



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

This matrix provides proposed Permittee responses to comments received from the Santa Ana Regional Water Quality Control Board staff on the Draft Santa Ana Region Hydromodification Management Plan (HMP) & HMP Evaluation Program dated January 29, 2014. Comments were received on March 21, 2014. The matrix includes a response to each comment describing how it has been addressed in the revised documents.

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
A.1	Pages 1-3, Simplified HMP Roadmap for User: These pages appear suited to project-level Hydrologic Condition of concern (HCOC) guidance in the Water Quality Management Plan (WQMP) rather than a watershed level HMP approach. We recommend revising this section to briefly reference the WQMP for project level HCOC applicability determination. The HMP should primarily address drainage area or watershed level approach to manage stream hydromodification susceptibility. Also, considering that the HMP is a component of the WAP, please clarify who are the intended "users" referenced throughout the document. This comment also applies to Section 2.1, pages 12, 13, 14.	<p>Watershed-wide studies, including Hydromodification Susceptibility Documentation Report and Mapping (See Appendix A of the Watershed Action Plan) and Causes of Degradation and Aggradation in the SAR (See Appendix F of the Watershed Action Plan) have been completed to identify the adequate approach to manage stream hydromodification susceptibility on a watershed basis. The nexus between watershed-wide management approach and project-specific requirements is established in the HMP. The HMP meets the intent of the Permit (Section XII.B.5), which states that the HMP should be project, subwatershed and watershed level.</p> <p>The Roadmap intends to summarize the project-specific requirements for an end user (now defined in the HMP). The content of the HMP and the WAP, including watershed-wide management approaches, will be used by the Co-Permittees and the public as guidance documents. The WQMP will be revised with project-specific requirements after the HMP is approved.</p>
A.2	Page 1, "How do I identify if a project is subject to the requirements of this HMP?" Some of the bulleted exemptions stated are not consistent with the permit or other Santa Ana Regional Board approved document, please delete or identify them as a proposed exemption and provide supporting information specific to the sub-watershed or drainage area, consistent with Section XII.E.9.b.iv for our consideration. Also, please see comment 1.	<p>The following exemptions are listed under "How do I identify if a project is subject to the requirements of this HMP?":</p> <p>Exemptions supported by Permit:</p> <ol style="list-style-type: none"> 1. As identified in Section XII.B.9.b.iii, adequate sumps (Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River or other lake, reservoir or natural resistant feature) and conveyance channels that are engineered and regularly maintained; 2. Project over one acre that disturbs less than one acre and is not part of a common plan of development. <p>Proposed additional exemptions supported by regional studies (actual technical justifications are provided in Section 2 of the HMP):</p> <ol style="list-style-type: none"> 1. Hydromodification susceptibility mapping; 2. Watershed protection projects; 3. Large river reaches;



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
		4. Stable receiving waters; 5. Existing infrastructure information; 6. Transportation projects. The following exemption has been removed, as not justified by regional analysis: 1. Exemption based on BMP standards
A.3	Page 1 and page 12, Bullet 1: Please revise to state "If the project is not a New Development or Significant Redevelopment project over one acre that disturbs less than one acre and is not part of a common plan of development," This should also be reflected in Figure 2 - HMP Decision Flowchart. Also, please see comment 1.	The sentence has been revised per the suggestion, along with Figure 2.
A.4	Page 2, "How does the user meet the HCOC MEP standards?": This section states a local and regional approach to meet the HCOC standards. We recommend this section to clarify that the HMP is a component of the WAP. The WAP does not currently present a regional option to address watershed-specific water quality and hydromodification concerns but Section 4 of the HMP provides guidance for interested parties on how a regional project may address HCOC consistent with the hydromodification management approach for sub-watersheds in the SAR. Also, please see comment 1.	In the HMP the user has the option to meet the HCOC MEP standard using either a local approach (see Section 3 of the SAR HMP) or a regional approach (see Section 4 of the SAR HMP). The SAR HMP is integrated into Section 3.6.1 of the WAP, which identifies the local and regional options mentioned in the SAR HMP. Additionally, upon approval of the SAR HMP, the SAR WQMP Guidance Document will be updated.
A.5	Section 1.1, page 4, SAR HMP Context: This section discusses that flow depths below a certain point will not generate the critical shear stress and therefore have no effect on channel stability. Please elaborate on this by differentiating between an increased flow above the pre-development peak flow that can cause an increase in the shear stress and no increase in flow, but an increase in duration that nevertheless can affect channel stability.	In addition to the concept of critical shear stress, Section 1.1 introduces the notion of cumulative effective work, whereby the flow-frequency relationship of a channel is multiplied by sediment transport rate giving a mass-frequency relationship for erosion rates in a channel. Flows on the lower end of the relationship (e.g., two-year flows) may transport less sediment, but occur more frequently than higher flows, thereby having a greater overall effect on the cumulative effective work, or the potential amount of erosion of bed and banks, within the channel. Conversely, higher magnitude events, while transporting more material, occur infrequently so cause less effective work. Leopold (1964) found that the maximum point on the effective work curve occurred around the 1-to 2-year frequency range. This maximum point is commonly referred to as the dominant flow.
A.6	Section 1.2, Lakes, Water Reservoirs and Basins: Diamond Valley Lake is outside the jurisdiction of the SAR, please clarify its role in the SAR HMP or delete if there is no impact to the SAR watershed.	A description of Diamond Valley's relevance to the SAR region has been added to Section 1.2.



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
A.7	Figure 1, page 7: Please clarify how this figure is to be used. The issue of streams labeled as not susceptible is identical to the issue of areas not subject to HCOC that is also discussed in this comment letter. If an exemption for a drainage area is presented based on the presence of controlled release points, the permittees must include supporting evidence showing that the controlled release point does not affect the downstream channels during a 2 year storm. See also comment 14 below.	Figure 1 was moved to Section 2.2.ii and may be used for planning purposes only to identify if a user should evaluate the benefits provided a controlled release point. The user will demonstrate that the presence of a controlled release point does not affect the downstream channels during a 2-year storm, consistent with the conditions listed under the exemptions stable receiving waters (Section 2.2.v) and existing infrastructure information (Section 2.2.vi).
A.8	Section 2.1.i, page 12: Please revise the following sentence as follows: "It should be noted that all projects are subject to the Permit's LID, design capture volume (DCV) and water quality treatment requirements even if Hydromodification control measures for both volumetric mitigation and time of concentration mitigation are not required."	The sentence has been revised, per the suggestion.
A.9	Section 2.1.ii, page 13: Please provide a reference for acceptable energy dissipation system design or reference the WQMP if this is addressed in the WQMP.	Section 2.1.ii has been updated to refer to the 1982 Los Angeles Flood Control District Hydraulic Design Manual or approved alternative (Caltrans, Army Corps, Green Book) that requires properly designed energy dissipation systems at all outfalls to unlined channels. Additionally, upon approval of the SAR HMP, the SAR WQMP Guidance Document will be updated.
A.10	Section 2.2.i., page 15: The third sentence of the second paragraph states users may evaluate local drainage systems that aren't in Appendix A for exemption applicability. If Permittees are seeking exemption from hydromodification requirements for a specific drainage area, supporting documentation related to the specific drainage areas must be presented in the WAP and HMP.	It is important that each project be evaluated in detail as local drainage systems are constructed. The exemptions allow for a project-specific analysis that goes beyond the Hydromodification Susceptibility Report. The HMP and WAP should not have to be updated every time a drainage system is improved. No additional exemptions have been added. All exemptions are located in Section 2.2 of the HMP.
A.11	Section 2.2.i., page 15: The third sentence of the third paragraph states that, "The table contains the name of the channel..." Please clarify what table is being referred to. The reference seems to be a table that needs to be developed for each project level WQMP for which an HCOC exemption is to be claimed.	The reference to a table in Section 2.2.i has been removed.
A.12	Section 2.2.ii, page 21, Watershed Protection Projects: Consistent	The following statement has been added to the end of Section 2.2.iii



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
	with the approved WQMP Guidance, please add the following statement to the end of this section "However, such projects may be considered "Other Development Projects". "Other Development Projects" are required to incorporate appropriate LID Principles (Site Design), Source Control, and other BMPs which may or may not include Treatment Control BMPs. Permittee staff will require Project-Specific WQMPs for these Other Development Projects not considered under priority development categories, if deemed necessary to ensure that the potential for significant adverse water quality impacts to storm water are mitigated."	(previously Section 2.2ii): "Watershed Protection Projects: Consistent with the approved WQMP Guidance Document. However, "Other Development Projects" are required to incorporate appropriate LID Principles (Site Design), Source Control and other BMPs which may or may not include Treatment Control BMPs. Co-Permittee staff will require project-specific WQMPs for the "Other Development Projects" not considered under priority development categories, if deemed necessary, to ensure that the potential for significant adverse water quality impacts to storm water are mitigated."
A.13	Section 2.2.iii, page 21: In the second paragraph of this section, the SAR HMP refers to the San Diego HMP. Please respond as to how the SAR HMP addresses the following issue. The final San Diego HMP (http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmppdf/susmp_appendixG_2011mar.pdf) states on page 6-6 that in addition to the 20,000 cfs and 100 square miles watershed criteria, "...all proposed river reaches are subject to significant upstream reservoir flow regulation, have wide floodplain or stabilized channel areas, and low gradients. This combination of factors, in association with field observations and years of historical perspective from the TAC members, justifies exemptions for direct discharges to the exempt river reaches provided that properly sized energy dissipation is provided at the outfall location." The only criteria that the SAR HMP seems to briefly consider are the properly sized energy dissipated outfalls. Other criteria as described in the above quote are not addressed. Watershed-specific analysis must be presented in the SAR HMP and supported by actual data to support a drainage area based exemption.	Section 2.2.iv (previously 2.2iii): Large River exemption applies to the identified segments of the Santa Ana River, San Jacinto River, Temescal Wash and Cucamonga Creek Channel because of the following factors: <ol style="list-style-type: none"> 1. The segments exhibit a drainage area larger than 100 miles and a 100-year peak discharge higher than 20,000 cfs; 2. As identified in Section 1.2, the natural hydrology and sediment loading of different watercourses within the SAR are significantly impacted by the upstream reservoirs, which regulate downstream flow; 3. As identified in Section 1.2, Permittees participate in the National Flood Insurance Program and enforce a floodplain management ordinance to regulate development in mapped flood hazard areas. The Hydromodification Susceptibility Report and Mapping Study (Appendix A of the WAP) includes floodway characteristics (width, section, mean velocity) from the 2008 FEMA Flood Insurance Study for Riverside County. Floodway characteristics demonstrate that the floodplain widths for the Santa Ana River, San Jacinto River, Temescal Wash and Cucamonga Creek Channel contribute to the deposition of coarse-grained sediments; 4. The low-gradient watercourses of the Santa Ana River, San Jacinto River, Temescal Wash and Cucamonga Creek Channel are beneficial to the deposition of coarse-grained sediments. Gradients are identified in the Causes for Aggradation and Degradation (Appendix F of the WAP), consistent with the findings of the 2008 FEMA FIS for Riverside County;



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
		5. Finally, the SAR is located within the same geomorphic zone (Peninsular Zone) as San Diego County, per the California Geological Survey, thus exhibits similar macro-scale geomorphic trends.
A.14	Section 2.2.iv., page 22, Stable Receiving Waters: The purpose and applicability of this paragraph need to be clarified. We recommend that the HMP identify streams, drainage areas or sub-watersheds where permittees believe this may be an option for New Development or Significant Redevelopment projects. Also, additional information on the stream stability assessment such as the type of analyses and criteria that will demonstrate stability may improve implement ability of this section.	It is important that each project have the opportunity to evaluate the receiving waters in detail beyond the Hydromodification Susceptibility Report. The revised Section 2.2.v. (previously 2.2.iv) describes the required elements of analysis to be provided by the user for consideration by the Permittee having jurisdiction over the project. The analysis should include: <ol style="list-style-type: none"> 1. As-builts, maintenance records and design specifications that demonstrate the capacity of the channel to convey the 2-year ultimate discharge; or 2. A degradation/aggradation evaluation (scour analysis) for a single 2-year storm using approved hydraulic methods that demonstrate the stability of the channel under the 2-year event.
A.15	Section 2.2v, page 22, Existing Infrastructure Information: Please clarify the applicability of the reasonable assurance evaluation to demonstrate that the presence of existing infrastructure such as those identified as controlled release points in Figure 1 are protective of the downstream water to HCOCs up to the state of ultimate build-out. The evaluation must consider current watershed conditions and future built-out conditions with and without hydromodification controls. If Permittees' hydromodification management proposes HCOC exemption on a sub-watershed or watershed basis based on evaluation of existing infrastructure, the supporting information should be presented in the HMP. We recommend that the HMP identify streams, drainage areas or sub- watersheds where permittees believe this may be an option for New Development or Significant Redevelopment projects.	It is important that each project be evaluated in detail as local drainage systems are constructed. The exemptions allow for a project-specific analysis that goes beyond the Hydromodification Susceptibility Report. The HMP and WAP should not have to be updated every time a drainage system is improved. Consistent with the response to Comment No. 10, Section 2.2.vi (previously 2.2v) has been revised to identify the elements of analysis to be provided by the user for consideration by the Permittee having jurisdiction over the project. The analysis should include: <ol style="list-style-type: none"> 1. As-builts, maintenance records and design specifications that demonstrate the capacity of downstream channels to convey the 2-year ultimate discharge; or 2. A degradation/aggradation evaluation (scour analysis) for a single 2-year storm using approved hydraulic methods. The evaluation shall account for the effects of the existing infrastructure and demonstrate the stability of the downstream channel under the 2-year event.
A.16	Section 2.2.vi., page 22, BMP Design Standards: The intent of this section is unclear. Again, this appears to be a paragraph requirement more appropriate as part of the WQMP Guidance. We do not agree with exemption of projects based on a single BMP. If the proposed mitigation is subject to clogging, then the responsible party must be required to propose a mitigation that will function and adequately mitigate the HCOC. Furthermore,	Section 2.2.vi BMP Design Standards has been removed. Drawdown time requirements for detention systems will remain at 72 hours.



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
	inability to meet the drawdown time should also not allow an exemption. The responsible party must propose a device or project design that will mitigate and meet any such standard requirements as a drawdown time. Also, the California Department of Health had informed us that a 96 hour drawdown time is adequately protective for vectors since the shortest time of any mosquito's reproductive cycle is 4 days.	
A.17	Section 2.2.vii., page 23, Transportation Projects: This section states that Permittee transportation projects are not subject to HCOC requirement. Section XII.F. Of the MS4 Permit states that the roadway BMP guidance should meet the performance standard of the HCOC criteria. The Transportation Guidance developed to comply with the Permit requirement states it is functionally equivalent to a WQMP. This section also appears to lump all transportation projects into one category which is not accurate. Please revise this section to correctly explain the requirement for HCOC for transportation projects.	Section 2.2vii, page 23 has been revised to identify that the Low Impact Development: Guidance and Standards for Transportation Projects has been approved by the EO to meet the performance standards for site design/LID BMPs, source control and treatment control BMPs, and the HCOC criteria. Section 2.2vii identifies also that the Guidance does not apply to the following projects: <ol style="list-style-type: none"> 1. Transportation projects that received CEQA approval prior to October 22, 2012; 2. Emergency projects, as defined in the Guidance, Section 2; 3. Maintenance projects, as defined in the Guidance, Section 2; 4. Dirt or gravel roads; 5. Transportation projects that are part of a private new development or significant redevelopment project and required the preparation of a Water Quality Management Plan (WQMP); and 6. Transportation projects subject to other MS4 Permit requirements, e.g., California Transportation Department (Caltrans) oversight projects, cooperative projects with an adjoining County or an agency outside the jurisdiction covered by the Santa Ana Region MS4 Permit.
A.18	Section 3.2, page 25, Volumetric Volume Approach: This section has no lower boundary of 95% of pre-development volume, which in general might be a desirable condition. However, watershed level analysis must be conducted so as not to have unintended consequences on sediment budget and downstream plants, wild life and biota if volumetric runoff to receiving water is extremely reduced post-development. Also, please clarify use of this section with respect to project level, drainage area level or sub-watershed level approach.	It is unlikely that the volume to be retained through infiltration or reuse will significantly reduce the 2-year volume discharged to downstream channels below that of pre-development conditions. Developers will certainly optimize the size of their retention facilities to achieve the greatest efficiency. The Permittees concur with the concerns regarding the impacts of development over sediment budget, downstream plants, wildlife and biota. The cost and timeline required for such watershed-wide studies cannot be supported by the Permittees. Nevertheless, to address these concerns, the Permittees have adopted a Development Planning and Permitting Process that include an Initial Environmental Study and CEQA checklist. Initial



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
A.19	<p>Figures 3, 4 and 6, SAR areas subject to HCOC Requirements: We believe the following areas shown in green require hydromodification management: a) The areas that drain into Temescal Creek in Corona showed some areas in that lower part of Temescal Creek that appear to be undergoing some significant Hydromodification. b) An area along the San Jacinto River just upstream from Canyon Lake that we inspected was also clearly not engineered and regularly maintained. Please revise the maps accordingly.</p> <p>The HMP must clarify that discharges into a channel that is engineered and maintained may still pose a hydromodification concern if there are any sections further downstream that are susceptible to hydromodification. Therefore, it is not appropriate to label all the upstream channels not subject to HCOC lest any writer of a WQMP be confused about what type of channel that is being discharged to. One example of this situation is Salt Creek through Menifee where even though it is engineered and maintained drains through another area further downstream near Canyon Lake that is subject to hydromodification.</p>	<p>environmental studies will identify mitigation measures that are specific to the conditions associated with the project and downstream reaches and habitats.</p> <p>The locations along Temescal Creek in Corona (South Norco Channel, Temescal Creek Channel and Oak Street Channel) all drain to the Santa Ana River (exempt from hydromodification) and are all located within the flood zone of the Santa Ana River.</p> <p>The location along the San Jacinto River (33.731947, -117.258212) is located within a local flood hazard area (County Ordinance 458).</p> <p>The additional sites mentioned by the Region Board (via Michael Roth’s e-mail), Phoenix Ave Storm Drain (33.964732, -117.427129), Magnolia Center Storm Drain (33.965851, -117.415713), Box Spring Storm Drain (33.976022, -117.401692) and the overflow area of Lake Evans (33.996707, -117.382121) all fall within Special Flood Hazard Areas and are managed by the Permittees Flood Plain Management Section.</p> <p>The revised Section 2.2.i identifies that “User must determine if the New Development or Significant Redevelopment project conveys stormwater into a <u>continuous</u> engineered and regularly maintained channels, and/or large rivers to an Adequate Sump.”</p>
A.20	<p>Appendix A, Section 3.2.1: This section discusses use of the 10 year inundation level in Prado Lake as a cutoff where any section downstream from that point would not be considered to cause hydromodification. Our field visit of a section of Temescal Creek within the Prado Basin showed what appeared to be evidence of hydromodification below the 10 year inundation level. Moreover, it is not clear why the 2-year level is not used in the HMP since that is the level that could likely be inundated in the storm we are protecting for.</p>	<p>Based on ongoing discussions with Milasol and the Regional Board staff, the language describing the inundation zone within Prado Basin has been removed as inundation zones and boundaries of geomorphically significant flows are two separate concepts. The analysis rather focuses on the susceptibility of channels and the specific conditions that support the applicability of the large river exemption.</p> <p>The reported erosion appears to be a small, localized scour hole right at the toe of a grade control structure/bridge (Rincon Street). The Permittees constantly monitor the structural stability of all bridge abutments and perform any necessary repairs. Such localized scour holes are not to be addressed by the SAR HMP, as they are caused an abrupt change in flow direction rather than the additional runoff generated by development projects.</p>



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
A.21	Appendix A, Section 3.2.2: This section discusses HCOC exemption for areas that drain directly to large rivers. The large river criteria was taken from the San Diego HMP to be draining more than 100 square miles and having a 100-year design flow of 20,000 cfs. As stated in Comment 13 above, there are significantly more criteria than just the watershed area, the 100 year flow and energy dissipation devices. Watershed -specific analysis must be presented in the SAR HMP and supported by actual data to support a drainage area-based exemption.	Section 3.2.1 (formerly 3.2.2) has been updated with watershed-specific data to support the applicability of the large river exemption: <ol style="list-style-type: none"> 1. Peak discharge and drainage area at specific concentration points to determine whether and where the 20,000 cfs and 100-square mile thresholds are met; 2. The name and location of upstream controlled release points that significantly attenuate peak discharges from the upper reaches; 3. Low numerical gradients and wide floodplain characteristics for the four reaches that meet the large river exemption; 4. The Riverside County Integrated Project (RCIP) that include the restoration of the Temescal Canyon floodplain to its natural state; 5. The SAR is located within the same geomorphic zone as San Diego County (Peninsular Zone)
A.22	Section 4, Page 30, Alternative Compliance for Hydromodification: Please delete "one" in the first sentence and replace the conjunction "or" with "and" for the three bulleted items in the last paragraph of this section.	The introduction to Section 4 has been updated to stress the fact that all regional mitigation projects must protect beneficial uses to the MEP. The goal of regional mitigation is to protect beneficial uses. The regional mitigation project must be capable of one of the following MEP standards: <ol style="list-style-type: none"> 1. Matching or reducing the equivalent volume, as well as ensuring that the time of concentration has not significantly decreased, from the project development; and 2. Protects or restores the channel stability; and 3. Offsite mitigation projects, in-stream restoration projects, and regional projects in line with the regional approach defined in the WAP that aim ultimately at protecting beneficial uses.
A.23	Appendix A, Section 4.2: There are 2 maps that require clarification The first map entitled Existing Stream Channel Delineation Map (ESCDM) shows the entire San Jacinto River and parts of Temescal Wash as being exempt when only certain parts of the rivers might be exempt. The second map is entitled HCOC Applicability Map (HAM). The HAM doesn't reflect the stream susceptibility represented on the first map. The large river exemption described in the San Diego HMP does not correlate with the ESCDM that shows some of the downstream channels as susceptible to hydromodification. If the downstream area is so susceptible, it appears to follow that any increased flow placed in the river upstream from it has the potential to exacerbate	Map 1 classifies the watercourses based on the material type, their capacity to convey the design flow and the level of maintenance conducted by the Permittees. Consistent with the conditions established in the San Diego County HMP, a large river may not be fully hardened, engineered and maintained, but may still aggrade from a geomorphic standpoint because of the floodplain characteristics and the presence of upstream detention infrastructure that has significantly modified the hydrology and sediment regimes. Based on watershed-wide data developed in Section 3.2.1, several segments qualify as large rivers. Map 2 reflects those conditions.



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
	downstream HCOC. All drainage areas to susceptible channels must be shown as subject to HCOC management unless data can be presented or factors specific to a drainage area is presented to demonstrate it is not. Please revise the HAM to show the existing stream delineation color scheme.	
A.24	Appendix A, Section 2.2 of Susceptibility Mapping Report, Delineation of Existing Stream Channels: This section mentions below ground stream channels. Please elaborate as to what is meant by delineating a below ground stream channel.	Section 2.2 of Appendix A has been revised to identify that below-ground channels are channel segments that convey stormwater in underground drainage structures. Typical underground drainage structures are made of reinforced concrete and/or corrugated metal, or material of equivalent shear resistance.
A.25	Appendix A, Table 2 lists large rivers in Riverside County. Please clarify how this table is intended to be used as part of hydromodification management based on area-specific analysis.	Consistent with the elements of response to Comment No. 13, additional conditions of applicability for the large river classification have been added to Section 3.2.2. In addition, Section 3.2.2 indicates that a user should refer to Section 2.1 and Section 2.2.iv of the SAR HMP to ensure that a project discharges into continuous engineered and regularly maintained channels and/or large rivers to an adequate sump. Table 2 lists the upstream limit of where a channel is identified as a large river.
A.26	Appendix B, Causes of Degradation and Aggradation: Page 1, section 1.2 states the reason for excluding the MSAR watershed in the evaluation for causes of degradation and aggradation due to "The tributary drainage area to the MSAR is sufficiently large to create a condition of depositional river;..." The above rationale for excluding this sub watershed from investigating the causes of degradation and aggradation is unclear. Deposition or aggradation could also be a consequence of hydromodification brought on by urbanization.	The MSAR has been identified as a large river in Section 3.2.2 of Appendix B because of drainage, tributary area and floodplain characteristics of the river. The sentence in Section 1.2 has been updated to reflect these conditions.
A.27	Appendix B, Section 3.2.2, Causes of Degradation and Aggradation: Please verify accuracy of the statement that base flow in the San Jacinto River was from Lake Perris and from publically owned treatment works.	The reference to Lake Perris has been deleted.
A.28	Appendix B, Section 4: The conclusion should include consideration of increased runoff due to increased imperviousness from urbanization as a major contributing factor to stream channel degradation and aggradation.	The conclusion identifies that "the development of the land...has increased the potential runoff while at the same time decreasing the sediment produced."



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
A.29	<p>Appendix B, Causes of Degradation and Aggradation, Sections 3.1.1, 3.2.1, 3.3.1, 3.4.1, 3.5.1: For each study area, please briefly include additional characterization of the contributing drainage area, including current imperviousness, percent developable land, population, susceptibility to hydromodification of tributary streams within the drainage area.</p> <p>Also, for each study area, please briefly discuss the rationale for selection of the location and stream length of study reach.</p>	<p>The Causes of Degradation and Aggradation study meets the requirements of the Permit.</p> <p>Section 2.1 has been revised to identify that study reaches have been selected based on the engineer's best professional judgment to exhibit channel conditions that are representative of the evolution of the subwatershed and, if any, examine the timing and the extent of degradation and aggradation of selected channels. The length of study was limited by the availability of historical aerials. Historical aerials used for the study have been included as Attachment B of the Causes of Degradation and Aggradation Technical Memorandum.</p>
A.30	<p>Appendix B, Causes of Degradation and Aggradation: Figures 2, 3, 5, 6, 8, 9, 11, 12 - please correct the figure titles. Figure 7 - please correct the legend title.</p>	<p>Figure titles have been modified to correctly identify whether the figure exhibits land cover, hillslope gradient or geology type.</p> <p>The legend of Figure 7 has been corrected to identify hillslope gradients instead of land cover.</p>
A.31	<p>Appendix B, Causes of Degradation and Aggradation :The document appears to have many questions marks where not necessary. Please do a global search and delete as appropriate.</p>	<p>Question marks within the document that are not applicable have been removed.</p>
A.32	<p>Section XII.B.5. of the Permit requires a prioritization of actions based on drainage features/susceptibility/risk assessments and opportunities for restoration. It appears that the permittees started to analyze this subject in the Causes of Degradation and Aggradation. However, there is no clear identification and prioritization, opportunities for restoration or assessment methodology provided so follow-up could monitor the effectiveness of BMPs on hydromodification. The plan includes a clear description of the effect of debris basins on hydromodification in several sub-watersheds. This could form the basis for a plan to implement regional BMPs in some sub-watersheds by allowing for the bypass of coarse sediment from these structures. If this path is taken, we suggest that a thorough evaluation be conducted on the design effectiveness that could be translated to other sub-watersheds that have similar characteristics. This could also be an opportunity to optimize designs that correlate sediment budget with successful BMPs.</p>	<p>As identified in Section 1.2, Future Infrastructure and Project Prioritization, the Permittees evaluate on an annual basis potential flood control project requests. The process takes into consideration the susceptibility of drainage features to hydromodification. Potential channel restoration projects may be considered. In addition, only a very limited number of sediment bypass structures have been built worldwide because of topographical, hydrological or economic conditions. Bypassing sediments from debris basins would have to be evaluated on a scale beyond the WAP and the HMP requirements. Currently, the Orange County Water District is evaluating a Prado Basin Sediment Management Project.</p>



RESPONSE TO COMMENTS MATRIX – May 2014
Draft Santa Ana Region Hydromodification Management Plan (SAR HMP)

Item #	Santa Ana Regional Board Comments	Proposed Responses from SAR Permittees
B.1	Section 3.1, page 14: This section states that the HMP monitoring data will be submitted to the Santa Ana Regional Board at the end of the evaluation period, tentatively in Fall 2019. While this appears to be a reasonable timeframe to acquire and analyze data, please include a breakdown of tasks with projected schedule from the date of HMP/WAP approval.	Section 5 identifies a breakdown of tasks and schedules consistent with the Evaluation Program and include a discussion describing the yearly efforts and information collected in regard to HMP implementation and evaluation which will be provided on an annual basis (2015-2019). The discussion will be integrated in the Annual Report. A preliminary summary for the evaluation program will be provided in 2019.
B.2	Section 3.1 -this section identifies possible approaches for the HMEP, however, it lacks commitment to an approach. Please identify the approach that will be used. For example, it is not clearly stated how surveys will be conducted or if certain condition(s) will indicate which techniques or combination techniques will be used. Similarly, this section states that "Aerial photogrammetry can specifically be used to evaluate floodplain width, plan form changes, channel migration and floodplain obstructions or constrictions..." but does not state if aerial photogrammetry will actually be used or situations when it may be used, nor does it specify alternative evaluation methodology.	Providing that they provide adequate accuracy and precision per the specifications defined in the introduction of Section 3, aerial photogrammetry techniques may be more cost effective than field survey techniques performed by a crew. The important factor is to ensure an adequate precision of field measurements; survey firms may have access to different resources.
B.3	Section 4.2, Performance Protocol, 2nd paragraph: Since one of the objectives of the HMP and HMEP is to evaluate the HCOC management approach specified in the permit which is based on the 2 year storm, please delete the qualifier "if required".	The term "if required" has been replaced by "if applicable".
B.4	Section 5, bullet 5, and Figure 4: Please explain the qualifier "If applicable". Either specify a decision tree or identify conditions that will determine if an annual hydrologic analysis will be conducted.	Figure 4 has been updated to clarify the conditions for performing an annual hydrologic analysis consistent with Section 4.2.
B.5	The HMPEP only identifies one hydromodification monitoring location. The HMP EP is an integral component of the Watershed Action Plan and must encompass all the sub-watersheds within the permit area. The Technical Memorandum on the Causes of Degradation and Aggradation identified various study areas for each sub-watershed. It is unclear if these study areas are candidates for baseline monitoring. Also, the HMP Evaluation Program must relate the stream hydromodification susceptibility assessments to prioritization and management actions consistent with the objectives for each stream and sub-watershed.	The Permittees have performed a survey of the SAR and only identified one site that discharges into a channel that is impacted by upstream dams or retarding systems, agricultural developments, significant storm events or other stressors within the SAR. As identified in Section 3.2, Permittees are actively looking for other monitoring opportunities, as land development projects are submitted to the Permittees for approval.