

THE RANCH PLAN PLANNED COMMUNITY
PLANNING AREAS 3 AND 4 RUNOFF MANAGEMENT PLAN

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INTERNATIONAL

TECHNICAL APPENDIX O.5

Ranch Plan ROMP (2013) Chapter 4

4 Regulatory Requirements and Design Criteria

4.1 Flood Protection Requirements

The minimum adopted standard for flood protection requirements by the County of Orange as those mandated through the National Flood Insurance Program that utilize the 100-year standard. Although, recently the State of California adopted Senate Bill (SB 5, 2007) - Flood Risks which suggests a 200-year level of protection and is updating the building code standards, but is only being applied in the Central Valley. The statewide FLOODSAFE program sustainable integrated flood management and emergency response system throughout California that improves public safety, protects and enhances environmental and cultural resources, and supports economic growth by reducing the probability of destructive floods, promoting beneficial floodplain processes, and lowering the damages caused by flood.

4.1.1 Federal Requirements - NFIP

The minimum federal flood protection goals and requirements are administered by FEMA as part of the National Flood Insurance Program (NFIP). The National Flood Insurance Program (NFIP) originally established in 1968 provides low-cost federally subsidized flood insurance to those communities that participate in this program. Participation in the program requires that the community adopt floodplain regulations which meet the requirements of the NFIP defined in *44CFR Chapter 1 Part 59*. The County of Orange is a participant in the NFIP and has adopted floodplain regulations along with the mapping of existing flood hazard areas. The County of Orange National Flood Program Community ID is 060212 with the initial flood hazard base mapping performed in January 1975 and the initial Flood Insurance Rate Map (FIRM) published in September 1979. The current "effective" FIRM date for the County of Orange is December 2009.

4.1.2 County Requirements

The County has adopted the 100-year return frequency for the minimum standard utilized in the protection of all habitable structures (see *Orange County Hydrology Manual*, Section A.2-Hydrologic Protection Levels) which corresponds to the requirements for their participation in the NFIP. All flood protection (storm drain) facilities shall be designed in accordance with the County of Orange standards. Final facility design and locations will be reviewed as part of the final engineering plans and grading plans. Minimum County criteria requires all on-site storm drain facilities to be designed to convey flows expected from a 10-year storm with additional design factors of safety and freeboard to provide a 100-year level of flood protection to all habitable structures, as shown in the County of Orange *Local Drainage Manual*, Chapter 1 - Design Criteria.

4.2 Legal Aspects of Drainage System Design

The following are general guidelines and considerations related to drainage law in order to avoid liability issues that have been incorporated in the planning of the development drainage and should be continued to be utilized as guidance in the future with the refined planning. Almost every aspect of action on drainage and flood control work may have serious legal complications. Therefore, the design engineer must be able to recognize liability and avoid situations in which liability would be incurred. Engineer should consider these principles during the refined design of the different development areas covered by the ROMP.

- a. Do not divert surface waters from one property to another over which they would not naturally flow.
- b. Do not gather waters by artificial means and discharge them onto lower property in greater volume or concentration than they would naturally be discharged (except that the volume may be increased by urbanization or by development of the upper property).
- c. Do not construct ditches or other artificial structures to drain water which have accumulated naturally in ponds and depressions onto lower property owned by another person.

- d. Do not direct surface waters which have been improperly diverted from still higher property to lower property.
- e. Do not concentrate surface waters into a single channel, instead of two (2) or more, and then discharge the channel onto lower property.
- f. Do not obstruct the flow of surface waters from higher property that naturally drain across or onto lower property.
- g. Perpetuate natural drainage insofar as practicably possible.
- h. Do not dam or obstruct the flow of surface waters from higher property that naturally drains across or onto lower property.

4.3 Hydrology

All engineering analyses for determining surface runoff hydrology is based on the Orange County *Hydrology Manual* (October 1986) and the corresponding published Addendums No. 1 and 2 to the *Hydrology Manual*.

4.3.1 Facility Design Criteria – Hydrologic Protection Levels

- Storm drains with tributary areas of less than 640 acres are to be designed for a minimum of 10-year frequency below the top of curb. In sump conditions, catch basins and the connecting storm drain should be designed to a 25-year frequency.
- Provide 100-year level of flood protection for all habitable structures. The elevation of the lowest floor of buildings must be at least one (1) foot above the 100-year water surface elevation.

4.3.2 Hydrologic Mitigation - Detention Facilities Design Criteria

The design of the detention basin facilities utilized for hydrologic mitigation will be based on the County of Orange *Draft Design Criteria for Retarding Basins* (Phil Jones, June 2001). The referenced criteria memo by the County of Orange for retarding basins has never been adopted, but the criteria represent a summary of general guidance utilized by the County for the design of these facilities. The ROMP provides the preliminary sizing of these detention basin facilities in order to demonstrate the mitigation of the hydrologic impacts, however, the preliminary sizing at this level in the ROMP document does not go through all the details involved in the facility design such as the spillway sizing. The intent is to demonstrate that the adequate space can be reserved for the facility in the land planning based on the storage requirements for the mitigation.

Design Freeboard

Freeboard for retarding basins shall be defined herein as the elevation difference between the highest water surface elevation within the basin for the multiday 100-year design storm event to the top of the basin emergency spillway crest. Freeboard for retarding basins shall be determined by the criteria contained herein, but under no circumstance, shall the minimum basin freeboard be less than the following:

one (1) foot for any basin or dam facility, and

plus (+) 0.5 feet for flow-through basin or dam facilities, and

plus (+) 0.5 feet for basin or dam facilities with a maximum water surface storage (emergency spillway crest) height greater than adjacent or surrounding property.

Or,

Ten percent (10%) of the 100-year, multi-day, design storage volume,

Whichever is greater unless otherwise authorized in writer by the Chief Engineer, OCPW.

Right-of-Way

Right of way obtained for retarding basins must include unhindered maintenance and emergency access; periphery maintenance roads (meeting OCPW standards); dam embankments; all basin slopes, active storage areas, basin structures; and clear areas for accessing and maintaining all basin features in their entirety.

Emergency Spillway Criteria

Outlet spillway design shall consider the consequences of failure. If there is no physical limitation to the flows which can enter the basin, the outlet/spillway shall be designed for not less than a 1,000-year flood based on the design storm computed. If there is a physical restriction to the amount of flow which can enter the basin, the spillway shall be designed for the maximum restricted flow, using a weir coefficient at the high end of the expected range or using a Manning's 'n' coefficient at the low side of expected range. The above criteria shall in no way relieve the design engineer from complying with design criteria set forth by DSOD when and where the basin may fall under State jurisdiction.

Embankment Criteria

The slopes for most embankments on strong foundations can be 3:1 upstream and 2:1 downstream. However, flatter slopes should be considered for dams constructed on inorganic clay or high plasticity and very fine inorganic silt. Organic soils are not usable as embankment materials. *(For basins not subject to DSOD jurisdiction, upstream embankments may be constructed as steep as 2:1 provided there is geotechnical and structural data to support the design.)*

Detention Criteria

Facilities which empty by gravity flow downstream: this condition entails that the basin invert must be higher in elevation than the adjacent or downstream channel/storm drain invert.

1. Off-stream (by-pass/flow-by). Discharge 80% of the design storage volume within two (2) days.
2. On-stream (flow-through). Provide a gated outlet facility capable of discharging 80% of the design storage volume and the recession leg of the hydrograph within two (2) days. For purpose of preliminary design, the capacity may be assumed to be two (2) times the capacity needed to discharge 80% of the design storage volume without consideration of the recession leg of the hydrograph.

Access Criteria

At least one continuous 15 foot wide, 6" thick, concrete paved access ramp (capable of withstanding H20-44 truck loading) with a maximum slope of ten 10% shall be provided from the nearest street to the invert of the basin. The access ramp shall be graded to drain at a two 2% slope toward a parallel asphalt or concrete berm or concrete drainage ditch or "v"-ditch. The surface runoff shall be directed to a concrete downdrain, storm drain, or dissipator device to effectively minimize any potential sheet flow erosion of the basin slopes. In addition, the concrete paved access ramp shall be extended to within thirty five (35) feet of all basin outlets, intake towers, and other debris/sediment trapping appurtenances, where applicable. A 35 foot radius, 6" thick, circular concrete pad (capable of withstanding H20-44 truck loading) shall be constructed around the base of all intake towers with a maximum slope of 2%. A 50 foot by 50 foot wide or 35 foot radius concrete turn-a-round shall be constructed at or near the terminus of the access ramp on the basin invert, but shall be located 3 feet above the maximum allowable basin sediment storage elevation. The maintenance/access roadway system shall be designed such that the entire periphery of the basin shall be accessible during a design level event. Except where a joint-use partner is responsible for security, the basin site shall be fenced with chain-link fence in accordance with OCPW Standard Plan 600-0-OC.

Sediment and Debris Criteria

Retarding basin proposals for flow-through facilities shall include a sediment analysis, and the design of the retarding basin shall provide sufficient additional volume to store the sediment and debris expected to be deposited in the basin. Bypass channel low flows shall be confined to a pilot channel or vee to facilitate sediment movement. Because of the uncertainties in design flood volume estimation, and estimation of the rating of inlet structures, confining levees shall be a minimum of 2 feet above the outlet/emergency spillway surcharge unless the spillway is designed for the Probable Maximum Flood, in which case the 2 foot requirement above may not be required. Debris and sediment volumes for flow-through basins shall be determined as follows:

1. U.S. Army Corps of Engineers, Los Angeles District, A New Method of Estimating Debris-Storage Requirements for Debris Basins (Tatum Method), February 1963, by Fred E. Tatum assuming a major flood four (4) years after a 100% burn, (See *Appendix G*) and
2. The US Army Corps of Engineers, Los Angeles District, Los Angeles District Method for Prediction of Debris Yield, February 1992, Revised August 1992 (See *Appendix H*) shall both be utilized to determine basin sediment volume. Other comparable methods may be used for analysis as authorized in writing by the District.

Operating Manual

An operating manual describing all features of basin operation, including: a copy of all regulatory permits, basin agreements, rating curves of all facilities, an elevation-capacity curve for the basin, instruction manuals for all equipment, and a maintenance schedule shall be provided.

4.4 Hydraulic Design

The local storm drain system for the development areas shall be capable of conveying the urban runoff generated with a minimum of damage and public inconvenience during the design storm. The hydraulic analyses methods include procedures for evaluation of street flow, storm drains, and/or natural drainage channels. Regional facility hydraulics is designed per the *OCFCD Design Manual*. The hydraulic analysis requires accurate reference information upstream and downstream of the proposed design, which is the reason for the detailed submittals. Although the storm drain/street hydraulics does not specify the actual flood protection level of the combined storm drain/street hydraulics, the effect of all systems should be to provide 100-year protection for all habitable non-flood proofed structures.

4.4.1 Regional Channel Facilities – Hydraulic Design Manual

The hydraulic analysis and design criteria for regional flood control facilities should be based on the *Orange County Flood Control Design Manual*. “Regional” facilities generally have tributary drainage areas which exceed 1,000 acres and ownership would normally be with OCFCD while “subregional” facilities have tributary drainage areas between 640 and 1,000 acres which OCFCD may assume ownership if compliance with OCPW standards.

4.4.2 Local Drainage – Local Drainage Manual

The Orange County *Local Drainage Manual* will be the primary reference for design criteria associated with the interior local drainage systems within the development areas.

Storm Drains: The following is an outline of the design for the development of the storm drain criteria and the local flood protection requirements within the development Planning Areas:

- Drainage facilities shall be designed in accordance with the County of Orange Flood Control District *Design Manual* and the County of Orange *Local Drainage Manual*.
- Urban runoff generated from within the developed portions of the project shall be directed to and intercepted by an underground storm drain facility.

- Street interception inlets will be designed for a 10-year storm capacity and those inlets in a sump condition with a secondary outlet will be designed for a 100-year storm capacity.
- Sump locations with no secondary outlets will be designed for a 100-year storm capacity.
- Local area drains, curb drains and the landscaping or common area drainage systems will connect to the storm drain at street inlet locations or manholes, to provide locations of adequate maintenance. Pipe sizing, clean-out and manhole spacing will be per the Local Drainage Manual and/or where needed.
- Local surface inlets for the common area or the landscaped area will be sized with the appropriate clogging factors, minimum of 50% to account for debris.
- Dedicated emergency overflow paths will be provided along the drainage system at sump locations based upon an "extreme analysis" (i.e., 100-year storm). The dedicated flow path is the path that overland flow can escape without causing flood damage to any of the facilities. The emergency overflow paths may consist of pedestrian walk paths which can confine and direct the flow without causing erosion. Adequate freeboard, as outlined in the Local Drainage Manual, shall be provided for these overland flow paths.
- Dedicated right-of-way must be provided for the public storm drain facilities which traverse the site. The horizontal and vertical alignments, and right-of-way widths must follow the minimum requirements outlined by the Local Drainage Manual. No structural encroachments, excluding walls and wall footings, are allowed in these easements.
- Storm drains located in 2:1 slopes will be provided with adequate access and spacing for conduit maintenance, as outlined in the Local Drainage Manual.
- Access roads, gates and their location, if needed, will be per the Orange County Flood Control District Design Manual.
- The finished floor elevations of the commercial and habitable structures will be elevated 1 foot above the 100-year water surface in the street or 1 foot above the top of curb, whichever is greater.
- The drainage system will be designed to provide a 100-year level of protection to all habitable structures through a combined hydraulic conveyance of the underground storm drain section and the street section.
- Provisions for maintenance will be incorporated in the proposed drainage system which includes providing manholes at the appropriate spacing and locations.
- Maximum velocities in standard wall reinforced concrete (RCP) storm drain pipe are limited to 20 feet per second (fps). Velocities between 20 fps and 45 fps will require special wall RCP. Above 45 fps, velocities will be reduced using: less steep pipe slopes, larger diameter pipes/culverts, velocity rings.
- Street inlets will be provided at a minimum for those locations where the street hydraulic capacity will be exceeded or locations where the product of the velocity and flow depth exceeds a value of 6, or locations to reduce pedestrian hazards. Hydraulic capacity here is defined as the maximum volumetric rate of water that a drainage system can convey, in this case, the street.

4.5 Additional General Storm Drain Design Criteria

- Velocity in RCP standard wall pipe should not exceed 20 fps.
- Where velocities exceed 20 fps, a special wall RCP with a minimum 1 1/2 steel clearance on both inside and outside surfaces should be used.
- Maximum velocity in special cover RCP is 45 fps.
- Generally on-site storm drain is a 10-year frequency, however, in sump conditions for catch basins and connecting storm drains, use a 25-year frequency.
- On arterial highway, 1 (one) 12 foot lane in each direction should be clear of water for a 10-year storm; in sump conditions a 25-year storm shall be used.
- On local streets flow shall not exceed top of curb for 10-year storm, in sump conditions, 25-year storm shall be used.
- All buildings shall be protected from flooding drain under 100-year frequency storms.
- Maximum water surface and catch basins for design conditions shall be half a foot below the inlet street flow line elevation.

- Once water is picked up in the storm drain it shall remain in the system.
- Pipe size shall not be decreased downstream without receiving governing agency approval.
- Generally, branching or splitting inflow (bifurcation) is not allowed.
- Ratio of the normal velocity to critical velocity should be less than .9 or greater than 1.2.
- All pipe and conduits laid parallel to the roadway shall be placed at least 30" below the road surface.
- Any street, the depth of water at the curb times the velocity should not exceed six (6).
- Catch basins will be constructed at the beginning and end of super elevated streets. Catch basins must be able to completely intercept a minimum of a 10-year storm.
- Generally, a maximum of 15% of the flow is recommended passing the continuous-grade catch basin.
- The required connector pipe size for catch basins will be determined from culvert equations for inlet control or outlet control.
- Spacing requirements for manholes should be per the *Local Drainage Manual* Pg. 1-9 VIII "Conduit Maintenance and Access Criteria."
- Manholes shall not be located in street intersections, especially heavily traveled streets.
- Manholes should be located as close to grade changes as possible.
- The minimum pipe size is generally 18".
- Minimum pipe slope for mainlines ranges from 0.001 to 0.002 depending on agency.
- Junction Angle of Confluence:
 - In general the angle of confluence between the main and lateral line shall not exceed 45° and as an additional requirement shall not exceed 30° under the following conditions:
 - Where flow in the proposed lateral exceeds 10% from the mainline flow;
 - where the velocity of the flow in the proposed lateral is 20 fps or greater;
 - where the size of the proposed lateral is 30" or greater;
 - where the hydraulic calculations indicate excessive head losses may occur.
- When minimum clearance between road surfaces and pipe cannot be met, pipe must be encased in concrete when the cover is 12" or less.
- RCP pipe generally is manufactured in 8 foot lengths.
- Wherever practical pipeline curves shall have a radius of 90, 45 or 22 1/2 feet, these are the standard allowable radius for reinforced concrete pipe.
- When the mainline or lateral in an area where the pipe may carry significant amount of debris, the minimum diameter is 36".
- When the radius is less than the allowable radius the resulting joints shall be protected by reinforced concrete collars.
- No conduit shall be reduced in cross section area downstream within the storm drain system.
- All storm drain systems shall be designed for ultimate development flows in all areas.
- Storm drain stationing is run upgrade from the lower end of the street and lower end of the storm drain.
- Vertical curves shall be designed so that angle points fall at a pipe joint. Maximum spacing of angle point shall be 8 feet. Maximum angle at any joint shall be 10 degrees.
- Care shall be taken to prevent horizontal and vertical curves within the same reach of the pipe.
- Generally, the service life requirements for underground structures is a 100-years, however it depends on local agency requirements.

4.5.1 Local Storm Drain Debris Basin Requirements

The County requires that storm drain facilities which drain or intercept runoff from natural watershed areas that produce sediment/floating debris, then a debris/desilting basin is required at the entrance to the storm drain facility at these locations in order trap sediment and floating debris prior to entering the storm drain. The design and planning of the local storm drain inlet facilities needs to accommodate these requirements as part of the refined grading studies and design. In addition, the *Local Drainage Manual* identifies different types of "debris barriers" which should be considered at the inlet of the storm drain to collect "floating debris" and prevent it from entering the storm drain pipe which may clog the pipe. The County should be consulted for the current specific sizing requirements and analysis procedures of

the debris basin facility to ensure that adequate volume is provided for the necessary debris storage. In addition, provisions for maintenance and access to the debris basin facilities would need to be incorporated into the design and planning of the facilities which would include, but not limited to, ramps and roadways.

4.6 Water Quality / Hydromodification

This section summarizes the regulatory requirements and design criteria contained in the municipal separate storm sewer systems (MS4) permit, the County's Water Quality Management Plan (WQMP) preparation process established for the Ranch Plan Planned Community, and Clean Water Act Section 401 Water Quality Certifications.

4.6.1 MS4 Permit, Model WQMP, and Technical Guidance Document

NPDES Permit and Waste Discharge Requirements Order No. R9-2009-0002, adopted on December 16, 2009, regulates discharges of urban runoff from MS4s in the portion of Orange County within the San Diego Regional Water Quality Control Board (Regional Water Board). The MS4 Permit stipulates requirements for new development and significant redevelopment, including specific selection and sizing criteria for low impact development (LID) best management practices (BMPs), treatment control BMPs, and hydromodification control BMPs.

LID and Treatment Control: Pursuant to Order No. R9-2009-0002, Orange County Public Works (OCPW) submitted a draft Model Standard Stormwater Management Plan (SSMP) to the Regional Water Board Executive Officer on December 16, 2011, for consideration of approval. Within 180 days following approval of the Model SSMP by the Regional Board Executive Officer, the County and co-permittees will be required to incorporate these requirements into the environmental review process and development permit approval process for significant new development and redevelopment projects. The 2003 Drainage Area Management Plan (DAMP) Local Implementation Plan (DAMP Appendix A, July 2003) remains in effect until this time.

The LID and treatment control criteria of Order No. R9-2009-0002 are summarized as follows:

- Select LID BMPs to retain the runoff from the 85th percentile, 24-hour design storm (design capture volume) to the maximum extent practicable, using infiltration, harvest and use, and/or evapotranspiration processes.
- Select biofiltration BMPs to address all primary pollutants of concern with medium or high effectiveness for the remainder of the design capture volume that cannot be feasibly retained.
- If biofiltration BMPs cannot be sized for the remaining design capture volume, then conduct alternative compliance for LID requirements and provide treatment control BMPs to address all primary pollutants of concern with medium or high effectiveness for the remainder of the design capture volume that cannot be retained or biofiltered.

Hydromodification Control: Pursuant to Order No. R9-2009-0002, OCPW submitted a draft Hydromodification Management Plan (HMP) to the Regional Water Board Executive Officer on December 16, 2011 for consideration of approval. Within 180 days following approval of the HMP by the Regional Water Board Executive Officer, the County will be required to incorporate these requirements into the environmental review process and development permit approval process for significant new development and redevelopment projects. The hydromodification criteria in the draft HMP are as follows:

- All Priority Development Projects (PDPs) must use continuous simulation to ensure that post-project runoff flow rates and durations for the PDP shall not exceed pre-development, naturally occurring, runoff flow rates and durations by more than 10% for peak flow rates, from 10% of the 2-year runoff event up to the 10-year runoff event.
- In addition, the PDP must compensate for the loss of sediment supply due to the development.

On April 25th, 2012, the Regional Water Board sent a comment letter on the December 2011 Draft HMP to the County. This letter states that the Copermittees are required to submit a final HMP that incorporates the comments by October 25, 2012. In the interim, the San Diego Water Board encourages the Copermittees to immediately implement measures likely to be included in the HMP, in compliance with MS4 Permit requirement F.1.h.(4)(d).

Provisions for Projects Greater Than 100 Acres: Order No. R9-2009-0002 includes optional provisions for incorporating watershed-based water quality, hydrologic, and fluvial geomorphologic planning principles into preparation and review of project plans. This is an option for projects greater than 100 acres that seek to establish project-specific criteria based on watershed-scale planning principles. Specifically, Order No. R9-2009-0002 states the following:

- Where a development project, greater than 100 acres in total project size or smaller than 100 acres in size yet part of a larger common plan of development that is over 100 acres, has been prepared using watershed and/or sub-watershed based water quality, hydrologic, and fluvial geomorphologic planning principles that implement regional LID BMPs in accordance with the sizing and location criteria of this Order and acceptable to the Regional Board, such standards shall govern review of projects with respect to Section F.1 of this Order and shall be deemed to satisfy this Order's requirements for LID site design, buffer zone, infiltration and groundwater protection standards, source control, treatment control, and hydromodification control standards.
- Regional BMPs must clearly exhibit that they will not result in a net impact from pollutant loadings over and above the impact caused by capture and retention of the design storm. Regional BMPs may be used provided that the BMPs capture and retain the volume of runoff produced from the 24-hour 85th percentile storm event as defined in section F.1.d.(6)(a)(i) and that such controls are located upstream of receiving waters.
- Any volume that is not retained by the LID BMPs, up to the design capture volume, must be treated using LID biofiltration.
- Where regional LID implementation has been shown to be technically infeasible (per section F.1.d.7.b) any volume up to and including the design capture volume, not retained by LID BMPs, nor treated by LID biofiltration, must be treated using conventional treatment control BMPs in accordance with Section F.1.d.(6) and participation in the LID waiver program in Section F.1.d.(7).

The Ranch Plan Planned Community is greater than 100 acres; therefore, this provision is applicable.

4.6.2 Preparation of WQMPs

Guidelines for the preparation of Water Quality Management Plans (WQMPs) for the Ranch Plan Planned Community have been established by Orange County Planning (February 2012). The purpose of these guidelines is to clarify the process for preparation and review of WQMPs within the Ranch Plan Planned Community for OCPW staff, plan check consultants, and development applicants.

A unique Watershed Based Approach to Water Quality Management within the Ranch Plan Planned Community was set forth by the Board of Supervisors as part of the November 2004 approval of the Ranch Plan Planned Community and certification of EIR 589, including Section 4.5 (Water Resources) and Technical Appendix C-2 (Community-Wide WQMP). This unique watershed based approach (i.e., allowable use of regional BMPs) is recognized by the Regional Water Board in the MS4 Permit (Order No. R9-2009-0002) and the Orange County Stormwater Program New Development/Significant Redevelopment Program Technical Guidance Document for Preparation of Conceptual, Preliminary, and Project WQMPs (Drainage Area Management Plan Exhibit 7.III).

The Community-Wide WQMP is the parent document of all subsequent Ranch Plan WQMPs. Each subsequent WQMP must be prepared in compliance with the MS4 Permit, the Model Water Quality Plan (Model WQMP) for South Orange County, Orange County Technical Guidance Manual (TGD), and South Orange County HMP. In addition, each WQMP must be prepared utilizing the appropriate South Orange County WQMP Template. The process by which Rancho Mission Viejo will demonstrate, and the County

of Orange will verify, compliance with the above documents will be through a series of progressively more detailed WQMPs, as follows:

- Planning Area WQMP – Individual Planning Area Scale (Master Area Plans),
- Interim Grading WQMP - Subarea Scale (Master “A” Tentative Tract Map),
- Conceptual Project Specific WQMP – Project Scale (Discretionary Review Process), and
- Final Project Specific WQMP - Project Scale (Precise Grading Plans for Site Development Permits and “B” Tentative Tract Maps). A Project-Specific WQMP will be required for each Regional BMP if the BMP is not included and adequately addressed in another WQMP prepared for a larger project area.

In general, each level of WQMP will provide supplemental and refined information concerning how site design, source control, LID, treatment control, and hydromodification control BMPs will be implemented for the area in question; potential structural LID, treatment, and hydromodification control facility sizing and location within the subject area; and monitoring, operation, and maintenance of stormwater BMPs within the relevant area. In addition, each Master Area Plan WQMP will include analyses that demonstrate that proposed regional treatment and hydromodification control BMPs will not result in a net impact from pollutant loadings over and above the impact caused by capture and retention of the design storm with on-site LID BMPs, per the requirement of the MS4 Permit.

4.6.3 Water Quality Certification

Section 404 of the Clean Water Act is a program that regulates the discharge of dredged and fill material into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include fills for development, including physical alterations to drainages to accommodate storm drainage, stabilization, and flood control improvements.

Section 401 of the Clean Water Act (CWA) requires that any person applying for a federal permit or license which may result in a discharge of pollutants into waters of the United States must obtain a state water quality certification that the activity complies with all applicable water quality standards, limitations, and restrictions. Subject to certain limitations, no license or permit may be issued by a federal agency until the Section 401 certification has been granted. Further, no license or permit may be issued if certification has been denied. CWA Section 404 permits and authorizations for the Ranch Plan are subject to Section 401 certification by the Regional Water Board. Future Section 401 certifications issued by the Regional Water Board for the Ranch Plan may contain water quality and hydromodification control provisions.