City of Garden Grove, California

Preliminary Water Quality Management Plan

(P-WQMP)

Project Name:

Starlight Cinemas Phase III-CEQA

12111 Valley View Street, Garden Grove CA

(APN: 224-202-17)

Prepared By: KPFF Consulting Engineers

APPROVED BY:

_____

CITY ENGINEER R.C.E. No. 52125 Exp. 12/31/18 - Date

THIS WQMP IS SIGNED BY THE PUBLIC WORKS DEPARTMENT FOR CONCEPT AND ADHERENCE TO CITY STANDARDS AND REQUIREMENTS ONLY. THE PUBLIC WORKS DEPARTMENT IS NOT RESPONSIBLE FOR DESIGN, DESIGN ASSUMPTIONS, OR ACCURACY.

Preliminary
Water Quality Management Plan
(P-WQMP)

Project Name:

Starlight Cinemas Phase III-CEQA

Prepared for:

Valley View Cinema Center, LLC

315 Rees Street

Playa Del Rey, CA 90293

310-702-5190

Prepared by:

KPFF Consulting Engineers

Engineer Ali Khamsi Registration No. C74768

18400 Von Karman Avenue Suite 600

Irvine, CA 92612

949-252-1022

October 2020

Project Owner's Certification			
Permit/Application No.		Grading Permit No.	TBD
Tract/Parcel Map No.		Building Permit No.	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			CUP-140-2018

This Preliminary Water Quality Management Plan (P-WQMP) has been prepared for Valley View Cinema Center, LLC by KPFF Consulting Engineers. The P-WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this 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 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 may 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. In lieu of recordation, the City may require the Project 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 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: Daniel Akarakian			
Title	Owner		
Company	Cinemas Management, INC.		
Address	315 Rees Street, Playa Del Rey, CA 90293		
Email	dakarakian@yahoo.com		
Telephone #	310-702-5190		
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.	TBD	Tract/Parcel Map No.	TBD
Additional Information/ Comments:	The project is located at 12111 Valley View Street in the city of Garden Grove, CA.		
Water Quality Conditions			
Water Quality Conditions (list verbatim)	7. 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. 19. In accordance with the Orange County Storm Water Program manual, the applicant and/or its contractors shall provide dumpsters on-site during construction unless an Encroachment Permit is obtained for placement in street. 20. 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: a. Addresses Site Design BMPs based upon the geotechnical report recommendations and findings such as infiltration minimizing impervious areas, maximizing permeability, minimizing directly connected impervious areas, creating reduced or "zero discharge" areas, and conserving natural areas.		

b. Incorporates the applicable Routine Source Control BMPs as defined in the DAMP.
c. Incorporates structural and Treatment Control BMPs as defined in the DANIP.
d. Generally describes the long-term operation and maintenance requirements for the Treatment Control BNIPs.
e. e. Identifies the entity that will be responsible for long-term operation and maintenance of the Treatment Control BNIPs.
f. f. Describes the mechanism for funding the long-term operation and maintenance of the Treatment Control BMIPs.
g.

21. Prior to grading or building permit closeout and/or the issuance of a certificate of use or a certificate of occupancy, the applicant shall:

a. 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.

b. Demonstrate that applicant is prepared to implement all non-structural BMPs described in the Project WQMP.

c. Demonstrate that an adequate number of copies of the approved Project WQMP are available on-site.

d. Submit for review and approval by the City an Operations and Maintenance (O&NI) Plan for all structural BMPs.

22. All trash container areas shall meet the following requirements per City of Garden Grove Standard B-502 and state mandated commercial organic recycling law-AB 1826:

a. Paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements diverted around the area, screened or walled to prevent off-site transport of trash.

b. Provide solid roof or awning to prevent direct precipitation.

c. Connection of trash area drains to the municipal storm drain system is prohibited.

d. Potential conflicts with fire code and garbage hauling activities should be considered in implementing this source control.

e. See CASQA Storm Water Handbook Section 3.2.9 and BMP Fact Sheet SD-32 for additional information.

f. The trash shall be located to allow pick-up and maneuvering, including turnarounds, in the area of enclosures.

g. Pursuant to state mandated commercial organic recycling law-AB 1826, the applicant is required to coordinate storage and removal of the organics waste with local recycling/trash company.

	25. Prior to the issuance of any grading or building permits for projects that will result in soil disturbance of one acre or more of land, the applicant shall demonstrate that coverage has been obtained under California's General Permit for Stormwater Discharges Associated with Construction Activity by providing a copy of the Notice of Intent (NOI) submitted to the State Water Resources Control Board and a copy of the subsequent notification of the issuance of a Waste Discharge Identification (WDID) Number. Projects subject to this requirement shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). A copy of the current SWPPP shall be kept at the project site and be available for City review on request. 45. A properly sized grease interceptor shall be installed on the sewer lateral and maintained by the property owner. There shall be a separate sanitary waste line that will connect to the sewer lateral downstream of the grease interceptor. All other waste lines shall be drained through the grease interceptor. Grease interceptor shall be located outside of the building and accessible for routine maintenance. Owner shall maintain comprehensive grease interceptor maintenance records and shall make them available to the City of Garden Grove upon demand. 52. Litter shall be removed daily from the project site, including adjacent public sidewalks and all parking areas under the control of the applicant. There areas shall be swept or cleaned, either mechanically or manually, on a weekly basis, to control debris. 53. The applicant shall abate all graffiti vandalism within the premises. The applicant shall implement best management practices to prevent and abate graffiti vandalism within the premises throughout the life of the project, including, but not limited to, timely removal of all graffiti, the use of graffiti resistant coatings and surfaces, the installation of vegetation screening of frequent graffiti sites, and the installation of signage, lighting, and/or security cameras, as necessary. Graffiti shall be removed/eliminated by the applicant as soon as reasonably possible after it is discovered, but not later than 72 hours after discovery.
Watershed-Based Plan Conditions	
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	The project drains to Bolsa Chica Channel. All pollutants listed on the 303d list are included in TMDLs.

Section II Project Description

II.1 Project Description

Description of Proposed Project		
Development Category (Verbatim from WQMP):	Priority category 8: "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): 93654	Number of Dwelling Units: N/A	SIC Code: _____
Narrative Project Description:	This project consists of the expansion of the existing Starlight Cinema, located at 1211 Valley View Street in the city of Garden Grove. The site is located southwest of the Chapman Avenue and Valley View Street Intersection. The project site is bounded by commercial properties to the north and east and residential areas to the south and west. A vicinity map is provided in Exhibit 1. The 2.15 acre parcel is the third phase of redevelopment in the West Grove Shopping Center. Proposed work for this phase includes tenant improvements to the existing bowling alley, construction of new restaurant space, and reconfiguration of the parking lot including revised pedestrian and vehicular paths of travel.	

Project Area	Pervious		Impervious	
	Area	Percentage	Area	Percentage
Pre-Project Conditions	0.01 Acres	1%	2.14 Acres	99%
Post-Project Conditions	0.27 Acres	13%	1.88 Acres	87%
Drainage Patterns/Connections	There are two drainage areas in both existing and proposed conditions. The majority of the site sheet flows to the roadway in existing conditions. In proposed conditions, runoff sheet flows to gutters and is collected by catch basins. Flow is conveyed via storm drain to modular wetland treatment systems before being pumped out through a parkway drain.			

II.2 Potential Stormwater Pollutants

Determine and list expected stormwater pollutants based on land uses and site activities. *Refer to Section 2.2.2 and Table 2.1 in the TGD for guidance.*

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	
Nutrients	(E)	N	
Heavy Metals	(E)	N	
Pathogens (Bacteria/Virus)	(E)	N	
Pesticides	(E)	N	
Oil and Grease	(E)	N	
Toxic Organic Compounds	(E)	N	
Trash and Debris	(E)	N	

II.3 Hydrologic Conditions of Concern

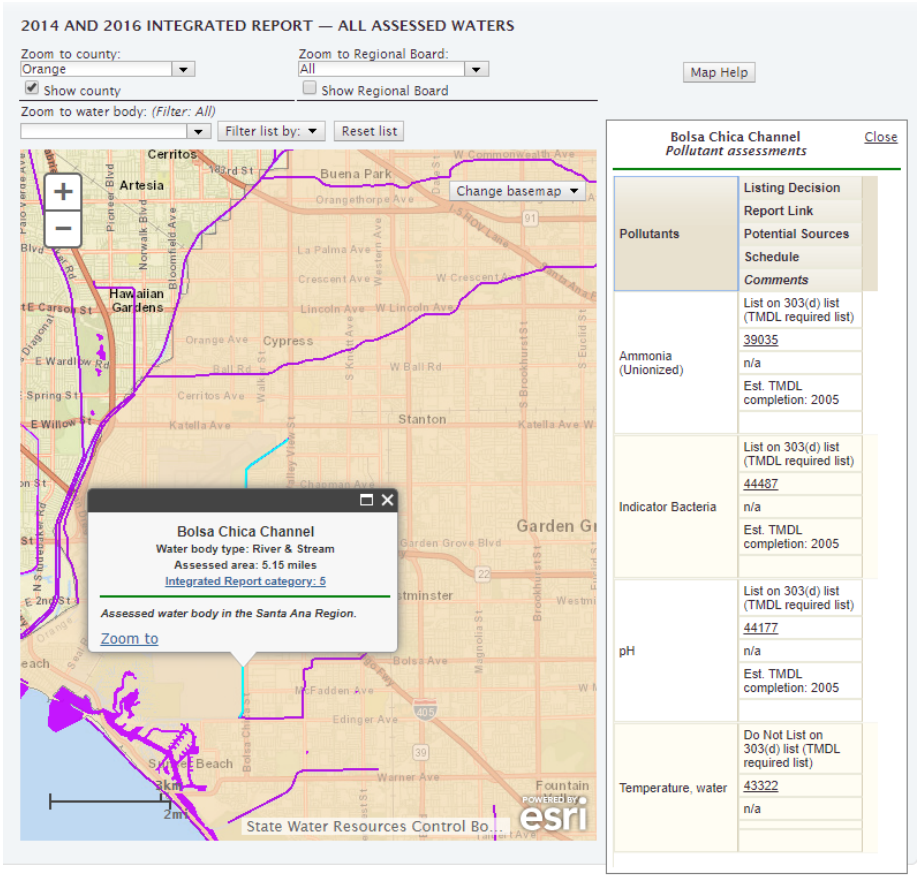
Determine if streams located downstream from the project area are determined to be potentially susceptible to hydromodification impacts. *Refer to Section 2.2.3.1 in the TGD.*

☒ No – Show map

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

Runoff will sheet flow to the valley gutters before entering the BMP. Although this project is located within a potential area of erosion, habitat, and physical structure susceptibility per the Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans, no HCOCs exist. This site is part of an existing, developed shopping mall, which consists of 99% impervious in existing conditions. This project proposes pervious planters which decreases the impervious area. The added pervious area and the proposed storm drain system will increase the time of concentration and decrease the runoff volume. Because the volume of post to pre runoff is less than the allowable 1.05, no HCOCs exist. Computations shown in Attachment C.

Site drains to Bolsa Chica Channel which lists ammonia, indicator bacteria, and pH on the 303d list


2014 AND 2016 INTEGRATED REPORT — ALL ASSESSED WATERS
Zoom to county:
Orange
Show county
Zoom to Regional Board:
All
Show Regional Board
Map Help
Zoom to water body: (Filter: All)
Filter list by:
Reset list
Change basemap
Bolsa Chica Channel
Water body type: River & Stream
Assessed area: 5.15 miles
Integrated Report category: 5
Assessed water body in the Santa Ana Region.
Zoom to
State Water Resources Control Bo...
Bolsa Chica Channel
Pollutant assessments
Close
Pollutants
Listing Decision
Report Link
Potential Sources
Schedule
Comments
Ammonia (Unionized)
List on 303(d) list (TMDL required list)
39035
n/a
Est. TMDL completion: 2005
Indicator Bacteria
List on 303(d) list (TMDL required list)
44487
n/a
Est. TMDL completion: 2005
pH
List on 303(d) list (TMDL required list)
44177
n/a
Est. TMDL completion: 2005
Temperature, water
Do Not List on 303(d) list (TMDL required list)
43322
n/a

II.4 Post Development Drainage Characteristics

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

The post development drainage is similar to the pre development drainage. There are two drainage management areas (DMAs) and runoff flows in the southern and eastern direction in both the pre and post condition. Runoff in the existing condition sheet flows to the road, however in developed condition, flow is collected and conveyed through storm drain to a modular wetland system before discharging through a parkway drain. DMA 1 is along Valley View street and will discharge to the street before entering a catch basin south of the site along Valley View Street. DMA 2 discharges to the alley where it flows along the alley gutter west before entering a trench drain near the adjacent community.

II.5 Property Ownership/Management

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

Owner: Valley View Cinema Center, LLC.

Address: 315 Rees Street, Playa Del Rey, CA 90293

Responsible Party: Daniel Akarakian

Responsible Party Contact Number: 310-702-5190

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	West Grove Shopping Center
Location/Address	12141 Valley View Street
	Garden Grove, CA 92845
Land Use	Commercial
Zoning	PUD(C)
Acreage	2.15
Predominant Soil Type	B

III.2 Site Characteristics

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. Refer to Section 2.3.2 in the TGD.

Precipitation Zone	*0.8 Inches*
Topography	*Site slopes to the south and to the east.*
Drainage Patterns/Connections	*Majority of site sheet flows to roadway. Part of site drains to valley gutters and conveys to street*
Soil Type, Geology, and Infiltration Properties	*Site is located in type B soils according to exhibits located in the TGD. Very soft to medium stiff lean clay with variable amounts of sand. Refer to geotechnical report.*

Site Characteristics (continued)	
Hydrogeologic (Groundwater) Conditions	*Groundwater was encountered between the depths of 5 and 7 feet per geotechnical report dated June 5, 2017. Due to this, onsite infiltration is not considered feasible.*
Geotechnical Conditions (relevant to infiltration)	*Due to high groundwater, infiltration is not considered feasible.*
Off-Site Drainage	*N/A*
Utility and Infrastructure Information	*On site soils will provide suitable support for underground utilities. Backfill and bedding material per geotechnical report.*

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	Bolsa Chica Channel
303(d) Listed Impairments	Ammonia, Bacteria, pH
Applicable TMDLs	All impairments have expected TMDL completions of 2021.
Pollutants of Concern for the Project	Pathogens, nutrients
Environmentally Sensitive and Special Biological Significant Areas	Recognized as a potential area of erosion, habitat, and physical structure susceptibility; no special biologically significant areas.

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

Describe project performance criteria. Several steps must be followed in order to determine what performance criteria will apply to a project. These steps include:

- If the project has an approved WIHMP or equivalent, then any watershed specific criteria must be used and the project can evaluate participation in the approved regional or sub-regional opportunities. The local Permittee planning or NPDES staff should be consulted regarding the existence of an approved WIHMP or equivalent.
- Determine applicable hydromodification control performance criteria. *Refer to Section 7.II-2.4.2.2 of the Model WQMP.*
- Determine applicable LID performance criteria. *Refer to Section 7.II-2.4.3 of the Model WQMP.*
- Determine applicable treatment control BMP performance criteria. *Refer to Section 7.II-*3.2.2 *of the Model WQMP.*
- Calculate the LID design storm capture volume for the project. *Refer to Section 7.II-2.4.3 of the Model WQMP.*

(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.		

Project Performance Criteria (continued)	
If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	N/A
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	Modular Wetland Linear units
List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)	Modular Wetland Linear units
Calculate LID design storm capture volume for Project.	C=0.75 * IMP +0.15 DCV=C * d(1/12) * A See Attachment B

IV.2. SITE DESIGN AND DRAINAGE PLAN

Describe site design and drainage plan including

- A narrative of site design practices utilized or rationale for not using practices;
- A narrative of how site is designed to allow BMPs to be incorporated to the MEP
- A table of DMA characteristics and list of LID BMPs proposed in each DMA.
- Reference to the WQMP plot plan.
- Calculation of Design Capture Volume (DCV) for each drainage area.
- A listing of GIS coordinates for LID and Treatment Control BMPs (unless not required by local jurisdiction).

Refer to Section 2.4.2 in the TGD.

General drainage patterns will remain the same from existing to proposed conditions. Concrete curb and gutters have been added to direct flow to the modular wetland systems. DMA 1 is located on the southeast corner of the site and DMA 2 is located on the southwest corner of the site. Modular wetland systems will be located at the southernmost points of each drainage area. Flow will be treated in the system and then pumped up to a parkway drain due to the lack of existing storm drain to tie into. Infiltration practices are not feasible at this site due to high groundwater reported in a prior geotechnical analysis for the project site.

IV.3 LID BMP SELECTION AND PROJECT CONFORMANCE ANALYSIS

Each sub-section below documents that the proposed design features conform to the applicable project performance criteria via check boxes, tables, calculations, narratives, and/or references to worksheets. *Refer to Section 2.4.2.3 in the TGD for selecting LID BMPs and Section 2.4.3 in the TGD for conducting conformance analysis with project performance criteria.*

IV.3.1 Hydrologic Source Controls

Hydrologic Source Controls (HSCs) are not proposed for this project.

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:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐

IV.3.2 Infiltration BMPs

Infiltration BMPs are not proposed for this project.

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:	☐
Other:	☐

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

The full Design Capture Volume will be met with bio treatment; therefore evapotranspiration, rainwater harvesting BMPs will not be required..

Name	Included?
All HSCs; *See Section IV.3.1*	☐
Surface-based infiltration BMPs	☐
Biotreatment BMPs	☐
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐
Other:	☐
Other:	☐

IV.3.4 Biotreatment BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, and/or evapotranspiration and rainwater harvesting BMPs, describe biotreatment BMPs. Include sections for selection, suitability, sizing, and infeasibility, as applicable.

Name	Included?
Bioretention with underdrains	☐
Stormwater planter boxes with underdrains	☐
Rain gardens with underdrains	☐
Constructed wetlands	☐
Vegetated swales	☐
Vegetated filter strips	☐
Proprietary vegetated biotreatment systems	☒
Wet extended detention basin	☐
Dry extended detention basins	☐
Other:	☐
Other:	☐

DMA	AREA (AC)	IMPERVIOUS (AC)	C	2-YEAR, 24 HR RAINFALL	DCV (CF)
1	1.19	1.02	0.79	0.8	2730
2	0.96	0.86	0.82	0.8	2286
TOTAL	2.15	1.88			5016

See Attachment C for calculations.

IV.3.5 Hydromodification Control BMPs

The project does not have the potential for HCOC; therefore, hydro modification control BMPs are not applicable. The project also decreases the amount of impervious area on site by incorporating planters; therefore, proposed flow will be slightly reduced.

IV.3.6 Regional/Sub-Regional LID BMPs

Regional/sub-regional LID BMPs are not applicable for this project.

IV.3.7 Treatment Control BMPs

Treatment control BMPs are not being utilized. Proprietary BMPs will be used for LID and the entire DCV.

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)	☐	☒	No hazardous waste for this project.
N6	Local Industrial Permit Compliance	☐	☒	Not in an industrial zone.
N7	Spill Contingency Plan	☐	☒	No hazardous materials
N8	Underground Storage Tank Compliance	☐	☒	No underground storage tanks.
N9	Hazardous Materials Disclosure Compliance	☐	☒	No hazardous materials
N10	Uniform Fire Code Implementation	☒	☐	
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	No loading docks
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	Not applicable

IV.3.9 Structural Source Control BMPs

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

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 material storage
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☒	☐	
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 for this project
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☒	N/A
S6	Dock areas	☐	☒	No dock areas
S7	Maintenance bays	☐	☒	No maintenance bays
S8	Vehicle wash areas	☐	☒	No vehicle wash area
S9	Outdoor processing areas	☐	☒	No outdoor processing
S10	Equipment wash areas	☐	☒	No equipment wash areas
S11	Fueling areas	☐	☒	No fueling areas
S12	Hillside landscaping	☐	☒	No hillside landscaping
S13	Wash water control for food preparation areas	☐	☒	N/A
S14	Community car wash racks	☐	☒	N/A

IV.4 ALTERNATIVE COMPLIANCE PLAN (IF APPLICABLE)

IV.4.1 Water Quality Credits

Determine if water quality credits are applicable for the project. *Refer to Section 3.1 of the Model WQMP for description of credits and Appendix VI of the TGD for calculation methods for applying water quality credits.*

<table>
<tr><th colspan="5">Description of Proposed Project</th></tr>
<tr><td colspan="5">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>☐ 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>☐ 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>☐ 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="4">N/A. This project will not be utilizing credits.</td></tr>
</table>

IV.4.2 Alternative Compliance Plan Information

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the WQMP.*

An Alternative Compliance Plan is not being proposed for this project..

Section V Inspection/Maintenance Responsibility for BMPs

The owner, Valley View Cinema Center, LLC, is responsible for all BMP inspection and Maintenance.

Owner: Valley View Cinema Center, LLC.

Address: 315 Rees Street, Playa Del Rey, CA 90293

Contact: Daniel Akarakian

Contact Number: 310-702-5190

BMP Inspection/Maintenance

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
Modular Wetland System	Owner	Remove trash from screening device, remove sediment from separation chamber, replace cartridge and drain down filter media, trim vegetation. Rainy season beings Oct. 1st.	Semi-annually (trash, vegetation) Annually (sediment filters) Refer to Attachment G
N1. Education for Property Owners, Tenants and Occupants	Owner	The owner shall prepare a training manual for existing and future employees. The manual should include information on non-point source pollution and how to use Best Management Practices. Training shall be provided upon hire and at regular intervals thereafter.	Quarterly
N2. Activity Restrictions	Owner	Activity Restrictions must be prepared for the purpose of surface water quality protection. There shall be no discharges of fertilizer, pesticides, or wastes to streets or storm drains. There shall be no blowing or sweeping	Daily

		of debris into storm drain. All debris shall be collected and relocated to an approved landfill. In addition, onsite activities shall be limited to the requirements of this WQMP as described herein. Ensure all employees are adhering to the activity restrictions and are not engaged in activities that can have a negative impact on storm water.	
N3 Common Area Landscape Management (SC-73)	Owner	Identify on-going landscape maintenance requirements that are consistent with those in the County Water Conservation Resolution (or city equivalent) that include fertilizer and/or pesticide usage consistent with Management Guidelines for Use of Fertilizers (DAMP Section 5.5). All maintenance shall be consistent with the County of Orange Water Quality Ordinance. Proper landscape maintenance practices will help to reduce or eliminate pollution from pesticides, nutrients, trash/debris, and sediments. Irrigation systems shall be inspected monthly for poorly aligned sprinkler heads, broken sprinkler heads, and leaks. Detected problems shall be repaired as soon as they are observed. Avoid over- watering of vegetation. If excessive runoff is observed, automatic timers shall be adjusted.	Landscape maintenance shall be performed on a weekly basis. Irrigation systems shall be inspected monthly for leaks. Leaks shall be repaired as soon as they are observed
N4. BMP Maintenance	Owner	The Project WQMP shall identify responsibility for implementation of each non-structural BMP and scheduled cleaning and/or maintenance of all structural BMP facilities.	As needed
N11. Common Area Litter Control (SC- 60)	Owner	For industrial/commercial developments the owner/tenant should be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The owner/tenant may contract with their landscape maintenance firms to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal	Daily

		violations by tenants or businesses and reporting the violations to the owner/tenant for investigation.	
N12. Employee Training	Owner	Owner will provide environmental awareness education materials containing use of chemicals that should be limited to the property, with no discharge or specified wastes via hosing or other direct discharge to gutters, catch basins, and storm drains. Ensuring that employees are properly trained will help to reduce all anticipated and potential pollutants from the site. All new employees will be trained on how to minimize impacts to water quality. The educational materials provided in Attachment A will be reviewed.	Education of employees/owner(s)s hall be done within 4 weeks of startup and continue on an annual refreshing basis with each new onsite employee/ owner(s) being given a water quality orientation using this WQMP as reference within two weeks of hire date.
N14 Common Area Catch Basin Inspection	Owner	For industrial/commercial developments and for developments with privately maintained drainage systems, the owner is required for catch basins to be inspected monthly with cleaning and maintenance of drainage facilities before the start of the rainy season at minimum. Cleaning should take place in the late summer/early fall prior to the start of the rainy season. Drainage facilities include catch basins (storm drain inlets) detention basins, retention basins, sediment basins, open drainage channels and lift stations. Records should be kept to document the annual maintenance.	Inspect area in around catch basins for trash/debris and clean as necessary. Monthly and prior to the rainy season (by Oct.1st).
N15. Street Sweeping Private Streets and Parking Lots (SC-43, SC-70)	Owner	Streets and parking lots are required to be swept prior to the storm season, in late summer or early fall, prior to the start of the rainy season or equivalent as required by the governing jurisdiction.	The access roads and drive aisles shall be swept on a regular basis to remove debris.

			Streets and parking lots shall be swept monthly at a minimum.
S1. Provide Storm Drain System Stenciling and Signage	Owner	Storm drain stencils are highly visible source control messages, typically placed directly adjacent to storm drain inlets. The stencils contain a brief statement that prohibits the dumping of improper materials into the municipal storm drain system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message. Stencils and signs alert the public to the destination of pollutants discharged into stormwater. The following requirements should be included in the project design and shown on the project plans: 1. Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language (such as: "NO DUMPING- DRAINS TO OCEAN") and/or graphical icons to discourage illegal dumping. 2. Post signs and prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area. 3. Maintain legibility of stencils and signs. See CASQA Stormwater Handbook BMP Fact Sheet SD- 13 for additional information. 4. Stormdrain signage should be re-stenciled at minimum once every five years.	
S3: Design and construct trash and waste storage areas to reduce pollution introduction	Owner		

S4. Use Efficient Irrigation Systems and Landscape Design (SD- 12)	Owner	Projects shall design the timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the municipal storm drain system. (Limited exclusion: detached residential homes.) The following methods to reduce excessive irrigation runoff shall be considered, and incorporated on common areas of development and other areas where determined applicable and feasible by the Permittee: 1. Employing rain shutoff devices to prevent irrigation after precipitation. 2. Designing irrigation systems to each landscape area's specific water requirements. 3. Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. 4. Implementing landscape plan consistent with County Water Conservation Resolution or city equivalent, which may include provision of water sensors, programmable irrigation times (for short cycles), etc. 5. The timing and application methods of irrigation water shall be designed to minimize the runoff of excess irrigation water into the municipal storm drain system. 6. Employing other comparable, equally effective, methods to reduce irrigation water runoff. 7. Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider other design features, such as: -Use mulches (such as wood chips or shredded wood products) in planter areas without ground cover to minimize sediment in runoff.	Weekly

		-Install appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant material where possible and/or as recommended by the landscape architect. -Leave a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible.	

Section VI Site Plan and Drainage Plan

VI.1 SITE PLAN AND DRAINAGE PLAN

Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural BMP locations
- Drainage delineations and flow information
- Drainage connections
- BMP details

See Appendix E for WQMP Exhibit.

VI.2 ELECTRONIC DATA SUBMITTAL

The minimum requirement is to provide submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open.

If the local jurisdiction requires specialized electronic document formats (CAD, GIS) to be submitted, this section will be used to describe the contents (e.g., layering, nomenclature, georeferencing, etc.) of these documents so that they may be interpreted efficiently and accurately.

Section VII Educational Materials

Refer to the Orange County Stormwater Program (ocwatersheds.com) for a library of materials available. For the copy submitted to the Permittee, only attach the educational materials specifically applicable to the project. Other materials specific to the project may be included as well and must be attached.

Education Materials			
Residential Material (http://www.ocwatersheds.com)	**Check If Applicable**	**Business Material (http://www.ocwatersheds.com)**	**Check If Applicable**
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☒
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☒
Household Tips	☐	**Other Material**	**Check If Attached**
Proper Disposal of Household Hazardous Waste	☐		
Recycle at Your Local Used Oil Collection Center (North County)	☐		☐
Recycle at Your Local Used Oil Collection Center (Central County)	☐		☐
Recycle at Your Local Used Oil Collection Center (South County)	☐		☐
Tips for Maintaining a Septic Tank System	☐		☐
Responsible Pest Control	☒		☐
Sewer Spill	☐		☐
Tips for the Home Improvement Projects	☐		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☐		☐
Tips for Pool Maintenance	☐		☐
Tips for Residential Pool, Landscape and Hardscape Drains	☐		☐
Tips for Projects Using Paint	☒		☐

Attachment A

Educational Materials

The Ocean Begins at Your Front Door

Never allow pollutants to enter the street, gutter or storm drain!

Even if you live miles from the Pacific Ocean, you may be unknowingly polluting it.

Dumping one quart of motor oil into a storm drain can contaminate 250,000 gallons of water.

Did You Know?

- Most people believe that the largest source of water pollution in urban areas comes from specific sources such as factories and sewage treatment plants. In fact, the largest source of water pollution comes from city streets, neighborhoods, construction sites and parking lots. This type of pollution is sometimes called “non-point source” pollution.
- There are two types of non-point source pollution: stormwater and urban runoff pollution.
- Stormwater runoff results from rainfall. When rainstorms cause large volumes of water to rinse the urban landscape, picking up pollutants along the way.
- Urban runoff can happen any time of the year when excessive water use from irrigation, vehicle washing and other sources carries trash, lawn clippings and other urban pollutants into storm drains.

Where Does It Go?

- Anything we use outside homes, vehicles and businesses – like motor oil, paint, pesticides, fertilizers and cleaners – can be blown or washed into storm drains.
- A little water from a garden hose or rain can also send materials into storm drains.
- Storm drains are separate from our sanitary sewer systems; unlike water in sanitary sewers (from sinks or toilets), water in storm drains is not treated before entering our waterways.

Sources of Non-Point Source Pollution

- Automotive leaks and spills.
- Improper disposal of used oil and other engine fluids.
- Metals found in vehicle exhaust, weathered paint, rust, metal plating and tires.
- Pesticides and fertilizers from lawns, gardens and farms.
- Improper disposal of cleaners, paint and paint removers.
- Soil erosion and dust debris from landscape and construction activities.
- Litter, lawn clippings, animal waste, and other organic matter.
- Oil stains on parking lots and paved surfaces.

The Effect on the Ocean

Non-point source pollution can have a serious impact on water quality in Orange County. Pollutants from the storm drain system can harm marine life as well as coastal and wetland habitats. They can also degrade recreation areas such as beaches, harbors and bays.

Stormwater quality management programs have been developed throughout Orange County to educate and encourage the public to protect water quality, monitor runoff in the storm drain system, investigate illegal dumping and maintain storm drains.

Support from Orange County residents and businesses is needed to improve water quality and reduce urban runoff pollution. Proper use and disposal of materials will help stop pollution before it reaches the storm drain and the ocean.

Follow these simple steps to help reduce water pollution:

Household Activities

- Do not rinse spills with water. Use dry cleanup methods such as applying cat litter or another absorbent material, sweep and dispose of in the trash. Take items such as used or excess batteries, oven cleaners, automotive fluids, painting products and cathode ray tubes, like TVs and computer monitors, to a Household Hazardous Waste Collection Center (HHWCC).
- For a HHWCC near you call (714) 834-6752 or visit www.oclandfills.com.
- Do not hose down your driveway, sidewalk or patio to the street, gutter or storm drain. Sweep up debris and dispose of it in the trash.

Automotive

- Take your vehicle to a commercial car wash whenever possible. If you wash your vehicle at home, choose soaps, cleaners, or detergents labeled non-toxic, phosphate- free or biodegradable. Vegetable and citrus-based products are typically safest for the environment.
- Do not allow washwater from vehicle washing to drain into the street, gutter or storm drain. Excess washwater should be disposed of in the sanitary sewer (through a sink or toilet) or onto an absorbent surface like your lawn.
- Monitor your vehicles for leaks and place a pan under leaks. Keep your vehicles well maintained to stop and prevent leaks.
- Never pour oil or antifreeze in the street, gutter or storm drain. Recycle these substances at a service station, a waste oil collection center or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.1800cleanup.org.

Pool Maintenance

- Pool and spa water must be dechlorinated and free of excess acid, alkali or color to be allowed in the street, gutter or storm drain.
- When it is not raining, drain dechlorinated pool and spa water directly into the sanitary sewer.
- Some cities may have ordinances that do not allow pool water to be disposed of in the storm drain. Check with your city.

Landscape and Gardening

- Do not over-water. Water your lawn and garden by hand to control the amount of water you use or set irrigation systems to reflect seasonal water needs. If water flows off your yard onto your driveway or sidewalk, your system is over-watering. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of waste by composting, hauling it to a permitted landfill, or as green waste through your city's recycling program.
- Follow directions on pesticides and fertilizer, (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Take unwanted pesticides to a HHWCC to be recycled. For locations and hours of HHWCC, call (714) 834-6752 or visit www.oclandfills.com.

Trash

- Place trash and litter that cannot be recycled in securely covered trash cans.
- Whenever possible, buy recycled products.
- Remember: Reduce, Reuse, Recycle.

Pet Care

- Always pick up after your pet. Flush waste down the toilet or dispose of it in the trash. Pet waste, if left outdoors, can wash into the street, gutter or storm drain.
- If possible, bathe your pets indoors. If you must bathe your pet outside, wash it on your lawn or another absorbent/permeable surface to keep the washwater from entering the street, gutter or storm drain.
- Follow directions for use of pet care products and dispose of any unused products at a HHWCC.

Common Pollutants

Home Maintenance

- Detergents, cleaners and solvents
- Oil and latex paint
- Swimming pool chemicals
- Outdoor trash and litter

Lawn and Garden

- Pet and animal waste
- Pesticides
- Clippings, leaves and soil
- Fertilizer

Automobile

- Oil and grease
- Radiator fluids and antifreeze
- Cleaning chemicals
- Brake pad dust

For More Information

California Environmental Protection Agency
www.calepa.ca.gov

- **Air Resources Board**
  www.arb.ca.gov
- **Department of Pesticide Regulation**
  www.cdpr.ca.gov
- **Department of Toxic Substances Control**
  www.dtsc.ca.gov
- **Integrated Waste Management Board**
  www.ciwmb.ca.gov
- **Office of Environmental Health Hazard Assessment**
  www.oehha.ca.gov
- **State Water Resources Control Board**
  www.waterboards.ca.gov

Earth 911 - Community-Specific Environmental Information 1-800-cleanup or visit www.1800cleanup.org

Health Care Agency's Ocean and Bay Water Closure and Posting Hotline
(714) 433-6400 or visit www.ocbeachinfo.com

Integrated Waste Management Dept. of Orange County (714) 834-6752 or visit www.oclandfills.com for information on household hazardous waste collection centers, recycling centers and solid waste collection

O.C. Agriculture Commissioner
(714) 447-7100 or visit www.ocagcomm.com

Stormwater Best Management Practice Handbook
Visit www.cabmphandbooks.com

UC Master Gardener Hotline
(714) 708-1646 or visit www.uccemg.com

The Orange County Stormwater Program has created and moderates an electronic mailing list to facilitate communications, take questions and exchange ideas among its users about issues and topics related to stormwater and urban runoff and the implementation of program elements. To join the list, please send an email to ocstormwaterinfo-join@list.ocwatersheds.com

Orange County Stormwater Program

Aliso Viejo	(949) 425-2535
Anaheim Public Works Operations	(714) 765-6860
Brea Engineering	(714) 990-7666
Buena Park Public Works	(714) 562-3655
Costa Mesa Public Services	(714) 754-5323
Cypress Public Works	(714) 229-6740
Dana Point Public Works	(949) 248-3584
Fountain Valley Public Works	(714) 593-4441
Fullerton Engineering Dept.	(714) 738-6853
Garden Grove Public Works	(714) 741-5956
Huntington Beach Public Works	(714) 536-5431
Irvine Public Works	(949) 724-6315
La Habra Public Services	(562) 905-9792
La Palma Public Works	(714) 690-3310
Laguna Beach Water Quality	(949) 497-0378
Laguna Hills Public Services	(949) 707-2650
Laguna Niguel Public Works	(949) 362-4337
Laguna Woods Public Works	(949) 639-0500
Lake Forest Public Works	(949) 461-3480
Los Alamitos Community Dev.	(562) 431-3538
Mission Viejo Public Works	(949) 470-3056
Newport Beach, Code & Water Quality Enforcement	(949) 644-3215
Orange Public Works	(714) 532-6480
Placentia Public Works	(714) 993-8245
Rancho Santa Margarita	(949) 635-1800
San Clemente Environmental Programs	(949) 361-6143
San Juan Capistrano Engineering	(949) 234-4413
Santa Ana Public Works	(714) 647-3380
Seal Beach Engineering	(562) 431-2527 x317
Stanton Public Works	(714) 379-9222 x204
Tustin Public Works/Engineering	(714) 573-3150
Villa Park Engineering	(714) 998-1500
Westminster Public Works/Engineering	(714) 898-3311 x446
Yorba Linda Engineering	(714) 961-7138
Orange County Stormwater Program	(877) 897-7455

Orange County 24-Hour
Water Pollution Problem Reporting Hotline
1-877-89-SPILL (1-877-897-7455)

On-line Water Pollution Problem Reporting Form
www.ocwatersheds.com

Printed on Recycled Paper

The Ocean Begins at Your Front Door

The Pollution Solution

Several residential activities can result in water pollution. Among these activities are car washing and hosing off driveways and sidewalks. Both activities can waste water and result in excess runoff. Water conservation methods described in this pamphlet can prevent considerable amounts of runoff and conserve water. By taking your car to a commercial car wash and by sweeping driveways and sidewalks, you can further prevent the transport of pollutants to Orange County waterways. Here are some of the common pollutants for which you can be part of the solution:

1 Pesticides and Fertilizer

- **Pollution:** The same pesticides that are designed to be toxic to pests can have an equally lethal impact on our marine life. The same fertilizer that promotes plant growth in lawns and gardens can also create nuisance algae blooms, which remove oxygen from the water and clog waterways when it decomposes.

- **Solution:** Never use pesticides or fertilizer within 48 hours of an anticipated rainstorm. Use only as much as is directed on the label and keep it off driveways and sidewalks.

2 Dirt and Sediment

- **Pollution:** Dirt or sediment can impede the flow of the stormwater and negatively impact stream habitat as it travels through waterways and deposits downstream. Pollutants can attach to sediment, which can then be transported through our waterways.

- **Solution:** Protect dirt stockpiles by covering them with tarps or secure plastic sheets to prevent wind or rain from allowing dirt or sediment to enter the storm drain system.

3 Metals

- **Pollution:** Metals and other toxins present in car wash water can harm important plankton, which forms the base of the aquatic food chain.

- **Solution:** Take your car to a commercial car wash where the wash water is captured and treated at a local wastewater treatment plant.

DID YOU KNOW?

Did you know that most of the pollution found in our waterways is not from a single source, but from a "non-point" source meaning the accumulation of pollution from residents and businesses throughout the community

4 Pet Waste

- **Pollution:** Pet waste carries bacteria through our watersheds and eventually will be washed out to the ocean. This can pose a health risk to swimmers and surfers.

- **Solution:** Pick up after your pets!

5 Trash and Debris

- **Pollution:** Trash and debris can enter waterways by wind, littering and careless maintenance of trash receptacles. Street sweeping collects some of this trash; however, much of what isn't captured ends up in our storm drain system where it flows untreated out to the ocean.

- **Solution:** Don't litter and make sure trash containers are properly covered. It is far more expensive to clean up the litter and trash that ends up in our waterways than it is to prevent it in the first place. Come out to one of Orange County's many locations for Coastal and Inner-Coastal Cleanup Day, which is held in September.

6 Motor Oil / Vehicle Fluids

- **Pollution:** Oil and petroleum products from our vehicles are toxic to people, wildlife and plants.

- **Solution:** Fix any leaks from your vehicle and keep the maintenance up on your car. Use absorbent material such as cat litter on oil spills, then sweep it up and dispose of it in the trash. Recycle used motor oil at a local Household Hazardous Waste Collection Center.

A TEAM EFFORT

The Orange County Stormwater Program has teamed with the Municipal Water District of Orange County (MWDOC) and the University of California Cooperative Extension Program (UCCE) to develop this pamphlet.

Low Impact Development (LID) and sustainable water use prevents water pollution and conserves water for drinking and reuse. Reducing your water use and the amount of water flowing from your home protects the environment and saves you money.

Thank you for making water protection a priority!

For more information, please visit www.ocwatersheds.com/publiced/

www.mwdoc.com

www.uccemg.com

To report a spill, call the Orange County 24-Hour Water Pollution Prevention Reporting Hotline at 1-877-89-SPILL \ (1-877-897-7455)

Special Thanks to
The City of Los Angeles Stormwater Program for the use of its artwork

The Metropolitan Water District of Southern California for the use of the California-Friendly Plant and Native Habitat photos

PROJECT Pollution PREVENTION

UCCE University of California Cooperative Extension

MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

RUNOFF, RAINWATER AND REUSE

Where Does Water Runoff Go?

Stormwater, or water from rainfall events, and runoff from outdoor water use such as sprinklers and hoses flows from homes directly into catch basins and the storm drain system. After entering the storm drain, the water flows untreated into streams, rivers, bays and ultimately the Pacific Ocean. Runoff can come from lawns, gardens, driveways, sidewalks and roofs. As it flows over hard, impervious surfaces, it picks up pollutants. Some pollutants carried by the water runoff include trash, pet waste, pesticides, fertilizer, motor oil and more.

Water Conservation

Pollution not only impairs the water quality for habitat and recreation, it can also reduce the water available for reuse. Runoff allowed to soak into the ground is cleaned as it percolates through the soil, replenishing depleted groundwater supplies. Groundwater provides at least 50% of the total water for drinking and other indoor household activities in north and central Orange County. When land is covered with roads, parking lots, homes, etc., there is less land to take in the water and more hard surfaces over which the water can flow.

In Orange County, 60-70% of water used by residents and businesses goes to irrigation and other outdoor uses. Reusing rainwater to irrigate our lawn not only reduces the impact of water pollution from runoff, but it also is a great way to conserve our precious water resources and replenish our groundwater basin.

What is Low Impact Development (LID)?

Low Impact Development (LID) is a method of development that seeks to maintain the natural hydrologic character of an area. LID provides a more sustainable and pollution-preventative approach to water management.

New water quality regulations require implementation of LID in larger new developments and encourage implementation of LID and other sustainable practices in existing residential areas. Implementing modifications to your lawn or garden can reduce pollution in our environment, conserve water and reduce your water bill.

Permeable pavement allows water runoff to infiltrate through the soil and prevents most pollutants from reaching the storm drain system.

OPTIONS FOR RAINWATER HARVESTING AND REUSE

Rainwater harvesting is a great way to save money, prevent pollution and reduce potable water use. To harvest your rainwater, simply redirect the runoff from roofs and downspouts to rain barrels. Rain gardens are another option; these reduce runoff as well as encourage infiltration.

Downspout Disconnection/Redirection

Disconnecting downspouts from pipes running to the gutter prevents runoff from transporting pollutants to the storm drain. Once disconnected, downspouts can be redirected to rain gardens or other vegetated areas, or be connected to a rain barrel.

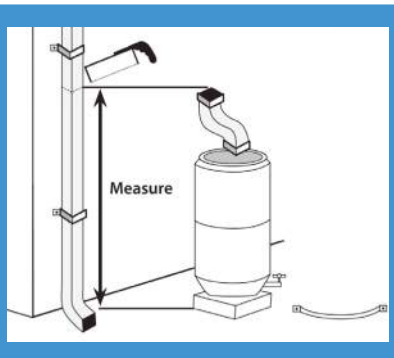
Rain Barrels

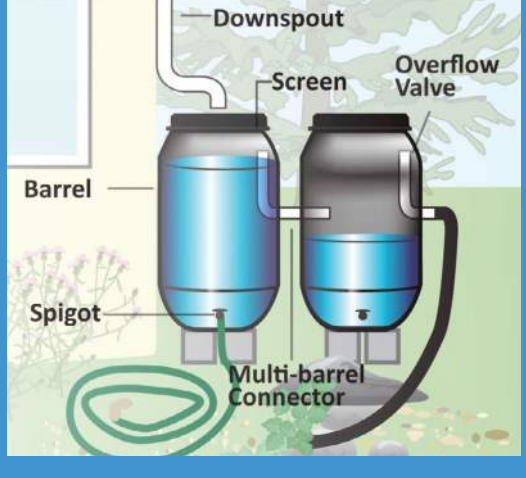
Rain barrels capture rainwater flow from roofs for reuse in landscape irrigation. Capacity of rain barrels needed for your home will depend on the amount of roof area and rainfall received. When purchasing your rain barrel, make sure it includes a screen, a spigot to siphon water for use, an overflow tube to allow for excess water to run out and a connector if you wish to connect multiple barrels to add capacity of water storage.

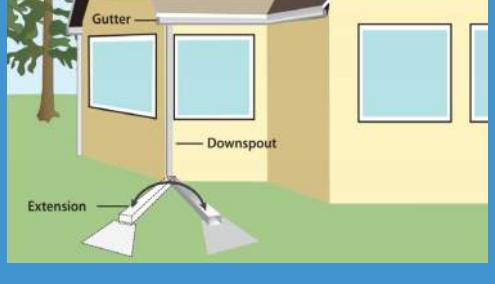
Mosquito growth prevention is very important when installing a rain barrel. The best way to prevent mosquito breeding is to eliminate entry points by ensuring all openings are sealed tightly. If these methods are unsuccessful, products are available to kill mosquito larvae, but that are harmless to animals and humans. Regular application of these products is essential. Please visit the Orange County Vector Control website for more information at www.ocvcd.org/mosquitoes3.php.

Rain Gardens

Rain gardens allow runoff to be directed from your roof downspout into a landscaped area. Vegetation and rocks in the garden will slow the flow of water to allow for infiltration into the soil. Plants and soil particles will absorb pollutants from the roof runoff. By utilizing a native plant palate, rain gardens can be maintained all year with minimal additional irrigation. These plants are adapted to the semi-arid climate of Southern California, require less water and can reduce your water bill.







Before modifying your yard to install a rain garden, please consult your local building and/or planning departments to ensure your garden plan follows pertinent building codes and ordinances. Besides codes and ordinances, some home owner associations also have guidelines for yard modifications. If your property is in hill areas or includes engineered slopes, please seek professional advice before proceeding with changes.

For information on how to disconnect a downspout or to install and maintain a rain barrel or rain garden at your home, please see the Los Angeles Rainwater Harvesting Program, A Homeowner's "How-To" Guide, November 2009 at www.larainwaterharvesting.org/

OTHER WATER CONSERVATION AND POLLUTION PREVENTION TECHNIQUES

Native Vegetation and Maintenance

"California Friendly" plants or native vegetation can significantly reduce water use. These plants often require far less fertilizers and pesticides, which are two significant pollutants found in Orange County waterways. Replacing water "thirsty" plants and grass types with water efficient natives is a great way to save water and reduce the need for potentially harmful pesticides and fertilizer.

Please see the California Friendly Garden Guide produced by the Metropolitan Water District of Southern California and associated Southern California Water Agencies for a catalog of California friendly plants and other garden resources at www.bewaterwise.com/Gardensoft.

Weed Free Yards

Weeds are water thieves. They often reproduce quickly and rob your yard of both water and nutrients. Weed your yard by hand if possible. If you use herbicides to control the weeds, use only the amount recommended on the label and never use it if rain is forecast within the next 48 hours.

Soil Amendments

Soil amendments such as green waste (e.g. grass clippings, compost, etc.) can be a significant source of nutrients and can help keep the soil near the roots of plants moist. However, they can cause algal booms if they get into our waterways, which reduces the amount of oxygen in the water and impacts most aquatic organisms. It is important to apply soil amendments more than 48 hours prior to predicted rainfall.

IRRIGATE EFFICIENTLY

Water runoff from sprinklers left on too long will carry pollutants into our waterways.

Smart Irrigation Controllers

Smart Irrigation Controllers have internal clocks as well as sensors that will turn off the sprinklers in response to environmental changes. If it is raining, too windy or too cold, the smart irrigation control sprinklers will automatically shut off.

Check with your local water agency for available rebates on irrigation controllers and smart timers.

- Aim your sprinklers at your lawn, not the sidewalk – By simply adjusting the direction of your sprinklers you can save water, prevent water pollution from runoff, keep your lawn healthy and save money.
- **Set a timer for your sprinklers** – lawns absorb the water they need to stay healthy within a few minutes of turning on the sprinklers. Time your sprinklers; when water begins running off your lawn, you can turn them off. Your timer can be set to water your lawn for this duration every time.
- **Water at Sunrise** – Watering early in the morning will reduce water loss due to evaporation. Additionally, winds tend to die down in the early morning so the water will get to the lawn as intended.
- **Water by hand** – Instead of using sprinklers, consider watering your yard by hand. Hand-watering ensures that all plants get the proper amount of water and you will prevent any water runoff, which wastes water and carries pollutants into our waterways.
- **Fix leaks** - Nationwide, households waste one trillion gallons of water a year to leaks – that is enough water to serve the entire state of Texas for a year. If your garden hose is leaking, replace the nylon or rubber hose washer and ensure a tight connection. Fix broken sprinklers immediately.

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as pest control can lead to water pollution if you're not careful. Pesticide treatments must be planned and applied properly to ensure that pesticides do not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump pesticides into the ocean, so don't let it enter the storm drains. Pesticides can cause significant damage to our environment if used improperly. If you are thinking of using a pesticide to control a pest, there are some important things to consider.

For more information,
please call
University of California Cooperative
Extension Master Gardeners at
(714) 708-1646
or visit these Web sites:
www.uccemg.org
www.ipm.ucdavis.edu

For instructions on collecting a specimen sample visit the Orange County Agriculture Commissioner's website at:
http://www.ocagcomm.com/ser_lab.asp

To report a spill, call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
at 1-877-89-SPILL (1-877-897-7455).

For emergencies, dial 911.

Information From:
Cheryl Wilen, Area IPM Advisor; Darren Haver, Watershed Management Advisor; Mary Louise Flint, IPM Education and Publication Director; Pamela M. Geisel, Environmental Horticulture Advisor; Carolyn L. Unruh, University of California Cooperative Extension staff writer. Photos courtesy of the UC Statewide IPM Program and Darren Haver.

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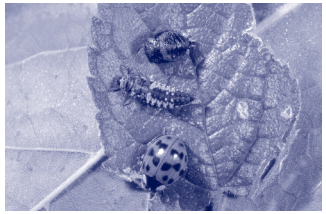
Help Prevent Ocean Pollution:

Responsible Pest Control

Tips for Pest Control

Key Steps to Follow:

Step 1: Correctly identify the pest (insect, weed, rodent, or disease) and verify that it is actually causing the problem.



Three life stages of the common lady beetle, a beneficial insect.

This is important because beneficial insects are often mistaken for pests and sprayed with pesticides needlessly.

Consult with a Certified Nursery Professional at a local nursery or garden center or send a sample of the pest to the Orange County Agricultural Commissioner's Office.

Determine if the pest is still present – even though you see damage, the pest may have left.

Step 2: Determine how many pests are present and causing damage.

Small pest populations may be controlled more safely using non-pesticide techniques. These include removing food sources, washing off leaves with a strong stream of water, blocking entry into the home using caulking and replacing problem plants with ones less susceptible to pests.

Integrated Pest Management (IPM) usually combines several least toxic pest control methods for long-term prevention and management of pest problems without harming you, your family, or the environment.

UC CE University of California Cooperative Extension

Step 3: If a pesticide must be used, choose the least toxic chemical.

Obtain information on the least toxic pesticides that are effective at controlling the target pest from the UC Statewide Integrated Pest Management (IPM) Program's Web site at www.ipm.ucdavis.edu.

Seek out the assistance of a Certified Nursery Professional at a local nursery or garden center when selecting a pesticide. Purchase the smallest amount of pesticide available.

Apply the pesticide to the pest during its most vulnerable life stage. This information can be found on the pesticide label.

Step 4: Wear appropriate protective clothing.

Follow pesticide labels regarding specific types of protective equipment you should wear. Protective clothing should always be washed separately from other clothing.

Step 5: Continuously monitor external conditions when applying pesticides such as weather, irrigation, and the presence of children and animals.

Never apply pesticides when rain is predicted within the next 48 hours. Also, do not water after applying pesticides unless the directions say it is necessary.

Apply pesticides when the air is still; breezy conditions may cause the spray or dust to drift away from your targeted area.

In case of an emergency call 911 and/or the regional poison control number at (714) 634-5988 or (800) 544-4404 (CA only).

For general questions you may also visit www.calpoison.org.

Step 6: In the event of accidental spills, sweep up or use an absorbent agent to remove any excess pesticides. Avoid the use of water.

Be prepared. Have a broom, dust pan, or dry absorbent material, such as cat litter, newspapers or paper towels, ready to assist in cleaning up spills.

Contain and clean up the spill right away. Place contaminated materials in a doubled plastic bag. All materials used to clean up the spill should be properly disposed of according to your local Household Hazardous Waste Disposal site.

Step 7: Properly store and dispose of unused pesticides.

Purchase Ready-To-Use (RTU) products to avoid storing large concentrated quantities of pesticides.

Store unused chemicals in a locked cabinet.

Unused pesticide chemicals may be disposed of at a Household Hazardous Waste Collection Center.

Empty pesticide containers should be triple rinsed prior to disposing of them in the trash.

Household Hazardous Waste Collection Center
(714) 834-6752
www.oclandfills.com

PROJECT Pollution PREVENTION

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into storm drains that flow to the ocean. Overwatering lawns can also send materials into storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

UCCE Master Gardener Hotline:
(714) 708-1646

To report a spill,
call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
1-877-89-SPILL (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while landscaping or gardening. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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Help Prevent Ocean Pollution:

Tips for Landscape & Gardening

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Landscape & Gardening

Never allow gardening products or polluted water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers, and pesticide applied to the landscape.

- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Use slow-release fertilizers to minimize leaching, and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.

- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting. For more information, visit **www.ipm.ucdavis.edu**.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. Locations are provided below.

Household Hazardous Waste Collection Centers

Anaheim:	1071 N. Blue Gum St.
Huntington Beach:	17121 Nichols St.
Irvine:	6411 Oak Canyon
San Juan Capistrano:	32250 La Pata Ave.

For more information, call (714) 834-6752 or visit www.oclandfills.com

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as painting can lead to water pollution if you're not careful. Paint must be used, stored and disposed of properly to ensure that it does not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump paint into the ocean, so don't let it enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline** at **1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while using, storing and disposing of paint. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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Help Prevent Ocean Pollution:

Tips for Projects Using Paint

Tips for Projects Using Paint

Paint can cause significant damage to our environment. Whether you hire a contractor or do it yourself, it is important to follow these simple tips when purchasing, using, cleaning, storing and disposing of paint.

Purchasing Paint

- Measure the room or object to be painted, then buy only the amount needed.
- Whenever possible, use water-based paint since it usually does not require hazardous solvents such as paint thinner for cleanup.

Painting

- Use only one brush or roller per color of paint to reduce the amount of water needed for cleaning.
- Place open paint containers or trays on a stable surface and in a position that is unlikely to spill.
- Always use a tarp under the area or object being painted to collect paint drips and contain spills.

Cleaning

- Never clean brushes or rinse paint containers in the street, gutter or storm drain.
- For oil-based products, use as much of the paint on the brushes as possible. Clean brushes with thinner. To reuse thinner, pour it through a fine filter (e.g. nylon, metal gauze or filter paper) to remove solids such as leftover traces of paint.
- For water-based products, use as much of the paint on the brushes as possible, then rinse in the sink.
- Collect all paint chips and dust. Chips and dust from marine paints or paints containing lead, mercury or tributyl tin are hazardous waste. Sweep up and dispose of at a Household Hazardous Waste Collection Center (HHWCC).

Storing Paint

- Store paint in a dry location away from the elements.
- Store leftover water-based paint, oil-based paint and solvents separately in original or clearly marked containers.
- Avoid storing paint cans directly on cement floors. The bottom of the can will rust much faster on cement.
- Place the lid on firmly and store the paint can upside-down to prevent air from entering. This will keep the paint usable longer. Oil-based paint is usable for up to 15 years. Water-based paint remains usable for up to 10 years.

Alternatives to Disposal

- Use excess paint to apply another coat, for touch-ups, or to paint a closet, garage, basement or attic.
- Give extra paint to friends or family. Extra paint can also be donated to a local theatre group, low-income housing program or school.
- Take extra paint to an exchange program such as the **"Stop & Swap"** that allows you to drop off or pick up partially used home care products free of charge. **"Stop & Swap"** programs are available at most HHWCCs.
- For HHWCC locations and hours, call **(714) 834-6752** or visit **www.oclandfills.com**.

Disposing of Paint

- Never put wet paint in the trash.

For water-based paint:

- If possible, brush the leftover paint on cardboard or newspaper. Otherwise, allow the paint to dry in the can with the lid off in a well-ventilated area protected from the elements, children and pets. Stirring the paint every few days will speed up the drying.
- Large quantities of extra paint should be taken to a HHWCC.
- Once dried, paint and painted surfaces may be disposed of in the trash. When setting a dried paint can out for trash collection, leave the lid off so the collector will see that the paint has dried.

For oil-based paint:

- Oil-based paint is a household hazardous waste. All leftover paint should be taken to a HHWCC.

Aerosol paint:

- Dispose of aerosol paint cans at a HHWCC.

Spills

- Never hose down pavement or other impermeable surfaces where paint has spilled.
- Clean up spills immediately by using an absorbent material such as cat litter. Cat litter used to clean water-based paint spills can be disposed of in the trash. When cleaning oil-based paint spills with cat litter, it must be taken to a HHWCC.
- Immediately report spills that have entered the street, gutter or storm drain to the County's 24-Hour Water Pollution Problem Reporting Hotline at **(714) 567-6363** or visit **www.ocwatersheds.com** to fill out an incident reporting form.

PROJECT Pollution PREVENTION

Clean beaches and healthy creeks, rivers, bays, and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Materials and excess concrete or mortar can be blown or washed into the storm drains that flow to the ocean. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never throw building materials into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com.**

To report a spill, call the **Orange County 24-Hour Water Pollution Reporting Hotline** at **1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The Tips contained in this brochure provide useful information about how you can keep materials and washwater from entering the storm drain system. If you have other suggestions for how water and materials may be contained, please contact your city's stormwater representative or call the Orange County Stormwater Program.

Tips for Using Concrete and Mortar

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Using Concrete and Mortar

Never allow materials or washwater to enter the street or storm drain.

Before the Project

- Schedule projects for dry weather.
- Store materials under cover, with temporary roofs or plastic sheets, to eliminate or reduce the possibility that the materials can be carried from the project site to streets, storm drains or adjacent properties via rainfall, runoff or wind.
- Minimize waste by ordering only the amount of materials needed to complete the job.
- Take measures to block nearby storm drain inlets.

During the Project

- Set up and operate small mixers on tarps or heavy drop cloths.
- Do not mix more fresh concrete or cement than is needed for the job.

- When breaking up pavement, pick up all chunks and pieces and recycle them at a local construction and demolition recycling company. (See information to the right)
- When making saw cuts in pavement, protect nearby storm drain inlets during the saw-cutting operation and contain the slurry. Collect the slurry residue from the pavement or gutter and remove from the site.

Clean-Up

- Dispose of small amounts of dry concrete, grout or mortar in the trash.
- Never hose materials from exposed aggregate concrete, asphalt or similar treatments into a street, gutter, parking lot, or storm drain.
- Wash concrete mixers and equipment in designated washout areas where the water can flow into a containment area or onto dirt. Small amounts of dried material can be disposed of in the trash. Large amounts should be recycled at a local construction and demolition recycling company. (See information below)

- Recycle cement wash water by pumping it back into cement mixers for reuse.

Spills

- Never hose down pavement or impermeable surfaces where fluids have spilled. Use an absorbent material such as cat litter to soak up a spill, then sweep and dispose in the trash.
- Clean spills on dirt areas by digging up and properly disposing of contaminated dry soil in trash.
- Immediately report significant spills to the County's 24-Hour Water Pollution Problem Reporting Hotline at 714-567-6363 or log onto the County's website at www.ocwatersheds.com and fill out an incident reporting form.

For a list of construction and demolition recycling locations in your area visit www.ciwmb.ca.gov/Recycle/.

For additional information on how to control, prevent, remove, and reduce pollution refer to the Stormwater Best Management Practice Handbook, available on-line at www.cabmphandbooks.com.

Attachment B

BMP Calculations

LID DESIGN SUMMARY						
DMA	**AREA (AC)**	**IMPERVIOUS (AC)**	**C**	**24 Hour, 85th Percentile Rainfall (in)**	**QDESIGN (CFS)**	**DCV (CF)**
1	1.19	1.02	0.79	0.8	0.2	2730
2	0.96	0.86	0.82	0.8	0.24	2286
				TOTAL	0.44	5016

Formulas

V=C*d*A*43560* 1/12

C from TGD worksheet D

GARDEN GROVE

Worksheet D: Capture Efficiency Method for Flow-Based BMPs

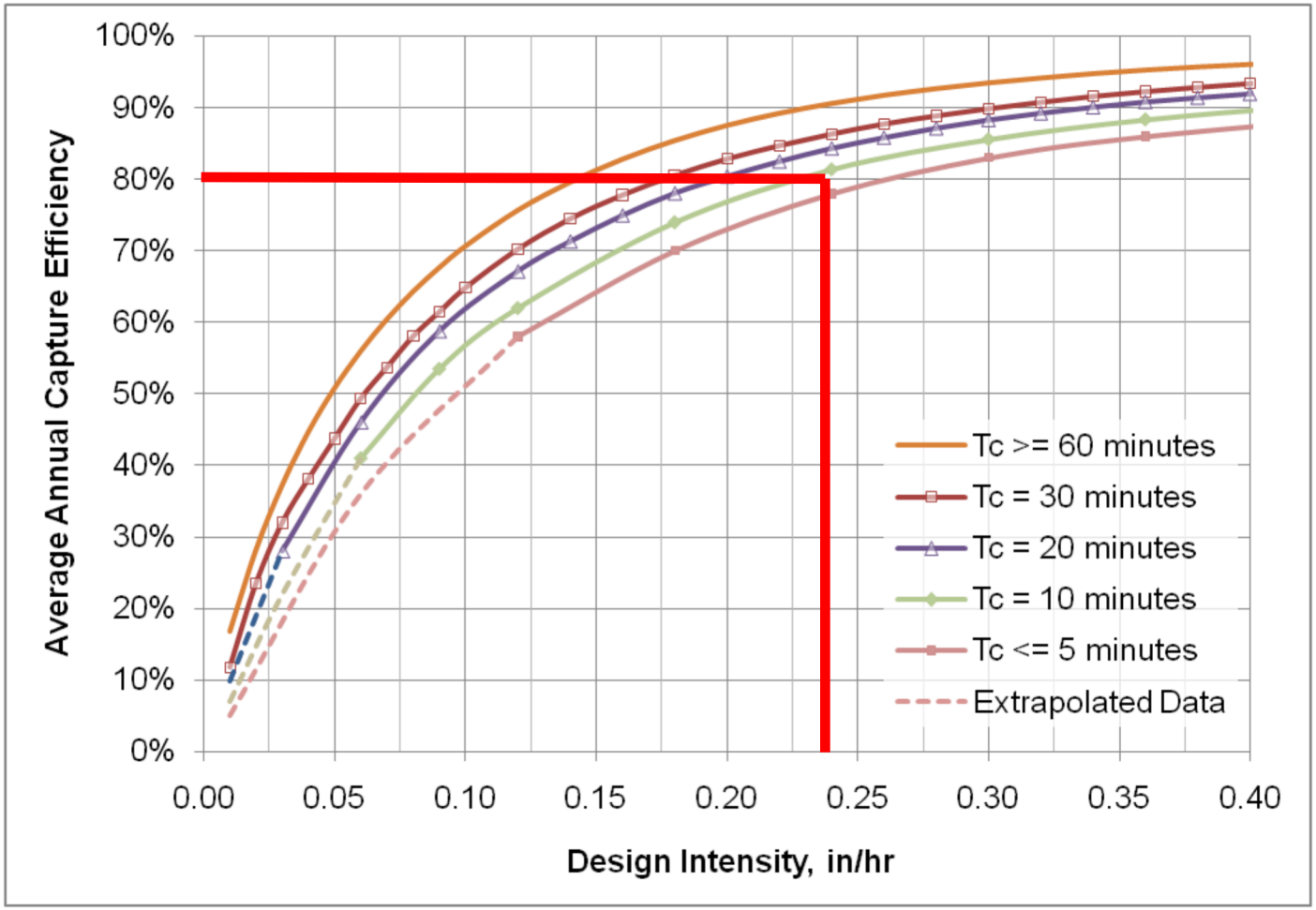
Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter the time of concentration, T_c (min) (See Appendix IV.2)	T_c=	8.5	
2	Using Figure III.4, determine the design intensity at which the estimated time of concentration (T_c) achieves 80% capture efficiency, I_1	I_1=	0.24	in/hr
3	Enter the effect depth of provided HSCs upstream, d_{HSC} (inches) (Worksheet A)	d_{HSC}=		inches
4	Enter capture efficiency corresponding to d_{HSC}, Y_2 (Worksheet A)	Y_2=		%
5	Using Figure III.4, determine the design intensity at which the time of concentration (T_c) achieves the upstream capture efficiency(Y_2), I_2	I_2=		
6	Determine the design intensity that must be provided by BMP, $I_{design}= I_1-I_2$	I_{design}=	0.24	
Step 2: Calculate the design flowrate				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	1.19	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.85	
3	Calculate runoff coefficient, $C= (0.75 \times imp) + 0.15$	C=	0.79	
4	Calculate design flowrate, $Q_{design}= (C \times i_{design} \times A)$	Q_{design}=	.23	cfs
Supporting Calculations				
Modular Wetland System				

GARDEN GROVE

Worksheet D: Capture Efficiency Method for Flow-Based BMPs

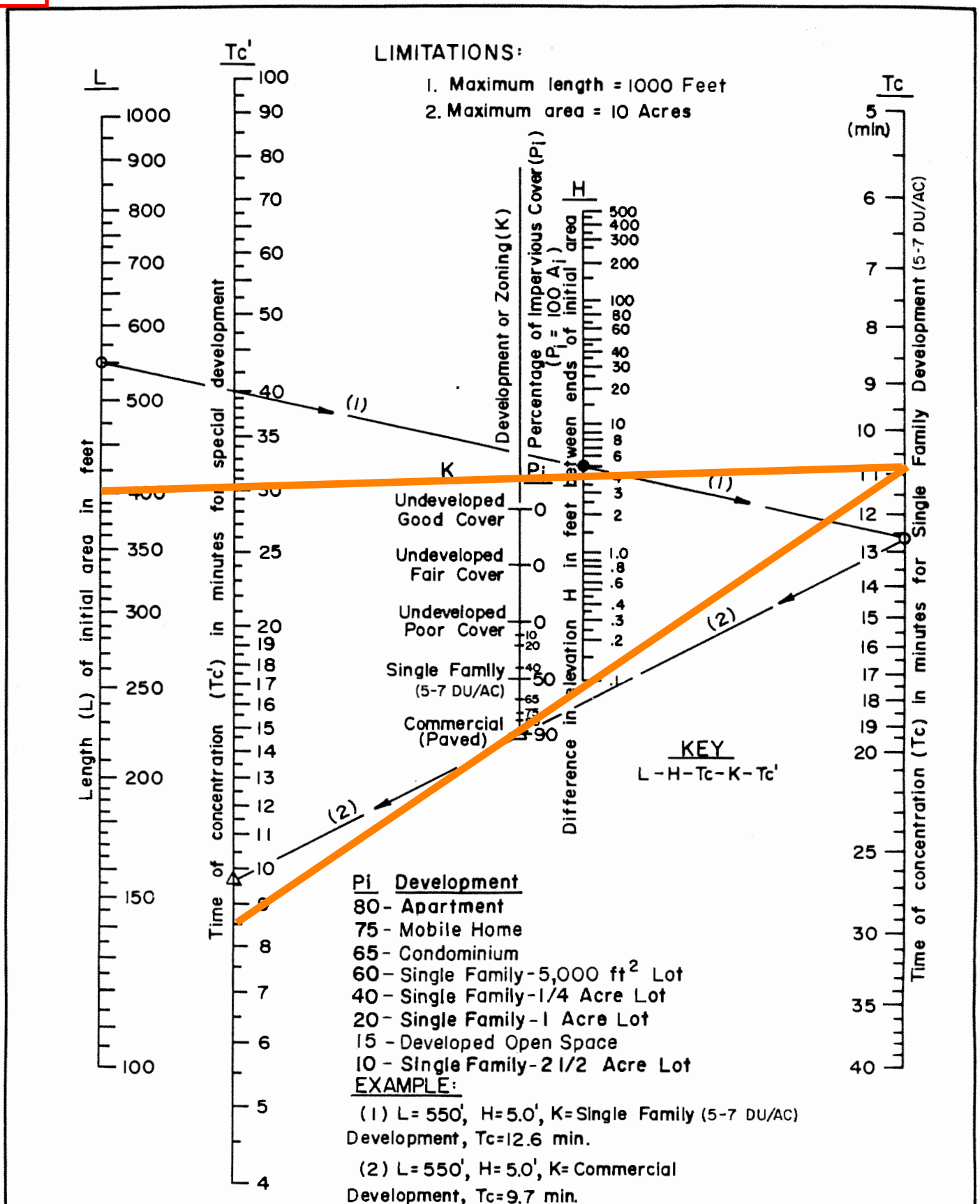
Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter the time of concentration, T_c (min) (See Appendix IV.2)	T_c=	8.5	
2	Using Figure III.4, determine the design intensity at which the estimated time of concentration (T_c) achieves 80% capture efficiency, I_1	I_1=	0.24	in/hr
3	Enter the effect depth of provided HSCs upstream, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	N/A	inches
4	Enter capture efficiency corresponding to d_{HSC}, Y_2 (Worksheet A)	Y_2=	N/A	%
5	Using Figure III.4, determine the design intensity at which the time of concentration (T_c) achieves the upstream capture efficiency(Y_2), I_2	I_2=	N/A	
6	Determine the design intensity that must be provided by BMP, $I_{design}= I_1-I_2$	I_{design}=	0.24	
Step 2: Calculate the design flowrate				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	0.96	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.89	
3	Calculate runoff coefficient, $C= (0.75 \times imp) + 0.15$	C=	.82	
4	Calculate design flowrate, $Q_{design}= (C \times i_{design} \times A)$	Q_{design}=	.19	cfs
Supporting Calculations				
Modular Wetland System				

Figure III.4. Capture Efficiency Nomograph for Off-line Flow-based Systems in Orange County



SAME DESIGN INTENSITY FOR DMA 1 and DMA 2

DMA 1



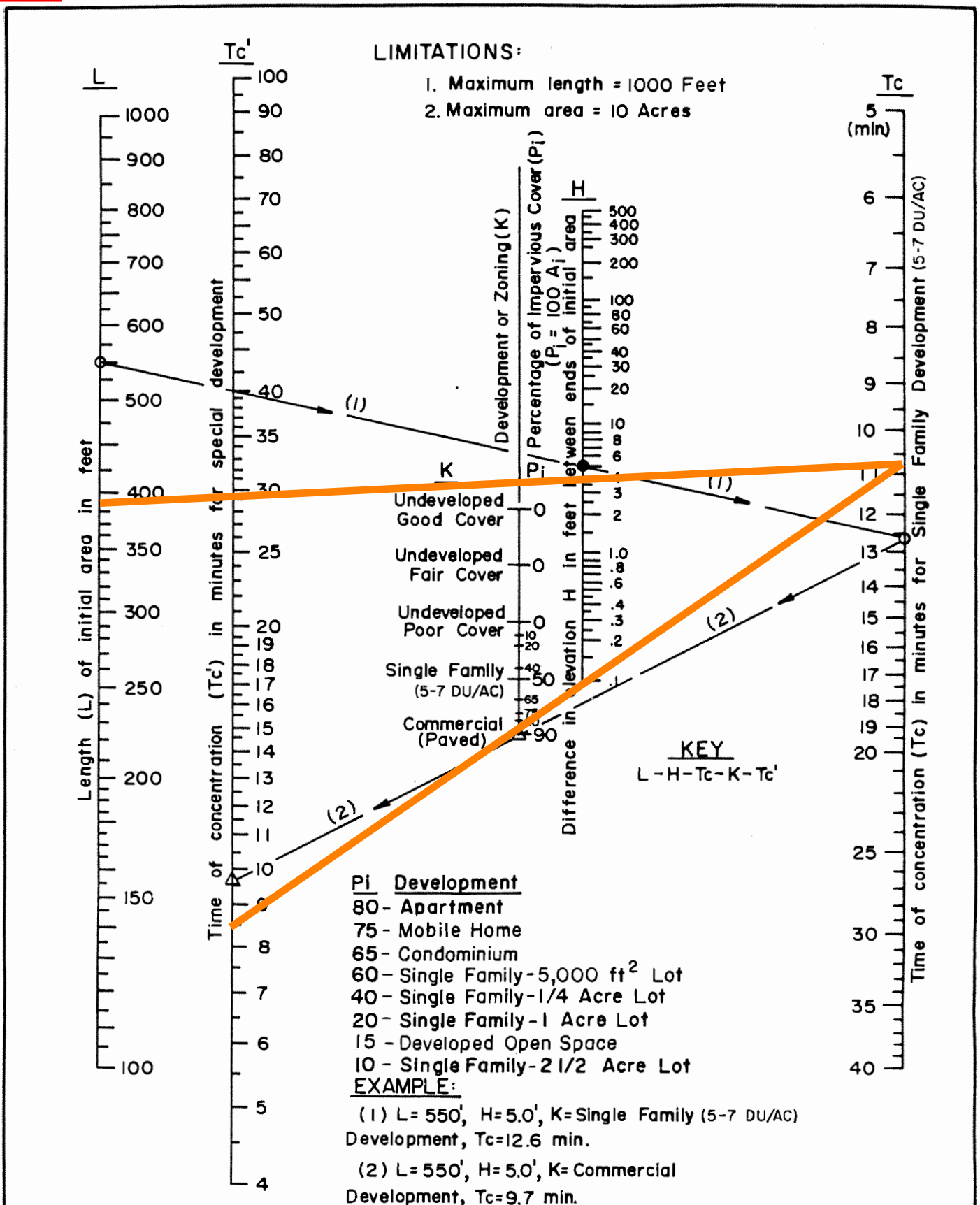
ORANGE COUNTY

HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

Figure D-1

DMA 2



ORANGE COUNTY

HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

Figure D-1

Attachment C

HCOC Calculations

HCOC Calculation

PRE-DEVELOPED CONDITION						
DMA	**AREA (AC)**	**IMPERVIOUS (AC)**	**IMPERVIOUS RATIO**	**C**	**2-YEAR, 24 HR RAINFALL (in)**	**Runoff Volume (CF)**
1	0.67	0.66	0.99	0.89	2.13	4611
2	1.48	1.48	1.00	0.9	2.13	10299
					TOTAL	14909

POST-DEVELOPED CONDITION						
DMA	**AREA (AC)**	**IMPERVIOUS (AC)**	**IMPERVIOUS RATIO**	**C**	**2-YEAR, 24 HR RAINFALL (in)**	**Runoff Volume (CF)**
1	1.19	1.02	0.86	0.79	2.13	7269
2	0.96	0.86	0.90	0.82	2.13	6087
					TOTAL	13355

V2 (post/pre)	**0.90**

Hydromodification Control Design Not Required

Post developement runoff volume for the 2-year, 24 hour storm does not exceed that of the pre-developement condition by more than 5%; therefore HCOCs do not exist. Due to the addition of pervious planters and the use of storm drain systems to collect runoff, time of concentration has increased, and runoff volume has decreased from pre

Formulas

V=C*d*A*43560* 1/12

NOAA Atlas 14, Volume 6, Version 2
Location name: Garden Grove, California, USA*
Latitude: 33.7864°, Longitude: -118.0294°
Elevation: 33.67 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.122** (0.102-0.147)	**0.163** (0.136-0.196)	**0.217** (0.181-0.262)	**0.261** (0.216-0.319)	**0.323** (0.258-0.409)	**0.371** (0.290-0.480)	**0.421** (0.320-0.559)	**0.472** (0.349-0.646)	**0.543** (0.383-0.777)	**0.598** (0.407-0.888)
10-min	**0.175** (0.147-0.211)	**0.233** (0.195-0.281)	**0.311** (0.259-0.376)	**0.375** (0.310-0.457)	**0.463** (0.370-0.586)	**0.532** (0.415-0.688)	**0.603** (0.459-0.801)	**0.677** (0.500-0.926)	**0.778** (0.550-1.11)	**0.858** (0.584-1.27)
15-min	**0.212** (0.177-0.255)	**0.282** (0.236-0.340)	**0.376** (0.314-0.454)	**0.453** (0.375-0.553)	**0.560** (0.447-0.708)	**0.643** (0.502-0.832)	**0.729** (0.555-0.968)	**0.819** (0.604-1.12)	**0.941** (0.665-1.35)	**1.04** (0.706-1.54)
30-min	**0.291** (0.244-0.351)	**0.388** (0.325-0.468)	**0.517** (0.432-0.625)	**0.624** (0.516-0.761)	**0.771** (0.616-0.975)	**0.886** (0.692-1.15)	**1.00** (0.764-1.33)	**1.13** (0.832-1.54)	**1.30** (0.915-1.85)	**1.43** (0.972-2.12)
60-min	**0.409** (0.343-0.492)	**0.545** (0.456-0.657)	**0.726** (0.606-0.878)	**0.875** (0.725-1.07)	**1.08** (0.864-1.37)	**1.24** (0.971-1.61)	**1.41** (1.07-1.87)	**1.58** (1.17-2.17)	**1.82** (1.29-2.60)	**2.01** (1.37-2.97)
2-hr	**0.590** (0.495-0.711)	**0.775** (0.649-0.934)	**1.02** (0.852-1.23)	**1.22** (1.01-1.49)	**1.50** (1.20-1.90)	**1.72** (1.34-2.23)	**1.95** (1.48-2.58)	**2.18** (1.61-2.98)	**2.50** (1.77-3.58)	**2.75** (1.87-4.08)
3-hr	**0.725** (0.608-0.873)	**0.947** (0.793-1.14)	**1.24** (1.04-1.50)	**1.49** (1.23-1.81)	**1.82** (1.46-2.31)	**2.09** (1.63-2.70)	**2.36** (1.79-3.13)	**2.64** (1.95-3.61)	**3.03** (2.14-4.33)	**3.33** (2.27-4.94)
6-hr	**1.00** (0.839-1.20)	**1.30** (1.09-1.57)	**1.70** (1.42-2.06)	**2.04** (1.69-2.48)	**2.50** (1.99-3.16)	**2.86** (2.23-3.69)	**3.23** (2.45-4.28)	**3.61** (2.67-4.94)	**4.14** (2.93-5.92)	**4.56** (3.10-6.76)
12-hr	**1.27** (1.06-1.53)	**1.66** (1.39-2.00)	**2.18** (1.82-2.64)	**2.62** (2.17-3.19)	**3.22** (2.57-4.07)	**3.69** (2.88-4.78)	**4.18** (3.18-5.55)	**4.69** (3.46-6.42)	**5.39** (3.81-7.72)	**5.95** (4.05-8.83)
24-hr	**1.61** (1.42-1.86)	**2.13** (1.88-2.47)	**2.84** (2.50-3.29)	**3.42** (2.99-3.99)	**4.23** (3.58-5.10)	**4.87** (4.04-5.99)	**5.53** (4.47-6.97)	**6.22** (4.90-8.06)	**7.18** (5.43-9.69)	**7.94** (5.81-11.1)
2-day	**1.93** (1.70-2.23)	**2.59** (2.29-2.99)	**3.48** (3.06-4.03)	**4.22** (3.68-4.93)	**5.24** (4.44-6.33)	**6.05** (5.02-7.45)	**6.89** (5.58-8.69)	**7.77** (6.12-10.1)	**8.99** (6.80-12.1)	**9.96** (7.29-13.9)
3-day	**2.14** (1.89-2.47)	**2.89** (2.56-3.34)	**3.91** (3.45-4.54)	**4.76** (4.16-5.56)	**5.95** (5.03-7.17)	**6.88** (5.70-8.47)	**7.84** (6.35-9.88)	**8.86** (6.98-11.5)	**10.3** (7.77-13.8)	**11.4** (8.33-15.9)
4-day	**2.33** (2.06-2.69)	**3.18** (2.80-3.67)	**4.32** (3.80-5.00)	**5.27** (4.60-6.15)	**6.59** (5.58-7.95)	**7.64** (6.33-9.40)	**8.72** (7.06-11.0)	**9.86** (7.77-12.8)	**11.4** (8.66-15.4)	**12.7** (9.30-17.7)
7-day	**2.64** (2.34-3.05)	**3.64** (3.22-4.21)	**5.00** (4.40-5.79)	**6.13** (5.35-7.16)	**7.71** (6.52-9.30)	**8.96** (7.43-11.0)	**10.3** (8.30-12.9)	**11.6** (9.16-15.1)	**13.5** (10.2-18.2)	**15.0** (11.0-21.0)
10-day	**2.84** (2.51-3.28)	**3.93** (3.47-4.55)	**5.42** (4.77-6.28)	**6.67** (5.82-7.79)	**8.41** (7.12-10.1)	**9.79** (8.12-12.1)	**11.2** (9.09-14.2)	**12.8** (10.0-16.5)	**14.9** (11.3-20.1)	**16.6** (12.1-23.1)
20-day	**3.34** (2.96-3.86)	**4.66** (4.12-5.39)	**6.47** (5.70-7.49)	**7.99** (6.98-9.33)	**10.1** (8.57-12.2)	**11.8** (9.81-14.6)	**13.6** (11.0-17.2)	**15.5** (12.2-20.1)	**18.2** (13.7-24.5)	**20.3** (14.8-28.3)
30-day	**3.92** (3.46-4.52)	**5.45** (4.81-6.29)	**7.54** (6.64-8.74)	**9.32** (8.14-10.9)	**11.8** (10.0-14.3)	**13.8** (11.5-17.0)	**16.0** (12.9-20.1)	**18.2** (14.3-23.6)	**21.3** (16.1-28.8)	**23.8** (17.4-33.3)
45-day	**4.68** (4.13-5.40)	**6.43** (5.68-7.43)	**8.84** (7.79-10.2)	**10.9** (9.52-12.7)	**13.8** (11.7-16.7)	**16.2** (13.4-19.9)	**18.6** (15.1-23.5)	**21.3** (16.7-27.5)	**24.9** (18.9-33.6)	**27.9** (20.4-38.9)
60-day	**5.48** (4.84-6.32)	**7.43** (6.56-8.58)	**10.1** (8.91-11.7)	**12.4** (10.8-14.5)	**15.7** (13.3-18.9)	**18.3** (15.2-22.6)	**21.1** (17.1-26.6)	**24.1** (19.0-31.2)	**28.3** (21.4-38.1)	**31.6** (23.1-44.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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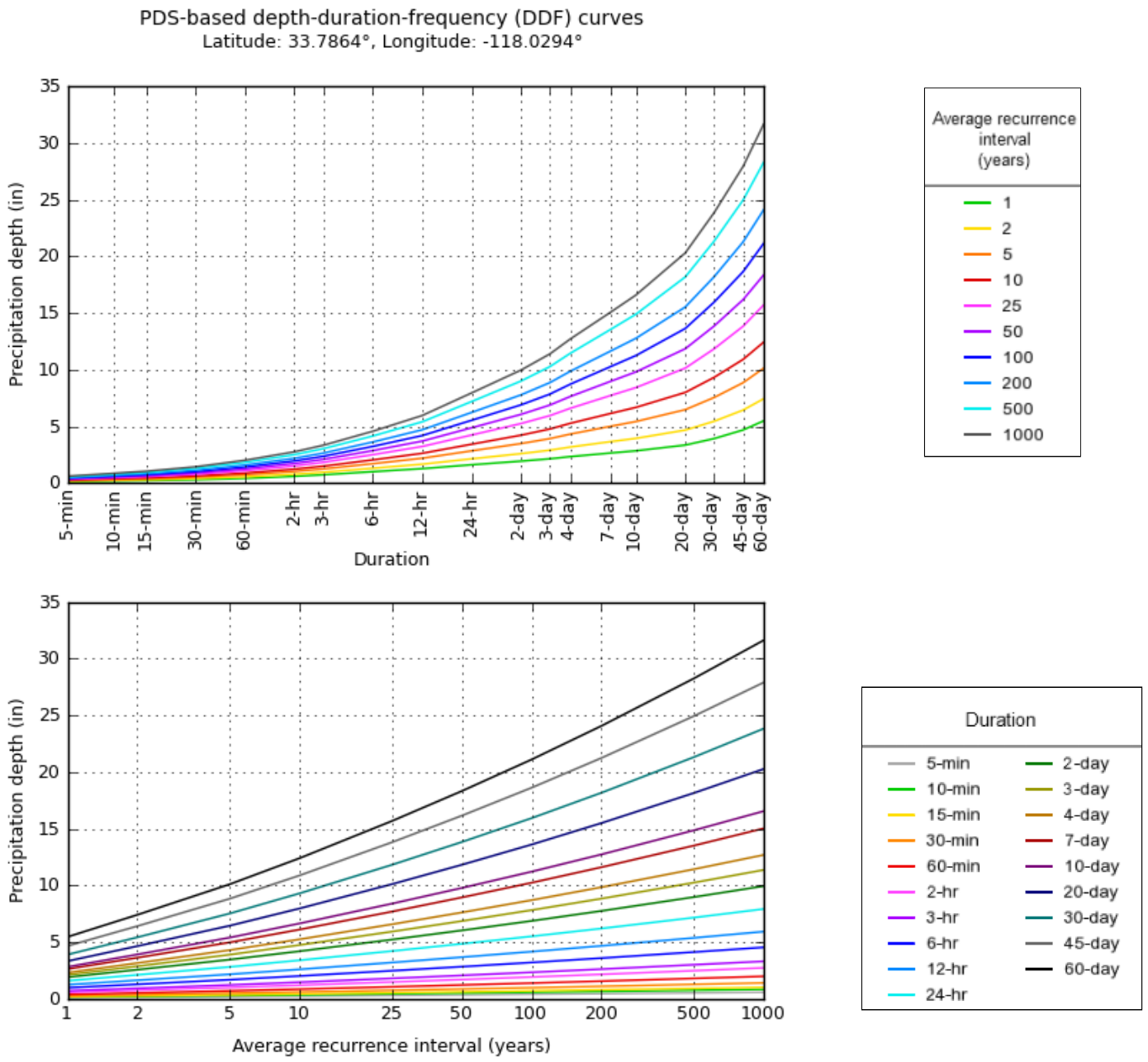
PF graphical



NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Thu Mar 19 21:35:15 2020

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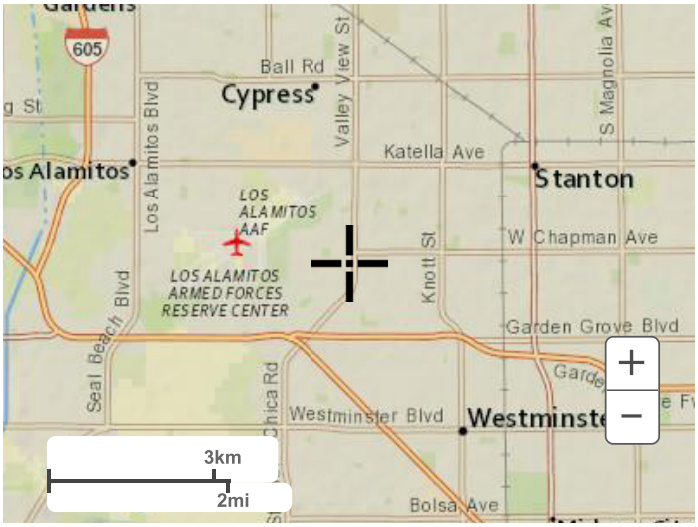
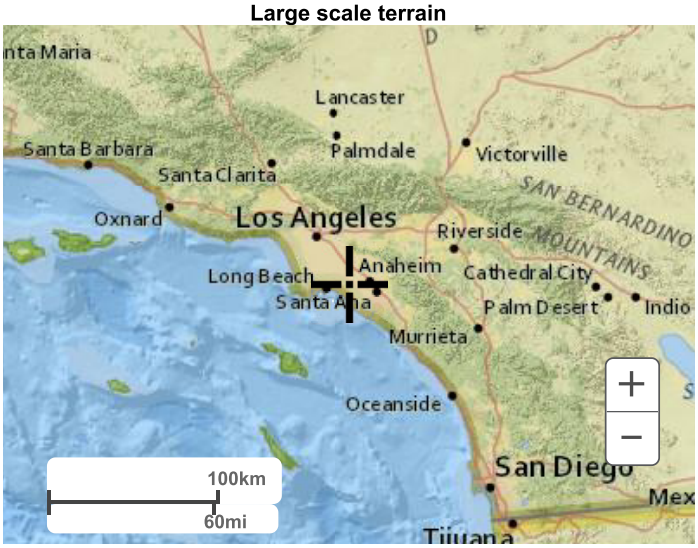
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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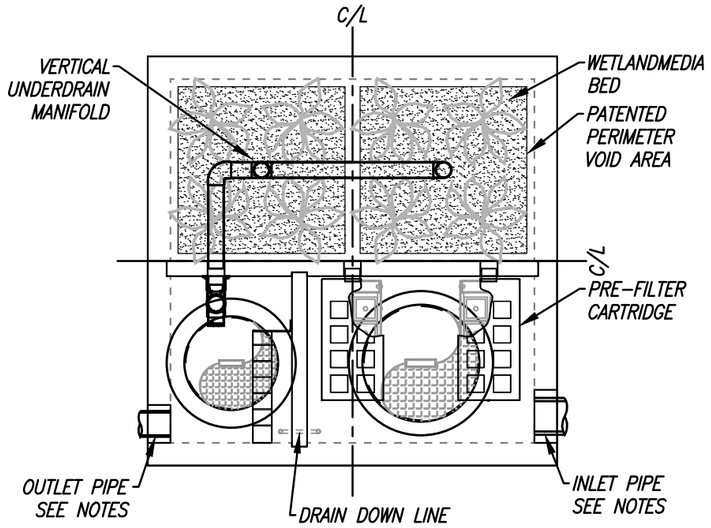
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

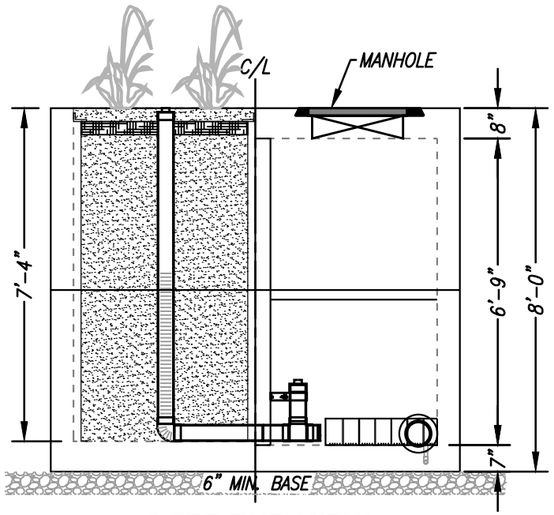
Attachment D

Modular Wetland Information

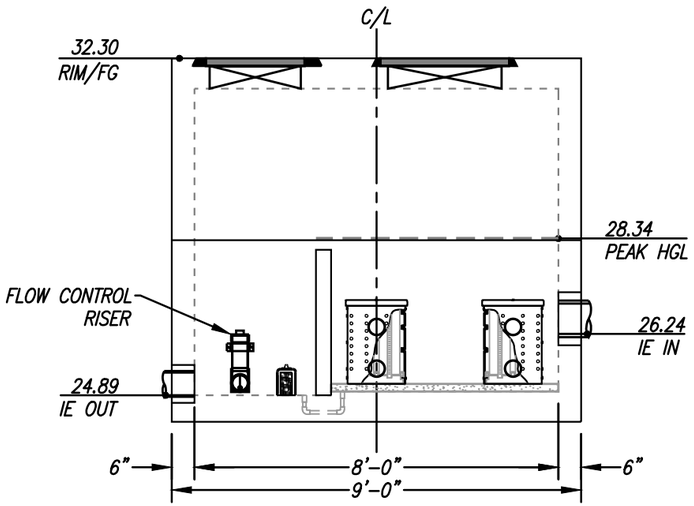
SITE SPECIFIC DATA			
PROJECT NUMBER		10749	
PROJECT NAME		STARLIGHT CINEMAS PHASE III	
PROJECT LOCATION		GARDEN GROVE, CA	
STRUCTURE ID		DMA 1	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.220	
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			1.14
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	26.24	PVC	8"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	24.89	PVC	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	32.30	32.30	32.30
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	ø30"	OPEN PLANTER	ø24"
WETLANDMEDIA VOLUME (CY)			7.43
ORIFICE SIZE (DIA. INCHES)			ø2.14"
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



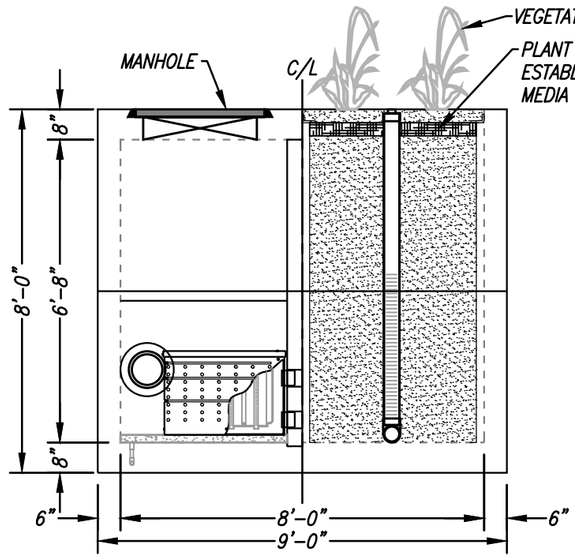
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

INTERNAL BYPASS DISCLOSURE:

THE DESIGN AND CAPACITY OF THE PEAK CONVEYANCE METHOD TO BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD. HGL(S) AT PEAK FLOW SHALL BE ASSESSED TO ENSURE NO UPSTREAM FLOODING. PEAK HGL AND BYPASS CAPACITY SHOWN ON DRAWING ARE USED FOR GUIDANCE ONLY.

TREATMENT FLOW (CFS)	0.220
OPERATING HEAD (FT)	3.2
PRETREATMENT LOADING RATE (GPM/SF)	1.9
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MWS-L-8-8-7'-4"-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

3/24/20WINDOLFRY

SITE SPECIFIC DATA			
PROJECT NUMBER		10749	
PROJECT NAME		STARLIGHT CINEMAS PHASE III	
PROJECT LOCATION		GARDEN GROVE, CA	
STRUCTURE ID		DMA 2	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.260	
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			1.34
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	27.39	PVC	8"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	26.04	PVC	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	31.50	31.50	31.50
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	2EA ø30"	OPEN PLANTER	ø30"
WETLANDMEDIA VOLUME (CY)			8.18
ORIFICE SIZE (DIA. INCHES)			ø2.47"
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
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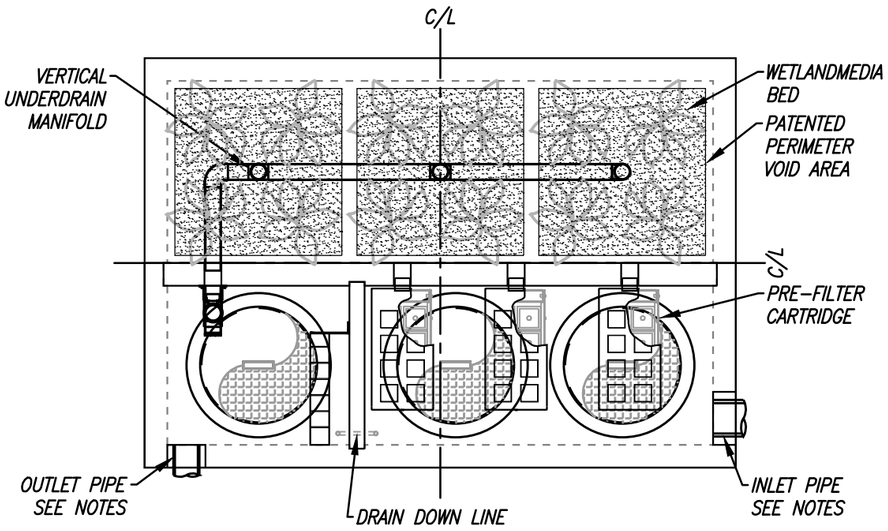
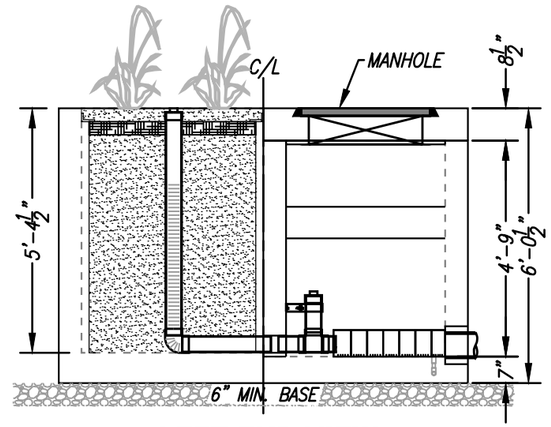
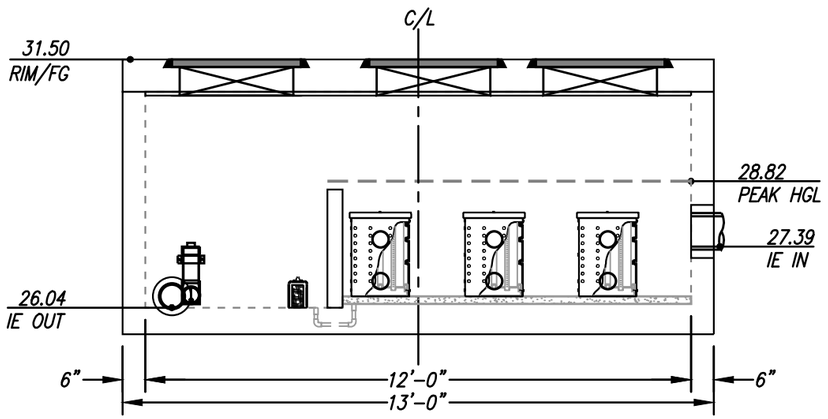


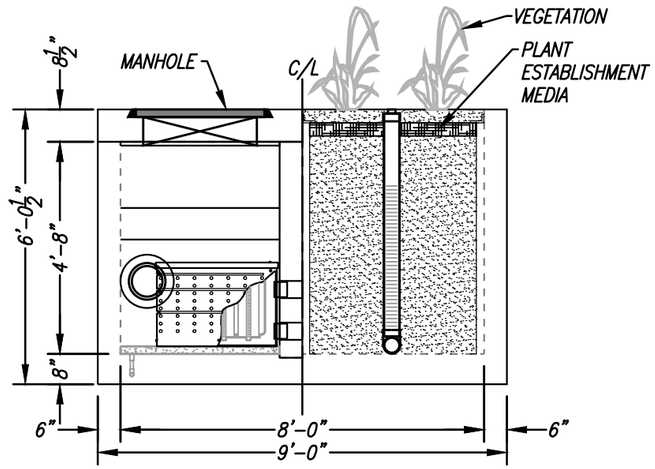
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

INTERNAL BYPASS DISCLOSURE:

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TREATMENT FLOW (CFS)	0.260
OPERATING HEAD (FT)	2.6
PRETREATMENT LOADING RATE (GPM/SF)	1.5
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS

Bio Clean
A Forterra Company

MWS-L-8-12-5'-4.5"-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

3/24/20WOOLERY

Bio Clean

A Forterra Company

Modular Wetlands® System Linear

A Stormwater Biofiltration Solution

OVERVIEW

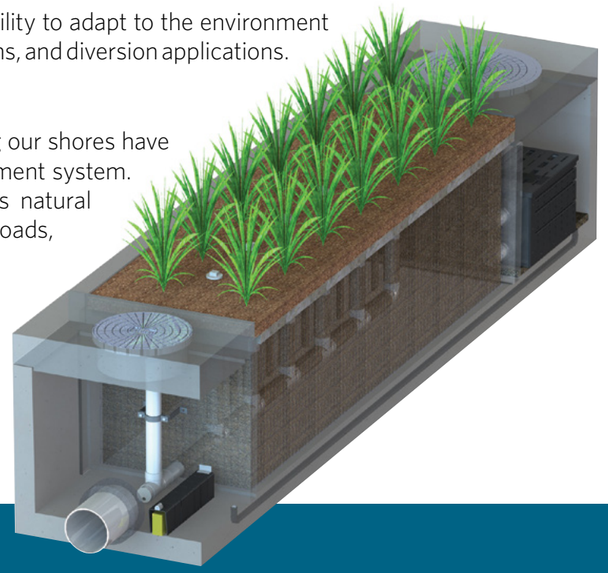
The Bio Clean Modular Wetlands® System Linear (MWS Linear) represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands System Linear incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.

The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as cities grow and develop, our environment's natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature's presence in urban areas, and rejuvenating waterways with the MWS Linear.



PERFORMANCE

The Modular Wetlands® System Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the MWS Linear has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the MWS Linear harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	**69%** REMOVAL OF TOTAL ZINC	**38%** REMOVAL OF DISSOLVED COPPER	**64%** REMOVAL OF TOTAL PHOSPHORUS	
45% REMOVAL OF NITROGEN	**50%** REMOVAL OF TOTAL COPPER	**95%** REMOVAL OF MOTOR OIL	**67%** REMOVAL OF ORTHO PHOSPHORUS	**85%** REMOVAL OF TSS

APPROVALS

The Modular Wetlands® System Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.

Washington State Department of Ecology TAPE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

California Water Resources Control Board, Full Capture Certification

The Modular Wetlands® System is the first biofiltration system to receive certification as a full capture trash treatment control device.

Virginia Department of Environmental Quality, Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.

Maryland Department of the Environment, Approved ESD

Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.

MASTEP Evaluation

The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.

Rhode Island Department of Environmental Management, Approved BMP

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

Texas Commission on Environmental Quality

Atlanta Regional Commission

ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The Modular Wetlands® System Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

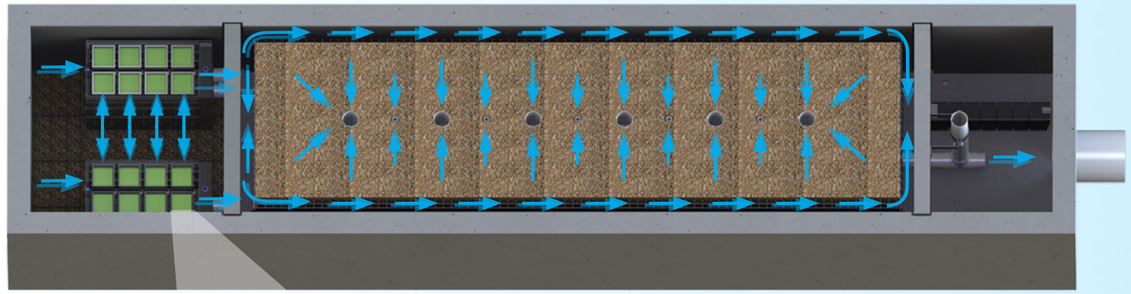


Figure 2,
Top View

2x to 3x more surface area than traditional downward flow bioretention systems.

1 PRETREATMENT

SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter boxes
- Designed for easy maintenance access

PRE-FILTER BOXES

- Over 25 sq. ft. of surface area per box
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber

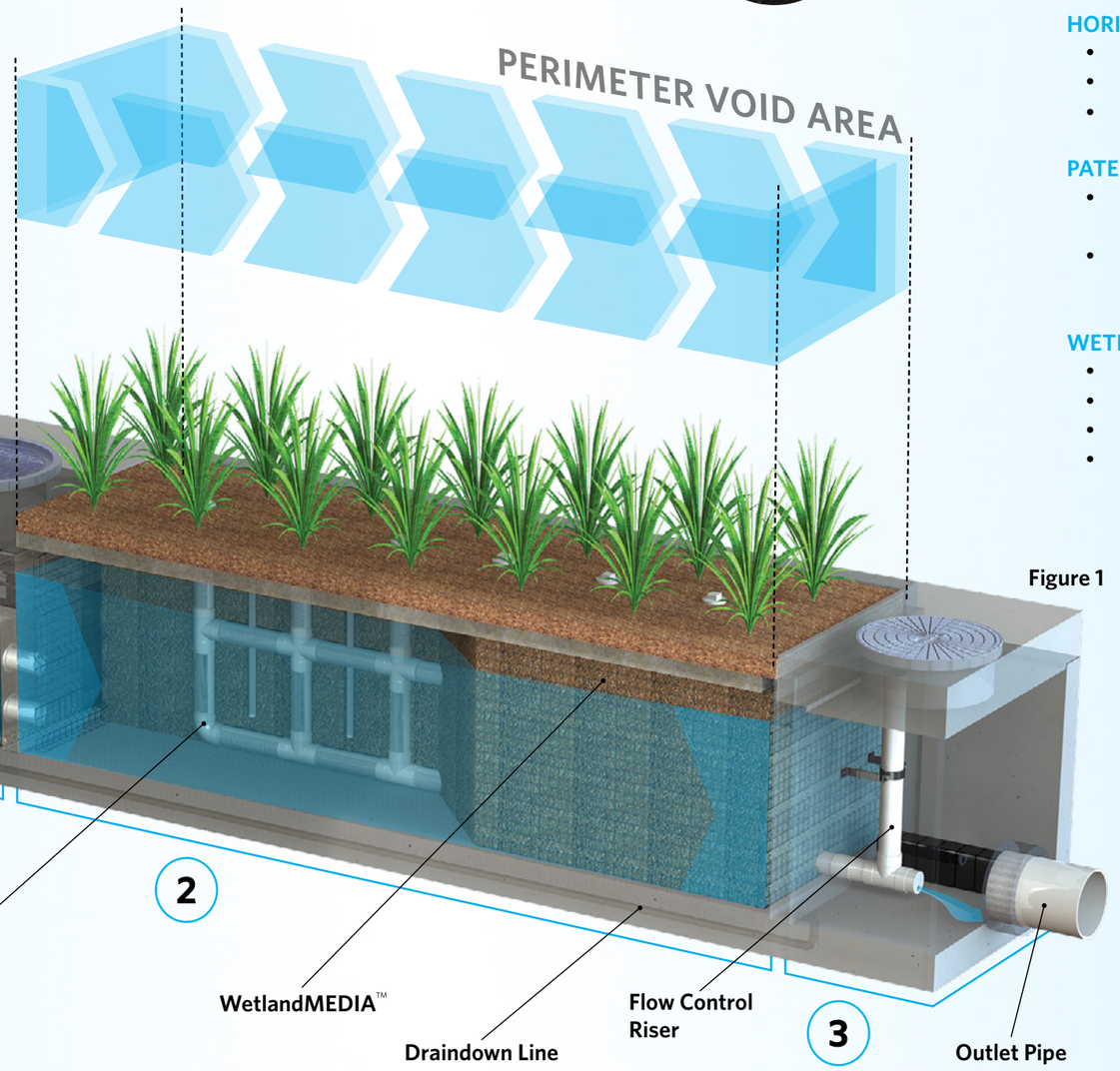


Figure 1

2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

FLOW CONTROL

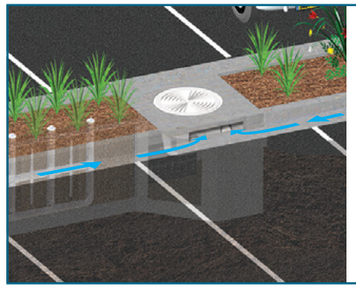
- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated

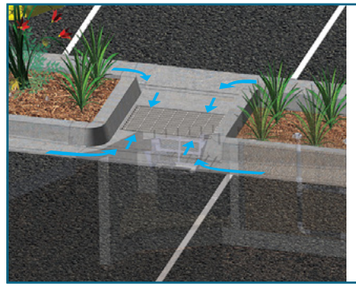
CONFIGURATIONS

The Modular Wetlands® System Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



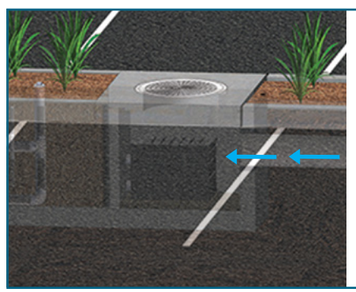
CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

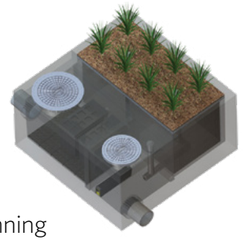
The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/ bioretention systems. Another benefit of the "pipe-in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

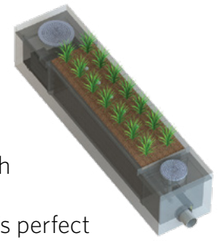
ORIENTATIONS

SIDE-BY-SIDE



The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

END-TO-END



The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.

BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

EXTERNAL DIVERSION WEIR STRUCTURE

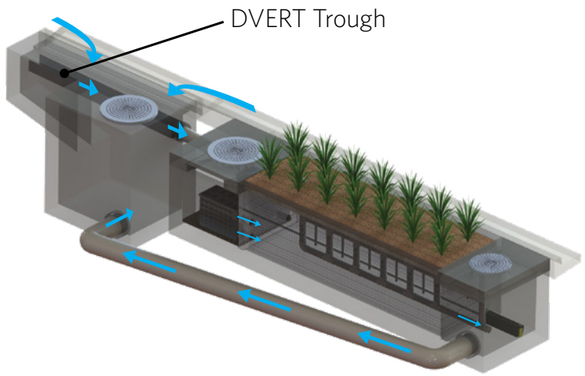
This traditional offline diversion method can be used with the Modular Wetlands® System Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® System Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels



them over to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the system to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements, and since it is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

MODEL #	DIMENSIONS	WETLANDMEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4′ x 4′	23	0.052
MWS-L-4-6	4′ x 6′	32	0.073
MWS-L-4-8	4′ x 8′	50	0.115
MWS-L-4-13	4′ x 13′	63	0.144
MWS-L-4-15	4′ x 15′	76	0.175
MWS-L-4-17	4′ x 17′	90	0.206
MWS-L-4-19	4′ x 19′	103	0.237
MWS-L-4-21	4′ x 21′	117	0.268
MWS-L-6-8	7′ x 9′	64	0.147
MWS-L-8-8	8′ x 8′	100	0.230
MWS-L-8-12	8′ x 12′	151	0.346
MWS-L-8-16	8′ x 16′	201	0.462
MWS-L-8-20	9′ x 21′	252	0.577
MWS-L-8-24	9′ x 25′	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

VOLUME-BASED DESIGNS

HORIZONTAL FLOW BIOFILTRATION ADVANTAGE

MODULAR WETLANDS® SYSTEM LINEAR WITH URBANPOND™ PRESTORAGE

In the example above, the Modular Wetlands® System Linear is installed downstream of the UrbanPond storage system. The MWS Linear is designed for the water quality volume and will treat and discharge the required volume within local draindown time requirements. The MWS Linear's unique horizontal flow design, gives it benefits no other biofilter has - the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The system's horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points.

UrbanPond
Single and Double Modules

DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the MWS Linear, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- MEETS LID REQUIREMENTS
- BUILT-IN ORIFICE CONTROL STRUCTURE
- WORKS WITH DEEP INSTALLATIONS

APPLICATIONS

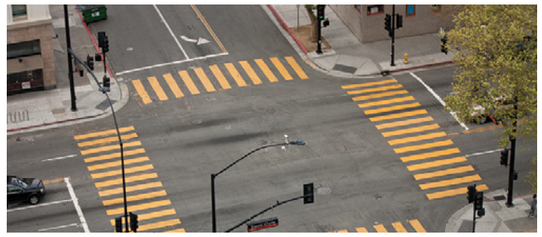
The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.

INDUSTRIAL

Many states enforce strict regulations for discharges from industrial sites. The MWS Linear has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.

RESIDENTIAL

Low to high density developments can benefit from the versatile design of the MWS Linear. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



STREETS

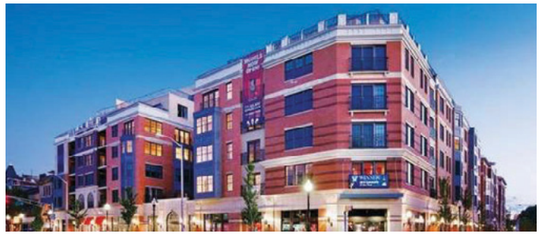
Street applications can be challenging due to limited space. The MWS Linear is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.

PARKING LOTS

Parking lots are designed to maximize space and the Modular Wetlands'® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.

COMMERCIAL

Compared to bioretention systems, the MWS Linear can treat far more area in less space, meeting treatment and volume control requirements.



MIXED USE

The MWS Linear can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:

• Agriculture • Reuse • Low Impact Development • Waste Water

PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the MWS Linear, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.

A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION

The Modular Wetlands® System Linear is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

MAINTENANCE

Reduce your maintenance costs, man hours, and materials with the Modular Wetlands® System Linear. Unlike other biofiltration systems that provide no pretreatment, the MWS Linear is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter boxes is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.

Bio Clean
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biocleanenvironmental.com

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XIV.5. Biotreatment BMP Fact Sheets (BIO)

Conceptual criteria for biotreatment BMP selection, design, and maintenance are contained in **Appendix XII**. These criteria are generally applicable to the design of biotreatment BMPs in Orange County and BMP-specific guidance is provided in the following fact sheets. [24]

*Note: Biotreatment BMPs shall be designed to provide the maximum feasible infiltration and ET based on criteria contained in **Appendix XI.2**.*

BIO-1: Bioretention with Underdrains

Bioretention stormwater treatment facilities are landscaped shallow depressions that capture and filter stormwater runoff. These facilities function as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. The facilities normally consist of a ponding area, mulch layer, planting soils, and plants. As stormwater passes down through the planting soil, pollutants are filtered, adsorbed, biodegraded, and sequestered by the soil and plants. Bioretention with an underdrain are utilized for areas with low permeability native soils or steep slopes where the underdrain system that routes the treated runoff to the storm drain system rather than depending entirely on infiltration. **Bioretention must be designed without an underdrain** in areas of high soil permeability.

Also known as:

- *Rain gardens with underdrains*
- *Vegetated media filter*
- *Downspout planter boxes*

Bioretention
Source: Geosyntec Consultants

Feasibility Screening Considerations

- If there are no hazards associated with infiltration (such as groundwater concerns, contaminant plumes or geotechnical concerns), **bioinfiltration facilities**, which achieve partial infiltration, should be used to maximize infiltration.

[24] Not all BMPs presented in this section are considered "biofiltration BMPs" under the South Orange County Permit Area. Biofiltration BMPs are vegetated treat-and-release BMPs that filter stormwater through amended soil media that is biologically active, support plant growth, and also promote infiltration and/or evapotranspiration. For projects in South Orange County, the total volume of storage in surface ponding and pores spaces is required to be at least 75% of the remaining DCV that the biofiltration BMP is designed to address. This prevents significant down-sizing of BMPs which otherwise may be possible via routing calculations. Biotreatment BMPs that do not meet this definition are not considered to be LID BMPs, but may be used as treatment control or pre-treatment BMPs. See Section III.7 and Worksheet SOC-1 for guidance.

- Bioretention with underdrain facilities should be lined if contaminant plumes or geotechnical concerns exist. If high groundwater is the reason for infiltration infeasibility, bioretention facilities with underdrains do not need to be lined.

Opportunity Criteria

- Land use may include commercial, residential, mixed use, institutional, and subdivisions. Bioretention may also be applied in parking lot islands, cul-de-sacs, traffic circles, road shoulders, road medians, and next to buildings in planter boxes.
- Drainage area is ≤ 5 acres.
- Area is available for infiltration.
- Site must have adequate relief between land surface and the stormwater conveyance system to permit vertical percolation through the soil media and collection and conveyance in underdrain to stormwater conveyance system.

OC-Specific Design Criteria and Considerations

☐ Ponding depth should not exceed 18 inches; fencing may be required if ponding depth is greater than 6 inches to mitigate drowning.

☐ The minimum soil depth is 2 feet (3 feet is preferred).

☐ The maximum drawdown time of the bioretention ponding area is 48 hours. The maximum drawdown time of the planting media and gravel drainage layer is 96 hours, if applicable.

☐ Infiltration pathways may need to be restricted due to the close proximity of roads, foundations, or other infrastructure. A geomembrane liner, or other equivalent water proofing, may be placed along the vertical walls to reduce lateral flows. This liner should have a minimum thickness of 30 mils.

☐ If infiltration in bioretention location is hazardous due to groundwater or geotechnical concerns, a geomembrane liner must be installed at the base of the bioretention facility. This liner should have a minimum thickness of 30 mils.

☐ The planting media placed in the cell shall be designed per the recommendations contained in MISC-1: Planting/Storage Media

☐ Plant materials should be tolerant of summer drought, ponding fluctuations, and saturated soil conditions for 48 hours; native place species and/or hardy cultivars that are not invasive and do not require chemical inputs should be used to the maximum extent feasible

☐ The bioretention area should be covered with 2-4 inches (average 3 inches) or mulch at the start and an additional placement of 1-2 inches of mulch should be added annually.

☐ Underdrain should be sized with a 6 inch minimum diameter and have a 0.5% minimum slope. Underdrain should be slotted polyvinyl chloride (PVC) pipe; underdrain pipe should be more than 5 feet from tree locations (if space allows).

☐ A gravel blanket or bedding is required for the underdrain pipe(s). At least 0.5 feet of washed aggregate must be placed below, to the top, and to the sides of the underdrain pipe(s).

☐ An overflow device is required at the top of the bioretention area ponding depth.

☐ Dispersed flow or energy dissipation (i.e. splash rocks) for piped inlets should be provided at basin inlet to prevent erosion.

☐ Ponding area side slopes shall be no steeper than 3:1 (H:V) unless designed as a planter box BMP with appropriate consideration for trip and fall hazards.

Simple Sizing Method for Bioretention with Underdrain

If the Simple Design Capture Volume Sizing Method described in **Appendix III.3.1** is used to size a bioretention with underdrain facility, the user selects the basin depth and then determines the appropriate surface area to capture the DCV. The sizing steps are as follows:

Step 1: Determine DCV

Calculate the DCV using the Simple Design Capture Volume Sizing Method described in **Appendix III.3.1**.

Step 2: Verify that the Ponding Depth will Draw Down within 48 Hours

The ponding area drawdown time can be calculated using the following equation:

$DD_P = (d_P / K_{MEDIA}) \times 12$ in/ft

Where:

DD_P = time to drain ponded water, hours

d_P = depth of ponding above bioretention area, ft (not to exceed 1.5 ft)

K_{MEDIA} = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; K_{MEDIA} of 2.5 in/hr should be used unless other information is available)

If the drawdown time exceeds 48 hours, adjust ponding depth and/or media infiltration rate until 48 hour drawdown time is achieved.

Step 3: Determine the Depth of Water Filtered During Design Capture Storm

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

$d_{FILTERED}$ = Minimum [$((K_{MEDIA} \times T_{ROUTING})/12)$, d_P]

Where:

$d_{FILTERED}$ = depth of water that may be considered to be filtered during the design storm event, ft

K_{MEDIA} = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; K_{MEDIA} of 2.5 in/hr should be used unless other information is available)

$T_{ROUTING}$ = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3 hours. If the designer desires to account for further routing effects, the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs (See **Appendix III.3.2**) should be used.

d_P = depth of ponding above bioretention area, ft (not to exceed 1.5 ft)

Step 4: Determine the Facility Surface Area

$A = DCV/ (d_P + d_{FILTERED})$

Where:

A = required area of bioretention facility, sq-ft

DCV = design capture volume, cu-ft

$d_{FILTERED}$ = depth of water that may be considered to be filtered during the design storm event, ft

d_P = depth of ponding above bioretention area, ft (not to exceed 1.5 ft)

In South Orange County, the provided ponding plus pore volume must be checked to demonstrate that it is greater than 0.75 of the remaining DCV that this BMP is designed to address. See Section III.7 and Worksheet SOC-1.

Capture Efficiency Method for Bioretention with Underdrains

If the bioretention geometry has already been defined and the user wishes to account more explicitly for routing, the user can determine the required footprint area using the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs (See **Appendix III.3.2**) to determine the fraction of the DCV that must be provided to manage 80 percent of average annual runoff volume. This method accounts for drawdown time different than 48 hours.

Step 1: Determine the drawdown time associated with the selected basin geometry

$DD = (d_p / K_{DESIGN}) \times 12$ in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

d_P = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

K_{DESIGN} = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise proposed)

If drawdown is less than 3 hours, the drawdown time should be rounded to 3 hours or the Capture Efficiency Method for Flow-based BMPs (See **Appendix III.3.3**) shall be used.

Step 2: Determine the Required Adjusted DCV for this Drawdown Time

Use the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs (See **Appendix III.3.2**) to calculate the fraction of the DCV the basin must hold to achieve 80 percent capture of average annual stormwater runoff volume based on the basin drawdown time calculated above.

Step 3: Determine the Basin Infiltrating Area Needed

The required infiltrating area (i.e. the surface area of the top of the media layer) can be calculated using the following equation:

$A = \text{Design Volume} / d_p$

Where:

A = required infiltrating area, sq-ft (measured at the media surface)

Design Volume = fraction of DCV, adjusted for drawdown, cu-ft (see Step 2)

d_p = ponding depth of water stored in bioretention area, ft (from Step 1)

This does not include the side slopes, access roads, etc. which would increase bioretention footprint. If the area required is greater than the selected basin area, adjust surface area or adjust ponding depth and recalculate required area until the required area is achieved.

In South Orange County, the provided ponding plus pore volume must be checked to demonstrate that it is greater than 0.75 of the remaining DCV that this BMP is designed to address. See Section III.7 and Worksheet SOC-1.

Configuration for Use in a Treatment Train

- Bioretention areas may be preceeded in a treatment train by HSCs in the drainage area, which would reduce the required design volume of the bioretention cell. For example, bioretention could be used to manage overflow from a cistern.
- Bioretention areas can be used to provide pretreatment for underground infiltration systems.

Additional References for Design Guidance

- CASQA BMP Handbook for New and Redevelopment: http://www.cabmphandbooks.com/Documents/Development/TC-32.pdf

- SMC LID Manual (pp 68):
  http://www.lowimpactdevelopment.org/guest75/pub/All_Projects/SoCal_LID_Manual/SoCalLID_Manual_FINAL_040910.pdf
- Los Angeles County Stormwater BMP Design and Maintenance Manual, Chapter 5:
  http://dpw.lacounty.gov/DES/design_manuals/StormwaterBMPDesignandMaintenance.pdf
- San Diego County LID Handbook Appendix 4 (Factsheet 7):
  http://www.sdcounty.ca.gov/dplu/docs/LID-Appendices.pdf

  Los Angeles Unified School District (LAUSD) Stormwater Technical Manual, Chapter 4:
  http://www.laschools.org/employee/design/fs-studies-and-reports/download/white_paper_report_material/Storm_Water_Technical_Manual_2009-opt-red.pdf?version_id=76975850
- County of Los Angeles Low Impact Development Standards Manual, Chapter 5:
  http://dpw.lacounty.gov/wmd/LA_County_LID_Manual.pdf

Attachment E

Exhibits

SUBJECT TO FURTHER REVISION

PROJECT LOCATION

D=0.8 INCHES

LOS ANGELES COUNTY
ORANGE COUNTY
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY

0.65
0.7
0.75
0.8
0.85
0.9
0.95
1
1.05

LEGEND

- Orange County Precipitation Stations
- 24 Hour, 85th Percentile Rainfall (Inches)
- 24 Hour, 85th Percentile Rainfall (Inches) - Extrapolated
- City Boundaries

Rainfall Zones

Design Capture Storm Depth (inches)

- 0.65"
- 0.7
- 0.75
- 0.80
- 0.85
- 0.90
- 0.95
- 1.00
- 1.10"

Note: Events defined as 24-hour periods (calendar days) with greater than 0.1 inches of rainfall.
For areas outside of available data coverage, professional judgment shall be applied.

0 3 6 12 Kilometers
0 1.8 3.6 7.2 Miles

TITLE: RAINFALL ZONES

JOB: ORANGE COUNTY TECHNICAL GUIDANCE DOCUMENT — ORANGE CO. CA

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/22/10
JOB NO.	9526-E

PACE Advanced Water Engineering

FIGURE XVI-1

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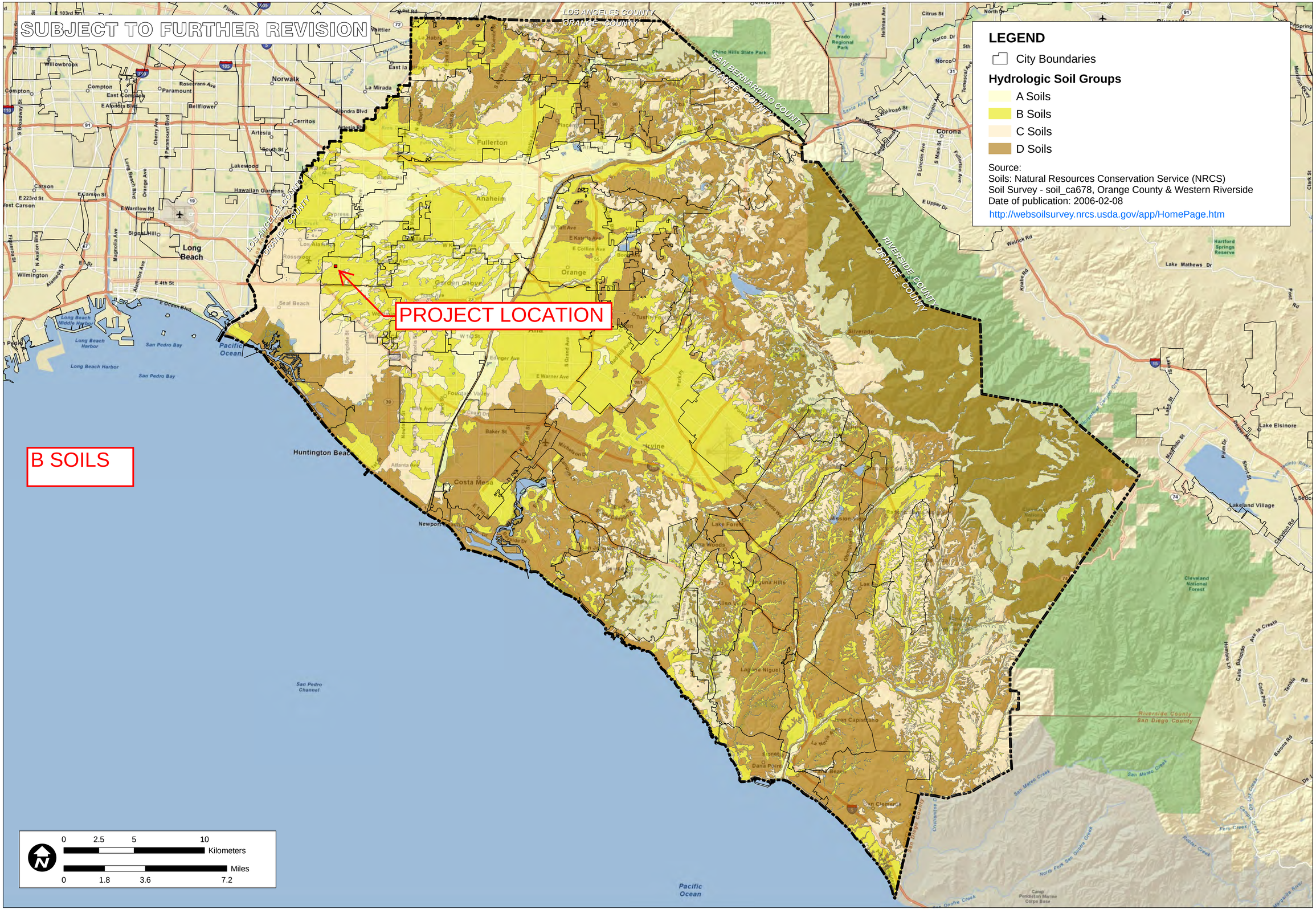
SUBJECT TO FURTHER REVISION



LEGEND

City Boundaries

Hydrologic Soil Groups

- A Soils
- B Soils
- C Soils
- D Soils

Source:
Soils: Natural Resources Conservation Service (NRCS)
Soil Survey - soil_ca678, Orange County & Western Riverside
Date of publication: 2006-02-08
http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

0 2.5 5 10 Kilometers

0 1.8 3.6 7.2 Miles

TITLE

NRCS HYDROLOGIC SOILS GROUPS

ORANGE COUNTY INFILTRATION STUDY

CA

JOB

ORANGE CO.

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE

XVI-2a

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-2a_HydroSoils_20110215.mxd

SUBJECT TO FURTHER REVISION

PROJECT LOCATION

SITE NOT LOCATED IN A POTENTIAL LANDSLIDE AREA

LOS ANGELES COUNTY
ORANGE COUNTY

SAN BERNARDINO COUNTY
ORANGE COUNTY

RIVERSIDE COUNTY
ORANGE COUNTY

LOS ANGELES COUNTY
ORANGE COUNTY

LEGEND

City Boundaries

Seismic Hazards

Potential Landslide Area

Source:
Seismic Hazard Zone Maps
Division of Mines and Geology, California Geology Survey,
Publication Date: 2005; Data Downloaded 02-09-2011

http://www.conservation.ca.gov/cgs/shzp/Pages/Index.aspx

0 2.5 5 10 Kilometers

0 1.8 3.6 7.2 Miles

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-2c_Landslides_20110215.mxd

TITLE
HYDROLOGIC SOIL GROUP
TYPE D NRCS SOIL SURVEY

ORANGE COUNTY
INFILTRATION STUDY

CA

JOB
ORANGE CO.

SCALE	1" = 1.25 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE
XVI-2c

SUBJECT TO FURTHER REVISION

LEGEND

- Depth To First Groundwater Contours
- City Boundaries
- OCWD Groundwater Basin Protection Boundary

Note: Data are not available for South Orange County at this time.

Source:
Sprotte, Fuller and Greenwood, 1980.
California Division of Mines and Geology;
California Geological Survey

LOS ANGELES COUNTY
ORANGE COUNTY

SAN BERNARDINO COUNTY
ORANGE COUNTY

RIVERSIDE COUNTY
ORANGE COUNTY

PROJECT LOCATION

~10 FT TO GROUNDWATER

INSIDE OCWD
GROUNDWATER
PROTECTION BOUNDARY

0 2 4 8 Kilometers

0 1.25 2.5 5 Miles

P:\95226E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\95226E_FigureXVI-2d_DepthToGroundwaterOverview_20110215.mxd

TITLE
NORTH ORANGE COUNTY
MAPPED DEPTH TO FIRST
GROUNDWATER

JOB
ORANGE COUNTY
INFILTRATION STUDY
ORANGE CO. CA

SCALE	1" = 1.25 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	95226-E

PACE
Advanced Water Engineering

FIGURE
XVI-2d

SUBJECT TO FURTHER REVISION

LOS ANGELES COUNTY
ORANGE COUNTY

SAN BERNARDINO COUNTY
ORANGE COUNTY

RIVERSIDE COUNTY
ORANGE COUNTY

LOS ANGELES COUNTY
ORANGE COUNTY

PROJECT LOCATION

LOCATED CLOSE TO BUT OUTSIDE 10 FT TO GROUNDWATER ZONE.

LEGEND

City Boundaries

OCWD Groundwater Basin Protection Boundary

Depth To Groundwater

<= 5'

5-10'

Note: Data are not available for South Orange County at this time.

Source:
Sprotte, Fuller and Greenwood, 1980.
California Division of Mines and Geology;
California Geological Survey

0 2 4 8 Kilometers

0 1.25 2.5 5 Miles

TITLE
NORTH ORANGE COUNTY
MAPPED SHALLOW GROUNDWATER

JOB
ORANGE CO.
INFILTRATION STUDY
CA

SCALE	1" = 1.25 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE
XVI-2e

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-2e_DepthToGroundwater15ft_20110215.mxd

SUBJECT TO FURTHER REVISION

PROJECT LOCATION

LOCATED IN OCWD GROUNDWATER BASIN PROTECTION BOUNDARY

LEGEND

- City Boundaries
- OCWD Groundwater Basin Protection Boundary

Plume Protection Boundaries

- North Basin Groundwater Protection Project
- South Basin Groundwater Protection Project
- El Toro Marine Base
- Tustin Marine Air Base
- Approximate Selenium Contamination Area

Note: Individual contamination sites are not plotted.
See State Water Resources Control Board Geotracker database (http://geotracker.waterboards.ca.gov),
Department of Toxic Substance Control Envirostor database (http://www.envirostor.dtsc.ca.gov) and other applicable sources for current listing of active contaminated sites.

Groundwater basin and plume protection boundaries for South Orange County are not shown on this exhibit at this time

0 2 4 8 Kilometers

0 1.25 2.5 5 Miles

TITLE: NORTH ORANGE COUNTY GROUNDWATER PROTECTION AREAS

ORANGE COUNTY INFILTRATION STUDY

JOB: ORANGE CO. CA

SCALE	1" = 1.25 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/22/10
JOB NO.	9526-E

PACE Advanced Water Engineering

FIGURE XVI-2f

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-2f_NorthOCGroundwaterProtectionAreasStreetMap_20110215.mxd

SUBJECT TO FURTHER REVISION

PROJECT LOCATION

NO CONSTRAINTS

LEGEND

- OCWD Groundwater Basin Protection Boundary
- City Boundaries

Infiltration Constraints

- 1 Constraint
- 2 Overlapping Constraints
- 3 Overlapping Constraints
- 4 Overlapping Constraints

Analysis Layers Included: 1. Hydrologic Soil Group D, 2. Landslide Hazard Zone, 3. Groundwater Protection Areas 4. Approximate Selinium Area, 5. Depth to Groundwater <= 5'

Note: Screening datasets are not exhaustive. The applicant should always conduct a review of available site-specific information relative to infiltration constraints as part of assessing the feasibility of stormwater infiltration.
Source;
Infiltration Constraint Analysis: PACE/Geosyntec

0 2.5 5 10 Kilometers

0 1.8 3.6 7.2 Miles

TITLE
INFILTRATION ANALYSIS
OVERLAPPING CONSTRAINT LOCATIONS

JOB
ORANGE COUNTY
INFILTRATION STUDY
ORANGE CO. CA

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/22/10
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE
XVI-2g

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-2g_InfiltrationFinal_20110215.mxd

Susceptibility

Potential Areas of Erosion, Habitat, & Physical Structure Susceptibility

Channel Type

- Earth (Unstable)
- Earth (Stabilized)
- Stabilized

Tidel Influence

- <= Mean High Water Line (4.28')

Water Body

- Basin
- Lake

Federal & Other Lands

- Seal Beach National Wildlife Refuge
- Airports/Military

San Gabriel-Coyote Creek

Los Alamitos Naval Air Station

Seal Beach Naval Weapons Station

Seal Beach National Wildlife Refuge

West Street Retarding Basin

Haster Retarding Basin

Newland Retarding Basin

Lake Huntington

John Wayne Airport

Newport Bay

Santa Ana River

PROJECT LOCATION

STABILZIED CHANNEL

LOCATED IN POTENTIAL AREA OF EROSION, HABITAT, & PYSICAL STRUCTURE SUSCEPTIBILITY

0 6,500 13,000 Feet

TITLE: SUSCEPTIBILITY ANALYIS ANAHEIM BAY- HUNTINGTON HARBOR

ORANGE COUNTY WATERSHED MASTER PLANNING

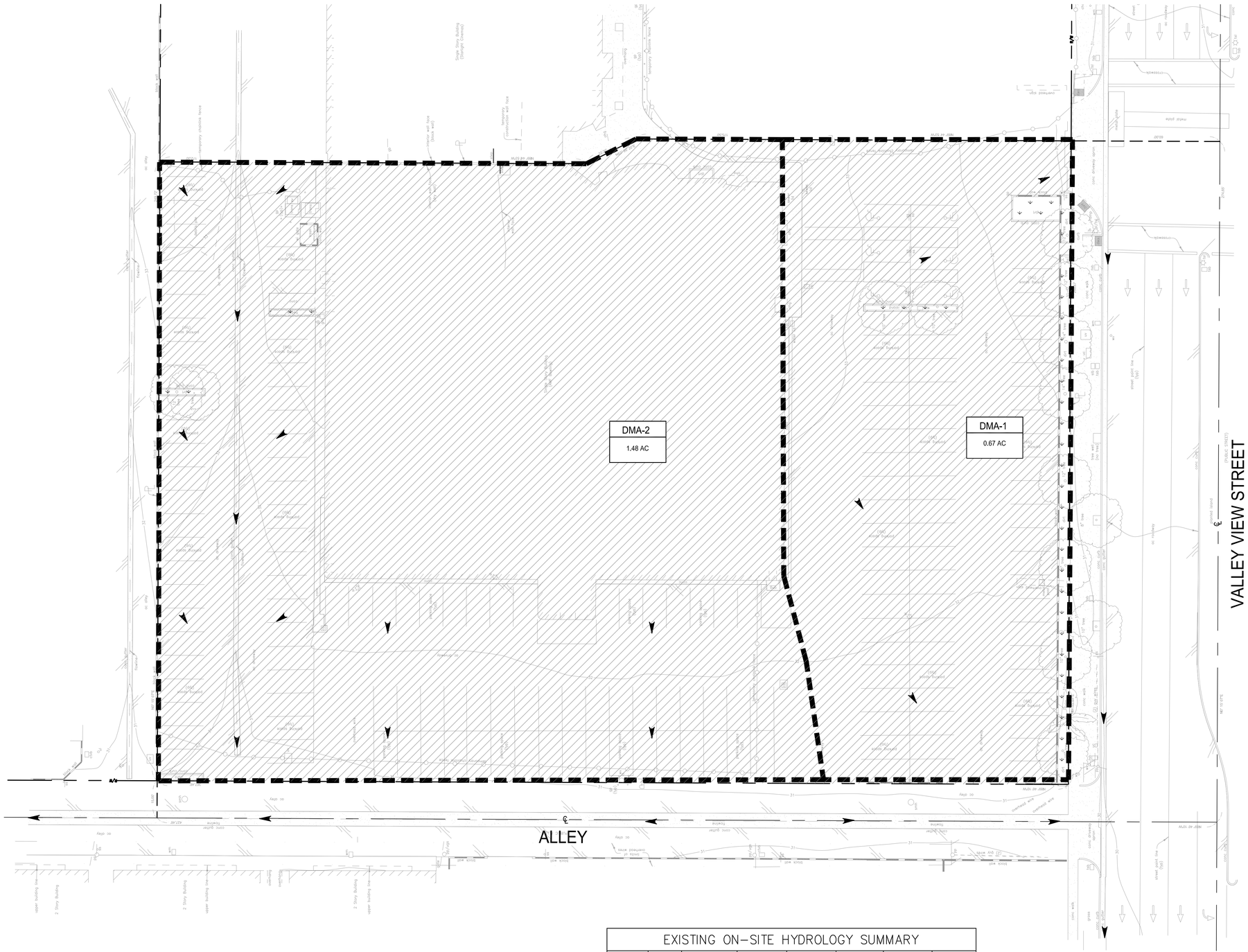
JOB: ORANGE CO. CA

SCALE	DESIGNED	DRAWING	CHECKED	DATE	JOB NO.
1" = 6500'	TH	TH	BMP	04/22/10	9526-E

PACE Advanced Water Engineering

FIGURE 2

P:\9526E\6-GIS\Mxds\Workspace\SusceptibleAnalysis_20100422\9526E_AnaheimBay_20100331.mxd



LEGEND

- PROPERTY LINE
- DRAINAGE AREA BOUNDARY (DMA)
- EXISTING FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- EXISTING PERVIOUS AREA

EXISTING ON-SITE HYDROLOGY SUMMARY							
TOTAL (FT^2)	TOTAL (AC)	IMPERVIOUS (FT^2)	IMPERVIOUS (AC)	IMPERVIOUS (%)	PERVIOUS (FT^2)	PERVIOUS (AC)	PERVIOUS (%)
DMA-1	0.67	28812.68	0.66	98.50	251.63	0.01	1.50
DMA-2	1.48	64,467.65	1.48	99.88	74.67	0.00	0.12
93,606.63	2.15	93,280.33	2.14	99.65	326.30	0.01	0.35

PLAN
SCALE: 1" = 20'-0"
0 10' 20' 40'
GRAPHIC SCALE

kpff
18400 Von Karman Ave., Suite 600
Irvine, CA 92612
O: 949.252.1022
F:949.252.8082
www.kpff.com

STARLIGHT CINEMAS

12111 VALLEY VIEW STREET
GARDEN GROVE CA 92845

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMO
No. 074768
Exp. 12/31/21
CIVIL
STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

DATE		ISSUED FOR:

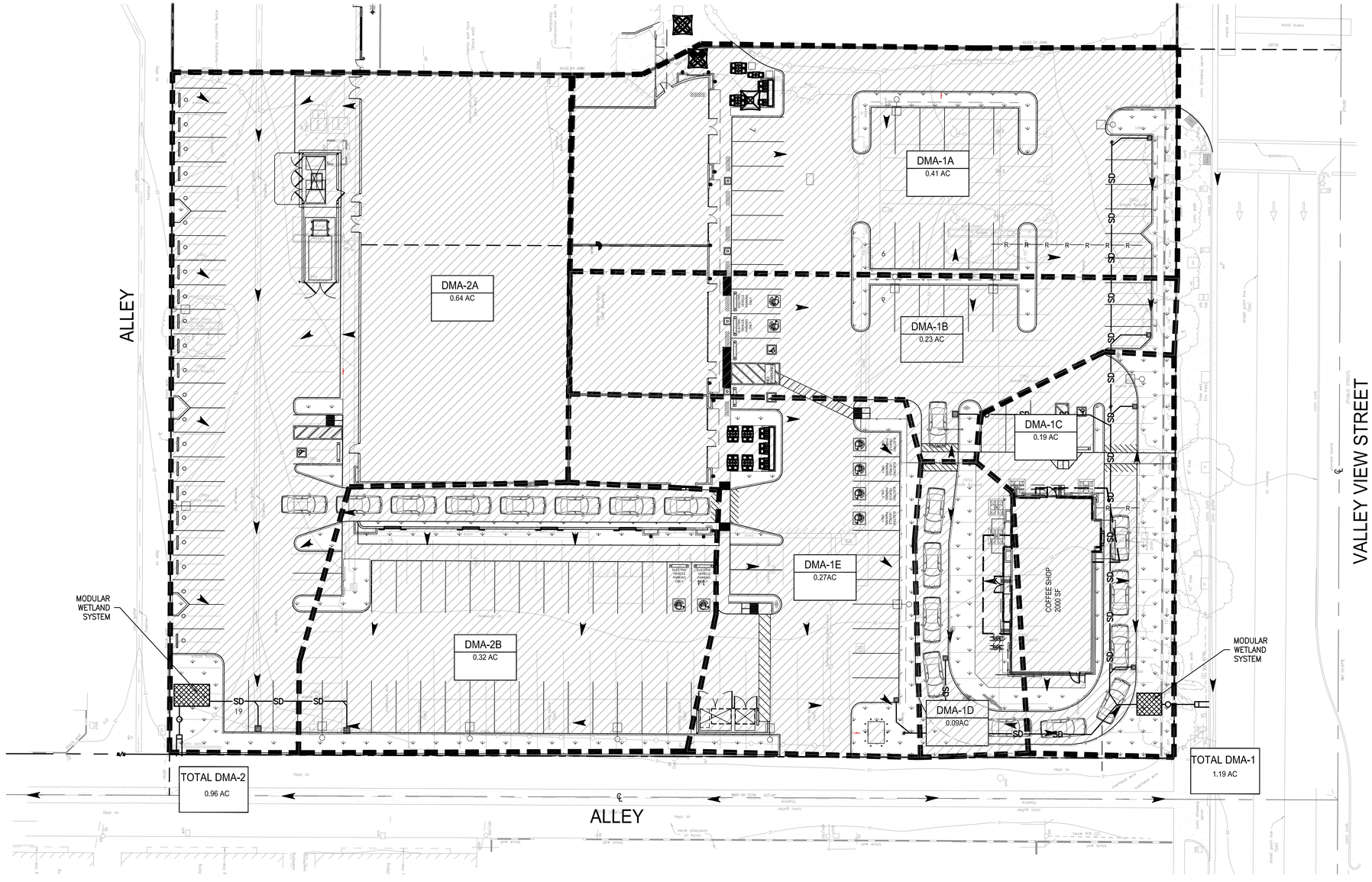
Date: 03-19-2020
Project Number: 1900064
Drawn By: TN
Checked By: RH
Scale: AS SPECIFIED

EXISTING HYDROLOGY EXHIBIT

SHEET:
EXHB 1

NOT FOR CONSTRUCTION

Drawing: P:\2019\1900064 -19- Starlight Cinemas Phase III\DWG\EXHIBIT\HYDROLOGY\C-EXHIB-EXST-MONO-24X36.dwg Last Saved: Tuesday, March 24, 2020 1:16:40 PM Last Plotted: Tuesday, March 24, 2020 1:17:09 PM By: Robyn Hume



LEGEND

- PROPERTY LINE
- DRAINAGE AREA BOUNDARY
- SD — PROPOSED STORM DRAIN LINE
- PROPOSED SURFACE RUNOFF
- PROPOSED CATCH BASIN
- MODULAR WETLAND SYSTEM
- PROPOSED IMPERVIOUS HARDSCAPE AREA
- PROPOSED PERVIOUS LANDSCAPE AREA

PROPOSED ON-SITE HYDROLOGY SUMMARY

	TOTAL (FT^2)	TOTAL (AC)	IMPERVIOUS (FT^2)	IMPERVIOUS (AC)	IMPERVIOUS (%)	PERVIOUS (FT^2)	PERVIOUS (AC)	PERVIOUS (%)	HCOC RUNOFF VOL (CF)
DMA-1	51836.40	1.19	44,264.45	1.02	85.39	7571.95	0.17	14.61	7,269
DMA-2	41817.60	0.96	37,590.52	0.86	88.75	4227.08	0.10	11.25	6,087
SITE	93654.00	2.15	81,854.97	1.88	87.40	11799.03	0.27	12.60	13,355

PLAN
SCALE: 1" = 20'-0"
0 10' 20' 40'
GRAPHIC SCALE

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STARLIGHT CINEMAS

12111 VALLEY VIEW STREET
GARDEN GROVE CA 92845

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMSI
No. C74768
Exp. 12/31/21
CIVIL
STATE OF CALIFORNIA

DATE		ISSUED FOR:

Date: 03-19-2020
Project Number: 1900064
Drawn By: TN
Checked By: RH
Scale: AS SPECIFIED

PROPOSED HYDROLOGY EXHIBIT

SHEET:
EXHB 1

NOT FOR CONSTRUCTION

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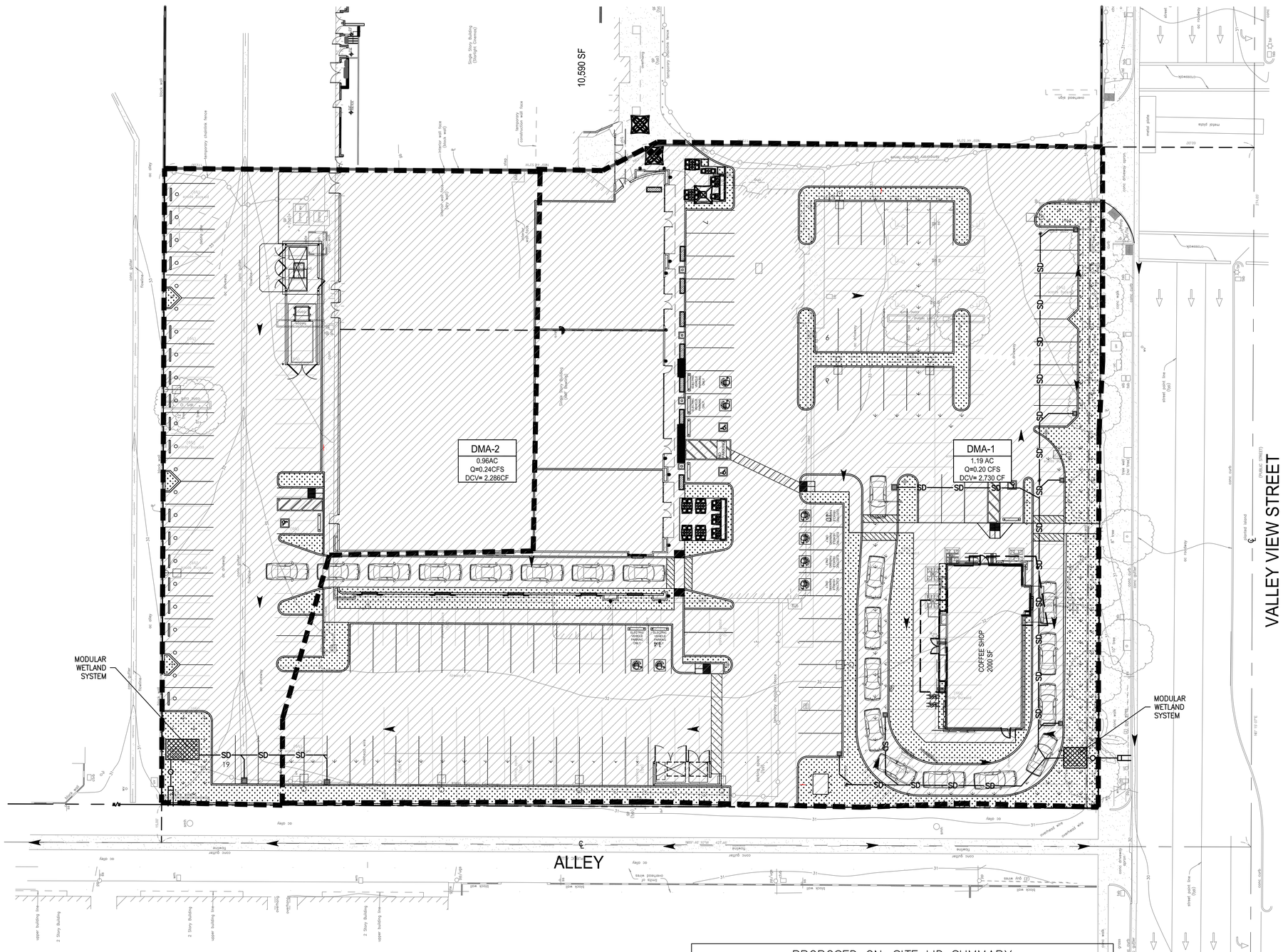

LEGEND

- PROPERTY LINE
- DRAINAGE AREA BOUNDARY
- SD — PROPOSED STORM DRAIN LINE
- PROPOSED SURFACE RUNOFF
- PROPOSED CATCH BASIN
- MODULAR WETLAND SYSTEM
- PROPOSED IMPERVIOUS HARDSCAPE AREA
- PROPOSED PERVIOUS LANDSCAPE AREA

PROPOSED ON-SITE LID SUMMARY

	TOTAL (FT^2)	TOTAL (AC)	IMPERVIOUS (FT^2)	IMPERVIOUS (AC)	IMPERVIOUS (%)	PERVIOUS (FT^2)	PERVIOUS (AC)	PERVIOUS (%)
DMA-1	51836.40	1.19	44,264.45	1.02	85.39	7571.95	0.17	14.61
DMA-2	41817.60	0.96	37,590.52	0.86	88.75	4227.08	0.10	11.25
SITE	93654.00	2.15	81,854.97	1.88	87.40	11799.03	0.27	12.60

PLAN
SCALE: 1" = 20'-0"
0 10' 20' 40'
GRAPHIC SCALE

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STARLIGHT CINEMAS

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GARDEN GROVE CA 92845

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMOS
No. C74768
Exp. 12/31/21
CIVIL
STATE OF CALIFORNIA

DATE		ISSUED FOR:

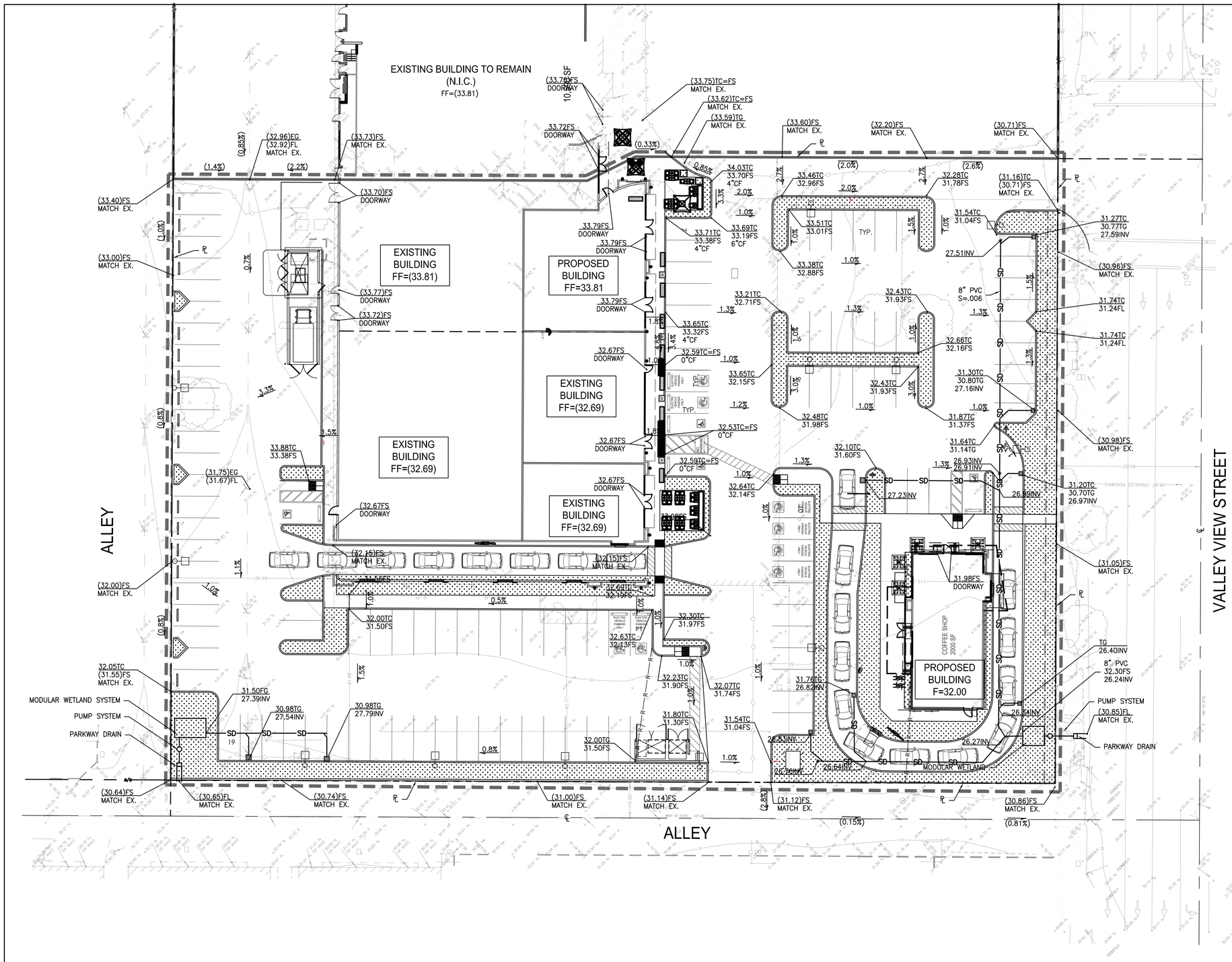
Date: 03-19-2020
Project Number: 1900064
Drawn By: TN
Checked By: RH
Scale: AS SPECIFIED

PROPOSED
WATER QUALITY
MITIGATION PLAN

SHEET:
EXHB 1

NOT FOR CONSTRUCTION

Drawing: \\KPFFIRVSVRFS1\Civil\2019\1900064 -19- Starlight Cinemas Phase III\DWG\EXHIBIT\WQMP\WQMP.dwg Last Saved: Friday, October 9, 2020 10:22:05 AM Last Plotted: Friday, October 9, 2020 10:22:52 AM By: Robyn Hume



Site Address:
12111 VALLEY VIEW STREET, GARDEN GROVE, CA 92845

Assessor's Parcel Number (APN):
224–202–17

Basis of Bearings:
THE BEARING OF N0°15'07"W ALONG THE CENTERLINE OF VALLEY VIEW STREET AS SHOWN ON TRACT NO. 6740, MAP BOOK 337, PAGES 15–17 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER, WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

Boundary:
PER TRACT NO. 6740, M.B. 337, PAGES 15–17, ADJUSTED TO FOUND CITY CENTERLINE MONUMENTS, USING STANDARD SURVEYING PROCEDURES.

Bench Mark:
THE ELEVATION OF 33.508 ON BENCH MARK NO. GG–114 (NORTHWEST QUADRANT OF VALLEY VIEW ST. & LAMPSON AVE., 99' NORTH OF THE B.C.R., 46' WEST OF CURB FACE, 11' NORTH OF BURGER KING, SET IN THE EASTERLY CORNER OF 6'X8' TRANSFORMER PAD) NAVD 1988 DATUM, 2012 ADJUSTMENT, AS SHOWN IN CITY OF GARDEN GROVE BENCHMARK DATA SHEET WAS USED AS ELECTRONIC DATUM FOR THIS SURVEY.

Legal Description:
LOT 132 OF TRACT NO. 6740, M.B. 337, PAGES 15–17 IN THE CITY OF GARDEN GROVE, COUNTY OF ORANGE, STATE OF CALIFORNIA. (PER TAX ASSESSOR)

Easement and Boundary Note:
REQUESTED TITLE INSURANCE POLICY WAS NOT PROVIDED. THEREFORE EASEMENTS MAY EXIST, NOT PLOTTED HEREON. BOUNDARY LEGAL DESCRIPTION PER TAX ASSESSOR AND NOT PLOTTED HEREON. BOUNDARY LEGAL DESCRIPTION PER TAX ASSESSOR AND NOT VERIFIED WITH TITLE INSURANCE POLICY.

Owner:
CINEMAS MANAGEMENT, INC.
315 REES STREET, PLAYA DEL REY, CA 90293
T 310–702–5190
CONTACT: DAN AKARAKIAN

PLAN
SCALE: 1" = 20'–0"
0 10' 20' 40'
GRAPHIC SCALE

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMSI
No. C74768
Exp. 12/31/21
CIVIL
STATE OF CALIFORNIA

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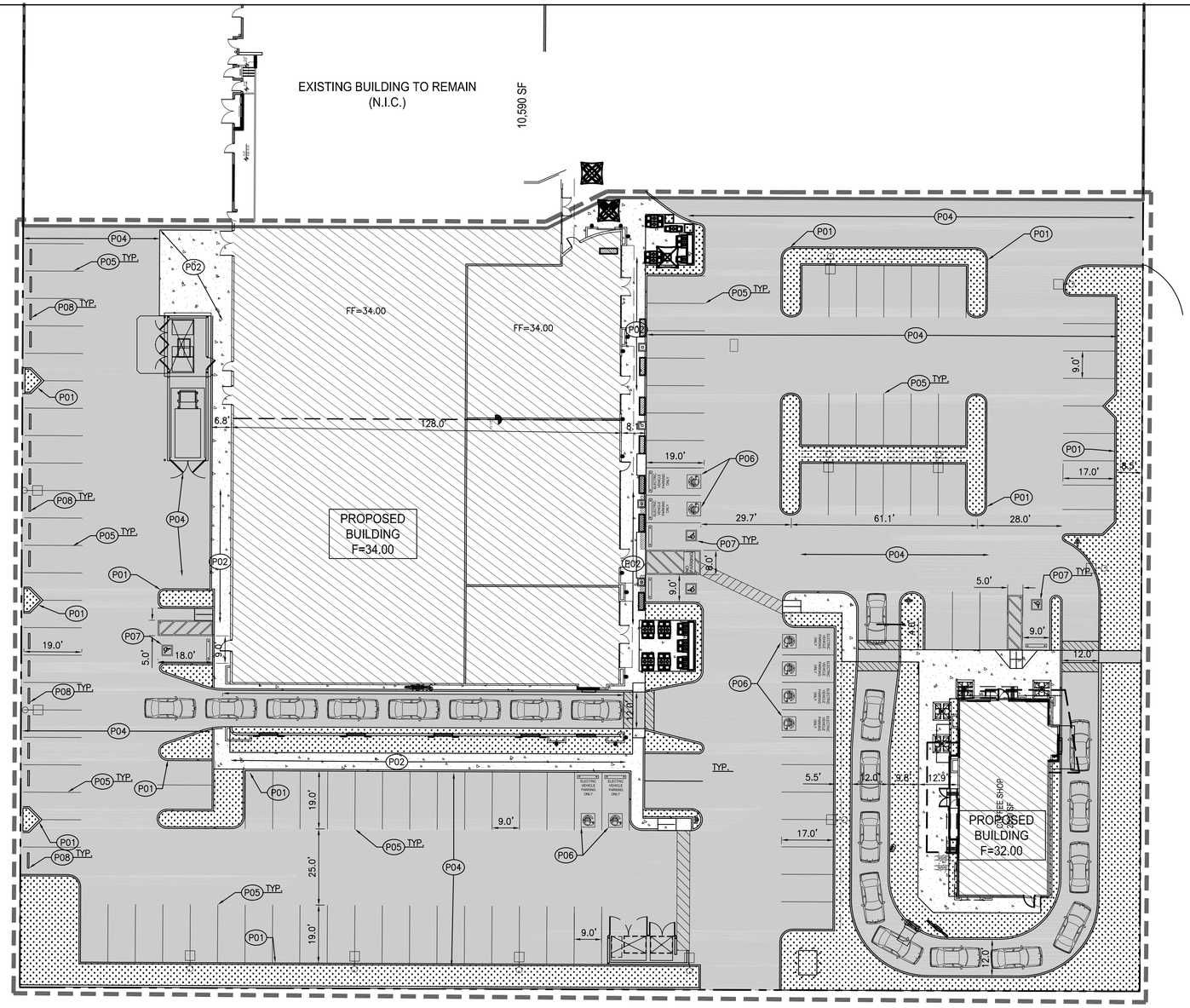
STARLIGHT CINEMAS PROJECT

GRADING AND DRAINAGE PLAN

12111 VALLEY VIEW STREET
GARDEN GROVE, CA 92845

DRAWING NUMBER
A–
SHEET 1 OF 1

Drawing: \\KPFFIRVSVRFS1\Civil\2019\1900064 -19- Starlight Cinemas Phase III\DWG\SHEET\C1.30-GP.dwg Last Saved: Friday, October 9, 2020 11:43:52 AM Last Plotted: Friday, October 9, 2020 11:44:13 AM By: Robyn Hume



ALLEY

℄

ALLEY

℄

VALLEY VIEW STREET

PAVING CONSTRUCTION NOTES:

- P01 CONCRETE CURB
- P02 CONCRETE PAVEMENT
- P03 CONCRETE VALLEY GUTTER
- P04 ASPHALT CONCRETE PAVEMENT
- P05 STRIPING
- P06 EV STALL
- P07 ADA STALL
- P08 WHEEL STOP

LEGEND:

- PROPERTY LINE
- LIMIT LINE OF PAVING
- BUILDING
- CONCRETE PAVING (REFER TO SHEET CX.XX FOR DETAILS)
- ASPHALT (REFER TO SHEET CX.XX FOR DETAILS)
- PA PLANTER AREA/LANDSCAPE (REFER TO LANDSCAPING PLANS FOR DETAILS)

N

PLAN

SCALE: 1" = 20'-0"

0 10' 20' 40'

GRAPHIC SCALE

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMSI
No. C74768
Exp. 12/31/21
CIVIL
STATE OF CALIFORNIA

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www.kpff.com

STARLIGHT CINEMAS PROJECT

PAVING PLAN

12111 VALLEY VIEW STREET
GARDEN GROVE, CA 92845

DRAWING NUMBER
A–

SHEET 1 OF 1

Drawing: \\KPFFIRVSVRFS1\Civil\2019\1900064 -19- Starlight Cinemas Phase III\DWG\SHEET\C1.40-PV.dwg Last Saved: Wednesday, October 7, 2020 3:09:22 PM Last Plotted: Friday, October 9, 2020 11:44:48 AM By: Robyn Hume

Attachment F

Geotechnical Report

Geotechnical Engineering Report

4 Stars Cinemas Expansion and New Restaurants
12101-12111 Valley View Street
Garden Grove, California

June 5, 2017
Terracon Project No. 60175088

Prepared for:
Cinema Management, Inc.
Playa Del Rey, California

Prepared by:
Terracon Consultants, Inc.
Tustin, California

June 5, 2017

Cinema Management, Inc.
315 Rees St.
Playa Del Rey, CA

Attn: Mr. Daniel Akarakian
Email: dakarakian@yahoo.com
P: (310) 702-5190

Re: Geotechnical Engineering Report
4 Stars Cinemas Expansion and New Restaurants
12101-12111 Valley View Street
Garden Grove, California
Terracon Project No. 60175088

Dear Mr. Akarakian:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. These services were performed in general accordance with our proposal dated April 26, 2017.

This geotechnical engineering report presents the results of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slab and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Sivasubramaniam (Raj) Pirathiviraj, P.E., G.E.
Senior Engineer

F. Fred Buhamdan, P.E.
Principal

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

EXECUTIVE SUMMARY

A geotechnical exploration has been performed for the proposed project to be located at 12101-12111 Valley View Street, Garden Grove, Orange County, California. Terracon's geotechnical scope of work included the advancement of five (5) test borings to approximate depths ranging between 21½ and 51½ feet below the ground surface (bgs).

Based on the information obtained from our subsurface exploration, the site is considered suitable for development of the proposed project provided the recommendations included within this report are implemented during the design and construction phases of the project. The following geotechnical considerations were identified:

- The subsurface conditions encountered on the project site is predominantly very soft to medium stiff lean clay with variable amounts of sand to the maximum depth explored at 51½ feet bgs. In borings B-1 and B-4, very loose to medium dense clayey sand layers were interbedded below the approximate depth of 30 feet bgs.
- Groundwater was encountered between the depths of 5 and 7 feet bgs after the completion of the drilling.
- Liquefaction potential analyzes were performed from depth of 0 to 50 feet bgs in borings B-1 and B-4. The seismically-induced saturated and dry sand settlements are expected to range between 1.0 and 1.4 inches and seismically-induced saturated and dry sand differential settlements are expected to range between 0.5 and 0.9 inches.
- Due to the anticipated seismically-induced settlement and low bearing capacity of the subsurface materials, the upper soils should be overexcavated for the entire footprint of the buildings and additions to a minimum depth of 2½ feet below the bottom of footings or 4 feet below the existing ground, whichever is greater. Geogrid reinforced engineered fill extending to a minimum depth of 2½ feet below the bottom of foundations should be used to support the building foundation systems. Onsite soils may be used as engineered fill materials.
- Light (automobile) parking areas – 3" AC over 6" Class II AB or 5" PCC over 4" Class II AB; On-site driveways and delivery areas – 3" AC over 9" Class II AB or 6" PCC over 4" Class II AB. All pavements should be supported on a minimum of 10 inches of scarified, moisture conditioned, and compacted materials.
- The 2016 California Building Code (CBC) seismic site classification for this site is E.
- Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during construction.

This geotechnical executive summary should be used in conjunction with the entire report for design and/or construction purposes. It should be recognized that specific details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled General Comments should be read for an understanding of the report limitations.

GEOTECHNICAL ENGINEERING REPORT
4 STARS CINEMAS EXPANSION AND RESTAURANTS
12101-12111 VALLEY VIEW STREET
GARDEN GROVE, ORANGE COUNTY, CALIFORNIA

Terracon Project No. 60175088

June 5, 2017

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the proposed structures to be located at the 12101-12111 Valley View Street, Garden Grove, Orange County, California. The Site Location Plan (Exhibit A-1) is included in Appendix A of this report. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- earthwork
- seismic considerations
- floor slab design and construction
- groundwater conditions
- foundation design and construction
- pavement design and construction

Our geotechnical engineering scope of work for this project included the advancement of five (5) test borings to approximate depths ranging between 21½ and 51½ feet bgs.

Logs of the borings along with a Boring Location Diagram (Exhibit A-2) are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Site layout	Refer to the Boring Location Diagram (Exhibit A-2 in Appendix A).
Structures	The project will include the following: ■ Demolition of an abandoned restaurant with an approximate footprint area of 5,500 square feet ■ An expansion for an existing movie theater with an approximate footprint area of 1,000 square feet. ■ The construction of 2 drive-thru restaurants with approximate footprint areas of 1,850 and 2,420 square feet.

ITEM	DESCRIPTION
Finished floor elevation	Within one foot of existing grade (assumed).
Maximum loads (assumed)	Columns: 40 to 80 kips Walls: 1 to 2 klf Slabs: 150 psf max
Grading	Grading will include over-excavation and bringing the site grades back to proposed elevations.
Traffic loading	Assumed Design Traffic Index (TI's): Automobile Parking Areas: 4.5 On-site Driveways and Delivery Areas: 5.5
Paving	The project will include asphalt concrete and Portland Cement concrete pavements

2.2 Site Location and Description

Item	Description
Location	This project is located within the existing shopping center at 12101-12111 Valley View Street, Garden Grove CA
Existing site features	The site currently has two buildings, a 5,500 single story abandoned restaurant, and a movie theater with associated pavements and hardscape.
Surrounding developments	North: Restaurant and Associated Pavements South: Fire Station and Residential Buildings East: Valley View Street West: Residential Buildings
Current ground cover	Asphalt pavements and concrete flatwork.
Existing topography	Relatively level project site.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The site is situated within the Southern Peninsular Ranges Geomorphic Province in Southern California. Geologic structures within this Province trend mostly northwest, in contrast to the prevailing east-west trend in the neighboring Transverse Ranges Geomorphic Province to the north. The Peninsular Range Province extends into lower California, and is bounded by the Colorado Desert to the east, the Pacific Ocean to the west and the San Gabriel and San

Bernardino mountains to the north. [1,2] Surficial geologic units mapped at the site consists of Quaternary age recent alluvium[3].

3.2 Typical Subsurface Profile

Specific conditions encountered at the boring locations are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the boring logs included in Appendix A. Based on the results of the borings, subsurface conditions encountered on the project site is predominantly very soft to medium stiff lean clay with variable amounts of sand to the maximum depth explored at 51½ feet bgs. In borings B-1 and B-4, very loose to medium dense clayey sand layers were interbedded below the approximate depth of 30 feet bgs.

Laboratory tests were conducted on selected soil samples and the test results are presented in Appendix B and on the boring logs. Atterberg limit test results indicate that the near surface clayey materials exhibit low plasticity. An Expansion Index test was performed on the near surface clayey soils and indicates that these materials have an Expansion Index of 19. Consolidation/swell tests indicate that the clayey soils encountered at approximate depth of 2½ feet have a slight collapse potential when saturated under normal footing loads of 2,000 psf.

3.3 Groundwater

Groundwater was encountered between the depths of 5 and 7 feet bgs after the completion of the drilling. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

In clayey soils with low permeability, the accurate determination of groundwater level may not be possible without long term observation. Long term observation after drilling could not be performed as borings were backfilled immediately upon completion due to safety concerns. Groundwater levels can best be determined by implementation of a groundwater monitoring plan. Such a plan would include installation of groundwater monitoring wells, and periodic measurement of groundwater levels over a sufficient period of time.

Based on ground water data recorded from a monitoring wells located just east of the project site located at a distance of about 400 feet, the highest historical groundwater measurement was approximately 4½ feet bgs.[4]

---

[1] Harden, D. R., "*California Geology, Second Edition*," Pearson Prentice Hall, 2004.
[2] Norris, R. M. and Webb, R. W., *"Geology of California, Second Edition,"* John Wiley & Sons, Inc., 1990.
[3] Division of Mines and Geology, "*Geologic Map of California, Olaf P. Jenkins Edition, Long Beach Sheet*", Compilation by Charles W. Jennings, 1962, Scale 1:250,000.
[4] Groundwater elevation was obtained from a monitoring wells located at distance of about 400 feet north of the project site (12001 Valley View Street, Garden Grove, California, http://geotracker.waterboards.ca.gov)

3.4 Seismic Considerations

3.4.1 Seismic Site Classification Parameters

DESCRIPTION	VALUE
2016 California Building Code Site Classification (CBC) [1]	E
Site Latitude	N 33.7868°
Site Longitude	W 118.0291°
S_s Spectral Acceleration for a Short Period	1.483g
S_1 Spectral Acceleration for a 1-Second Period	0.543g
F_a Site Coefficient for a Short Period	0.900
F_v Site Coefficient for a 1-Second Period	2.400

[1] Note: The 2016 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope does not include the required 100 foot soil profile determination. Borings were extended to a maximum depth of 51½ feet, and this seismic site class definition considers that similar or denser soils continue below the maximum depth of the subsurface exploration. Additional exploration to deeper depths would be required to confirm the conditions below the current depth of exploration.

3.4.2 Faulting and Estimated Ground Motions

The site is located in Southern California, which is a seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. As calculated using the USGS Unified Hazard Tool, the Puente Hills (Coyote Hills) Fault with a maximum credible earthquake magnitude of 6.7, which is located approximately 11.3 kilometers from the site, is considered to have the most significant effect at the site from a design standpoint.

Based on the USGS Design Maps Summary Report, using the American Society of Civil Engineers (ASCE 7-10) standard, the peak ground acceleration (PGA_M) at the project site is expected to be 0.49g. Based on the USGS Unified Hazard Tool, the project site has a mode magnitude of 6.51. Furthermore, the site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of the State Fault Hazard Maps.[5]

3.4.3 Liquefaction Potential

Liquefaction is a mode of ground failure that results from the generation of high pore water pressures during earthquake ground shaking, causing loss of shear strength. Liquefaction is typically a hazard where loose sandy soils exist below groundwater. The California Geological Survey (CGS) has designated certain areas as potential liquefaction hazard zones. These are

[5] California Department of Conservation Division of Mines and Geology (CDMG), *"Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region"*, CDMG Compact Disc 2000-003, 2000.

areas considered at a risk of liquefaction-related ground failure during a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table.

The project site is located within a liquefaction potential zones as indicated by the CGS. Based on the materials encountered at the project site, subsurface conditions encountered on the project site is predominantly very soft to medium stiff lean clay with variable amounts of sand to the maximum depth explored at 51½ feet bgs. In borings B-1 and B-4, very loose to medium dense clayey sand layers interbedded below the approximate depth of 30 feet bgs. Historical high groundwater in the project vicinity is 4½ feet bgs.

Liquefaction analysis for the site was performed in general accordance with the DMG Special Publication 117. The liquefaction study utilized the software "LiquefyPro" by CivilTech Software. This analysis was based on the soils data from Borings B-1 and B-4. Peak Ground Acceleration (PGA) was of 0.49g was used. Calculations utilized historical groundwater depth. Settlement analysis used the Tokimatsu, M-correction method. Fines were corrected for liquefaction using modified Stark and Olson. Liquefaction potential analysis was performed from a depth of 0 to 50 feet bgs. Liquefaction potential analysis is attached in Appendix D of this report.

Based on the subsurface conditions presented in Borings B-1 and B-4, lab test results and calculation results, seismically-induced saturated and dry sand settlements are expected to range between 1.0 and 1.4 inches and seismically-induced saturated and dry sand differential settlements are expected to range between 0.5 and 0.9 inches.

3.5 Corrosion Potential

Results of soluble sulfate testing indicate that ASTM Type I/II Portland cement may be used for all concrete on and below grade. Foundation concrete may be designed for low sulfate exposure in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 4.

Laboratory test results indicate the on-site soils have a pH of 8.65, a minimum resistivity of 1,358 ohm-centimeters, a water soluble sulfate content of 0.02%, Red-Ox potential of +590 mV, negligible sulfides, and a chloride content of 175 parts per million (ppm) as shown on the attached Results of Corrosivity Analysis sheet. These values should be used to evaluate corrosive potential of the on-site soils to underground ferrous metals.

Refer to the Results of Corrosivity Analysis sheet in Appendix B for the complete results of the corrosivity testing conducted in conjunction with this geotechnical exploration.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings, provided the recommendations included within this report are implemented. Based on the geotechnical engineering analyses, subsurface exploration, and laboratory test results, we recommend supporting the proposed buildings and additions on a spread footing foundation system.

Due to the anticipated seismically-induced settlement and low bearing capacity of the subsurface materials, the upper soils should be overexcavated for the entire footprint of the buildings and additions to a minimum depth of 2½ feet below the bottom of footings or 4 feet below the existing ground, whichever is greater. Geogrid reinforced engineered fill extending to a minimum depth of 2½ feet below the bottom of foundations should be used to support the building foundation systems. Onsite clayey soils may be used as engineered fill materials.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for the design and construction of earth supported elements including, foundations, slabs, and pavements, are contingent upon following the recommendations outlined in this section. All grading for the proposed buildings and additions should incorporate the limits of the proposed construction plus a lateral distance of 2½ feet beyond the perimeter of the proposed buildings and additions.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

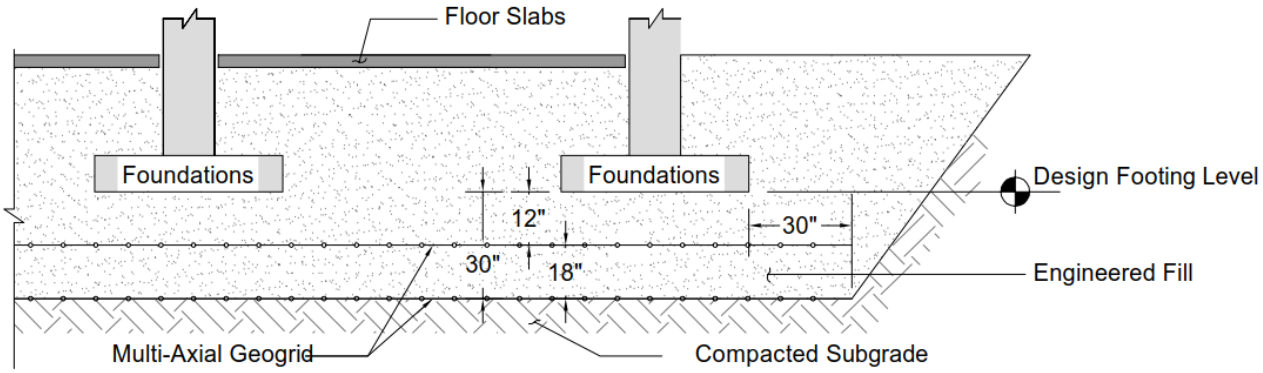
Strip and remove existing pavements, concrete flatwork and other deleterious materials from proposed building, addition and pavement areas. This should include the removal of all buried concrete slabs, and buried footings that may exist within the area of the proposed construction. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

Demolition of the existing building should include complete removal of all foundation systems and remaining underground utilities within the proposed construction area. This should include removal of any loose backfill found adjacent to existing foundations. All materials derived from the demolition of existing structures and pavements should be removed from the site and not be allowed for use as on-site fill. However, if the contractor desires to crush on-site pavements and concrete and use it as engineered fill, the crushed materials should be evaluated in accordance to section 4.2.3 of the report.

Evidence of underground facilities such as septic tanks, cesspools, and basements, was not observed during the site reconnaissance, however such features could be encountered during construction. If fill materials, underground facilities, and/or utilities lines are encountered, such features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

4.2.2 Subgrade Preparation

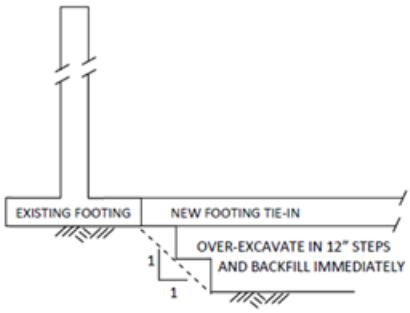
Due to the anticipated seismically-induced settlement, the upper soils should be overexcavated for the entire footprint of the buildings and additions to a minimum depth of 2½ feet below the bottom of footings or 4 feet below the existing ground, whichever is greater. As shown in the figure below, multi-axial (such as Tensar TX5 or equivalent) geogrid reinforced engineered fill extending to a minimum depth of 2½ feet below the bottom of foundations should be used to support the building foundation systems. Reinforced engineered fill should be placed beneath the entire footprint of the buildings and additions, and should extend horizontally a minimum distance of 2½ feet beyond the outside edge of perimeter footings. Two layers of geogrid should be placed at 18-inch on center with the first geogrid placed on the bottom of the excavation on prepared native soils. This placement schedule will place the top geogrid one-foot below the bottom of the footing.



OVER-EXCAVATION / BACKFILL DETAIL

The over-excavation bottom, once properly cleared, should be scarified to a minimum depth of 10 inches, moisture conditioned, and compacted per the compaction requirements in Section 4.2.4. The over-excavation should then be backfilled up to the footing base elevation with engineered fill placed in lifts of 8 inches or less in loose thickness and should be moisture conditioned and compacted following the recommendations in section 4.2.4 of this report.

If new foundations are constructed adjacent to the existing foundations, there is a risk that the bearing material could become undermined and/or overstressed due to overlapping stresses. Provisions should be made during construction to prevent undermining or disturbing the soils supporting the existing docks foundations. Excavations should not extend below an imaginary 1H:1V inclined plane projecting below the bottom edge of any adjacent existing foundations as shown in the figure.



Subgrade soils beneath exterior slabs, and pavements may be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until slab or pavement construction.

4.2.3 Fill Materials and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer.

Onsite near surface soils are considered suitable for use as engineered fill beneath the structures.

On-site soils or low volume change imported soils may be used as engineered fill materials in the following areas:

- foundation support
- interior slab areas
- exterior slab areas
- foundation backfill
- general site grading
- pavement areas

Imported soils should conform to low volume change materials as indicated in the following specifications:

Gradation	**Percent Finer by Weight (ASTM C 136)**
3”	100
No. 4 Sieve	50 to 100
No. 200 Sieve	10 to 40

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansive index* ..... 20 (max)

*ASTM D 4829

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed ten inches loose thickness.

4.2.4 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
On-site soils or imported materials:			
Beneath foundations:	90%	-1%	+4%
Beneath slabs:	90%	-1%	+4%
Utility trenches*:	90%	-1%	+4%
Beneath pavements:	95%	-1%	+4%
Bottom of excavation to receive fill:	90%	-1%	+4%
Miscellaneous backfill:	90%	-1%	+4%
Aggregate base (beneath pavements):	95%	-2%	+2%

* Upper 12 inches should be compacted to 95% within pavement and structural areas. Engineered fill should be used in structural areas.

4.2.5 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls.

Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

Roof drainage should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems and landscaped irrigation should not be installed within 5 feet of foundation walls.

4.2.6 Exterior Slab Design and Construction

Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill may experience some movement due to the volume change of the backfill. To reduce the potential for damage caused by movement, we recommend:

- exterior slabs should be supported directly on subgrade fill with no, or very low expansion potential;
- strict moisture-density control during placement of subgrade fills;
- maintain proper subgrade moisture until placement of slabs;
- placement of effective control joints on relatively close centers and isolation joints between slabs and other structural elements;
- provision for adequate drainage in areas adjoining the slabs;
- using of designs which allow vertical movement between the exterior slabs and adjoining structural elements.

4.2.7 Utility Trenches

It is anticipated that the on-site soils will provide suitable support for underground utilities and piping that may be installed. Any soft and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. A non-expansive granular material with a sand equivalent greater than 30 is recommended for bedding and shading of utilities, unless otherwise allowed by the utility manufacturer.

On-site materials are considered suitable for backfill of utility and pipe trenches in non-structural areas from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances. Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

4.2.8 Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. On-site soils may pump or become unworkable at high water contents. The workability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. Workability may be improved by scarifying and drying. Lightweight excavation equipment may be required to reduce subgrade pumping.

At the time of our study, moisture contents of the surface and near-surface native soils ranged from about 6 to 16 percent. Based on these moisture contents, some moisture conditioning may be needed for the project. The soils may need to be dried by aeration during dry weather conditions, or an additive, such as lime, cement, or kiln dust, may be needed to stabilize the soil.

If the construction schedule does not allow for drying by aeration, clay soils may be stabilized using triaxial geogrid and coarse aggregate materials.

Groundwater was encountered between the depths of 5 and 7 feet bgs during our field exploration. Depending upon depth of excavation and seasonal conditions, groundwater or perched groundwater may be encountered in excavations. Pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth.

If the exposed soils at the bottom of the excavations have elevated water contents and are pumping or yielding during attempts to compact the bottom of the excavation, the bottom of the excavations should be overexcavated to a minimum depth of 12 inches, and replaced with granular engineered fill. As an alternative, aggregate materials wrapped (top, bottom and sides) with a non-woven geotextile such as Mirafi 140N, or an approved equivalent may be utilized. The crushed aggregate could have a nominal particle size of ¾ to 1 inch. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the proposed footings and overlying backfill materials.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

The exposed subgrade and each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the geotechnical engineer's representative prior to placement of additional lifts. We recommend that each lift of fill be tested for density and moisture content at a frequency of one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. We recommend one density and moisture content test for every 50 linear feet of compacted utility trench backfill.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork operations may require additional mitigation measures beyond that which would be expected during the drier summer and fall months. This could include diversion of

surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

4.3 Foundations

DESCRIPTION	RECOMMENDATION
Foundation Type	Conventional Shallow Spread Footings
Bearing Material	Geogrid reinforced engineered fill extending to a minimum depth of 2½ feet below the bottom of the proposed foundations or 4 feet below the existing ground, whichever is greater
Allowable Bearing Pressure *	2,000 psf for a maximum footing width of 6 feet 1,500 psf for a maximum footing width of 8 feet
Minimum Dimensions	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Total Estimated Settlement	1 inch
Estimated Differential Settlement	½ inch across 40 feet

* Due to the soft clay soils encountered onsite, bearing capacity was based on an allowable settlement value of 1-inch. Terracon should be contact if larger width foundations are planned onsite.

Typically, the tolerated differential settlement among foundations is on the order of ½ to ¾ of an inch in a span of 40 feet. Such tolerance is based on the column beam connections and should be verified by the building structural engineer. The reinforced engineered fill will reduce the differential settlement by producing a relatively uniform settlement beneath the footprint of the proposed structure. Foundation design should include interconnecting isolated and continuous footings with seismic ties (per CBC 1809.13) to improve support and lessen the differential settlement.

Footings should be proportioned to reduce differential foundation movement. Proportioning on the basis of equal total settlement is recommended; however, proportioning to relative constant dead-load pressure will reduce differential settlement between adjacent footings. Additional foundation movements could occur if water, from any source, saturates the foundation soils; therefore, proper drainage should be provided during construction and in the final design.

Finished grade is defined as the lowest adjacent grade within five feet of the foundation for perimeter (or exterior) footings. The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total loads that include wind or seismic conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.

Foundations should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of control joints at openings or other discontinuities in masonry walls is recommended.

Foundation excavations should be observed by the geotechnical engineer. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

4.4 Floor Slab

DESCRIPTION	RECOMMENDATION
Interior floor system	Slab-on-grade concrete
Floor slab support	Geogrid reinforced engineered fill extending to a minimum depth of 2½ feet below the bottom of the proposed foundations or 4 feet below the existing ground, whichever is greater
Subbase	Minimum 4-inches of Aggregate Base
Modulus of subgrade reaction	200 pounds per square inch per inch (psi/in) (The modulus was obtained based on estimates obtained from NAVFAC 7.1 design charts). This value is for a small loaded area (1 Sq. ft or less) such as for forklift wheel loads or point loads and should be adjusted for larger loaded areas.

In areas of exposed concrete, control joints should be saw cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). Additionally, dowels should be placed at the location of proposed construction joints. To control the width of cracking (should it occur) continuous slab reinforcement should be considered in exposed concrete slabs.

The use of a vapor retarder or barrier should be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

4.5 Lateral Earth Pressures

For engineered fill comprised of on-site clay soils above any free water surface, recommended equivalent fluid pressures for unrestrained foundation elements are:

ITEM	VALUE[1]
Active Case	43 psf/ft
Passive Case	300 psf/ft
At-Rest Case	64 psf/ft
Coefficient of friction	0.30

[1]Note: The values are based on on-site clay soils used as backfill.

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if such conditions are to be included in the design.

Fill against foundation and retaining walls should be compacted to densities specified in the Earthwork section of this report. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors.

4.6 Pavements

4.6.1 Design Recommendations

An estimated design R-Value was used to calculate the asphalt concrete pavement thickness sections and the portland cement concrete pavement sections. R-value testing should be completed prior to pavement construction to verify the design R-value.

Assuming the pavement subgrades will be prepared as recommended within this report, the following pavement sections should be considered minimums for this project for the traffic indices assumed in the table below. As more specific traffic information becomes available, we should be contacted to reevaluate the pavement calculations.

	Recommended Pavement Section Thickness (inches)*	
	Light (Automobile) Parking Assumed Traffic Index (TI) = 4.5	**On-site Driveways and Delivery Areas Assumed TI = 5.5**
Section I Portland Cement Concrete (600 psi Flexural Strength)	5.0-inches PCC over 4-inches Class II Aggregate Base	6.0-inches PCC over 4-inches Class II Aggregate Base
Section II Asphaltic Concrete	3-inches AC over 6-inches Class II Aggregate Base	3-inches AC over 9-inches Class II Aggregate Base

* All materials should meet the CALTRANS Standard Specifications for Highway Construction.

All pavements should be supported on a minimum of 10 inches of scarified, moisture conditioned, and compacted materials. These pavement sections are considered minimal sections based upon the expected traffic and the existing subgrade conditions. However, they are expected to function with periodic maintenance and overlays if good drainage is provided and maintained.

Subsequent to clearing, grubbing, and removal of topsoil, subgrade soils beneath all pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. All materials should meet the CALTRANS Standard Specifications for Highway Construction. Aggregate base materials should meet the gradation and quality requirement of Class 2 Aggregate Base (¾ inch maximum) in Caltrans Standard Specifications, latest edition, Sections 25 through 29.

All concrete for rigid pavements should have a minimum flexural strength of 600 psi (4,250 psi Compressive Strength), and be placed with a maximum slump of four inches. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

4.6.2 Construction Considerations

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the State of California Department of Transportation, or other approved local governing specifications.

Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

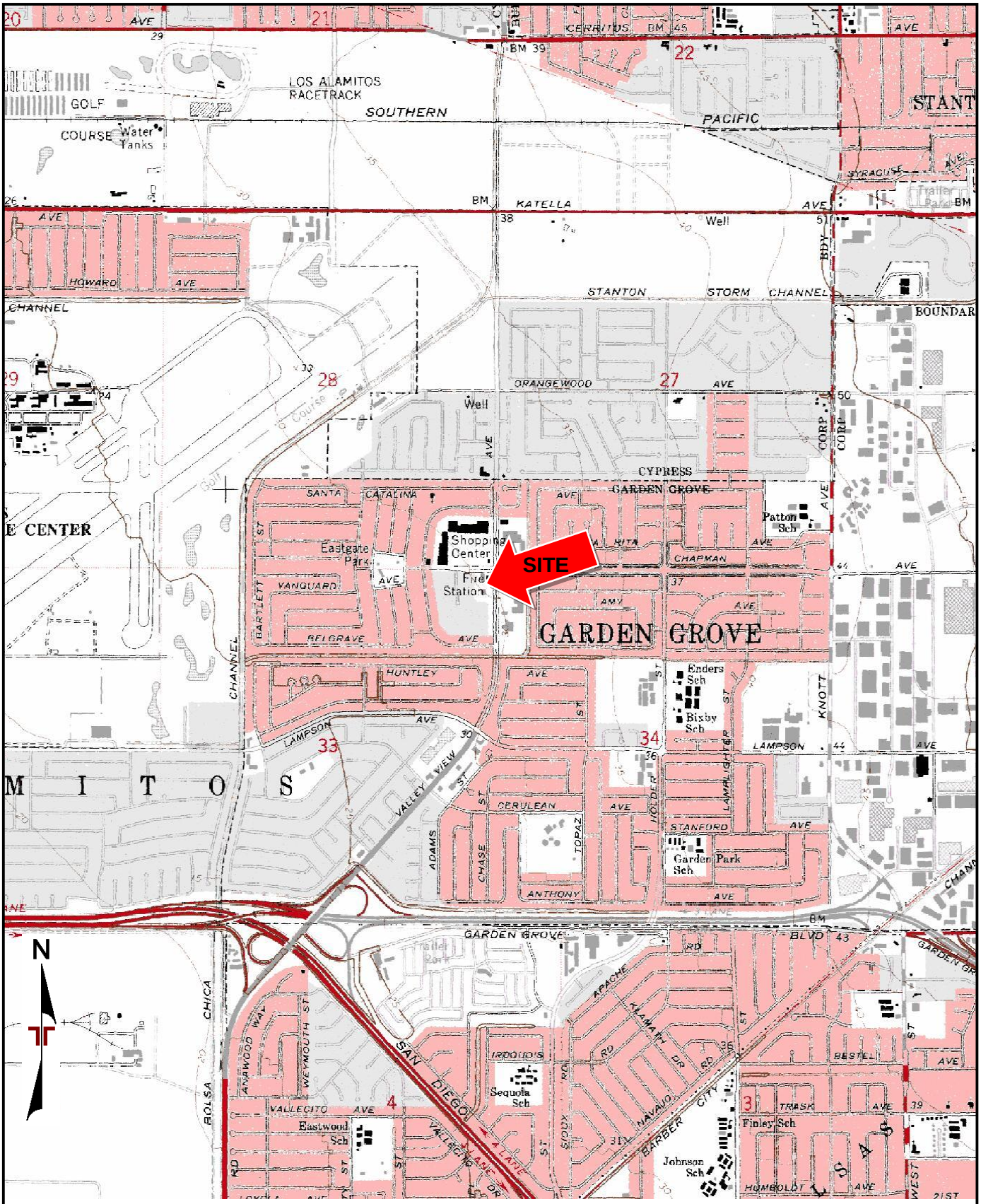
The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

FIELD EXPLORATION



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: LOS ALAMITOS, CA (1/1/1981).

Project Manager:	SP
Drawn by:	SP
Checked by:	FH
Approved by:	FH

Project No.	60175088
Scale:	1"=2,000'
File Name:	A-1
Date:	06/01/2017

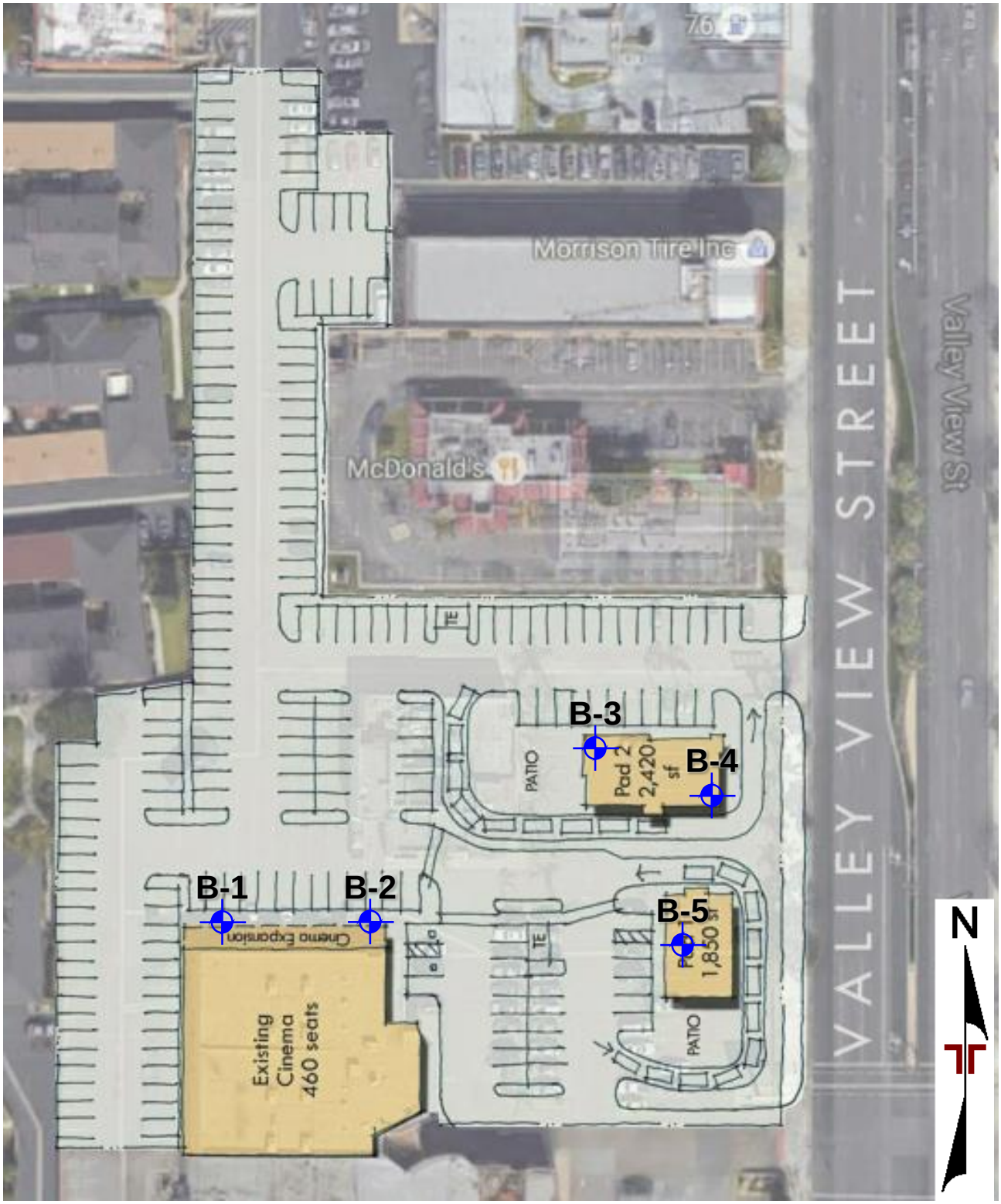
Terracon
1421 Edinger Ave Ste C
Tustin, CA 92780-6287

SITE LOCATION

4 Stars Cinemas Expansion and New Restaurants
12101-12111 Valley View Street
Garden Grove, CA

Exhibit

A-1



LEGEND

B-1 **SOIL BORING APPROXIMATE LOCATION**

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	SP
Drawn by:	SP
Checked by:	FH
Approved by:	FH

Project No.	60165088
Scale:	1" ~ 75'
File Name:	A-2
Date:	6/01/2017

Terracon
Consulting Engineers & Scientists
1421 Edinger Avenue Ste C Tustin, California 92614
PH. (949) 261-0051 FAX. (949) 261-6110

BORING LOCATION PLAN

4 Stars Cinemas Expansion and New Restaurants
12101-12111 Valley View Street
Garden Grove, CA

Exhibit
A-2

Field Exploration Description

A total of five (5) test borings were drilled at the site on May 5, 2017. The borings were drilled to approximate depth ranging between 21½ and 51½ feet bgs at the approximate locations shown on the attached Boring Location Diagram, Exhibit A-2. Test borings were advanced with a truck-mounted B-61 drill rig utilizing 6-inch diameter hollow-stem augers.

The borings were located in the field by using the proposed site plan, aerial photographs of the site, and hand held GPS device. The accuracy of boring locations should only be assumed to the level implied by the method used.

Continuous lithologic logs of the borings were recorded by the field engineer during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers. Bulk samples of subsurface materials were also obtained. Groundwater conditions were evaluated in the borings at the time of site exploration.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

An automatic hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings prior to the drill crew leaving the site.

BORING LOG NO. B-1

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.7868° Longitude: -118.0297°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0.4		**ASPHALT**, 5 inches												
		SANDY SILTY CLAY (CL-ML), medium stiff, brown											27-20-7	62
5.0		**LEAN CLAY (CL)**, medium stiff, trace sand, brown	5	▽		2-2-4 N=6								
						3-2-4 N=6								89
10.0		**LEAN CLAY WITH SAND (CL)**, soft, brown	10			WOH-WOH-3								82
			15			1-3-WOH								80
			20			WOH-WOH-4								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 | Boring Completed: 5/5/2017
Drill Rig: B-61 | Driller: Cal Pac
Project No.: 60175088 | Exhibit: A-4

BORING LOG NO. B-1

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.7868° Longitude: -118.0297°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY WITH SAND (CL), soft, brown *(continued)*											
25	stiff			4-6-7 N=13								
30.0	**CLAYEY SAND (SC)**, very loose, gray			2-1-2 N=3								39
35.0	**SANDY LEAN CLAY (CL)**, stiff, gray			3-4-7 N=11								54
40				WOH-3-7								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 | Boring Completed: 5/5/2017

Drill Rig: B-61 | Driller: Cal Pac

Project No.: 60175088 | Exhibit: A-4

BORING LOG NO. B-1

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.7868° Longitude: -118.0297°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	45.0 **SANDY LEAN CLAY (CL)**, stiff, gray *(continued)*												
	CLAYEY SAND (SC), loose, gray	45			WOH-3-7								36
		50			3-5-4 N=9								41
	51.5 ***Boring Terminated at 51.5 Feet***												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 | Boring Completed: 5/5/2017

Drill Rig: B-61 | Driller: Cal Pac

Project No.: 60175088 | Exhibit: A-4

BORING LOG NO. B-2

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.7868° Longitude: -118.0294°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0.3												
	ASPHALT, 3 inches											
	SANDY LEAN CLAY (CL), brown, trace gravel										31-19-12	55
	medium stiff to stiff			4-4-4 N=8							30-18-12	
5	very stiff	▽		5-8-15					16	110		
	medium stiff	▽		3-3-4 N=7								
10.0												
10	**LEAN CLAY WITH SAND (CL)**, medium stiff			WOH-3-3					28	94		
15	very soft			1-WOH-WOH								
20	stiff			2-5-6					28	95		
21.5												
	Boring Terminated at 21.5 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*
▽ *At completion of drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 | Boring Completed: 5/5/2017
Drill Rig: B-61 | Driller: Cal Pac
Project No.: 60175088 | Exhibit: A-5

BORING LOG NO. B-3

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.7871° Longitude: -118.029°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0.3		**ASPHALT**, 3 inches												
		SANDY SILTY CLAY (CL-ML), brown												
2.5		**SANDY LEAN CLAY (CL)**, very stiff				7-15-12					13	114		
		soft	5	▽		WOH-1-2								
				▽										
		medium stiff				2-3-4					30	94		
		very soft	10			1-WOH-WOH								
15.0		**LEAN CLAY WITH SAND (CL)**, stiff	15			3-5-6					29	94		
		soft to medium stiff	20			WOH-1-3								
21.5		***Boring Terminated at 21.5 Feet***												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 | Boring Completed: 5/5/2017

Drill Rig: B-61 | Driller: Cal Pac

Project No.: 60175088 | Exhibit: A-6

BORING LOG NO. B-4

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.787° Longitude: -118.0288°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0.3 **ASPHALT**, 4 inches													
LEAN CLAY WITH SAND (CL), brown						19						29-21-8	
soft					2-2-1 N=3								
			▽										
very soft		5			WOH-WOH-1								76
					WOH-1-1								
soft		10			WOH-2-2								
		15			WOH-1-2								73
		20			WOH-1-1								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 Boring Completed: 5/5/2017

Drill Rig: B-61 Driller: Cal Pac

Project No.: 60175088 Exhibit: A-7

BORING LOG NO. B-4

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.787° Longitude: -118.0288°

GRAPHIC LOG / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
LEAN CLAY WITH SAND (CL), brown *(continued)*												
stiff	25			3-5-6 N=11								
medium stiff, More sandy, gray	30			WOH-3-4								
stiff	35			3-4-5 N=9								
40.0 **CLAYEY SAND (SC)**, medium dense, gray	40			5-9-13 N=22								43

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 Boring Completed: 5/5/2017

Drill Rig: B-61 Driller: Cal Pac

Project No.: 60175088 Exhibit: A-7

BORING LOG NO. B-4

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.787° Longitude: -118.0288°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), medium dense, gray *(continued)*												
	brown	45			1-6-11 N=17								21
	loose	50			5-3-4 N=7								
	51.5												
	Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 Boring Completed: 5/5/2017

Drill Rig: B-61 Driller: Cal Pac

Project No.: 60175088 Exhibit: A-7

BORING LOG NO. B-5

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

SITE: 12101-12111 Valley View Street
Garden Grove, California

LOCATION See Exhibit A-2

Latitude: 33.7868° Longitude: -118.0289°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0.3		**ASPHALT**, 4 inches												
		SILTY CLAYEY SAND (SC-SM), brown, moist												
2.5														
		SANDY SILT (ML), very stiff, brown to dark brown				4-8-10					6	106		
		Light brown to tan, moist												
		medium stiff	5	▽		4-3-3					22	96		56
6.5														
		SANDY LEAN CLAY (CL), brown to gray, wet		▽		WOH--WOH-1								
10.0			10			1-2-3					28	96		
		LEAN CLAY WITH SAND (CL), medium stiff, brown, wet												
		very soft	15			1-WOH-WOH								
		soft	20			WOH-1-2								
21.5														
		Boring Terminated at 21.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.
Sealed with bituminous cold patch at surface.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 5/5/2017 Boring Completed: 5/5/2017

Drill Rig: B-61 Driller: Cal Pac

Project No.: 60175088 Exhibit: A-8

APPENDIX B

LABORATORY TESTING

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix C. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

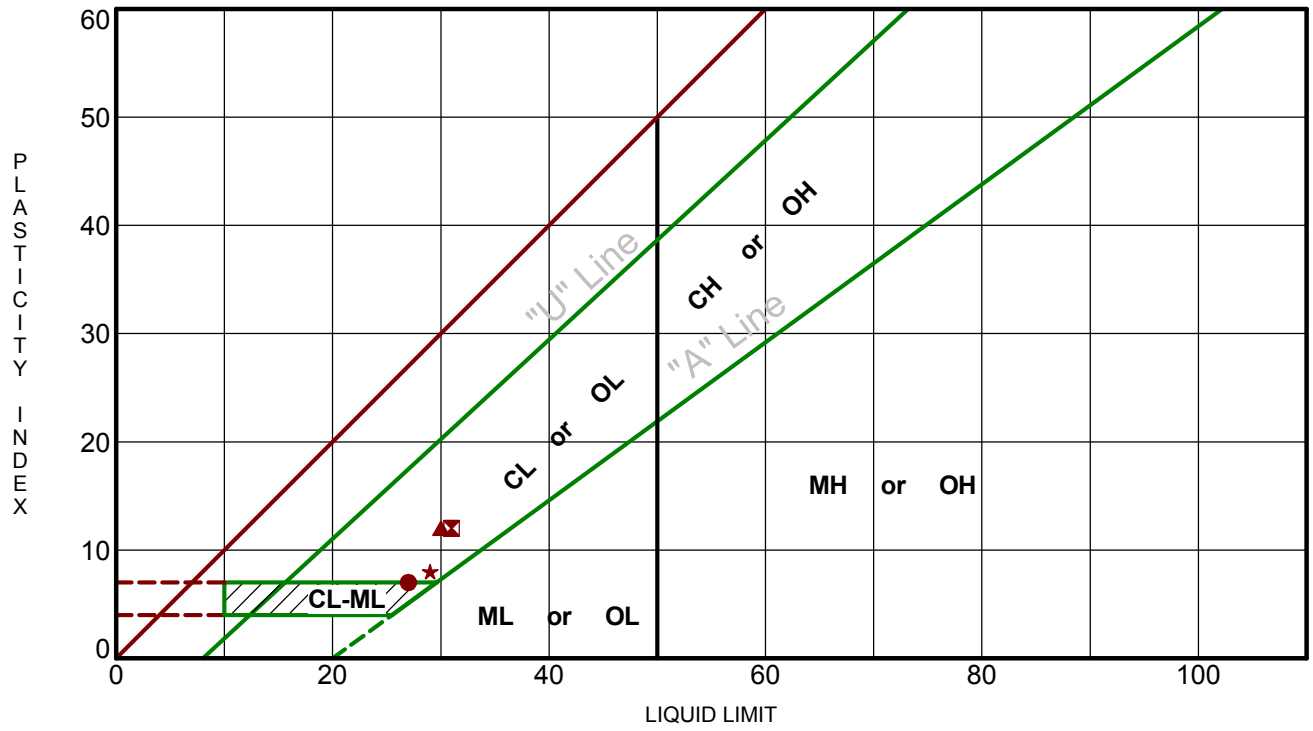
Selected soil samples obtained from the site were tested for the following engineering properties:

- ASTM D7263 Dry Density
- CT422 Chloride Content
- CT643 pH
- ASTM D4318 Atterberg Limits
- ASTM 4829 Expansion Index
- ASTM D2216 Moisture Content
- CT417 Soluble Sulfates
- CT643 Minimum Resistivity
- ASTM C136 Percent Passing #200 Sieve
- ASTM D4546 Collapse/Swell Potential

Procedural standards noted above are for reference to methodology in general. In some cases variations to methods are applied as a result of local practice or professional judgment.

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
● B-1	0.42 - 5	27	20	7	62	CL-ML	SANDY SILTY CLAY
⧓ B-2	0.25 - 2.5	31	19	12	55	CL	SANDY LEAN CLAY
▲ B-2	2.5 - 4	30	18	12		CL	SANDY LEAN CLAY
★ B-4	0.33 - 2.5	29	21	8		CL	LEAN CLAY WITH SAND

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

SITE: 12101-12111 Valley View Street Garden Grove, California

Terracon
1421 Edinger Ave Ste C
Tustin, CA

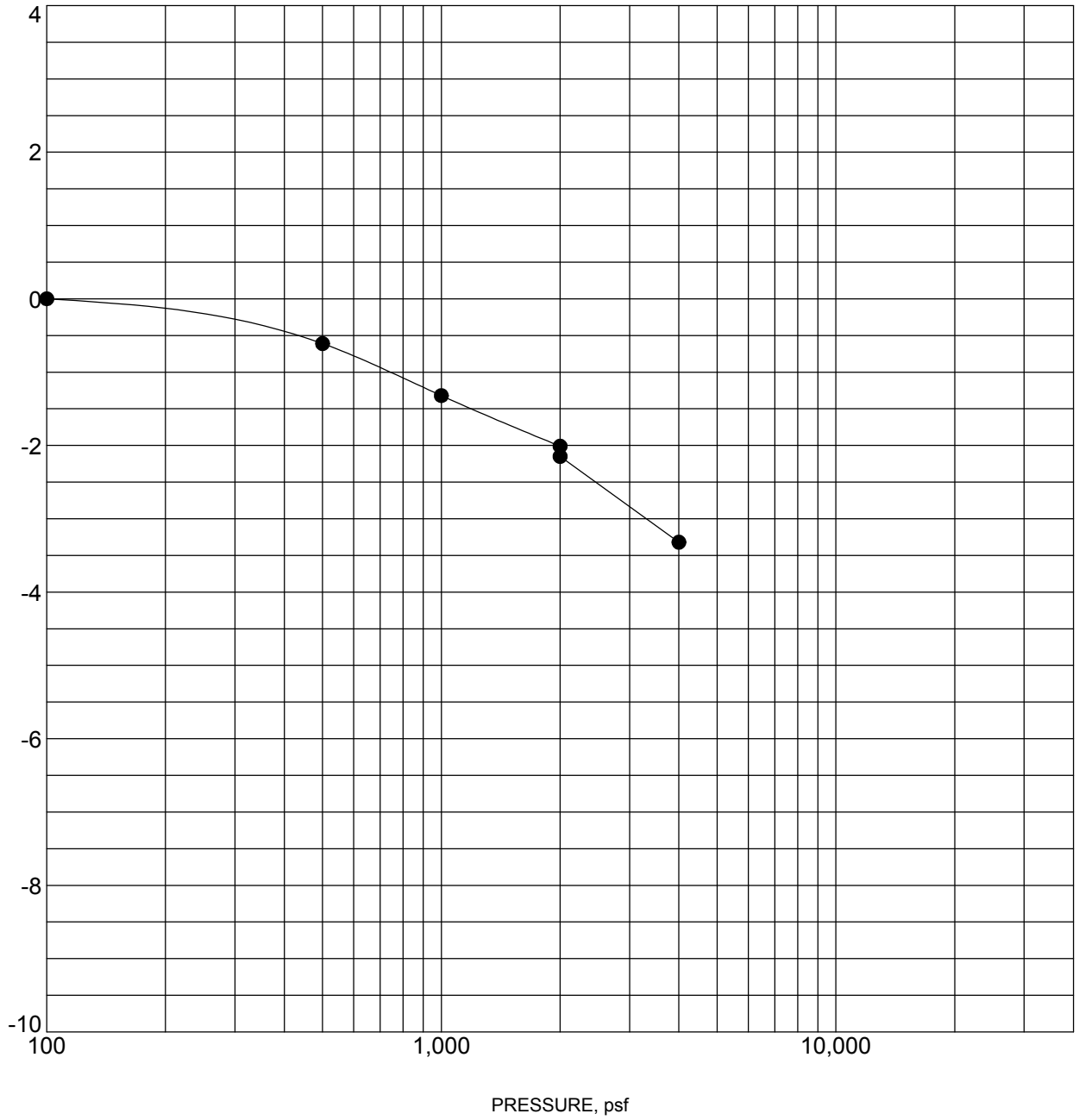
PROJECT NUMBER: 60175088

CLIENT: Cinema Management, Inc. Playa Del Rey, California

EXHIBIT: B-2

SWELL CONSOLIDATION TEST

ASTM D4546



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-3	2.5 ft	SANDY LEAN CLAY	114	13

NOTES: Water added at 2,000 psf.

PROJECT: 4 Stars Cinemas Expansion and New Restaurants

SITE: 12101-12111 Valley View Street
Garden Grove, California

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60175088

CLIENT: Cinema Management, Inc.
Playa Del Rey, California

EXHIBIT: B-3

CHEMICAL LABORATORY TEST REPORT

Project Number: 60175088
Service Date: 05/24/17
Report Date: 05/24/17
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Project

4 Stars: Garden Grove

Sample Submitted By: Terracon (60) **Date Received:** 5/17/2017 **Lab No.: 17-0477**

Results of Corrosion Analysis

Sample Number	
Sample Location	B-2
Sample Depth (ft.)	
pH Analysis, AWWA 4500 H	8.65
Water Soluble Sulfate (SO4), AWWA 4500 E (percent %)	0.02
Sulfides, AWWA 4500-S D, (mg/kg)	Nil
Red-Ox, AWWA 2580, (mV)	+590
Total Salts, AWWA 2510, (mg/kg)	1921
Chlorides, AWWA 4500 Cl B, (mg/kg)	175
Resistivity, ASTM G-57, (ohm-cm)	1358

Analyzed By: Kurt D. Ergun

Kurt D. Ergun
Chemist

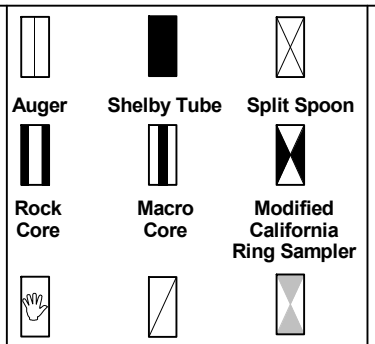
APPENDIX C

SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	**Hand Penetrometer**
(T)	**Torvane**
(b/f)	**Standard Penetration Test (blows per foot)**
N	**N value**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**
(WOH)	Weight of Hammer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels and sands.			**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance Includes silts and clays.			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, psf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Terracon

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

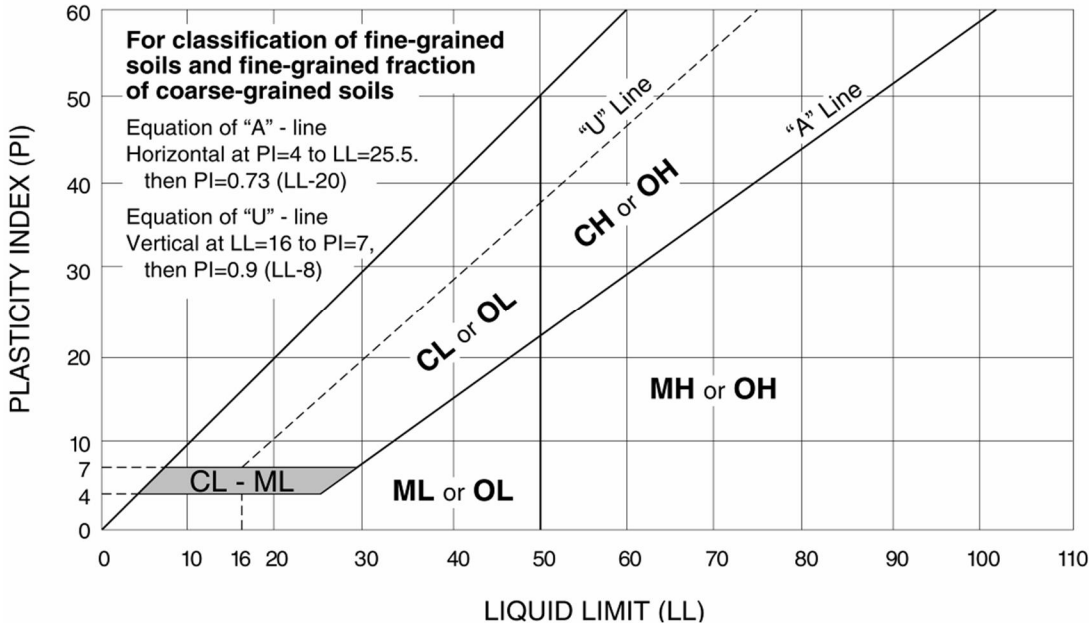
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Terracon

Exhibit C-2

USGS Design Maps Detailed Report

ASCE 7-10 Standard (33.7868°N, 118.0291°W)

Site Class E – "Soft Clay Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] $S_S = 1.483$ g

From Figure 22-2 [2] $S_1 = 0.543$ g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class E, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \le 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \ge 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = E and S_S = 1.483 g, F_a = 0.900

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \le 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \ge 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = E and S_1 = 0.543 g, F_v = 2.400

Equation (11.4–1): $S_{MS} = F_a S_S = 0.900 \times 1.483 = 1.334$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 2.400 \times 0.543 = 1.303$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

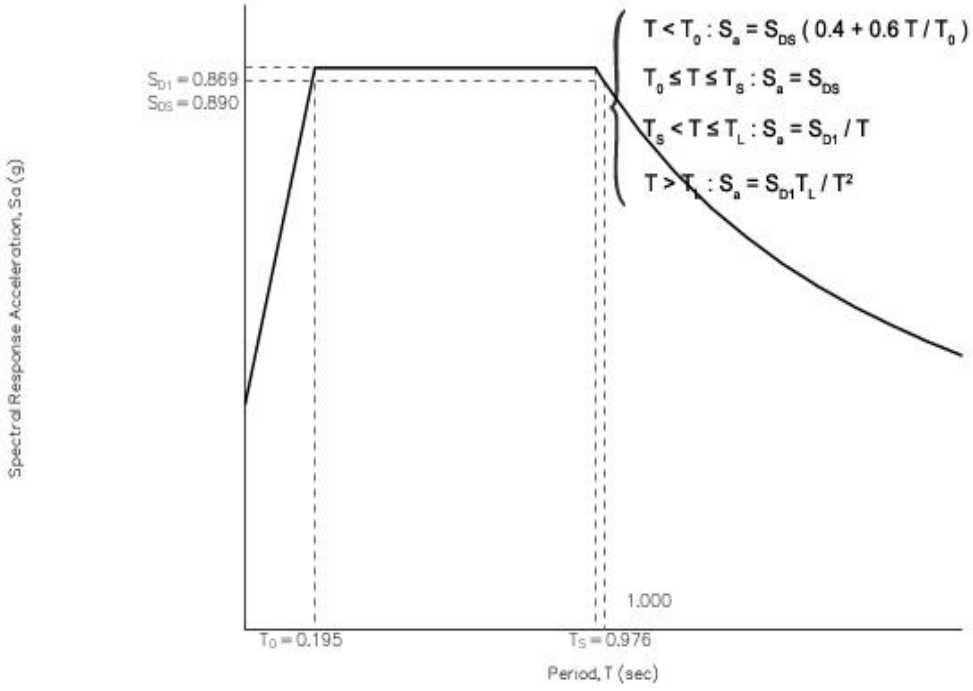
Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.334 = 0.890$ g

Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.303 = 0.869$ g

Section 11.4.5 — Design Response Spectrum

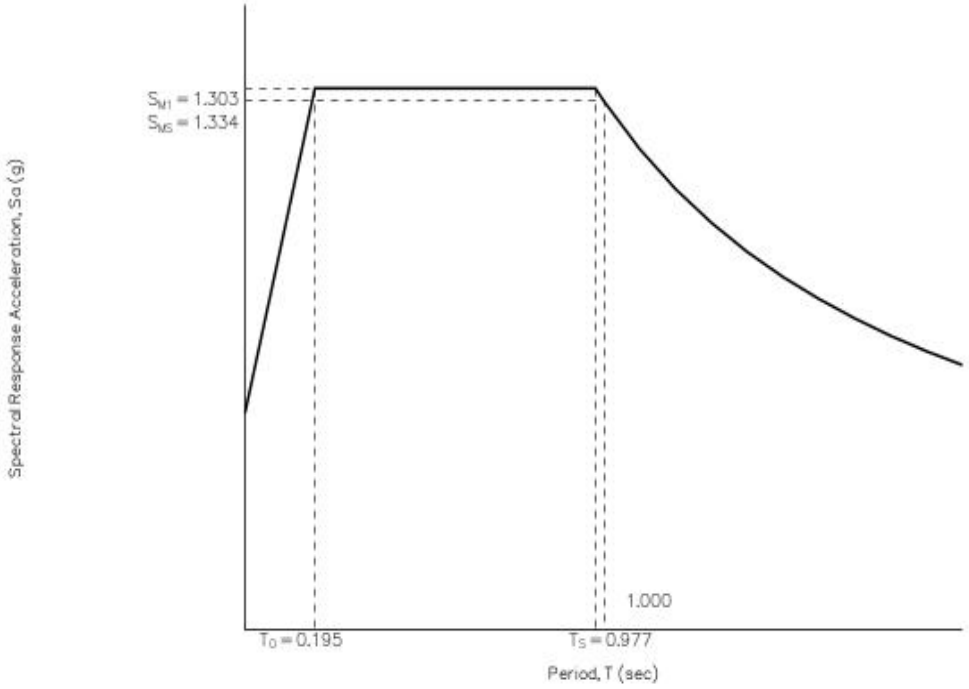
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.545

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 0.900 \times 0.545 = 0.49$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = E and PGA = 0.545 g, F_{PGA} = 0.900

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 1.008

From Figure 22-18 [6] C_{R1} = 1.045

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 0.890 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.869 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

APPENDIX D

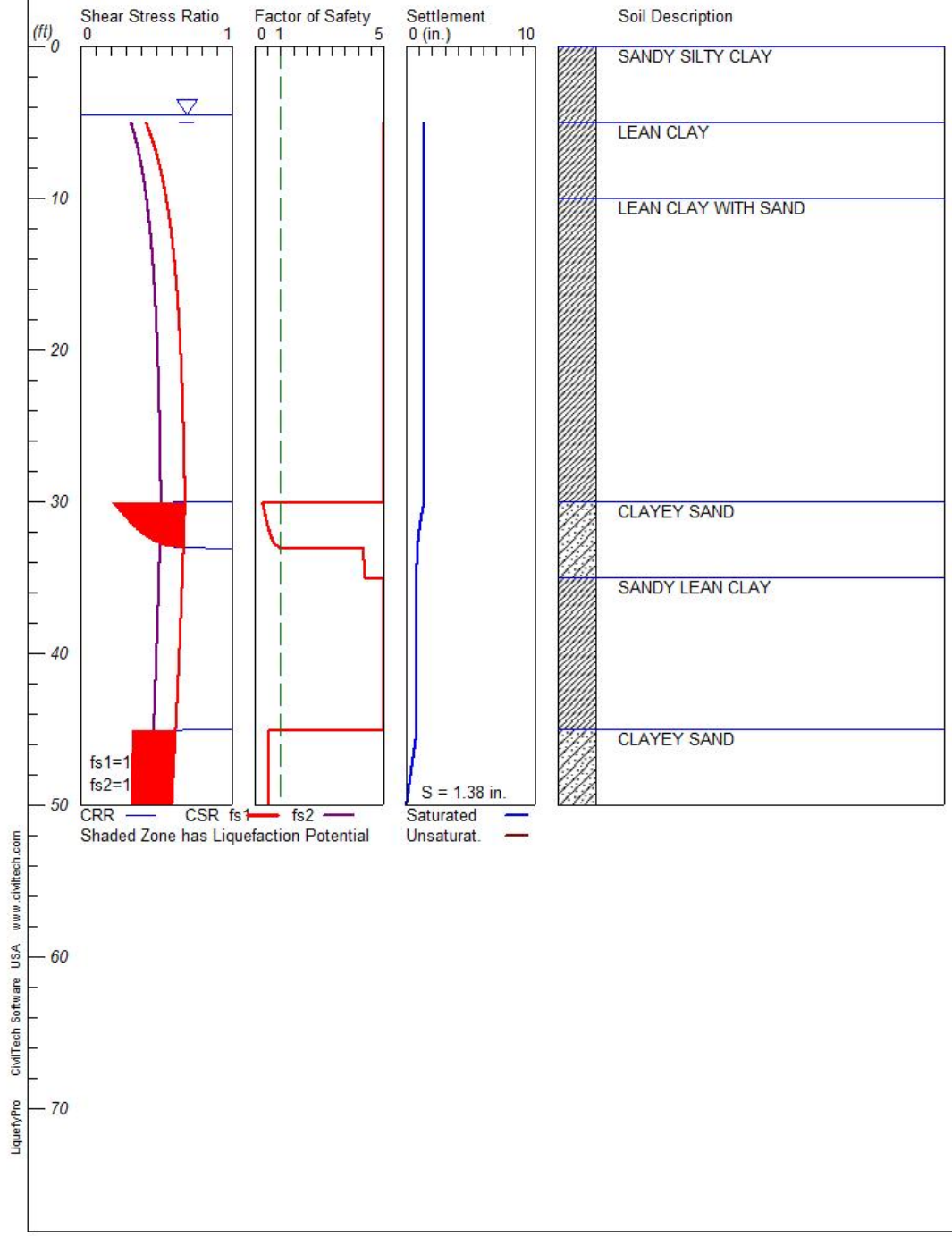
LIQUEFACTION ANALYSIS

LIQUEFACTION ANALYSIS

4 Stars Cinemas Expansion and New Restaurants

Hole No.=B-1 Water Depth=4.5 ft

Magnitude=6.51
Acceleration=0.49g



Terracon **60175088** **Exhibit D1**

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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: N:\Projects\2017\60175088\Working Files\Calculations-Analyses\B1.liq
Title: 4 Stars Cinemas Expansion and New Restaurants
Subtitle: 60175088

Surface Elev.=
Hole No.=B-1
Depth of Hole= 50.00 ft
Water Table during Earthquake= 4.50 ft
Water Table during In-Situ Testing= 7.00 ft
Max. Acceleration= 0.49 g
Earthquake Magnitude= 6.51

Input Data:
Surface Elev.=
Hole No.=B-1
Depth of Hole=50.00 ft
Water Table during Earthquake= 4.50 ft
Water Table during In-Situ Testing= 7.00 ft
Max. Acceleration=0.49 g
Earthquake Magnitude=6.51
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
5.00	6.00	120.00	NoLiq
7.50	6.00	120.00	NoLiq
10.00	3.00	120.00	NoLiq
15.00	3.00	120.00	NoLiq
20.00	4.00	120.00	NoLiq
25.00	13.00	120.00	NoLiq
30.00	3.00	120.00	39.00
35.00	11.00	120.00	NoLiq
40.00	10.00	120.00	NoLiq
45.00	10.00	120.00	36.00
50.00	9.00	120.00	41.00

Output Results:

Settlement of Saturated Sands=1.38 in.
Settlement of Unsaturated Sands=0.00 in.
Total Settlement of Saturated and Unsaturated Sands=1.38 in.
Differential Settlement=0.690 to 0.911 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
5.00	2.00	0.43	5.00	1.38	0.00	1.38
6.00	2.00	0.47	5.00	1.38	0.00	1.38
7.00	2.00	0.50	5.00	1.38	0.00	1.38
8.00	2.00	0.53	5.00	1.38	0.00	1.38
9.00	2.00	0.55	5.00	1.38	0.00	1.38
10.00	2.00	0.57	5.00	1.38	0.00	1.38
11.00	2.00	0.58	5.00	1.38	0.00	1.38
12.00	2.00	0.60	5.00	1.38	0.00	1.38
13.00	2.00	0.61	5.00	1.38	0.00	1.38
14.00	2.00	0.62	5.00	1.38	0.00	1.38
15.00	2.00	0.63	5.00	1.38	0.00	1.38
16.00	2.00	0.64	5.00	1.38	0.00	1.38
17.00	2.00	0.64	5.00	1.38	0.00	1.38
18.00	2.00	0.65	5.00	1.38	0.00	1.38
19.00	2.00	0.66	5.00	1.38	0.00	1.38
20.00	2.00	0.66	5.00	1.38	0.00	1.38
21.00	2.00	0.67	5.00	1.38	0.00	1.38
22.00	2.00	0.67	5.00	1.38	0.00	1.38
23.00	2.00	0.67	5.00	1.38	0.00	1.38
24.00	2.00	0.68	5.00	1.38	0.00	1.38
25.00	2.00	0.68	5.00	1.38	0.00	1.38
26.00	2.00	0.68	5.00	1.38	0.00	1.38

27.00	2.00	0.68	5.00	1.38	0.00	1.38
28.00	2.00	0.69	5.00	1.38	0.00	1.38
29.00	2.00	0.69	5.00	1.38	0.00	1.38
30.00	2.00	0.69	5.00	1.38	0.00	1.38
31.00	0.29	0.69	0.43*	1.17	0.00	1.17
32.00	0.39	0.68	0.57*	1.00	0.00	1.00
33.00	0.63	0.68	0.92*	0.88	0.00	0.88
34.00	2.87	0.68	4.24	0.83	0.00	0.83
35.00	2.87	0.67	4.27	0.83	0.00	0.83
36.00	2.00	0.67	5.00	0.83	0.00	0.83
37.00	2.00	0.67	5.00	0.83	0.00	0.83
38.00	2.00	0.66	5.00	0.83	0.00	0.83
39.00	2.00	0.66	5.00	0.83	0.00	0.83
40.00	2.00	0.65	5.00	0.83	0.00	0.83
41.00	2.00	0.65	5.00	0.83	0.00	0.83
42.00	2.00	0.64	5.00	0.83	0.00	0.83
43.00	2.00	0.64	5.00	0.83	0.00	0.83
44.00	2.00	0.63	5.00	0.83	0.00	0.83
45.00	2.00	0.63	5.00	0.83	0.00	0.83
46.00	0.34	0.62	0.54*	0.67	0.00	0.67
47.00	0.34	0.62	0.54*	0.51	0.00	0.51
48.00	0.33	0.61	0.54*	0.34	0.00	0.34
49.00	0.33	0.61	0.55*	0.17	0.00	0.17
50.00	0.33	0.60	0.55*	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

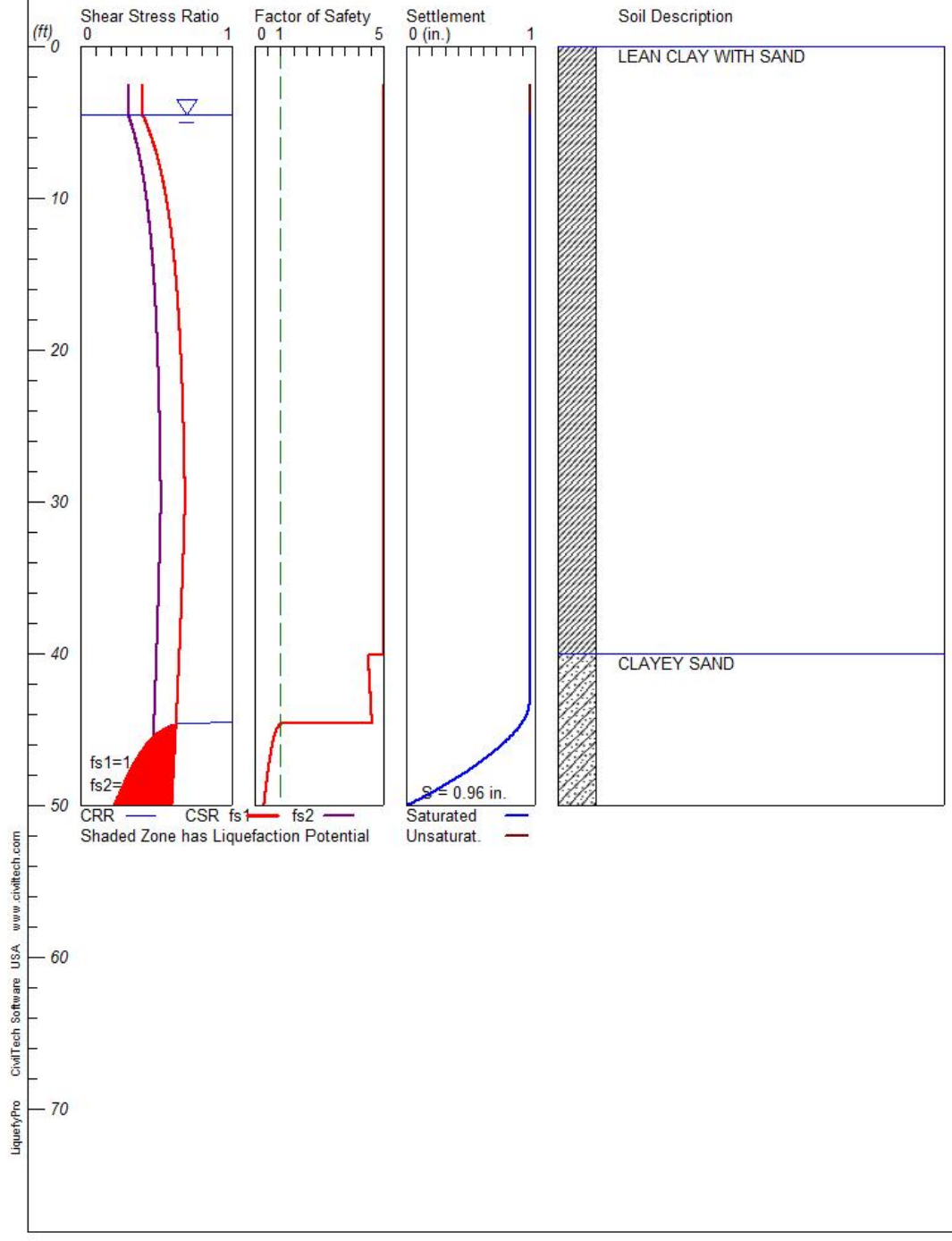
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

LIQUEFACTION ANALYSIS

4 Stars Cinemas Expansion and New Restaurants

Hole No.=B-4 Water Depth=4.5 ft

Magnitude=6.51
Acceleration=0.49g



Terracon **60175088** **Exhibit D3**

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LIQUEFACTION ANALYSIS SUMMARY

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Title: 4 Stars Cinemas Expansion and New Restaurants
Subtitle: 60175088

Surface Elev.=
Hole No.=B-4
Depth of Hole= 50.00 ft
Water Table during Earthquake= 4.50 ft
Water Table during In-Situ Testing= 5.00 ft
Max. Acceleration= 0.49 g
Earthquake Magnitude= 6.51

Input Data:
Surface Elev.=
Hole No.=B-4
Depth of Hole=50.00 ft
Water Table during Earthquake= 4.50 ft
Water Table during In-Situ Testing= 5.00 ft
Max. Acceleration=0.49 g
Earthquake Magnitude=6.51
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
2.50	3.00	120.00	NoLiq
5.00	1.00	120.00	NoLiq
7.50	2.00	120.00	NoLiq
10.00	4.00	120.00	NoLiq
15.00	3.00	120.00	NoLiq
20.00	2.00	120.00	NoLiq
25.00	11.00	120.00	NoLiq
30.00	7.00	120.00	NoLiq
35.00	9.00	120.00	NoLiq
40.00	22.00	120.00	43.00
45.00	17.00	120.00	21.00
50.00	7.00	120.00	21.00

Output Results:

Settlement of Saturated Sands=0.96 in.
Settlement of Unsaturated Sands=0.00 in.
Total Settlement of Saturated and Unsaturated Sands=0.96 in.
Differential Settlement=0.482 to 0.636 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
2.50	2.00	0.41	5.00	0.96	0.00	0.96
3.50	2.00	0.41	5.00	0.96	0.00	0.96
4.50	2.00	0.41	5.00	0.96	0.00	0.96
5.50	2.00	0.45	5.00	0.96	0.00	0.96
6.50	2.00	0.49	5.00	0.96	0.00	0.96
7.50	2.00	0.51	5.00	0.96	0.00	0.96
8.50	2.00	0.54	5.00	0.96	0.00	0.96
9.50	2.00	0.56	5.00	0.96	0.00	0.96
10.50	2.00	0.57	5.00	0.96	0.00	0.96
11.50	2.00	0.59	5.00	0.96	0.00	0.96
12.50	2.00	0.60	5.00	0.96	0.00	0.96
13.50	2.00	0.61	5.00	0.96	0.00	0.96
14.50	2.00	0.62	5.00	0.96	0.00	0.96
15.50	2.00	0.63	5.00	0.96	0.00	0.96
16.50	2.00	0.64	5.00	0.96	0.00	0.96
17.50	2.00	0.65	5.00	0.96	0.00	0.96
18.50	2.00	0.65	5.00	0.96	0.00	0.96
19.50	2.00	0.66	5.00	0.96	0.00	0.96
20.50	2.00	0.66	5.00	0.96	0.00	0.96
21.50	2.00	0.67	5.00	0.96	0.00	0.96
22.50	2.00	0.67	5.00	0.96	0.00	0.96

23.50	2.00	0.68	5.00	0.96	0.00	0.96
24.50	2.00	0.68	5.00	0.96	0.00	0.96
25.50	2.00	0.68	5.00	0.96	0.00	0.96
26.50	2.00	0.68	5.00	0.96	0.00	0.96
27.50	2.00	0.69	5.00	0.96	0.00	0.96
28.50	2.00	0.69	5.00	0.96	0.00	0.96
29.50	2.00	0.69	5.00	0.96	0.00	0.96
30.50	2.00	0.69	5.00	0.96	0.00	0.96
31.50	2.00	0.69	5.00	0.96	0.00	0.96
32.50	2.00	0.68	5.00	0.96	0.00	0.96
33.50	2.00	0.68	5.00	0.96	0.00	0.96
34.50	2.00	0.68	5.00	0.96	0.00	0.96
35.50	2.00	0.67	5.00	0.96	0.00	0.96
36.50	2.00	0.67	5.00	0.96	0.00	0.96
37.50	2.00	0.66	5.00	0.96	0.00	0.96
38.50	2.00	0.66	5.00	0.96	0.00	0.96
39.50	2.00	0.65	5.00	0.96	0.00	0.96
40.50	2.87	0.65	4.42	0.96	0.00	0.96
41.50	2.87	0.65	4.45	0.96	0.00	0.96
42.50	2.87	0.64	4.48	0.96	0.00	0.96
43.50	2.87	0.64	4.52	0.95	0.00	0.95
44.50	2.87	0.63	4.55	0.90	0.00	0.90
45.50	0.47	0.63	0.75*	0.80	0.00	0.80
46.50	0.39	0.62	0.62*	0.67	0.00	0.67
47.50	0.33	0.62	0.53*	0.51	0.00	0.51
48.50	0.28	0.61	0.46*	0.33	0.00	0.33
49.50	0.23	0.61	0.39*	0.12	0.00	0.12

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

Attachment G

Operations and Maintenance

Operations and Maintenance (O&M) Plan

Water Quality Management Plan
for

Valley View Street Garden Grove

12111 Valley View Street, Garden Grove, CA 92845

APN #224-202-16

Legal Project Description:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF GARDEN GROVE, COUNTY OF ORANGE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:
LOT 129 OF TRACT NO. 6740, IN THE CITY OF GARDEN GROVE, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 337, PAGES 15, 16 AND 17 OF MISCELLANEOUS MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY. EXCEPTING THEREFROM ONE-HALF OF ALL MINERALS, GAS, OILS, NAPHTHA AND OTHER HYDROCARBON SUBSTANCES IN OR UNDER SAID LAND, AS RESERVED IN THE DEED FROM THE ESTATE OF SUSANNA BIXBY BRYANT, DECEASED, RECORDED JUNE 28, 1947 IN BOOK 1535, PAGE 97 OF OFFICIAL RECORDS, BUT WITHOUT THE RIGHT OF SURFACE ENTRY UPON THE TOP 500 FEET THEREOF, AS PROVIDED BY QUITCLAIM DEED RECORDED JULY 13, 1959, IN BOOK 4795, PAGE 522 OF OFFICIAL RECORDS.
APN: 224-202-15

PARCEL 2:
LOT 131 OF TRACT NO. 6740, IN THE CITY OF GARDEN GROVE, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 337, PAGES 15, 16 AND 17 OF MISCELLANEOUS MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY. EXCEPTING THEREFROM ONE-HALF OF ALL MINERALS, GAS, OILS, NAPHTHA AND OTHER HYDROCARBON SUBSTANCES IN OR UNDER SAID LAND, AS RESERVED IN THE DEED FROM THE ESTATE OF SUSANNA BIXBY BRYANT, DECEASED, RECORDED JUNE 28, 1947 IN BOOK 1535, PAGE 97 OF OFFICIAL RECORDS, BUT WITHOUT THE RIGHT OF SURFACE ENTRY UPON THE TOP 500 FEET THEREOF, AS PROVIDED BY QUITCLAIM DEED RECORDED JULY 13, 1959, IN BOOK 4795, PAGE 522 OF OFFICIAL RECORDS.
APN: 224-202-15 AND 224-202-16

Exhibit A, Operations and Maintenance Plan

The responsible party of inspection and Maintenance for the plan will be the project owner. The "Owner" as referred below is Cinemas Management, INC. and their information is listed below:
Cinemas Management, INC.
315 Rees Street
Playa Del Rey, CA 90293
Contact: Daniel Arkarakian

The owner is aware of the maintenance responsibilities of the proposed BMP's. A funding mechanism will be established to maintain the BMP's at the frequency stated in the WQMP.

The ownership of the treatment control BMP's will not be transferred to a public agency.

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Non-Structural Source Control BMPs			
Yes	**N1. Education for Property Owners, Tenants and Occupants** The property owner shall prepare a training manual for all existing and future employees. The manual shall include information regarding proper practices that contribute to the protection of the stormwater quality. Training shall be provided upon hire of new associates. A copy of the training manual shall remain in the building at all times for employees to use as needed. The manual shall include all Educational Material included on Attachment A of this report. Additional education material may be found in the following website: http://www.ocwatershed.com/PublicEd/resources/business-brochures.html	Quarterly	Owner
Yes	**N2. Activity Restriction** The property owner shall ensure that the rules and guidelines as determined on the project conditions, covenants and restrictions (CC&R's) and lease terms or other policies are followed at all times once the project is operations. Prohibited activities for the project that promoted water quality includes: • Prohibit discharges of fertilizer, pesticides, or animal wastes to streets or storm drains. • Prohibit blowing or sweeping of debris (leaf litter, grass clippings, litter, etc.) into streets or storm drains. • Requirement to keep dumpster lids closed at all times. • Prohibit vehicle washing, maintenance, or repair on the premised or restrict those activities to designated areas.	Continual	Owner

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	**N3. Common Area Landscape Management** Ongoing maintenance is conducted to minimize erosion and over-irrigation, conserve water and reduce pesticide and fertilizer applications. All maintenance must be consistent with the City of Garden Grove requirements. Proper maintenance practices should help reduce and/or eliminate pollution from pesticides, nutrients, trash/debris and sediments. The project common area landscape maintenance should be consistent with the following documents included in Attachment A: • Building and Ground Maintenance Guidelines • Housekeeping practices • Plaza and sidewalk cleaning • Landscape maintenance	Weekly	Owner
Yes	**N4. BMP Maintenance** Maintain Bioretention per specifications below.		
No	**N5. Title 22 CCR Compliance** Hazardous waste shall be managed properly through compliance with applicable title 22 regulations. Storage and transportation of hazardous materials shall be per the title 22 of the California Code of Regulations and the Health and Safety Code.		
No	**N6. Local Industrial Permit Compliance**		
Yes	**N7. Spill Contingency Plan**		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
No	**N8. Underground Storage Tank Compliance**		
No	**N9. Hazardous Materials Disclosure Compliance** The Owner is responsible for obtaining the required permits for the use and transportation of hazardous materials. Permits may be required from the County of Orange Health Department, City of La Habra, and other local authorities.		
Yes	**N10. Uniform Fire Code Implementation** The Owner is responsible for complying with the Los Angeles Fire Department requirements regarding proper management of hazardous materials and emergency response plans. An inventory of hazardous materials should be maintained on-site and an emergency response plans should be established.	Continual	Owner
Yes	**N11. Common Area Litter Control** The Owner will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The Owner may contract with their landscape maintenance firm to provide this service with regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations and reporting the violations to the Owner for investigation.	Continual	Owner
Yes	**N12. Employee Training**		
No	**N13. Housekeeping of Loading Docks**		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	**N14. Common Area Catch Basin Inspection** The Owner must ensure that the on-site drain inlets, grates, and drain pipes will be periodically inspected visually. Cleaning should take place in the late summer/early fall prior to the start of the rainy season. If necessary, clean, repair, or replace any drainage facility prior to the start of each rainy season (no later than October 15 of each year). Also refer to "Drainage System Maintenance" in Attachment A.	Continual -Before and after predicted storm events	Owner
Yes	**N15. Street Sweeping Private Streets and Parking Lots** The Owner must sweep outdoor lots regularly (minimum monthly), and prior to the storm season (no later than October 15 each year). Sweeping shall be done with a vacuum-type sweeper. Under no circumstances are outdoor areas/lots to be rinsed or washed with water unless said rinse/wash water is collected and disposed of properly (i.e. into the sewer).	Monthly	Owner
No	**N16. Retail Gasoline Outlets**		
Structural Source Control BMPs			
Yes	**Provide Storm Drain System Stenciling and Signage** All catch basins/inlets/outlets on site must be marked using the City's "No Dumping – Drains to Ocean" curb marker or stenciled. An approved stencil shall be used to paint this message on the top of curb directly above the inlet, and on one side of the curb face. Labeling for catch basins is to be inspected regularly and maintained so as to be reasonably legible at all times. The inspection and maintenance is to be performed by the Owner. This stencil is to alert the public/employees to the destination of pollutants discharged into the storm water.	Annual	Owner

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	***Bioretention*** Erosion Standing Water Loss of Surface Permeability Standing Water	Annually prior to wet season. After major storm events.	Owner
	Visual Contaminants and Pollution Vegetation Inlet/Overflow Trash and Debris	Monthly.	
No	**Design and Construct Outdoor Material Storage Areas to Reduce Pollutant Introduction**		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	**Design and Construct Trash and Waste Storage Areas to Reduce Pollutant Introduction** The owner shall post signs on trash enclosure gates that state "Keep Dumpster Lids Closed." The Owner will monitor dumpster usage such that dumpsters are not overfilled and the dumpster lids can close completely. The Owner shall increase the trash pickup schedule as necessary to prevent dumpsters from overfilling. The Owner will observe and damage to the trash enclosure wall and any discharge from the trash storage area.	Continual	Owner
Yes	**Use Efficient Irrigation Systems & Landscape Design** All irrigation systems will be inspected to ensure that the systems are functioning properly and that the programmable timers are set correctly.	Weekly	Owner
No	**Protect Slopes and Channels and Provide Energy Dissipation**		
No	**Loading Docks**		
No	**Maintenance Bays**		
No	**Vehicle Wash Areas**		
No	**Outdoor Processing Areas**		
No	**Equipment Wash Areas**		
No	**Fueling Areas**		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
No	**Hillside Landscaping**		
No	**Wash Water Controls for Food Preparation Areas**		
No	**Community Car Wash Racks**		
Treatment Control BMPs			

Required Permits

No permits are required.

Forms to Record BMP Implementation, Maintenance, and Inspection

The form that will be used to record implementation, maintenance, and inspection of BMPs is attached.

Recordkeeping

All records must be maintained for at least five (5) years and must be made available for review upon request.

RECORD OF BMP IMPLEMENTATION, MAINTENANCE, AND INSPECTION

Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

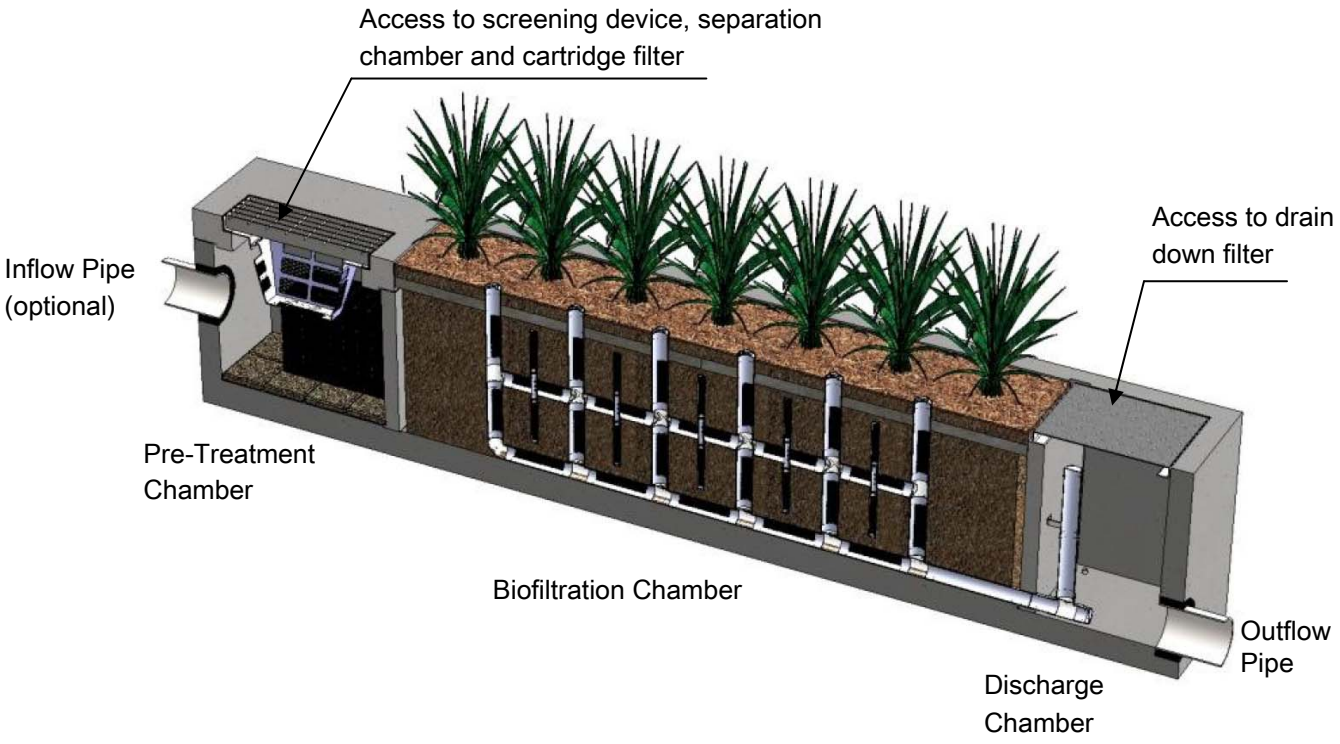
BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - (*5 minute average service time*).
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - (*5 minute average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.

Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Inspection Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes:

2972 San Luis Rey Road, Oceanside, CA 92058 P (760) 433-7640 F (760) 433-3176

Maintenance Report

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Cleaning and Maintenance Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

Attachment H

Conditions of Approval

GARDEN GROVE

CITY OF GARDEN GROVE

October 19, 2018

Cinemas Management, Inc.
Attn: Dan Akarakian
315 Rees Street
Playa Del Rey, CA 90293

REFERENCE: Planned Unit Development No. PUD-104-73 (REV. 2018)
Site Plan No. SP-057-2018
Conditional Use Permit No. CUP-140-2018
Lot Line Adjustment No. LLA-019-2018

Your request as referenced above has been provisionally approved contingent upon the approval of PUD-104-73 (REV. 2018) by City Council Ordinance.

Provided that you comply with all conditions of approval listed in the enclosed Resolution, no appeals of the Planning Commission's decision are filed with the City Clerk, and City Council approves PUD-104-73 (REV. 2018), the earliest effective date will be 30 days after the second reading of the approved City Council Ordinance.

The City Clerk's office will notify you of the City Council date(s).

Sincerely,

Maria Parra

Maria Parra
Senior Planner

Enclosure

RESOLUTION NO. 5931-18

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF GARDEN GROVE RECOMMENDING THE CITY COUNCIL APPROVE PLANNED UNIT DEVELOPMENT NO. PUD-104-73 (REV. 2018), AN AMENDMENT TO THE PUD-104-73 (PLANNED UNIT DEVELOPMENT) ZONE TO ALLOW AN AUTOMATIC CAR WASH, A DRIVE-THRU PAD RESTAURANT, AND A SIT-DOWN RESTAURANT, AND TO AMEND THE SIGN REQUIREMENTS OF THE PUD.

BE IT RESOLVED that the Planning Commission of the City of Garden Grove, in regular session assembled on October 18, 2018, does hereby recommend approval of Planned Unit Development No. PUD-104-73 (Rev. 2018), to amend the PUD-104-73 (Planned Unit Development) zone to allow redevelopment of the two lots located at 12101 and 12111 Valley Street, Assessor's Parcel Nos. 224-202-15 and 224-202-16, with an automatic car wash, an 1,870 square foot drive-thru pad restaurant, and a 2,700 square foot sit-down restaurant, and to modify the sign requirements of the PUD, including: to allow for a multiple-tenant sign cabinet on the existing pole sign, to allow a vertical sign on a new tower building element of the movie theater, and to allow non-LED/non-digital movie poster board graphics to be displayed on the exterior marquee and wall display boards of the movie theater.

BE IT FURTHER RESOLVED that the Planning Commission recommends that the City Council determine that the proposed Project is categorically exempt from the environmental review under the California Environmental Quality Act (CEQA) (California Public Resources Code Section 21000 et seq.), pursuant to Section 15303 (New Construction and Conversion of Small Structures) and Section 15301 (Existing Facilities) of the of the CEQA Guidelines (14 Cal. Code Regs., Sections 15301 and 15303).

BE IT FURTHER RESOLVED in the matter of Planned Unit Development No. PUD-104-73 (Rev. 2018), the Planning Commission of the City of Garden Grove does hereby report as follows:

1. The subject case was initiated by Dan Akarakian for Cinemas Management, Inc., with the authorization of Valley View Cinema Center, LLC, owner of the two commercial lots located at 12101 and 12111 Valley View Street containing the existing movie theater and large restaurant.

2. The applicant is requesting approval of an amendment to the standards and conditions of Planned Unit Development No. PUD-104-73 to facilitate the redevelopment of these two lots with the demolition of the existing large restaurant, expansion of the existing movie theatre, and the addition of an automatic car wash, a 1,870 square foot drive-thru pad restaurant, and a 2,700 square foot sit-down restaurant, and to modify the sign requirements of the PUD, including: to allow for a multiple-tenant sign cabinet on an existing pole sign, to allow a vertical sign on a new tower building element of

the movie theater, and to allow non-LED/non-digital movie poster board graphics to be displayed on the exterior marquee and wall display boards of the movie theater.

3. The property has a General Plan Land Use designation of Residential/ Commercial Mixed Use 2 and is zoned Planned Unit Development No. PUD-104-73. The subject site is comprised of two (2) parcels, with a total land area of 2.71-acres, that are improved with the Starlight 4 Star Cinema and a vacant 6,040 square foot restaurant. The applicant proposes to redevelop the site with an automatic car wash, a pad drive-thru restaurant, a sit-down restaurant, and the expansion of the existing movie theater through land use entitlements for Planned Unit Development No. PUD-104-73 (Rev. 2018), Site Plan No. SP-057-2018, Lot Line Adjustment No. LLA-019-2018, and Conditional Use Permit No. CUP-140-2018 (collectively, the "Project"). The existing vacant restaurant will be demolished to accommodate the proposed development.

4. The proposed Project is categorically exempt from CEQA pursuant to Section 15303 (New Construction and Conversion of Small Structures) and Section 15301 (Existing Facilities) of the of the CEQA Guidelines.

5. Existing land use, zoning, and General Plan designation of property in the vicinity of the subject property have been reviewed.

6. Report submitted by City staff was reviewed.

7. Pursuant to a legal notice, a public hearing was held on October 18, 2018, and all interested persons were given an opportunity to be heard.

8. Concurrently with the adoption of this Resolution, the Planning Commission adopted (a) Resolution No. 5932-18 approving Lot Line Adjustment No. LLA-019-2018 to modify existing lot lines to consolidate the two (2) subject parcels into one (1) and Site Plan No. SP-057-2018 authorizing the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive thru pad restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, and related site improvements; and (b) Resolution No. 5933-18 approving Conditional Use Permit No. CUP-140-2018 permitting operation of the proposed automatic car wash. The facts and findings set forth in Planning Commission Resolution Nos. 5932-18 and 5933-18 are hereby incorporated into this Resolution by reference.

9. The Planning Commission gave due and careful consideration to the matter during its meeting of October 18, 2018, and considered all oral and written testimony presented regarding the project.

BE IT FURTHER RESOLVED, FOUND AND DETERMINED that the facts and reasons supporting the conclusion of the Planning Commission, as required under Municipal Code Sections 9.16.030.20, are as follows:

FACTS:

The subject properties are located on the west side of Valley View Street, south of Chapman Avenue. The properties have a General Plan Land Use designation of Residential/Commercial Mixed Use 2, and are zoned Planned Unit Development (PUD) No. PUD-104-73. PUD-104-73 was adopted in 1973 to allow the construction of a 126-unit residential condominium (currently known as Stonegate), a 32-lane bowling alley (12141 Valley View Street), a 900 seat movie theater (12111 Valley View Street), a 7,500 square foot restaurant (12101 Valley View Street), a 3,600 square foot drive-thru restaurant (12051 Valley View Street), and a 41,850 square foot senior facility for 120 people (5900 Chapman Avenue).

The commercial portion of PUD-104-73 includes a total five (5) commercial properties: a bowling alley, formerly AMF Bowling Alley (12141 Valley View Street), the Starlight 4 Star Cinema (12111 Valley View Street), a vacant restaurant building (12101 Valley View Street), a McDonald's drive-thru restaurant (12051 Valley View Street), and the Brookdale Senior Living facility (5900 Chapman Avenue).

The applicant is the property owner of the movie theater and the vacant restaurant properties. The property owner intends to redevelop the movie theater and the vacant restaurant properties in an effort to revitalize the commercial center. The proposed project includes the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive-thru restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, along with related site improvements, and a lot line adjustment to modify existing lot lines to consolidate the two (2) subject parcels into one (1). In order to facilitate the request and the proposed uses, an amendment to the PUD is required to amend the uses to allow the automatic car wash, the drive-thru restaurant, and the sit-down restaurant, along with an amendment to the sign requirements of the PUD.

In conjunction with the proposed amendment to the PUD-104-73 zone, the applicant is requesting approval of Site Plan No. SP-057-2018 to allow the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive-thru restaurant, a 2,700 square foot sit-down restaurant, and the expansion of the existing movie theater by 2,846 square feet, along with related site improvements; Lot Line Adjustment No. LLA-019-2018 to modify existing lot lines to consolidate the two (2) subject parcels into one (1); and Conditional Use Permit No. CUP-140-2018 to allow the operation of the automatic car wash on the subject properties, 12101 and 12111 Valley View Street.

FINDINGS AND REASONS:

Planned Unit Development:

1. The location, design and proposed uses are compatible with the character of existing development in the vicinity and will be well integrated into its setting.

   The proposed PUD amendment permits an automatic car wash and two smaller restaurants in place of an existing vacant large restaurant on two lots within the commercial portion of the existing PUD, as well as making changes to the signage requirements of the PUD associated with the planned redevelopment. Pursuant to the amendment, all new buildings are subject to Site Plan approval, and the automatic car wash is subject to Conditional Use Permit approval. This will ensure that the proposed new uses and the location and design of the buildings and related site improvements are compatible with the character of the existing development in the vicinity and will be well integrated into the existing setting.

   The proposed Project will include the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive-thru restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, and related site improvements that will provide for the center's revitalization, as well as introduce new commercial uses to serve local residents. The proposed construction and site improvements will be compatible and be integrated with the existing commercial center, which can only be facilitated through the PUD amendment. The findings of the Planning Commission set forth in Resolution No. 5931-18 approving Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018 and Resolution No. 5933-18 approving Conditional Use Permit No. CUP-140-2018 are hereby incorporated herein by reference.

2. The plan will produce a stable and desirable environment and will not cause undue traffic congestion on surrounding streets or access streets.

   The redevelopment facilitated by the PUD amendment will revitalize an older and under-utilized commercial shopping center located along the Valley View Corridor. A Traffic Impact Study prepared for the Project concluded that the traffic associated with the new and expanded uses will not significantly impact adjacent intersections during peak AM and PM traffic times. The Traffic Impact Study concluded that the adjacent traffic intersections would operate at the same level of service with the incorporation of the proposed uses; therefore, the project would have no significant impact to the surrounding streets based on the criteria established by the City of Garden Grove. The traffic study also included a review of the Project's site access and circulation, including the queuing for the drive-thru restaurant and the automatic car wash, and

determined that the site design is adequate, and that the vehicle queuing will be contained within the proposed drive-thru lanes. The City's Engineering Division has reviewed the plan and all appropriate conditions of approval have been incorporated to minimize any adverse impacts on surrounding streets.

In addition, the project will provide sufficient on-site parking to accommodate the proposed uses and the movie theater expansion. The project will provide a total of 179 parking spaces (159 parking stalls and 20 vehicle queuing spaces along the drive-thru lane of the drive-thru restaurant and the car wash), which complies with the parking requirements of the Municipal Code. Changes to the on-site circulation will occur, and the design of the drive aisles and the parking lot comply with the City's requirement for vehicular and emergency access.

Furthermore, the project will continue to maintain two (2) access points to the site located on Valley View Street, as well as maintain the shared driveway access to the adjacent properties.

3. Provision is made for both public and private open spaces.

   The Project has been designed to include new on-site landscaping. The Project will provide new landscaping along Valley View Street and within the parking area. The overall landscaping for the site will increase from 1,647 square feet (1.4% of the site) to 13,268 square feet (14% of the site). The project has been designed in accordance with the City's provisions for providing an adequate amount of landscaping as required by the Planned Unit Development standards. The Community and Economic Development Department, Planning Services Division will review and approve the type and number of plants.

4. Provision is made for the protection and maintenance of private areas reserved for common use.

   Through the conditions of approval for the project, all necessary agreements for the protection and maintenance of landscaped setbacks and open spaces will be required to be adhered to for the life of the project.

5. The quality of the project, achieved through the proposed Planned Unit Development zoning, is greater than could be achieved through traditional zoning.

   The property is currently zoned Planned Unit Development No. PUD-104-73. PUD-104-73 was adopted in 1973 to allow the construction of a 126-unit residential condominium, a 32-lane bowling alley, a 900 seat movie theater, a 7,500 square foot restaurant, a 3,600 square foot drive-thru restaurant, and a 41,850 square foot aged facility. The project will continue to maintain the PUD zoning designation, but the PUD permitted uses will be amended to allow an

automatic car wash, a drive-thru restaurant, and a sit-down restaurant on the subject properties, 12101 and 12111 Valley View Street, as well as amend the sign criteria of the PUD. The proposed amendment will facilitate the redevelopment of the site in order to introduce new uses and necessary site improvements that will revitalize the center to fulfill the goals of the General Plan.

Furthermore, concurrently with the proposed PUD amendment, a Site Plan is proposed that will allow the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive-thru restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, along with related site improvements that will assist with the redevelopment and revitalization of the project site and commercial center. The proposed amendment to the PUD will allow for a project with a superior design and use diversity than the original PUD approved in 1973.

6. The amendment to the PUD is internally consistent with the goals, objectives, and elements of the General Plan.

The subject site, located within Planned Unit Development No. PUD-104-73, has a General Plan Land Use Designation of Residential/Commercial Mixed Use 2. The Residential/ Commercial Mixed Use 2 Land Use Designation is intended to provide a mix of residential and commercial uses mostly around older underutilized, multi-tenant commercial developments. PUD-104-73 was adopted in 1973 and allowed for the construction of a 126-unit residential condominium, bowling alley, a movie theater, a sit-down restaurant, a drive-thru restaurant, and an aged facility. Currently, the commercial portion of PUD-104-73 is improved with a bowling alley, a movie theater, a vacant restaurant building, a McDonald's restaurant, and a senior living facility. The proposed amendment to Planned Unit Development No. PUD-104-73 will modify the uses permitted on the subject site only to allow an automatic car wash and two smaller restaurants in place of the existing larger restaurant, as well as amending the sign criteria of the PUD. The proposed uses will be compatible with the Residential/ Commercial Mixed Use 2 land use designation, and existing uses.

The General Plan describes a Planned Unit Development as a precise plan that provide the means for the regulations of buildings, structures, and uses of land to facilitate the implementation of the General Plan. The regulations of the PUD are intended to provide for a diversity of uses, relationships, and open spaces in an innovative land plan and design, while ensuring compliance with the provisions of the Municipal Code. The proposal complies with the spirit and intent of the General Plan that establishes that a PUD is intended to provide for a diversity of uses, relationships, and open spaces in an innovative land plan

and design, while ensuring compliance with the provisions of the Municipal Code.

In addition, the proposed amendment will also assist with the revitalization and redevelopment of the commercial center, which is consistent with the General Plan. Goal LU-6.1 of the General Plan encourages the revitalization of aging, underused or deteriorated commercial centers; Policy LU-6.2 encourages a mix of retail shops and services to better meet the needs of the area's present and potential clientele; Policy LU-6.4 encourages the City to work with property owners to revitalize deteriorated centers; Policy LU-6.6 encourages appropriate signage in commercial centers; and LU-IMP-6C encourages façade renovations, enhanced parking area landscaping, and improved lighting. The proposed amendment will allow new uses within the PUD and update the sign requirements that will assist with revitalizing the properties and the commercial center, which is consistent with goals and policies, and elements of the General Plan.

The proposed Project will include the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive-thru restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, along with related site improvements that will provide for the center's revitalization as well as introduce new commercial uses to serve local residents. The proposed construction and site improvements will be compatible and be integrated with the existing commercial center, which can only be facilitated through the PUD amendment.

7. The amendment to the PUD will promote the public interest, health, and welfare.

An automatic car wash, a drive thru-pad restaurant, and a sit-down restaurant would be appropriate and compatible uses in the PUD-104-73 zone. The automatic car wash will be subject a Conditional Use Permit (CUP). The CUP process is a discretionary action that allows the City to review each proposal individually and place conditions on a proposed use to ensure it is compatible with the surrounding neighborhood. Introduction of new restaurants will provide new dining opportunities to serve the surrounding residential neighborhood, and will assist with the revitalization of the center. Adherence to the conditions of approval will ensure the public interest, health, safety, and welfare.

INCORPORATION OF FACTS AND REASONS SET FORTH IN STAFF REPORT

In addition to the foregoing the Planning Commission incorporates herein by this reference, the facts and reasons set forth in the staff report.

BE IT FURTHER RESOLVED that the Planning Commission does conclude:

1. Planned Unit Development No. PUD-104-73 (Rev. 2018) possesses characteristics that would indicate justification of the request in accordance with Municipal Code Section 9.16.030.020.F. (Planned Unit Development) and 9.32.030.D (Land Use Action Procedures).

2. The Planning Commission recommends that the City Council approve Planned Unit Development No. PUD-104-73 (Rev. 2018) and adopt the draft Ordinance attached hereto as Exhibit "A".

Adopted this 18th day of October 2018

ATTEST:

/s/ GEORGE BRIETIGAM
CHAIR

/s/ JUDITH MOORE
RECORDING SECRETARY

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS:
CITY OF GARDEN GROVE)

I, JUDITH MOORE, Secretary of the City of Garden Grove Planning Commission, do hereby certify that the foregoing Resolution was duly adopted by the Planning Commission of the City of Garden Grove, California, at a meeting held on October 18, 2018, by the following vote:

AYES:	COMMISSIONERS:	(6)	BRIETIGAM, LAZENBY, LEHMAN, NGUYEN, SALAZAR, TRUONG
NOES:	COMMISSIONERS:	(0)	NONE
ABSENT:	COMMISSIONERS:	(1)	KANZLER

/s/ JUDITH MOORE
RECORDING SECRETARY

PLEASE NOTE: Any request for court review of this decision must be filed within 90 days of the date this decision was final (See Code of Civil Procedure Section 1094.6).

A decision becomes final if it is not timely appealed to the City Council. Appeal deadline is November 8, 2018.

Exhibit "A"

ORDINANCE NO.

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF GARDEN GROVE APPROVING PLANNED UNIT DEVELOPMENT NO. PUD-104-73 (REV. 2018) AMENDING THE USES PERMITTED ON A PORTION OF PLANNED UNIT DEVELOPMENT NO. PUD-104-73 TO FACILITATE DEVELOPMENT OF AN AUTOMATIC CAR WASH, A DRIVE-THRU PAD RESTAURANT, AND A SIT-DOWN RESTAURANT ON THE PARCELS LOCATED AT 12101 AND 12111 VALLEY VIEW STREET, AND AMENDING THE SIGN REQUIREMENTS OF THE PUD

City Attorney Summary

This Ordinance approves an amendment to Planned Unit Development No. PUD-104-73 to modify the uses permitted on the properties located on the west side of Valley View Street, south of Chapman Avenue, at 12101 and 12111 Valley View Street, to allow an automatic car wash, a drive-thru pad restaurant, and a sit-down restaurant, and to amend the sign requirements of the PUD, including: to allow multi-tenant signage within the cabinet display area of an existing pole sign, and to allow non-LED/non-digital movie poster board graphic signage on the exterior wall marquee and exterior wall display boards, and to allow a vertical sign on the new building tower element of the movie theater.

THE CITY COUNCIL OF THE CITY OF GARDEN GROVE FINDS AND DETERMINES AS FOLLOWS:

WHEREAS, on August 21, 1973, the Garden Grove City Council adopted Resolution No. 4472-73, approving Planned Unit Development No. PUD-104-73 and rezoning an approximately 17.67-acre parcel located at the southwest corner of Chapman Avenue and Valley View Street to PUD-104-73, subject to all of the conditions and provisions as set forth in Planning Commission Resolution No. 2673; and

WHEREAS, the 17.67-acre site is currently comprised of one (1) residential lot and five (5) commercial lots; and

WHEREAS, the uses and activities currently permitted on the six (6) lots within PUD-104-73, respectively, include a 126-unit townhouse condominium development, a bowling alley, a movie theater, a 7,500 square foot restaurant, a McDonald's restaurant, and an aged care facility; and

WHEREAS, the signage permitted within PUD-104-73 is set forth in condition of approval D. of Planning Commission Resolution No. 2673; and

WHEREAS, Dan Akarakian for Cinemas Management, Inc., on behalf of Valley View Cinema Center, LLC, owner of the two commercial lots located at 12101 and 12111 Valley View Street containing the movie theater and large restaurant, has requested approval of an amendment to Planned Unit Development No. PUD-104-73 to facilitate the redevelopment of these two lots with the demolition of the existing large restaurant, an expansion of the existing movie theatre, and the

addition of an automatic car wash, a 1,870 square foot drive-thru pad restaurant, and a 2,700 square foot sit-down restaurant, and to modify the sign requirements of the PUD, including to allow for multi-tenant signage within the cabinet display area of an existing pole sign, to allow a vertical sign on a new tower building element of the movie theater, and to allow non-LED/ non-digital movie poster board graphics to be displayed on the exterior wall marquee and wall display boards of the movie theater; and

WHEREAS, the proposed amendment to Planned Unit Development No. PUD-104-73 is being processed in conjunction with (a) Site Plan No. SP-057-2018 to allow the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive-thru pad restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, and related site improvements on the properties located at 12101 and 12111 Valley View Street, (a) Lot Line Adjustment No. LLA-019-2018 to modify existing lot lines to consolidate the two (2) subject parcels into one (1); and (c) Conditional Use Permit No. CUP-140-2018 to allow the operation of the proposed automatic car wash; and

WHEREAS, the uses, activities, and improvements contemplated by the proposed PUD amendment, Site Plan No. SP-057-2018, Lot Line Adjustment No. LLA-019-2018, and Conditional Use Permit No. CUP-140-2018 are collectively referred to as the "Project"; and

WHEREAS, following a public hearing held on October 18, 2018, the Planning Commission adopted Resolution No. 5931-18 recommending City Council approval of Planned Unit Development No. PUD-104-73 (Rev. 2018);

WHEREAS, on October 18, 2018, the Planning Commission also adopted Resolution No. 5932-18 approving Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018 and Resolution No. 5933-18 approving Conditional Use Permit No. CUP-140-2018, each subject to the City Council's approval of Planned Unit Development No. PUD-104-73 (Rev. 2018);

WHEREAS, pursuant to a legal notice, a Public Hearing was held by the City Council on November ___, 2018, and all interested persons were given an opportunity to be heard; and

WHEREAS, the City Council gave due and careful consideration to the matter; and

WHEREAS, the City Council hereby determines that the proposed Project is categorically exempt from the California Environmental Quality Act ("CEQA") (Public Resources Code Section 21000 et. seq.) pursuant to Section 15303 (New Construction or Conversion of Small Structures) and Section 15301 (Existing Facilities) of the CEQA Guidelines (14 Cal. Code Regs., Sections 15301 and 15303); and

WHEREAS, the City Council hereby incorporates by reference the findings and reasons set forth in Planning Commission Resolution Nos. 5931-18, 5932-18, and

5933-18 and makes the following findings regarding Planned Unit Development No. PUD-104-73 (Rev. 2018):

A. The location of the buildings, architectural design, and uses proposed pursuant to the PUD amendment are compatible with the character of existing development in the vicinity and will be well integrated into its setting.

B. The amended plan will produce a stable and desirable environment and will not cause undue traffic congestion on surrounding streets.

C. Provision is made for both public and private open spaces.

D. Provision is made for the protection and maintenance of private areas reserved for common use.

E. The quality of the Project achieved through the proposed amendment to the existing planned unit development zoning is greater than could be achieved through traditional zoning.

F. The amendment to the PUD is internally consistent with the goals, objectives, and elements of the General Plan.

G. The amendment to the PUD will promote the public interest, health, and welfare.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF GARDEN GROVE DOES ORDAIN AS FOLLOWS:

SECTION 1: The above recitals are true and correct.

SECTION 2: Planned Unit Development No. PUD-104-73 (Rev. 2018) is hereby approved pursuant to the findings set forth herein and the facts and reasons stated in Planning Commission Resolution No. 5931-18, a copy of which is on file in the Office of the City Clerk, and which is incorporated herein by reference with the same force and effect as if set forth in full.

SECTION 3: Planned Unit Development No. PUD-104-73 is hereby amended to modify the uses and activities permitted on the 12101 and 12111 Valley View Street parcels in PUD-104-73, as set forth in Planning Commission Resolution No. 2673, by adding new Condition of Approval "X" to read as follows

> "X. Only the following uses shall be permitted on the 12101 and 12111 Valley View Street parcel(s):
>
> A movie theatre, subject to Site Plan approval
> An automatic car wash, subject to Site Plan and Conditional Use Permit approval
> An 1,870 square foot drive-thru pad restaurant, subject to Site Plan approval

A 2,700 square foot sit-down restaurant, subject to Site Plan approval"

The 7,500 square foot restaurant described in Planning Commission Resolution No. 2673, located at 12101 Valley View Street, is being demolished and shall no longer be a permitted use within Planned Unit Development No. PUD-104-73. The uses and activities permitted on the other parcels within Planned Unit Development No. PUD-104-73 shall remain the same.

SECTION 4: Planned Unit Development No. PUD-104-73 is hereby amended to modify the sign requirements, as set forth in Planning Commission Resolution 2673, as follows (additions shown in ***bold/italics***; deletions shown in ~~strikethrough~~):

D. ~~Signing~~ **Signage** in the residential portion shall be in accordance with the provisions of the R-2, Limited Multiple Residential zone. ~~Signing~~ **Signage** in the commercial area shall be as follows and shall be subject to be the square footage permitted in the C-1, ~~Limited~~ **Neighborhood** Commercial zone.

1) One pole sign shall be permitted for each of the four **primary** commercial uses **(the bowling alley, the movie theater, the automatic car wash, and McDonald's)** provided that they shall be located a minimum of 200 feet apart, and that they shall not exceed 35 feet in height. **The pole sign cabinet for the automatic car wash may be designed to allow for a multi-tenant display area to accommodate signage for the drive-thru restaurant and the sit-down restaurant located on-site. The proposed display area of any new pole sign cabinet shall comply with the total sign area requirements of the C-1 zone.**

2) ~~One wall sign, not extending above the top of any wall, for the large restaurant, the theater, and the bowling alley. Two wall signs for McDonald's as approved under PUD-107-71 (1st Revised).~~ **Wall signs shall not extend above the top of any wall, and no roof signs are permitted. Proposed wall signs for each use shall comply with the total allowable sign area requirements of the C-1 zone.**

3) **Permitted signage for the movie theater may also include a vertical sign on the new building tower element, and non-LED/non-digital movie poster board graphics on the exterior wall marquee and/or on the exterior wall movie poster display boards.**

SECTION 5. Severability. If any section, subsection, subdivision, sentence, clause, phrase, word, or portion of this Ordinance is, for any reason, held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have adopted this

Ordinance and each section, subsection, subdivision, sentence, clause, phrase, word, or portion thereof, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses, phrases, words or portions thereof be declared invalid or unconstitutional.

SECTION 6. The Mayor shall sign and the City Clerk shall certify to the passage and adoption of this Ordinance and shall cause the same, or the summary thereof, to be published and posted pursuant to the provisions of law and this Ordinance shall take effect thirty (30) days after adoption.

RESOLUTION NO. 5932-18

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF GARDEN GROVE APPROVING SITE PLAN NO. SP-057-2018 AND LOT LINE ADJUSTMENT NO. LLA-019-2018 FOR PROPERTIES LOCATED AT 12101 AND 12111 VALLEY VIEW STREET, ASSESSOR'S PARCEL NOS. 224-202-15 AND 224-202-16.

BE IT RESOLVED that the Planning Commission of the City of Garden Grove, in a regular session assembled on October 18, 2018, hereby approves Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018 for properties located on the west side of Valley View Street, south of Chapman Avenue, at 12101 and 12111 Valley View Street, Assessor's Parcel Nos. 224-202-15 and 224-202-16, respectively.

BE IT FURTHER RESOLVED in the matter of Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018, the Planning Commission of the City of Garden Grove does hereby report as follows:

1. The subject case was initiated by Dan Akarakian for Cinemas Management, Inc.

2. The applicant is requesting Site Plan approval to allow the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive-thru restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, along with related site improvements, and approval of a Lot Line Adjustment to modify existing lot lines to consolidate the two (2) subject parcels into one (1). This request is being processed in conjunction with a request for approval of Conditional Use Permit No. CUP-140-2018 to allow the operation of the proposed automatic car wash and a request for approval of Planned Unit Development No. PUD 104-73 (Rev. 2018) to amend the existing standards and conditions for Planned Unit Development No. PUD 104-73 to facilitate the proposed redevelopment project. The uses, activities, and improvements contemplated by the proposed PUD amendment, Site Plan No. SP-057-2018, Lot Line Adjustment No. LLA-019-2018, and Conditional Use Permit No. CUP-140-2018 are collectively referred to as the "Project".

3. The proposed Project is categorically exempt from review under the California Environmental Quality Act ("CEQA") pursuant to Section 15301 (Existing Facilities) and 15303 (New Construction or Conversion of Small Structures) of the CEQA Guidelines.

4. The property has a General Plan Land Use designation of Residential/Commercial Mixed Use 2 and is zoned Planned Unit Development No. PUD-104-73. The subject site is comprised of two parcels, with a total land area of 2.71-acres, and is currently improved with the Starlight 4 Star Cinema and vacant 6,040 square foot restaurant.

5. Existing land use, zoning, and General Plan designation of property in the vicinity of the subject property have been reviewed.

6. Report submitted by the City staff was reviewed.

7. Pursuant to a legal notice, a public hearing was held on October 18, 2018, and all interested persons were given an opportunity to be heard.

8. Concurrently with the adoption of this Resolution, the Planning Commission adopted (a) Resolution No. 5931-18 recommending that the City Council determine that the Project is categorically exempt from CEQA and approve Planned Unit Development No. PUD-104-73 (Rev. 2018) to amend PUD-104-73 to facilitate the proposed Project; and (b) Resolution No. 5933-18 approving Conditional Use Permit No. CUP-140-2018 permitting operation of the proposed automatic car wash.

9. The Planning Commission gave due and careful consideration to the matter during its meeting on October 18, 2018.

BE IT FURTHER RESOLVED, FOUND AND DETERMINED that the facts and reasons supporting the conclusion of the Planning Commission, as required under Municipal Code Sections 9.32.030 are as follows:

FACTS:

The subject properties are located on the west side of Valley View Street, south of Chapman Avenue. The properties have a General Plan Land Use designation of Residential/Commercial Mixed Use 2, and are zoned Planned Unit Development (PUD) No. PUD-104-73. PUD-104-73 was adopted in 1973 to allow the construction of a 126-unit residential condominium (currently known as Stonegate), a 32-lane bowling alley (12141 Valley View Street), a 900 seat movie theater (12111 Valley View Street), a 7,500 square foot restaurant (12101 Valley View Street), a 3,600 square foot drive-thru restaurant (12051 Valley View Street), and a 41,850 square foot senior facility for 120 people (5900 Chapman Avenue).

The commercial portion of PUD-104-73 includes a total five (5) commercial properties: a bowling alley, formerly occupied by the AMF Bowling Alley (12141 Valley View Street), the Starlight 4 Star Cinema (12111 Valley View Street), a vacant restaurant building (12101 Valley View Street), a McDonald's drive-thru restaurant (12051 Valley View Street), and the Brookdale Senior Living facility (5900 Chapman Avenue).

The applicant is the property owner of the movie theater and the vacant restaurant building properties. The property owner intends to redevelop the movie theater and the vacant restaurant properties in an effort to revitalize the commercial center. The proposed project includes the construction of a 4,241 square foot automatic car

wash, an 1,870 square foot drive-thru pad restaurant, a 2,700 square foot sit-down, in-line restaurant, a 2,846 square foot expansion to the existing movie theater, along with related site improvements, and a Lot Line Adjustment to modify existing lot lines to consolidate the two (2) subject parcels into one (1).

In conjunction with the proposed Site Plan and Lot Line Adjustment, the applicant is also requesting an amendment to PUD-104-73 to modify the permitted uses for the subject site to facilitate the Project, and Conditional Use Permit No. CUP-140-2018 to allow the operation of an automatic car wash on the subject properties, 12101 and 12111 Valley View Street.

FINDINGS AND REASONS:

SITE PLAN:

1. The Site Plan complies with the spirit and intent of the provisions, conditions, and requirements of the Municipal Code and other applicable ordinances.

   The properties have a General Plan land use designation of Residential/Commercial Mixed Use 2 and are zoned Planned Unit Development No. PUD-104-73. The Residential/ Commercial Mixed Use 2 is intended to provide a mix of residential and commercial uses mostly around older underutilized, multi-tenant commercial developments. PUD-104-73 was adopted in 1973 and allowed for the construction of a 126-unit residential condominium, a bowling alley, a movie theater, a sit-down restaurant, a drive-thru restaurant, and a aged facility. Currently, the commercial portion of PUD-104-73 is improved with a bowling alley (12141 Valley View Street), the Starlight 4 Star Cinema movie theater (12111 Valley View Street), a vacant restaurant building (12101 Valley View Street), a McDonald's drive-thru restaurant (12051 Valley View Street), and the Brookdale Senior Living facility (5900 Chapman Avenue).

   The proposed project includes the construction of a 4,241 square foot automatic car wash, an 1,870 square foot drive-thru restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, and related site improvements on a 2.71-acre site. The existing restaurant building will be demolished to accommodate the request. The proposed project will assist with revitalizing the commercial center as well as introduce new commercial uses that will serve the surrounding neighborhood. The proposed construction and site improvements will be compatible and integrated with the existing commercial center.

   In addition, General Plan describes a Planned Unit Development as a precise plan that provides the means for the regulations of buildings, structures, and uses of land to facilitate the implementation of the General Plan. The regulations of the PUD are intended to provide for a diversity of uses,

relationships, and open spaces in an innovative land plan and design, while ensuring compliance with the provisions of the Municipal Code. The proposal complies with the spirit and intent of the General Plan that establishes that a PUD is intended to provide for a diversity of uses, relationships, and open spaces in an innovative land plan and design, while ensuring compliance with the provisions of the Municipal Code.

The proposed project will assist with the revitalization and redevelopment of the commercial center, which is consistent with the General Plan. Goal LU-6.1 of the General Plan encourages the revitalization of aging, underused or deteriorated commercial centers; Policy LU-6.2 encourages a mix of retail shops and services to better meet the needs of the area's present and potential clientele; Policy LU-6.4 encourages the City to work with property owners to revitalize deteriorated centers; Policy LU-6.6 encourages appropriate signage in commercial centers; and LU-IMP-6C encourages façade renovations, enhanced parking area landscaping, and improved lighting.

The project is designed to comply with the development standards of the PUD zone, and complies with the required parking, setbacks, and landscaping, as well as the intent and goals of the General Plan.

Approval of this Site Plan is contingent upon City Council approval of Planned Unit Development No. PUD-104-73 (Rev. 2018). Provided the City Council approves Planned Unit Development No. PUD-104-73 (Rev. 2018), the Site Plan will comply with the PUD provisions.

2. The proposed development does not adversely affect essential on-site facilities such as off-street parking, loading and unloading areas, traffic circulation, and points of vehicular and pedestrian access.

The site will continue to be accessed from two (2) drive approaches located on Valley View Street. The most northerly driveway on Valley View Street will be relocated and reconstructed to accommodate the new circulation pattern and building placement of the proposed project. The site will also continue to maintain the shared reciprocal access with the adjacent properties located at 12141 Valley View Street (bowling alley), 12051 Valley View Street (McDonald's), and 5900 Chapman Avenue (senior living facility). The project includes redesigning and reconfiguring existing on-site drive aisles and the parking areas to improve the site's circulation and to accommodate parking for the proposed uses. The code requires a total of 179 parking spaces for the proposed project. A total of 179 parking spaces will be provided in the form of 159 parking stalls and 20 combined queuing spaces along the drive-thru lane of the proposed automatic car wash and drive-thru restaurant. All the required parking for the project will be provided completely on the project site. The existing parking spaces located on the adjacent bowling alley property will not change as a result of this proposed

project. A Traffic Study was also prepared that reviewed the project's site access and circulation, including the queuing for the drive-thru restaurant and the automatic car wash, and determined that the site design circulation is adequate, and that vehicle queuing will be contained within the respective drive-thru lane of the automatic car wash and the drive-thru restaurant.

The City's Traffic Engineering Division has reviewed the proposed project, and all appropriate conditions of approval have been incorporated to minimize any adverse impacts to surrounding streets.

3. The development, as proposed, will not adversely affect essential public facilities such as streets and alleys, utilities and drainage channels.

The utilities, drainage channels, and streets in the area are existing and adequate to accommodate the development, and all appropriate conditions of approval will minimize any adverse impacts to surrounding streets. The proposed development will provide landscaping and proper grading of the site, thereby, providing adequate on-site drainage.

A Traffic Impact Study prepared for the Project concluded that the traffic associated with the new and expanded uses will not significantly impact adjacent intersections during peak AM and PM traffic times. The Traffic Impact Study concluded that the adjacent traffic intersections would operate at the same level of service with the incorporation of the proposed uses; therefore, the project would have no significant impact to the surrounding streets based on the criteria established by the City of Garden Grove.

The City's Public Works Department has reviewed the proposed project, and all appropriate conditions of approval have been incorporated to minimize any adverse impacts to surrounding streets.

4. The proposed project will not adversely impact the Public Works Department ability to perform its required function.

The proposed project will not adversely impact the Public Works Department ability to perform its required function. The City's Public Works Department has reviewed the project, and has incorporated all the appropriate conditions of approval to minimize any adverse impacts.

5. The development does have a reasonable degree of physical, functional, and visual compatibility with neighboring uses and desirable neighborhood characteristics.

The project has been designed in accordance with the development standards of PUD-104-73, provided the City Council approves the proposed amendment to PUD-104-73 to allow for the proposed automatic car wash,

the drive-thru pad restaurant, and the sit-down restaurant, and the proposed sign amendment. The project is located in an older commercial shopping center located along the Valley View Corridor that is in need of revitalization. The commercial portion of the PUD that fronts onto Valley View Street includes properties improved with a bowling alley, a movie theater, a vacant restaurant, and a McDonald's drive-thru restaurant that were approved in 1973. The McDonald's restaurant was rebuilt in 2015, which was a first step to revitalizing the commercial center.

The proposed project includes the expansion of the existing movie theater, construction of an automatic car wash, a drive-thru pad restaurant, and a sit-down restaurant. The vacant restaurant building will be demolished in order to accommodate the proposed development.

The proposed development will enhance the overall site's appearance and facilitate the site's revitalization. The proposed project will compliment other improvements in the immediate vicinity, and will assist with implementation of the General Plan that encourages the revitalization of aging, underused or deteriorated commercial centers. The project will include new landscape areas and treatment along Valley View Street and the interior of the lot that will be consistent provisions of the PUD and applicable provisions of Title 9 of the Municipal Code. The project has been designed in accordance with the provisions of the PUD, and complies with the required setbacks, parking, and landscaping.

6. Through the planning and design of buildings and building placement, the provision of open space landscaping and other site amenities will attain an attractive environment for the occupants of the property.

   The project will include new landscape planters along Valley View Street, within the setbacks, and within the interior of the project site that complies with the landscaping requirements of Title 9 of the Municipal Code. This includes providing trees, ground cover, and shrubs, along with providing additional landscaping within the parking lot and with the landscaped setback areas to comply with the code.

INCORPORATION OF FACTS AND FINDINGS SET FORTH IN STAFF REPORT

In addition to the foregoing, the Planning Commission incorporates herein by this reference, the facts and findings set forth in the staff report.

BE IT FURTHER RESOLVED that the Planning Commission does conclude:

1. The Site Plan possesses characteristics that would justify the request in accordance with Municipal Code Section No. 9.32.030.D.3 (Site Plan) and Section 9.40.190 (Lot Line Adjustment).

2. In order to fulfill the purpose and intent of the Municipal Code and thereby promote the health, safety, and general welfare, the attached Conditions of Approval (Exhibit "A") shall apply to Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018.

3. The project is exempt from CEQA pursuant to the Class 1 and Class 3 categorical exemptions.

4. This approval of Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018 shall be contingent upon the adoption and effectiveness of an Ordinance approving Planned Unit Development No. PUD-104-73 (Rev. 2018) by the Garden Grove City Council.

Adopted this 18th day of October 2018

ATTEST:

/s/ JUDITH MOORE
RECORDING SECRETARY

/s/ GEORGE BRIETIGAM
CHAIR

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS:
CITY OF GARDEN GROVE)

I, JUDITH MOORE, Secretary of the City of Garden Grove Planning Commission, do hereby certify that the foregoing Resolution was duly adopted by the Planning Commission of the City of Garden Grove, California, at a meeting held on October 18, 2018, by the following vote:

AYES:	COMMISSIONERS:	(6)	BRIETIGAM, LAZENBY, LEHMAN, NGUYEN, SALAZAR, TRUONG
NOES:	COMMISSIONERS:	(0)	NONE
ABSENT:	COMMISSIONERS:	(1)	KANZLER

/s/ JUDITH MOORE
RECORDING SECRETARY

PLEASE NOTE: Any request for court review of this decision must be filed within 90 days of the date this decision was final (See Code of Civil Procedure Section 1094.6).

A decision becomes final if it is not timely appealed to the City Council. Appeal deadline is November 8, 2018.

EXHIBIT "A"

Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018

12101 and 12111 Valley View Street

CONDITIONS OF APPROVAL

GENERAL CONDITIONS

1. Each owner of the property shall execute, and the applicant shall record against the property, a "Notice of Discretionary Permit Approval and Agreement with Conditions of Approval" as prepared by the City Attorney's Office. Proof of such recordation is required prior to issuance of building permits.

2. All Conditions of Approval set forth herein shall be binding on and enforceable against each of the following, and whenever used herein, the term "applicant" shall mean and refer to each of the following: the project applicant, Dan Akarakian for Cinemas Management, Inc., the developer of the project, the owner(s) and tenants(s) of the property, and each of their respective successors and assigns. All conditions of approval are required to be adhered to for the life of the project, regardless of property ownership. Any changes to the Conditions of Approval require approval by the Planning Commission, except as otherwise provided herein.

3. The Site Plan and Lot Line Adjustment only authorize the construction of a 4,241 square foot automatic car wash, a 1,870 square foot drive-thru restaurant, a 2,700 square foot sit-down, in-line tenant restaurant, and a 2,846 square foot expansion of the existing movie theater. Approval of this Site Plan and Lot Line Adjustment shall not be construed to mean any waiver of applicable and appropriate zoning and other regulations; and wherein not otherwise specified, all requirements of the City of Garden Grove Municipal Code shall apply.

4. Minor modifications to the Site Plan, Lot Line Adjustment and/or these Conditions of Approval may be approved by the Community and Economic Development Director, in his or her discretion. Proposed modifications to the project and/or these Conditions of Approval determined by the Community and Economic Development Director not to be minor in nature shall be subject to approval of new and/or amended land use entitlements by the applicable City hearing body.

5. All conditions of approval shall be implemented at the applicant's expense, except where specified in the individual condition.

Public Works Engineering Division

6. The applicant shall be subject to Traffic Mitigation Fees, Drainage Facilities Fees, Water Assessment Fees, and other applicable mitigation fees identified in Chapter 9.44 of the Garden Grove Municipal Code, along with all other applicable fees duly adopted by the City. The amount of said fees shall be calculated based on the City's current fee schedule at the time of permit issuance.

7. 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.

8. Grading/street improvement plans prepared by a registered Civil Engineer are required. The grading plan shall be based on a current survey of the site, including a boundary survey, topography on adjacent properties up to 30' outside the boundary, and designed to preclude cross-lot drainage. Minimum grades shall be 0.50% for concrete flow lines and 1.25% for asphalt. The grading plan shall also include water and sewer improvements. The grading plan shall include a coordinated utility plan. Street improvement plan shall conform to all format and design requirements of the City Standard Drawings & Specifications.

9. Grading fees shall be calculated based on the current fee schedule at the time of permit issuance.

10. The grading plan shall depict an accessibility route for the ADA pathway in conformance with the requirements of the Department of Justice standards, latest edition.

11. A separate street permit is required for work performed within the public right-of-way. The City of Garden Grove completed a street rehabilitation project on Valley View Street in 2014. Valley View Street is currently under a street moratorium. Any utility trench backfilling fronting the project on Valley View Street is subject to 15 feet of asphalt resurfacing (up to 2-inches of asphalt grind and cap) from the center line of proposed utility (water, gas, sewer, communication cables) in both directions and may extend the full width of the street as determined by the City Engineer.

12. All vehicular access drives to the site shall be provided in locations approved by the City Traffic Engineer.

13. The new drive approaches to the site shall be constructed in accordance with Garden Grove Standard B-120.

14. The grading/horizontal control plan shall provide an approximately 80 feet or four vehicles lengths between the service window and order board and additional 80 feet or four vehicle lengths of queuing distance behind the order board for the drive-thru restaurant in conformance with the queuing requirements of City of Garden Grove Standard Plan B-312.

15. All parking spaces that abut to sidewalks that are not elevated with a curb face to the stall, if any, shall have wheel stops.

16. No parallel curb parking shall be permitted anywhere on the site.

17. A recorded agreement that provides for reciprocal access between the subject site and the adjacent properties to the north and south of the subject site containing the McDonald's restaurant and the bowling alley, in a form acceptable to the City Engineer, shall be required prior to issuance of a grading permit. The applicant shall provide the City with a copy of any existing reciprocal access agreement(s) for review and approval. Should no agreement exist, or if the existing agreement(s) is(are) not acceptable to the City Engineer, the applicant shall enter into a new or amended agreement with the adjacent property owners that is acceptable to the City Engineer and record said agreement prior to the issuance of a grading permit.

18. Prior to issuance of a grading permit, the applicant shall design overhead street lighting within the development in a manner meeting the approval of the City Engineer. Location of lighting poles shall be shown on the precise grading plans.

19. In accordance with the Orange County Storm Water Program manual, the applicant and/or its contractors shall provide dumpsters on-site during construction unless an Encroachment Permit is obtained for placement in street.

20. 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:

    a. Addresses Site Design BMPs based upon the geotechnical report recommendations and findings such as infiltration minimizing impervious areas, maximizing permeability, minimizing directly

connected impervious areas, creating reduced or "zero discharge" areas, and conserving natural areas.

b. Incorporates the applicable Routine Source Control BMPs as defined in the DAMP.

c. Incorporates structural and Treatment Control BMPs as defined in the DAMP.

d. Generally describes the long-term operation and maintenance requirements for the Treatment Control BMPs.

e. Identifies the entity that will be responsible for long-term operation and maintenance of the Treatment Control BMPs.

f. Describes the mechanism for funding the long-term operation and maintenance of the Treatment Control BMPs.

21. Prior to grading or building permit closeout and/or the issuance of a certificate of use or a certificate of occupancy, the applicant shall:

a. 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.

b. Demonstrate that applicant is prepared to implement all non-structural BMPs described in the Project WQMP.

c. Demonstrate that an adequate number of copies of the approved Project WQMP are available on-site.

d. Submit for review and approval by the City an Operations and Maintenance (O&M) Plan for all structural BMPs.

22. All trash container areas shall meet the following requirements per City of Garden Grove Standard B-502 and state mandated commercial organic recycling law-AB 1826:

a. Paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements diverted around the area, screened or walled to prevent off-site transport of trash.

b. Provide solid roof or awning to prevent direct precipitation.

c. Connection of trash area drains to the municipal storm drain system is prohibited.

d. Potential conflicts with fire code and garbage hauling activities should be considered in implementing this source control.

e. See CASQA Storm Water Handbook Section 3.2.9 and BMP Fact Sheet SD-32 for additional information.

f. The trash shall be located to allow pick-up and maneuvering, including turnarounds, in the area of enclosures.

g. Pursuant to state mandated commercial organic recycling law-AB 1826, the applicant is required to coordinate storage and removal of the organics waste with local recycling/trash company.

23. The applicant and his contractor shall be responsible for protecting all existing horizontal and vertical survey controls, monuments, ties (centerline and corner) and benchmarks located within the limits of the project. If any of the above require removal; relocation or resetting, the Contractor shall, prior to any construction work, and under the supervision of a California licensed Land Surveyor, establish sufficient temporary ties and benchmarks to enable the points to be reset after completion of construction. Any ties, monuments and bench marks disturbed during construction shall be reset per Orange County Surveyor Standards after construction. Applicant and his contractor shall also re-set the tie monuments where curb or curb ramps are removed and replaced or new ramps are installed. The Applicant and his contractor shall be liable for, at his expense, any resurvey required due to his negligence in protecting existing ties, monuments, benchmarks or any such horizontal and vertical controls.

24. Prior to issuance of a grading permit, the applicant shall submit to planning division an updated title report along with copies of the recorded instruments listed in the title report, reference maps used to prepare legal description and the plat for review and approval of the lot line adjustment application.

25. Prior to the issuance of any grading or building permits for projects that will result in soil disturbance of one acre or more of land, the applicant shall demonstrate that coverage has been obtained under California's General Permit for Stormwater Discharges Associated with Construction Activity by providing a copy of the Notice of Intent (NOI) submitted to the State Water Resources Control Board and a copy of the subsequent notification of the issuance of a Waste Discharge Identification (WDID) Number. Projects subject to this requirement shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). A copy of the current SWPPP shall be kept at the project site and be available for City review on request.

26. Any new or required block walls and/or retaining walls shall be shown on the grading plans. Cross sections shall show vertical and horizontal relations of improvements and property line. Block walls shall be designed in accordance to City standards or designed by a professional registered engineer. In addition, the following shall apply:

    The color and material of all proposed block walls, columns, and wrought iron fencing shall be approved by the Planning Services Division Prior to installation.

27. The applicant shall identify a temporary parking site(s) for construction crew and construction trailers office staff prior to issuance of a grading permit. No construction parking is allowed on local streets.

28. Prior to issuance of a street permit, the applicant submit and obtain approval of an off-site traffic control plan, satisfactory to the City Traffic Engineer.

29. Heavy construction truck traffic and hauling trips should occur outside peak travel periods. Peak travel periods are considered to be from 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.

30. Any required lane closures should occur outside of peak travel periods.

31. Construction vehicles should be parked off of traveled roadways in designated parking.

32. Prior to issuance of a grading permit, the applicant shall provide a hydrological analysis with scaled map and calculations and hydraulic calculations to size storm drains per the Orange County RDMD standards. Parkway culverts shall be designed per Orange County standard plan 1309, Type B. BMP's shall be sized per the requirements of the latest Technical Guidance Documents.

33. Prior to issuance of the a building permit, the applicant shall design and construct street frontage improvements as identified below:

    Valley View Street

    a. The existing northerly substandard driveway approach and landscape fronting the property along Valley View Street shall be removed and curb & gutter, sidewalk shall be constructed in accordance with City Standard;

    b. New 8-inch curb and gutter shall be constructed replacing the existing northerly driveway at 50-feet from the center line of Valley View Street according to City of Garden Grove Standard Plan B-114 (Type C-8 Modified).

c. Construct a 12-foot sidewalk adjacent to the new 8-inch curb and gutter, replacing the existing northerly driveway apron in accordance to standard B-106.

d. The new northerly driveway approach to the site on Valley View Street shall be constructed in accordance with City of Garden Grove Standard Plan B-120 (Options #2 & #3 only). Standard Plan B-120 calls for a minimum width of 30-feet for commercial and multi-residential projects, with any deviation from the standard requiring approval by the City Traffic Engineer and be detailed on the street improvement plan showing all modifications.

e. Remove all planter boxes and trees next to curb/gutter (Total Four) fronting the project on Valley View Street and replace the lifted sidewalk panels in accordance to City of Garden Grove Standard B-106.

f. Remove and replace the southerly drive approach (curbs and apron section only) per City Standard Plan B-120 (Option #3).

g. The applicant shall furnish and install a fully functioning video detection system at the project's main entrance traffic signal on Valley View to the Satisfaction of City Traffic Engineer.

h. Applicant shall coordinate the location of all new water meters, backflow preventers and backflow devices to be placed in sidewalk area on Valley View Street with Planning Division and Water Division.

i. Any proposed new landscaping in public right of way shall be approved by Planning Division and maintained by the owner.

Public Work's Environmental Services

34. The applicant shall contract with Republic Waste Services for demolition and debris hauling.

Public Works Water Services Division

35. The City of Garden Grove conducted a sewer lateral dye test for the existing restaurant and determined that the sewer drains to a manhole on the 8" sewer located on the east/west alley, and the City is assuming that the bowling alley and movie-theater also tie into this sewer lateral. The new in-line tenant restaurant located adjacent to the movie theater can tie into this sewer lateral as it will be smaller than the existing restaurant that will be demolished. The new car wash and the drive-thru restaurant (Jack in the Box) shall tie into a sewer main on Valley View Street.

36. New water service installations 2" and smaller, shall be installed by the City of Garden Grove at owner's/developer's expense. Installation shall be scheduled upon payment of applicable fees, unless otherwise noted. Fire services and larger water services 3" and larger, shall be installed by developer/owner's contractor per City Standards.

37. Water meters shall be located within the City right-of-way or within a dedicated waterline easement. Fire services and large water services 3" and larger shall be installed by contractor with Class A or C-34 license, per City water standards, and inspected by approved Public Works inspector.

38. A Reduced Pressure Principle Device (RPPD) backflow prevention device shall be installed for meter protection. The landscape system shall also have RPPD device. Any carbonation dispensing equipment shall have a RPPD device. Installation shall be per City Standards and shall be tested by a certified backflow device tester immediately after installation. Cross connection inspector shall be notified for inspection after the installation is completed. Owner shall have RPPD device tested once a year thereafter by a certified backflow device tester and the test results to be submitted to Public Works, Water Services Division. Property owner must open a water account upon installation of RPPD device.

39. Any new or existing water valve located within new concrete driveway or sidewalk construction shall be reconstructed per City Standard B-753.

40. City shall determine if existing water services(s) is/are usable and meets current City Standards. Any existing meter and service located within new driveway(s) shall be relocated at owner's expense.

41. Fire service shall have above ground backflow device with a double check valve assembly. Device shall be tested immediately after installation and once a year thereafter by a certified backflow device tester and the results to be submitted to Public Works, Water Services Division. Device shall be on private property and is the responsibility of the property owner. The above ground assembly shall be screened from public view as required by the Planning Division.

42. Location and number of fire hydrants shall be as required by Water Services Division and the Fire Department.

43. The owner shall install new sewer laterals with clean-outs at right-of-way line for the proposed carwash and drive-thru restaurant. The carwash is to use a water recycling system to minimize the amount of discharge to the City's sewer system. The laterals in public right-of-way shall be 6" min. dia., extra strength VCP with wedgelock joints.

44. Commercial food use of any type shall require the installation of an approved grease interceptor prior to obtaining a business license.

45. A properly sized grease interceptor shall be installed on the sewer lateral and maintained by the property owner. There shall be a separate sanitary waste line that will connect to the sewer lateral downstream of the grease interceptor. All other waste lines shall be drained through the grease interceptor. Grease interceptor shall be located outside of the building and accessible for routine maintenance. Owner shall maintain comprehensive grease interceptor maintenance records and shall make them available to the City of Garden Grove upon demand.

46. Food grinders (garbage disposal devices) are prohibited per Ordinance 6 of the Garden Grove Sanitary District Code of Regulations. Existing units are to be removed.

47. Contractor shall abandon any existing unused sewer lateral(s) at street right-of-way on the property owner's side. The sewer pipe shall be capped with an expansion sewer plug and encased in concrete.

Fire Department

48. All on-site drive aisles and turning radius shall comply with the Fire Department turning radius standards. The applicant shall provide an AutoCAD turning radius to verify access for both fire engines and fire truck access.

49. The project shall comply with all applicable requirements of the California Fire Code.

Building and Safety Division

50. The project shall comply with the requirements of the California Building Code, the California Green Building Code, and all California Model Codes, including, but not limited to, providing parking for electric and clean air vehicles, accessible routes to all buildings and trash enclosures, and solar ready commercial buildings.

Community and Economic Development Department

51. The applicant shall submit detailed plans, showing the proposed location of utilities and mechanical equipment, to the Community and Economic Development Department for review and approval prior to submitting plans into the Building and Safety Division Plan Check process. The project shall also be subject to the following:

a. All on-site and off-site utilities pertaining to the improvements proposed under this Site Plan shall be installed or relocated underground.

b. All above-ground utility equipment (e.g., electrical, gas, telephone, cable TV, water meters, electrical transformer) shall not be located in the street setback and shall be screened to the satisfaction of the Community and Economic Development Director.

c. No roof-mounted mechanical equipment shall be permitted unless a method of screening complementary to the architecture of the building is approved by the Community and Economic Development Department prior to the issuance of building permits. Said screening shall block visibility of any roof-mounted mechanical equipment from view of public streets and surrounding properties.

d. All ground or wall-mounted mechanical equipment shall be screened from view from any place on or off the site.

e. No exterior piping, plumbing, or mechanical ductwork shall be permitted on any exterior façade and/or be visible from any public right-or-way or adjoining property. All roof access ladders shall be accessed from inside the building.

52. Hours and days of construction and grading shall be as follows as set forth in the City of Garden Grove's Municipal Code Title Sections 8.47.040 to 8.47.060 referred to as the Noise Control Ordinance as adopted:

a. Monday through Saturday - not before 7 a.m. and not after 8 p.m. (of the same day).

b. Sunday and Federal Holidays – may work the same hours, but be subject to the restrictions as stipulated in Sections 8.47.040 to 8.47.060 of the Municipal Code.

53. The property owner(s) and all tenants shall comply with the adopted City Noise Ordinance.

54. All landscaping shall be consistent with the landscape requirements of Title 9 of the Municipal Code. The developer shall submit a complete landscape plan governing the entire development. The landscape irrigation plans shall include type, size, location and quantity of all plant material. The landscape plan shall include irrigation plans and staking and planting specifications. All landscape irrigation shall comply with the City's Landscape Ordinance and associated Water Efficiency Guidelines. The landscape plan is also subject to the following:

a. A complete, permanent, automatic remote control irrigation system shall be provided for all landscaping areas shown on the plan. The sprinklers shall be of drip or microspray system sprinkler heads for water conservation.

b. The plan shall provide a mixture of a minimum of ten percent (10%) of the trees at 48-inch box, ten percent (10%) of the trees at 36-inch box, fifteen percent (15%) of the trees at 24-inch box and sixty percent (60%) of the trees at 15-gallon, the remaining five percent (5%) may be of any size. These trees shall be incorporated into the landscaped frontages of all streets. Where clinging vines are considered for covering walls, drought tolerant vines shall be used.

c. Trees planted within ten feet (10') of any public right-of-way shall be planted in a root barrier shield. All landscaping along street frontages adjacent to driveways shall be of the low height variety to ensure safe sight clearance.

c. The landscaping treatment along the Valley View Street frontage, including the area designated as public right-of-way and parking areas, shall incorporate a mixture of groundcover, flowerbeds, shrubs, and trees to enhance the appearance of the property. The Community and Economic Development Department shall review the type and location of all proposed trees and plant materials. Said landscape area shall be the responsibility of the applicant to maintain.

d. The landscape plan shall incorporate and maintain for the life of the project those means and methods to address water run-off also identified as Low Impact Development provisions, which address water run-off. This is to also to be inclusive of any application of Water Quality Management Plans (WQMP), Drainage Area Management Plans (DAMP) and any other water conservation measures applicable to this type of development.

e. At the time of irrigation installation, the irrigation system shall comply with all applicable provisions of the City's Water Conservation Ordinance, the City's Municipal Code landscape provisions, and all applicable state regulations.

52. Litter shall be removed daily from the project site, including adjacent public sidewalks and all parking areas under the control of the applicant. There areas shall be swept or cleaned, either mechanically or manually, on a weekly basis, to control debris.

53. The applicant shall abate all graffiti vandalism within the premises. The applicant shall implement best management practices to prevent and abate graffiti vandalism within the premises throughout the life of the project,

including, but not limited to, timely removal of all graffiti, the use of graffiti resistant coatings and surfaces, the installation of vegetation screening of frequent graffiti sites, and the installation of signage, lighting, and/or security cameras, as necessary. Graffiti shall be removed/eliminated by the applicant as soon as reasonably possible after it is discovered, but not later than 72 hours after discovery.

54. There shall be no deliveries from or to the premises before 7:00 a.m. and after 10:00 p.m., seven days a week.

55. All signs shall comply with the sign requirements of PUD-104-73 (Rev. 2018). All signs shall require a separate permit and shall be installed in accordance with the provisions of the sign ordinance. A sign program governing the entire site, including height, size, color, and location of all signs, shall be approved by the Community and Economic Development Department, Planning Division prior to installation. All signage shall be limited to individual channel letters. No roof signs shall be permitted.

56. Permits from the City of Garden Grove shall be obtained prior to displaying any temporary advertising (i.e., banners).

57. Signs shall comply with the City of Garden Grove sign requirements. No more than 15% of the total window area and clear doors shall bear advertising or signs of any sort.

58. Any expansion to the floor area of the movie theater beyond the square footage approved by this Site Plan shall require review and approval by the appropriate hearing body as specified in Condition of Approval No. 4.

59. All lighting structures shall be placed so as to confine direct rays to the subject property. All exterior lights shall be reviewed and approved by the City's Planning Services Division. Lighting adjacent to residential properties shall be restricted to low decorative type wall-mounted lights, or a ground lighting system. Any new lighting that is provided within the parking lot area shall maintain a minimum of two foot-candles of light on the parking areas during business hours. Lighting in the parking areas shall be directed, positioned, or shielded in such manner so as not to unreasonably illuminate the windows of adjacent properties.

60. The applicant shall submit a light plan (photometric plan) to Planning Services Division for review. All lighting shall be provided throughout the parking areas at a minimum of two-foot candle of light during the hours of darkness when the businesses are open, and a one-foot candle of light during all other hours of darkness.

61. New perimeter walls, if proposed, shall be developed to City Standards or designed by a Registered Engineer, and shall be measured from the on-site finished grade, and shall be shown on the grading plan.

62. Construction activities shall adhere to SCAQMD Rule 403 (Fugitive Dust), which includes dust minimization measures, the use of electricity from power poles rather than diesel or gasoline powered generators, the use of methanol, natural gas, propane or butane vehicles instead of gasoline or diesel powered equipment, where feasible, the use of solar or low-emission water heaters, and the use of low-sodium parking lot lights, to ensure compliance with Title 24.

63. Any satellite dish antennas installed on the premises shall be screened, subject to approval by the Community and Economic Development Department, Planning Division. No advertising material shall be placed thereon.

64. During construction, if paleontological or archeological resources are found, all attempts will be made to preserve in place or leave in an undisturbed state in compliance with applicable law.

65. The driveways from Valley View Street shall be treated with decorative stamped concrete or interlocking pavers or other enhanced treatment, excluding scored and/or colored concrete, that is similar and consistent with the pattern and color used for the McDonald's restaurant (12051 Valley View Street). The color, pattern and material shall be approved by the Community and Economic Development Department, Planning Services Division, and shall be shown on the final site plan and the grading plan.

66. The car wash vacuum parking spaces shall be available for use by patrons of the movie-theater and restaurants during non-operating hours.

67. All on-site curbs, not associated with a parking space, shall be painted red.

68. The proposed trash enclosure shall be designed to comply with the City's B-502 trash enclosure standard, or with an alternative design approved by the Public Works Engineering Division.

69. The trash enclosures shall have unifying color and exterior finish that matches, and are integrated, with the proposed development. The proposed roof design of the trash enclosure shall be architecturally compatible with the design of the development. The Planning Services Division shall review and approve the design of the proposed roof and the material(s). The proposed roof and materials shall also comply with the building code requirements.

70. The trash bins shall be kept inside the trash enclosures, and gates closed at all times, except during disposal and pick-up. The property owner shall provide sufficient trash bins and pick-up to accommodate the site.

71. As part of the finalized working drawings for Planning Division, Engineering Division, and Building Plan Check, the applicant shall submit a detailed and dimensioned plot plan, floor plans, exterior elevations and landscape plans that reflect the above conditions of approval. The plans shall indicate landscape materials, wall materials, and building materials proposed for the project.

72. Any and all corrections notice(s) generated through the plan check and/or inspection process is/are hereby incorporated by reference as conditions of approval and shall be fully complied with by the owner, applicant and all agents thereof.

73. The design and operation of the drive-thru speaker system, including automatic timer, volume control, and message board, is subject to Planning Services Division review and approval. In the event that complaints are received from adjacent uses concerning noise created by the new food ordering speaker system, the applicant shall provide a plan to address the issues to the satisfaction of the Community and Economic Development Department.

74. The drive-thru menu/order board shall be designed to match the building, shall incorporate the same color and materials.

75. The applicant/property owner shall submit signed letters acknowledging receipt of the decision approving Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018, and his/her agreement with all conditions of approval.

76. Unless a time extension is granted pursuant to Section 9.32.030.D.9 of Title 9 of the Municipal Code, the uses and development authorized by this approval of Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018 shall become null and void if the subject use or construction necessary and incidental thereto is not commenced within one (1) year of the expiration of the appeal period and thereafter diligently advanced until completion of the project.

77. The applicant shall, as a condition of project approval, at its sole expense, defend, indemnify and hold harmless the City, its officers, employees, agents and consultants from any claim, action, or proceeding against the City, its officers, agents, employees and/or consultants, which action seeks to set aside, void, annul or otherwise challenge any approval by the City Council, Planning Commission, or other City decision-making body, or City staff action concerning Planned Unit Development No. PUD-104-73 (Rev. 2018), Site

Plan No. SP-057-2018, Lot Line Adjustment No. LLA-019-2018, and/or Conditional Use Permit No. CUP-140-2018. The applicant shall pay the City's defense costs, including attorney fees and all other litigation related expenses, and shall reimburse the City for court costs, which the City may be required to pay as a result of such defense. The applicant shall further pay any adverse financial award, which may issue against the City including but not limited to any award of attorney fees to a party challenging such project approval. The City shall retain the right to select its counsel of choice in any action referred to herein.

RESOLUTION NO. 5933-2018

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF GARDEN GROVE APPROVING CONDITIONAL USE PERMIT NO. CUP-140-2018 FOR PROPERTIES LOCATED AT 12101 AND 12111 VALLEY VIEW STREET, ASSESSOR'S PARCEL NOS. 224-202-15 AND 224-202-16.

BE IT RESOLVED that the Planning Commission of the City of Garden Grove, in a regular session assembled on October 18, 2018, hereby approves Conditional Use Permit No. CUP-140-2018 for properties located on the west side of Valley View Street, south of Chapman Avenue at 12101 and 12111 Valley View Street, Assessor's Parcel Nos. 224-202-15 and 224-202-16, respectively.

BE IT FURTHER RESOLVED in the matter of Conditional Use Permit No. CUP-140-2018, the Planning Commission of the City of Garden Grove does hereby report as follows:

1. The subject case was initiated by Dan Akarakian for Cinemas Management, LLC.

2. The applicant is requesting Conditional Use Permit approval to allow the operation of a 4,241 square foot automatic war cash that will be constructed in conjunction with Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018, and subject to approval of Planned Unit Development No. PUD-104-73 (Rev. 2018). The uses, activities, and improvements contemplated by the proposed PUD amendment, Site Plan No. SP-057-2018, Lot Line Adjustment No. LLA-019-2018, and Conditional Use Permit No. CUP-140-2018 are collectively referred to as the "Project".

3. The proposed Project is categorically exempt from review under the California Environmental Quality Act ("CEQA") pursuant to Section 15301 (Existing Facilities) and Section 15303 (New Construction or Conversion of Small Structures) of the CEQA Guidelines.

4. The properties have a General Plan Land Use designation of Residential/ Commercial Mixed Use 2 and are zoned Planned Unit Development No. PUD-104-73. The subject site is comprised of two parcels, with a total land area of 2.71 acres, and is currently improved with the Starlight 4 Star Cinema movie theater and a vacant 6,040 square foot restaurant. This request is being processed in conjunction with a request for approval of Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018 to allow for the demolition of the existing restaurant and the construction of an automatic car wash, a drive-thru restaurant, a sit-down restaurant, and an expansion to the existing movie theater and a request for approval of Planned Unit Development No. PUD 104-73 (Rev. 2018) to amend the existing standards and conditions for Planned Unit Development No. PUD 104-73 to

facilitate the proposed redevelopment project. A Conditional Use Permit is required for the operation of the proposed automatic car wash.

5. Existing land use, zoning, and General Plan designation of property in the vicinity of the subject property have been reviewed.

6. Report submitted by the City staff was reviewed.

7. Pursuant to a legal notice, a public hearing was held on October 18, 2018, and all interested persons were given an opportunity to be heard.

8. Concurrently with the adoption of this Resolution, the Planning Commission adopted (a) Resolution No. 5931-18 recommending that the City Council determine that the Project is categorically exempt from CEQA and approve Planned Unit Development No. PUD-104-73 (Rev. 2018) to amend PUD-104-73 to facilitate the proposed Project; and (b) Resolution No. 5932-18 approving Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018.

9. The Planning Commission gave due and careful consideration to the matter during its meeting on October 18, 2018; and

BE IT FURTHER RESOLVED, FOUND AND DETERMINED that the facts and reasons supporting the conclusion of the Planning Commission, as required under Municipal Code Sections 9.32.030 are as follows:

FACTS:

The subject properties are located on the west side of Valley View Street, south of Chapman Avenue. The properties have a General Plan Land Use designation of Residential/Commercial Mixed Use 2, and are zoned Planned Unit Development (PUD) No. PUD-104-73. PUD-104-73 was adopted in 1973 to allow the construction of a 126-unit residential condominium (currently known as Stonegate), a 32-lane bowling alley (12141 Valley View Street), a 900 seat movie theater (12111 Valley View Street), a 7,500 square foot restaurant (12101 Valley View Street), a 3,600 square foot drive-thru restaurant (12051 Valley View Street), and a 41,850 square foot aged facility for 120 people (5900 Chapman Avenue).

The commercial portion of PUD-104-73 includes a total five (5) commercial properties: a bowling alley, formerly occupied by the AMF Bowling Alley (12141 Valley View Street), the Starlight 4 Star Cinema (12111 Valley View Street), a vacant restaurant building (12101 Valley View Street), a McDonald's drive-thru restaurant (12051 Valley View Street), and the Brookdale Senior Living facility (5900 Chapman Avenue).

The applicant is the property owner of the movie theater and the vacant restaurant building properties. The property owner intends to redevelop the movie theater and the vacant restaurant properties in an effort to revitalize the commercial center. The proposed project includes the construction of a 4,241 square foot automatic car wash, a 1,870 square foot drive-thru pad restaurant, a 2,700 square foot sit-down restaurant, a 2,846 square foot expansion to the existing movie theater, along with related site improvements, and a lot line adjustment to modify existing lot lines to consolidate the two subject parcels into one.

In conjunction with the Conditional Use Permit request, the applicant is also requesting an amendment to PUD-104-73 to modify the permitted uses for the subject properties to facilitate the Project, and approval of Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018 to allow the construction of the proposed buildings and movie theater expansion, and to consolidate the subject properties into one.

The proposed amendment to PUD-104-73 will allow the proposed car wash subject to approval of a Conditional Use Permit. The applicant is requesting a Conditional Use Permit to allow the operation of the proposed automatic car wash.

The applicant has indicated that the proposed car wash will be operated by Fast 5 Xpress Car Wash. Fast 5 Xpress has existing car wash facilities located in the countries of Los Angeles, Orange, and San Bernardino. The automatic car wash is 4,241 square foot in size, and will consist of twenty (20) vacuum stations. The proposed automatic car wash will operate from 7:00 a.m. to 8:00 p.m., seven days a week.

FINDINGS AND REASONS:

1. That the proposed use will be consistent with the City's adopted General Plan and redevelopment plan.

   The properties have a land use designation of Residential/Commercial Mixed Use 2 and are zoned Planned Unit Development No. PUD-104-73. The Residential/ Commercial Mixed Use 2 is intended to provide a mix of residential and commercial uses mostly around older underutilized, multi-tenant commercial developments. PUD-104-73 was adopted in 1973 to allow for the construction of a 126-unit residential condominium, bowling alley, a movie theater, a sit-down restaurant, a drive-thru restaurant, and an aged facility. Currently, the commercial portion of PUD-104-72 is improved with a bowling alley (12141 Valley View Street), the Starlight 4 Star Cinema movie theater (12111 Valley View Street), a vacant restaurant building (12101 Valley View Street), a McDonald's drive-thru restaurant (12051 Valley View Street), and the Brookdale Senior Living facility (5900 Chapman Avenue).

The General Plan describes a Planned Unit Development as a precise plan that provide the means for the regulations of buildings, structures, and uses of land to facilitate the implementation of the General Plan. The regulations of the PUD are intended to provide for a diversity of uses, relationships, and open spaces in an innovative land plan and design, while ensuring compliance with the provisions of the Municipal Code. The proposal complies with the spirit and intent of the General Plan that establishes that a PUD is intended to provide for a diversity of uses, relationships, and open spaces in an innovative land plan and design, while ensuring compliance with the provisions of the Municipal Code.

Goal LU-6.1 of the General Plan encourages the revitalization of aging, underused or deteriorated commercial centers; Policy LU-6.2 encourages a mix of retail shops and services to better meet the needs of the area's present and potential clientele; Policy LU-6.4 encourages the City to work with property owners to revitalize deteriorated centers; Policy LU-6.6 encourages appropriate signage in commercial centers; and LU-IMP-6C encourages façade renovations, enhanced parking area landscaping, and improved lighting.

The proposed amendment to PUD-104-73, which is being processed with this request, will allow the proposed automatic car wash, subject to approval of a Conditional Use Permit. The proposed project will assist with revitalizing the commercial center and as well as introduce new commercial uses that will serve the surrounding neighborhood. The proposed construction and site improvements will be compatible and integrated with the existing commercial center.

2. That the requested use at the location proposed will not: adversely affect the health, peace, comfort, or welfare of the persons residing or working in the surrounding area, or unreasonably interfere with the use, enjoyment, or valuation of the property of other persons located in the vicinity of the site, or jeopardize, endanger, or otherwise constitute a menace to public health, safety, or general welfare.

The proposed automatic car wash use will not adversely affect the health, peace, comfort or welfare of persons residing or working in the surrounding area. The car wash will provide a service to local residents, and will be consistent with other car washes located in the immediate area. Currently, there are two (2) smaller car wash facilities at two (2) existing service stations located to the north of the project site, at the intersections of Valley View Street and Chapman Avenue. The proposed automatic car wash is a larger facility with vacuum stations that can serve a larger number of customers.

The operator of the proposed automatic car wash prepared a Noise Study to evaluate the car wash's potential noise levels in order to determine if the

noise levels were consistent with the City's Noise Ordinance. The study monitored noise levels as similar express car washes, including evaluating the noise from idling car wash vehicles, and noise from the car wash's compressed air nozzles, the dryer system, and the vacuum equipment. The study determined that the noise levels of the proposed car wash would not exceed the City's adopted noise levels. The study also evaluated the noise levels to the adjacent residential condominium development and to the McDonald's restaurant drive-thru order intercom system. The study determined that the hours of operation for the car wash, 7:00 a.m. to 8:00 p.m., seven days a week, would assist with maintaining the noise level below the City's adopted level and thereby not affect the adjacent residential condominium development, and the noise from the car wash would not interfere with the drive-thru intercom system.

Provided the conditions of approval are adhered to for the life of the project, the automatic car wash use will be harmonious with the persons who work and live in the area.

The automatic car wash use will not unreasonably interfere with the use, enjoyment or valuation of the property of other persons located within the vicinity of the site, provided the conditions of approval are adhered to for the life of the project. The use will not unreasonably interfere with the use, enjoyment or valuation of the property of other persons located within the vicinity of the site. The proposed development will be similar to the existing uses in the PUD, and also existing commercial uses in the vicinity, include two (2) existing car washes located just north of the site at two (2) existing service stations. The project has been designed to comply with the development standards for the zone. Provided that the project adheres to the conditions of approval the project will not unreasonably interfere with the use, enjoyment or valuation of the property of other persons located within the vicinity of the site.

3. That the proposed site is adequate in size and shape to accommodate the yards, walls, fences, parking and loading facilities, landscaping and other development features prescribed in this title or as is otherwise required in order to integrate such use with the uses in the surrounding area.

   The overall project site is 2.71-acres and is sufficient in size to accommodate the proposed car wash and site improvements. The car wash will have adequate vehicle queuing within the drive-thru lane, and will provide a total of twenty (20) vacuum stations. Other site improvements to accommodate the proposed project include new landscaping planters, reconfiguration of existing drive aisles and parking spaces.

4. That the proposed site is adequately served: by highways or streets or sufficient width and improved as necessary to carry the kind and quantity of

traffic such as to be generated, and by other public or private service facilities as required.

The site is adequately served by existing public streets. The site is also adequately served by the public service facilities required such as public utilities: gas, electric, water, and sewer facilities.

INCORPORATION OF FACTS AND FINDINGS SET FORTH IN STAFF REPORT

In addition to the foregoing, the Planning Commission incorporates herein by this reference, the facts and findings set forth in the staff report.

BE IT FURTHER RESOLVED that the Planning Commission does conclude:

1. The proposed Conditional Use Permit does possess characteristics that would indicate justification of the request in accordance with Municipal Code Section 9.24.030 (Conditional Use Permits).

2. In order to fulfill the purpose and intent of the Municipal Code and thereby promote the health, safety, and general welfare, the following Conditions of Approval, attached as Exhibit "A", shall apply to Conditional Use Permit No. CUP-140-2018.

3. The car wash shall also be subject to the conditions of approval as adopted by Planning Commission Resolution No. 5932-18 for Site Plan No. SP-057-2018 and Lot Line Adjustment No. LLA-019-2018.

4. This approval of Conditional Use Permit No. CUP-140-2018, shall be contingent upon the adoption and effectiveness of an Ordinance approving Planned Unit Development No. PUD-104-73 (Rev. 2018) by the Garden Grove City Council.

Adopted this 18th day of October 2018

ATTEST:

/s/ JUDITH MOORE
RECORDING SECRETARY

/s/ GEORGE BRIETIGAM
CHAIR

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS:
CITY OF GARDEN GROVE)

I, JUDITH MOORE, Secretary of the City of Garden Grove Planning Commission, do hereby certify that the foregoing Resolution was duly adopted by the Planning Commission of the City of Garden Grove, California, at a meeting held on October 18, 2018, by the following vote:

AYES:	COMMISSIONERS:	(6)	BRIETIGAM, LAZENBY, LEHMAN, NGUYEN, SALAZAR, TRUONG
NOES:	COMMISSIONERS:	(0)	NONE
ABSENT:	COMMISSIONERS:	(1)	KANZLER

/s/ JUDITH MOORE
RECORDING SECRETARY

PLEASE NOTE: Any request for court review of this decision must be filed within 90 days of the date this decision was final (See Code of Civil Procedure Section 1094.6).

A decision becomes final if it is not timely appealed to the City Council. Appeal deadline is November 8, 2018.

EXHIBIT "A"

Conditional Use Permit No. CUP-140-2018

12101 and 12111 Valley View Street

CONDITIONS OF APPROVAL

General Conditions

1. Each owner of the property shall execute, and the applicant shall record against the property, a "Notice of Discretionary Permit Approval and Agreement with Conditions of Approval" as prepared by the City Attorney's Office. Proof of such recordation is required prior to issuance of building permits.

2. All Conditions of Approval set forth herein shall be binding on and enforceable against each of the following, and whenever used herein, the term "applicant" shall mean and refer to the project applicant, Dan Akarakian for Cinemas Management, Inc., the owner(s) and tenant(s) of the property, and each of their respective successors and assigns, including all subsequent purchasers and/or tenants. The applicant and subsequent owner/operators of such business shall adhere to the conditions of approval for the life of the project, regardless of property ownership. Any changes of the conditions of approval require approval by the appropriate hearing body, except as otherwise provided herein.

3. This Conditional Use Permit only authorizes the operation of 4,241 square foot automatic car wash. Approval of this Conditional Use Permit shall not be construed to mean any waiver of applicable and appropriate zoning and other regulations; and wherein not otherwise specified, all requirements of the City of Garden Grove Municipal Code shall apply.

4. Minor modifications to the site plan, floor plan, and/or these Conditions of Approval may be approved by the Community and Economic Development Director, in his or her discretion. Proposed modifications to the project and/or these Conditions of Approval determined by the Community and Economic Development Director not to be minor in nature shall be subject to approval of new and/or amended land use entitlements by the applicable City hearing body.

5. All conditions of approval shall be implemented at the applicant's expense, except where specified in the individual condition.

6. The project shall comply with all applicable conditions of approval as specified in Exhibit "A" of Planning Commission Resolution No. 5932-18 for Site Plan No. SP-057-2018 and Lot Line Adjustment No. 019-2018.

Public Works Water Services Division

7. The car wash shall operate on a water recycling system.

Community and Economic Development Department

8. The approved site plan and floor plan are an integral part of the decision approving this Conditional Use Permit. There shall be no additional changes in the design of the site plan or floor plan without the approval of the Community and Economic Development Department, Planning Division. Any additional changes in the approved floor plan, which have the effect of expanding or intensifying the present use, shall require obtaining the proper entitlement (s).

9. No outside display of merchandise shall be permitted at any time.

10. A prominent, permanent sign, stating "NO LOITERING IS ALLOWED ON OR IN FRONT OF THE PREMISES," shall be posted in a place that is clearly visible to patrons of the licensee. The sign lettering shall be four (4) to six (6) inches high with black letters on a white background. The sign shall be displayed near or at the store's entrance, and shall also be visible to the public.

11. There shall be no deliveries to or from the premises between the hours of 10:00 p.m. and 7:00 a.m., seven days a week.

12. Litter shall be removed daily from the premises, including adjacent public sidewalks, and from all parking areas under the control of the applicant. These areas shall be swept or cleaned, either mechanically or manually, on a weekly basis, to control debris.

13. The applicant shall abate all graffiti vandalism within the premises. The applicant shall implement best management practices to prevent and abate graffiti vandalism within the premises throughout the life of the project, including, but not limited to, timely removal of all graffiti, the use of graffiti resistant coatings and surfaces, the installation of vegetation screening of frequent graffiti sites, and the installation of signage, lighting, and/or security cameras, as necessary. Graffiti shall be removed/eliminated by the applicant as soon as reasonably possible after it is discovered, but not later than 72 hours after discovery.

14. Any satellite dish antennas installed on the premises shall be screened, subject to approval by the Community and Economic Development Department, Planning Division. No advertising material shall be placed thereon.

15. Permits from the City of Garden Grove shall be obtained prior to displaying any temporary advertising (i.e., banners).

16. Signs shall comply with the City of Garden Grove sign requirements. No more than 15% of the total window area and clear doors shall bear advertising or signs of any sort.

17. All signage shall comply with the requirements of PUD-104-73 (Rev. 2018). No roof signs shall be permitted on the building or on the freestanding metal canopy structure. Any modifications to existing signs or the installation of new signs shall require approval by the Community and Economic Development Department, Planning Services Division prior to issuance of a building permit.

18. The applicant shall comply with the adopted City Noise Ordinance.

19. All lighting structures shall be placed so as to confine direct rays to the subject property. All exterior lights shall be reviewed and approved by the Planning Services Division. Lighting adjacent to residential properties shall be restricted to low, decorative type, wall-mounted lights, or ground lighting system. Lighting in the common and parking areas shall be directed, positioned or shielded in such manner so as not to unreasonably illuminate the window area of nearby residences. Parking area lighting shall be provided during the hours of darkness the establishment is open at a minimum of two-foot candles of light, and one-foot candle of light during all other hours of darkness. No pole mounted lights shall be allowed along the north and east property lines in order to minimize impacts to the abutting residential uses.

20. The proposed development shall comply with all applicable provisions of the Garden Grove Local Implementation Plan (LIP), including but not limited to, providing a Water Quality Management Plan (WQMP) and Section 7 addressing reducing water run-off from the site (e.g., direct roof rain gutter's downspouts to permeable areas such as landscape planters).

21. The hours of operation of the car wash shall be limited from 7:00 a.m. to 8:00 p.m., seven days a week. The applicant shall install an automatic, electric arm gate, or other device as approved by the Planning Services Division, at the entrance of the car wash drive-thru lane to prevent vehicles from accessing the car wash queuing lane during the non-operating hours. However, in the event problems arise where the hours of operation need to be reduced in order to minimize noise, the operator shall change the hours of operation as prescribed by the City.

22. During non-operating hours, the car wash vacuum station parking spaces shall be available for use by the movie theater and restaurant patrons.

23. The dryer unit on the car wash shall be fitted with a noise reduction package to reduce any potential noise problems.

24. There shall be no auto detailing or auto prep work conducted on the site at any time.

25. This Conditional Use Permit may be called for review by City Staff, the City Council, or the Planning Commission for any reason, including if noise or other complaints are filed and verified as valid by the Code Enforcement office or other city department concerning the violation of approved conditions, the Garden Grove Municipal Code, or any other applicable provisions of law.

26. A copy of the decision approving Conditional Use Permit No. CUP-140-2018 shall be kept on the premises at all times.

27. The permittee shall submit a signed letter acknowledging receipt of the decision approving Conditional Use Permit No. CUP-140-2018, and his/her agreement with all conditions of the approval.

28. Unless a time extension is granted pursuant to Section 9.32.030.D.9 of Title 9 of the Municipal Code, the use authorized by this approval of Conditional Use Permit No. CUP-140-2018 shall become null and void if the subject use or construction necessary and incidental thereto is not commenced within one (1) year of the expiration of the appeal period and thereafter diligently advanced until completion of the project.

29. The applicant shall, as a condition of project approval, at its sole expense, defend, indemnify and hold harmless the City, its officers, employees, agents and consultants from any claim, action, or proceeding against the City, its officers, agents, employees and/or consultants, which action seeks to set aside, void, annul or otherwise challenge any approval by the City Council, Planning Commission, or other City decision-making body, or City staff action concerning Planned Unit Development No. PUD-104-73 (Rev. 2018), Site Plan No. SP-057-2018, Lot Line Adjustment No. LLA-019-2018, and/or CUP-140-2018. The applicant shall pay the City's defense costs, including attorney fees and all other litigation related expenses, and shall reimburse the City for court costs, which the City may be required to pay as a result of such defense. The applicant shall further pay any adverse financial award, which may issue against the City, including, but not limited to, any award of attorney fees to a party challenging such project approval. The City shall retain the right to select its counsel of choice in any action referred to herein.