



THE CITY OF SUNNYVALE
STORM WATER QUALITY
BMP GUIDANCE MANUAL
FOR NEW AND REDEVELOPMENT PROJECTS

January 2007

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Abbreviations and Glossary

Abbreviations

BASMAA – Bay Area Storm Water Management Agencies Association
BMP – Best Management Practices
CASQA – California Storm Water Quality Association`
COA – Conditions of Approval
HMP – Hydromodification Management Plan
MEP – Maximum Extent Practicable
NOI- Notice of Intent
RWQCB – Regional Water Quality Control Board
SCVURPPP – Santa Clara Valley Urban Runoff Pollution Prevention Program
SCVWD – Santa Clara Valley Water District
SMC – Sunnyvale Municipal Code
SWMP – Storm Water Management Plan
SWPPP – Storm Water Pollution Prevention Plan
SWRCB – State Water Resources Control Board

Glossary

Below are selected items from the Sunnyvale Municipal Code (SMC) Section 12.60.040. Definitions are found below.

Best Management Practices (BMP) - means a structural device, measure facility or activity that helps to achieve storm water management control objectives at a designated site.

Construction BMP – Temporary source control (e.g. cover soil stockpiles) and/or treatment control (e.g. silt fence, temporary detention basin) BMPs intended to minimize pollutants from storm water **during** project construction.

Discharge - when used as a verb, means to allow pollutants to directly or indirectly enter storm water, or to allow storm water or non-storm water to directly or indirectly enter the storm drain system from an activity or operation. When used as a noun, "discharge" means the pollutants, storm water and/or non-storm water that are discharged.

Drainage area – An area, as defined by the highest topography of a site, where all precipitation falling within the area will flow to a single common point.

Drainage sub-area – A smaller portion of the drainage area.

Hydromodification Management Plan (HMP) – The Santa Clara Basin-wide plan prepared by SCVURPPP from which key provisions were adopted into the City's NPDES Storm Water Permit. The HMP requires projects that add or replace one acre of impervious area and are



located in specific areas of sub-watersheds that discharge to natural streams must be designed so that volumes and durations of post-construction storm water discharges are equal to pre-project discharges.

Impervious surface - means constructed or modified surface that cannot effectively infiltrate rainfall. Impervious surface includes but is not limited to building rooftops, pavement, sidewalks, and driveways where such surfaces are not constructed with pervious materials. "Impervious surface area" means the ground area covered or sheltered by an impervious surface, measured as if from directly above.

Infiltration - means the process of percolating storm water or non-storm water into the subsoil.

Infiltration device – is defined as any structure that is designed to infiltrate storm water into the subsurface and as designed, bypasses the natural groundwater protection afforded by surface or near surface soil. Infiltration devices that do not meet the design criteria in the SCVURPPP guidelines for Infiltration Devices (9-11-03 draft, copy included in Appendix D) should be reviewed and approved by the Santa Clara Valley Water District before City building permits are approved.

Non-storm water discharges – Non storm water discharges are those flows that do not consist entirely of storm water. Non-storm water discharges without pollutants can include uncontaminated groundwater and natural springs. Non-storm water discharges that may contain low levels of pollutants can include car washing, air conditioner condensate, and hydrant flushing water. (Reference: CASQA Industrial and Commercial BMP Handbook, Fact Sheet SC-10).

Numeric sizing criteria- Hydraulic sizing design criteria to for treatment BMPs for storm water runoff. Can be either volume hydraulic design basis or flow hydraulic design basis, depending on the primary mode of action for the treatment BMP. (Reference: Provision C.3.d of Regional Water Quality Control Board, San Francisco Bay Region Order No. 01-119)

Post-Construction BMP - Permanent source control and/or treatment control BMPs intended to be in place to treat storm water and minimize pollutants discharged to the City's storm drain collection system **after** the project is constructed. If a Storm Water Management Plan is required for a site, then information as to the design, operation, and maintenance of the Post-Construction BMPs must be included in the SWMP.

Redevelopment - means land-disturbing activity that result in the creation, addition, or replacement of impervious surface area on an already developed site. Redevelopment includes, but is not limited to the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces.

Source control best management practice – means any schedule of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that aim to prevent storm water pollution by reducing the potential for contamination at the source of pollution.

Storm water - means surface runoff and drainage associated with storm events.



Storm Water Management Plan – (SWMP) is a plan identifying the measures that will be used for storm water and non-storm water management after construction is complete for any new development or significant redevelopment project subject to the requirements of SMC Chapter 12.60. The SWMP should include treatment and source control Best Management Practices (BMPs) and site design measures that will treat and control storm water coming from the site to the maximum extent practicable. It must also reflect the information presented in project plan sheets as approved by Plan Check in the Sunnyvale Building Division. SWMPs may be required for projects that add or replace 10,000 square feet or more of impervious area.

Storm Water Pollution Prevention Plan – (SWPPP) is a plan identifying the measures that will be used to manage storm water and non-storm water during the construction phase of a project. A SWPPP is required for those facilities that disturb one or more acres of land and must file a Notice of Intent (NOI) with the Regional Water Quality Control Board. A SWPPP may also be required for projects in the City that are issued a grading permit.

Treatment - means the use of designed and/or engineered systems, which use physical, chemical, or biological processes to remove pollutants. Such processes include, but are not limited to filtration, gravity settling, media absorption, biodegradation, biological uptake, chemical oxidation and ultraviolet (UV) radiation.

Treatment Best Management Practice - means any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical, biological, or chemical process.



Introduction

Overview

This City Of Sunnyvale Storm Water Quality Best Management Practices (BMP) Guidance Manual 2006 Revision for New and Redevelopment Projects, is being provided by the City of Sunnyvale (City) to guide project applicants and City staff in the preparation, review, and approval of new and redevelopment projects according to the current requirements of the City's NPDES Storm Water Discharge permit. The focus of the BMP Guidance Manual is on Post-Construction Best Management Practices (BMPs) although BMPs to be implemented during construction are also addressed. More detailed resources to address Construction BMPs are contained in Appendix A – Blueprint for a Clean Bay.

As described in the Abbreviations and Glossary Section above, BMPs include any kind of procedure or device designed to minimize the quantity of pollutants that enter the storm drain system. Procedures can include the use of site design measures early in the planning stages of a project site to incorporate BMPs in the site landscape to minimize water quality impacts. It may also include source control BMPs such as placing signage on storm drain inlets, covering trash enclosures, and implementing practices such as sweeping and spill prevention programs. Treatment BMPs include permanent devices such as grassy or vegetated swales, infiltration trenches, and detention/retention basins. A summary of BMPs and references for more detailed information on BMPs can be found in Appendix C.

Referenced Material

The majority of the information for this BMP guidance manual is derived from two sources, the California Storm Water Quality Association (CASQA) Storm Water Quality Best Management Practices Handbook (4 volumes) and the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) C.3 Storm Water Handbook. The CASQA documents can be found at www.cabmphandbooks.com and the SCVURPPP documents can be found at www.scvurppp.org. The specific information from the sources mentioned above has been customized in this Guidance Manual for the City's processes and practices, and portions of documents from these sources are found in the appendices as applicable. The Hydromodification Management Plan requirements for the Santa Clara Basin can be found at the www.scvurppp.org website.

Sunnyvale's NPDES Storm Water Discharge Permit

As of November 1990, the Federal Clean Water Act requires that all operators of municipal separate storm sewer systems obtain National Pollutant Discharge Elimination System (NPDES) permits for storm water discharge and develop storm water management plans. The purpose of these requirements is to prevent harmful pollutants from being washed by storm water runoff into the municipal storm sewer and then being discharged into local streams, creeks, and other water bodies.



The City is a member of the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), which is an association of thirteen South Bay cities and towns, the Santa Clara Valley Water District, and Santa Clara County. All members of SCVURPPP share a common NPDES permit to discharge storm water into local creeks and South San Francisco Bay. The first countywide NPDES permit was issued in 1990 and revised in 1995. The permit was again revised in February 2001, with an emphasis on watershed management, pollutant specific requirements, and continuous improvement of existing programs.

In October 2001, the permit was amended by Order No. 01-119 to include a specific provision, C.3- New and Redevelopment Performance Standard. At that time, expanded requirements related to new and significant redevelopment were beginning to be implemented in individual NPDES permits, starting in southern California. Although they varied, these new requirements generally contained some version of the following:

- Numeric design standards for sizing storm water treatment controls;
- Limits on increases in peak storm water discharges from new or redevelopment sites that may increase erosion (hydromodification) in some creeks;
- Requirements for the operation and maintenance of storm water control Best Management Practices, including storm water control or treatment devices;
- Requirements for site design and pollutant source control measures;
- Definition of a minimum project size based on the amount of impervious (e.g., paved areas or roof tops) surface created for which the design standards, source control measures, peak storm water flow limitations, and maintenance requirements apply;
- Requirements for changes to General Plans, environmental review processes, and the legal authority of a co-permittee to implement the permit requirements;
- Specific reporting requirements and a schedule for implementation of various permit provisions.

The full text of this revision of Sunnyvale's permit can be found at:
http://www.waterboards.ca.gov/Sanfranciscobay/order_nos.htm. Select Order No. 01-119.

In July, 2005, Sunnyvale's permit was modified to clarify the definition of Group 2 projects and to adopt the key parameters of the Hydromodification Management Plan that was submitted to the Regional Water Quality Control Board in May 2005. The City has amended SMC 12.60 to address these permit changes. A copy of this revised permit, No. R2-2005-0035 can be found at http://www.waterboards.ca.gov/sanfranciscobay/order_nosb2005.htm.

Authority

City staff from the Departments of Public Works, Community Development, and Office of the City Attorney have worked together to develop the best approach for implementing requirements in the Storm Water NPDES Permit, especially the C.3 provision requirements. In order to implement the NPDES permit provisions; the City needed adequate legal authority to implement control measures for new development and significant redevelopment, including all requirements of the C.3 provision. This authority was put into place through amendments to City's Municipal Code Chapter 12.60.

The Storm Water Chapter includes:



- General provisions and definitions;
- Discharge prohibitions to the storm water conveyance system;
- Requirements for storm water pollution prevention and the development of Storm Water Management Plans;
- Numeric sizing criteria for pollutant removal treatment systems;
- Applicability of Hydromodification Management Plan to certain areas of the City based on drainage area to creeks and watersheds;
- Requirements for agreements to maintain storm water treatment Best Management Practices (BMPs) once constructed;
- Guidance on the selection of BMPs as well as minimum Best Management Practices for all dischargers;
- Authority for City staff to inspect and require the proper operation and maintenance of treatment devices;
- The process by which waivers and alternative compliance with permit requirements may be demonstrated; and
- Penalties for failure to comply with provisions of the chapter.

The most recent version of SMC 12.60 may be viewed at <http://municipalcodes.lexisnexis.com/codes/sunnyvale/> or from the City's website at <http://www.sunnyvale.ca.gov/> in the Municipal Codes Section of the website.

Overview of Project Review Process

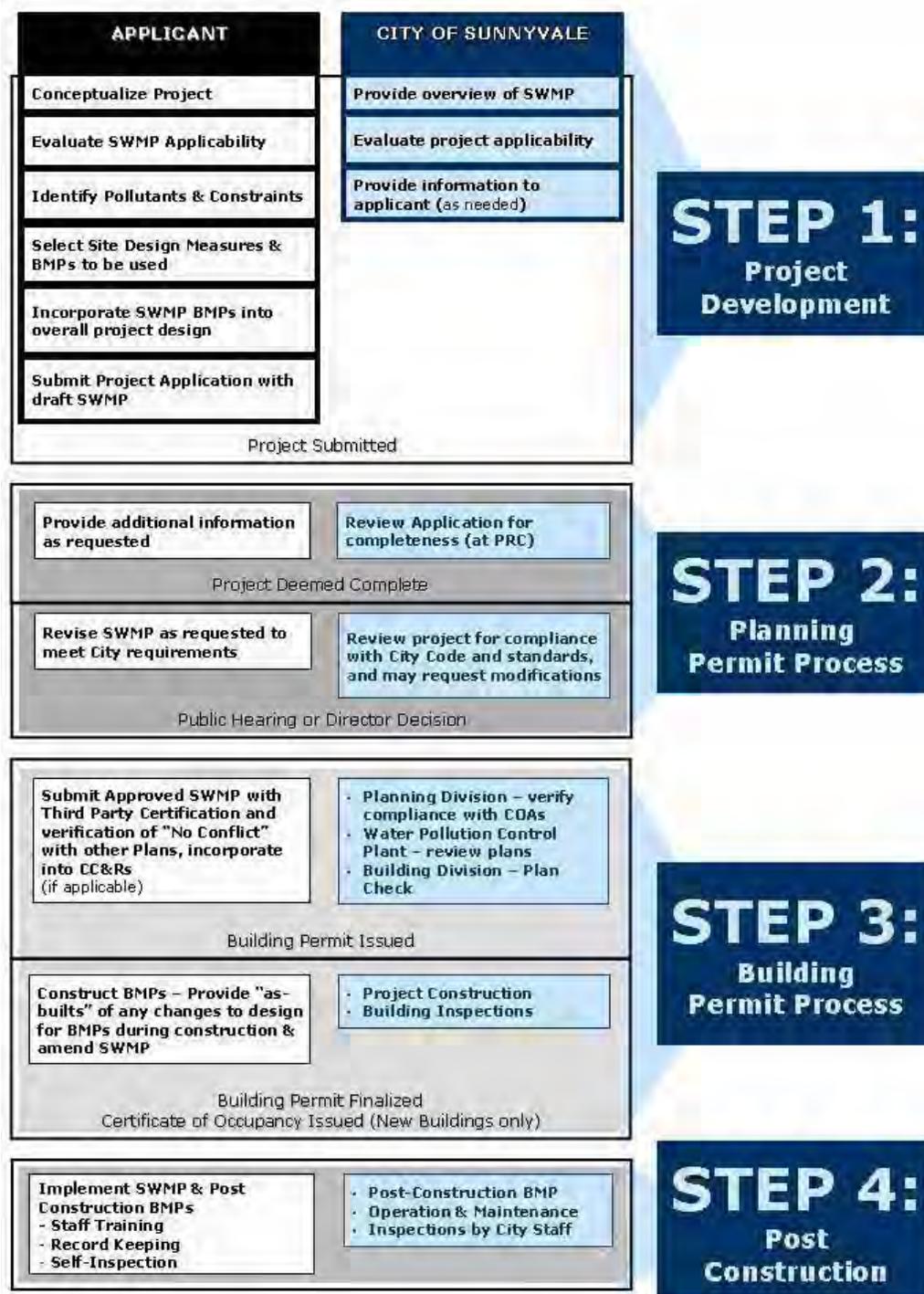
The review and approval process for projects that require Storm Water Management Plans is slightly different from the City's usual project review process. Figure 1 shows the four major steps for both the applicant and the City, including specific actions that must be completed before moving on to the next step of the project approval process. The figure shows the start of the project from its conception at the top through project plan design/review, and construction phases, to the completion of the project and implementation of post-construction requirements at the bottom.

The left side of the figure represents the steps that the applicant must take to prepare and submit appropriate documentation that describes the site design and BMP approaches that will be used in a specific Storm Water Management Plan (SWMP) for the project. A detailed description of what must be included in the SWMP is found in Appendix A. More detailed guidance to assist in the sizing of storm water treatment BMPs can be found in Appendix F, Flow-Based and Volume-Based Sizing Examples.

The center portion of the figure shows the City's review process and actions needed to reach the project milestones listed at the bottom of each step. This graphic is included to show a project applicant where their project is in the approval process.

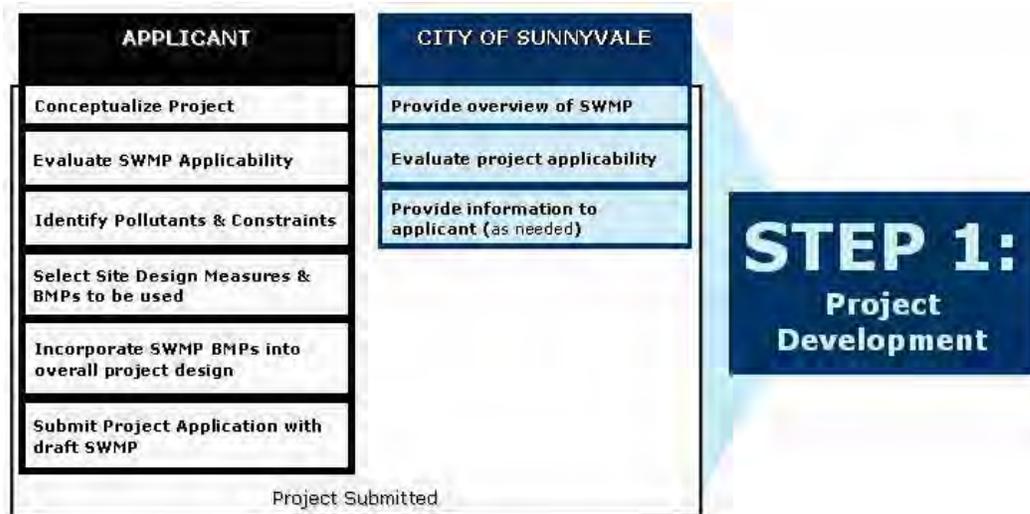


Figure 1: Steps in the Project Review Process for New and Redevelopment Projects in Sunnyvale





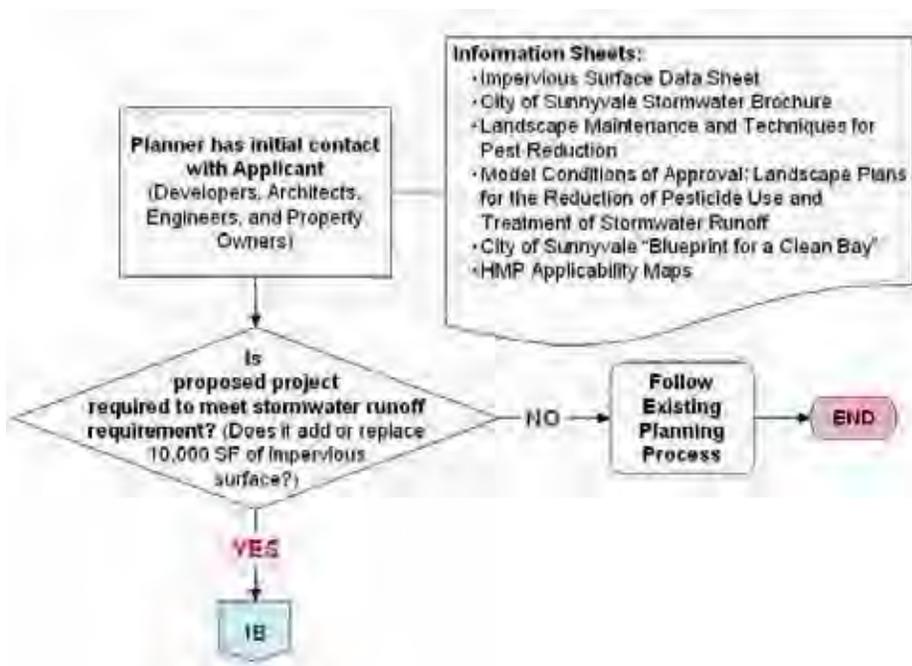
Step 1. Project Development



Step 1A: Project Concept and Applicability Evaluation

When an applicant is first developing a concept for a project, it is recommended that the applicant meet with City staff for guidance and to evaluate whether the C.3 Provisions apply to their project as shown and described below in Figure 2.

Figure 2: Project Applicability





When C.3 Provisions Are Not Applicable

Sunnyvale Municipal Code SMC 12.60.120 allows an exclusion from requirements for some projects that add or replace 10,000 square feet or more of impervious area as described below:

“... interior remodels and routine maintenance or repair, including roof or exterior surface replacement, pavement resurfacing, repaving and road pavement structural section rehabilitation within the existing footprint, and any other reconstruction work within the public street or road right-of-way where both sides of the right-of-way are developed.”

If it is found that BMP implementation is infeasible or impractical after an initial review and assessment of BMPs, then an alternative compliance demonstration for the C.3 provisions can be made as described in Step 1.C (Eligibility for Alternative Compliance if onsite storm water control measures are impracticable).

If the C.3 provisions are not applicable, then the applicant will follow the usual City process for permitting. Even if the C.3 provisions do not apply, the City has requirements and recommendations for storm water management as described below:

- Projects shall be designed to minimize and reduce directly connected impervious surfaces as well as to treat storm water runoff by incorporating elements that collect, detain, and infiltrate runoff.
- Landscaped areas in projects should be designed with efficient irrigation to reduce runoff, promote surface infiltration, and minimize the use of fertilizers and pesticides that can contribute to water pollution.

When C.3 Provisions Are Applicable

The C.3 provision of the Permit 01-119, as amended, requires that storm water BMPs be implemented:

- As of 20 October 2005, projects that create, add, or replace 10,000 ft² must comply with the requirements to treat storm water from impervious surfaces at the project site. Based on information provided to complete the first page of the Impervious Surface Data Sheet found in Appendix A, an evaluation will be made to determine which C.3 provisions apply to a project.
- As of 20 October 2005 storm water discharges from any non-exempt project (based on project size and watershed to which storm water from the project will drain) will need to be designed and maintained so that they do not cause an increase in erosion potential over the pre-project conditions of the stream into which they flow. Standards for measuring erosion potential and the specific design requirements to control hydromodification impact are described in the SCVURPPP Hydromodification Management Plan (HMP – available at www.scvurppp.org) adopted by the City.



Types of new development projects for which C.3 Provisions are applicable include:

New commercial, industrial or residential developments

The C.3 provisions are applicable to commercial, industrial, or residential developments that add 10,000 square feet or more of impervious area. This includes all new development on public or private land, which falls under the planning and building authority of the City.

Streets, roads, highways, and freeways

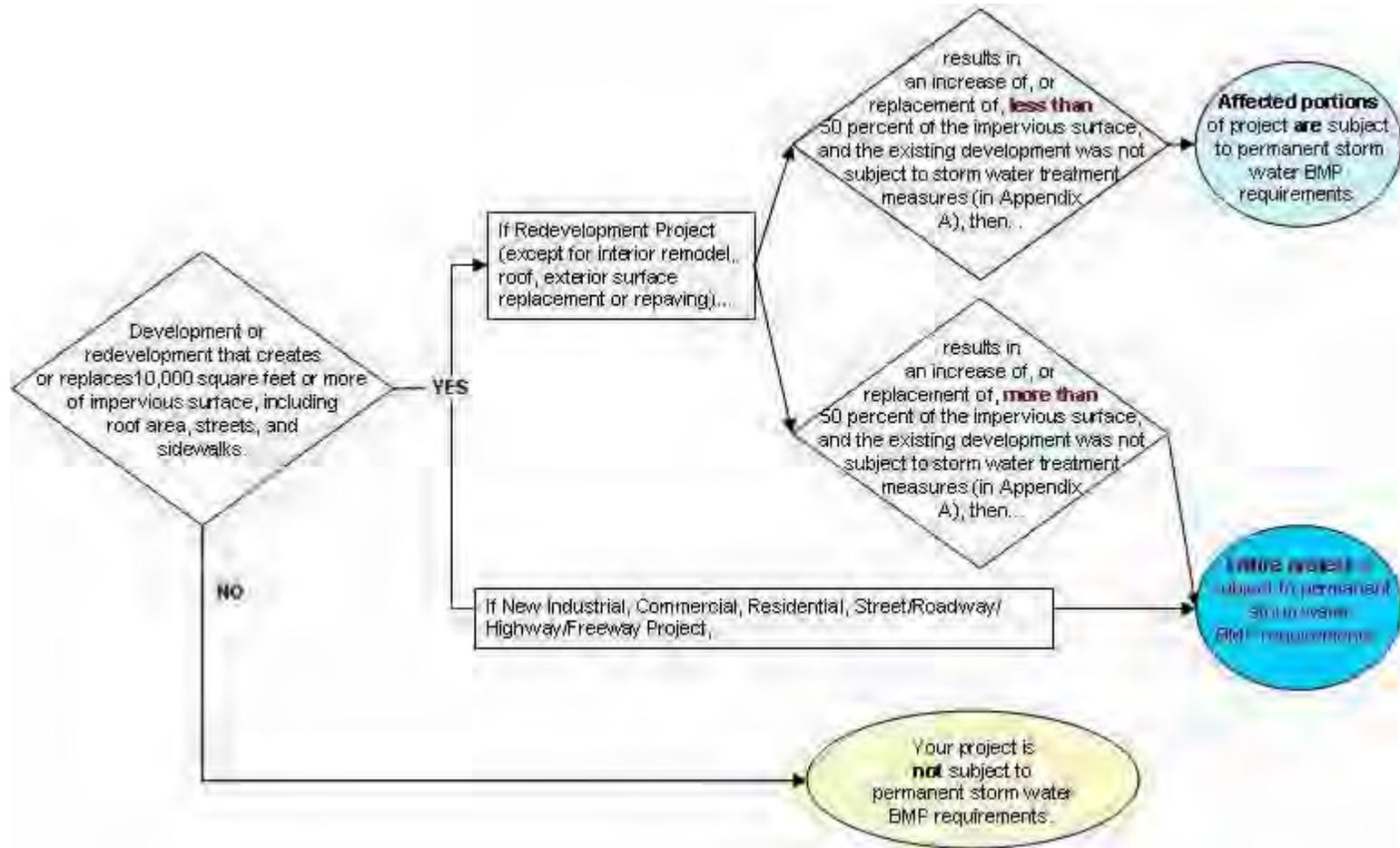
The C.3 provisions are applicable to streets, roads, highways and freeways that are under the City's jurisdiction that add 10,000 ft² or more of impervious area. This includes new paved surfaces for the used primarily for the transportation of automobiles, trucks, motorcycles, and other motorized vehicles. Excluded from this category are sidewalks, bicycle lanes, trails, bridge accessories, guardrails, and landscape features. Repavement or resurfacing of streets and roads in reconstruction work within the public street or road right-of-way, where both sides of the street are developed are also exempt from C.3 post-construction storm water treatment requirements.

Significant Redevelopment Projects

The C.3 provisions are also applicable to projects on a previously developed site that add or replace 10,000 ft² or more of impervious surface. Such a project is defined as a "Significant Redevelopment". Figure 3 is a flow chart that describes what is or is not a significant redevelopment project. Examples of how the requirements apply to redevelopment projects are found in Appendix A.



Figure 3: Significant Redevelopment Determination

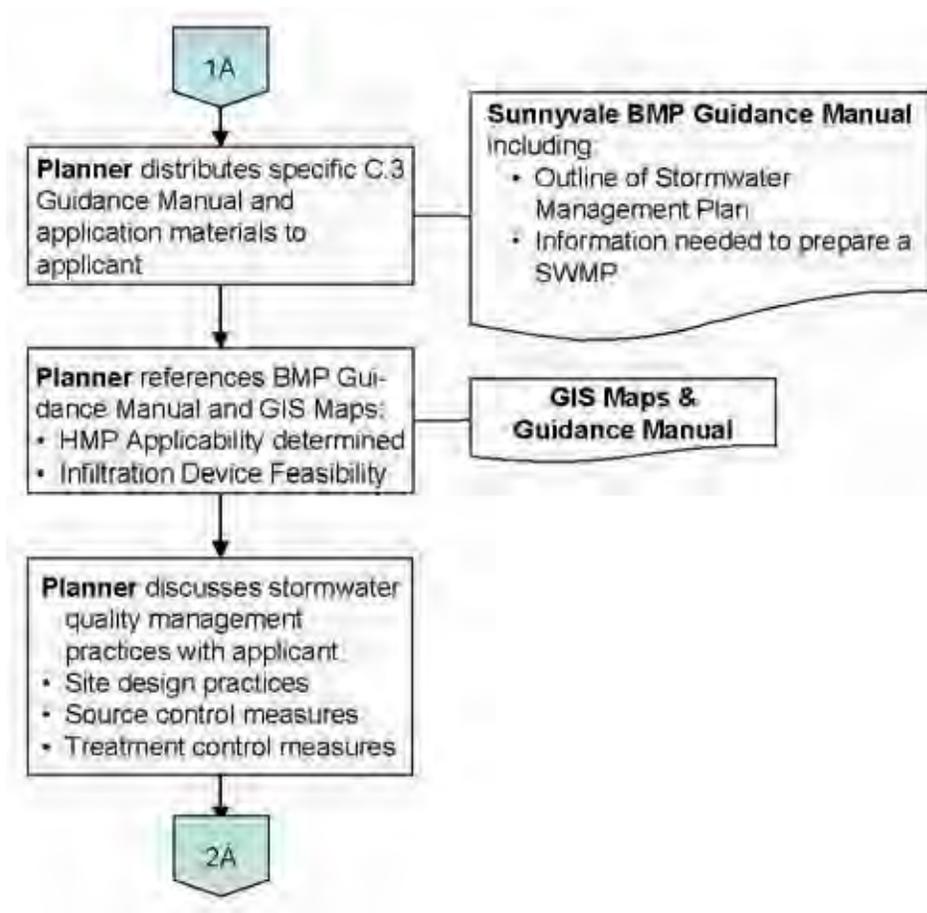




Step 1B: Applicant Education

If a project is required to comply with the C.3 Provisions, the following Figure 4 shows the applicant education process steps will be taken:

Figure 4: Applicant Education and Information



The City maps found in Appendix B should be consulted to identify the project location and determine:

1. Which creeks or channels will receive storm water from the project.
2. Whether the Hydrograph Modification Program (HMP) is applicable
3. Whether the use of infiltration BMPs (as defined in the by City Ordinance 12.60.190) is allowed based on soil types present, depth to groundwater at a project location, and project proximity to an identified groundwater protection area.
4. Other general constraints for the use of BMPs at the specific project location.

These items will be documented on the Impervious Surface Data Sheet found in Appendix A and on the Site Plan prepared for the SWMP, if one is required. The use of site design



techniques to minimize impervious surface as described in greater detail below are highly recommended.

Site Design Techniques to Minimize Amounts of Impervious Surface

Using site design measures to manage storm water quality requires both planning and design early in the project development process. As described in the SCVURPPP *Landscaping Elements for Storm Water Treatment* found in Appendix C, planning and design elements should address the following:

- i. Planning – Identify sensitive areas on a project site such as existing trees, erosive soils, riparian areas, wetlands, or other sensitive areas that need to be protected and preserved.
- ii. Design – Utilize drainage as a design element in site plan development. When possible, natural drainage should guide the pattern of development and influence layout of pathways, parks, open spaces/areas, and building structures. Suggested methods include:
 - a. Maximize storm water retention by:
 1. Minimizing the amount of directly connected impervious area to storm water collection systems. Maximize the amount of storm water discharge to landscape or other pervious areas.
 2. Use of permeable paving (e.g., pervious asphalt, pavers, concrete, turf block, etc.) where feasible.
 - b. Utilize storm water treatment opportunities through:
 1. Landscape grading to reduce runoff
 2. Use of grass swales or vegetated areas to act as biofilters along the perimeters of parking lots or sidewalks
 3. Use of multiple small retention/bioretention areas in parkway plantings, along street shoulders, under decks, in parking lot planters, and at roof downspouts
 4. Use of extended detention basins for larger projects (e.g., developments 10 acres or greater in size)
 5. Use of wet ponds that can be combined with fringe wetlands and/or recreational areas for larger projects (e.g., sites that are 2 – 10 acres in size)
 6. Increasing the treatment potential of the landscape through maintaining soil drainage capacity and plant selection using deeply rooted plants, as appropriate.
- iii. In addition to the information found in Appendix C, more detailed information on the use of site designs to manage storm water can be found in:
 - a. BASMAA's *Start at the Source: Residential Site Planning and Design Guidance Manual for Storm Water Quality Protection*
 - b. BASMAA's *Using Site Design Techniques to Meet Development Standards for Storm Water Quality – A Companion to Start at the Source*
 - c. SCVURPPP's *C.3 Storm Water Handbook: Guidance for Implementing Storm Water Requirements for New and Redevelopment*

These documents can be downloaded at <http://www.scvurppp.org> by connecting to the BASMAA link and/or the C.3 Submittals link.



Selection of BMPs

Potential BMPs can be selected from those summarized in Appendix C to address site specific conditions as well as community and environmental factors. The selection of site design techniques described above will depend upon site-specific conditions.

Community and environmental factors such as vector control and aesthetics should be considered in the selection of BMPs. BMPs should be consistent with the character and landscape of the community while performing their primary treatment and/or storage functions. Some BMPs will be encouraged over others in areas where they fit better into the surrounding landscape scheme.

BMPs selected for use in Sunnyvale should minimize vector (e.g., mosquito) breeding habitats. The BMP fact sheets presented in Appendix E and in the CASQA Storm Water BMP Handbooks (www.CABMPHandbooks.com) describe whether vector control may be an issue for a specific type of BMP and recommend design measures that can reduce the potential for formation of mosquito habitat. Some methods to minimize mosquito habitat include:

- Keep wetland edges with steep banks and deeper water
- Minimize the amount of stagnant water
- Minimize the amount of surface area
- Ensure drainage of storm water detention features within 72 hours of a rain event.



Step 1C: Storm Water Management Plan (SWMP) Preparation Guidelines

Once it is determined that a project must implement the numeric sizing criteria for storm water BMPs as required in SMC Chapter 12.16.130-150, the applicant will submit a Storm Water Management Plan (SWMP). The SWMP documents the decisions made regarding the selection, sizing, design, and location of BMPs. The SWMP preparation guidelines are described in greater detail in Appendix A “**How to Prepare a Storm Water Management Plan**”. Information to assist with BMP selection is found in Appendix C.

A SWMP describes the site design measures and permanent, post-construction storm water treatment and source control Best Management Practices (BMPs) that will be incorporated in the project to reduce the impacts to urban runoff from the development. The major steps in the development of a SWMP are:

1. Identify the expected pollutants of concern based on the proposed land use and activities. Incorporate BMPs into site designs that are effective for removing those pollutants from storm water and for their pollution prevention/source control benefits.
2. Identify the site constraints (e.g. high groundwater, space available, topography, proximity to groundwater protection areas, low-permeability soils, or location within HMP¹ applicability area) that could affect the types of BMPs that can be implemented. Look for opportunities to incorporate BMPs into Site Designs for the project. Construction costs, as well as ease of maintenance and long-term maintenance costs should also be considered when selecting appropriate BMPs.
3. Use Site Design measures to minimize imperviousness and redirect runoff from impervious surfaces to more pervious areas. Types of designs that minimize imperviousness may include, but are not limited to: inclusion of self-treating areas, clustering buildings/structures, reducing building footprints, and using of permeable paving materials, and alternative parking lot and service road designs in appropriate areas). Designs should also look for opportunities to direct runoff from impervious surfaces (e.g., roof tops, plazas, walkways, and access roads) to more pervious landscape or other storm water treatment areas.
4. Once Site Design measures are incorporated, select Best Management Practices for those impervious areas that cannot be served by site design measures. Best Management Practices include:
 - Source Control Measures
 - Treatment Control Measures
5. If site is located within the HMP¹ applicability areas and meets the criteria for HMP implementation, select Treatment Control Measures that have flow control benefits to the maximum extent practicable. These Best Management Practices are summarized in

¹The HMP requirements applies to only certain areas of the City that have storm water flows to natural creek drainages and are identified on GIS maps showing HMP applicability zones included in Appendix B.



Appendix C. They are accompanied with reference information that describes the BMP and ways to evaluate their effectiveness.

6. Install, operate, and maintain, selected post-construction Best Management Practices. Establish an inspection schedule in accordance with CASQA Storm Water BMP Handbook guidance or the manufacturer's recommendations.

Eligibility for Alternative Compliance if Onsite Storm Water Control Measures are Impracticable

Applicants may request a waiver from the requirement to install treatment best management practice for a given project if they can demonstrate that:

- 1) The installation of storm water treatment devices or flow control devices is impracticable for their particular site; or
- 2) The applicant will provide treatment or flow control of an equivalent pollutant loading or storm water run off quantity; or
- 3) The applicant will financially support an alternative project that will provide other equivalent water quality benefit and
- 4) The alternative compliance measure is approved by the Director of Public Works or the Director of Community Development (See SMC 12.60.270)

The criteria for determining if the installation of on-site treatment/detention BMPs or BMPs for controlling flows as required in the HMP are impracticable are found in SMC 12.60.280. An applicant will need to provide a technical consultant's certification to support the eligibility of a project to be granted a waiver, based on the following situations:

- 1) There are significant space limitations on detention and/or conveyance of runoff;
- 2) There are limitations on the ability of treatment measures to address the pollutants of concern;
- 3) The project site is located within a "groundwater protection area" zone so infiltration BMPs are not suitable. (Other options that do not call for infiltration may be suitable BMPs, and must be considered.)
- 4) The project site is located on soil that is not suitable for infiltration. (Other options that do not call for infiltration may be suitable BMPs for the site and must be considered.)
- 5) If projected costs for constructing on-site measures exceed 2% of the total project costs (includes only the construction labor and materials costs for the facility and its physical improvements).
- 6) The construction of on-site treatment may considered impracticable for the following types of projects where the projected costs for their construction will exceed 1% the total project costs:
 - Projects in redevelopment areas that create housing units affordable to persons of low or moderate income as defined by Health and Safety Code section 50093.
 - Projects within redevelopment areas which redevelop an existing Brownfield site as defined by Health and Safety Code section 50093.



- Transit village projects that occur within 1/4 mile of transit stations and/or intermodal facilities.
- 7) The installation of storm water treatment measures that would result in the inability of an applicant to comply with other regulatory requirements at the federal, state, or local level (i.e., Seismic Building Code Requirements).

Upon the approval of an application for a waiver based on impracticability by Director of Public Works or the Director of Community Development or their designees, the applicant may demonstrate alternative compliance by providing storm water treatment/detention measure at another site or by providing an equivalent water quality benefit. The type and location of the proposed alternative project, as well as a proposed schedule for the alternative compliance construction, must have the approval of these authorized enforcement officials.

The applicant must provide certified documentation that its contribution to the off-site detention and/or treatment, or other water quality benefit will protect or enhance water quality. This documentation should show that the amount being spent on the alternative project is equivalent to that which would have had to be provided for the installation of the required treatment measures at the original project site. It must also be demonstrated that the contribution is going toward detention and/or treatment that would not be otherwise required at the selected off-site location. The applicant must provide the Director of Public Works or Director of Community Development or their designees with the verification of the alternative compliance actions upon written request by the authorized enforcement official. (See SMC Chapter 12.60.300.)

If the project fails to provide any alternative compliance according to the approved schedule, it will be considered a violation of the Sunnyvale Municipal Code Chapter 12.60. Enforcement actions and penalties as outlined in SMC 12.60.310-360 may be imposed.

The full text of the Chapter 12.60 of the Sunnyvale Municipal Code can be found at <http://municipalcodes.lexisnexis.com/codes/sunnyvale/> or at <http://www.sunnyvale.ca.gov/> in the Municipal Codes Section of the website.



Step 1D: Initiate Certification of Design Criteria

As stated in the Sunnyvale Municipal Code (SMC 12.60.180), the Director of Public Works, Director of Community Development or their authorized staff may require a developer to provide a signed certification from a “qualified” professional that any plan for proposed storm water treatment facilities and Best Management Practices meet the requirements of SMC 12.60 and the established criteria expressed in that Chapter. Before a Building Permit can be issued as described in Step 3A, this “third party” certification must be completed

To facilitate “third-party” reviews and certifications, the City submitted a Request for Qualifications (RFQ) from a number of engineering and consulting firms in January 2004. The requirements for being considered a “qualified” consultant are listed in SMC 12.60.180. After reviewing the responses from firms responding to the RFQ, the City prepared a list of qualified consultants to certify storm water management plans. The City does not endorse or recommend any particular consultant on the list, but provides the list to assist project applicants in finding firms that have qualified staff, that meet the requirements of the City’s ordinance. The current list of qualified consultants is available on the City’s website, Planning Division page or may be obtained from Planning Division Staff.

Other firms may be added to the list of qualified firms at the request of the applicant, but the proposed firm must first submit the same “Statement of Qualifications” to the City as was required in the RFQ, and then the submission must undergo a review by City staff before the firm can be added to the list. The qualified consultant list will be updated approximately every two years.

When third-party certification of a Storm Water Management Plan is required by the City from a project applicant, the firm providing that certification should be prepared to do the following:

- 1) Review the requirements in the Sunnyvale Storm Water Quality BMP Applicant Guidance Manual for New and Redevelopment Projects (Sunnyvale BMP Guidance Manual).
- 2) Review the Part 1, Written Report portion of the Storm Water Management Plan Checklist in Appendix A to ensure that all items listed have been addressed. Proposed storm water BMPs shall be selected and sized to treat the types of pollutants from the site and the quantity of runoff expected to meet the standards described in SMC 12.60.150
- 3) Review the Maps, Plan Summary, and Plan Sheets submitted as a part of the Building Permit Application. Ensure that there are no conflicts between Storm Water Management Plan sheet designs and any other Plan Sheets (e.g., Grading plan, Utility plan, and Landscaping Plan) that may be required by the City.
- 4) Provide a compliance review stamp on the Storm Water Management Plan and any plan sheets reviewed as described in item #3 above.
- 5) The Storm Water Management Plan shall be signed and stamped by a Professional Engineer by stating as follows: “The sizing, selection, and preliminary design of the



treatment Best Management Practices and control measures in the Storm Water Management Plan meet the requirements of Sunnyvale Municipal Code, Chapter 12.60.”

- 6) Before the building permit is finalized or the Certificate of Occupancy is issued for new buildings, the project applicant and third-party reviewer must provide recertification of the design if there are any as-built modifications to the original approved plan sheets. Also, current contact information for the parties responsible for implementing the Storm Water Management Plan must be provided.

An example of a Third – Party Certification Checklist is provided in Appendix A.

Additions to the Qualified Consultants List:

To be added to the list described above, the firm/person wanting to be included on the Qualified Consultants List must submit information to CDD staff to demonstrate their qualifications, as the other firms on the List have already done. City staff will review those qualifications submitted and determine if they meet the criteria established in SMC 12.60.180. To be qualified for inclusion on the List, a Statement of Qualifications must be submitted to CDD staff and include the following:

- The firm’s name, business address, telephone number and year established.
- Name and phone number of a primary contact person for the firm.
- Names of the principles and key personnel who will be assigned to conduct the review.

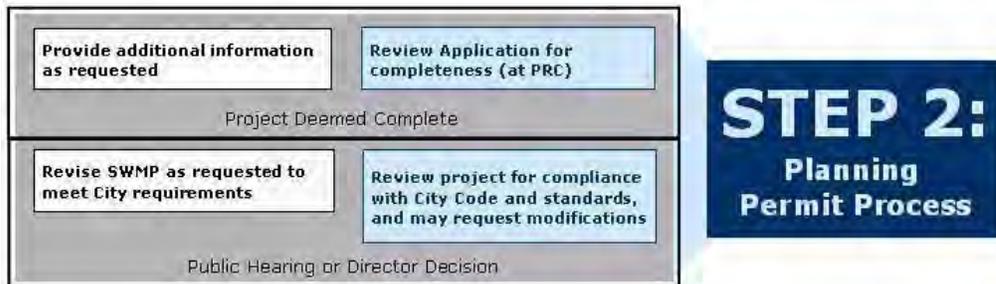
Describe their qualifications and experience by providing answers to the items below:

1. The background of these individuals: i.e., civil engineer, licensed architect, or landscape architect registered in the State of California.
2. Listing of the training completed by these individuals on Best Management Practices design for managing storm water quality within the three years prior to the date their statement of qualifications is submitted.
3. Proof of training completed by these individuals that was conducted by an organization with storm water treatment and Best Management Practices design expertise. Training conducted by an organization with storm water treatment best management practice design expertise may be considered as qualifying. Such organizations include, but are not limited to:
 - Universities
 - American Society of Civil Engineers
 - American Society of Landscape Architects
 - American Public Works Association
 - California Water Environment Association
 - California Storm Water Quality Association
 - Santa Clara Valley Urban Runoff Pollution Prevention Program

Examples of proof may include, but are not limited to class transcripts, CEU/credit certificates, and course outlines with proof of attendance.



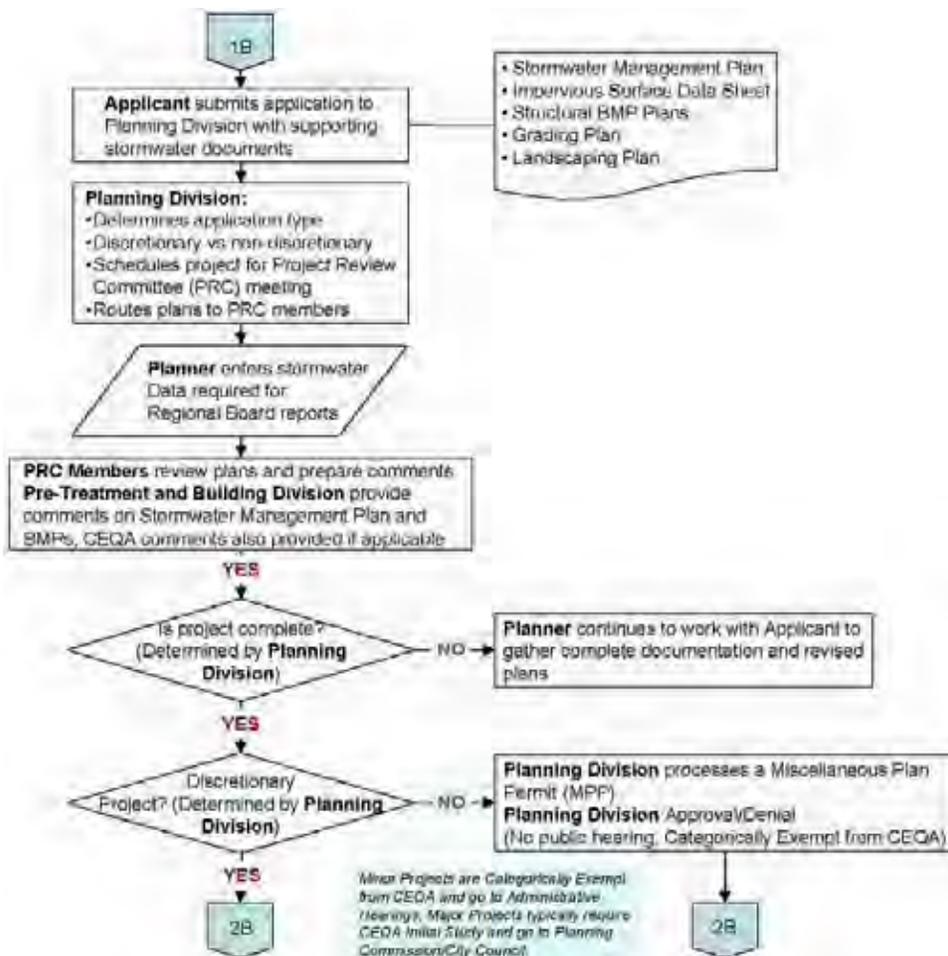
Step 2. Planning Permit Process



Step 2A: City Review Process – Project Review Committee

Once a SWMP has been prepared, the flow chart below describes the City’s review process for the storm water management plan.

Figure 5: Plan Approvals

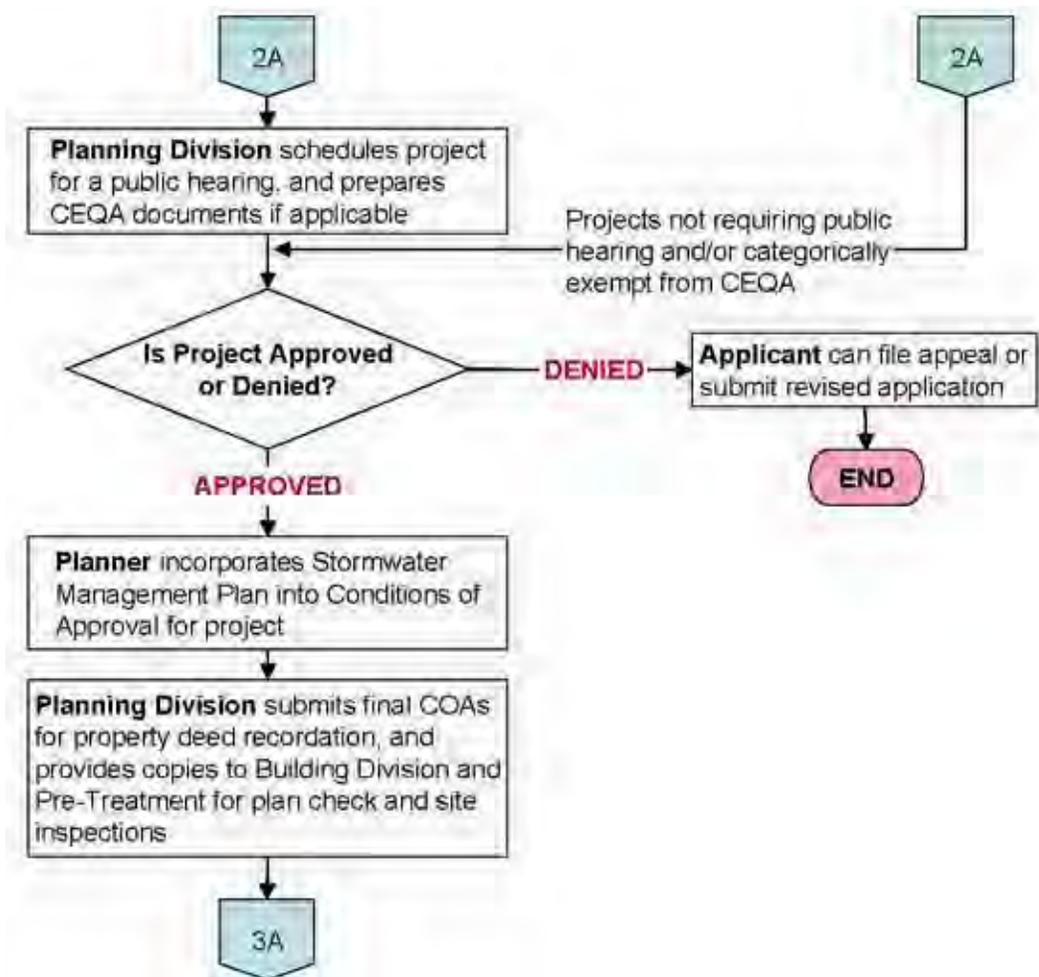




Step 2B: City Approval Process – Project Decision

Following City Planning staff review of storm water information submitted with the project application, the following flow chart shows the City's approval process.

Figure 6: Project Decision





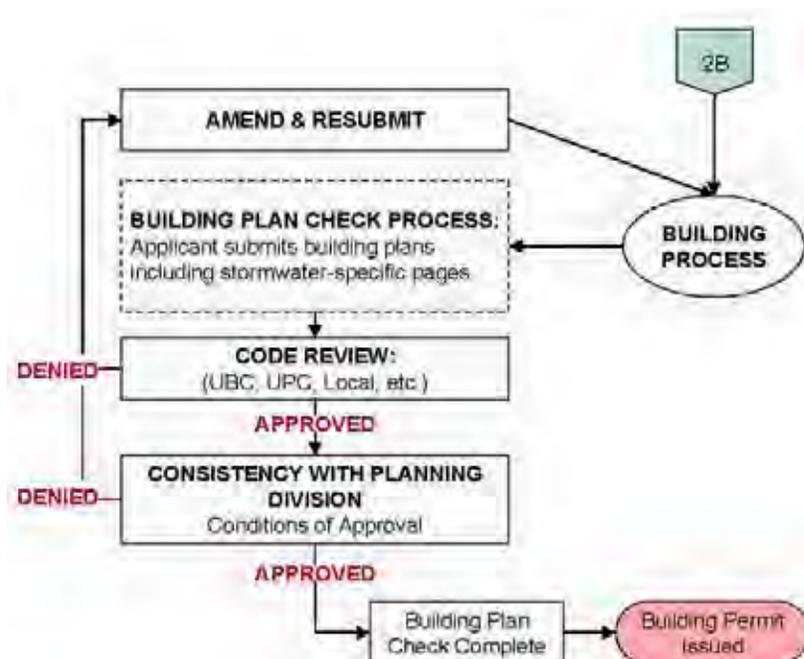
Step 3. Building Permit Process



Step 3A: Issuance of a City Building Permit

Once a project has been approved, the applicant then works with the City's Building Division staff to obtain a building permit which includes the Conditions of Approval for storm water quality approved by the City's Planning Division. SWMPs must have their third-party certification complete as described in Step 1D (Certification of Design Criteria) before Building Permits are issued. This includes the Storm Water Plan Sheet review and certification for no conflicts with other plan sheets such as those for landscaping and other utilities

Figure 7: Plan Check and Building Permits





Step 3B: Project Construction

Usually, post-Construction BMPs are not installed in the early stages of construction as they may be adversely affected by ongoing construction activities. In most cases, the post-construction BMPs are not completed and made operational until the exterior construction is near completion and the disturbed soil areas have been stabilized. During construction, a storm water pollution prevention plan is prepared, which includes specific BMPs that are installed for only the duration of the construction project to protect existing storm drains near to the construction activities, control soil erosion, and prevent discharge of materials to storm water collection systems that can impact aquatic life.

Construction BMP requirements described in the City's Blueprint for a Clean Bay found in Appendix A. Projects that create 1 acre or more of disturbance must submit a Notice of Intent (NOI) to the State Water Resources Control Board (SWRCB) to be covered under the SWRCB's General Storm Water Construction Permit. Other information about the SWRCB's Construction NOI program can be found at <http://www.swrcb.ca.gov/stormwtr/construction.html>. Part of the NOI is the preparation of a storm water pollution prevention plan (SWPPP) for BMPs that must be in place during construction.

Guidance for preparation of a SWPPP is contained in the San Francisco Bay Regional Water Quality Control Board's Erosion and Sediment Control Field Manual, Third Edition, 1999. This document can be obtained by contacting Friends of the San Francisco Estuary, P.O. Box 791, Oakland, CA 94604-0791, telephone: 510-622-2419. Additional information for Construction BMPs can be found in the CASQA Construction BMP used in a SWPPP Handbook. (<http://www.cabmphandbooks.com/>)

The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the Federal Clean Water Act Section 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP. It should be emphasized that the SWRCB administers the NOI and SWPPP program and this information is provided for the applicant's benefit. In accordance with Regional Board Order No. 01-119, the applicant should be prepared to demonstrate to City staff, upon request, compliance with the NOI and SWPPP program.



Step 3C: City Building Inspections

Inspections of construction sites by the City's Building Division will occur periodically through the construction phases. This includes inspection of Storm Water Pollution Prevention Plan BMPs in place during the construction phase of the project and Post-construction BMPs that are being built according to the approved plans for treatment of storm water when the facility is completed. Enforcement actions will be taken and/or notices will be issued if the project does not comply with the Storm Water Pollution Prevention Plan.

Once the project is constructed, the City's Building Division will conduct a final building inspection of the post-construction storm water BMPs included in the project plan sheets as well as for the other structures that are a part of the project before a Building Permit is finalized or Certificate of Occupancy is issued for new buildings.

If there have been any changes to the design plans for the storm water treatment BMPs from those originally submitted and approved in the Storm Water Management Plan, then the revised "as-built" information needs to be included in an amendment the SWMP for the facility before the Building Permit is finalized or Certificate of Occupancy is granted.



Step 4. Post Construction



Step 4A: Post-Construction BMP Operations and Maintenance

Once a project is completed, the post-construction BMPs must be maintained and inspected as described in the project's Storm Water Management Plan (SWMP), so that they can provide the water quality protection required for the site. Installation, operation, maintenance, inspection and recordkeeping of the post-construction BMPs are the responsibility of the applicant and/or property owner identified in the SWMP. Records supporting post-construction operations and maintenance activities need to be kept by the party identified in the SWMP.

Step 4B: Post-Construction Compliance Inspections

The City's Pre-treatment Division staff is responsible for inspecting the facility post-construction, and assuring that the applicant/owner is operating and maintaining the post-construction BMPs in accordance with their approved SWMP. Staff will visit the sites and perform inspections annually or at a frequency to be determined based recommendations for BMP inspections as presented by CASQA BMP Handbook guidance or manufacturers' recommendations. Records supporting operations and maintenance activities associated with storm water treatment BMPs will be reviewed as well.

An example of the post-construction inspection checklist that the City will be using is included in Appendix G.

Additional resources for Post-Construction BMP maintenance can be found in the CASQA Municipal Handbook Sections 3 and 4 for Maintenance of Municipal Facilities, in the CASQA Industrial Handbook Sections 3 and 4 for Maintenance of Industrial Facilities and in the CASQA New and Redevelopment Handbook, Section 5. (<http://www.cabmphandbooks.com/>).



References and Web Links

Bay Area Storm Water Management Agencies Association (BASMAA)

Start at the Source Manual and Using Site Design Techniques to Meet Development Standards for Storm Water Quality: A Companion Document to Start at the Source

http://www.scvurppp-w2k.com/basmaa_satsm.htm

California Storm Water Quality Association (CASQA)

Storm Water Best Management Practice Handbook: (4 Volumes)

- New and Redevelopment
- Industrial and Commercial
- Municipal
- Construction

www.cabmphandbooks.com

City of Sunnyvale

Sunnyvale Municipal Code Chapter 12.60:

<http://municipalcodes.lexisnexis.com/codes/sunnyvale/> or

<http://www.sunnyvale.ca.gov/> in the Municipal Codes Section of the website

Friends of the San Francisco Estuary

Erosion and Sediment Control Field Manual, Third Edition, 1999. This document can be obtained by contacting Friends of the San Francisco Estuary, P.O. Box 791, Oakland, CA 94604-0791, Telephone: 510-622-2419.

Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)

C.3 Storm Water Handbook, May 2004: www.scvurppp.org

Hydromodification Management Plan, Final Report, April 2005: www.scvurppp.org

Model List of Source Control Measures and other C.3 implementation related documents
http://www.scvurppp-w2k.com/permit_c3.htm

State Water Resources Control Board (SWRCB)

General Storm Water Permit (NOI/SWPPP)

<http://www.swrcb.ca.gov/stormwtr/construction.html>.

SCVURPPP NPDES Permit: #'s. R2-2005-0035, 01-119, and 01-024 can be downloaded from http://www.waterboards.ca.gov/sanfranciscobay/order_nos.htm



Appendix A: Supplementary Information & How to Prepare a SWMP

- Redevelopment Examples A - 2
- Impervious Surface Data Sheet for NPDES Permit Provision C.3 Compliance A - 4
- How to Prepare a Storm Water Management Plan: A - 6

Part 1: Written Report: - Storm Water Management Plan Checklist

- 1) Table of Contents
- 2) Project Description
- 3) Site Constraints
- 4) HMP Applicability Determination
- 5) BMP Description
- 6) Infiltration Devices
Table A-1, BMP Summary Table example
- 7) Post construction BMP maintenance and/or Source Control
Table A-2, Example: Post-construction Maintenance and/or Source Control
Table A-3, Example: Self-Inspection Program Description
Table A-4, Example: Employee Training Program

Part 2: Maps and Plan Summary

- 8) Vicinity Map, (scale 1" = 250')
 - 9) Existing and Proposed site plans (to scale)
 - 10) Storm Water Management Plan sheet list
 - 11) - 13) Other Plans, as applicable
- Third-Party Certification of SWMP Checklist A - 16
 - Property Maintenance Fact Sheet: Landscape Maintenance Techniques for Pest Reduction A - 17
 - Model Conditions of Approval: Landscape Plans for the Reduction of Pesticide Use and Treatment of Storm Water Runoff A - 19
 - Blueprint for a Clean Bay A - 20



Redevelopment Examples

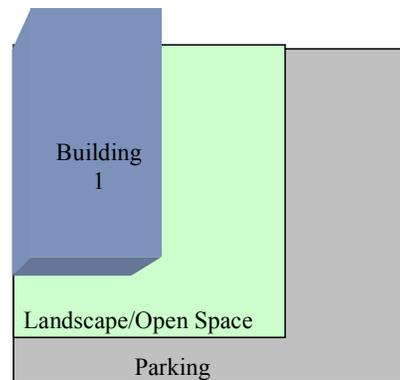
An example of a redevelopment project and the portions of the project that would be subject to specific numeric sizing criteria for storm water BMPs depending on the proportion of the project site that is being redeveloped are also shown and described on the figure below.

Redevelopments that could increase the impervious surface could include remodel, tenant improvement, or new building to replace an existing building.

EXAMPLE: REDEVELOPMENT PROJECTS (Not To Scale)

ORIGINAL SITE DESCRIPTION

Building 1 = 15,000 ft²
Parking = 9,500 ft²
Landscaping = 7,500 ft²
Open Space = 20,000 ft²
Total Site = 52,000 ft²
Total Impervious Surface = 24,500 ft²
50% of Impervious surface = 12,250 ft²

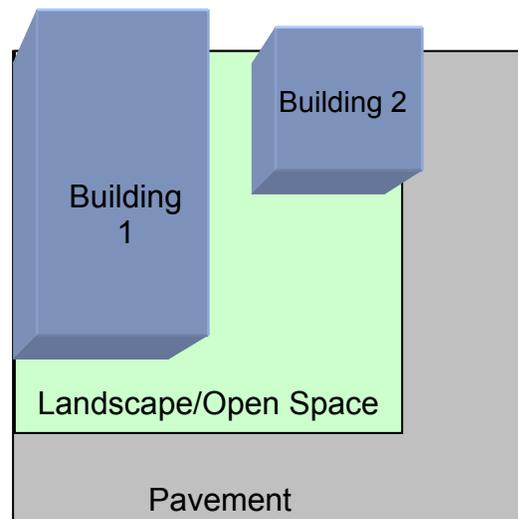


EXAMPLE A

Redevelopment of Site with:
New Building 2 = 5,000 ft² and
Increase of Parking by 2,000 ft²
Total of new impervious surface added is
7,000 ft²
Total Site Impervious Surface = 31,500 ft²

Added impervious surface after
Redevelopment is <10,000 ft² and <50% of
the impervious area of original site,
therefore;

Site is not subject to numeric sizing criteria
for storm water BMPs, but *is* subject to other
City requirements such as source control
BMPs. Site is encouraged to minimize
impervious areas and to drain storm water to
vegetated areas as much as possible.



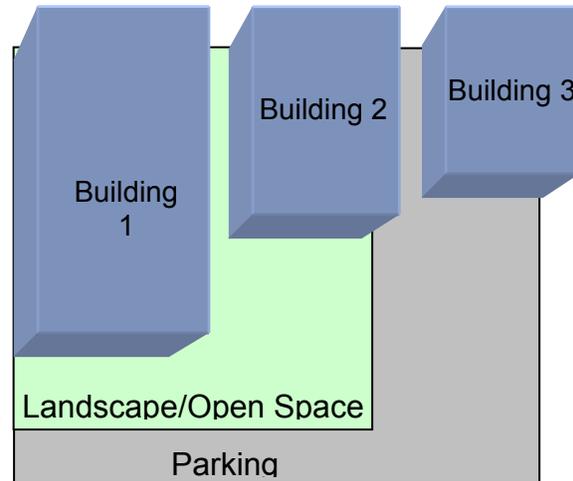


EXAMPLE B

Redevelopment of Site with:
Existing Building = 15,000 ft²
New Building 2 = 10,000 ft² and
New Building 3 = 7,000 ft² and
increase of Parking to 11,500 ft² and
Total Site Impervious Surface= 43,500 ft²

Total Redevelopment is > 10,000 ft² and
>50% of the existing impervious area,
therefore,

Entire 44,500 ft² of original site is subject to
numeric sizing criteria for storm water BMPs



EXAMPLE C

Redevelopment of Site with:

Original Building = 15,000 ft²

New Building 2 = 6,000 ft² and

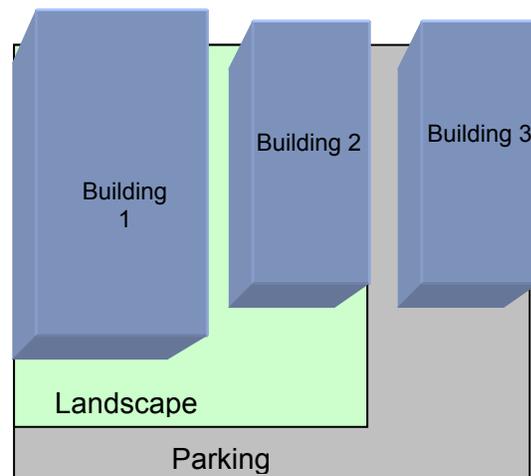
New Building 3 = 6,000 ft² and

Parking to 9,500 ft² and

Total Site Impervious Surface= 38,500 ft²

Total Redevelopment adds 12,000 ft²
impervious area, but is <50% of the existing
impervious area, therefore,

Only the 12,000 ft² of new impervious area
added to the site is subject to numeric sizing
criteria for storm water BMPs





STORMWATER MANAGEMENT PLAN DATA FORM

(NPDES PERMIT PROVISION C.3)

Planning Permit Number _____

Date Deemed Complete _____

Approval / Public Hearing Date _____

PROJECTS THAT REQUIRE STORMWATER MANAGEMENT PLANS

New or redeveloped commercial, industrial or residential projects require a SWMP when they create or replace 10,000 square feet or more of new or replaced impervious surface. If the increase or replacement is for 50% or more of existing impervious surface, the entire development is subject to stormwater treatment measures. If the increase or replacement is for less than 50% of existing impervious surface, only the added impervious surface area is subject to stormwater treatment measures. Driveways, sidewalks, and private streets are included towards the impervious surface calculations unless they are constructed with pervious materials that allow passage of water into subsurface soils.

DEFINITION OF IMPERVIOUS SURFACES

An impervious surface prevents the infiltration or passage of water into the soil. Impervious surfaces can include building rooftops, covered patios, driveways, parking lots, paved areas, sidewalks and streets.

Project Address	
APN	
Site Area (square feet)	
Applicant Name	
Project Description	

1. Project Type (*Check all that apply*):

- New Development
 Commercial
 Pavement Replacement
 Multi-Family No. Units _____
 Redevelopment
 Public
 Industrial
 Single-Family

2. Project Impact on Impervious Surface:

Description	Existing sq. ft.	Proposed sq. ft.
a Impervious surface area (includes land covered by buildings, sheds, patios/covers, parking lots, streets, sidewalks, paved walkways and driveways)	sq. ft.	sq. ft.
b Pervious Area (includes landscaping, pervious pavement, and natural buffer areas)	sq. ft.	sq. ft.
c Total Project Area (a + b)	sq. ft.	sq. ft.
d Percent Impervious (a ÷ c)x100	%	%
e Percent Pervious (b÷ c) x 100	%	%
f Impervious created or added		sq. ft.
g Impervious area replaced		sq. ft.
h Estimated area of land disturbed during construction (includes clearing, grading or excavating)		sq. ft.

<p>3. Does runoff from offsite flow through the project site? <input type="checkbox"/> Yes <input type="checkbox"/> No. If yes show where offsite runoff flows onto project site on the Site map prepared for the SWMP.</p> <p>4. GIS Map Review:</p> <p>a. Is project site within the HMP Inclusion Area? <input type="checkbox"/> Yes <input type="checkbox"/> No. If yes, then HMP requirements of SMC 12.60.160 apply.</p> <p>b. Is project site within the Infiltration Device Exclusion Area? <input type="checkbox"/> Yes <input type="checkbox"/> No. If yes, the use of infiltration devices for stormwater treatment is not allowed.</p> <p>5. Numeric Sizing Criteria Used:</p> <p><input type="checkbox"/> Flow Hydraulic Design Basis, or <input type="checkbox"/> Volume Hydraulic Design Basis</p> <p>6. Type of Pesticide Reduction Measures Used (Check <u>all</u> that apply):</p> <p><input type="checkbox"/> Education (PEDU) <input type="checkbox"/> Condition of Approval (PCOA) <input type="checkbox"/> Doesn't Apply (DNA)</p> <p>7. Types of Stormwater Control Measures Used (Check <u>all</u> that apply):</p> <p><input type="checkbox"/> Stormwater Treatment Measures (STM) <input type="checkbox"/> Source Control Measures (SCM) <input type="checkbox"/> Site Design Measures (SDM) <input type="checkbox"/> Doesn't Apply (DNA)</p>	<p><i>For more information regarding selection of Best Management Practices (BMPs) for stormwater pollution prevention or stormwater treatment, contact the Planning Division at (408) 730-7440 or planning@ci.sunnyvale.ca.us.</i></p>
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8. Identify Specific Stormwater Control Measures Used

Stormwater Treatment	Source Controls	Site Design
<input type="checkbox"/> Biofilter (vegetated swale, buffer strip) <input type="checkbox"/> Detention basin (dry) <input type="checkbox"/> Detention pond (wet) <input type="checkbox"/> Hydrodynamic device (commercially available in-line treatment unit) <input type="checkbox"/> Infiltration basin / trench <input type="checkbox"/> Inlet filter <input type="checkbox"/> Media filter (sand, organic matter, bio-retention) <input type="checkbox"/> Planter boxes <input type="checkbox"/> Porous pavement <input type="checkbox"/> Underground detention <input type="checkbox"/> Wetland basin <input type="checkbox"/> Wetland channel <input type="checkbox"/> Other _____	<input type="checkbox"/> Beneficial landscaping (minimizes irrigation, runoff, pesticides and fertilizers; promotes treatment) <input type="checkbox"/> Covers, drains for loading docks, maintenance bays, fueling areas <input type="checkbox"/> Covered dumpster area, drain to sanitary sewer <input type="checkbox"/> Maintenance (street sweeping, catch basin cleaning) <input type="checkbox"/> Outdoor material storage protection <input type="checkbox"/> Swimming pool drain to sanitary sewer <input type="checkbox"/> Wash area/racks, drain to sanitary sewer <input type="checkbox"/> Other _____	<input type="checkbox"/> Alternative driveway design <input type="checkbox"/> Cluster structures / pavement <input type="checkbox"/> Disconnect downspouts <input type="checkbox"/> Micro-detention in landscape <input type="checkbox"/> Minimize change in runoff hydrograph <input type="checkbox"/> Minimize land disturbance <input type="checkbox"/> Minimum-impact street or parking lot design <input type="checkbox"/> Minimize impervious surfaces <input type="checkbox"/> Preserve open space <input type="checkbox"/> Protect riparian & wetland areas, riparian buffers <input type="checkbox"/> Other _____

PLANNING REVIEW BY: _____ DATE: __/__/__ DATA ENTRY BY: _____ DATE: __/__/__



How to Prepare a Storm Water Management Plan (SWMP)

The following section includes a checklist and descriptions of the information needed to complete a Storm Water Management Plan (SWMP). The SWMP consists of two parts: first, a written narrative that outlines all aspects of the plan and second, appropriate maps and site plans that show the location of treatment BMPs and the areas from which they will be treating storm water flows.

Design plan sheets, drawn to scale and including cross-sectional drawing of the treatment BMPs selected for construction at the site need to be included, where appropriate.



Storm Water Management Plan Checklist

Part 1 - Written Report	Check Items
1. Table Of Contents	
2. Project Description – Document in Page 1 of Impervious Surface Data Sheet <ul style="list-style-type: none"> a. General Information <ul style="list-style-type: none"> i. Project and Applicant Name ii. Project Location (address) and APN # iii. Project Type/Classification (new, redevelopment, residential, commercial, industrial, roadway) iv. Description of facility activity b. Describe water bodies (watercourses, impoundments, and wetlands) that will receive runoff from the site and show them on vicinity or project map. c. Identify potential pollutants of concern (i.e. trash, heavy metals (such as mercury, copper, lead, selenium, zinc and nickel), nutrients, petroleum, sediment, indicator bacteria, pesticides, etc... 	
3. Site Constraints: Describe and provide supporting geotechnical investigations (soil maps, depth to groundwater, soil permeability)	
4. Determine HMP Applicability based on site location maps and exemptions. If a non-exempt project is located in one of the HMP applicability zones, identify measures that will ensure post-project storm water discharges do not increase over pre-project levels per SMC 12.60.160	
5. BMP Description - Complete BMP Summary Table 1 with descriptions of each BMP selected. Provide calculations for BMPs selected and manufacturer specifications for proprietary devices used. Also for each BMP used provide: <ul style="list-style-type: none"> a. Description and acreage of drainage entire area/sub-areas and, if applicable, size of area/sub-area that may be off of the project property but that drains on the project property b. Proposed Site Activities c. Potential pollutants in drainage area (subset of pollutants of concern) d. Percent Impervious or runoff coefficient e. Flow and/or volume generated by area including back-up hydrologic and hydraulic computations 	
6. If an infiltration device, meeting the definition of SMC 12.60.190 is proposed, identify vertical distance between base of infiltration device and seasonal high groundwater mark using corroborating depth to groundwater and soil permeability information.	
7. Post-Construction BMP maintenance and/or Source Control <ul style="list-style-type: none"> a. Describe pesticide reduction measures, if a landscaping plan required. b. Describe preventive maintenance actions needed for the operation of all treatment BMPs in Table 2. c. Describe the elements of a self-inspection program in Table 3. d. Describe employee training program in Table 4. e. List spill response procedures (if applicable) f. Describe handling and storage of process materials and wastes. (e.g., stockpiles, dumpsters, tallow bins, recyclables or vehicle storage) to prevent storm water runoff contamination or spills. g. Describe record keeping and internal reporting procedures h. Provide facility owner/operator contact information for post-construction inspections of BMPs. 	
Part 2 – Maps and Plan Summary	
8. Provide a Vicinity Map (scale 1" = 250')	
9. Provide Existing and Proposed Site Maps/Plans (scale 1" = 40') that identifies, the following: <ul style="list-style-type: none"> a. Entire property included on one plan page with any easements and rights-of-way b. Existing and proposed topographic contours with drainage areas and sub-areas (if applicable) delineated and arrow showing flow direction of storm water. c. Identify areas for outdoor storage of process materials and wastes on the site plan described below. d. Show existing/proposed buildings, covered activity areas, and treatment BMP measure locations and type. Copy Table 1 BMP Summary Table to provide information such as square feet of project property/impervious areas, and flow/volume sizing of individual BMPs. e. Identify private storm drain systems and/or public storm conveyance systems including storm drain inlets with existing and proposed flows labeled f. Identify nearby water bodies (e.g. streams, creeks, channels, ponds), impoundments, and wetlands g. Identify potential areas where soil erosion could occur h. If applicable, show the following <ul style="list-style-type: none"> i. 100-year Flood elevations ii. Soil boring locations, depth(s) to groundwater and date(s) of measurement iii. Monitoring well locations, depth(s) to groundwater and date(s) of measurement iv. Water supply well locations within property and on adjacent properties v. Landscaping Plans, if used as part of Storm Water Treatment 	
10. Storm Water Management Plan Sheet List	
11. Grading Plan	
12. Utility plan	
13. Landscaping Plans	



Storm Water Management Plan Preparation Instructions for Checklist Items
Part 1 - Written Report – Use the Check List provided above to ensure that each of the following items are addressed in the SWMP provided with the project application. The SWMP must include all of the following information before it can be considered complete.

1. **Provide a table of contents for the SWMP**
2. **Project Description (Page 1 of the Impervious Surface Data Sheet, Appendix A)**
 - a. Provide General Information
 - i. Project Name and Applicant Name
 - ii. Project Location (address) and APN #
 - iii. Project type (new development or redevelopment of an already developed property) and Project Classification (residential, commercial, industrial, roadway)
 - iv. Description of proposed activities that will occur at the facility
 - b. Provide a Vicinity Map (1" = 250 ft) and identify water bodies that will receive runoff from the site. All watercourses, impoundments, and wetlands within 500 feet of the facility should be shown on either the vicinity or project map. (Projects will drain to Calabazas Creek, Sunnyvale East Channel, Sunnyvale West Channel, Moffett Channel, El Camino Channel, or Stevens Creek. See GIS maps in Appendix B of this manual to identify the water body that will receive the project's storm water drainage.)
 - c. Pollutants of Concern in Receiving Waters: Identify pollutants of concern based on potential activities and land uses of the project site. At a minimum, BMPs selected for the project should be able to protect receiving waters from pollutants of concern. Pollutants of concern are listed in the 2002 CWA Section 303(d) List of Water Quality Limited Segments adopted by the SWRCB in 2003 (See the Region 2 list at http://www.waterboards.ca.gov/tmdl/303d_lists.html). Typical pollutants associated with the Receiving Waters in the Santa Clara County Area include, but are not limited to: heavy metals (such as mercury, copper, lead, selenium, zinc and nickel), nutrients, Diazinon and organophosphate pesticide, chlordane, DDT, dieldrin, PCB, petroleum products, sediment, indicator pathogenic bacteria, pesticides, etc.). Trash is included on a "watch" list of pollutants of concern for urban creeks. The following table describes typical pollutants associated with facility activities. Other specific activities may have more potential pollutants of concern. Pollutants of concern are summarized in the table below.

Pollutants of Concern Based on Facility Activities

Facility Activity	Pollutants of Concern
Commercial/Residential – General	Oil and grease, sediments, pesticides, trash
Commercial – food related	Pathogens, oil, and grease, pesticides, trash
Commercial – animal related	Pathogens, nutrients, pesticides
Commercial – auto related	Total petroleum hydrocarbons, metals, Poly Aromatic Hydrocarbons (PAH), and surfactants
Industrial	Total petroleum hydrocarbons, sediment, metals, PAHs, PCB, pH, surfactants
Agricultural	Sediment, nutrients, pesticides

The pollutants of concern for a facility should be summarized in the Impervious Surface Data Sheet and described further, as necessary, in the text of the Storm Water Management Plan. Treatment BMPs selected for the project must provide suitable treatment for the pollutants of concern identified for the project.



3. Identify Site Constraints

Identify site constraints using maps provided in Appendix B and any site specific studies performed on the parcel. This information is required on the second page of the Impervious Surface Data Sheet. Provide supporting geotechnical investigations (soil maps, borings, depth to groundwater, soil permeability) as needed for BMPs selected. Include as an attachment to the plan, if appropriate and available.

4. Determine if Project Is Subject to HMP Requirements

Some projects (depending on project size) in certain areas of the City are required to manage increases in storm water peak flow and increased runoff volume. The Hydromodification Management Plan (HMP) has identified specific storm drain catchment areas of Stevens Creek and Calabazas Creek where the HMP requirements will apply to projects within Sunnyvale's jurisdiction. In the first phase of HMP implementation, projects of 50 acres or more in size that occur in the identified catchments of Stevens Creek or Calabazas Creek must implement the HMP performance criteria (see HMP Final Report, April 2005 for performance criteria, at www.SCVURPPP.org). Control of storm water peak flow and increased runoff volume from smaller-sized projects is encouraged, but not required.

When a Baywide Municipal Regional Storm Water Permit is issued by the Regional Water Quality Control Board, projects that add or replace one-acre or more of impervious area in the identified HMP impact zones within the City may be required to meet HMP requirements to control flow and volume discharges of storm water from a site to pre-project levels. Specific lot locations that have storm drainage discharges to portions of Calabazas and Stevens Creek where the HMP requirements will apply can be found on HMP maps in Appendix B.

5. BMP Selection and Description, as reported in the SWMP text and BMP Summary Table:

- a. Once the site-specific factors have been identified, select the appropriate BMPs for the site as discussed in Step 2 of the planning process. Summarize all BMPs selected in a table, using headings similar to those provided as an example in Table A - 1.

Certain BMPs have been identified by Region 2 of the State Water Quality Control Board as not meeting the Storm Water "maximum extent practicable" standard. Therefore, they cannot be approved as "stand-alone" storm water treatment devices per the Region 2, RWQCB letter of August 5, 2004 to SCVURPPP co-permittees. These BMPs that that cannot be considered "MEP" when used by themselves and include the following:

- Storm Drain Inlet Filters (also known as drain inserts) have been shown to have limited effectiveness in removing pollutants, due to their design. Inlet filters are typically bags or trays of media filter that are designed to catch and treat runoff as it enters the storm drain. Filters reviewed were subject to clogging in very frequently result in runoff bypassing the filter or causing flooding. Required maintenance is very frequent, sometimes as often as during and after every storm, and in practice, maintenance is not completed an effective frequency to avoid bypasses of the filtering element that becomes clogged with debris.



Table A-1: BMP Summary Table

Area ID	Existing Area (Ac or Ft ²)	Proposed Area (Ac or Ft ²)	BMP ID	BMP Classification			Sizing Criteria (Volume or Flow)	Sizing Method (URQM or CA BMP)	Runoff Coefficient	BMP size (ft ³ or cfs)	Pollutant(s) addressed by BMP	SCVWD Infiltration Device Type (A,B, or C) and depth to gw if applicable	SWMP Calculation Sheet Page No.
				Site Design	Source Control	Treatment Control							
Building____													
Building____													
Building____													
Building____													
Parking - Impervious													
Other Hardscape													
Subtotal - Total Impervious Area													
Landscape													
Turf													
Parking – Pervious													
Open Space													
Other													
Subtotal - Total Pervious Area													
Total Project Area													
% of Total Project Area Impervious													
% of Total Project Area Pervious													

Note: Add Rows as Necessary to Describe Project



- Oil/Water Separators (water quality inlets) are generally ineffective in removing pollutants in concentrations seen in urban storm water runoff. Since the removal rates are low, those pollutants that are removed are often flushed out by subsequent storms, especially when the inlet frequently maintained. This type of device may be suitable for use as part of a “treatment train” approach where there are projects with potentially high oil and grease concentrations and where other controls are not included as part of the treatment after water goes through the oil/water separator.

In the written text of the SWMP, provide additional information regarding the BMPs selected.

- Provide a description of the entire site drainage area, including all the project property and, if applicable, any areas that may be off the project property, but drains onto it.
- Show all treatment BMP locations, the sub drainage areas flowing into them, and identify the direction of storm water flows into the BMP on a Site Plan Sheet for the project area.
- Identify the potential pollutants present for each sub drainage area, which would be a subset of all pollutants of concern for the site.
- Provide the percent impervious surface present and/or the runoff coefficient to be used for the BMPs
- Provide the hydrologic and hydraulic computations for flow and/or volume for each of the sub drainage areas using the

To complete Table A-1 BMP Summary Table,

- Provide the description of each BMP selected
 - Classify the BMP selected as either Site Design, Source Control, or Treatment Control
 - Identify the type of sizing criteria used: either Volume Hydraulic Design or Flow Hydraulic Design
 - Identify the sizing method used: for Volume it is either the Urban Runoff Quality Management (85th percentile of the 24-hour storm runoff event) or the CA BMP Handbooks Appendix D method to achieve 80% or more capture, using local rainfall data. For Flow Hydraulic Design, BMPs will be sized using one of these three options: Factored Flood Flow Method (10% of the 50-year peak flow rate; the California Stormwater BMP Handbook method (The flow produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity); or the Uniform Intensity Method (the flow produced by a rain event equal to at least 0.2 inches/hour intensity. (See SMC 12.60.150 for design criteria.)
 - Identify the Runoff Coefficient selected and the BMP size in either cubic feet or cubic feet/second
 - List the pollutants that will be addressed by each BMP
- b. Describe the proposed site activities that may affect storm water quality in each of the drainage or sub-drainage areas.
- c. Identify each of the pollutants of concern for each drainage or sub-drainage area (This may be a subset of the pollutants of concern for the entire project.)
- d. The Percent Impervious and/or runoff coefficient (see example computations described in Appendix F)



- e. Flow and/or volume of storm water generated to be treated by an area, using computations described in Appendix F:
 - Hydrologic computations
 - Hydraulic computations for runoff conveyance systems (e.g., swales, channels, culverts, pipes, etc.)

6. Infiltration Devices

Infiltration Inclusion Zones in the City of Sunnyvale have been identified on the GIS layer maps in Appendix B. The Infiltration Inclusion Zone is an area where the depth to groundwater, more permeable soil conditions, and other factors are such that infiltration devices (e.g., shallow dry wells, infiltration basins, infiltration and exfiltration trenches, unlined retention basins and unlined or open bottom vaults) can be used if the special guidelines discussed below are followed.

The Infiltration Inclusion Zone shown on the maps was developed based on generalized information on the depth of groundwater greater than 30 feet from ground surface and soil permeabilities categorized as “moderate” using data provided by the Santa Clara Valley Water District (SCVWD). Soil permeabilities in this area range from 0.06 in/hr to 2.0 in/hr. The soil permeability rate is applicable for soils up to 60 inches deep. These include Arbuckle Pleasanton and Yolo soil associations. The use of infiltration devices in the infiltration inclusion zone is generally acceptable, although site specific information regarding the depth to groundwater and soil infiltration rates may be required to obtain other permits needed from the SCVWD and to demonstrate that infiltration devices are feasible at the project site.

If an infiltration device will be used, identify the vertical distance between the base of an infiltration device and seasonal high groundwater depth. Refer to SMC 12.60.040 (q) for the definition of a storm water infiltration device and to SMC 12.60.190 for minimum criteria for minimum criteria for the use of storm water infiltration devices. Also, review the Guidance for Use of *Infiltration Measures for Storm Water Management in Santa Clara Valley (Infiltration Guidance)*, developed by SCVURPPP for additional requirements of the Santa Clara Valley Water District which can be found in Appendix D.

7. Plans for Post-Construction BMP Maintenance and/or Source Control

- a. Describe pesticide reduction measures, if a landscaping plan required. Examples can be found in Appendix A, Landscape Maintenance Techniques for Pest Reduction.
- b. Describe preventive maintenance actions needed for the operation of treatment BMPs once the facility is constructed. Identify other facility equipment, and systems needed to ensure source control BMP measures are followed after the facility is constructed. Provide this information in a table, similar to Table A-2 below.



Table A-2: Example – Post Construction BMP Maintenance and/or Source Control Activities

Name of Party or Agency/Company responsible for BMP Maintenance: _____
 If different from above, identify each of the parties responsible for Source Control Activities (e.g., sweeping, litter pick up, landscape maintenance, if a part of a BMP)
 Provide the following contact information:
 Address _____
 Phone_ () _____ FAX() _____ E-mail _____

Structural BMP / Source Control Measure Descriptions	Date When BMP Began Operation	Proposed Maintenance Schedule (daily, weekly, monthly, quarterly, etc.) and description of maintenance activities

- c. Identify the elements of a self-inspection program to investigate non-storm water discharges, BMP maintenance activities, effectiveness of BMPs, and prevention of soil erosion. Provide this information in a table, similar to Table A-3 below.

Table A-3: Example – Self-Inspection Program Description

Name of Responsible Party for Self Inspections: _____
 Provide the following contact information:
 Address _____
 Phone_ () _____ FAX() _____ E-mail _____

Description of Items for Self Inspection (e.g. BMP, non-storm water discharges, BMP maintenance actions, soil erosion, and others as applicable to site)	Self-Inspection Schedule



- d. Describe employee training program to implement the post-construction operations and maintenance of all storm water BMPs at the project site.

Table A-4: Example – Employee Training Program

Name of Responsible Party for training: _____ Provide the following contact information: Address _____		
Phone () _____ FAX() _____ E-mail _____		
Description of Items for Training (e.g. maintenance, inspection, pesticide use, others as applicable to site)	Training Schedule	Employees To Be Trained (Job Category or Title)

- e. Describe spill response procedures (if applicable) based on the types of materials being handled outdoors at the facility.
- f. Identify any areas to be used for outdoor storage and handling of process materials and wastes. (e.g., stockpiles, dumpsters, tallow bins, recyclables or vehicle storage) on the site map described in #8 below. Describe how materials will be handled or stored on site to prevent storm water runoff contamination or spills.
- g. Describe record keeping and internal reporting procedures for self-inspections and maintenance of BMPs. Provide information as to who will keep the records and where they will be located.
- h. Provide current contact information for the facility owner or operator so that post-construction inspections of the storm water treatment BMPs can be scheduled.

Part 2 – Maps and Plan Summary

8. Provide a Vicinity Map (scale 1” = 250’) (It can be the same scale map used for Part 1, Item 2.b of the checklist)

9. Provide Existing and Proposed Site Plan (scale 1” = 40’).

The Site Plan Sheets must match all information presented in the Storm Water Management Plan narrative submitted as a part of the Project Application. Identify the following:

- a. Entire property included on one plan sheet/map with any easements and rights-of-way
- b. Existing and proposed topographic contours with drainage areas and sub-areas delineated with arrows showing surface water flow direction.
- c. Show any existing structures that will remain and all new/proposed: buildings, sidewalks, driveways, parking areas, and covered activity areas as described in Table 1 – BMP Summary Table. Provide information on acreage/square feet of entire project property, acreage/square feet of new or replaced impervious surface of the project property, and estimated surface drainage area being treated by an individual BMP. The Table A - 1- BMP Summary Table from above can be copied to the site map to provide this information.
- d. Identify private storm drain systems and/or public storm conveyance systems including storm drain inlets and provide information on existing and proposed flows to each inlet.



- e. Identify any water bodies (e.g. streams, creeks, channels, and ponds), impoundments, and wetlands that occur within 500 ft. of the project boundary.
- f. Identify locations of treatment control Best Management Practice measures and show proposed areas that will drain into them.
- g. Identify potential areas where soil erosion could occur.
- h. If applicable, show the following
 - i. 100-year Flood elevations
 - ii. Soil boring locations, depth(s) to groundwater and date(s) of measurement
 - iii. Monitoring well locations, depth(s) to groundwater and date(s) of measurement
 - iv. Water supply well locations within property and on adjacent properties (within 500 ft.)
 - v. Landscaping Plan (if landscape is to be used as part of a storm water treatment BMP).

10. Plan Sheets

In addition to the site map, the applicant should submit a list of plan sheets related to the storm water facilities that will be prepared and submitted to the City for the building permit. These design plan sheets need to include profiles or cross-sections and details of any structures that will be constructed to manage storm water from the project site. The Storm Water Management Plan narrative and the Storm Water Management Plan Sheets must match; all BMP designs and treatment devices included on the plan sheets must also be discussed in the SWMP narrative.

The plans listed below may be required as part of the building permit application, depending on the project. If they are submitted, there must be no conflicts between these plans and the Storm Water Management Plan Sheets.

11. Grading Plan

12. Utility Plan

13. Landscaping Plans



Third - Party Certification Checklist

This checklist is to be used to assist third-party reviewers of Storm Water Management Plans (SWMPs) for a project.

Information/Plans Required	Provided? Yes/No
1. All items on the Storm Water Management Plan Checklist (Appendix A) have been addressed in the SWMP being reviewed	
2. BMPs selected will treat storm water to remove the types of pollutants expected from this site?	
3. BMPs are appropriately sized to treat the quantity of storm water expected from this site to meet the guidance in the California Stormwater Quality Association, Stormwater Best Management Practice Handbook , New and Redevelopment Volume and the requirements of SMC 12.60.150	
4. There are no conflicts between the SWMP Plan sheet and any other plan sheets included with the project (e.g., Grading, Utility, or Landscaping Plan Sheets) that may be required by the City.	
5. A compliance review stamp is provided on the SWMP and any plan sheets as reviewed in #4 above.	
6. The SWMP is signed and stamped by a Professional Engineer and states as follows: The sizing, selection, and preliminary design of the Best Management Practices and control measures in the Storm Water Management Plan meet the requirements of SMC 12.60	
7. If there are any modifications to the SWMP as the project is being developed, the as-built designs must be reviewed and recertified by the third-party reviewer before the building permit is finalized or the Certificate of Occupancy is issued.	

PROPERTY MAINTENANCE FACT SHEET



Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Landscape Maintenance Techniques for Pest Reduction

Who should use this Fact Sheet?

- Development Project Applicants
- City/County Planners
- Landscape Maintenance Personnel
- Landscape Architects
- Homeowners

Why is it Important to Reduce Pesticide Usage?

When it rains, pesticides used in maintaining landscapes and gardens are washed off the plants and soils they are used to protect. This stormwater runs off the landscape and flows to the nearest storm drain, which ultimately carries the water to a local creek or the San Francisco Bay without treatment. Pesticides carried with stormwater into creeks and the Bay are harmful to the fish and other organisms that live there. Minimizing our use of pesticides in landscape maintenance helps protect water quality, aquatic life, and our own health.



What is Integrated Pest Management?

IPM is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed, according to established guidelines, and treatments are made with the goal of managing only the target organism to an acceptable level. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment.

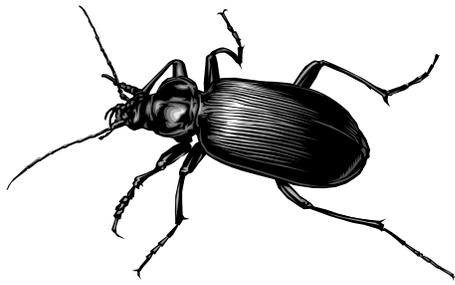
How Can Landscape Design and Maintenance Techniques Reduce Pesticide Usage

Pesticides are often used in maintaining landscapes. The amount of pesticides entering our waters can be decreased by using alternative design and maintenance techniques that:

- Reduce the potential for the pesticides to run off the landscape;
- Reduce the amount of chemicals necessary to ensure healthy plants or eliminate the need for pesticide usage at all; or,
- Decrease the need for landscape maintenance by designing landscapes that minimize pest infestation and create low maintenance environments.

Refer to the back of this fact sheet for more design and maintenance tips.





Pest Reducing Landscape Design Techniques

- Design the landscape for efficient irrigation and drainage.
- Design the landscape to conform to natural drainage patterns.
- Retain existing native, pest-resistant trees, shrubs and plants.
- Select pest-resistant plants adapted to your specific area. Consider site-specific characteristics such as the soil, topography, climate, amount and timing of sunlight, prevailing winds, rainfall, air movement, patterns of land use, ecological consistency and plant interactions.
- Prevent the need for routine pruning by selecting plants based on their size and shape when mature.
- Situate plants to facilitate maintenance. Install mowing strips, tree wells and pathway edging to reduce problems associated with maintaining the interface between different elements of the design.
- Plant at the right time of year.

Pest Reducing Landscape Maintenance Techniques

- Employ Integrated Pest Management methods before using chemical pesticides to treat a pest problem (i.e., biological, physical and cultural controls).
- If pesticides are necessary, use the least toxic pesticide available. Avoid use of copper-based pesticides.
- Do not over apply pesticide. Spray only where the infestation exists. Follow the manufacturer's instructions for mixing and applying materials.
- Properly sweep up spilled fertilizers or pesticides. Do not wash away or bury such spills.
- Properly dispose of chemical wastes by recycling, reusing, or disposing of as hazardous waste. Do not dispose of debris into or near channels or other waterways or leave it on the street where it may contact runoff.
- Apply pesticides at the appropriate time to maximize their effectiveness and minimize the likelihood of discharging undegraded pesticides into runoff. Avoid application if rain is expected.
- Maintain healthy soils by incorporating organic matter, making regular pH adjustments, and appropriately fertilizing.
- Do not overwater. Do not allow overspray.
- Prune to increase air circulation but do not overprune.
- Apply 2-4 inches of mulch or geotextiles to exposed soils to prevent weed growth.
- Mow lawns and turf high and leave clippings.
- Replace problem plants with locally-adapted, pest resistant plants.
- Place trash and recycling canisters away from buildings and properly cover.
- Remove, rake up and dispose of diseased plant parts.

ADDITIONAL RESOURCES

IPM Access,
www.efn.org/~ipmpa, *IPM Based Landscape Design*.

Bio-Integral Resource Center
(BIRC) (510) 524-2567

Central Contra Costa County Sanitary District
Our Water Our World IPM Fact Sheets
www.centrialsan.org

San Francisco Department of the Environment
www.sfenvironment.com
www.watershedwatch.net



Pest Resistant Plant List www.scvurppp.org

University of California Cooperative Extension
Master Gardeners (in the phone book)

University of California IPM (800) 994-8849
www.ipm.ucdavis.edu

- Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control
- The UC Guide to Solving Garden and Landscape Problems: An Interactive CD- ROM
- Pests of Landscape Trees and Shrubs



Model Conditions of Approval: Landscape Plans for the Reduction of Pesticide Use and Treatment of Storm Water Runoff

If a landscaping plan is required as part of a development project application, the plan shall meet the following conditions related to reduction of pesticide use on the project site:

1. Landscaping shall be designed with efficient irrigation to reduce runoff, promote surface infiltration, and minimize the use of fertilizers and pesticides that can contribute to water pollution.
2. Where feasible, landscaping shall be designed and operated to treat storm water runoff by incorporating elements that collect, detain, and infiltrate runoff. In areas that provide detention of water, plants that are tolerant of saturated soil conditions and prolonged exposure to water shall be specified.
3. Plant materials selected shall be appropriate to site specific characteristics such as soil type, topography, climate, amount and timing of sunlight, prevailing winds, rainfall, air movement, patterns of land use, ecological consistency, and plant interactions to ensure successful establishment.
4. Existing native trees, shrubs, and groundcover shall be retained and incorporated into the landscape plan to the maximum extent possible.
5. Proper maintenance of landscaping, with minimal pesticide use, shall be the responsibility of the property owner. See "Fact Sheet on Landscape Maintenance Techniques for Pest Reduction" as a good example of an education piece for property owners.

Blueprint for a Clean Bay

Best Management Practices for the Construction Industry



Remember: The property owner and the contractor share ultimate responsibility for the activities that occur on a construction site. You may be held responsible for any environmental damage caused by your subcontractors or employees.

Preventing Pollution: It's Up to Us

In the Santa Clara Valley, storm drains transport water directly to local creeks and San Francisco Bay without treatment. Stormwater pollution is a serious problem for wildlife dependent on our creeks and bays and for the people who live near polluted streams or baylands. Common sources of this pollution include spilled oil, fuel, and fluids from vehicles and heavy equipment; construction debris; sediment created by erosion; landscaping runoff containing pesticides or weed killers; and materials such as used motor oil, antifreeze, and paint products that people pour or spill into a street or storm drain.



**Santa Clara Valley
Urban Runoff
Pollution Prevention Program**

Thirteen valley municipalities have joined together with Santa Clara County and the Santa Clara Valley Water District to educate local residents and businesses and fight stormwater pollution. This "blueprint" summarizes "Best Management Practices (BMPs) for stormwater pollution prevention.

Spill Response Agencies:

In the City of Sunnyvale, DIAL 9-1-1.

State Office of Emergency Service
Warning Center (24 hours)
.....1-800-852-7550

Santa Clara County Environmental
Health Services
.....(408) 299-6930

Local Pollution Control Agencies:

County of Santa Clara
Pollution Prevention Program
..... (408) 441-1195

County of Santa Clara Integrated Waste
Management Program
..... (408) 441-1198

Santa Clara County Hazardous
Waste Program
..... (408) 299-7300
For information on the disposal of hazardous waste

County of Santa Clara District Attorney
Environmental Crimes Hotline
..... (408) 299-TIPS

Santa Clara Valley Water District
..... (408) 265-2600

Santa Clara Valley Water
District Pollution Hotline
..... 1-888-510-5151

Santa Clara County Recycling Hotline
..... 1-800-533-8414

Regional Water Quality Control Board
..... (510) 622-2300
Serving San Francisco Bay Region

**Sunnyvale Water Pollution
Control Plant**
..... (408) 730-7270

Sunnyvale Recycling Program
..... (408) 730-7262
Or visit www.ci.sunnyvale.ca.us/recycle

SMaRT Station®
(GreenTeam/Zanker of Sunnyvale)
Recycling Drop-Off Center,
Garbage Disposal
..... (408) 752-8530

Small Business Hazardous Waste Disposal Program

Santa Clara County businesses that generate less than 27 gallons or 220 pounds of hazardous waste per month are eligible to use Santa Clara County's Small Business Hazardous Waste Disposal Program. Call (408) 299-7300 for a quote, more information or guidance on disposal.

General Construction and Site Supervision

Who should use this information?

- General Contractors
- Site Supervisors
- Inspectors
- Home Builders
- Developers
- Homeowners



Doing the Job Right General Principles

- Keep an orderly site and ensure good housekeeping practices are used.
- Maintain equipment properly.
- Cover materials when they are not in use.
- Keep materials away from streets, storm drains and drainage channels.
- Ensure dust control water doesn't leave site or discharge to storm drains.

Advance Planning To Prevent Pollution

- Schedule excavation and grading activities for dry weather periods. To reduce soil erosion, plant temporary vegetation or place other erosion controls before rain begins. Use the *Erosion and Sediment Control Field Manual*, available from the Regional Water Quality Control Board San Francisco Bay Region, as a reference.
- Control the amount of runoff crossing your site (especially during excavation!) by using berms or temporary or permanent drainage ditches to divert water flow around the site. Reduce stormwater runoff velocities by constructing temporary check dams or berms where appropriate.
- Train your employees and subcontractors. Make sure everyone who works at the construction site is familiar with this information. Inform subcontractors about the stormwater requirements and their own responsibilities. Use BAASMA, *Blueprint for a Clean Bay*, a construction best

management practices guide available from the Santa Clara Valley Urban Runoff Pollution Prevention Program, and California Storm Water Quality Association Stormwater Best Management Practice Handbook: Construction; (Jan 2003) as references.

Good Housekeeping Practices

- Designate one area of the site for auto parking, vehicle refueling, and routine equipment maintenance. The designated area should be well away from streams or storm drain inlets, bermed if necessary. Make major repairs off site.
- Keep materials out of the rain – prevent runoff contamination at the source. Cover exposed piles of soil or construction materials with plastic sheeting or temporary roofs. Before it rains, sweep and remove materials from surfaces that drain to storm drains, creeks, or channels.
- Keep pollutants off exposed surfaces. Place trash cans and recycling receptacles around the site to minimize litter.
- Clean up leaks, drips and other spills immediately so they do not contaminate soil or groundwater or leave residue on paved surfaces.
- Never hose down "dirty" pavement or surfaces where materials have spilled.
- Use dry cleanup methods whenever possible. If you must use water, use just enough to keep the dust down.
- Cover and maintain dumpsters. Check frequently for leaks. Place dumpsters under roofs or cover with tarps or plastic sheeting secured around the outside of the dumpster. Never clean out a dumpster by hosing it down on the construction site.

Storm Drain Pollution from Construction Activities

Construction sites are common sources of storm water pollution. Materials and wastes that blow or wash into a storm drain, gutter, or street have a direct impact on local creeks and the Bay.

As a contractor, or site supervisor, owner or operator of a site, you may be responsible for any environmental damage caused by your subcontractors or employees.

- Place portable toilets away from storm drains. Make sure portable toilets are in good working order. Check frequently for leaks.

Materials/Waste Handling

- Practice Source Reduction -- minimize waste when you order materials. Order only the amount you need to finish the job.
- Use recyclable materials whenever possible. Arrange for pick-up of recyclable materials such as concrete, asphalt, scrap metal, solvents, degreasers, cleared vegetation, paper, rock, and vehicle maintenance materials such as used oil, antifreeze, batteries, and tires.
- Dispose of all wastes properly. Many construction materials and wastes, including solvents, water-based paints, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation can be recycled. (See Sunnyvale Recycling Program information listed above.) Materials that cannot be recycled must be taken to an appropriate landfill or disposed of as hazardous waste. Never bury waste materials or leave them in the street or near a creek or stream bed.

Permits

- In addition to local grading and building permits, you will need to obtain coverage under the State's General Construction Activity Stormwater Permit if your construction site's disturbed area totals 1 acre or more. Information on the General Permit can be obtained from the Regional Water Quality Control Board.

Painting and Application of Solvents and Adhesives

Who should use this information?

- Painters
- Paperhangers
- Plasterers
- Graphic Artists
- Dry Wall Crews
- Floor Covering Installers
- General Contractors
- Home Builders
- Developers
- Homeowners



Storm Drain Pollution from Paints, Solvents, and Adhesives

All paints, solvents, and adhesives contain chemicals that are harmful to wildlife in local creeks, San Francisco Bay, and the Pacific Ocean. Toxic chemicals may come from liquid or solid products or from cleaning residues or rags. Paint material and wastes, adhesives and cleaning fluids should be recycled when possible, or disposed of properly to prevent these materials from flowing into storm drains and watercourses.

Doing the Job Right Handling Paint Products

- Keep all liquid paint products and wastes away from the gutter, street, and storm drains. Liquid residues from paints, thinners, solvents, glues, and cleaning fluids are hazardous wastes and must be disposed of as hazardous. Contact the Santa Clara County Hazardous Waste Program at (408) 299-7300.
- Wash water from painted buildings constructed before 1978 can contain high amounts of lead, even if paint chips are not present. Before you begin stripping paint or cleaning pre-1978 building exteriors with water under high pressure, test paint for lead by taking paint scrapings to a local laboratory. See Yellow Pages for a state-certified laboratory.
- If there is loose paint on the building, or if the paint tests positive for lead, block storm drains. Check with the wastewater treatment plant to determine whether you may discharge water to the sanitary sewer, or if you must send it offsite for disposal as hazardous waste.

Paint Removal

- Buildings constructed before 1978 may have lead paint in them. Test paint for lead by taking samples to a local environmental testing laboratory to determine if removed paint must be disposed of as hazardous waste.
- Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury or tributyl tin must be disposed of as hazardous wastes. Lead based paint removal requires a state-certified contractor.
- When stripping or cleaning building exteriors with high-pressure water, block storm drains. Direct wash water onto a dirt area, or check Sunnyvale Water Pollution Control Plant (408) 730-7270 to find out if you can collect (mop or vacuum) building cleaning water and dispose to the sanitary sewer. Sampling of the water may be required to assist the wastewater treatment authority in making its decision.

Painting Cleanup

- Never clean brushes or rinse paint containers into a street, gutter, storm drain, French drain, or stream.
- For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary

sewer. Never pour paint down a storm drain. Dispose of excess liquids and residue as hazardous waste.

- For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids and residue as hazardous waste.
- When thoroughly dry, empty paint cans, used brushes, rags, and drop cloths may be disposed of as garbage in a sanitary landfill. Leave lids off paint cans so the refuse collector can see that they are empty. Empty, dry paint cans also may be recycled as metal.
- Dispose of empty aerosol paint cans as hazardous waste or at household hazardous waste collection events.

Recycle/Reuse Leftover Paints Whenever Possible

- Donate excess water-based (latex) paint for reuse. Call the Santa Clara County Hazardous Waste Program at (408) 299-7300 for details.
- Reuse leftover oil-based paint. Dispose of non-recyclable thinners, sludge and unwanted paint, as hazardous waste.
- Unopened cans of paint may be able to be returned to the paint vendor. Check with the vendor regarding its "buy-back" policy.

Landscaping, Gardening, And Pool Maintenance

Who should use this information?

- Landscapers
- Gardeners
- Swimming Pool/Spa Service and Repair Workers
- General Contractors
- Home Builders
- Developers
- Homeowners



Storm Drain Pollution from Landscaping and Swimming Pool Maintenance

Many landscaping activities expose soils and increase the likelihood that earth and garden chemicals will run off into the storm drains during irrigation or when it rains. Swimming pool water containing chlorine and copper-based algaecides should never be discharged to storm drains. These chemicals are toxic to aquatic life.

Doing the Job Right General Business Practices

- Protect stockpiles (e.g. asphalt, sand, or soil) and landscaping materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Store pesticides, fertilizers, and other chemicals indoors or in a shed or storage cabinet.
- Schedule grading and excavation projects during dry weather.
- Use temporary check dams or ditches to divert runoff away from storm drains.
- Protect storm drains with sandbags or other sediment controls.
- Revegetation is an excellent form of erosion control for any site. Replant as soon as possible with temporary vegetation such as grass seed.

Landscaping/Garden Maintenance

- Consider using Integrated Pest Management Techniques. Use pesticides sparingly, according to instructions on the label. Rinse empty containers, and use rinsewater as product. Dispose of rinsed, empty containers in the trash.
- Dispose of unused pesticides as hazardous waste.

- Curbside pickup of yard waste is provided for Sunnyvale residences. Place yard waste in approved containers at curbside for pickup on waste collection days. Commercial entities may take yard waste to the Sunnyvale SMaRT station for recycling. Contact the Sunnyvale Recycling Program (408) 730-7262 for further information.
- Collect lawn and garden clippings, pruning waste, and tree trimmings. Chip if necessary, and compost if possible.
- Do not blow or rake leaves, etc. into the street, or place yard waste in gutters or on dirt shoulders. Sweep up any leaves, litter or residue in gutters or on street.

Pool/Fountain/Spa Maintenance Draining pools or spas

When it's time to drain a pool, spa, or fountain, please be sure to call the Sunnyvale Water Pollution Control Plant (408) 730-7270 before you start for further guidance on flow rate restrictions, backflow prevention, and handling special cleaning waste (such as acid wash). Discharge flows should be kept to the low levels typically possible through a garden hose. Higher flow rates may be prohibited by local ordinance.

- Never discharge pool or spa water to a street or storm drain; discharge to a sanitary sewer cleanout.
- If possible, when emptying a pool or spa, let chlorine dissipate for a few days and then recycle/reuse water by draining it gradually onto a landscaped area. OR
- Contact the Sunnyvale Water Pollution Control Plant (408) 730-7270. You may be able to discharge to the sanitary sewer by running the hose to a utility sink or sewer pipe clean-out.
- Do not use copper-based algaecides. Control algae with chlorine or other alternatives, such as sodium bromide.

Filter Cleaning

- Never clean a filter in the street or near a storm drain. Rinse cartridge and diatomaceous earth filters onto a dirt area, and spade filter residue into soil. Dispose of spent diatomaceous earth in the garbage.
- If there is no suitable dirt area, call the Sunnyvale Water Pollution Control Plant (408) 730-7270 for instructions on discharging filter backwash or rinsewater to the sanitary sewer.

Earth-Moving and Dewatering Activities

Who should use this information?



- Bulldozer, Back Hoe, and Grading Machine Operators
- Dump Truck Drivers
- Site Supervisors
- General Contractors
- Home Builders
- Developers

Storm Drain Pollution from Earth-Moving Activities

Soil excavation and grading operations loosen large amounts of soil that can flow or blow into storm drains when handled improperly. Sediments in runoff can clog storm drains, smother aquatic life, and destroy habitats in creeks and the Bay. Effective erosion control practices reduce the amount of runoff crossing a site and slow the flow with check dams or roughened ground surfaces.

Contaminated groundwater is a common problem in the Santa Clara Valley. Depending on soil types and site history, groundwater pumped from construction sites may be contaminated with toxics (such as oil or solvents) or laden with sediments. Any of these pollutants can harm wildlife in creeks or the Bay, or interfere with wastewater treatment plant operation. Discharging sediment-laden water from a dewatering site into any water of the state without treatment is prohibited.

Doing the Job Right

General Business Practices

- Schedule excavation and grading work during dry weather.
- Perform major equipment repairs away from the job site.
- When refueling or vehicle/equipment maintenance must be done on site, designate a location away from storm drains.
- Do not use diesel oil to lubricate equipment parts, or clean equipment.

Practices During Construction

- Remove existing vegetation only when absolutely necessary. Plant *temporary* vegetation for erosion control on slopes or where construction is not immediately planned.
- Protect downslope drainage courses, streams, and storm drains with wattles, or temporary drainage swales. Use check dams or ditches to divert runoff around excavations. Refer to the Regional Water Quality Control Board's *Erosion and Sediment Control*

Field Manual for proper erosion and sediment control measures, and California Stormwater Quality Association Stormwater Best Management Practice Handbook (construction, 2003)

- Cover stockpiles and excavated soil with secured tarps or plastic sheeting.

Dewatering Operations

Check for Toxic Pollutants

- Check for odors, discoloration, or an oily sheen on groundwater.
- Call your local wastewater treatment agency and ask whether the groundwater must be tested.
- If contamination is suspected, have the water tested by a certified laboratory.
- Depending on the test results, you may be allowed to discharge pumped groundwater to the storm drain (if no sediments present) or sanitary sewer. OR, you may be required to collect and haul pumped groundwater offsite for treatment and disposal at an appropriate treatment facility.

Check for Sediment Levels

- If the water is clear, the pumping time is less than 24 hours, and the flow rate is less than 20 gallons per minute, you may pump water to the street or storm drain.
- If the pumping time is more than 24 hours and the flow rate greater than 20 gpm, call your local wastewater treatment plant for guidance.
- If the water is not clear, solids must be filtered or settled out by pumping to a settling tank prior to discharge. Options for filtering include:
 - Pumping through a perforate pipe sunk part way into a small pit filled with gravel;
 - Pumping from a bucket placed below water level using a submersible pump;
 - Pumping through a filtering device such as a swimming pool filter or filter fabric wrapped around end of suction pipe.
- When discharging to a storm drain, protect the inlet using a barrier of burlap bags filled with drain rock, or cover inlet with filter fabric anchored under the grate. OR pump water through a grassy swale prior to discharge.

Detecting Contaminated Soil or Groundwater

Contaminated groundwater is a common problem in the Santa Clara Valley. It is essential that all contractors and subcontractors involved know what to look for in detecting contaminated soil or groundwater, and testing ponded groundwater before pumping. Watch for any of these conditions:

1. Unusual soil conditions, discoloration or odor.
2. Abandoned underground tanks.
3. Abandoned wells.
4. Buried barrels, debris or trash.

If any of these are found follow the procedures below.

Roadwork and Paving

Who should use this information?

- Road Crews
- Driveway/Sidewalk/Parking Lot Construction Crews
- Seal Coat Contractors
- Operators of Grading Equipment, Paving Machines, Dump Trucks, Concrete Mixers
- Construction Inspectors
- General Contractors
- Developers
- Home Builders



Storm Drain Pollution from Roadwork

Road paving, surfacing, and pavement removal happen right in the street, where there are numerous opportunities for asphalt, saw-cut slurry, or excavated material to illegally enter storm drains. Extra planning is required to store and dispose of materials properly and guard against pollution of storm drains, creeks, and the Bay.

Doing the Job Right

General Business Practices

- Develop and implement erosion/sediment control plans for roadway embankments.
- Schedule excavation and grading work during dry weather.
- Check for and repair leaking equipment.
- Perform major equipment repairs at designated areas in your maintenance yard, where cleanup is easier. Avoid performing equipment repairs at construction sites.
- When refueling or when vehicle/equipment maintenance must be done on site, designate a location away from storm drains and creeks.
- Do not use diesel oil to lubricate equipment parts or clean equipment.
- Recycle used oil, concrete, broken asphalt, etc. whenever possible, or dispose of properly.
- Take broken up concrete to a local recycling facility. Call the Sunnyvale Recycling Program at (408) 730-7262 for information.

During Construction

- Avoid paving and seal coating in wet weather, or when rain is forecast, to prevent fresh materials from contacting stormwater runoff.
- Cover and seal catch basins and manholes when applying seal coat, slurry seal, fog seal, or similar materials.
- Protect drainage ways by using earth dikes, sand bags, or other controls to divert or trap and filter runoff.
- Never wash excess material from exposed aggregate concrete or similar treatments into a street or storm drain. Collect and recycle, or dispose to dirt area.
- Cover stockpiles (asphalt, sand, etc.) and other construction materials with plastic tarps. Protect from rainfall and prevent runoff with temporary roofs or plastic sheets and berms.
- Park paving machines over drip pans or absorbent material (cloth, rags, etc.) to catch drips when not in use.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) Dig up, remove, and properly dispose of contaminated soil.

- Collect and recycle or appropriately dispose of excess abrasive gravel or sand.
- Avoid over-application by water trucks for dust control.

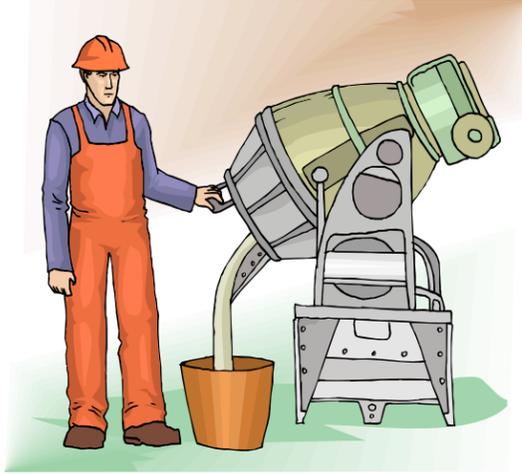
Asphalt/Concrete Removal

- Avoid creating excess dust when breaking asphalt or concrete.
- After breaking up old pavement, be sure to remove all chunks and pieces. Make sure broken pavement does not come in contact with rainfall or runoff.
- When making saw cuts, use as little water as possible. Shovel or vacuum saw-cut slurry and remove from the site. Cover or protect storm drain inlets during saw-cutting. Sweep up, and properly dispose of, all residues.
- Sweep, never hose down streets to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquor in storm drains.

Fresh Concrete and Mortar Application

Who should use this information?

- Masons and Bricklayers
- Sidewalk Construction Crews
- Patio Construction Workers
- Construction Inspectors
- General Contractors
- Home Builders
- Developers
- Concrete Delivery/Pumping Workers



Storm Drain Pollution from Fresh Concrete And Mortar Applications

Fresh concrete and cement-related mortars that wash into lakes, streams, or estuaries are toxic to fish and the aquatic environment. Disposing of these materials to the storm drains or creeks can block storm drains, causes serious problems, and is prohibited by law.

Doing the Job Right

General Business Practices

- Wash out concrete mixers only in designated wash-out areas in your yard, away from storm drains and waterways, where the water will flow into a temporary waste pit in a dirt area. Let water percolate through soil and dispose of settled, hardened concrete as garbage. Whenever possible, recycle washout by pumping back into mixers for reuse.
- Wash out chutes onto dirt areas at site that do not flow to streets or drains.
- Always store both dry and wet materials under cover, protected from rainfall and runoff and away from storm drains or waterways. Protect dry materials from wind.
- Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- Do not use diesel fuel as a lubricant on concrete forms, tools, or trailers.

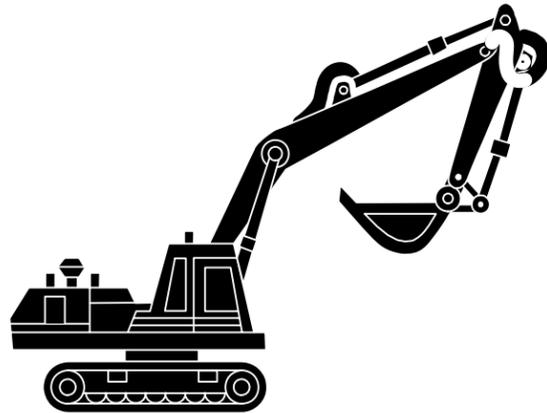
During Construction

- Don't mix up more fresh concrete or cement than you will use in a two-hour period.
- Set up and operate small mixers on tarps or heavy plastic drop cloths.
- When cleaning up after driveway or sidewalk construction, wash fines onto dirt areas, not down the driveway or into the street or storm drain.
- Protect applications of fresh concrete and mortar from rainfall and runoff until the material has dried.
- Wash down exposed aggregate concrete only when the wash water can (1) flow onto a dirt area; (2) drain onto a bermed surface from which it can be pumped and disposed of properly; or (3) be vacuumed from a catchment created by blocking a storm drain inlet. If necessary, divert runoff with temporary berms. Make sure runoff does not reach gutters or storm drains.
- When breaking up pavement, be sure to pick up all the pieces and dispose of properly. Recycle large chunks of broken concrete at a local recycling facility. Call the Sunnyvale Recycling Program at (408) 730-7262 for information.
- Never bury waste material. Dispose of small amounts of excess dry concrete, grout, and mortar in the trash.
- Never dispose of washout into the street, storm drains, drainage ditches, or streams.

Heavy Equipment Operation

Who should use this information?

- Vehicle and Equipment Operators
- Site Supervisors
- General Contractors
- Home Builders
- Developers



Stormwater Pollution from Heavy Equipment on Construction Sites

Poorly maintained vehicles and heavy equipment that leak fuel, oil, antifreeze or other fluids on the construction site are common sources of storm drain pollution. Prevent spills and leaks by isolating equipment from runoff channels, and by watching for leaks and other maintenance problems. Remove construction equipment from the site as soon as possible.

Doing the Job Right

Site Planning and Preventive Vehicle Maintenance

- Designate one area of the construction site, well away from streams or storm drain inlets, for auto and equipment parking, refueling, and routine vehicle and equipment maintenance. Contain the area with berms, sand bags, or other barriers.
- Maintain all vehicles and heavy equipment. Inspect frequently for and repair leaks.
- Perform major maintenance, repair jobs, and vehicle and equipment washing off site where cleanup is easier.
- If you must drain and replace motor oil, radiator coolant, or other fluids on site, use drip pans or drop cloths to catch drips and spills. Collect all spent fluids, store in separate containers. Recycle them wherever possible, otherwise, dispose of them as hazardous wastes.
- Do not use diesel oil to lubricate equipment parts, or clean equipment. Use only water for any onsite cleaning.
- Cover exposed fifth wheel hitches and other oily or greasy equipment during rain events.
- Use as little water as possible for dust control. Ensure water used doesn't leave silt or discharge to storm drains.

Spill Cleanup

- Clean up spills immediately when they happen.
- Never hose down "dirty" pavement or impermeable surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags) whenever possible and properly dispose of absorbent materials.
- Sweep up spilled dry materials immediately. Never attempt to "wash them away" with water, or bury them.
- Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- Report significant spills to the appropriate local spill response agencies immediately. In Sunnyvale, dial 9-1-1 if hazardous materials might enter the storm drain.
- If the spill poses a significant hazard to human health and safety, property or the environment, you must also report it to the State Office of Emergency Services 1-800-852-7500.



Appendix B: GIS Maps of Sunnyvale Drainage System

➤ City of Sunnyvale Storm Drain System Citywide Map – Plate 1	B - 3
➤ Storm Drain System Map - Sheet 1	B - 4
➤ Storm Drain System Map - Sheet 2	B - 5
➤ Storm Drain System Map - Sheet 3	B - 6
➤ Storm Drain System Map - Sheet 4	B - 7
➤ Storm Drain System Map - Sheet 5	B - 8
➤ Storm Drain System Map - Sheet 6	B - 9
➤ Storm Drain System Map - Sheet 7	B - 10
➤ Storm Drain System Map - Sheet 8	B - 11
➤ Stevens Creek Watershed HMP Zone	B - 12
➤ Calabazas Creek Watershed HMP Zone	B - 13



These maps are to be used to:

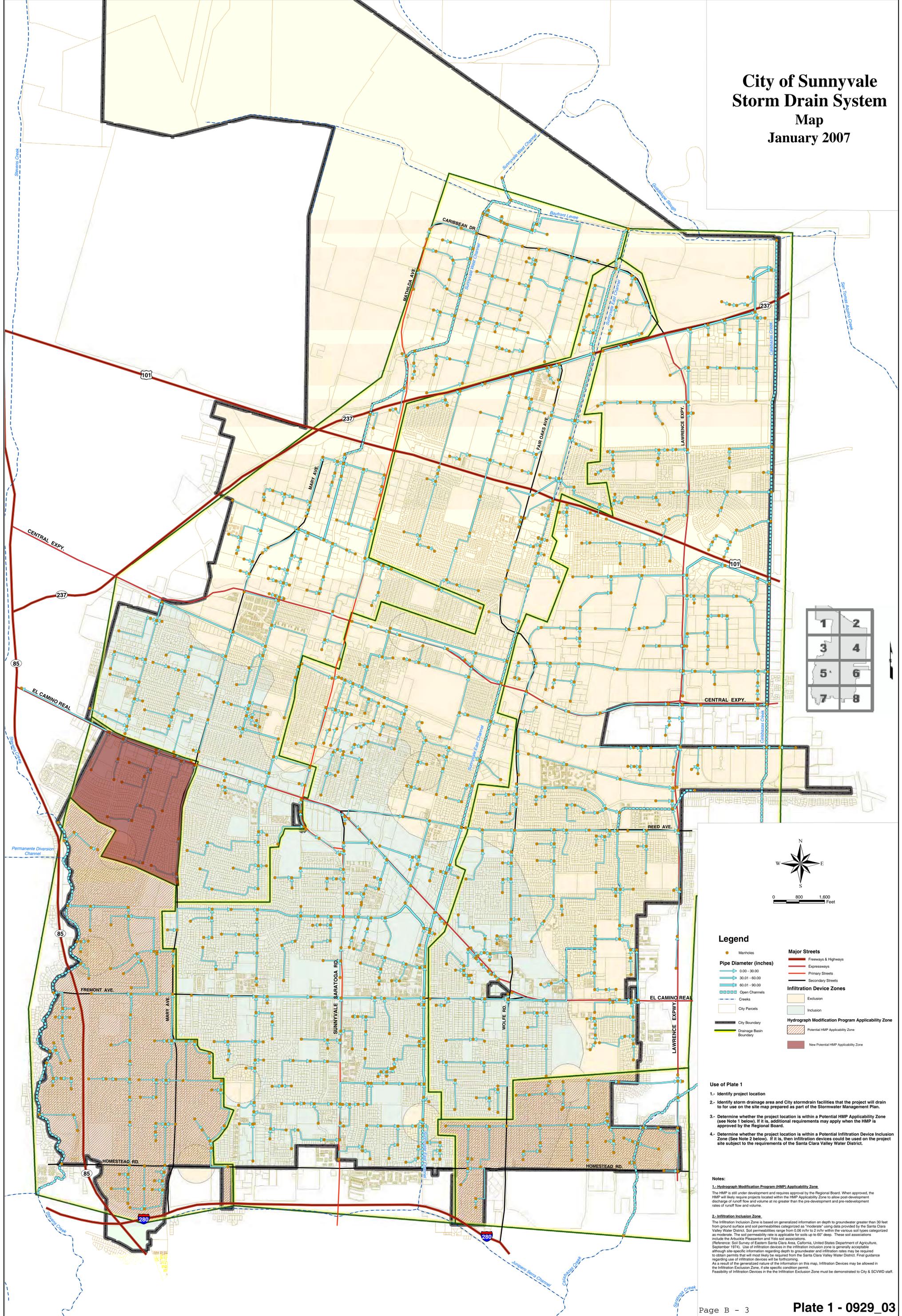
1. Identify project location
2. Identify storm drainage area and City storm drain facilities that the project will drain to for use on the site map prepared as part of the Storm water Management Plan.
3. Determine whether the project location is within a Potential HMP Applicability Zone. (See Note 1 below.) If it is, limitations on the increase of peak storm water runoff discharge rates may apply. Post-development discharge of runoff flow and volume from these areas will occur at rates no greater than the pre-development rates.
4. Determine if the project is located within a Potential Infiltration Device Inclusion Zone (See Note 2 below). If it is, then infiltration devices could be used on the project site subject to the requirements of the Santa Clara Valley Water District (SCVWD). It is unlikely that projects located outside of the Inclusion Zone could have infiltration-type BMPs approved due to the heavy clay soil and depth to groundwater generally found in this area. However, there may be some locations where infiltration BMPs could be applied or where underdrains may be used to collect the flow after treatment and discharge into storm drain lines. Applications will be reviewed on a case-by-case basis, depending on the documentation of soil type present, measured depth to groundwater, and design plans to determine if infiltration-type BMPs are appropriate. Infiltration devices proposed for these areas may also be subject to the requirements of the SCVWD for permitting

NOTE:

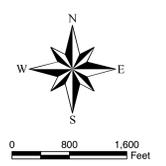
1. Hydromodification Management Plan Applicability Zone – Two areas have been identified as HMP Applicability Zones. One is located in the southeast corner of the City that has storm drains that flow to Calabazas Creek and the second is located in the south west corner that has storm drains flowing to Stevens Creek (See Pages B-12 and B-13). Some projects in these areas are required to meet HMP Performance criteria. In the current HMP implementation plan, all projects that are greater than 50 acres in size must implement the HMP performance criteria. Projects that are equal to 50 acres or less in size (and not a part of a phased development) will use appropriate site design, source control, and treatment control measures that have flow control benefits to the maximum extent practicable. If off-site or in-stream controls are available for these projects to contribute to, then they can also be used to help meet the management objective.
2. Infiltration Inclusion Zone – The Infiltration Inclusion Zone is based on generalized information on depth to groundwater greater than 30 feet from ground surface and soil permeability categorized as “moderate” using data provided by the Santa Clara Valley Water District. Soil permeability ranges from 0.06 in/hr to 2 in/hr within the various soil types are categorized as moderate. The soil permeability rate is applicable for soils up to 60” deep. These soil associations include the Arbutle Pleasanton and Yolo soil associations. (Reference: Soil Survey of Eastern Santa Clara Area, California, United States Department of Agriculture, September 1974). Use of infiltration devices in the infiltration inclusion zone is generally acceptable although site-specific information regarding depth to groundwater and infiltration rates may be required to obtain permits that will most likely be required from the Santa Clara Valley Water District. Final guidance regarding use of infiltration devices will be forthcoming from the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP).

Due to the generalized nature of the information on this map, infiltration devices may be allowed in the other areas, if site-specific conditions permit. The feasibility of infiltration devices at any location must be documented to City and approved by SCVWD staff.

City of Sunnyvale Storm Drain System Map January 2007



1	2
3	4
5	6
7	8



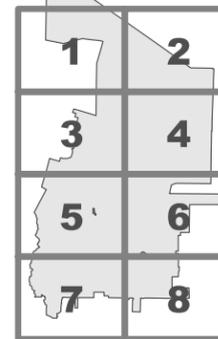
- Legend**
- Manholes
 - Pipe Diameter (inches)
 - 0.00 - 30.00
 - 30.01 - 60.00
 - 60.01 - 90.00
 - Open Channels
 - Creeks
 - City Parcels
 - City Boundary
 - Drainage Basin Boundary
 - Major Streets
 - Freeways & Highways
 - Expressways
 - Primary Streets
 - Secondary Streets
 - Infiltration Device Zones
 - Exclusion
 - Inclusion
 - Potential HMP Applicability Zone
 - New Potential HMP Applicability Zone
 - Hydrograph Modification Program Applicability Zone

- Use of Plate 1**
1. Identify project location
 2. Identify storm drainage area and City storm drain facilities that the project will drain to for use on the site map prepared as part of the Stormwater Management Plan.
 3. Determine whether the project location is within a Potential HMP Applicability Zone (see Note 1 below). If it is, additional requirements may apply when the HMP is approved by the Regional Board.
 4. Determine whether the project location is within a Potential Infiltration Device Inclusion Zone (see Note 2 below). If it is, then infiltration devices could be used on the project site subject to the requirements of the Santa Clara Valley Water District.

Notes:

1- Hydrograph Modification Program (HMP) Applicability Zone
 The HMP is still under development and requires approval by the Regional Board. When approved, the HMP will likely require projects located within the HMP Applicability Zone to allow post-development discharge of runoff flow and volume at no greater than the pre-development and pre-development rates of runoff flow and volume.

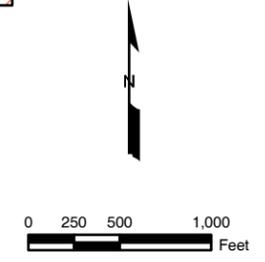
2- Infiltration Inclusion Zone
 The Infiltration Inclusion Zone is based on generalized information on depth to groundwater greater than 30 feet from ground surface and soil permeabilities categorized as "moderate" using data provided by the Santa Clara Valley Water District. Soil permeabilities range from 0.05 in/hr to 2 in/hr within the various soil types categorized as moderate. The soil permeability rate is applicable for soils up to 60" deep. These soil associations include the Artuckle Presentation and Yolo soil associations.
 Reference: Soil Survey of Eastern Santa Clara Area, California, United States Department of Agriculture, September 1974). Use of infiltration devices in the infiltration inclusion zone is generally acceptable although site-specific information regarding depth to groundwater and infiltration rates may be required to obtain permits that will most likely be required from the Santa Clara Valley Water District. Final guidance regarding use of infiltration devices will be forthcoming.
 As a result of the generalized nature of the information on this map, Infiltration Devices may be allowed in the Infiltration Exclusion Zone, if site specific condition permit.
 Feasibility of Infiltration Devices in the Infiltration Exclusion Zone must be demonstrated to City & SCVWD staff.



INDEX MAP

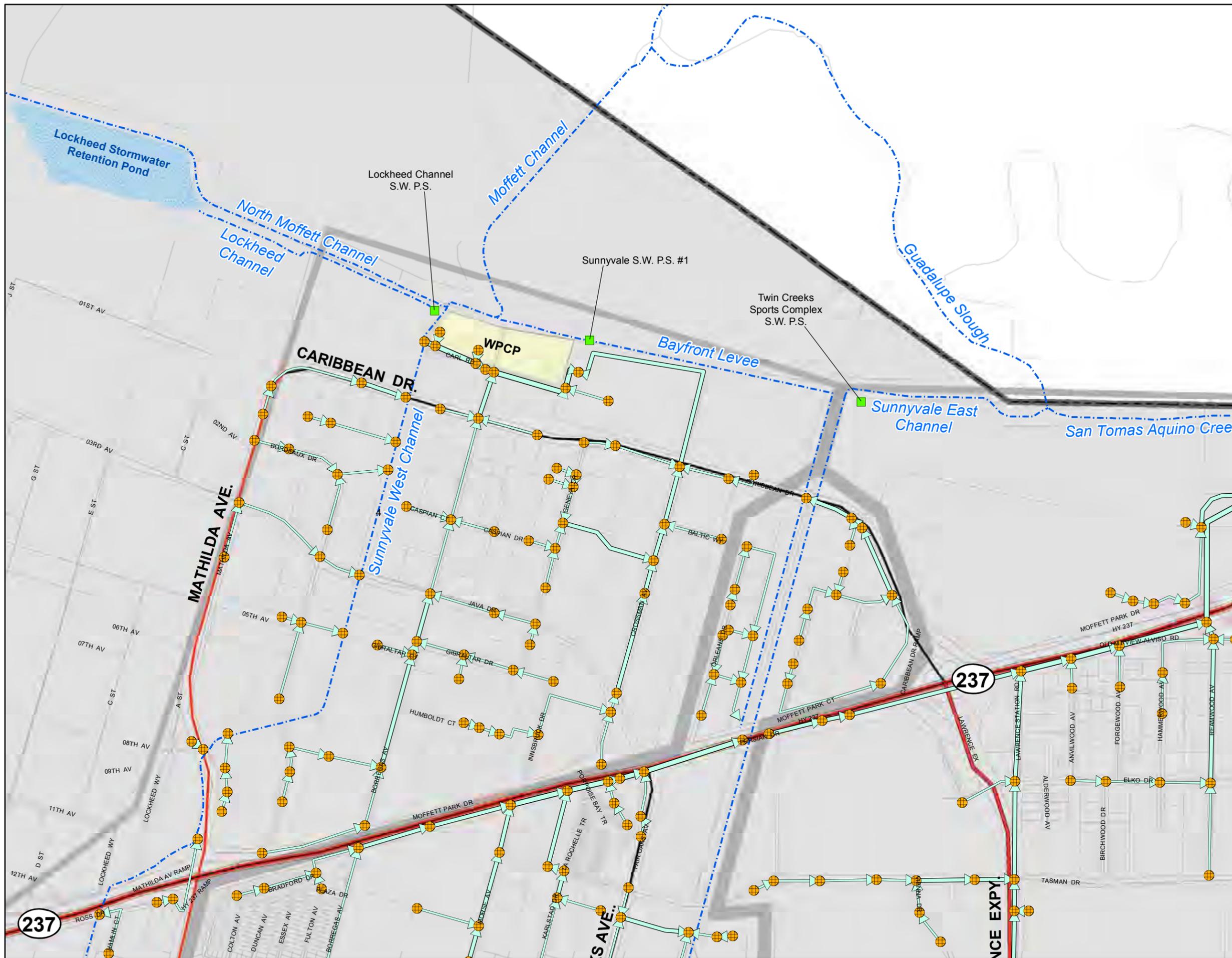
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 - 60.01 - 90.00
- Creeks
- City Parcels
- City Boundary
- Drainage Basins
- Major Streets**
 - Freeways & Highways
 - Expressways
 - Primary Streets
 - Secondary Streets
- Infiltration Device Zones**
 - Exclusion
 - Inclusion
- HMP Applicability Zone**
 - Potential HMP Applicability Zone



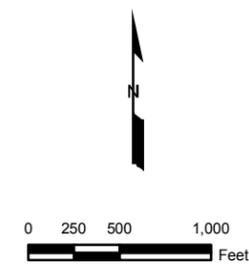
City of Sunnyvale, California

STORM DRAIN SYSTEM MAP



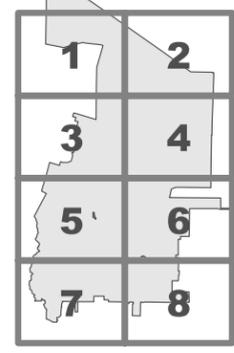
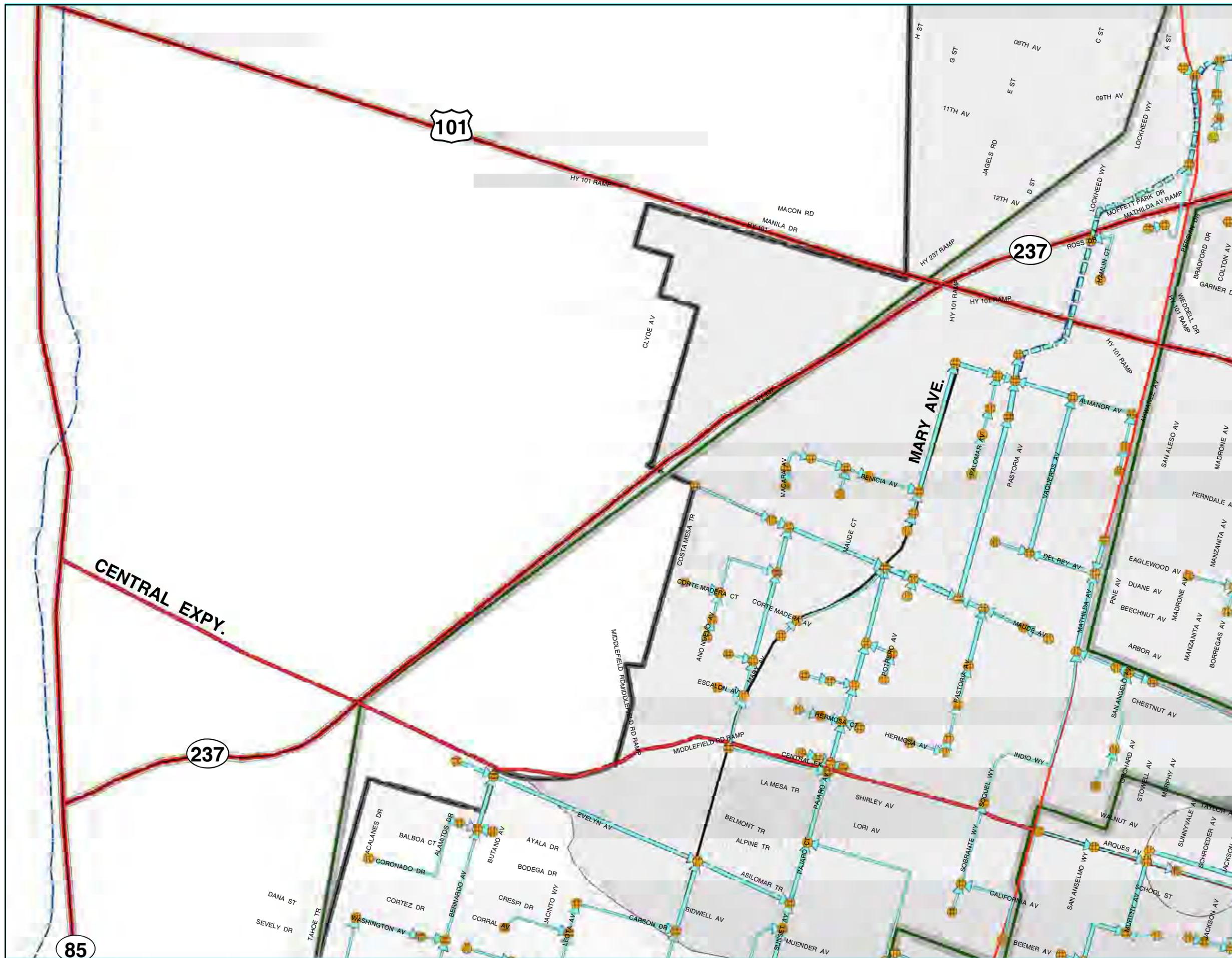
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 - 60.01 - 90.00
- Creeks/Channels/Ditches
- City Parcels
- City Boundary
- Major Streets**
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 - Expressways
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 - Secondary Streets
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 - Exclusion
 - Inclusion
- HMP Applicability Zone**
 - Potential HMP Applicability Zone



City of Sunnyvale, California

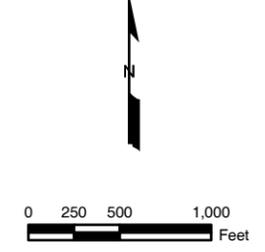
STORM DRAIN SYSTEM MAP



INDEX MAP

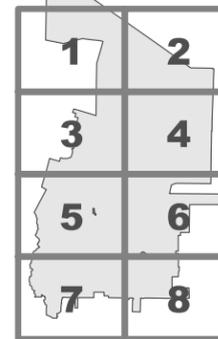
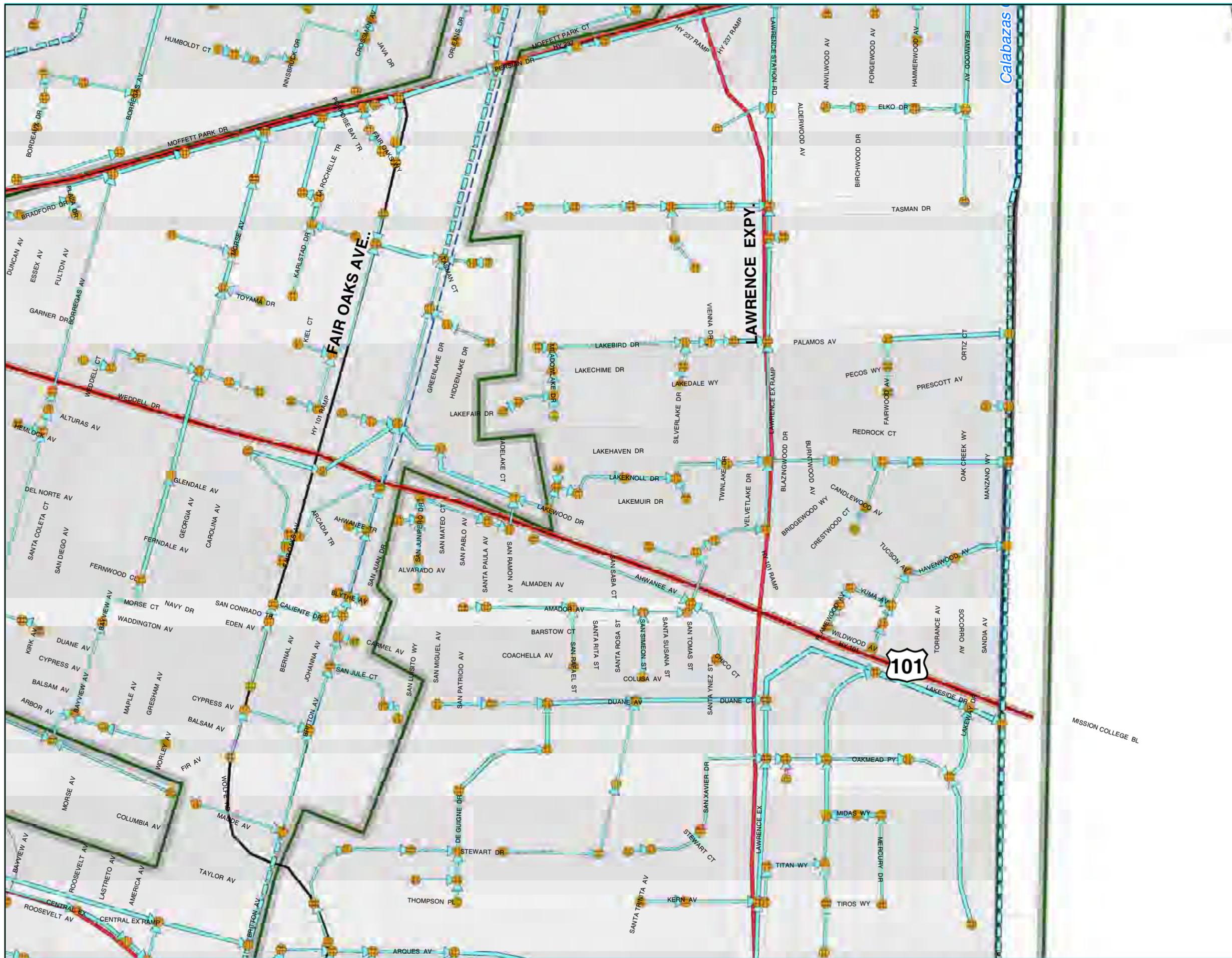
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City of Sunnyvale, California

STORM DRAIN SYSTEM MAP



INDEX MAP

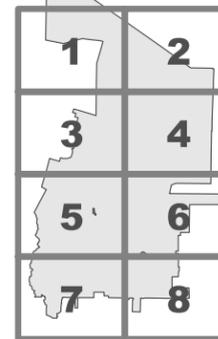
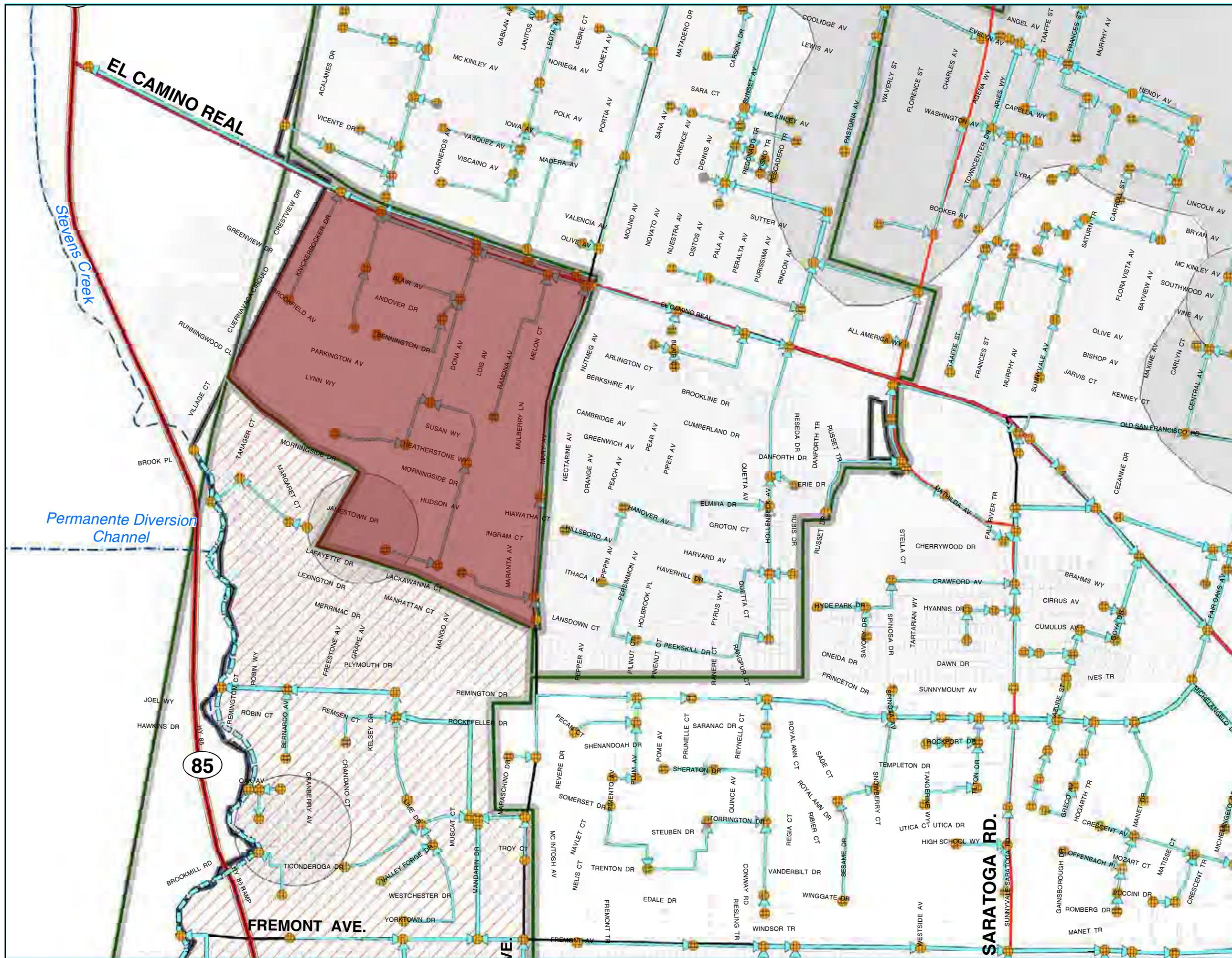
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City of Sunnyvale, California

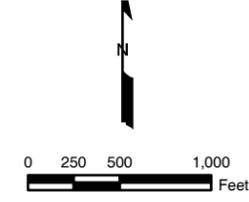
STORM DRAIN SYSTEM MAP



INDEX MAP

Legend

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City of Sunnyvale, California

STORM DRAIN SYSTEM MAP