Preliminary Water Quality Management Plan (PWQMP)

Project Name:

Tentative Tract Map No. 19298

Prepared for:

The Olson Company

3010 Old Ranch Parkway, Suite 100

Seal Beach, CA 90740

(562) 596-4770

Prepared by:

Advanced Civil Group, Inc.

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3RD REVIEW 3-15-24
NO EXCEPTION TAKEN
Robert Righetti
Land Use Review

Date Prepared: 2/22/2024

Project Owner's Certification

Permit/Application No.		Grading Permit No.	
Tract/Parcel Map No.	TTM No. 19298	Building Permit No.	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			090-671-07

This Preliminary Water Quality Management Plan (PWQMP) has been prepared for The Olson Company by Advanced Civil Group, Inc.. The PWQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan and the requirements of the California Environmental Quality Act (CEQA) to assess impacts and propose appropriate mitigation during the entitlement process.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of the final plan and will ensure that the final plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the Final Water Quality Management Plan (WQMP). An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Each Project WQMP will be stored within the City's files, and will continue with the property after the completion of the construction phase, and the City will require that the terms, conditions and requirements be recorded with the County Recorder's office by the property owner or any successive owner as authorized by the Water Quality Ordinance. The City will also require the Project Final WQMP to include a Notice of Transfer Responsibility Form, which serves to notify the City that a change in ownership has occurred and notify the new owner of its responsibility to continue implementing the Project Final WQMP.

The final Project WQMP must include calculations to support the structural integrity of the selected LID or treatment control BMP as appropriate and be prepared by or under the direction of a California Registered Civil Engineer and affixed with their stamp.

Owner:			
Title	VP, Operational Planning		
Company	The Olson Company		
Address	3010 Old Ranch Parkway, Suite 100 Seal Beach, CA 90740		
Email	tmoore@theolsonco.com		
Telephone #	(562) 596-4770		
Signature		Date	

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Attachments

Section I Discretionary Permit(s) and Water Quality Conditions

Provide discretionary permit and water quality information. *Refer to Section 2.1 in the Technical Guidance Document (TGD) available from the Orange County Stormwater Program (ocwatersheds.com).*

Project Infomation			
Permit/Application No.		Tract/Parcel Map No.	TTM No. 19298
Additional Information/ Comments:	This Preliminary Water Quality Management Plan (PWQMP) is prepared to satisfy the requirements of the current Orange County Drainage Area Management Plan (DAMP) and the requirements of the California Environmental Quality Act (CEQA) for the entitlement processing of the project to determine impacts of the project and recommend mitigation to address the impacts during entitlement review. Approval of this preliminary plan does not imply final approval of the Final Project Water Quality Management Plan, nor the associated final grading plan for the project.		
Water Quality Conditions			
Water Quality Conditions (list verbatim)	A geotechnical study prepared by a registered geotechnical engineer is required. The report shall analyze the liquefaction potential of the site and make recommendations. The report shall analyze sub-surface issues related to the past uses of the site, including sub-surface tanks and basement and septic facilities. Any soil or groundwater contamination shall be remediated prior to the issuance of a building permit in a manner meeting the approval of the City Engineer in concert with the Orange County Health Department. The report shall make recommendations for pavement design the interior streets and parking spaces. The report shall also test and analyze soil conditions for LID (Low Impact Development) principles and implementations, including potential infiltration alternatives, soil compaction, saturation, permeability and groundwater levels. a. WQMP i. Prior to the issuance of any grading or building permits or prior to recordation upon subdivision of land if determined applicable by the City Building Official, the applicant shall submit to the City for review and approval a Water Quality Management Plan that:		

	Addresses Site Design BMPs such as minimizing impervious areas, maximizing permeability, minimizing directly connected impervious areas, creating reduced or "zero discharge" areas, and conserving natural areas Incorporates the applicable Routine Source Control BMPs as defined in the DAMP Incorporates structural and Treatment Control BMPs as defined in the DAMP • Generally describes the long-term operation and maintenance requirements for the Treatment Control BMPs Identifies the entity that will be responsible for long-term operation and maintenance of the Treatment Control BMPs Describes the mechanism for funding the long-term operation and maintenance of the Treatment Control BMPs. 2. Prior to grading or building permit closeout and/or the issuance of a certificate of use or a certificate of occupancy, the applicant shall: Demonstrate that all structural best management practices (BMPs)described in the Project WQMP have been constructed and installed in conformance with approved plans and specifications Demonstrate that applicant is prepared to implement all non-structural BMPs described in the Project WQMP Demonstrate that an adequate number of copies of the approved Project WQMP are available onsite Submit for review and approval by the City an Operations and Maintenance (O&M) Plan for all structural BMPs
Watershed-Based Plan Conditions	
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	There is currently no approved WIHMP for the project area watershed. New development projects that create 10,000 square feet or more of impervious surface. This category includes commercial, industrial, residential housing subdivisions, mixed-use, and public projects on private or public property that falls under the planning and building authority of the Permittees.

Section II Project Description

II.1 Project Description

Description of Proposed Project		
Development Category (Verbatim from WQMP):	Priority Project All significant redevelopment projects, where significant redevelopment is defined as the addition or replacement of 5,000 or more square feet of impervious surface on an already developed site. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety. If the redevelopment results in the addition or replacement of less than 50 percent of the impervious area on-site and the existing development was not subject to WQMP requirement, the numeric sizing criteria discussed in Section 7.II-2.0 only applies to the addition or replacement area. If the addition or replacement accounts for 50 percent or more of the impervious area, the Project WQMP requirements apply to the entire development.	
Project Area (ft^2): 38,422	Number of Dwelling Units: 15	SIC Code: Not Applicable
Narrative Project Description:	Under proposed conditions, the site will be developed for residential use and plans to consist of 15 detached residential townhomes. Associated interior driveways and private drive, common area landscaping, surface parking spaces along the private drive, perimeter walls, and underground utilities are proposed. Landscaped areas are both common – open space maintained by HOA – and private yards maintained by homeowner. There will not be any residential features that are of particular water quality concern proposed for the project, such as swimming pools, trash enclosures, outdoor storage areas, or recreational facilities of note. The project will not have any of the items listed above. The proposed project does not include any right-of-ways that will incorporate green street design to address water quality, as the LID BMPs proposed for the project site meet or exceed the benefits of what green streets would otherwise achieve.	

Project Area	Pervious		Impervious	
	Area (acres or sq ft)	Percentage	Area (acres or sq ft)	Percentage
Pre-Project Conditions	24,829 sq ft	64.8%	13,593 sq ft	35.2%
Post-Project Conditions	8,276 sq ft	21.6%	30,146 sq ft	78.4%
Drainage Patterns/Connections	The site is relatively flat with elevations ranging from EL 93 to EL 97 above Mean Sea Level. Drainage is directed as sheet flow to the west and into Newhope Street. Runoff then flows as curb and gutter flows along Newhope Street south about 500 feet to a catch basin. The MS4 then flows south into a storm drain channel just north of the 22 Highway (OCFCD CO5S10). The channel drains southeast and confluences with a larger channel, East Garden Grove Wintersburg Channel draining south and southwest (OCFCD CO5) to the Anaheim Bay / Huntington Harbor and ultimately to the Pacific Ocean.			

II.2 Potential Stormwater Pollutants

Pollutants of Concern			
Pollutant	Circle One: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	(E)	N	Residential Development
Nutrients	(E)	N	Residential Development
Heavy Metals	(E)	N	Private Street
Pathogens (Bacteria/Virus)	(E)	N	Residential Development
Pesticides	(E)	N	Residential Development
Oil and Grease	(E)	N	Residential Development
Toxic Organic Compounds	(E)	N	Private Street
Trash and Debris	(E)	N	Residential Development

II.3 Hydrologic Conditions of Concern

☒ No – Show map

☐ Yes – Describe applicable hydrologic conditions of concern below. *Refer to Section 2.2.3 in the TGD.*

The project is not susceptible to hydromodification impacts because all downstream receiving waters, are considered stabilized. See map provided below, where the project site is clearly outside of the area of susceptibility shaded in blue. Therefore, there area no HCOC's for the project.

The proposed project is not within a hydrologic condition of concern area and will have a very minor increase in runoff (less than 1 cfs in the 100 year event) in the developed condition. For these reasons, the proposed project runoff will not negatively impact properties downstream and will not negatively impact the downstream drainage system.

II.4 Post Development Drainage Characteristics

Describe post development drainage characteristics. Refer *to Section 2.2.4 in the TGD.*

In the post-development condition, the proposed project will maintain existing drainage patterns. The site's runoff is collected in drive gutters and area drains and conveyed in a westerly direction towards the project entrance. On-site storm drain inlets with grates and Full Trash Capture certified inserts (to ensure trash does not enter system and to meet requirements of the Statewide Trash Amendment, Full Capture System definition, part b (P. E-9)) collect the runoff and convey LID flows to an underground storage system and deep infiltration dry well for infiltration below the surface parking on the south side of the entrance. High flows continue west in a new storm drain connection to the existing storm drain in Newhope Street. There are no negative impacts to downstream properties or downstream drainage systems. All trash generated by the project will be placed in private trash cans with lids that are to be stored in the private unit garages. There is no planned common trash enclosure.

II.5 Property Ownership/Management

Describe property ownership/management. *Refer to Section 2.2.5 in the TGD.*

A Homeowners Association (HOA) will be formed upon project completion. The HOA will be responsible for inspecting and maintaining all BMPs prescribed for Tentative Tract No. 19298 at 12828 Newhope Street. Until an HOA is formally established, The Olson Company shall assume all BMP maintenance and inspection responsibilities for the proposed project. Inspection and maintenance responsibilities are outlined in Section V of this report. No infrastructure will be transferred to any public agencies.

Section III Site Description

III.1 Physical Setting

Fill out table with relevant information. *Refer to Section 2.3.1 in the TGD.*

Planning Area/ Community Name	Tentative Tract No. 19298
Location/Address	12828 Newhope Street
	Garden Grove, CA
Land Use	Medium Density Residential
Zoning	
Acreage	0.88 acres / 38,422 sq ft
Predominant Soil Type	The site geotechnical report prepared by Albus and Associates on June 6, 2023 found the predominant soils to be coarse-grained material consisting of sands with variable amounts of silt and clay, and sandy clay. The Natural Resources Conservation Service (NRCS) identifies the site as having Hydrologic Soil Type B.

III.2 Site Characteristics

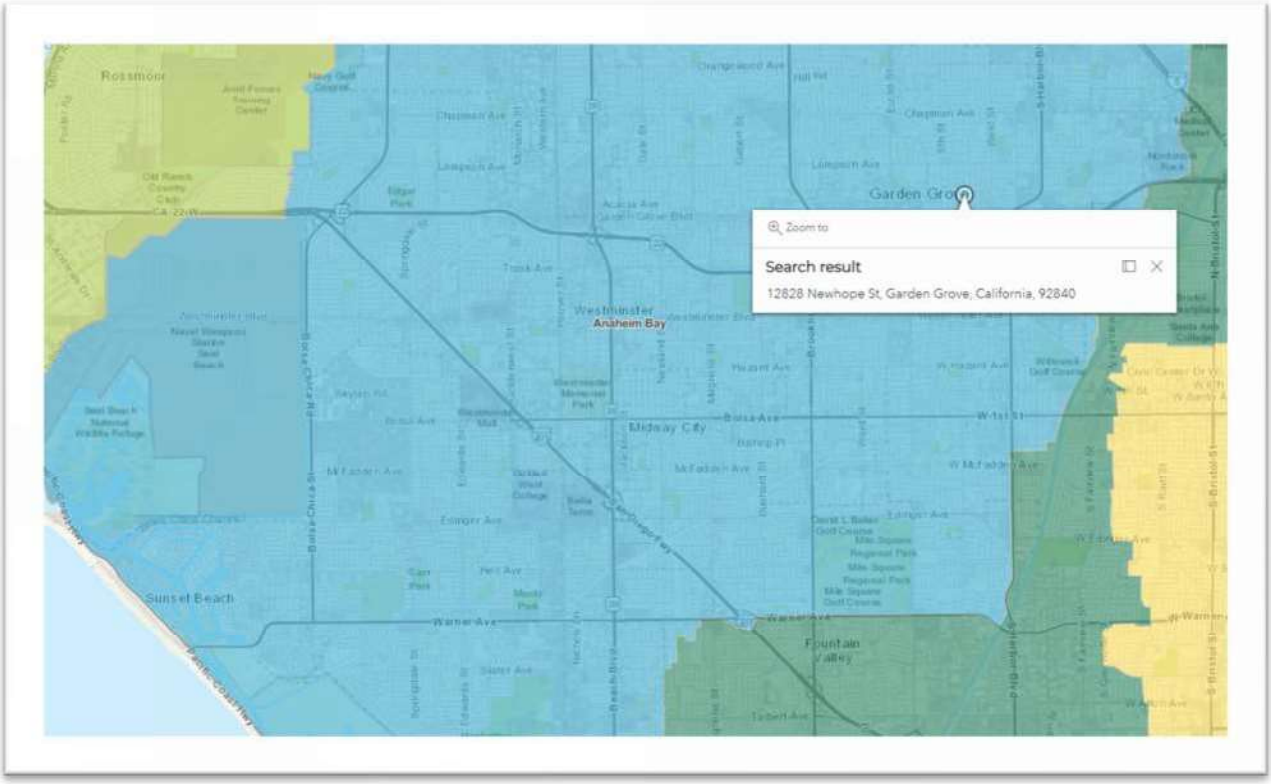
Precipitation Zone	0.78 inches
Topography	Relatively flat terrain with a slight grade to the west. Outside of any significant topography and not located within a potential landslide area.
Drainage Patterns/Connections	In the post-development condition, the proposed project will maintain existing drainage patterns. The site's runoff is collected in drive gutters and area drains and conveyed in a westerly direction towards the project entrance. On-site storm drain inlets collect the runoff and convey LID flows to an underground storage system and deep infiltration well for infiltration below the surface parking on the south side of the entrance. High flows continue west in a new storm drain connection to the existing storm drain in Newhope Street.
Soil Type, Geology, and Infiltration Properties	Artificial fill material was observed in soil borings and are anticipated to be generally 2 feet deep. Deeper portions of artificial fill may be encountered in localized areas. A retaining wall exists along all sides of the property lines and retains approximately 2 feet at the northwest and southwest corners before tapering off heading south and east. The artificial fill materials observed onsite are typically silty sands that are damp to very moist, loose to medium dense, and gray. Young alluvial fan deposits (Qyfa) were encountered below the fill materials to the maximum depths explored of 51.5 feet. The materials were typically interbedded with a predominance of coarse-grained materials. Deeper portions of the alluvial fan deposits were observed to be cohesive. The materials consisted of sands with variable amounts of silt and clay, and sandy clay, which were very moist and loose to dense and very stiff to hard. Soils located within the upper 35 feet are primarily sandy in nature with relatively high infiltration rates.

Site Characteristics (continued)	
Hydrogeologic (Groundwater) Conditions	Groundwater was encountered at 37 feet below the existing grade during subsurface exploration to a depth of 51.5 feet. The CDMG Special Report 003 suggests that historic high groundwater for the subject site is about 10 feet below the ground surface. The geotechnical engineer researched online groundwater well data in the California Department of Water Resources database and found three wells located around the site (north, east, and west). The locations of the three wells are depicted in Figure 2. Data from these wells spans from 1970 to 2023. The recorded depths to groundwater from these wells are plotted in in the Geotech report. All three wells indicate that groundwater has remained below a depth of 45 feet since 1970, except for one measurement on May 1, 1979. This measurement may be an error considering other data. Except for this measurement, all measured groundwater depths are deeper than 45 feet. Based on the data from these wells, the water encountered in our borings is likely a shallower perched condition that is hydraulically separate from a deeper aquifer being measured by the local wells. A zone of finer-grained interlayers are present below a depth of 35 feet which may be impeding flow of water downward to a deeper aquifer.
Geotechnical Conditions (relevant to infiltration)	Groundwater was encountered at 37 feet below the ground surface at the time of our investigation although literature indicates historical levels as shallow as 10 feet. As with most areas in southern California, ground water levels have generally been dropping due to water extraction and historical shallow levels are unlikely to occur in the future. Given the unusually high rainfall this past season, the current groundwater levels likely represent a relatively shallow condition over the last few decades. We estimate that future groundwater levels during the life of the project are unlikely to be shallower than 35 feet. Soils located within the upper 35 feet are primarily sandy in nature with relatively high infiltration rates. Below a depth of 35 feet, materials encountered were predominately interbedded coarse-grained and fine grained soils that will tend to impede groundwater infiltration. Based on this condition, dry wells are feasible for use in infiltrating storm water. However, wells will need to be limited to a depth of 25 feet. Please note that a proposed dry well may be required to be registered with the EPA as a Class V injection well. Please see Attachment E - Dry Wells (Uses, Regulations, & Guidelines in California & Elsewhere)
Off-Site Drainage	No off-site drainage enters the project site.
Utility and Infrastructure Information	There are no existing subsurface utilities that will impact the location of LIDBMPs on-site. Any existing utilities will be removed and/or replaced

III.3 Watershed Description

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.3 in the TGD.*

Receiving Waters	- Anaheim Bay
303(d) Listed Impairments	- Anaheim Bay: Nickel, Toxicity, PCBs
Applicable TMDLs	- Anaheim Bay: Copper, Bacteria
Pollutants of Concern for the Project	Expected pollutants from attached residential developments include sediment, nutrients, pathogens, pesticides, oil & grease, and trash. Based on the 303(d) listed impairments and TMDLs for the project's receiving waters, the pollutants of concern are pathogens.
Environmentally Sensitive and Special Biological Significant Areas	There are no ESA's or ASBS within the projects vicinity.



Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?		YES ☐	NO ☒
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.	Not Applicable		

Project Performance Criteria (continued)	
If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	As explained in Section II.3 of this report, the proposed project is not located within an area that is hydromodification susceptible. All downstream receiving waters are considered stabilized. Therefore, HCOCs do not exist for the proposed project.
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	Infiltrate, harvest and use, evapotranspire, or biotreat/biofilter, the 85th percentile, 24-hour storm event (Design Capture Volume). LID BMPs must be designed to retain, on-site, (infiltrate, harvest and use, or evapotranspire) storm water runoff up to 80 percent average annual capture efficiency. The proposed project will infiltrate the entire DCV via underground infiltration in a deep well.
List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)	If it is not feasible to meet LID performance criteria through retention and/or biotreatment provided on-site or at a sub-regional/regional scale, then treatment control BMPs shall be provided on-site or offsite prior to discharge to waters of the US. Sizing of treatment control BMP(s) shall be based on either the unmet volume after claiming applicable water quality credits, if appropriate. Treatment control BMPs are not required, since the DCV will be biotreated.
Calculate LID design storm capture volume for Project.	$DCV = C \times d \times A \times 43560\ sf/ac \times 1/12\ in/ft$ Where: DCV = runoff volume during the design storm event, cu-ft C = runoff coefficient = $(0.75 \times imp + 0.15)$ imp = impervious fraction of drainage area (ranges from 0 to 1) d = storm depth (inches) A = tributary area (acres) DCV = 0.74 x 0.78 in x 0.88 acres x 43560 sf/ac × 1/12 in/ft DCV = $\underline{2{,}095\ ft^3}$

IV.2. SITE DESIGN AND DRAINAGE PLAN

Minimize Impervious Area

Hardscape is minimized on the property where imperviousness is 82.1%. Also, infiltration BMPs will be implemented for the project to offset the site's imperviousness.

Preserve Existing Drainage Patterns

Existing drainage patterns will be preserved as indicated. The site will drain in a westerly direction as in existing conditions.

Disconnect Impervious Areas

Area drain inlets are located within landscape areas. As such, building roof drains will drain to landscaping before collecting into the area drains.

Landscape Design

Drought tolerant plants will be utilized in the project's landscape design.

The design capture volumes (DCV) for each DMA are summarized in the table below. These have been derived utilizing the "Simple Design Capture Volume Sizing Method" in accordance with the TGD. Actual BMP sizing requirements, drawdown, depths, and other design details specific to subsurface infiltration are provided in Section IV.3.2 below. Locations of DMAs and associated LID and treatment BMPs are identified on the exhibits in Section VI. Additional calculations and TGD Worksheets are provided in Attachment A.

DRAINAGE MANAGEMENT AREAS (DMA's)					
DMA ID	Tributary Drainage Area (ac)	% Imp.	Design Storm Depth (in.)	Design Capture Volume (ft^3)	Tributary LID BMP's
1	0.88 ac	78%	0.78	2,095 ft^3	Infiltration Dry Well Volume = 2,095 ft3

IV.3 LID BMP SELECTION AND PROJECT CONFORMANCE ANALYSIS

Low Impact Development (LID) BMPs are required in addition to site design measures and source controls to reduce pollutants in storm water discharges. LID BMPs are engineered facilities that are designed to retain or biotreat runoff on the project site. The 4th Term MS4 Storm Water Permit (Order R9-2009-0009) requires the evaluation and use of LID features using the following hierarchy of treatment: infiltration, evapotranspiration, harvest/reuse, and biotreatment.

It has been determined that infiltration is feasible for the proposed project due to measured infiltration rates being greater than 0.3 inches per hour. The measured rate was 1.4 in/hr. Therefore, infiltration BMPs will be used to treat the project's DCV. Specific details are provided in the following sub-sections.

IV.3.1 Hydrologic Source Controls

If required HSCs are included, fill out applicable check box forms. If the retention criteria are otherwise met with other LID BMPs, include a statement indicating HSCs not required.

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☐
Street trees (canopy interception)	☐
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable pavers, site design)	☐
Other:	☐

No HSCs are proposed for the project site. The DCV will be addressed through infiltration, as discussed below.

IV.3.2 Infiltration BMPs

Identify infiltration BMPs to be used in project. If design volume cannot be met state why BMPs cannot be met

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Drywells	☒
Subsurface infiltration galleries	☐
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐

Preliminary analyses indicate that a dry well could likely provide a peak measured infiltration flow of approximately 0.038 cfs and the chamber empties within approximately 2.5 hours. The typical dry well is estimated to be 25 feet deep. The estimated Design Capture Volume (DCV) will be about 2,500 cu ft. Assuming a factor of safety of 3.0 applied to our estimated flow rate of the dry well, we estimate the DCV can be treated within the required 72 hours using one dry well. We also estimate the system will require an additional retention storage of about 2,200 cubic feet placed upstream of the dry well. This retention storage can be accommodated by pipe or vault systems. Further percolation testing and/or evaluation may be necessary based on review of preliminary WQMP design plans.

IV.3.8 Non-structural Source Control BMPs

Fill out non-structural source control check box forms or provide a brief narrative explaining if non-structural source controls were not used.

Non-Structural Source Control BMPs

Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	
N2	Activity Restrictions	☒	☐	
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	Residential Site
N6	Local Industrial Permit Compliance	☐	☒	Residential Site
N7	Spill Contingency Plan	☐	☒	Residential Site
N8	Underground Storage Tank Compliance	☐	☒	No USTs proposed
N9	Hazardous Materials Disclosure Compliance	☐	☒	No Hazardous Wastes
N10	Uniform Fire Code Implementation	☐	☒	No Hazardous Wastes
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	No loading docks proposed
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	No RGOs proposed.

N1, Education for Property Owners, Tenants and Occupants

Educational materials related to urban runoff can be provided to homeowners (via project owner or HOA) and employees to reduce pollutants from reaching the storm drain system. Examples of environmental awareness materials include, but are not limited to: guidelines for landscaping and gardening, tips for pet care, vehicle cleaning, and proper disposal of household hazardous waste.

N2, Activity Restrictions

Activity restrictions can be developed to restrict activities that have the potential to create adverse impacts on water quality. Activities include but are not limited to: the handling and disposal of contaminants, trash management and litter control, irrigation and landscaping practices, vehicle and equipment cleaning, fertilizer applications and household waste management practices.

N3, Common Area Landscape Management

Common area landscape management will include minimizing fertilizer and pesticide application, use of slow-release fertilizers, maintenance activities, providing education to homeowners (via project owner and/or HOA), and providing education and training for employees on management of landscape materials and storm water management. Maintenance shall be conducted on a monthly basis at a minimum.

N4, BMP Maintenance

In accordance with the City LIP and OC DAMP, the project owners and/or HOA of the site will be responsible for the implementation and maintenance of each applicable non-structural BMP, as well as scheduling inspections and maintenance of all applicable structural BMP facilities through its landscape contractor and any other necessary maintenance contractors for the project site. In addition, the project owner will be required to verify treatment control BMP implementation and ongoing maintenance through inspection, self-certification, or other equally effective measure. The certification shall verify that, at a minimum, the inspection and maintenance of all structural BMPs has occurred prior to the start of the rainy season, and in accordance with frequencies outlined in the PWQMP prepared for the project. Maintenance frequencies are identified in Section V and shall be implemented upon completion of the project.

N11, Common Area Litter Control

Regular litter control for the entire project area shall be performed including trash pick-up on a weekly basis, and sweeping of littered common areas, as performed by the maintenance crew. In addition, pet waste receptacles will be provided throughout the project site where applicable. Proper signage regarding litter will be posted on or near trash receptacles and trash bins will have lids if not covered by canopy.

N12, Employee Training

Employees of the owner and/or HOA, as well as any contractors of the aforementioned entities will require training to ensure that employees are aware of activities that may result in pollutants reaching the storm drain. Training shall be conducted on an annual basis to ensure proper maintenance activities and daily activities are occurring.

N14, Common Area Catch Basin Inspection

Employees of the owner and/or HOA, as well as any contractors of the aforementioned entities will require training to ensure that employees are aware of activities that may result in pollutants reaching the storm drain. Training shall be conducted on an annual basis to ensure proper maintenance activities and daily activities are occurring.

N15, Street Sweeping Private Streets and Parking Lots

Street sweeping of all impervious streets and parking lots performed at a frequency that reduces or prevents sediment and debris from entering receiving waters, monthly at a minimum, and prior to the rainy season.

IV.3.9 Structural Source Control BMPs

The table below indicates all BMPs to be incorporated in the project. For those designated as not applicable (N/A), a brief explanation why is provided.

Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**If not applicable, state brief reason**
		Included	**Not Applicable**	
S1	Provide storm drain system stenciling and signage	☒	☐	
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	No outdoor storage areas.
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☐	☒	No trash enclosures.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☐	☒	No slopes or channels.
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☒	
S6	Dock areas	☐	☒	No dock areas.
S7	Maintenance bays	☐	☒	No maintenance bays.
S8	Vehicle wash areas	☐	☒	No vehicle wash areas.
S9	Outdoor processing areas	☐	☒	No outdoor process areas.
S10	Equipment wash areas	☐	☒	No equipment wash areas.
S11	Fueling areas	☐	☒	No fueling areas.
S12	Hillside landscaping	☐	☒	No hillsides.
S13	Wash water control for food preparation areas	☐	☒	No food prep areas.
S14	Community car wash racks	☐	☒	No car wash racks.

S1/SD-13, Provide storm drain system stenciling and signage

Storm drain stenciling or signage on all catch basins with the highly visible source control message "No Dumping Drains to Ocean". This includes catch basins and grate inlets near pedestrian areas or drive aisles. Stencils shall be inspected annually and replaced as needed.

S4/SD-12, Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control

Installing and maintaining efficient irrigation systems designed to minimize water by eliminating overspray to hardscape areas, and setting irrigation timing and cycle lengths in accordance with water demands, given time of year, weather, and day and night temperatures. Where feasible, includes incorporation of native tolerant species for landscaping, protection of slopes and efficient irrigation. May be used in conjunction with educational materials to homeowners as well as activity restrictions.

IV.4 ALTERNATIVE COMPLIANCE PLAN (IF APPLICABLE)

IV.4.1 Water Quality Credits

Not applicable, water quality credits do not apply to this project. LID BMPs will be utilized for water quality treatment on-site in accordance with the MS4 Permit hierarchy identified at the beginning of this Section.

<table>
<tr><th colspan="6">Description of Proposed Project</th></tr>
<tr><td colspan="6">Project Types that Qualify for Water Quality Credits (Select all that apply):</td></tr>
<tr><td colspan="2">☐Redevelopment projects that reduce the overall impervious footprint of the project site.</td><td colspan="2">☐Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.</td><td colspan="2">☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).</td></tr>
<tr><td colspan="2">☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).</td><td colspan="2">☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned</td><td colspan="2">☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).</td></tr>
<tr><td>☐Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.</td><td>☐ Developments in a city center area.</td><td>☐ Developments in historic districts or historic preservation areas.</td><td colspan="2">☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.</td><td>☐In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.</td></tr>
<tr><td>Calculation of Water Quality Credits
(if applicable)</td><td colspan="5"></td></tr>
</table>

IV.4.2 Alternative Compliance Plan Information

Not applicable. LID BMPs will be utilized for water quality treatment on-site in accordance with the MS4 Permit hierarchy identified at the beginning of this Section.

Section V Inspection/Maintenance Responsibility for BMPs

It has been determined that The Olson Company shall assume all BMP inspection and maintenance responsibilities for the Tentative Tract No. 19298 project.

Contact Name:	Tom Moore
Title:	VP, Operational Planning
Company:	The Olson Company
Address:	3010 Old Ranch Parkway, Suite 100 Seal Beach, CA 90740
Phone:	(562) 682-7422
Email:	Tmoore@theolsonco.com

Should the maintenance responsibility be transferred at any time during the operational life of Tentative Tract No. 19298, such as when an HOA or POA is formed for a project, a formal notice of transfer shall be submitted to the City of Garden Grove at the time responsibility of the property subject to this PWQMP is transferred. The transfer of responsibility shall be incorporated into this PWQMP as an amendment.

The Owner shall verify BMP implementation and ongoing maintenance through inspection, self-certification, survey, or other equally effective measure. The certification shall verify that, at a minimum, the inspection and maintenance of all structural BMPs including inspection and performance of any required maintenance in the late summer / early fall, prior to the start of the rainy season. A form that may be used to record implementation, maintenance, and inspection of BMPs is included in Attachment C. The O&M Plan will be recorded in the Orange County Clerk-Recorder's Office prior to close-out of grading/building permits.

The City of Garden Grove may conduct verifications to assure that implementation and appropriate maintenance of structural and non-structural BMPs prescribed within this PWQMP is taking place at the project site. The Owner shall retain operations, inspections and maintenance records of these BMPs and they will be made available to the City upon request. All records must be maintained for at least five (5) years after the recorded inspection date for the lifetime of the project.
Long term funding for operations and maintenance of BMPs will be generated through HOA fees. Until an HOA is established, the Owner will provide funding for O&M. CC&Rs specifying BMP maintenance requirements of the HOA and annual HOA BMP Inspection and Maintenance budget will be finalized and submitted to the City for final review.

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
INFILTRATION BMPs			
R-Tank underground storage	Owner/ HOA	See Attachment C for manufacturer's O&M Manual. Inspect as required. If sediment is at or above 3 inches (lower row of sidewall holes), clean out using JetVac process.	Every 6 months in the first year, then Annually thereafter. Per Manufacturer's Recommendations
NON-STRUCTURAL SOURCE CONTROL BMPs			
Education for Property Owners, Tenants and Occupants	Owner/ HOA	Educational materials will be provided to homeowners upon occupancy (see Attachment B).	Annually
Activity Restrictions	Owner/ HOA	Activity and use restrictions will be developed and enforced by the Owner/ HOA through CC&Rs.	Ongoing

BMP Inspection/Maintenance

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
Common Area Landscape Management	Owner/ HOA	Maintenance shall be consistent with City requirements, plus fertilizer and/or pesticide usage shall be consistent with City of Garden Grove LIP Section 5. Maintenance includes mowing, weeding, and debris removal on a weekly basis. Trimming, replanting and replacement of mulch shall be performed on an as-needed basis. Trimmings, clippings, and other waste shall be properly disposed of off-site in accordance with local regulations. Materials temporarily stockpiled during maintenance activities shall be placed away from water courses and drain inlets.	Monthly
BMP Maintenance	Owner/ HOA	Maintenance of BMPs implemented at the project site shall be performed at the frequency prescribed in this PWQMP. Records of inspections and BMP maintenance shall be maintained by the Owner/HOA and documented with the PWQMP, and shall be available for review upon request.	Ongoing
Common Area Litter Control	Owner/ HOA	Litter patrol, violations investigation, reporting and other litter control activities shall be performed in conjunction with maintenance activities. Litter collection and removal shall be performed on a weekly basis.	Weekly

BMP Inspection/Maintenance

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
Employee Training	Owner/ HOA	The Owner shall educate all new employees/managers on storm water pollution prevention, particularly good housekeeping practices, prior to the start of the rainy season (October 1). Refresher courses shall be conducted annually. Materials that may be used are attached to this PWQMP.	Annually

Common Area Catch Basin Inspection	Owner/ HOA	Private catch basin inlets, area drains, swales, curb-and-gutter systems and other drainage systems shall be inspected after each storm event and, when debris is present, cleaned prior to the storm season by October 1st each year.	After each storm event and Annuall
Street Sweeping Private Streets and Parking Lots	Owner/ HOA	Private streets and drive aisles must be swept quarterly, including prior to the start of the rainy season (October 1st).	Quarterly
STRUCTURAL SOURCE CONTROL BMPs			
Provide storm drain system stenciling and signage	Owner/ HOA	Private storm drain stencils shall be inspected for legibility, at minimum, once prior to the storm season, no later than October 1st each year. Those determined to be illegible will be re-stenciled as soon as possible.	Annually
ADS Flexstorm Full Trash Capture (FTC) Inserts	Owner/ HOA	Drop Inlets shall be opened, inspected for trash and other debris, and cleaned out.	Monthly
Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	Owner/ HOA	In conjunction with routine maintenance activities, verify that landscape design continues to function properly by adjusting properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather, day or nighttime temperatures based on system specifications and local climate patterns.	Monthly

Any waste generated from maintenance activities will be disposed of properly. Wash water and other waste from maintenance activities is not to be discharged or disposed of into the storm drain system. Clippings from landscape maintenance (i.e. prunings) will be collected and disposed of properly off-site, and will not be washed into the streets, local area drains/conveyances, or catch basin inlets

Section VI Site Plan and Drainage Plan

VI.1 SITE PLAN AND DRAINAGE PLAN

The exhibits provided in this section are to illustrate the post construction BMPs prescribed within this PWQMP. Drainage flow information of the proposed project, such as general surface flow lines, concrete or other surface drainage conveyances, and storm drain facilities are also depicted. All structural source control BMPs are shown as well. Include a site plan and drainage plan sheet set containing the following minimum information:

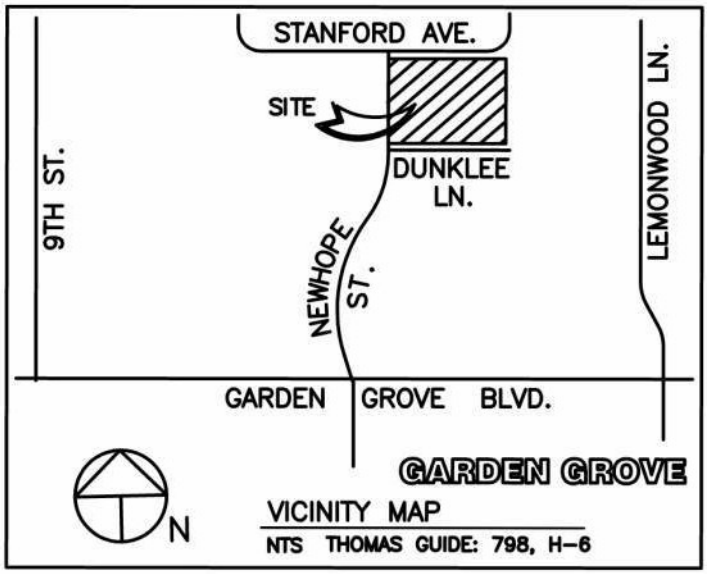
VI.1.1 Vicinity Map

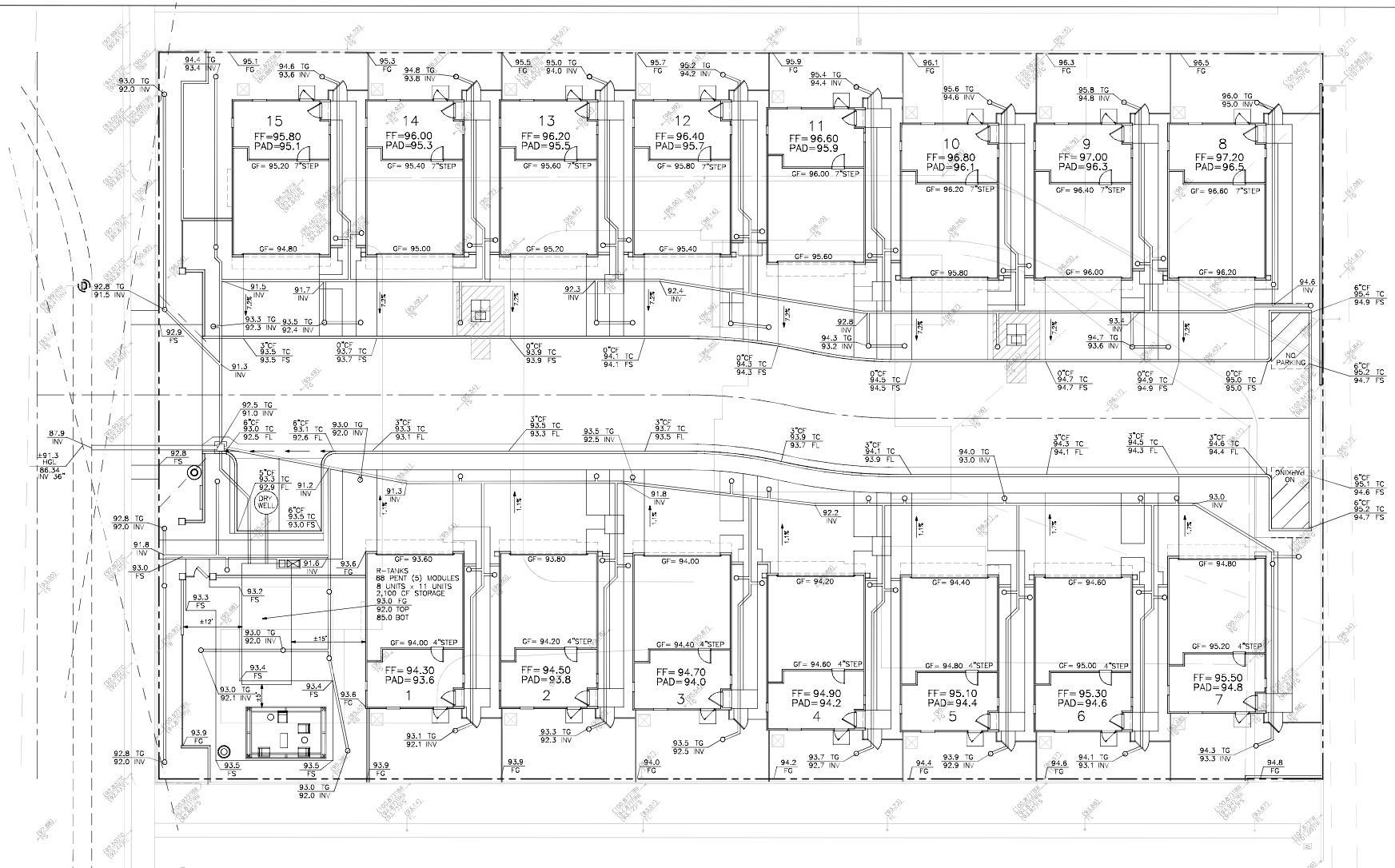
VI.1.2 Concept Grading Plan

VI.1.3 PWQMP Site Plan

VI.1.4 DCV Calculation w/ Existing and Proposed Pervious Exhibits

Vicinity Map





PREPARED BY:

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ALAN R. SHORT, P.E.

Alan R Short 12/15/23

ALAN R. SHORT, P.E. DATE:
R.C.E. 30873, EXPIRES 3/31/24

DEVELOPER:

THE OLSON COMPANY
3010 OLD RANCH PARKWAY, SUITE 100
SEAL BEACH, CALIFORNIA 90740-2750
(562) 598-4770
ATTENTION: MR. BRIAN GEIS

CONCEPT GRADING
TT No. 19298
GARDEN GROVE
NEWHOPE ST.

12/15/23

SHEET 1 OF 1