STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF MARCH 15, 2012
Prepared on February 22, 2012

ITEM NUMBER: **17**

SUBJECT: **The Central Coast Joint Effort for Hydromodification Control and Low Impact Development**

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KEY INFORMATION

Location:	Region-wide
Type of Discharge:	Municipal stormwater
Disposal Method:	Surface water discharge at multiple locations
Existing Orders:	Waste Discharge Requirements State Water Board Order No. 2003-0005-DWQ
This Action:	**Status Report**

I. SUMMARY

Our traditional methods for managing urban stormwater do not adequately protect the beneficial uses of waters of the State. They treat symptoms instead of causes, they tend to focus on only one type of receiving water (small streams), and they lead to practices such as channelization and stream armoring that permanently alter hydrology (hydromodification) and degrade water quality. To correct this, the Water Board has taken a broad perspective on the best way to manage urban stormwater and to protect and restore key watershed processes to meet both resource protection goals and regulatory requirements.

The Central Coast Joint Effort for Hydromodification Control and Low Impact Development (the "Joint Effort") is a Central Coast Regional Water Quality Control Board (Water Board)-led collaboration with municipalities to develop and implement post-construction stormwater requirements. The goal of the Joint Effort is to protect or restore beneficial uses that otherwise would be, or that already have been, adversely affected by stormwater management practices in urban areas. The objective of the Joint Effort is to identify hydromodification control strategies for new urban development and redevelopment, based on landscape characterization and analyses, to protect and restore watershed processes that impact beneficial uses.

The purpose of this staff report is to:

- Continue and expand the education and awareness of Water Board members and public stakeholders about the Joint Effort, including key concepts and findings to date, on:
    - watershed process protection;
    - landscape stratification;
    - stormwater management strategies; and
    - the status of the process to select appropriate hydromodification control requirements,
- Review the process and schedule for the remaining work, emphasizing key decisions the Water Board will be considering at the July 12, 2012 Board Meeting, and
- Provide stakeholders an opportunity to address the Water Board concerning the Joint Effort.

II. OBJECTIVES OF THE JOINT EFFORT

The Joint Effort's objective to identify hydromodification control strategies for new urban development and redevelopment can only be accomplished by addressing the variety of changes in watershed processes (physical, chemical, and biological) that result from urban development. In this way, hydromodification control becomes a key component in protecting and restoring watershed processes and maintaining appropriate beneficial uses—and not just a tool to address stream-channel stability, which is often the primary focus of hydromodification management.

This approach to managing hydromodification is consistent with USEPA's Office of Research and Development[1] broader definition of hydromodification that explicitly includes urbanization,

[1] Mohamoud, Y.M., A.C. Sigleo, and R.S. Parmar. 2009. Modeling the Impacts of Hydromodification on Water Quantity and Quality. EPA/600/R-09/116. U.S. Environmental Protection Agency, Office of Research and Development, National Exposure Research Laboratory, Ecosystems Research Division, Athens, GA.

climate change, water withdrawals, and inter-basin transfers. USEPA's stated intention "is to use the term for a wide range of anthropogenic watershed disturbances that alter natural flow regimes and degrade water quality," providing a basis for integrated management of multiple stressors. Under this definition, water-quality impairment caused by hydromodification includes increased sedimentation, higher water temperature, lower dissolved oxygen, degradation of aquatic habitat, and loss of fish and other aquatic populations. Hydromodification (as broadly defined by USEPA) may also include decreased water quality due to increased levels of nutrients, metals, hydrocarbons, bacteria, and other constituents.

Water Board staff finds that pursuing the Joint Effort objectives in the context of this broader definition of hydromodification, will yield management strategies that effectively address the causes of urban runoff impacts to beneficial uses, avoid more costly strategies that yield limited benefit, and lead to protection or restoration of beneficial uses by improving watershed processes. The Joint Effort includes both *technical* tasks and *administrative* activities.

A. Technical Tasks of the Joint Effort

The technical tasks of the project include:

a. Developing a methodology for selecting numeric criteria that ensure the protection of watershed processes, to the extent possible, at the parcel-scale,
b. Applying the methodology to establish numeric criteria in each municipality, and
c. Selection of Applicability Thresholds (project characteristics, such as size of impervious area, that trigger hydromodification control and water quality treatment requirements).

These technical tasks are being completed based on work completed by consultants under Water Board staff's direction. The key concepts and findings from the consultants' work are described below in Sections III and IV.

B. Administrative Activities of the Joint Effort

Related to the technical tasks, the administrative activities, like modifying codes and ordinances and training municipal employees to implement new requirements, are also part of the Joint Effort. These administrative activities are happening in parallel with the technical tasks.

Joint Effort participating municipalities are pursuing six Best Management Practices (BMPs) built around Guidance, Education and Outreach, and Interim LID Implementation. Combined with BMPs for adopting Enforceable Mechanisms (e.g., ordinance and code updates), Joint Effort participants are engaged in implementing BMPs during an active two-year period setting the stage for successful implementation of the requirements developed through the technical work. Municipalities have made substantial progress over the first year, and the Central Coast LID Initiative[2] has provided technical and compliance assistance in key areas for successful implementation. Resources and guidance associated with these areas of implementation are available on-line at the Central Coast LID Initiative website:
http://www.centralcoastlidi.org/Central_Coast_LIDI/LID_Technical_Guidance.html
The Central Coast LIDI will continue to offer assistance to participants over the second year of the Joint Effort. Areas of focus will include: targeted assistance with code updates; continued

[2] The Central Coast LID Initiative supports the vision of healthy watersheds through the implementation of LID design principles, hydromodification controls, and sustainable development throughout the Central Coast Region. In 2008, the Central Coast Water Board established the Low Impact Development Endowment Fund with the Bay Foundation of Morro Bay. The fund provides support for the LIDI, which is housed under a branch of the UC Davis Extension, Land Use and Natural Resources Program.

guidance and training for bioretention design; guidance on Stormwater Control Plans and how municipalities can use them in the project review and approval process; policy alternatives for alternative compliance; and continued project consultation and partnering, including grant writing.

III. METHODOLOGY FOR SELECTING NUMERIC CRITERIA

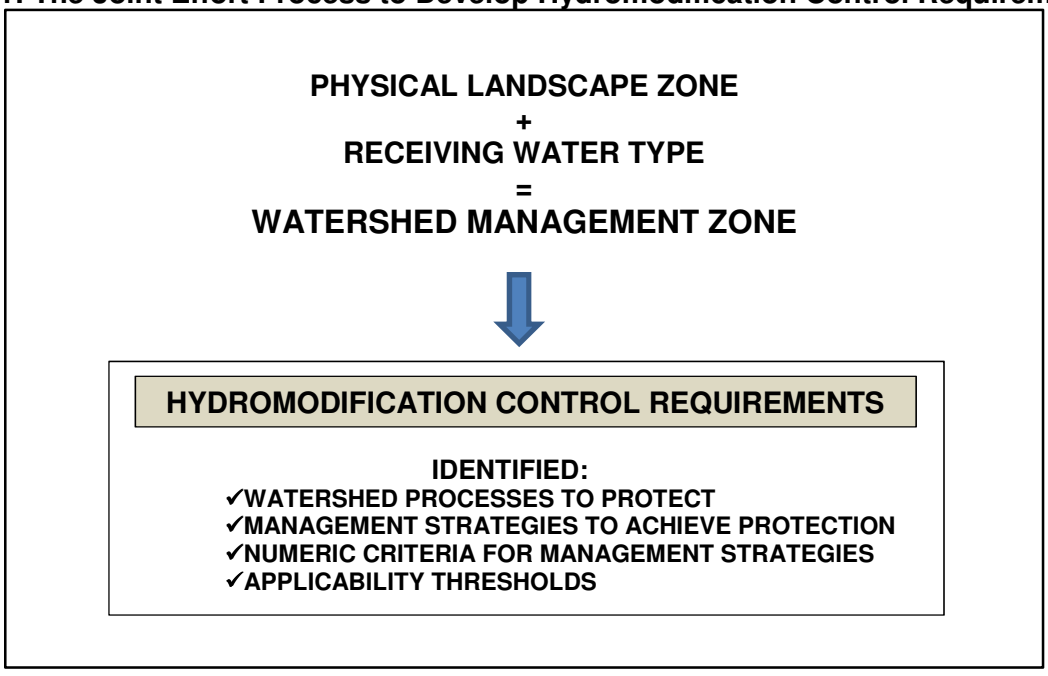
The Joint Effort's primary technical task is to develop a methodology for selecting numeric criteria that ensure the protection of watershed processes in new urban development and redevelopment. The methodology developed by the Water Board's consultants uses watershed analysis and mapping to:

(1) identify Physical Landscape Zones in which watershed processes can be identified;
(2) delineate watersheds based on receiving water type (e.g., stream, nearshore marine, lake); and
(3) combine these map layers and information to yield Watershed Management Zones.

The Watershed Management Zones then point to specific hydromodification control requirements for parcel-scale development and redevelopment. These hydromodification control requirements identify:

- the most important watershed processes to protect to support beneficial uses;
- the management strategies to achieve that protection;
- the numeric targets for stormwater control design to implement the management strategies; and
- the project sizes and types that trigger applicability of the requirements (Figure 1).

Figure 1: The Joint Effort Process to Develop Hydromodification Control Requirements



To date, products[3] of the Joint Effort have included:

1. Literature and data summaries (See: Literature Review and Review of Existing Data),
2. A preliminary, GIS-based characterization of the landscape and watersheds of the Central Coast Region (See: Watershed Characterization Part 1: Precipitation and Landscape),
3. Data- and field-supported identification of landscape attributes, watershed processes, receiving-water conditions, and primary disturbances present on that landscape (See: Watershed Characterization Part 2: Watershed Management Zones and Receiving Water Conditions), and
4. GIS-based analysis of a final set of "Physical Landscape Zones" and a systematic description of the primary landscape attributes and dominant watershed processes associated with each Physical Landscape Zone (See: Linkage Analysis: Landscape Characterization, Receiving Water Conditions, Watershed Processes, and Human Disturbance).

A Preliminary Map of Watershed Management Zones is included as Attachment 1 to this staff report. Also, a summary of the key findings of the technical work available at the time Water Board staff prepared this staff report is provided in Attachment 2.

IV. APPLICABILITY THRESHOLDS

Another key technical task of the Joint Effort is to establish Applicability Thresholds – thresholds that determine which projects will be subject to hydromodification controls. Efforts to establish Applicability Thresholds are progressing. First, Central Coast municipalities have devised tiered approaches to determine which projects are subject to their Interim LID requirements. These tiered approaches will be in effect until final numeric criteria resulting from the Joint Effort methodology, are adopted in the first Quarter of 2013. Second, the Central Coast LID Initiative is leading a small group of representatives from municipalities in the northern, central and southern parts of the Central Coast Region, and Water Board staff, to propose Applicability Thresholds that can be used in concert with the final numeric criteria developed through the Joint Effort methodology. This focus group has been meeting since 2010. The group will present its proposed framework to municipal stormwater stakeholders in March 2012, soon after the Board Meeting for which staff prepared this staff report.

V. STAKEHOLDER INVOLVEMENT

Water Board staff has involved stakeholders using multiple strategies, including: convening an advisory group – the Joint Effort Review Team (see below); conducting multiple stakeholder workshops (see below); posting project materials on a dedicated Joint Effort webpage[4]; including Joint Effort items on Water Board meeting agenda; providing stakeholders with a mid-term status report; speaking at municipal stormwater manager groups throughout the region;

[3] Documents available by going to the Water Board website at: http://www.waterboards.ca.gov/centralcoast/water_issues/programs/stormwater/docs/lid/lid_hydromod_charette_index.shtml

[4] Same as above.

and convening meetings with key environmental and building industry stakeholders. The following describes two key strategies in greater detail.

The Joint Effort Review Team (JERT)
Once the Joint Effort technical consultants were hired and their work was underway, Water Board staff convened a focused stakeholder group to provide review and feedback on major project deliverables and findings. This group – the Joint Effort Review Team, or "JERT" – met for the first time December 15, 2010 and has met six times since, corresponding with the consultant's completion of each draft methodology project deliverable. The JERT's 10 members, plus their alternates, represent municipality, Central Coast Water Board, development, and environmental perspectives, and are acknowledged as leaders among their peers. Water Board staff solicited nominations broadly from stakeholders throughout the region and considered geographic scope in selecting members. Participation by JERT members is based on each member's ability to offer insight and expertise on the issue of hydromodification resulting from development projects that are reviewed and approved by municipal agencies. The JERT members' bios[5] are posted on the Joint Effort webpage.

The JERT's principal focus is the technical issues associated with various aspects of the consultants' work. It has served as a sounding board for the consultants and Water Board staff concerning specific decisions in the work to develop and start initial implementation of the methodology for deriving hydromodification controls. The consultants participated in the five JERT meetings conducted up to the time this staff report was prepared.

Joint Effort Workshops
On February 15 and 16, Water Board staff conducted stakeholder workshops in Watsonville and Santa Maria, respectively, to discuss findings and progress on the Joint Effort. Eighty-three individuals attended the workshops, which reviewed the analysis Joint Effort consultants conducted to provide the basis for selecting numeric criteria and applicability thresholds (thresholds that trigger requirements). The Workshop did not present recommended numeric criteria or applicability thresholds, which Water Board staff is developing based on completion of final work on the methodology as well as further input from stakeholders. Recommended numeric criteria and applicability thresholds will be presented to stakeholders at a second workshop, tentatively scheduled for late April or early May, 2012.

VI. REMAINING STEPS TO COMPLETE THE JOINT EFFORT

Completing the Joint Effort requires actions to be taken over the next 11 months by municipalities, the Water Board, and the JERT, and includes substantial opportunities for participation by municipal stormwater and public stakeholders throughout the region. The history of the project and the considerable accomplishments of participants to date (Table 1) suggest these actions can be completed in accordance with timelines described below (see Schedule) and codified in participants' Stormwater Management Plans. These actions also follow an approach that Water Board staff expects to significantly lower the cost to municipalities, compared to what was originally anticipated, removing a critical financial and procedural hurdle for municipal stormwater entities. The current sequence of steps to complete the Joint Effort differs from the previous plan to have municipalities apply the methodology

[5] http://www.waterboards.ca.gov/centralcoast/water_issues/programs/stormwater/docs/lid/hydromod_lid_docs/jert_review_team_bios.pdf

independently, and it averts the need for potentially significant expenditures by municipalities to do so. This approach meets municipalities' Stormwater Management Plan requirements to derive municipality-specific criteria using Water Board-approved methodology developed through the Joint Effort. It therefore reserves municipalities' resources, allowing them to focus on completing administrative activities essential for successful implementation of the requirements.

A. Central Coast Water Board Direction

At the July 12, 2012 Water Board meeting, Water Board staff intends to seek Water Board direction clarifying expectations for implementation of municipalities' BMPs for hydromodification control and low impact development pursuant to the Joint Effort.

VII. SCHEDULE

The Joint Effort was designed to be completed over a two-year period. The history of events leading up to the commencement of the Joint Effort in October 2010 is presented in Table 1. The Joint Effort is currently on schedule and Table 2 presents the steps for completing the project, beginning with this Status Report and concluding with municipalities implementing hydromodification controls in January 2013. Table 3 provides the calendar of key dates associated with the steps necessary to complete the Joint Effort.

VIII. HOW JOINT EFFORT RELATES TO PHASE II PERMIT RENEWAL

The State Water Resources Control Board (State Board) is in the process of renewing the General Permit for Phase II Municipal Separate Storm Sewer System (MS4) Discharges. Many Joint Effort participants have sought clarification on how the next Phase II Permit will interface with the current permit requirements for Central Coast MS4s participating in the Joint Effort. It is understandable that perfect alignment between these regulatory strategies is challenging because the Joint Effort has established time lines that the next Phase II Permit cannot automatically embed in its post-construction requirements. The State Board received public comment on the Draft Phase II Permit, including many from Central Coast municipalities and stormwater stakeholders, and is in the process of responding to the issues raised in those comments. While it is premature to explain in precise regulatory language how the Joint Effort relates to the Phase II Permit provisions for hydromodification control, Central Coast Water Board staff is working closely with State Board staff to ensure that implementation of hydromodification requirements developed from the Joint Effort will provide a path to compliance with the Phase II Permit for Central Coast municipalities.

IX. ATTACHMENTS

1. Preliminary Map of Watershed Management Zones
2. Draft Summary of Key Technical Findings

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Table 1: Key Milestones and History of the Central Coast Joint Effort for Hydromodification Control and LID

2008 – 2009	Water Board enrolled Central Coast MS4s under General Permit for Phase II Municipal Stormwater Discharges, which included hydromodification requirements to: • Maximize infiltration of clean stormwater, and minimize runoff volume and rate • Protect riparian areas, wetlands, and their buffer zones • Minimize pollutant loading; and • Provide long-term watershed protection
April 20, 2009	Water Board received letter from the Central Coast Low Impact Development Initiative (LIDI) recommending a two-year, collaborative effort for the development of hydromodification control criteria
June 19, 2009	Water Board concurred with LIDI recommendation and committed to developing a framework and securing funding for a Joint Effort
August 4, 2009	Water Board notified municipalities of option to pursue Joint Effort for developing hydromodification control. Letter included: • Process for developing the Joint Effort • $600,000 authorized from State Clean-up and Abatement Account • Tentative schedule for Joint Effort (then, August 2009 – November 2011)
August – September 2009	Water Board conducted stakeholder workshops ("charettes") to provide information on the Joint Effort and to develop recommendations for Project Milestones to ensure the effort's success
October 20, 2009	Water Board notified municipalities of opportunity to participate in the Joint Effort, including: • Terms of participation • Steps and schedule for amending SWMPs • New BMPs for SWMPs developed from Project Milestones
October 23, 2009	Water Board Meeting, Executive Officer's Report: Joint Effort Update
Fall 2009	Municipalities declared participation in Joint Effort by submitting signed form letter
January, 2010	Water Board staff began assisting municipalities with SWMP amendments to pursue the Joint Effort
February – August 2010	Water Board staff appeared before local government decision-makers to urge participation in Joint Effort. Joint Effort achieved 100% participation from Central Coast municipal stormwater permitees
September 2, 2010	Water Board hired contractors for Joint Effort Methodology Project
September 28, 2010	Water Board notified municipalities regarding commencement of the Joint Effort
October 1, 2010	Joint Effort Commenced with BMPs scheduled for implementation from October 1, 2010 through December 31, 2012
December 9, 2010	Water Board Meeting, Agenda Item: LIDI Annual Report, including Joint Effort Update
December 15, 2010	Joint Effort Review Team 1st Meeting
January 19, 2011	Joint Effort Review Team 2nd Meeting
February 9, 2011	Water Board distributed to stormwater stakeholders "Joint Effort and LID Update" by Lyris email
March 30, 2011	Joint Effort Review Team 3rd Meeting
September 1, 2011	Joint Effort Review Team 4th Meeting
October 31, 2011	Water Board mails Joint Effort Status Report to Permitees
November 30, 2011	Joint Effort Review Team (JERT) Meeting 5th Meeting
December/January	Water Board Outreach to Permitees following up on October 31 Status Report
December 1, 2011	Executive Officer's Report for Water Board Meeting
January 23, 2012	Joint Effort Review Team Meeting 6th Meeting
Feb. 15 and 16, 2012	Water Board holds 2 (north & south) Workshops with stakeholders on Joint Effort Status and Schedule
March 15, 2012	Water Board Meeting to increase Board's awareness and understanding of Joint Effort and to describe process for pending decisions on Numeric Criteria and Applicability Thresholds

Table 2: Steps to Completing the Central Coast Joint Effort for Hydromodification Control and LID

Key Milestones[6]	Objective/Desired Outcome
1. Selection of Proposed Numeric Criteria	Water Board staff identifies proposed numeric criteria based on the final Joint Effort methodology and final report
2. Selection of Proposed Applicability Thresholds (AT)	Water Board staff identifies proposed AT based on: recommendations of LIDI's AT focus group; the final Joint Effort methodology and final report; municipalities' experiences with AT for Interim LID; and input from stakeholder workshops
3. Joint Effort Review Team Meeting	Discuss Water Board staff's proposed Numeric Criteria and Applicability Thresholds; discuss potential continuing role for JERT
4. Water Board holds 2 (north & south) Workshops on Proposed Numeric Criteria and Applicability Thresholds	Water Board staff receives input from stakeholders on proposed Numeric Criteria and Applicability Thresholds
5. Joint Effort BMP Compliance Evaluation	Water Board staff ensures participants are making progress toward adoption and implementation of hydromodification requirements
6. Selection of Final Recommended Numeric Criteria	Following April Stakeholder Workshops, Water Board staff recommends final requirements for hydromodification control and LID for approval by Water Board
7. Selection of Final Recommended Applicability Thresholds	Following April Stakeholder Workshops, Water Board staff recommends final AT for approval by Water Board
8. Water Board Meeting, July 12, 2012	Water Board provides final direction to staff on requirements for Hydromodification Control and LID and framework for Alternative Compliance
9. Permitees undertake adoption of local regulations	Adoption of local regulations for Hydromodification Control and LID
10. Permitees implement local regulations	Permitees commence implementation of local regulations

[6] Numbers correspond to Table 3: Central Coast Joint Effort - Schedule for Development and Implementation of Hydromodification Control Criteria and LID

Table 3: Central Coast Joint Effort Schedule for the Development and Implementation of Hydromodification Control Requirements

	Mar 2012	Apr 2012	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013
Water Board Meeting	**Mar 15th**										
Selection of Numeric Criteria - Proposed	**1**										
Selection of Applicability Thresholds - Proposed	**2**										
JERT Meeting	**3**										
Water Board led Workshops (2): Proposed Numeric Criteria & Applicability Thresholds		**4**									
Water Board Conducts JE BMP Compliance Evaluation		**5**									
Selection of Numeric Criteria - Final Recommended				**6**							
Selection of Applicability Thresholds - Final Recommended				**7**							
Water Board Meeting					**8**						
Anticipated Local Regulatory Adoption Process						**9**					
Municipalities Implement Hydromodification Control Requirements											**10**