

REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF REPORT

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SUBJECT: Santa Clara Valley Urban Runoff Pollution Prevention Program - Status Report on the Hydromodification Management Plan Approval and New and Redevelopment Control Measure Implementation Issues

Introduction

Board staff plans to present two items about the Santa Clara Program's Permit to the Board for its consideration in February: the Santa Clara Valley Hydromodification Management Plan and an amendment to Provision C.3, the Permit's New and Redevelopment Performance Standards. This status report provides background information in preparation for these actions.

The Santa Clara Valley Urban Runoff Pollution Prevention Program consists of 13 cities, the County, and the Santa Clara Valley Water District (the Permittees), who are collectively referred to as the Program. In February 2001, the Program led the Bay Area in receiving its third generation municipal stormwater permit from the Board. In October 2001, the Board amended the Program's permit to update its New and Redevelopment Performance Standard. The amendment, which revised Provision C.3. of the permit, requires that certain sizes of new and redevelopment projects include stormwater treatment measures, and that they be designed to treat an optimal volume or flow of stormwater runoff from the project site.

Provision C.3. also requires that increased runoff due to increases in impervious surface created by a project not adversely affect watercourses downstream from the project. Adverse effects on watercourses, such as increased erosion and sedimentation, caused by increases in impervious surface in a watershed, are collectively referred to as "hydromodification." These adverse effects are to be controlled through implementation of a Hydromodification Management Plan (HMP), which must be proposed by the Program and, as required by the Permit, approved by the Board. This report provides background on hydromodification and the HMP requirements, summarizes the Program's work in developing its HMP, and introduces the plan that will be brought for the Board's consideration for approval in February 2005.

What is Hydromodification?

Hydromodification refers to the effects of urbanization on stormwater runoff and stream flows. As natural surfaces are paved, covered by structures, and compacted, less rainwater

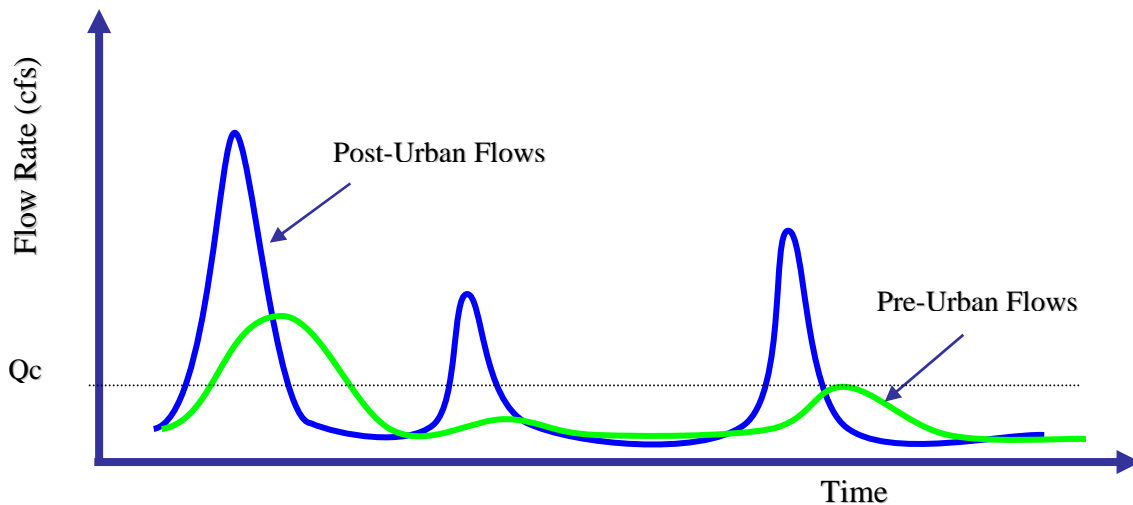
infiltrates into the ground. Urbanization also increases the connectivity of paved surfaces and the storm drain system: roof downspouts, curbs, streets, and drainage pipes all flow directly to storm drains, which discharge directly to streams. So, not only does *more* water flow to creeks, but the pavement and storm drains *speed the delivery* of the runoff into the creeks.

The term “hydromodification” is shorthand for modification of the hydrograph, a graph that shows time (in minutes or hours) on the x-axis and flow rate (in cubic feet per second) on the y-axis. This graph is useful because it illustrates both how much water flows and the speed of this water flowing in a creek over time. Using a hydrograph, we can see the difference in the volumes and flow rates of water in a creek before and after urbanization. The hydrograph below illustrates that the increased runoff from an urban development project increases both the volume of water (the total area under the curve) and the flow rate in the creek downstream of the project. The peaks in the hydrograph represent rainfall events.

This combination of higher volume and flow rate results in significant increases in the amount and duration of energy surging through the creek after a rainfall event. This commonly results in increased erosion of creek beds and banks, and in excess deposition of sediment further downstream. Erosion of creek banks often results in loss of property, loss of native vegetation, decrease in riparian corridor width, and loss of habitat for riparian species.

Excess deposition occurs when the high-energy water carrying eroded bed and bank sediments slows down (as when the creek transitions from a steep grade to a flatter grade). Such deposition is commonly responsible for flooding, because it decreases the capacity of the stream to convey water. It also results in loss of habitat, particularly spawning habitat for anadromous fish. Dredging of such sediments once deposited is not only expensive to the community, but has its own water quality impacts.

Pre-Development vs. Post-Development Hydrographs *from GeoSyntec Consultants*
(Q_c is the flow rate at which bed and bank material begins to erode.)



How Hydromodification is Controlled

Hydromodification is generally controlled by temporarily detaining and slowing excess runoff and releasing it in a manner that mimics the pre-project hydrograph. Excess runoff can be detained or slowed by the following features, used singly or in combination:

- Infiltrate runoff into the ground through swales, bioretention units, tree wells, porous pavement, permeable pavers; and
- Temporarily detain runoff in basins, wet ponds, dry ponds, wetlands, cisterns, underground pipes, or vaults.

Most of these devices can be designed to treat the pollutants in runoff as well as detain runoff. Provision C.3. requires a three-pronged approach to addressing pollutants in runoff: source control (keeping pollutants contained and out of the way of stormwater); site design (encouraging stormwater infiltration as much as possible in the design of the project); and treatment (removing pollutants before the runoff leaves the project site). By designing hydromodification control units to treat *and* detain stormwater runoff, one unit can fulfill dual purposes. Further economies can be attained by designing the site to minimize the increase in stormwater runoff, thereby reducing the size of hydromodification/treatment unit needed.

Purpose and Contents of the Hydromodification Management Plan

The purpose of the HMP is to establish how, when, and where increases in peak runoff flow and volume will be managed. Based on the Program's permit requirements, the following elements must be addressed in the HMP:

- A review of pertinent literature. This was completed by the Program in September 2002;
- A method for evaluating and managing increases in flow rates/durations from new development and significant redevelopment projects that create or replace one acre or more of impervious surface (defined as Group 1 Projects in the Permit);
- Delineation of areas within the Santa Clara Valley where increased flow rates/durations must be managed. The Plan may exclude areas where there is minimal potential for erosion or other impacts to beneficial uses from cumulative increased flow rates/durations. Such excluded areas could include, for example, areas where creeks are concrete-lined downstream to their outfall to the Bay, and highly developed areas—such as downtown core areas, where redevelopment has little potential to change runoff characteristics;
- A demonstration that the proposed method will be protective of creeks over time; and
- A description of how the cities in the Santa Clara Valley will incorporate HMP requirements into their local project approval processes.

The HMP is *not* expected to correct existing areas of instability in watercourses. The HMP requirements are meant to prevent future projects from making creek stability problems worse, rather than to fix existing problems;

Status of the Santa Clara Valley HMP

The Program's Permit required that the final HMP be submitted by January 15, 2004. On that date, the Program submitted a schedule for completing the HMP by October 2004. Due to the complexity of developing the first HMP in the Bay Area, Board staff has not sought to take enforcement action for this missed permit deadline. Throughout the process of developing the HMP, Board staff has provided both formal written comments and input during meetings.

On July 9, 2004, the Program submitted a Draft HMP Report for public and Board staff comment. We provided written comments on August 25, 2004, and attended four public meetings in July and August for city staff and developers. This report, together with its appendices and supporting materials, provided a sound technical approach to controlling increased flow rates/durations from development projects, but lacked an effective implementation component.

On November 4, 2004, the Program submitted a Second Draft HMP Report, which improves upon the first draft by including HMP requirements for five developing areas of San Jose—these areas had been excluded in the first draft. The Second Draft also satisfactorily addresses other issues from our August 25 comment letter, and thus represents a positive step toward developing an acceptable HMP. Despite these improvements, the second draft still excludes “Smart Growth Projects,” a category which is too broadly defined,¹ from full HMP compliance. The Second Draft HMP also excludes areas of low-intensity development, where such areas are fully developed according to current zoning. Thus, parks, open space, golf courses, schools, and single family homes built at one dwelling per acre are excluded; these low-intensity uses could and should readily comply with HMP requirements. These exclusions illustrate that the Second Draft, while making notable improvements, continues to lack an effective implementation component.

It is our understanding that the City of San Jose plans to take the Second Draft HMP to its City Council for approval in the near future. We have learned that it is difficult to change a policy or plan once the City Council has approved it, and we believe San Jose should wait until the HMP is acceptable to the Water Board before taking such a step. Board staff intends to continue working with the Permittees to improve the final HMP Report. Because the HMP is essentially complete except for resolution of all implementation issues, staff intends to bring a modified HMP for the Board's consideration and approval in February, to avoid further delay in implementation.

Hydromodification in the Bay Area

The other large, Phase I Bay Area stormwater programs are also in the process of developing HMPs, as required by their stormwater permits. Alameda, Contra Costa, and San Mateo counties and the Fairfield-Suisun area have HMP requirements identical to Santa Clara Valley's, except that the required submittal date for those Programs is May 15, 2005 (Oct. 16, 2005 for Fairfield-Suisun). The smaller, Phase II programs in the Bay Area are not required to prepare HMPs; however, the State-wide Phase II General Permit does require these programs to control post-development peak runoff rates where the increased peak discharge rate will result in increased potential for downstream erosion. For some of our Phase II programs in the Bay Area, this requirement goes into effect June 2006.

¹ San Jose's definition of “Smart Growth” includes any project on land with existing sanitary sewer and water infrastructure.

Some Santa Clara Program Permittees would like additional time to complete and implement their HMP, to put them on the same schedule as the other Phase I programs in the Bay Area. Board staff believes additional time is not warranted for the following reasons:

1. Due to the advanced nature of development in the Santa Clara Valley, the HMP will affect few remaining development projects. Based on what we know about planned development in the Valley, it appears unlikely that developers will view HMP requirements as a determining factor in going elsewhere to develop. We commonly hear from developers that uncertainty is their biggest risk factor, not the stormwater requirements themselves; once the requirements are known, the uncertainty is removed. Because project development often occurs over a long timeframe, it does not appear that the implementation date for HMPs in the various counties will have a real impact on development decisions.
2. Board staff is aware of two pending large developments being planned in San Jose. These developments, in the Evergreen and Coyote Valley areas, are located in what appear to be the last large undeveloped parcels in the Santa Clara Valley. Controlling increased runoff flow rates/durations is most straightforward when one begins with an undeveloped parcel. Thus, a delay could result in a lost opportunity to control runoff from large development sites when it is simplest to do so. These developments of 6000 units and more are located in areas where the increased flows would be expected to impact stream stability. In a time when we are looking for grants and other funding mechanisms to reverse stream degradation, much of it caused by urbanization, it would not be prudent to lose such an opportunity for resource protection.
3. While the Program had the difficult task of leading the Bay Area in developing its HMP, the Program has had 37 months to date to complete this task. The other large Bay Area programs have a 28-month timeframe in which to complete their HMPs. While the Program would like additional time (apparently at least one year) to develop a tool to simplify the design of HMP controls, such work can continue simultaneously with implementation of the HMP. We believe the Program has had adequate time to complete the HMP.

Next Steps in Completing the Hydromodification Management Plan

Board staff plans to bring an HMP for the Santa Clara Program to the Board for its consideration and approval at its February 2005 meeting. We anticipate the HMP will retain essentially all of the sound technical approach proposed in the draft HMP Reports but will be applicable to a larger area than that currently proposed. We are working with the Program on the issue of exempt areas and will try to reach agreement prior to the February meeting.

Status of New and Redevelopment Control Measure Implementation in Santa Clara Valley and the Need for Permit Amendment

The Permit's Provision C.3., as amended in October 2001, requires Santa Clara Valley cities to require new and redevelopment projects to include permanent (or "post-construction") stormwater treatment measures. For projects that create or replace one acre or more of impervious surface, which are called Group 1 Projects, this requirement went into effect on October 15, 2003. The implementation date for Group 2 Projects, which create or replace 10,000 square feet of impervious surface, is April 15, 2005. Both the implementation dates and Group 2 Project size have been administratively extended to make the Santa Clara Valley requirements consistent with the other stormwater program permits in the Bay Area.

Despite our efforts to provide consistency, we find that some Santa Clara Valley cities are not fully complying with Provision C.3., largely by misinterpreting the language of the permit to greatly delay or avoid implementation. The City of San Jose adopted a policy that, if employed to the full extent, would render very few new/redevelopment projects subject to treatment BMPs. San Jose's policy exempts all "Smart Growth" projects, defined broadly to include virtually all projects within the urban infrastructure (e.g., already served by sanitary sewers, water, etc.), from installing any stormwater treatment BMPs at all. Other projects may show the impracticability of installing BMPs through any of seven loosely defined or undefined criteria, including an "undue burden" on the project sponsor or the City associated with maintenance, inspection, and/or monitoring of the BMP. This is essentially a waiver policy that was not submitted for Board approval.

In addition, both San Jose and Milpitas have avoided addressing Provision C.3. altogether for some large development projects that are still in the early planning stages, by "deeming applications complete" for minimal submittals for these projects by the October, 2003 implementation date. The Board's intent in stating that Provision C.3. shall not apply to projects for which a "development application has been deemed complete" was to allow projects that were well along in the design phase to be built without the burden and cost of redesigning for stormwater treatment, and, conversely, that projects still in the initial stages of proposal, scoping, and design should include stormwater treatment.

To clarify the Board's original intent of the permit requirements, and to make the Santa Clara Program's permit more consistent with the other Bay Area stormwater program permits, we plan to clarify the permit's subsections as follows:

- Clarify the "deemed complete" language in C.3.c. to more specifically state that projects in initial proposal stages are not exempt from the post-construction stormwater treatment requirement. This is needed because we are finding that cities are exempting projects that are in the early stages of approval. Cities are claiming that such projects are "deemed complete" as early as the date the project is proposed and initial application fees are paid, when many or even most aspects of the project's site design are not complete. Some of these projects are quite large and will have significant stormwater impacts.
- Change "begin implementation" to "implement" by the required date in C.3.c. for Group 1 and Group 2 Projects to clarify the intent of the permit language. At least one city has taken a very reduced approach to implementation by requiring post-construction stormwater treatment only for a small subset of Group 1 sites. This subset includes only "land uses of concern" (gas stations, auto wrecking yards, loading docks, heavy automotive, and heavy industrial uses) and projects that require a permit from the Board (that is, those that require a

Section 401 water quality certification for construction affecting a Water of the State). The Board required such projects to include stormwater treatment for a number of years before Provision C.3. was adopted. Staff believes that the Board's original intent was that the cities shall require all Group 1 sites to implement post-construction stormwater treatment by the required date.

- Amend C.3.g. to reiterate the original intent that all waiver programs proposed by either the Program as a whole, or by an individual city, must be approved by the Board. At least one city has incorrectly interpreted the existing permit language as allowing an individual city to adopt a waiver program without Board approval. We will also reiterate that any Alternate Group 2 Project definitions must be submitted for Board approval before they can be implemented.
- Change other subsections to make the Santa Clara Program's permit consistent with the other Bay Area stormwater program permits. These relatively minor amendments include specific exclusions of certain categories of land use (e.g., sidewalks, bike lanes, trails, and single-family homes that use landscaping to treat impervious area runoff) that were incorporated into the other programs' permits after the Santa Clara Program's permit was adopted.

Board staff has met with City of San Jose staff three times to provide information on stormwater treatment methods and to attempt to find a common ground in the area of Provision C.3. compliance. We are still in disagreement as to the intent of the permit requirements. Permit amendment is necessary to remove any ambiguity of the permit requirements. While we will continue to work with San Jose, we are considering issuing permits on a project-by-project basis to require stormwater treatment controls until the issue is resolved. We are in the process of discussing the above permit amendments with all Santa Clara Permittees, and plan to bring the amendments to the Board for consideration at the February meeting.