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California Regional Water Quality Control Board

Central Coast Region



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November 15, 2007

Christopher Callihan
Deputy City Attorney II
City of Salinas
200 Lincoln Ave.
Salinas, CA 93901-2639

**RE: CITY OF SALINAS STORMWATER DESIGN STANDARDS AND
FUTURE GROWTH AREA PLANS**

Mr. Callihan;

Water Board staff have reviewed a number of construction and planning documents provided by your staff (listed below). From these documents we recognize the substantial effort the City is making toward managing storm water. We have relied on this group of documents in our on-going effort to determine the status of the City's compliance with Storm Water Permit requirements. This letter conveys our comments and concerns regarding the City's current construction requirements and future Stormwater Design Standards and Future Growth Area planning.

We are providing our questions and comments on the upcoming Stormwater Design Standards and Future Growth Area plans to you and the Stormwater Design Standards stakeholders to facilitate your ability to address them with your stakeholders before you present a draft of the standards to the Water Board in December. Because the City is in the middle of working on the Stormwater Design Standards, we do not expect the City to answer the questions raised in this letter at this time. However, we hope that providing our concerns and questions in a written format will give the Stakeholders and the City a clear understanding of our expectations of the upcoming Stormwater Design Standards, and Future Growth Area Specific Plans.

Our comments are grouped around three specific areas of concern. The first concern centers on how the City can ensure that developers are made aware of Low Impact Development (LID) requirements and guidance. Our second area of concern is regarding the effectiveness of the adopted grading and storm water ordinances to require LID. Both of these concerns are addressed in Attachment A to this letter. The third concern focuses on the City's approaches to developing the Future Growth Area, and reducing, eliminating, or mitigating the effects of storm water runoff, and is addressed in Attachment B to this letter.

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The pertinent documents that we have reviewed and will discuss in this letter include:

Document	Status and Notes
2006/2007 SWMP Annual Report (Annual Report)	City submitted the Annual Report to the Water Board on Oct. 1, 2007. Water Board Staff are reviewing it and it is posted to www.swrcb.ca.gov/rwqcb3 for public review and comment.
June 2007 Draft SWMP (SWMP)	City submitted the Draft to the Water Board in June 2007. Water Board Staff have made comments and posted them with the SWMP at www.swrcb.ca.gov/rwqcb3 for public comment.
Stormwater Design Standards	City has not completed the Standards. The Standards are to include Low Impact Development (LID) and other design standards required by the City's Stormwater Permit. City is planning to deliver a Draft in December 2007.
An Ordinance Amending Chapter 29 of the Salinas City Code Regarding Stormwater Management and Discharge Control, 2007 (Stormwater Ordinance)	Salinas City Council adopted this ordinance in summer 2007.
Standards to Control Excavations, Cuts, Fills, Clearing, Grading, Erosion and Sediment, 2007 (Grading Standards)	Salinas City Council adopted this ordinance in summer 2007.
The Regional Stormwater Analysis for Salinas East Future Growth Area, May 2007 (East FGA report)	City provided a draft of this report in September 2007 to the Water Board as an informational item.
The Regional Stormwater Analysis for Salinas East Future Growth Area, May 2007 (West FGA report)	City provided a draft of this report in September 2007 to the Water Board as an informational item.
Regional Watershed Analysis – Hydrologic Mitigation, March 2007 (PACE report)	City provided a draft of this report in September 2007 to the Water Board to inform staff.
Dec. 23, 2005 letter from Water Board to City of Salinas. Subject: City of Salinas Stormwater Permit Maximum Extent Practicable Standard and Low Impact Development Techniques	Letter summarizes the sections of the City's Permit that relate to required Stormwater Design Standards and LID techniques as part of the maximum extent practicable standard the City must meet.
Kennedy/Jenks Consultants Technical Memorandum 1, Dec. 30, 2006, "Review of City of Salinas Policies and Procedures for Conformance with Low Impact Development (LID) Principles and NPDES Permit Requirements" (Tech Memo 1)	Produced with City's assistance and Water Board funding. Tech Memo 1 provides evaluation and suggestions for the City to modify existing documents to allow LID to be a realistic development option, and to align with the City's permit requirements. In a Sept. 1, 2006 Notice of Violation letter, the Water Board required the City to fully address Tech Memo 1.
Standard Specifications Design Standards and	City submitted to Water Board Sept 2007.



Standard Plans 2008 Edition (City 2008 Standards) "Preliminary Only, Not for Construction",	Specifications for grading, landscaping, subbase and paving, drainage and sewer, curbs and sidewalks, and traffic control features.
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Please provide these comments to stakeholders who we may have inadvertently omitted in the cc list for this letter. Should you have questions, please contact Donette Dunaway at (805) 549-3698 or ddunaway@waterboards.ca.gov.

Sincerely,



Roger W. Briggs
Executive Officer

Cc: City of Salinas Staff:

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Attachments:

A – Effectiveness of the Adopted Grading and Storm Water Ordinances to Require Low Impact Development

B – Response to Future Growth Area Regional Stormwater Analyses

C. Water Board staff letter to City of Salinas, December 23, 2005

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ATTACHMENT A
Effectiveness of the Adopted Grading and Storm Water Ordinances to Require
Low Impact Development

The Water Board's Dec. 23, 2005 letter explains the basis for the Water Board's LID requirements for the City (see Attachment C). The purpose of Kennedy/Jenks' work with the City, including Tech Memo 1 and the final Design Standards Plan, was to provide a detailed approach for determining where and how to implement LID techniques. The City stated in their Jan 30, 2007 letter that most of Tech Memo 1 recommendations were, or would be addressed in their Grading Standards and Storm Water Ordinance. Staff reviewed the City's final Storm Water Ordinance, Grading Standards, and the City 2008 Standards, and searched these documents for requirements that address the Tech Memo 1 suggestions that the City promised in the January 30, 2007 letter, and that meet the City's Permit Attach 4 requirements.

We are aware that the City is working on Storm Water Design Standards for December 2007 release, which are to include LID methods, and therefore we have included below some stated assumptions based on this knowledge. To demonstrate our diligence in searching the City's documents to answer our questions, and to give an indication of our understanding and assumptions, we have included the sections of the Storm Water Ordinance, and Grading Standard that appear to address portions of the primary questions listed below. However we are still unclear on certain critical details, and we iterate our remaining questions below for the City and Stakeholders to consider.

We continue to raise discussion about the City's response to the Tech Memo 1, because we believe that the memo is a good summary of the City's existing documents, and remaining impediments to LID implementation, as required by the City's permit. Tech Memo 1 material could be translated into a Work Plan for the City, therefore we pay close attention to how the City utilizes Tech Memo 1.

Our comments are organized with our topic of concern or sections of the Tech Memo provided in indentation and standard font, and our comments or questions regarding the issue in *italics* below. We have included sections of the standards and ordinances that we found to closely address the topics, and we have presented our assumptions in our response.

1. The primary question is when and how the City will be requiring LID for development and significant re-development.

*The **Grading Standards**, Section 3(e) appears to provide an ambiguous approach to requiring LID by stating "If, in the opinion of the City Engineer, grading activities result in a need for post-construction runoff control measures, then such measures, (including Low Impact Development devices/systems) will be required to be installed, as specified in the City of Salinas Storm Water Development Standards" (emphasis added). We are uncertain what the criteria are for enacting the City's Storm Water Development Standards on a project. Where and how will this be clarified to developers?*

2. (From Tech Memo 1) "Section III of Attachment 4 to Order R3-2004-0135 sets forth eight development standards toward consistent implementation of water quality protection measures for all development practices:

Minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and use on-site infiltration of runoff in areas with appropriate soils where the infiltration of storm water would not pose a potential threat to groundwater quality. (Attach. 4, Section III.a.i.1)"

Storm Water ordinance, Sect. 29-15 First paragraph states that the goal of controlling storm water runoff, soil erosion and non-point source pollution can be "achieved by designing sites that disturb only the smallest area necessary, minimize soil compaction and imperviousness, preserve natural drainages, vegetation and buffer zones, and utilize on-site storm water treatment techniques." This statement supports the above-mentioned section of the Permit, however the City 2008 Standards, and the Grading Standards do not appear to carry out the Storm Water Ordinance goal through required practices.

Grading Standards, Section 5e.i states that an Engineering Report may be required by the City engineer. The Engineering Report includes "measures to minimize impervious surface runoff". This requirement does not define what degree of minimal impervious surface is required or acceptable. We are also unclear as to when an Engineering Report would be required, and how a developer or plans checker would define "minimal" imperviousness. It is unclear what criteria the City Engineer uses to determine the need for an Engineering Report. With regard to determining adequacy of a site for on-site infiltration, it seems that the Engineering Report may be an appropriate place for this analysis, however we do not see this is a requirement. Where would the City require a developer to provide this analysis, and what criteria for infiltration would the City use?

We searched the **City 2008 Standards** for any required LID-compatible methods for clearing and grading. The Standards, page 23 "Clearing and Grubbing" refers to California State standard specifications, which do not emphasize LID techniques such as retaining existing topography, minimizing clearing and soil compaction. The Standards appear to address all standard aspects of paving, however we find no requirement to minimize paving. The **Grading Standards** also appear to be an appropriate location to specify minimal compaction and site disturbance, however we did not find such requirements. How do the goals stated in the Storm Water ordinance, section 29-15 (quoted above), link to the requirements in the Grading Ordinance and City Standards? We assume that the upcoming LID Standards will contain BMPs regarding grading, paving, and planter design. If so, how will developers and plan checkers integrate the requirements listed in Grading Ordinance and City Standards with the upcoming LID standards?

3. (From Tech Memo 1) "With respect to new development and significant redevelopment in the City, Attachment 4 to the Salinas NPDES Permit requires that short and long-term impacts on receiving waters be minimized by the City's review and update of its existing planning and development program. Per Attachment 4 the City is required to implement the following measures:

Review and condition for compliance all "Priority Project Categories" and require the incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads and peak flow rates; Control the post-development peak storm water run-off discharge rates and velocities to prevent or reduce downstream erosion, and to protect stream habitat (Permit, Attachment 4, Section II.a.i.8)"

The 2006/2007 Annual Report states that, "All new developments are using LID BMPs to treat stormwater on-site," (p. 2-18) and discusses a required storm water control plan. We find that

the **Storm Water Ordinance**, section 29-15e requires, "All new development and significant redevelopment, as defined herein, shall develop and implement a storm water control plan, as defined herein, demonstrating how the site's drainage will be managed." Our electronic search of the ordinance for "storm water control plan" did not reveal additional information as to what the control plan must contain. We presume the control plan would discuss peak flow rates and discharge durations (or volumes of runoff), but there should be a description of what must be included in a storm water control plan.

We read in the **Grading Standards**, "Site design will incorporate measures for reducing runoff and water quality impacts in compliance with the current City of Salinas NPDES storm water permit and current City design standards" (Section 12.a.i); "All drainage facilities shall be designed to carry surface and subsurface waters to a street, storm drain or watercourse, while minimizing the amount of said discharge" (Section 12.a.ii); "peak storm drainage runoff and sediment rates may not exceed predevelopment rates." (Section 12.a.i); "Plans and specifications prepared for subdivisions of five (5) acres or more, or as required by the current City of Salinas Standard Specifications, Design Standards and Standard Plans document; and the City's Storm Water Development Standards, shall show, by table and/or calculations, the peak rates of storm runoff both before and after development of the 10-year and 100-year storms" (Section 12.b).

From these sections we learn that peak runoff has specific requirements in the City's standards and ordinance. However increased volumes, which are associated with increased erosion and habitat destruction, are not as well addressed ("minimizing the amount of said discharge"). Will excess volume of water from developed lands be more thoroughly addressed in the Storm Water Development Standards?

Also, planning for the 10-year and 100-year peak events do not necessarily protect downstream receiving waters from erosion. Does the City have evidence that the 10-year and 100-year peak discharge requirements are protective of receiving waters? If not, then will the City be evaluating the erosion potential or erosion response of streams downstream of new developments? Will the Permit's sizing criteria for flow and volume restrictions be included in any of the City documents? (see Attach 4, Section II.c.iii).

The City's Permit requires the City review and condition "Priority Projects" (defined in Permit, Attach 4, Section II.c.i) for compliance with the LID Development Standards. When in the application process would a project get flagged as a Priority Project? The **Storm Water Ordinance** does not cross reference Priority Project list, and the **City 2008 Standards** building application submittal checklist, page 154, Section V does not identify the information needed for a reviewer to realize if a plan falls into a Priority Project definition. The **Grading Standards** reference a five (5) acre threshold. Will any of these documents be updated to include Priority Projects (as defined in the Permit Attachment 4) and where and how in the planning process will Priority Projects get identified?

4. (From Tech Memo 1, Section 4.2) "With respect to new development and significant redevelopment in the City, Attachment 4 to the Salinas NPDES Permit requires that short and long-term impacts on receiving waters be minimized by the City's review and update of its existing planning and development program. Per Attachment 4 the City is required to implement the following measures:

Infiltrate runoff on-site where appropriate soil conditions exist and where infiltration of storm water will not pose a potential threat to groundwater quality;"

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(From Tech. Memo 1, Section 4.4.1) "A specification sub-section could be added to explicitly support LID planting areas. The subsection could address soil mixtures to meet the drainage requirements for large volumes of water. The use of curb cuts, curbless streets, and grading should be considered."

*We have found reference in the **Storm Water Ordinance** to the desirability for infiltration (Section 29-15, reference included above), however we have not found reference in the **City 2008 Standards** which would direct a developer to build an infiltration device. For example, we expected to find City Standards to include designs for very common LID devices such as depressed vegetative planters for infiltration/bioswale, street tree infiltration devices, or curb cuts for directing storm water out of gutters and into vegetated areas. The City 2008 Standards section 73-1.06, 73-1.05, and Standard Plan 11 for Street Tree Planting, would be appropriate locations such standards..*

*We assume the City will be including LID BMPs in the forthcoming Stormwater Standards. What is the City's plan for directing a developer to look at standards other than the **City 2008 Standards**?*

*The **City 2008 Standards** section 20-2.022 address organic soil amendment. We are unclear whether this soil mixture matches with the performance for quickly draining soils as described in Tech memo 1 section 4.4.1 (above). Will rapidly draining soil mixtures be addressed in the Storm Water Standards?*



ATTACHMENT B
Response to Future Growth Area
Regional Stormwater Analyses

The Regional Stormwater Analysis for Salinas East, and for Salinas West Future Growth Areas (FGA) reports show a design layout which includes streets, land use areas, storm drains and stormwater detention/retention basins. We have several questions about the three submitted FGA documents. The questions center around the primary understanding that a true Low Impact Development Plan (hence Maximum Extent Practicable Standard) starts with site layout that protects natural water courses, minimizes topographic changes, and takes advantage of infiltration capacities of more permeable soils when practicable. To understand the infiltration capacity of the site, it is important to do on-the-ground percolation tests, and then use this information to dictate infiltration BMPs. Finally, LID BMPs are used to treat storm water runoff for urban pollutants, and to keep post-development runoff rates and volumes at or near pre-development values. The last goal often requires using runoff modeling, which requires careful choice of input data to result in accurate designs. Although the Annual Report discusses these planning aspects¹, it appears that these baseline principles have not been taken into account fully to assure both volumetric and qualitative treatment of storm water. We provide these comments and questions for your consideration:

- Both East and West reports say the designers/engineers will use a hydromodification management plan to restore the peak flows and runoff volumes to the existing conditions while maintaining water quality standards (p. 1, 2nd paragraph, and pg. 4). These documents (East and West FGA reports) appear to already be the hydromodification plan because they show the volume and runoff calculations and storm drain infrastructure layout, which is the foundation of a hydromodification plan. The Annual Report says that "engineers have completed an area stormwater analysis for an approach for mitigating stormwater runoff issues". It seems that the submitted reports are the stormwater mitigation plans, and the City's Annual Report verifies that these are stormwater mitigation plans, but the reports state there will be a later hydromodification plan. Low Impact Development technique begins with minimizing hydromodification through design, not designing conventional developments then adding end-of-pipe features onto a standard layout. We are unclear as to what the upcoming hydromodification plan(s) will contain, and how they might influence the findings and layout of the current FGA stormwater analysis and site layout. When will they be available to the Water Board and the public, and what information will they contain that is different from these reports?
- Figure 6 of both East and West reports show the existing surface drainages are being routed into underground piped storm drains, rather than using above-ground bioswale conveyance systems. Conventional storm drain pipes do not contribute to urban storm water pollutant treatment as LID BMPs do. Piping storm water increases the runoff

¹ The City's Annual Report states, "Engineers working with the City's Future Growth Area have developed hydrologic mitigation approaches to assure both volumetric and qualitative treatment of storm water in the new area. (2006/2007 Annual Report, p 2-9), and "The consulting engineering teams planning the Future Growth Area have conducted soils testing to determine appropriate locations capable of on-site storm water infiltration. These engineers have completed an area stormwater analysis for an approach for mitigating stormwater runoff issues (p 2-18)."



velocity, prevents infiltration, and does not allow or support aquatic habitat. The project designers may have a logical reason for the conventional piped-watercourse plan, however they should explain the context of water quality and habitat protection (LID principles). When did or will the site layout take into account the basic principles of watercourse protection, minimizing paving through layout, and protecting and utilizing higher percolation soil areas? Did the FGA engineers conduct a storm water analysis using a site layout that included above-ground storm water conveyances, per LID principles?

- A series of critical calculations are given in Appendix C to determine the runoff volume, and units are not always included but should be. Hand written calculations on the "Appendix B" page within Appendix C are not well explained; for example, where do the values of 0.07 in/hr soil infiltration rate, and the 0.33 in Water Quality Volume equation come from? These questions are important because they are the basis of the modeling calculations used to determine final storm water design sizing, and therefore should be more clearly addressed in the final report. In order to assure a reader that the designs assure both volumetric and qualitative treatment of storm water (as the Annual Report states¹), the final reports should provide a more transparent explanation of calculations.
- Salinas West is primarily underlain by Hydrologic soil group B (Figure 4) which should have moderately good infiltration capacity. Infiltration tests range from 0.004 in/hr to 0.35 in/hr. Salinas East is underlain by Soil A, B, C, and D, but the development layout does not appear to take advantage of the higher infiltrating A and B soils, as one would expect from an LID design, and as suggested by the Annual Report statement that soil testing was conducted "to determine appropriate locations capable of on-site storm water infiltration". Salinas East infiltration test rates varied greatly. However in both East and West reports Appendix C calculations "Method Used in Hydrologic Modeling to Reflect LID" use constant soil infiltration rate of 0.07in/hr. Where did this value come from, and why are the actual values not used? The infiltration values are critical to determining expected pre-development runoff rates and volumes. The designers are tasked with matching pre- and post-development runoff, therefore if faulty data is used to determine pre-development values, then post-development values will be faulty.
- Salinas West Percolation Testing location map is virtually illegible so hard to determine where the best infiltration locations are. The reason for concern is that City plan reviewer or any other reviewer would not be able to double check whether the developer has sited their infiltration devices in areas with higher soil infiltration. The report says infiltration was done "near the surface" (p. 3). This is not very specific. The soil report is limited to the conclusion page, which does not give details other than the name of the infiltration test. Spotty data reporting does not allow the City or other reviewers to draw confident conclusions that Low Impact Development techniques were applied to the maximum extent practicable in the plan for the FGA.
- Salinas East report does not include all percolation test boring logs. Why are some logs omitted?

- We understand that the developer intends to use bio-swales, on-site bio-retention (West, p. 4, and East, p. 5). The Annual Report² suggests that the engineers who have produced the FGA reports have addressed storm water treatment. The East Area report Figure 6 appears to show three block long section of bioswale for the entire 934-acre area. Design details are not provided, however we feel confident in stating that as presented, this bioswale segment cannot significantly address water quality concerns across the site. The Salinas West Figure 6 legend includes a "proposed water quality" feature, however it is unclear what is being referenced in the figure. Will bioswale use be expanded across both sites? What water quality parameters are the developers aiming to address? This question will lead to the BMP selection, and therefore should be stated and agreed upon up front. When will design details be revealed?
- We are pleased to find the plans for pervious strips along residential streets and at driveways to disconnect developed lots from drainage systems. Do the developers plan to use this system throughout the development?

Salinas Future Growth Area – Central section (PACE report)

The PACE report discusses differences in hydrologic modeling inputs and results between PACE's calibration models and Wood Rogers reported models. The calculated lag times and discharge values, and rainfall inputs are critical in assessing whether pre- and post-development values are similar. PACE suggests that they and Wood Rogers meet to discuss the differences in approaches, share data, and methodologies. Because model inputs are vital to the accuracy of a model, and thus to the design of the FGA, we would like to know whether the two engineering firms have met to discuss these issues, and what the outcome of the discussion(s) were. If they have not met, is there a plan for such?

We have not received a development layout for the Central area to comment on.

² "City staff are working collaboratively with Future Growth Area engineers to develop hydrologic mitigation approaches to address both volumetric and qualitative treatment of storm water in the new area. In September 2007, City staff forwarded copies of draft analyses to the Regional Board's staff."