollutants from stormwater runoff using the following types of stormwater treatment measures: rainwater harvesting and use, infiltration, evapotranspiration, or, where these are infeasible, biotreatment.

Municipal Regional Stormwater Permit (MRP)

The municipal stormwater NPDES permit under which discharges are permitted from municipal separate storm sewer systems throughout the NPDES Phase I jurisdictions within the San Francisco Bay Region.

Potential Rainwater Capture Area

The impervious area from which rainwater may be potentially be captured, if rainwater harvesting and use were implemented for a project. If the entire site is evaluated for rainwater harvesting and use feasibility, this consists of the impervious area of the proposed project; for redevelopment projects that replace 50% or more of the existing impervious surface, it also includes the areas of existing impervious surface that are not modified by the project. If only a roof area or designated impervious area is evaluated for rainwater harvesting and use feasibility, the potential rainwater capture area consists only of the applicable impervious area.

Screening Density

A threshold of density (e.g., number of units or interior floor area) per acre of impervious surface, associated with a certain potential demand for non-potable water, for C.3 regulated projects. The screening density varies by municipality, according to location (see Attachment 2.) If the screening density is met or exceeded, the Rainwater Harvesting and Use Feasibility Worksheet must be completed for the project.

Self-Retaining Area

A portion of a development site designed to retain the first one inch of rainfall (by ponding and infiltration and/or evapotranspiration) without producing stormwater runoff. Self-retaining areas must have at least a 2:1 ratio of contributing area to a self-retaining area and a 3" ponding depth. Self-retaining areas may include graded depressions with landscaping or pervious pavement.

Areas that Contribute Runoff to Self-Retaining Areas are impervious or partially pervious areas that drain to self-retaining areas.

Self-Treating Area

A portion of a development site in which infiltration, evapotranspiration and other natural processes remove pollutants from stormwater. Self-treating areas may include conserved natural open areas, areas of landscaping, green roofs and pervious pavement. Self-treating areas treat only the rain falling on them and do not receive stormwater runoff from other areas.

Special Projects

Certain types of smart growth, high density and transit oriented development projects that are allowed, under Provision C.3.e.ii of the MRP, to receive LID treatment reductions. The specific development project types will be described in an amendment to the MRP, anticipated in Fall 2011.

Total Project Cost

Total project cost includes the construction (labor) and materials cost of the physical improvements proposed; however, it does not include land, transactions, financing, permitting, demolition, or off-site mitigation costs.