Appendices

Appendix IS-1

Protected Tree Report

PROTECTED TREE REPORT

PREPARED FOR

Eyestone Environmental

6701 Center Drive West, Suite 900

Los Angeles, California 90045

PROPERTY

3900 block of S Figueroa between 39th St. and Martin Luther King Jr. Blvd.

3900 S Figueroa St., 3907 - 3941 Flower Dr.

Los Angeles, CA 90037

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April 25, 2016

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PROTECTED TREE REPORT

3900 block of S Figueroa between 39th Street and Martin Luther King Jr. Boulevard
3900 S Figueroa St., 3907 - 3941 Flower Dr.
Los Angeles, CA 90037

SUMMARY

This Tree Report was prepared at the request of the property owner, Spectrum Group Real Estate. The owner is preparing to re-develop approximately 4.4 acres located on the 3900 block of Figueroa between 39th Street and Martin Luther King Jr. Boulevard in Downtown Los Angeles (Project Site) from a parking lot and multi-family housing into a new mixed use commercial, residential, and hotel project (Project).

The Project Site is bounded by 39th Street to the north, commercial retail uses to the south, Flower Drive to the east, and Figueroa Street to the west and is adjacent to Exposition Park and near the university of Southern California's (USC) University Park Campus in the City of Los Angeles. The Project is comprised of three components: a Hotel Component, a Student Housing Component, and a Mixed-Income Housing Component.

The Hotel Component would include 298 rooms along with retail and restaurant uses. The Student Housing Component would provide 222 student housing units and approximately 31,260 square feet of community serving retail and restaurant uses. The Mixed-Income Housing Component would provide 186 dwelling units, along with creative office space, retail, and restaurant uses. The Project would also construct a nine-story above-ground parking structure to provide parking for all three components. Upon completion, the total floor area ratio (FAR) of the Project would be up to 3.25:1.

There are NO native protected trees on the Project Site, such as oak, Western sycamore, Southern California black walnut or California bay.

There are ten (10) Non-Native trees that are 8" or greater in Diameter at Breast Height (DBH) on the Project Site. These trees will be removed for proper re-grading and construction throughout the Project Site. The owner will mitigate the removed trees to the satisfaction of the City of Los Angeles, Urban Forestry Division. The City standard of mitigation is at a one-to-one (1:1) ratio. Replacement trees in a 24" box size may be recommended for good establishment and root quality.

There are seven (7) Fan Palms City of Los Angeles Street Trees located in sidewalk planter spaces, which will be significantly impacted and will require removal. Mitigation of these (7) trees will be to the satisfaction of the City of Los Angeles, Urban Forestry Division, which is expected to require mitigation at a two-to-one (2:1) ratio. Replacement trees in a 24" box size may be recommended for good establishment and root quality. The Tree Location map for this Project is included.

This Project Site is under the jurisdiction of the City of Los Angeles and guided by the City's Protected Tree Ordinance. The City of Los Angeles adopted the Protected Tree Ordinance to recognize the aesthetic, environmental, ecological and economic benefits and the historical legacy that native trees provide the community.

ASSIGNMENT

The Assignment included a field observation and inventory of the trees on the Project Site. A Tree Location Plot Map is included along with a Summary of Field Inspection.

TREE CHARACTERISTICS AND SITE CONDITIONS

Table 1. Private Trees — Non-Protected Significant Trees

Palm size noted as Clear Trunk Height.

Tree #	Species	Status	DBH (")	Height (')	Spread (')	Condition	Retain or Remove
1	Avocado *Persea sp*	Non-Protected Significant	12	30	20	Fair	Remove
2	Weeping Fig *Ficus benjamina*	Non-Protected Significant	3, 5, 5	15	15	Fair	Remove
3	Canary Island Palm *Phoenix canariensis*	Non-Protected Significant	24"+	6	NA	Fair	Remove
4	Cotoneaster *Cotoneaster sp*	Non-Protected Significant	multi, 36+	40	15	Fair	Remove
5	Citrus *Citrus sp*	Non-Protected Significant	multi, 36+	20	20	Fair	Remove
6	Cotoneaster *Cotoneaster sp*	Non-Protected Significant	multi, 36+	30	15	Fair	Remove
7	Pine *Pine sp*	Non-Protected Significant	10	20	25	Fair	Remove
8	Citrus *Citrus sp*	Non-Protected Significant	4, 10	25	20	Fair	Remove
9	Mexican Fan Palm *Washingtonia robusta*	Non-Protected Significant	12"	6	NA	Fair	Remove
10	Mexican Fan Palm *Washingtonia robusta*	Non-Protected Significant	12"	6	NA	Fair	Remove

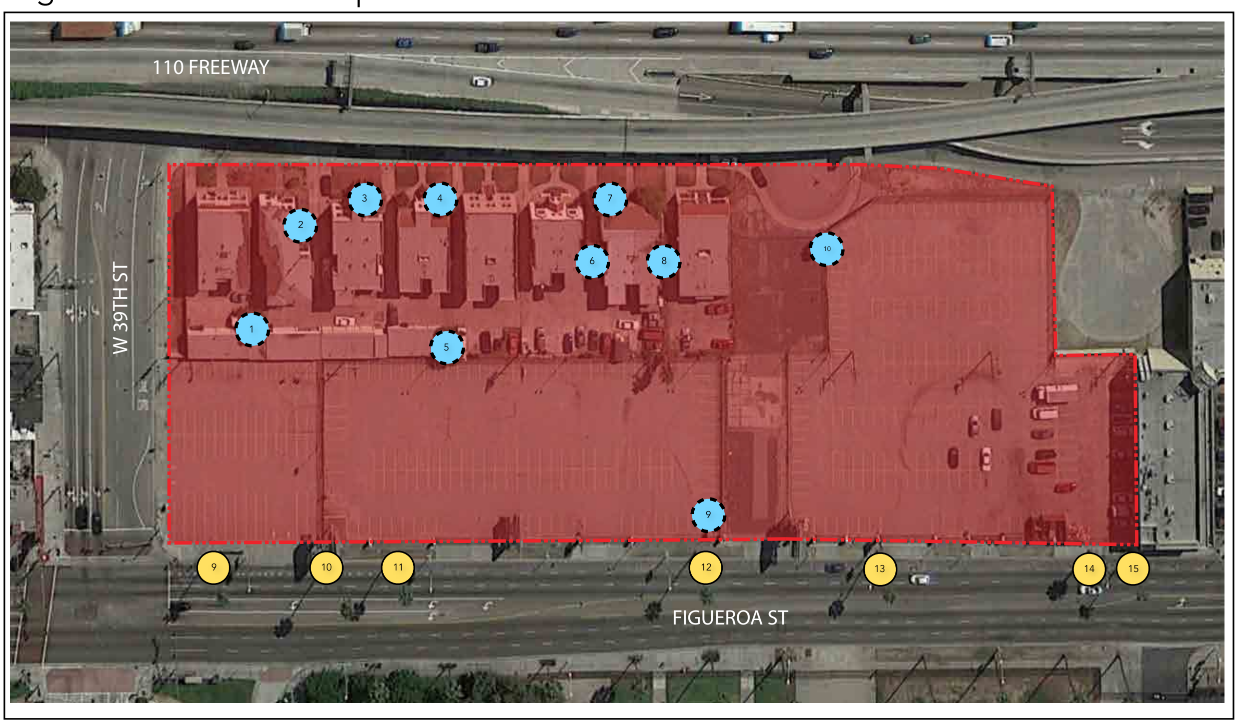
TREE CHARACTERISTICS AND SITE CONDITIONS, continued

Table 2. City of Los Angeles Street Trees

Palm size noted as Clear Trunk Height.

Tree #	Species	Status	DBH (")	Height (')	Spread (')	Condition	Retain or Remove
11	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
12	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
13	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
14	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
15	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
16	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
17	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove

Fig. 1. Tree Location Map



KEY

Non-Protected Significant Tree (8"+ DBH), Private Property

City of Los Angeles Street Tree

IMPACT ANALYSIS AND SPECIFIC RECOMMENDATIONS

As discussed, this Project will significantly impact all of the existing trees on the Project Site.

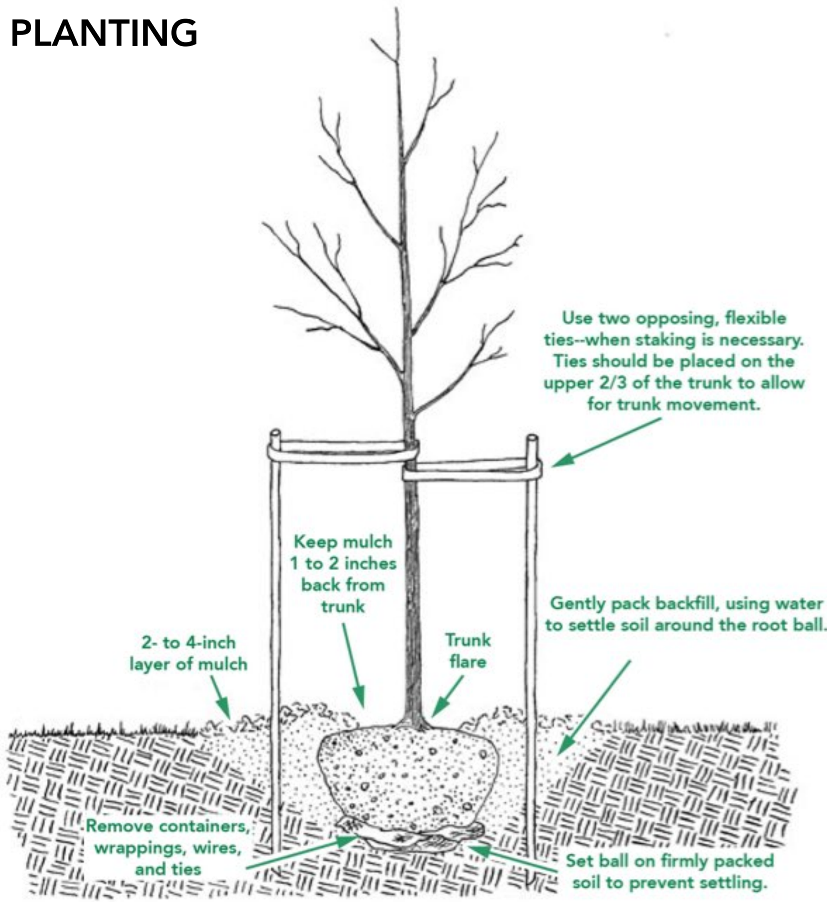
The removal of the existing buildings and asphalt parking along with the re-grading and re-compaction of the property will impact the root system of all on-site trees. These trees will not tolerate the loss of their root system or the lowering of the soil grade around their root ball.

Accordingly all ten (10) Non-Protected Significant Trees on site that are 8" DBH or greater in size will require removal. The ten (10) Non-Protected Significant Trees will be mitigated at a 1:1 replacement ratio to the satisfaction of the City of Los Angeles.

The (7) Fan Palm trees located on S Figueroa will be significantly impacted by the Project's street improvements. These (7) Street trees will be mitigated to the satisfaction of the City of Los Angeles, Urban Forestry Division, which is expected to require mitigation at a two-to-one (2:1) ratio.

GENERAL RECOMMENDATIONS

NEW TREE PLANTING



The ideal time to plant trees and shrubs is during the dormant season, in the fall after leaf drop or early spring before budbreak. Weather conditions are cool and allow plants to establish roots in the new location before spring rains and summer heat stimulate new top growth. Before you begin planting your tree, be sure you have had all underground utilities located prior to digging.

If the tree you are planting is balled or bare root, it is important to understand that its root system has been reduced by 90 to 95 percent of its original size during transplanting. As a result of the trauma caused by the digging process, trees commonly exhibit what is known as transplant shock. Containerized trees may also experience transplant shock, particularly if they have circling roots that must be cut. Transplant shock is indicated by slow growth and reduced vigor following transplanting. Proper site preparation before and during planting coupled with good follow-up care reduces the amount of time the plant experiences transplant shock and allows the tree to quickly establish in its new location. Carefully follow nine simple steps, and you can significantly reduce the stress placed on the plant at the time of planting.

NEW TREE PLANTING, continued

1. Dig a shallow, broad planting hole. Make the hole wide, as much as three times the diameter of the root ball but only as deep as the root ball. It is important to make the hole wide because the roots on the newly establishing tree must push through surrounding soil in order to establish. On most planting sites in new developments, the existing soils have been compacted and are unsuitable for healthy root growth. Breaking up the soil in a large area around the tree provides the newly emerging roots room to expand into loose soil to hasten establishment.

2. Identify the trunk flare. The trunk flare is where the roots spread at the base of the tree. This point should be partially visible after the tree has been planted (see diagram). If the trunk flare is not partially visible, you may have to remove some soil from the top of the root ball. Find it so you can determine how deep the hole needs for proper planting.

3. Remove tree container for containerized trees. Carefully cutting down the sides of the container may make this easier. Inspect the root ball for circling roots and cut or remove them. Expose the trunk flare, if necessary.

4. Place the tree at the proper height. Before placing the tree in the hole, check to see that the hole has been dug to the proper depth and no more. The majority of the roots on the newly planted tree will develop in the top 12 inches of soil. If the tree is planted too deeply, new roots will have difficulty developing because of a lack of oxygen. It is better to plant the tree a little high, 1-2 inches above the base of the trunk flare, than to plant it at or below the original growing level. This planting level will allow for some settling.

5. Straighten the tree in the hole. Before you begin backfilling, have someone view the tree from several directions to confirm that the tree is straight. Once you begin backfilling, it is difficult to reposition the tree.

6. Fill the hole gently but firmly. Fill the hole about one-third full and gently but firmly pack the soil around the base of the root ball. Be careful not to damage the trunk or roots in the process. Fill the remainder of the hole, taking care to firmly pack soil to eliminate air pockets that may cause roots to dry out. To avoid this problem, add the soil a few inches at a time and settle with water. Continue this process until the hole is filled and the tree is firmly planted. It is not recommended to apply fertilizer at time of planting.

7. Stake the tree, if necessary. If the tree is grown properly at the nursery, staking for support will not be necessary in most home landscape situations. Studies have shown that trees establish more quickly and develop stronger trunk and root systems if they are not staked at the time of planting. However, protective staking may be required on sites where lawn mower damage, vandalism, or windy conditions are concerns. If staking is necessary for support, there are three methods to choose among: staking, guying, and ball stabilizing. One of the most common methods is staking. With this method, two stakes used in conjunction with a wide, flexible tie material on the lower half of the tree will hold the tree upright, provide flexibility, and minimize injury to the trunk (see diagram). Remove support staking and ties after the first year of growth.

8. Mulch the base of the tree. Mulch is simply organic matter applied to the area at the base of the tree. It acts as a blanket to hold moisture, it moderates soil temperature extremes, and it reduces competition from grass and weeds. A 2- to 3-inch layer is ideal. More than 3 inches may cause a problem with oxygen and moisture levels. When placing mulch, be sure that the actual trunk of the tree is not covered. Doing so may cause decay of the living bark at the base of the tree. A mulch-free area, 1 to 2 inches wide at the base of the tree, is sufficient to avoid moist bark conditions and prevent decay.

TREE MAINTENANCE AND PRUNING

Some trees do not generally require pruning. The occasional removal of dead twigs or wood is typical. Occasionally a tree has a defect or structural condition that would benefit from pruning. Any pruning activity should be performed under the guidance of a certified arborist or tree expert.

Because each cut has the potential to change the growth of the tree, no branch should be removed without a reason. Common reasons for pruning are to remove dead branches, to remove crowded or rubbing limbs, and to eliminate hazards. Trees may also be pruned to increase light and air penetration to the inside of the tree's crown or to the landscape below. In most cases, mature trees are pruned as a corrective or preventive measure.

Routine thinning does not necessarily improve the health of a tree. Trees produce a dense crown of leaves to manufacture the sugar used as energy for growth and development. Removal of foliage through pruning can reduce growth and stored energy reserves. Heavy pruning can be a significant health stress for the tree.

Yet if people and trees are to coexist in an urban or suburban environment, then we sometimes have to modify the trees. City environments do not mimic natural forest conditions. Safety is a major concern. Also, we want trees to complement other landscape plantings and lawns. Proper pruning, with an understanding of tree biology, can maintain good tree health and structure while enhancing the aesthetic and economic values of our landscapes.

Pruning Techniques – From the I.S.A. Guidelines

Specific types of pruning may be necessary to maintain a mature tree in a healthy, safe, and attractive condition.

Cleaning is the removal of dead, dying, diseased, crowded, weakly attached, and low- vigor branches from the crown of a tree.

Thinning is the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree, reduces weight on heavy limbs, and helps retain the tree's natural shape.

Raising removes the lower branches from a tree to provide clearance for buildings, vehicles, pedestrians, and vistas.

Reduction reduces the size of a tree, often for clearance for utility lines. Reducing the height or spread of a tree is best accomplished by pruning back the leaders and branch terminals to lateral branches that are large enough to assume the terminal roles (at least one-third the diameter of the cut stem). Compared to topping, reduction helps maintain the form and structural integrity of the tree.

TREE MAINTENANCE AND PRUNING, continued

How Much Should Be Pruned?

Mature trees should require little routine pruning. A widely accepted rule of thumb is never to remove more than one-quarter of a tree's leaf-bearing crown. In a mature tree, pruning even that much could have negative effects. Removing even a single, large- diameter limb can create a wound that the tree may not be able to close. The older and larger a tree becomes, the less energy it has in reserve to close wounds and defend against decay or insect attack. Pruning of mature trees is usually limited to removal of dead or potentially hazardous limbs.

Wound Dressings

Wound dressings were once thought to accelerate wound closure, protect against insects and diseases, and reduce decay. However, research has shown that dressings do not reduce decay or speed closure and rarely prevent insect or disease infestations. Most experts recommend that wound dressings not be used.

DISEASES AND INSECTS

Continual observation and monitoring of your tree can alert you to any abnormal changes. Some indicators are: excessive leaf drop, leaf discoloration, sap oozing from the trunk and bark with unusual cracks. Should you observe any changes, you should contact a Tree specialist or Certified Arborist to review the tree and provide specific recommendations. Trees are susceptible to hundreds of pests, many of which are typical and may not cause enough harm to warrant the use of chemicals. However, diseases and insects may be indication of further stress that should be identified by a professional.

GRADE CHANGES

The growing conditions and soil level of trees are subject to detrimental stress should they be changed during the course of construction. Raising the grade at the base of a tree trunk can have long-term negative consequences. This grade level should be maintained throughout the protected zone. This will also help in maintaining the drainage in which the tree has become accustomed.

INSPECTION

The property owner should establish an inspection calendar based on the recommendation provided by the tree specialist. This calendar of inspections can be determined based on several factors: the maturity of the tree, location of tree in proximity to high-use areas vs. low-use area, history of the tree, prior failures, external factors (such as construction activity) and the perceived value of the tree to the homeowner.

Assumptions and Limiting Conditions

No warranty is made, expressed or implied, that problems or deficiencies of the trees or the property will not occur in the future, from any cause. The Consultant shall not be responsible for damages or injuries caused by any tree defects, and assumes no responsibility for the correction of defects or tree related problems.

The owner of the trees may choose to accept or disregard the recommendations of the Consultant, or seek additional advice to determine if a tree meets the owner's risk abatement standards.

The Consulting Arborist has no past, present or future interest in the removal or retaining of any tree. Opinions contained herein are the independent and objective judgments of the consultant relating to circumstances and observations made on the subject site.

The recommendations contained in this report are the opinions of the Consulting Arborist at the time of inspection. These opinions are based on the knowledge, experience, and education of the Consultant. The field inspection was a visual, grade level tree assessment.

The Consulting Arborist shall not be required to give testimony, perform site monitoring, provide further documentation, be deposed, or to attend any meeting without subsequent contractual arrangements for this additional employment, including payment of additional fees for such services as described by the Consultant.

The Consultant assumes no responsibility for verification of ownership or locations of property lines, or for results of any actions or recommendations based on inaccurate information.

This Arborist report may not be reproduced without the express permission of the Consulting Arborist and the client to whom the report was issued. Any change or alteration to this report invalidates the entire report.

Should you have any further questions regarding this property, please contact me at (310) 663-2290.

Respectfully submitted,

Lisa Smith

Registered Consulting Arborist #464
ISA Certified Arborist #WE3782
ISA Tree Risk Assessor Qualified
American Society of Consulting Arborists, Member

APPENDIX A - SUMMARY OF FIELD INSPECTION

3900 block of S Figueroa between 39th Street and Martin Luther King Jr. Boulevard
(**3900 S Figueroa St., 3907 - 3941 Flower Dr.) Los Angeles, CA 90037**

Schedule of Proposed Removals

Palm size noted as Clear Trunk Height.

Tree #	Species	Status	DBH (")	Height (')	Spread (')	Condition	Retain or Remove
1	Avocado *Persea sp*	Non-Protected Significant	12	30	20	Fair	Remove
2	Weeping Fig *Ficus benjamina*	Non-Protected Significant	3, 5, 5	15	15	Fair	Remove
3	Canary Island Palm *Phoenix canariensis*	Non-Protected Significant	24"+	6	NA	Fair	Remove
4	Cotoneaster *Cotoneaster sp*	Non-Protected Significant	multi, 36+	40	15	Fair	Remove
5	Citrus *Citrus sp*	Non-Protected Significant	multi, 36+	20	20	Fair	Remove
6	Cotoneaster *Cotoneaster sp*	Non-Protected Significant	multi, 36+	30	15	Fair	Remove
7	Pine *Pine sp*	Non-Protected Significant	10	20	25	Fair	Remove
8	Citrus *Citrus sp*	Non-Protected Significant	4, 10	25	20	Fair	Remove
9	Mexican Fan Palm *Washingtonia robusta*	Non-Protected Significant	12"	6	NA	Fair	Remove
10	Mexican Fan Palm *Washingtonia robusta*	Non-Protected Significant	12"	6	NA	Fair	Remove
11	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
12	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove

Schedule of Proposed Removals, continued

Palm size noted as Clear Trunk Height.

Tree #	Species	Status	DBH (")	Height (')	Spread (')	Condition	Retain or Remove
13	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
14	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
15	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
16	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove
17	Mexican Fan Palm *Washingtonia robusta*	City of LA Street Tree	12"+	60	NA	Fair	Remove

Appendix IS-2

Water Resources Technical Report

FUSCOE ENGINEERING

WATER RESOURCES TECHNICAL REPORT

The Fig

City of Los Angeles, California

Prepared For

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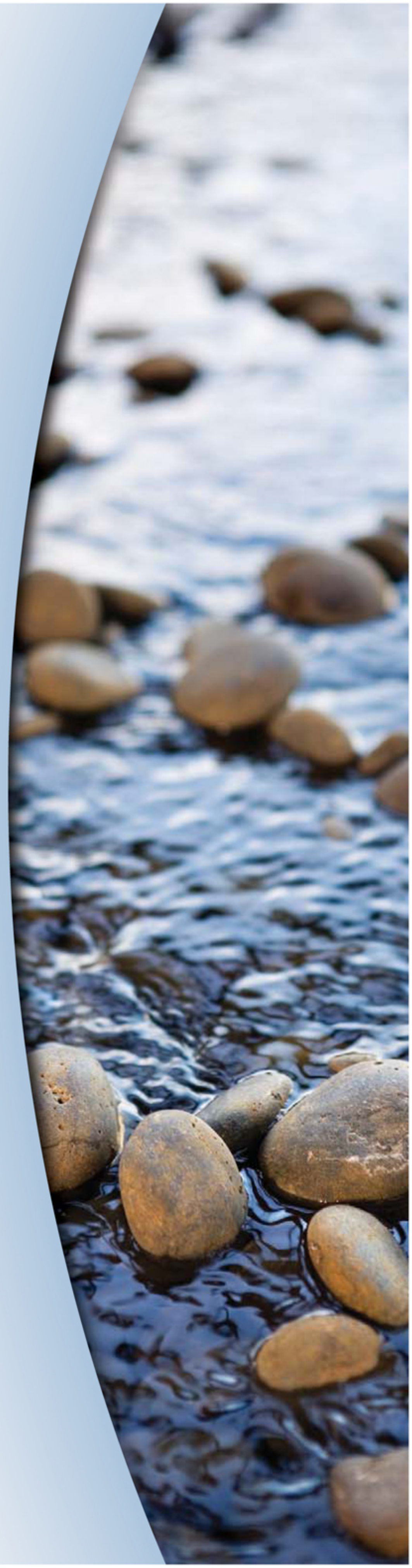
Date Prepared: June 14, 2016

Job Number: 01415.03



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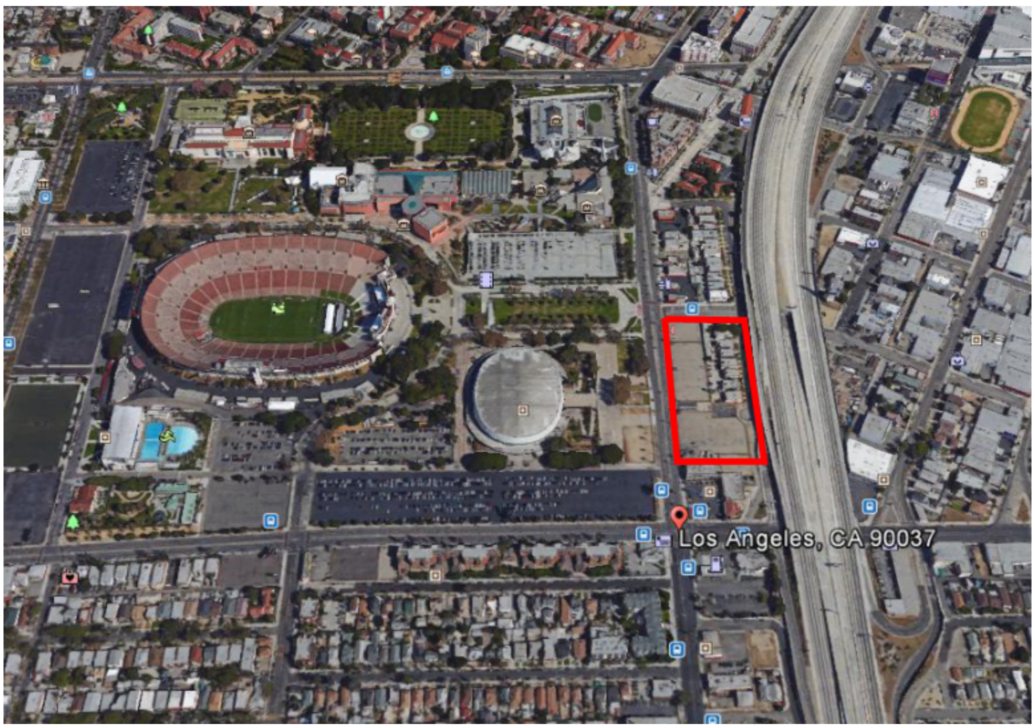
1. INTRODUCTION

1.1. PROJECT DESCRIPTION

The Fig is a mixed-use development project (Project) on an approximately 4.4-acre (prior to anticipated street vacations/dedications/easements) site (Project Site) located adjacent to Exposition Park and near the University of Southern California's (USC) University Park Campus in the City of Los Angeles. The Project Site is bounded by West 39th Street to the north, South Flower Drive and Interstate 110 freeway to the east, West Martin Luther King Junior Boulevard to the south, and South Figueroa Street to the west.



The existing site is currently comprised of surface parking areas and eight multi-family residential buildings containing a total of 32 dwelling units and approximately 33,720 square feet of residential floor area located on the northeastern portion of the Project Site fronting Flower Drive. The remainder of the Project Site is developed with paved surface parking lots that include approximately 385 parking spaces. The Project Site is relatively flat with the existing drainage conveyed via surface flows to the adjacent public streets.

The Project is comprised of three components: a Hotel Component, a Student Housing Component, and a Mixed-Income Housing Component. The Hotel Component would include 298 rooms, approximately 15,335 square feet of retail and restaurant uses, approximately 13,553 square feet of shared guest and public amenities, and approximately 7,203 square feet of public meeting spaces. The Student Housing Component would provide 222 student housing units and approximately 32,991 square feet of community-serving retail and restaurant uses. The Mixed-Income Housing Component would provide 186 dwelling units (82 of which would be restricted to households earning no more than 80 percent of the Area Median Income), approximately 20,364 square feet of creative office space, and approximately 7,000 square feet of retail and restaurant uses. The Project would also construct a nine-story above-ground parking structure to provide parking for all three components.

1.2. SCOPE OF WORK

As part of the environmental impact report (EIR) for the Project, this report will describe the existing and proposed surface water hydrology, surface water quality, and groundwater at the Project Site and immediate surrounding areas, as well as an analysis of the Project's potential impacts on each of these water resources.

For the purpose of this report, the collective Project components (student, mixed-income housing and hotel) will be analyzed and considered as one project.

2. REGULATORY FRAMEWORK

2.1. SURFACE WATER HYDROLOGY

County of Los Angeles Hydrology Manual

The Project Site is located within the Los Angeles River Watershed, which covers over 830 square miles. The Los Angeles County Flood Control District (LACFCD) is responsible for providing flood protection, water conservation, recreation and aesthetic enhancement within this entire watershed. LACFCD is governed, as a separate entity, by the County of Los Angeles Board of Supervisors.

LACFCD encompasses more than 3,000 square miles, 85 cities and approximately 2.1 million land parcels. It includes the vast majority of drainage infrastructure within incorporated and unincorporated areas in every watershed, including 500 miles of open channel, 2,800 miles of underground storm drain, and an estimated 120,000 catch basins. The Los Angeles County Department of Public Works and LACFCD are responsible for the development of a hydrology manual for consistent hydrologic design throughout the County.

The Los Angeles County Department of Public Works Hydrology Manual (January 2006) establishes the Los Angeles County Department of Public Works' hydrologic design procedures based on historic rainfall and runoff data collected within the County. The hydrologic techniques in the manual apply for the design of local storm drains, retention and detention basins, pump stations, and major channel projects.

The Project is required to utilize the 2006 Hydrology Manual and accompanying hydrologic tools including HydroCalc Calculator to calculate existing and proposed discharges and volumes from the Project.

Los Angeles Municipal Code

Any proposed drainage improvements within the street right-of-way or any other property owned by, to be owned by, or under the control of the City requires approval through the B-Permit process (Section 62.105, Los Angeles Municipal Code (LAMC)). Through the B-Permit process, storm drain installation plans which include any connections to the City's storm drain system from a property line to a catch basin or storm drain pipe, are subject to review and approval by the City of Los Angeles Department of Public Works, Bureau of Engineering.

2.2. SURFACE WATER QUALITY

Clean Water Act

Controlling pollution of the nation's receiving water bodies has been a major environmental concern for more than three decades. Growing public awareness of the impacts of water pollution in the United States culminated in the establishment of the federal Clean Water Act[1] (CWA) in 1972, which provided the regulatory framework for surface water quality protection.

[1] Also referred to as the Federal Water Pollution Control Act of 1972.

The United States Congress amended the CWA in 1987 to specifically regulate discharges to waters of the United States from public storm drain systems and storm water flows from industrial facilities, including construction sites, and require such discharges be regulated through permits under the National Pollutant Discharge Elimination System (NPDES).[2] Rather than setting numeric effluent limitations for storm water and urban runoff, CWA regulation calls for the implementation of Best Management Practices (BMPs) to reduce or prevent the discharge of pollutants from these activities to the Maximum Extent Practicable (MEP) for urban runoff and meeting the Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) standards for construction storm water. Regulations and permits have been implemented at the federal, state, and local level to form a comprehensive regulatory framework to serve and protect the quality of the nation's surface water resources.

In addition to reducing pollution with the regulations described above, the CWA also seeks to maintain the integrity of clean waters of the United States – in other words, to keep clean waters clean and to prevent undue degradation of others. As part of the CWA, the Federal Anti-Degradation Policy [40 Code of Federal Regulations (CFR) Section 131.12] states that each state "shall develop and adopt a statewide anti-degradation policy and identify the methods for implementing such policy…" [40 CFR Section 131.12(a)]. Three levels of protection are defined by the federal regulations:

1. Existing uses must be protected in all of the Nation's receiving waters, prohibiting any degradation that would compromise those existing uses;
2. Where existing uses are better than those needed to support propagation of aquatic wildlife and water recreation, those uses shall be maintained, unless the state finds that degradation is "…necessary to accommodate important economic or social development" [40 CFR Section 131.12(a)(2)]. Degradation, however, is not allowed to fall below the existing use of the receiving water; and
3. States must prohibit the degradation of Outstanding National Resource Waters, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreation or ecological significance.

Federal Anti-Degradation Policy

The Federal Anti-Degradation Policy (40 CFR 131.12) requires states to develop statewide anti-degradation policies and identify methods for implementing them. Pursuant to the CFR, state anti-degradation policies and implementation methods shall, at a minimum, protect and maintain (1) existing in-stream water uses; (2) existing water quality, where the quality of the waters exceeds levels necessary to support existing beneficial uses, unless the state finds that allowing lower water quality is necessary to accommodate economic and social development in the area; and (3) water quality in waters considered an outstanding national resource.

Porter-Cologne Water Quality Act

In the State of California, the State Water Resources Control Board (SWRCB) and local Regional Water Quality Control Boards (RWQCBs) have assumed the responsibility of implementing the United States Environmental Protection Agency's (USEPA) NPDES Program and other programs under the CWA such as the Impaired Waters Program and the Anti-Degradation Policy. The primary quality control law in California is the Porter-Cologne Water Quality Act (Water Code Sections 13000 et seq.). Under Porter-Cologne, the SWRCB issues joint federal NPDES Storm

[2] CWA Section 402(p).

Water permits and state Waste Discharge Requirements (WDRs) to operators of municipal separate storm sewer systems (MS4s), industrial facilities, and construction sites to obtain coverage for the storm water discharges from these operations.

California Anti-Degradation Policy

The California Anti-Degradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High Quality Water in California, was adopted by the SWRCB (State Board Resolution No. 68-16) in 1968. Unlike the Federal Anti-Degradation Policy, the California Anti-Degradation Policy applies to all waters of the state, not just surface waters. The policy states that whenever the existing quality of a water body is better than the quality established in individual Basin Plans, such high quality shall be maintained and discharges to that water body shall not unreasonably affect present or anticipated beneficial use of such water resource.

California Toxic Rule

In 2000, the EPA promulgated the California Toxic Rule, which establishes water quality criteria for certain toxic substances to be applied to waters in the state. The EPA promulgated this rule based on the EPA's determination that the numeric criteria are necessary in the state to protect human health and the environment. The California Toxic Rule establishes acute (i.e., short-term) and chronic (i.e., long-term) standards for bodies of water such as inland surface waters and enclosed bays and estuaries that are designated by the Los Angeles Regional Water Quality Control Board (LARWQCB) as having beneficial uses protective of aquatic life or human health.

Board Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties

As required by the California Water Code (CWC), the LARWQCB has adopted a plan entitled "Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties" (Basin Plan). Specifically, the Basin Plan designates beneficial uses for surface and groundwaters, sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and describes implementation programs to protect all waters in the Los Angeles Region. In addition, the Basin Plan incorporates (by reference) all applicable state and regional board plans and policies and other pertinent water quality policies and regulations. Those of other agencies are referenced in appropriate sections throughout the Basin Plan.

NPDES Permit Program

The NPDES permit program was first established under authority of the CWA to control the discharge of pollutants from any point source into the waters of the United States. As indicated above, in California, the NPDES stormwater permitting program is administered by the SWRCB through its nine RWQCBs.

The General Permit for Construction Activities

SWRCB Order No. 2009-0009-DWQ known as the "General Permit" was adopted on September 2, 2009 and was amended by Order No 2012-0006-DWQ which became effective on July 17, 2012. This NPDES permit establishes a risk-based approach to stormwater control requirements for construction projects by identifying three project risk levels. The main objectives of the General Permit are to:

- Reduce erosion
- Minimize or eliminate sediment in stormwater discharges
- Prevent materials used at a construction site from contacting stormwater

- Implement a sampling and analysis program
- Eliminate unauthorized non-stormwater discharges from construction sites
- Implement appropriate measures to reduce potential impacts on waterways both during and after construction of projects
- Establish maintenance commitments on post-construction pollution control measures

California mandates requirements for all construction activities disturbing more than one acre of land to develop and implement Stormwater Pollution Prevention Plans (SWPPPs). The SWPPP documents the selection and implementation of BMPs for a specific construction project, charging owners with stormwater quality management responsibilities. A construction site subject to the General Permit must prepare and implement a SWPPP that meets the requirements of the General Permit.

As part of the Project, preparation and implementation of a SWPPP will be required. In addition, the Project will be required to obtain a Waste Discharger Identification Number (WDID) through the state's Storm Water Multiple Application and Report Tracking System (S.M.A.R.T.S.).

Los Angeles County Municipal Storm Water System (MS4) Permit

As described above, USEPA regulations require that MS4 permittees implement a program to monitor and control pollutants being discharged to the municipal system from both industrial and commercial projects that contribute a substantial pollutant load to the MS4.

On December 13, 2001, the LARWQCB adopted Order No. 01-182 under the CWA and the Porter-Cologne Act. This Order is the NPDES Permit or MS4 permit for municipal stormwater and urban runoff discharges within Los Angeles County. The requirements of this Order (the "Permit") cover 84 cities and most of the unincorporated areas of Los Angeles County. Under the Permit, LACFCD is designated as the Principal Permittee. The 84 Los Angeles County cities (including the City of Los Angeles) and unincorporated areas within Los Angeles County are the "Co-Permittees". The Principal Permittee helps to facilitate activities necessary to comply with the requirements outlined in the Permit but is not responsible for ensuring compliance of any of the Permittees.

Since adoption of Order No. 01-182, the LARWQCB has seen adopted Order No. R4-2012-0175, as amended by State Water Board Order WQ 2015-0075 NPDES Permit No. CAS004001 on November 8, 2012. This current permit will expire on December 28, 2017. As a Co-Permittee, the City of Los Angeles is subject to the requirements set forth in Order No. R4-2012-0175, as amended by State Water Board Order WQ 2015-0075, NPDES Permit No. CAS004001.

Los Angeles Municipal Code

Section 64.70 of LAMC sets forth the City's Stormwater and Urban Runoff Pollution Control Ordinance. The ordinance prohibits the discharge of the following items into any storm drain systems:

- Any liquids, solids or gasses which by reason of their nature or quantity are flammable, reactive, explosive, corrosive, or radioactive, or by interaction with other materials could result in fire, explosion or injury.
- Any solid or viscous materials, which could cause obstruction to the flow or operation of the storm drain system.

- Any pollutant that injures or constitutes a hazard to human, animal, plant or fish life, or creates a public nuisance.
- Any noxious or malodorous liquid, gas, or solid in sufficient quantity, either singly or by interaction with other materials, which creates a public nuisance, hazard to life, or inhibits authorized entry of any person into the storm drain system.
- Any medical, infectious, toxic or hazardous material or waste.

Earthwork activities, including grading, are overseen by the Los Angeles Building Code, which is contained in LAMC, Chapter IX, Article 1. Section 91.7013 contains regulations pertaining to erosion control and drainage devices and Section 91.7014 provide requirements for flood, mudflow protection and general construction requirements.

Standard Urban Stormwater Mitigation Plan (SUSMP)

Under the current Los Angeles County Municipal NPDES Permit, permittees are required to implement a development planning program to address storm water pollution. These programs require project applicants for certain types of projects to implement Standard Urban Stormwater Mitigation Plans (SUSMPs) throughout the operational life of their projects. The purpose of SUSMPs is to reduce the discharge of pollutants in storm water by outlining BMPs which must be incorporated into the design plans of new development and redevelopment.

The Project falls within the definition of "redevelopment" under the MS4 Storm Water Permit which requires compliance with the Low Impact Development (LID) requirements and SUSMP requirements.

Low Impact Development

LID is a stormwater strategy that is used to mitigate the impacts of runoff and stormwater pollution as close to its source as possible. Urban runoff discharged from municipal storm drain systems is one of the principal causes of water quality impacts in most urban areas. The stormwater may contain pollutants such as trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals that can negatively affect the ocean, rivers, plant and animal life, and public health.

LID encompasses a set of site design approaches and BMPs that are designed to address runoff and pollution at the source. These LID practices can effectively remove nutrients, bacteria, and metals, while reducing the volume and intensity of stormwater flows.

The Project is subject to compliance with Order No. R4-2012-0175, which became effective on November 8, 2012. The main purpose of this law is to ensure that development and redevelopment projects mitigate runoff in a manner that captures or treats rainwater at its source, while utilizing natural resources.

In accordance with Order No. R4-2012-0175, stormwater runoff shall be infiltrated, evapotranspired, captured and used, or treated through high removal efficiency BMPs, onsite, through stormwater management techniques that comply with provisions of the City of Los Angeles Development Best Management Practices Handbook (June 2011).

The City of Los Angeles also passed an LID Ordinance (#181899) on October 7, 2011 which provides mandates for LID BMPs within development and redevelopment projects.

The LARWQCB has a BMP Hierarchy in which the project must follow when selecting the type or types of BMPs to be constructed on site. The following is the BMP Hierarchy, per Order No. R4-2012-0175 as amended by Order WQ 2015-0075 NPDES NO. CAS004001:

1. On-site infiltration,
2. On-site bioretention and/or harvest and use,
3. On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit

Hydromodification

In addition to the LID requirements listed in the Permit, the Permit also addresses requirements for Hydromodification as pertaining to the project. Per Part VI.D.7.c.iv of the Permit:

> Each Permittee shall require all New Development and Redevelopment projects located within natural drainage systems as described in Part VI.D.7.c.iv.(1)(a)(iii) to implement hydrologic control measures, to prevent accelerated downstream erosion and to protect stream habitat in natural drainage systems. The purpose of the hydrologic controls is to minimize changes in post-development hydrologic storm water runoff discharge rates, velocities, and duration. This shall be achieved by maintaining the project's pre-project stormwater runoff flow rates and durations.

However, per Part VI.D.7.c.iv.(1)(b)(iv) of the Permit, the Project is exempt from such requirements as runoff from the Project Site is discharged directly via storm drain to a receiving water that is not susceptible to hydromodification impacts. Specifically, the Project Site discharges via storm drain to Compton Creek and the Los Angeles River, which are categorized as not susceptible to hydromodification. Therefore, the Project is not required to implement hydrologic control measures as mitigation for hydromodification impacts. In addition, as described below, implementation of the Project will result in a reduction of peak flows and volumes as compared to existing conditions, thereby satisfying hydromodification requirements in addition to the receiving water exemption.

Upper Los Angeles River Watershed Enhanced Watershed Management Program

The County of Los Angeles, the City of Los Angeles and all other cities in the Los Angeles Watershed are responsible for the implementation of watershed improvement plans or Enhanced Watershed Management Programs (EWMP) to improve water quality and assist in meeting the Total Maximum Daily Load (TMDL) milestones. A Draft EWMP for the Upper Los Angeles River Watershed (ULAR EWMP, May 2015) was prepared with the City of Los Angeles as the lead coordinating agency. The vision of the EWMP is to utilize a multi-pollutant approach that maximizes retention and use of urban runoff as a resource for groundwater recharge and irrigation while also improving water quality and also environmental, aesthetic, recreational, water supply and other community enhancements (ULAR EWMP, May 2015).

The EWMP identifies a toolbox of distributed and regional watershed control measures to address applicable stormwater quality regulations including the following:

- LID at the individual parcels
- Green Streets features within the public right-of-way and privately maintained streets
- Regional projects that retain and treat runoff from large upstream areas
- Institutional control measures to prevent transport of pollutants in the watershed

The Compton Creek Watershed falls within the ULAR EWMP and ultimately discharges into Reach 2 of the Los Angeles River. The ULAR EWMP does not identify any regional BMP projects in the vicinity of the Project. Therefore, LID BMP's will be implemented at the individual parcels associated with the Project to meet the local MS4 Permit requirements and remain consistent with the objectives of the ULAR EWMP.

2.3. GROUNDWATER

California Groundwater Sustainability Act

On Sept. 16, 2014, California Governor Jerry Brown signed into law a three-bill legislative package, known as the Sustainable Groundwater Management Act of 2014 (SGMA). The SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention only if necessary to protect the resource.

The SGMA requires the formation of local groundwater sustainability agencies (GSAs) that must assess conditions in their local water basins and adopt locally-based management plans. The act provides substantial time – 20 years – for GSAs to implement plans and achieve long-term groundwater sustainability. It protects existing surface water and groundwater rights and does not impact current drought response measures.

The California Water Commission (CWC) requires a statewide prioritization of California's groundwater basins using the following eight criteria:

1. Overlying population;
2. Projected growth of overlying population;
3. Public supply wells;
4. Total wells;
5. Overlying irrigated acreage;
6. Reliance on groundwater as the primary source of water;
7. Impacts on the groundwater—including overdraft, subsidence, saline intrusion, and other water quality degradation;
8. Any other information determined to be relevant by the Department.

The Project Site is located within a high priority California Statewide Groundwater Elevation Monitoring groundwater basin. GSAs responsible for high-and medium-priority basins must adopt groundwater sustainability plans within five to seven years, depending on whether the basin is in critical overdraft. Agencies may adopt a single plan covering an entire basin or combine a number of plans created by multiple agencies. Preparation of groundwater sustainability plans is exempt from California Environmental Quality Act (CEQA). Plans must include a physical description of the basin, including groundwater levels, groundwater quality, subsidence, information on groundwater-surface water interaction, data on historical and projected water demands and supplies, monitoring and management provisions, and a description of how the plan will affect other plans, including city and county general plans. Plans will be evaluated every five years.

Board Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties

As required by the CWC, the LARWQCB has adopted a plan entitled "Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties" (Basin Plan). Specifically, the Basin Plan designates beneficial uses for surface and groundwaters, sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and describes implementation programs to protect all waters in the Los Angeles Region. In addition, the Basin Plan incorporates (by reference) all applicable state and regional board plans and policies and other pertinent water quality policies and regulations. Those of other agencies are referenced in appropriate sections throughout the Basin Plan.

The Basin Plan is a resource for the LARWQCB and others who use water and/or discharge wastewater in the Los Angeles Region. Other agencies and organizations involved in environmental permitting and resource management activities also use the Basin Plan. Finally, the Basin Plan provides valuable information to the public about local water quality issues.

Safe Drinking Water Act (SDWA)

The federal Safe Drinking Water Act (SDWA), established in 1974, sets drinking water standards throughout the country and is administered by the USEPA. The drinking water standards established in the SDWA, as set forth in the CFR, are referred to as the National Primary Drinking Water Regulations (Primary Standards, Title 40, CFR Part 141) and the National Secondary Drinking Water Regulations (Second Standards, 40 CFR Part 143). California passed its own SDWA in 1986 that authorizes the state's Department of Health Services (DHS) to protect the public from contaminants in drinking water by establishing maximum contaminants levels, as set forth in the California Code of Regulations (CCR), Title 22, Division 4, Chapter 15, that are at least as stringent as those developed by the USEPA, as required by the federal SDWA.

California Water Plan

The California Water Plan (The Plan) provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The Plan, which is updated every five years, presents basic data and information on California's water resources including water supply evaluations and assessments of agricultural, urban, and environmental water uses to quantify the gap between water supplies and uses. The Plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the state's water needs.

The goal for the California Water Plan Update is to meet CWC requirements, to receive broad support among those participating in California's water planning, and to be a useful document for the public, water planners throughout the state, and legislators and other decision-makers.

3. ENVIRONMENTAL SETTING

3.1. SURFACE WATER HYDROLOGY

3.1.1. Regional

The Project Site is located within the Los Angeles River Watershed, which covers over 830 square miles. The watershed includes the western portion of the San Gabriel Mountains, the Santa Susana Mountains, the Verdugo Hills, and the northern slope of the Santa Monica Mountains. The Los Angeles River flows from its headwaters in the western San Fernando Valley, crosses the San Fernando Valley and the central portion of the Los Angeles Basin, and outlets in San Pedro Bay near Long Beach. The watershed's terrain consists of mountains, foothills, valleys, and the coastal plain.

The major tributaries or sub-watersheds of the Los Angeles River include Burbank Western Channel, Pacoima Wash, Tujunga Wash, and Verdugo Wash in the San Fernando Valley; and the Arroyo Seco, Rio Hondo, and Compton Creek in the Los Angeles Basin. The Project falls within the Compton Creek Watershed.

Please refer to Attachment A for a map of the Los Angeles River Watershed.

3.1.2. Local

Stormwater runoff is collected from the Project Site and conveyed through offsite storm drain facilities along the public streets surrounding the Project Site. The storm drain facilities along South Flower Drive and West Martin Luther King Junior Boulevard are owned and maintained by the City of Los Angeles. The storm drain along South Flower Drive flows in a southerly direction and connects to the storm drain along West Martin Luther King Junior Boulevard, which flows westerly and discharges into the storm drain along South Figueroa Street. The storm drain facilities along South Figueroa Street are owned and maintained by LACFCD and flow in a southerly direction. Further downstream, flows within the LACFCD storm drain in Figueroa discharge into Compton Creek.

Compton Creek is a LACFCD-maintained channel which discharges into the Los Angeles River (Reach 1: Estuary to Carson Street) and ultimately into the Pacific Ocean. The Compton Creek Watershed is the last major tributary to discharge into the Los Angeles River.

Please refer to Attachment B for a graphic depiction of the local storm drain system.

3.1.3. On Site

The Project Site is currently developed with residential buildings and paved parking areas. Stormwater runoff is collected and conveyed at all four public street adjacencies that surround the Project Site. At the north end, a portion of this stormwater is conveyed via sheet flow northerly into the public street gutter of West 39th Street where it flows westerly to the southeast corner of the West 39th Street/South Figueroa Street intersection and then flows southerly along South Figueroa Street into a catch basin located approximately 500 feet to the south. At the southeast portion of the Project Site, stormwater is collected via sheet flow and discharges into the public street gutter on South Flower Drive which then travels southerly downstream and discharges into a catch basin located on West Martin Luther King Junior Boulevard. At the northeast portion of the Project Site, stormwater is collected via sheet flow and discharges into a gutter that leads into a catch basin located at the cul-de-sac end of South Flower Drive. At the west end of the

Project Site, water sheet flows into the public street where it is collected via catch basins along South Figueroa Street and continues southerly in the underground storm drain system.

Please refer to Attachment C for the existing drainage pattern and existing hydrology of the Project Site.

Table 1 below provides the 25-year and 50-year storm frequency analysis for the Project Site's existing conditions. Output calculations are provided in Attachment D.

Table 1 – Existing Drainage Calculations

Drainage Area	Area (acres)	% Imperviousness	Q_{25} (cfs) (volumetric flow rate measured in cubic feet per second)	Q_{50} (cfs) (volumetric flow rate measured in cubic feet per second)
A-1	1.17	91	2.95	3.37
A-2	1.32	86	3.31	3.79
A-3	0.20	91	0.50	0.58
B-1	0.92	91	2.32	2.65
B-2	0.41	91	1.03	1.18
C-1	0.16	86	0.40	0.46
C-2	0.17	86	0.43	0.49
Total	4.35	89% (average)	10.94	12.52

Under existing conditions, approximately half the Project Site discharges westerly to South Figueroa Street and approximately half discharges easterly to South Flower Drive. A small tributary area discharges northerly to West 39th Street near the intersection of West 39th Street and South Figueroa Street. The total amount of runoff produced from the Project Site during a 25-year storm event is 10.94 cubic feet per second (cfs). For a 50-year event, the total project runoff is 12.52 cfs. In all instances, runoff from the Project Site discharges into the gutters of the aforementioned streets and drains southerly before ultimately being picked up in a series of catch basins located south of the Project Site in West Martin Luther King Jr Boulevard. There are no known storm drain deficiencies associated with the project.

3.1.4. FEMA

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) No. 06037C1620F, dated September 26, 2008, the Project Site is located within Zone X, which depicts areas determined to be outside the 0.2% (500-year) annual chance floodplain. See Attachment E.

The nearest estimated adjacent base flood elevation determination is 300 feet; some 118 feet below lowest site grades. Therefore, the processing of a letter of map revision or conditional letter of map revisions (LOMR/CLOMR) through FEMA will not be required for the Project.

3.2. SURFACE WATER QUALITY

3.2.1. Regional

As described above, the Project is located within the Los Angeles River Watershed and located more specifically within the Compton Creek Watershed of the Los Angeles River. Compton Creek is the first major tributary above the Los Angeles River estuary. It is an impaired sub-watershed of the Los Angeles River and lies primarily in the cities of Compton, Lynwood, and South Gate, and the Watts and south-central areas of the City of Los Angeles. It also includes portions of the City of Long Beach (North Long Beach area), Carson, Huntington Park, and the unincorporated communities of East Rancho Dominguez, Rosewood, Willowbrook, Athens, Florence, and Walnut Park within Los Angeles County. Compton Creek is a highly urbanized area with little remaining natural areas, a low number of recreational parks, and major corridors of industrial manufacturing facilities.

3.2.1.1. Beneficial Uses in Compton Creek/Los Angeles River Watershed

Based on the Basin Plan, the beneficial uses of Compton Creek are municipal and domestic water supply, ground water recharge, water contact and non-contact water recreation, warm freshwater habitat, and wetland habitat.

3.2.1.2. Impairments and TMDL's in Compton Creek/Los Angeles River Watershed

CWA 303(d) List of Water Quality Limited Segments

Under Section 303(d) of the CWA, states are required to identify water bodies that do not meet their water quality standards. Biennially, the LARWQCB prepares a list of impaired waterbodies in the region, referred to as the 303(d) list. The 303(d) list outlines the impaired waterbody and the specific pollutant(s) for which it is impaired. All waterbodies on the 303(d) list are subject to the development of a TMDL.

According to the SWRCB, Compton Creek, which is upstream of the major vein of the Los Angeles River, is listed as an impaired water body. Impairments for Compton Creek include the following: Benthic-Macroinvertebrate Bioassessments, Coliform Bacteria, Copper, Lead, Trash, and pH. (See Attachment F.)

Total Maximum Daily Loads (TMDLs)

Once a water body has been listed as impaired on the 303(d) list, a TMDL for the constituent of concern (pollutant) must be developed for that water body. A TMDL is an estimate of the daily load of pollutants that a water body may receive from point sources, non-point sources, and natural background conditions (including an appropriate margin of safety), without exceeding its water quality standard. Those facilities and activities that are discharging into the water body, collectively, must not exceed the TMDL. In general terms, municipal, small MS4, and other dischargers within each watershed are collectively responsible for meeting the required reductions and other TMDL requirements by the assigned deadline.

TMDLs for the Los Angeles River (Reach 2) and its tributaries including Compton Creek have been established for the following pollutants: Trash, heavy metals (cadmium, copper, lead, selenium, zinc) nutrients and coliform bacteria.

3.2.2. Local

Within the urban environment of the Project, stormwater runoff occurs during and shortly after rain events. The volume of runoff depends on the intensity and duration of the storm event and the imperviousness of the drainage area. Typical urban pollutants associated with stormwater runoff following rain events includes sediment, trash, bacteria, metals, nutrients, and potentially organics and pesticides. The source of contaminants is wide ranging and includes all areas where rainfall occurs along with atmospheric deposition. Therefore, sources of contaminants within urban areas include roadways, building tops, parking lots, landscape areas and maintenance areas.

To reduce contaminant loads from entering the storm drain system, the City conducts routine street cleaning operations as well as periodic cleaning and maintenance of the catch basins to reduce stormwater pollution within the storm drain system. The City also installs catch basin screens to reduce trash from entering the catch basins.

3.2.3. On Site

Under existing conditions, the Project Site primarily consists of at-grade parking lots, with eight multi-family residential buildings at the northeast portion. Based on visual inspection, water quality treatment control BMPs are not currently present at the Project Site. Stormwater that leaves the Project Site is untreated and flows directly into the public right-of-way where it ultimately gets picked up by a public storm drain system. Several existing catch basins within West Martin Luther King Junior Boulevard are screened to prevent trash from entering the storm drain system. Anticipated pollutants consistent with parking lots, building areas and landscaping include total suspended solids (TSS), oil/grease, heavy metals, nutrients, pesticides and trash.

3.3. GROUNDWATER

3.3.1. Regional

The City of Los Angeles overlies the Los Angeles Coastal Plain Groundwater Basin (Basin) which consists of four major subbasins: Hollywood, Santa Monica, Central and West Coast. Replenishment of the Basin occurs primarily through percolation of rainfall throughout the watershed via permeable surfaces, spreading grounds, and groundwater migration from adjacent basins. Injection wells are also used to pump freshwater along specific seawater barriers to prevent the intrusion of salt water. Groundwater flow within the Basin generally flows in a south and southwesterly direction.

3.3.2. Local

The Project Site is located within the Central Basin, which underlies the southeastern part of the Los Angeles Coastal Plain Groundwater Basin. The Central Basin is bounded on the north by a surface divide called the La Brea high, and on the northeast and east by emergent less permeable Tertiary rocks of the Elysian, Repetto, Merced and Puente Hills. The southeast boundary between Central Basin and Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage province boundary. The southwest boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift. The Los Angeles and San Gabriel Rivers drain inland and pass across the surface of the Central Basin on their way to the Pacific Ocean. The Central Basin productive water bearing sediments are contained within Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations.[3]

According to the California Department of Water Resources, the annual precipitation throughout the Central Basin ranges from 11 to 13 inches with an average of around 12 inches. The Central Basin has a surface area of 177,000 acres and a groundwater storage capacity of approximately 13,800,000 acre/feet.[4,5] Historically, groundwater flow is generated from recharge areas in the northeast segment of the Central Basin, toward the Pacific Ocean on the southwest. Recharge of the Central Basin occurs primarily by engineered recharge of stormwater, imported water, and reclaimed water along the upper reaches of the San Gabriel and Santa Ana Rivers and the Rio Hondo.[6] Additional sources of recharge include surface and subsurface flow and by direct percolation of precipitation and stream flow.

3.3.3. On Site

As noted by Leighton and Associates' geotechnical report for the Project dated February 26, 2016, the Seismic Hazard Zone Report for the Hollywood Quadrangle (California Geological Survey, 1998) indicates that the historically high groundwater level in the area is deeper than 50 feet below the ground surface. During Leighton and Associates' exploration of the Project Site, groundwater was not encountered at soil borings drilled to maximum depths of 101.5 feet below ground surface (bgs). The proposed maximum mass excavation depth for the construction of the Project is anticipated to be 20 feet, with isolated deeper auger excavations down to 50 feet for proposed drywell installations.

Based on the Project Site's soil investigation, sufficient sand layers exist within the first 50 feet bgs to allow feasible infiltration through the use of pre-treatment devices, detention systems and dry wells. However, should it be determined that infiltration of the Project's entire treatment volume is infeasible, biofiltration BMPs will be required. If required, these BMPs must be sized to treat 150% of the unmet infiltration volume.

[3] California's Groundwater, Bulletin 118. Department of Water Resources. February 2004.
[4] California's Groundwater, Bulletin 118. Department of Water Resources. February 2004.
[5] Los Angeles Basin Groundwater Adjudication Summary. US Bureau of Reclamation. July 2014
[6] Groundwater Quality in the Coastal Los Angeles Basin, CA. Fact Sheet 2012-3096. September 2012.

4. SIGNIFICANCE THRESHOLDS

CEQA significance criteria are used to evaluate the degree of impact caused by a development project on environmental resources such as hydrology, surface water quality, and groundwater.

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would impact any of the items listed below.

Would the Project:

A. Violate any water quality standards or waste discharge requirements?

B. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table? (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)

C. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or in a manner which would result in a substantial erosion or siltation on- or off-site?

D. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?

E. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

F. Otherwise substantially degrade water quality?

G. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

H. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

I. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

J. Be subject to inundation by seiche, tsunami, or mudflow?

4.1. SURFACE WATER HYDROLOGY

The City of Los Angeles, as the lead agency, utilizes a set of city-specific criteria to evaluate impacts. The *L.A. CEQA Thresholds Guide* states that a project would normally have a significant impact on surface water hydrology if it would:

- Cause flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources;
- Substantially reduce or increase the amount of surface water in a water body; or
- Result in a permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow.

4.2. SURFACE WATER QUALITY

The *L.A. CEQA Thresholds Guide* states that a project would normally have a significant impact on surface water quality if discharges associated with the project would create pollution, contamination or nuisance, as defined in Section 13050 of the (CWC) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body.

The *L.A. CEQA Thresholds Guide* and CWC include the following relevant definitions:

- "Pollution" means an alteration of the quality of the waters of the state to a degree which unreasonably affects either of the following: 1) the waters for beneficial uses or 2) facilities which serve these beneficial uses. "Pollution" may include "Contamination".
- "Contamination" means an impairment of the quality of the waters of the state by waste to a degree, which creates a hazard to the public health through poisoning or though the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.
- "Nuisance" means anything which meets all of the following requirements: 1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; 2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and 3) occurs during, or as a result of, the treatment or disposal of wastes.

4.3. GROUNDWATER

According to the *L.A. CEQA Thresholds Guide*, a project would normally have a significant impact on groundwater quality and groundwater level if it would:

- Affect the rate or change the direction of movement of existing contaminants;
- Expand the area affected by contaminants;
- Result in an increased level of groundwater contamination (including that from direct percolation, injection or salt water intrusion); or
- Cause regulatory water quality standards at an existing production well to be violated, as defined in the CCR, Title 22, Division 4, and Chapter 15 and in the SDWA.
- Change potable water levels sufficiently to:
  - Reduce the ability of a water utility to use the groundwater basin for public water supplies, conjunctive use purposes, storage of imported water, summer/ winter peaking, or to respond to emergencies and drought;
  - Reduce yields of adjacent wells or well fields (public or private);
  - Adversely change the rate or direction of flow of groundwater;
- Result in demonstrable and sustained reduction of groundwater recharge capacity.

5. METHODOLOGY

5.1. SURFACE WATER HYDROLOGY

In December 3, 1999, the City of Los Angeles issued Special Order No. 007-1299 which adopted the Los Angeles County Department of Public Works' Hydrology Manual to be used for hydrology studies within the City of Los Angeles. According to the County's Hydrology Manual, the Project is required to have drainage facilities that meet the Urban Flood level of protection, which is equivalent to runoff from a 25-year frequency design storm falling on a saturated watershed. A 25-year frequency design storm has a probability of 1/25 of being equaled or exceeded in any year.

However, the *L.A. CEQA Thresholds Guide* has determined that a 50-year storm frequency analysis is required when determining flood hazards impacts and changes in the amount or movement of surface water. To analyze the Project's potential impacts under both thresholds, runoff for both 25- and 50-year frequency design storms was calculated for this report.

This study was prepared using HydroCalc 0.3.1-beta software in conformance with the County's Hydrology Manual (2006). The HydroCalc program uses the Modified Rational Method to calculate the required time of concentration and designed flowrates for 25- and 50-year storm events. The peak runoff for a drainage area is calculated using the formula Q= CIA, where

- Q= flowrate (cfs)
- C= runoff coefficient (unit less)
- I=rainfall intensity (in/hr)
- A= basin area (acres)

The HydroCalc calculator is supported by the County's online GIS system. This database is used to locate the Project Site's 50-year isohyet rainfall frequency as well as relevant soil type. The data collected is then used in the HydroCalc program to calculate peak stormwater runoff values.

5.2. SURFACE WATER QUALITY

5.2.1. Construction

Prior to the issuance of grading permits, the applicant is required by the City to provide a Notice of Intent (NOI) and WDID Number issued from the SWRCB in accordance with the requirements of the General Permit to ensure the potential for soil erosion and construction impacts are minimized. In accordance with the updated General Permit (Order No 2012-0006-DWQ), the following Permit Registration Documents (PRDs) are required to be submitted to the SWRCB prior to commencement of construction activities:

- NOI;
- Risk Assessment (Standard or Site-Specific);
- Particle Size Analysis (if site-specific risk assessment is performed);
- Site Map;
- SWPPP;
- Annual Fee & Certification.

The updated General Permit uses a risk-based approach for controlling erosion and sediment discharges from construction sites, since the rates of erosion and sedimentation can vary from site to site depending on factors such as duration of construction activities, climate, topography, soil condition, and proximity to receiving water bodies. The updated General Permit identifies three levels of risk with differing requirements, designated as Risk Levels 1, 2 and 3, with Risk Level 1 having the fewest permit requirements and Risk Level 3 having the most-stringent requirements.

The Risk Assessment incorporates two risk factors for a project site: sediment risk (general amount of sediment potentially discharged from the site) and receiving water risk (the risk sediment discharges can pose to receiving waters). Based on the Risk Level a project falls under, different sets of regulatory requirements are applied to the site. The main difference between Risk Levels 1, 2, and 3 are the numeric effluent standards. In Risk Level 1, there are no numeric effluent standard requirements, as it is considered a Low sediment risk and Low receiving water risk. Instead, narrative effluent limits are prescribed. In Risk Level 2, Numeric Action Levels (NALs) of pH between 6.5-8.5 and turbidity below 250 NTU are prescribed in addition to the narrative effluent limitations found in Risk Level 1 requirements. Should the NAL be exceeded during a storm event, the discharger is required to immediately determine the source associated with the exceedance and to implement corrective actions if necessary to mitigate the exceedance. Risk Level 3 dischargers must comply with Risk Level 2 requirements for NALs in addition to more rigorous monitoring requirements such as receiving water monitoring and in some cases bioassessment, should NALs be exceeded.

5.2.2. Operation

The Project will comply with the City's LID Manual,[7] which requires that post-construction stormwater runoff from new developments be infiltrated, evapotranspirated, captured and reused, and/or treated through a high efficiency BMP onsite for the 85th percentile storm event or 0.75"—whichever is greater. For the Project, the 85th percentile storm event is 1.1". The LID Manual prioritizes BMPs with infiltration systems as the top priority BMP. The Project will implement infiltration BMPs in the form of drywells as the proposed means of stormwater management and compliance. The dry wells will be appropriately sized in conformance with the LID manual, using sizing criteria shown in Attachment G.

5.3. GROUNDWATER

The significance of the Project as it relates to the condition of the underlying groundwater table included a review of the following existing considerations:

- Identification of the Central Basin as the underlying groundwater basin, and description of the level, quality, direction of flow, and existing uses for the groundwater
- Description of the location, existing uses, production capacity, quality and other pertinent data for spreading grounds and potable water wells in the vicinity (typically within a one-mile radius);

[7] The Development Best Management Practices Handbook, Part B Planning Activities, 4th Edition; adopted by the City of Los Angeles, Board of Public Works on July 1, 2011 to reflect LID requirements that took effect on May 12, 2012.

The analysis of the Project's impacts on groundwater conditions included a review of the following proposed considerations:

- Description of the rate, duration, location and quantity of extraction, dewatering, spreading, injection or other activities;
- The projected reduction in groundwater resources and any existing wells in the vicinity (typically within one-mile radius); and
- The projected change in local or regional groundwater flow patterns.

In addition, short-term groundwater quality impacts could potentially occur during construction of the Project as a result of soil or shallow groundwater being exposed to construction activities, materials, wastes and spilled materials. These potential impacts were qualitatively assessed.

6. PROJECT IMPACT ANALYSIS

6.1. CONSTRUCTION

6.1.1. Surface Water Hydrology and Quality

Implementation of the Project would result in construction activities that includes demolition of the existing parking lots and buildings on-site and over-excavation of existing soils. It is anticipated that the Project would result in the excavation of approximately 115,200 cubic yards of soil, of which approximately 27,400 cubic yards will be used for on-site fill and approximately 87,800 cubic yards will be exported. The remaining excavated materials will be hauled via the adjacent 110 Freeway with the ultimate destination at the Manning Pit Sediment Placement Site in the City of Irwindale.

Construction activities have the potential to temporarily alter the existing drainage patterns of the Project Site and also increase the permeability of the site based on increased pervious surface coverage during construction. Exposed pervious surfaces also have the potential for erosion, scour, and increased sediment and associated pollutants discharging from the Project Site during construction activities. The main pollutant of concern during construction is typically sediment and soil particles that discharge off-site due to wind, rain, and construction patterns.

Based on the Project's location and known site conditions, a preliminary erosion calculation can be performed consistent with General Permit. Based on this evaluation, the estimated sediment loss for the Project was determined to be 16 tons/acre. Based on the sediment risk criteria, the Project would be considered to have a medium sediment risk. Based on the Project's connection with the existing public drainage system (no direct discharge to a receiving water), the Project would be considered to have a low receiving water risk. Based on a medium sediment risk and a low receiving water risk, the Project is anticipated to have a Risk Level 2 to water quality based on the General Permit requirements. Risk Level 2 projects require a variety of sampling and analysis and visual monitoring for dry weather discharges and stormwater runoff including the following:

Visual Monitoring/Inspections

- Visual monitoring for non-storm water discharges (quarterly)
- Baseline pre-rain event inspection (within 48 hours of qualifying rain events)
- BMP inspections (weekly and every 24 hours during extended storm events)
- Post-rain event inspection (within 2 business days after qualifying rain events)

Sampling & Analysis

- Effluent sampling for turbidity and pH (minimum 3 samples per day per discharge point per qualifying rain event)
- Contained rain water (at time of discharge)
- Non-visible pollutants, spills and/or BMP failures (within first 2 hours of discharge from site)
- Other (as required by dewatering permits, RWQCB or TMDLs)

In the event exceedences of receiving water quality objectives are observed, measures must be taken and documented within the SWPPP to improve discharge water quality and runoff effluent. This may include but not be limited to increasing the size of existing BMPs, adding more BMPs to the drainage area, additional filtering, and/or a reduction in active grading area.

Construction Best Management Practices (BMPs)

Prior to commencement of construction activities, the General Permit requires the Project SWPPP to be prepared in accordance with the site-specific information including grading limits, BMP's for each phase, schedule and sediment risk analyses. In accordance with the General Permit, the construction SWPPP must be made available for review upon request, shall describe construction BMPs that address pollutant source reduction, and provide measures/controls necessary to mitigate potential pollutant sources. These measures/controls include, but are not limited to: erosion controls, sediment controls, tracking controls, non-storm water management, materials & waste management, and good housekeeping practices including the following:

- Erosion control BMPs, such as hydraulic mulch, soil binders, and geotextiles and mats, protect the soil surface by covering and/or binding the soil particles. Temporary earth dikes or drainage swales may also be employed to divert runoff away from exposed areas and into more suitable locations. If implemented correctly, erosion controls can effectively reduce the sediment loads entrained in storm water runoff from construction sites.
- Sediment controls are designed to intercept and filter out soil particles that have been detached and transported by the force of water. Storm drain inlets on the Project Site or within the project vicinity (i.e., along streets immediately adjacent to the project boundary) should be adequately protected with an impoundment (i.e., gravel bags) around the inlet and equipped with a sediment filter (i.e., fiber roll). Bags should also be placed around areas of soil disturbing activities, such as grading or clearing.
- Stabilize construction entrance/exit points to reduce the tracking of sediments onto adjacent streets. Wind erosion controls should be employed in conjunction with tracking controls.
- Non-storm water management BMPs prohibit the discharge of materials other than storm water, as well as reduce the potential for pollutants from discharging at their source. Examples include avoiding paving and grinding operations during the rainy season (i.e., October 1 through April 30 each year) where feasible, and performing any vehicle equipment cleaning, fueling and maintenance in designated areas that are adequately protected and contained.
- Waste management consists of implementing procedural and structural BMPs for collecting, handling, storing and disposing of wastes generated by a construction project to prevent the release of waste materials into storm water discharges.

The phases of construction will define the maximum amount of soil disturbed, the appropriate sized sediment basins, and other control measures to accommodate all active soil disturbance areas and the appropriate monitoring and sampling plans.

Potential Surface Water Hydrology and Quality Impacts

Through compliance with the General Permit including the preparation of a SWPPP, implementation of BMPs appropriate for each major phase of construction, and compliance with applicable City grading regulations, construction of the Project would not cause flooding, substantially increase or decrease the amount of surface water in a water body, or result in a permanent, adverse change to flow direction. The construction of the Project would also not result in discharges that would cause: (1) pollution that would impact the quality of waters of the state to a degree which negatively impacts beneficial uses of the waters; (2) contamination of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) nuisance that would be injurious to health, affect an entire community or neighborhood or any considerable number of persons, and occurs during or as a result of the treatment or disposal of wastes. Lastly, construction of the Project would not result in discharges that would cause regulatory impacts within the Compton Creek and the Los Angeles River. Therefore, impacts to surface water hydrology and water quality during construction would be less than significant.

6.1.2. Groundwater Hydrology

Construction of the Project is not anticipated to impact any water supply wells, as no water supply wells are located at or within one mile of the Project and the Project will not include the construction of any water supply wells. Construction of the Project will include excavation with average depths of 5-20 feet bgs with additional depths for the proposed drywells (40-50 bgs). Based on Leighton and Associates' Geotechnical Report (February 26, 2016), the historical high groundwater level in the area is deeper than 50 feet bgs, the State of California Geotracker website notes that groundwater is approximately 80 feet bgs based on the closest reporting site approximately 1.1 miles northeast of the site, and groundwater was not encountered during Project Site boring investigations to maximum depths of 101.5 feet bgs. Based on this site-specific and local data, it is not expected that groundwater would be encountered during construction that would require temporary or permanent dewatering operations. In the event pirched groundwater is encountered, the Project would be required to obtain a temporary dewatering permit from the City of Los Angeles. Accordingly, construction of the Project would not adversely impact the rate or direction of flow of groundwater, and the Project would not result in a significant impact on groundwater hydrology during construction.

6.1.3. Groundwater Quality

As previously noted above, construction of the Project will include mass excavation with average depths of 5-20 feet bgs with additional depths for the proposed drywells (40-50 bgs). The Project will also result in a net export of existing soil material. Although the Phase I Report and Geotracker website does not anticipate any contaminated soils within the evacuation limits, if found, contaminated soils would be collected within the excavated material, removed from the Project Site, and disposed of in accordance with all applicable regulatory requirements.

During on-site grading and building activities, minimal amounts of hazardous materials such as fuels, paints, solvents, and concrete additives could be used, and the presence of such materials provides an opportunity for hazardous materials to be released into groundwater. To protect groundwater resources, the Project will comply with applicable federal, state and local requirements related to the handling, storage, application and disposal of hazardous waste which will reduce the potential for construction activities of the Project to release contaminants into groundwater that could affect existing contamination, mobilize or increase the level of groundwater contamination, or cause a violation of regulatory water quality standards at an existing production well. Therefore, construction of the Project would not result in a significant increase in groundwater contamination through hazardous materials releases, and impacts on groundwater quality would be less than significant.

6.2. OPERATION

6.2.1. Surface Water Hydrology

Development of the Project would result in a slight increase in the landscaped areas throughout the Project Site and would reduce the amount of impervious surfaces from 89 percent to 88 percent. This small increase in pervious surfaces would result in a slight reduction in stormwater runoff. Table 2 below provides an analysis of a 25-year and 50-year frequency design storm events following construction of the Project. Attachment H provides the Proposed Hydrology Map and output calculations are provided in Attachment I.

Table 2 – Proposed Drainage Calculations

Drainage Area	Area (acres)	% Imperviousness	Q_{25} (cfs)	Q_{50}(cfs)
A-1	0.61	96	1.55	1.76
A-2	0.50	96	1.27	1.45
B-1	1.13	86	2.60	2.97
B-1	1.12	86	2.39	2.94
C-1	0.59	86	1.48	1.69
C-2	0.47	86	1.18	1.35
Total	4.42	88% (average)	10.47	12.16

Table 3 provides a comparison of the existing and proposed peak flows for the 25-year and 50-year storm events.

Table 3 – Comparison Existing vs. Proposed Hydrology

Condition	Area (acres)	Q_{25} (cfs)	Q_{50} (cfs)
Existing	4.35	10.94	12.52
Proposed	4.42*	10.47	12.16
Difference	+0.07	-0.47	-0.36
% Increase or Decrease	+1.61%	-4.30 %	-2.88%

*Following proposed street vacation & dedication.

The above analysis includes the assumption that the portion of South Flower Drive located at the west terminus side of the cul-de-sac would be vacated, thereby increasing the size of the Project Site. In addition, corner cuts will be dedicated at the southeast corner of the West 39th Street/South Figueroa Street intersection and at the southwest corner of the West 39th Street/South Flower Drive intersection. Please refer to Attachment H for the proposed onsite hydrology map. As shown in Table 3, the increase in permeable surfaces on the Project Site would result in a reduction of flows under both the 25-year and 50-year storm events for the Project.

Based on the above, operation of the Project would not result in flooding, impact the capacity of the existing storm drain system, or worsen an existing condition flood condition. In addition, the Project would not substantially reduce or increase the amount of surface water in the local water body, or result in a permanent adverse change in the drainage pattern that would result in an incremental effect on the capacity of the storm existing storm drain system. Therefore, operation of the Project would result in a less than significant impact on surface water hydrology.

6.2.2. Surface Water Quality

Stormwater runoff from the Project has the potential to discharge pollutants into the City and County storm drain system. Anticipated pollutants and typical source of the pollutants include the following:

- Sediment (coarse and fine) – parking lots, driveways, building rooftops, landscape areas, roads
- Nutrients (dissolved and particulates) – landscape areas, lawns
- Pesticides – landscape areas, lawns
- Pathogens – landscape areas, lawns, building rooftops, food serving areas
- Trash/debris – parking lots, driveways, roadways, parks
- Oil/Grease – parking lots, driveways, roadways, food serving areas
- Metals (dissolved and particulate) – parking lots, driveways, roadways

To meet the local MS4 Permit and LID requirements consistent with the City's LID Ordinance and LID Development BMP Handbook (June 2011), stormwater management strategies will be implemented throughout the Project Site. Infiltration design features will be implemented to meet the local LID requirements.

Table 4 shows the water quality volumes (V_m), as well as water quality flow rates (Q_{pm}), that are required to be infiltrated for each drainage area based on an 85th percentile storm event of 1.1".

Please refer to Attachment J for LA County 85th Percentile exhibit and Attachment K for the HydroCalc LID Results for the Proposed Site.

Table 4 – Low Impact Development – Water Quality Calculations

Drainage Area	Area (acres)	Q_{pm} (cfs)	V_m (cf)
A-1	0.61	0.22	2,097
A-2	0.50	0.19	1,719
B-1	1.13	0.31	3,526
B-2	1.12	0.30	3,495
C-1	0.59	0.18	1,841
C-2	0.47	0.15	1,467
Proposed Total	4.42	1.35	14,145

Infiltration BMPs are LID BMPs that capture, store, and infiltrate storm water runoff. These BMPs are engineered to store a specified volume of water and have no design surface discharge (underdrain or outlet structure) until this volume is exceeded. Examples of infiltration BMPs include infiltration trenches, bioretention without underdrains, drywells, permeable pavement, and underground infiltration galleries.

Based on the presence of consistent thick sand soil layers ranging from 30-50 feet below ground, infiltration is considered feasible at the Project Site. A conservative design infiltration rate of 0.5 inch/hour is assumed for the preliminary BMP sizing. During final design, infiltration tests at the specific location and design depth will be performed by the geotechnical consultant to confirm the final infiltration flow rates for each drywell. The infiltration rates will be included in the final geotechnical report and will be used to design the drywell system and associated upstream detention system.

Due to the below-grade structures included in the Project footprint and the presence of sandy soil layers deeper in the ground, drywell infiltration systems are proposed to infiltrate storm water at approximately 40-50 feet below the ground surface. The lowest sub-surface elevation of the proposed subterranean structures is approximately 20' below grade, thereby providing sufficient clearance between the project structures and the invert of the drywell. In addition, the drywells will be located approximately 15'-25' away from the closest structure to avoid adverse impacts. For those drainage areas that include more than one drywell, a minimum distance of 50' will occur between each drywell. A total of ten drywells are proposed based on the Project drainage areas, conservative infiltration rates and safety factors. In the event the measured field infiltration rate is greater than the conservative assumptions to date, the proposed infiltration drywell quantities and detention systems may be reduced. Alternatively, if the rates are less than assumed, the number of proposed drywells and/or detention volumes may be increased.

Typical drywell systems incorporate pre-treatment of runoff through a settling chamber that traps trash, floating debris, oil and grease, and large sediment. Pre-treated flows then gravity flow into the drywell chamber and infiltrate into the surrounding soil. With the incorporation of pretreatment and infiltration, drywells have high removal effectiveness for storm water pollutants of concern. The most important part of drywell systems is the incorporation of proper upstream pre-treatment to remove solids and fines from entering the final infiltration chamber. Therefore, pre-treatment BMPs will be located adjacent to the catch basins to pre-treat runoff further prior to discharging into the detention system and the drywell's settling chamber. A total of six pre-treatment devices (hydrodynamic separator or equivalent) are proposed.

In order to maximize infiltration within the drywells, underground detention systems will be incorporated to satisfy the treatment volume requirements (Vm) for each drainage area. The detention systems will be located downstream of the pre-treatment BMPs. The detention systems will temporarily detain the water quality volume and will provide constant head to the drywells during the drawdown process. A total of six detention systems are proposed for a total detention volume of 11,130 cubic feet.

Based on the conservative infiltration rate, drawdown times range from 50-80 hours which is considered sufficient based on the incorporate of upstream detention systems for each drainage area. See Table 5 below for Drywell Infiltration BMP Summary.

Table 5 - Drywell Infiltration BMP Summary

DRYWELL INFILTRATION BMP SUMMARY										
Sub-Area	% Imp.	Drainage Area (ac)	Water Quality Volume (ft³)	Water Quality Flow Rate (cfs)	Infiltration BMP Type	Safety Factor (applies to field rate)	Assumed Design Infiltration Rate (in/hr)	Number of Drywells Proposed	Detention Storage Required (ft³)	Detention Storage Provided (ft³)
A-1	96%	0.61	2,097	0.23	Detention + Drywell	3	0.5	2	1,502.7	1,503.0
A-2	96%	0.50	1,719	0.19	Detention + Drywell	3	0.5	1	1,370.8	1,371.0
B-1	86%	1.13	3,526	0.31	Detention + Drywell	3	0.5	2	2,897.7	2,898.0
B-2	86%	1.12	3,495	0.30	Detention + Drywell	3	0.5	2	2,866.7	2,867.0
C-1	86%	0.59	1,841	0.19	Detention + Drywell	3	0.5	2	1,306.7	1,307.0
C-2	86%	0.47	1,467	0.15	Detention + Drywell	3	0.5	1	1,183.8	1,184.0
Total		4.42 ac	14,145 ft³	1.35 cfs				10	11,128 ft³	11,130 ft³

The existing Project Site does not have any structural or LID BMPs to treat or infiltrate stormwater. Therefore, implementation of the LID features proposed as part of the Project would result in a significant improvement in surface water quality runoff as compared to existing conditions. Implementation of the proposed BMP system will result in infiltration of the entire required treatment volume for the Project Site and the elimination of pollutant runoff up to the 85th percentile storm event.

Based on the proposed LID plan, operation of the Project would not result in discharges that would cause: (1) an incremental increase in pollution which would alter the quality of the waters of the state (Compton Creek & Los Angeles River) to a degree which unreasonably affects beneficial uses of the waters; (2) an incremental increase of contamination of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) an incremental increase in the nuisance that would injurious to health; affect an entire community or neighborhood, or any considerable numbers of persons; and occurs during or as a result of the treatment or disposal of wastes. Lastly, operation of the Project would not result in discharges that would cause regulatory standards to be violated in Compton Creek or the Los Angeles River. Thus, the Project's operational impacts on surface water quality would be less than significant.

6.2.3. Groundwater Hydrology

Under the proposed conditions, regional and local potable water levels and adjacent wells or well fields will not be impacted by the Project. The Project does not include any groundwater pumping and relies on the LADWP for water. In addition, the Project is not anticipated to adversely change the rate of direction of flow of groundwater. Infiltration of the 85th percentile storm event (1.1") of periodic small storm events is not a sufficient volume of water to change regional groundwater rates or flows. Implementation of the Project would also result in a slight increase in pervious areas over the existing conditions. The increase in pervious areas coupled with the drywell infiltration system would improve the groundwater recharge capacity of the Project Site over existing conditions. Based on the design of the infiltration system and depth to groundwater, the Project is providing a sufficient depth for pollutant removals prior to reaching the groundwater table.

Based on the design of the Project's infiltration system including pre-treatment, detention and drywells discharging runoff into the soil at an appropriate depth away from the structures and groundwater table, operational impacts to groundwater hydrology are considered less than significant.

6.2.4. Groundwater Quality

In addition, infiltration of storm water via the drywells is not anticipated to cause the movement of existing contaminants. The SWRCB's Geotracker website indicates there are no significant sources of soil or groundwater pollution within the project area and local vicinity. Therefore, the proposed infiltration systems are designed to safely convey stormwater runoff into the sub-surface soil without the threat of contaminant mobilization.

Based on the design of the Project's infiltration system including pre-treatment, detention and drywells discharging runoff into the soil at an appropriate depth away from the structures and groundwater table, operational impacts to groundwater quality are considered less than significant.

6.3. CUMULATIVE IMPACTS

6.3.1. Surface Water Hydrology

The context for the cumulative impact analysis on surface water hydrology is the Compton Creek sub-watershed, which ultimately discharges into the Los Angeles River. The Project in conjunction with forecasted growth in the Compton Creek sub-watershed could cumulatively increase stormwater runoff flows. However, as demonstrated above, the Project does not have an adverse impact on stormwater flows. Also, in accordance with City requirements, related projects and other future development projects would be required to implement BMPs to manage stormwater in accordance with LID guidelines. Furthermore, the City of Los Angeles Department of Public Works would review each future development project on a case-by-case basis to ensure sufficient local and regional infrastructure is available to accommodate stormwater runoff. Therefore, cumulative impacts on surface water hydrology would be less than significant.

6.3.2. Surface Water Quality

Future growth in the Compton Creek sub-watershed would be subject to NPDES requirements regarding water quality for both construction and operation. All future redevelopment and infill projects similar to the Project would also be subject to SWPPP, LID and other implementation measures to comply with regional TMDL requirements which will generally result in water quality improvements over existing conditions. In addition, implementation of regional BMPs to improve water quality within the Compton Creek sub-watershed would improve regional water quality over time. Therefore, through compliance with applicable laws, rules and regulations, cumulative impacts to surface water quality would be less than significant.

6.3.3. Groundwater Hydrology

Cumulative groundwater hydrology impacts could result from an increased use of the groundwater basins located in the proximity to the Project and other related projects. As previously noted, implementation of the Project would not result in the temporary or permanent extraction of groundwater from the Project or otherwise utilize the groundwater.

Implementation of the Project would result in a slight decrease in impervious conditions. Redevelopment projects within the Compton Creek sub-watershed will also change existing pervious and impervious conditions for each project, but with the high built-out condition of the watershed, cumulative increases in impervious conditions are not as likely as increases in pervious conditions due to existing LID requirements for redevelopment projects. Lastly, as infiltration systems become more frequent throughout the sub-watershed, infiltration of stormwater as a means of stormwater treatment and management will enhance existing groundwater hydrology. Accordingly, potential cumulative impacts associated with the Project on groundwater hydrology would be less than significant.

6.3.4. Groundwater Quality

Compliance with applicable regulations would prevent the Project from negatively impacting or expanding any potential areas affected by contamination, increasing the level of contamination, or causing regulatory water quality standards at an existing production well to be violated as defined in the CCR, Title 22, Division 4, Chapter 15 and SDWA. Additionally, related and future projects would be unlikely to cause or increase groundwater contamination because compliance with existing regulations would similarly prevent these projects from affecting or expanding any potential areas of contamination, increasing the level of contamination, or causing regulatory water quality standards at an existing production well to be violated. Therefore, cumulative impacts to groundwater quality would be less than significant.

7. LEVEL OF SIGNIFICANCE

Based on the analysis contained in this report no significant impacts have been identified for surface water hydrology, surface water quality, or groundwater for this Project.

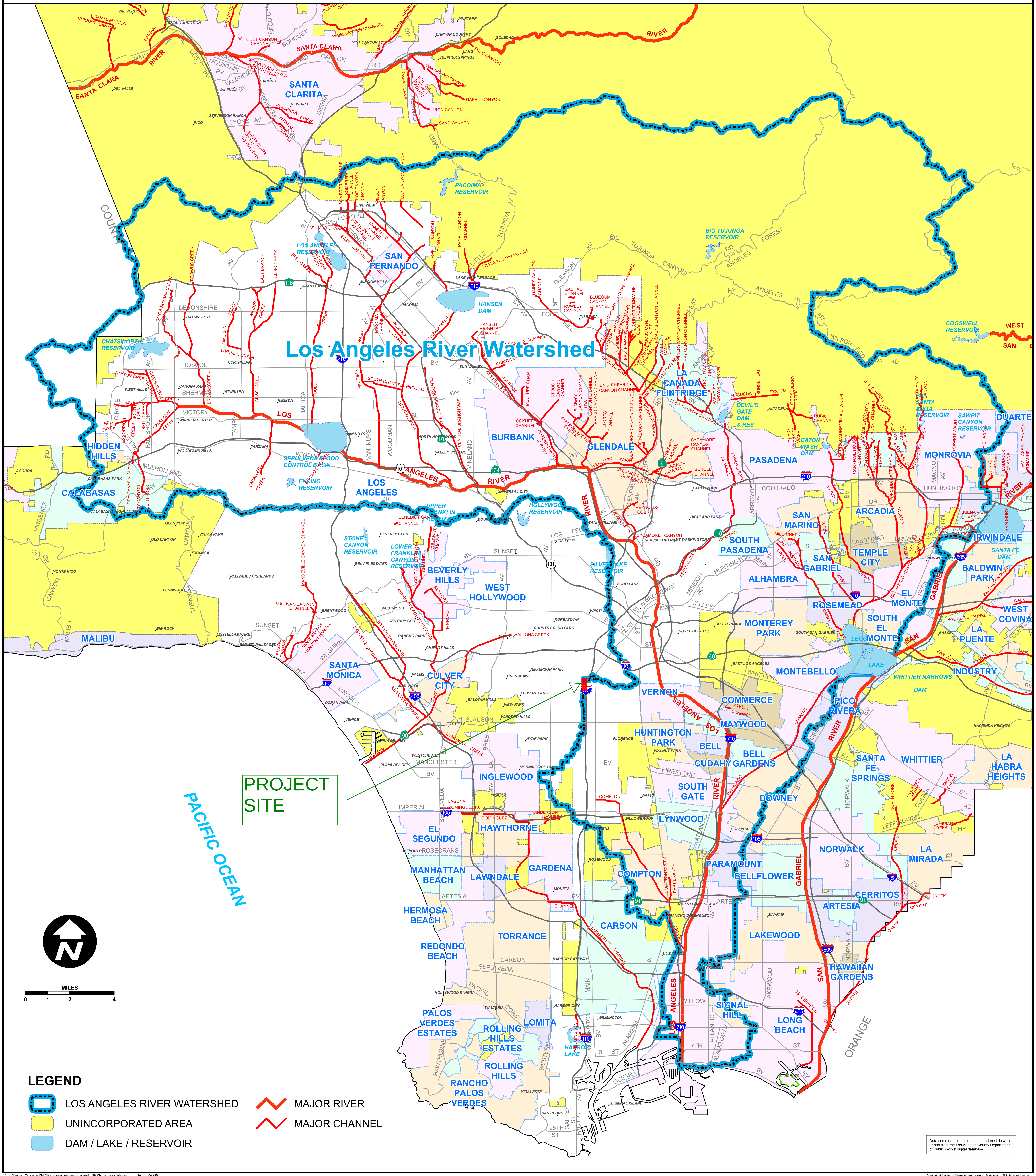
ATTACHMENTS

ATTACHMENT A

LOS ANGELES RIVER WATERSHED MAP

COUNTY OF LOS ANGELES

LOS ANGELES RIVER WATERSHED



ATTACHMENT B

LOCAL STORM DRAIN SYSTEM EXHIBIT

LEGEND

- EXISTING CLEANOUT
- EXISTING CATCH BASIN
- EXISTING FIRE HYDRANT
- EXISTING PARKING METER
- EXISTING SEWER/STORMDRAIN MANHOLE
- EXISTING TELEPHONE MANHOLE
- EXISTING SIGN
- EXISTING STREET LIGHT
- EXISTING STREET LIGHT PULLBOX
- EXISTING TREE
- EXISTING WATER METER
- CENTER LINE
- EXISTING RIGHT OF WAY
- EXISTING LOT LINES
- PROPERTY LINE
- (SD) EXISTING STORM DRAIN
- (G) EXISTING GAS
- (E) EXISTING UNDERGROUND ELECTRIC
- (E-OH) EXISTING OVERHEAD ELECTRIC
- (T) EXISTING TELEPHONE/TELECOMMUNICATIONS

GENERAL NOTES

1. THE EXISTENCE, LOCATION AND CHARACTERISTICS OF ANY UNDERGROUND UTILITY INFORMATION SHOWN HEREON HAS BEEN OBTAINED FROM A REVIEW OF AVAILABLE RECORD DATA. IT SHALL BE THE RESPONSIBILITY AND LIABILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OR NONEXISTENCE OF SUCH UTILITIES AND TO PROTECT THEM IN PLACE.

PROJECT ADDRESS

3900 S FIGUEROA ST, LOS ANGELES, CA 90037

THE FIG
EXISTING STORM DRAIN PLAN

04.27.2016

N

40' 0' 20' 40' 80'

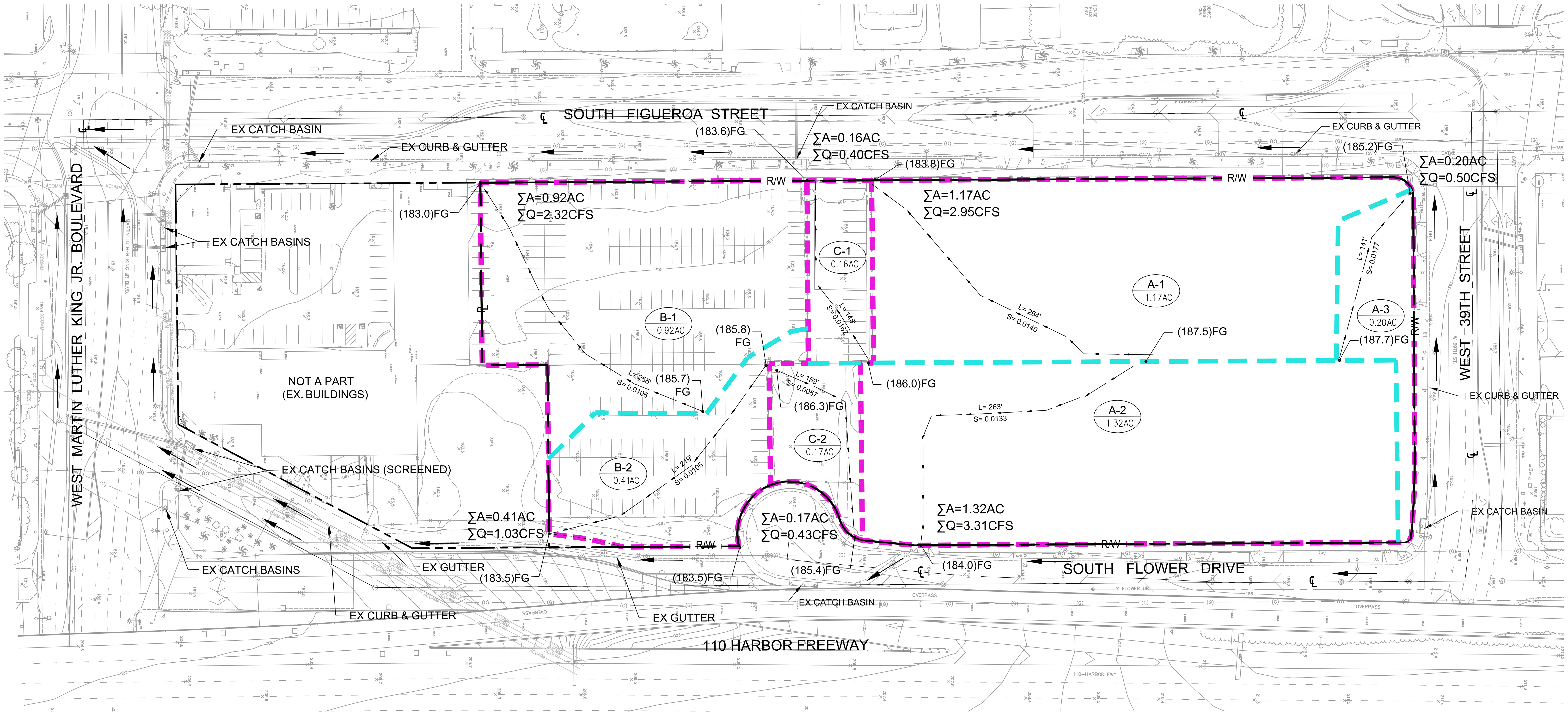
SCALE: 1" = 40'

FUSCOE ENGINEERING
600 Wilshire Boulevard, Suite 1470
Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803
www.fuscoe.com

F:\PROJECTS\1415\003\EXHIBITS\1415-003 EXISTING SD PLAN.DWG (04-27-16 10:46:18AM) Plotted by: Georgik Hormoz

ATTACHMENT C

EXISTING ON-SITE HYDROLOGY MAP



HYDROLOGIC RUN-OFF CALCULATIONS

SITE PARAMETERS: 50 YR ISOHYET = 5.40 IN
25 YR ISOHYET = 4.74 IN
SOIL CLASSIFICATION = 006

SUB-AREA	OUTFALL LOCATION	TOTAL (Ac)	% IMP	Q25 (cfs)	Q50 (cfs)
A-1	SOUTH FIGUEROA STREET	1.17	91	2.95	3.37
A-2	SOUTH FLOWER DRIVE	1.32	86	3.31	3.79
A-3	WEST 39TH STREET	0.20	91	0.50	0.58
B-1	SOUTH FIGUEROA STREET	0.92	91	2.32	2.65
B-2	SOUTH OF SOUTH FLOWER DRIVE	0.41	91	1.03	1.18
C-1	SOUTH FIGUEROA STREET	0.16	86	0.40	0.46
C-2	SOUTH OF SOUTH FLOWER DRIVE	0.17	86	0.43	0.49
TOTAL	TOTAL RUN-OFF	4.35	–	10.94	12.52

LENGEND

- X / X.XXAC — TRIBUTARY AREA NUMBER ACREAGE
- R/W
- CENTERLINE
- HYDROLOGY TRIBUTARY AREA
- HYDROLOGY SUB-AREA
- CENTER LINE
- PROPERTY LINE
- FLOW DIRECTION
- FLOW PATH

40' 0' 20' 40'
SCALE: 1" = 40'

FUSCOE ENGINEERING
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www.fuscoe.com

SPECTRUM DEVELOPMENT

THE FIG

EXISTING HYDROLOGY MAP

05.06.2016
1415.001

F:\PROJECTS\1415\001\EXHIBITS\1415-001-HYD1XH.DWG (05-06-16 5:17:52PM) Plotted by: Archie Darnidon

ATTACHMENT D

HYDROCALC HYDROLOGY RESULTS FOR EXISTING SITE

Peak Flow Hydrologic Analysis

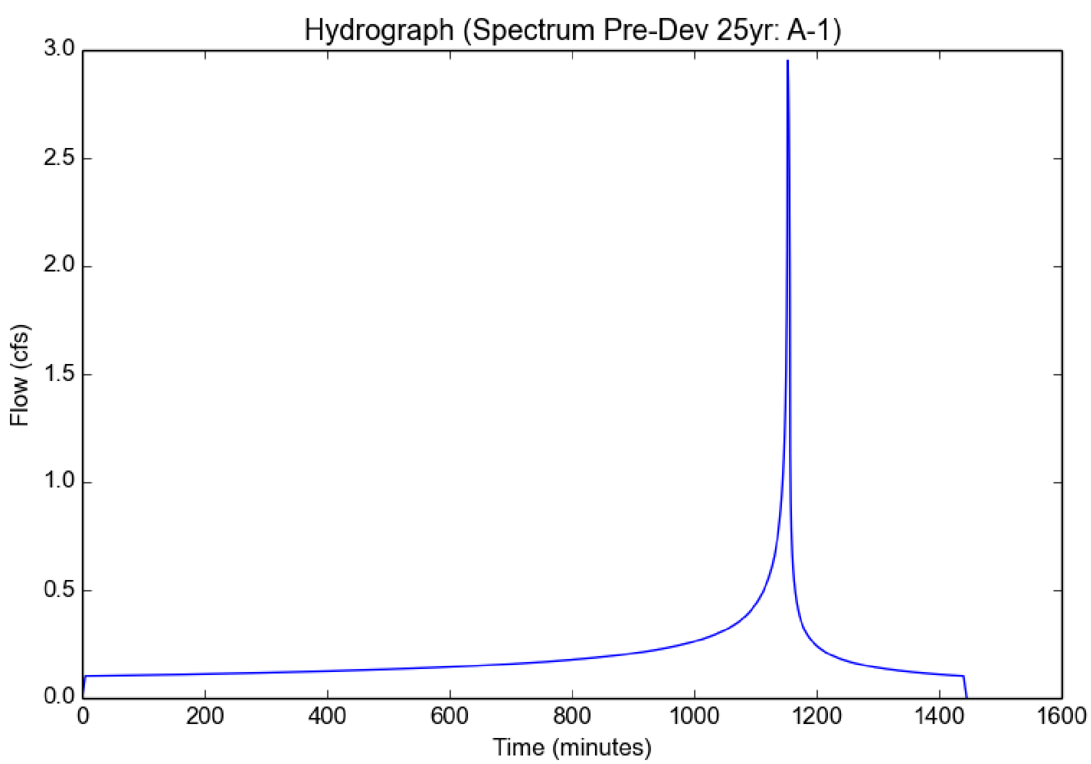
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 25yr
Subarea ID	A-1
Area (ac)	1.17
Flow Path Length (ft)	264.0
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8919
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.9519
Burned Peak Flow Rate (cfs)	2.9519
24-Hr Clear Runoff Volume (ac-ft)	0.3833
24-Hr Clear Runoff Volume (cu-ft)	16694.5665



Peak Flow Hydrologic Analysis

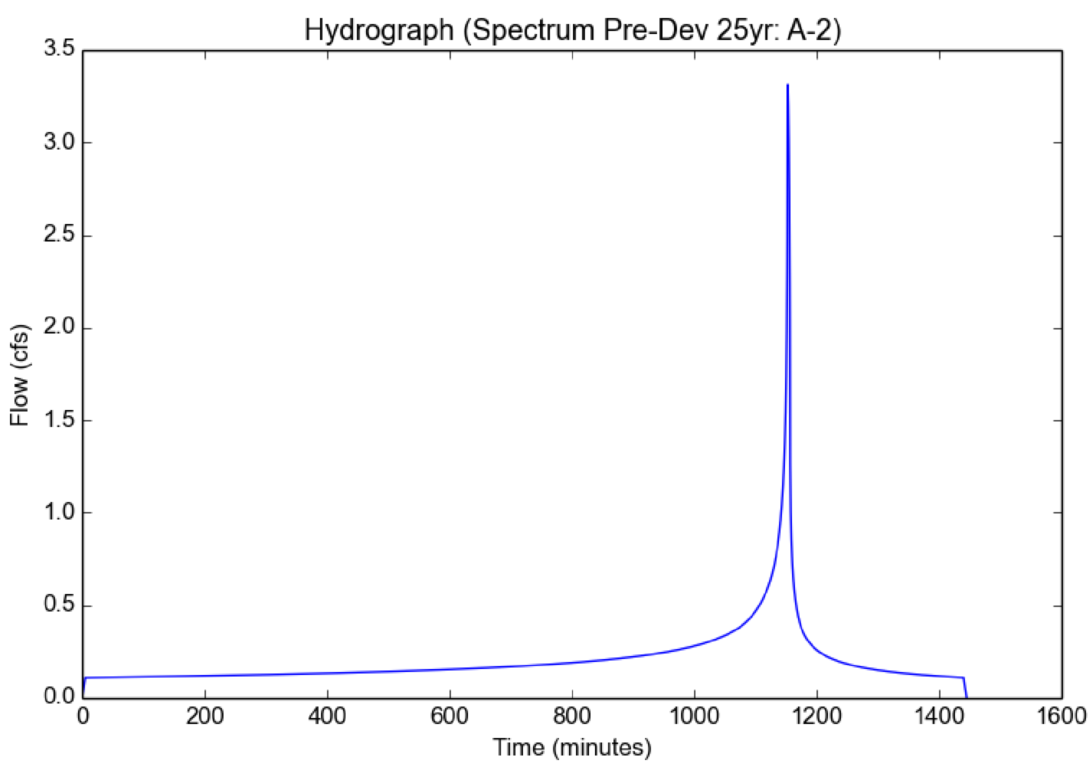
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 25yr
Subarea ID	A-2
Area (ac)	1.32
Flow Path Length (ft)	263.0
Flow Path Slope (vft/hft)	0.0133
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8874
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.3136
Burned Peak Flow Rate (cfs)	3.3136
24-Hr Clear Runoff Volume (ac-ft)	0.414
24-Hr Clear Runoff Volume (cu-ft)	18033.6317



Peak Flow Hydrologic Analysis

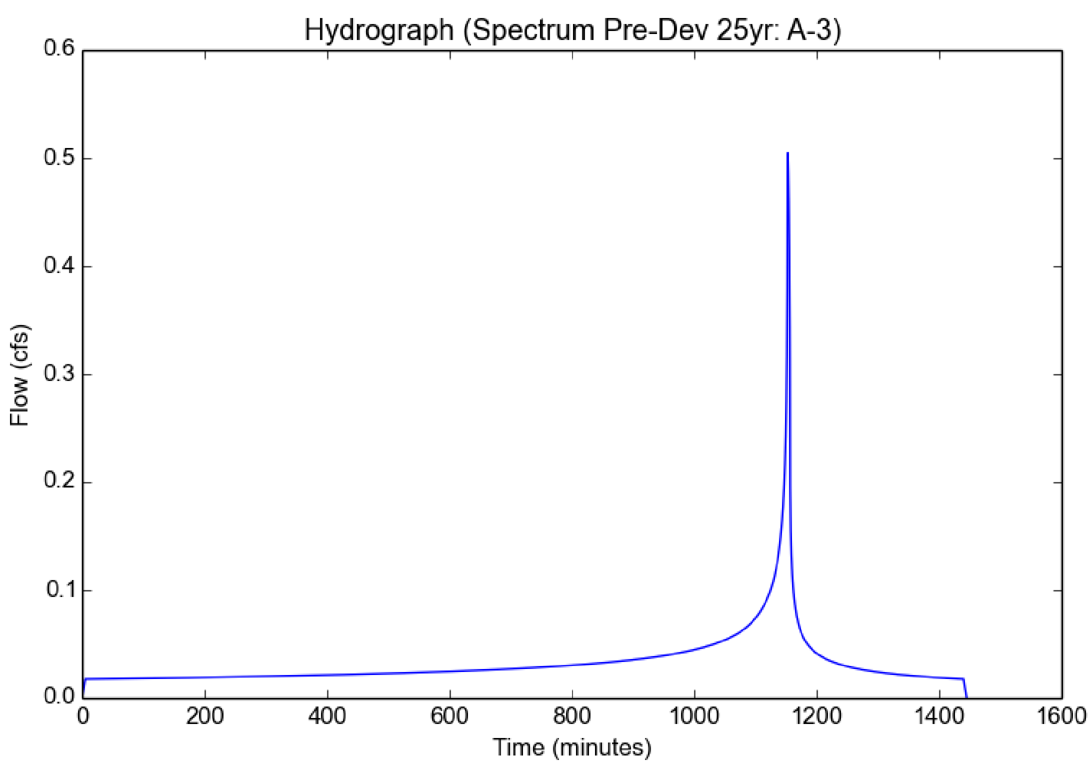
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 25yr
Subarea ID	A-3
Area (ac)	0.2
Flow Path Length (ft)	141.0
Flow Path Slope (vft/hft)	0.0177
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8919
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5046
Burned Peak Flow Rate (cfs)	0.5046
24-Hr Clear Runoff Volume (ac-ft)	0.0655
24-Hr Clear Runoff Volume (cu-ft)	2853.7721



Peak Flow Hydrologic Analysis

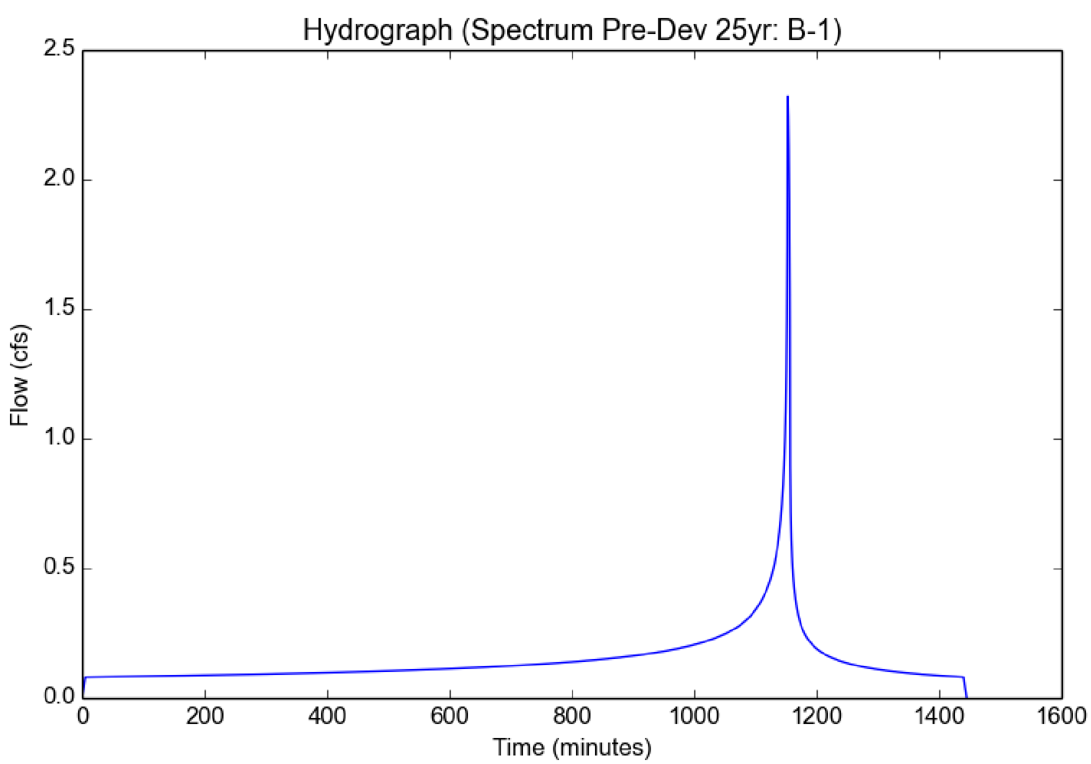
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 25yr
Subarea ID	B-1
Area (ac)	0.92
Flow Path Length (ft)	255.0
Flow Path Slope (vft/hft)	0.0106
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8919
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.3212
Burned Peak Flow Rate (cfs)	2.3212
24-Hr Clear Runoff Volume (ac-ft)	0.3014
24-Hr Clear Runoff Volume (cu-ft)	13127.3514



Peak Flow Hydrologic Analysis

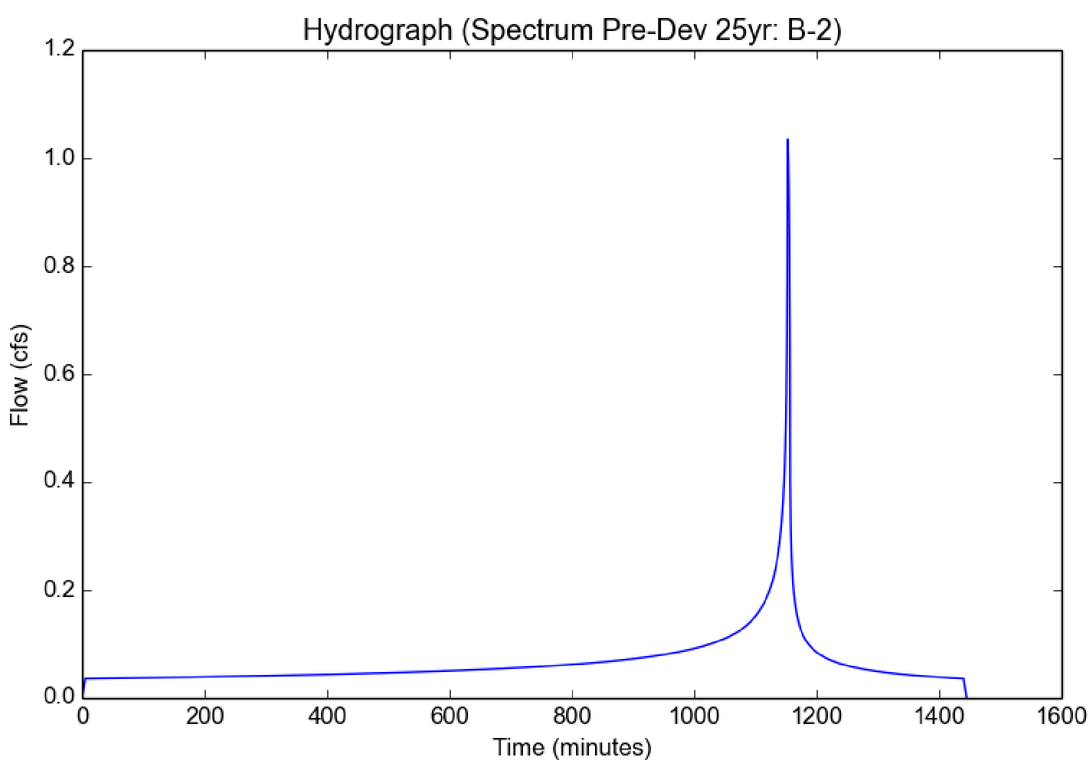
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 25yr
Subarea ID	B-2
Area (ac)	0.41
Flow Path Length (ft)	219.0
Flow Path Slope (vft/hft)	0.0105
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8919
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.0344
Burned Peak Flow Rate (cfs)	1.0344
24-Hr Clear Runoff Volume (ac-ft)	0.1343
24-Hr Clear Runoff Volume (cu-ft)	5850.2327



Peak Flow Hydrologic Analysis

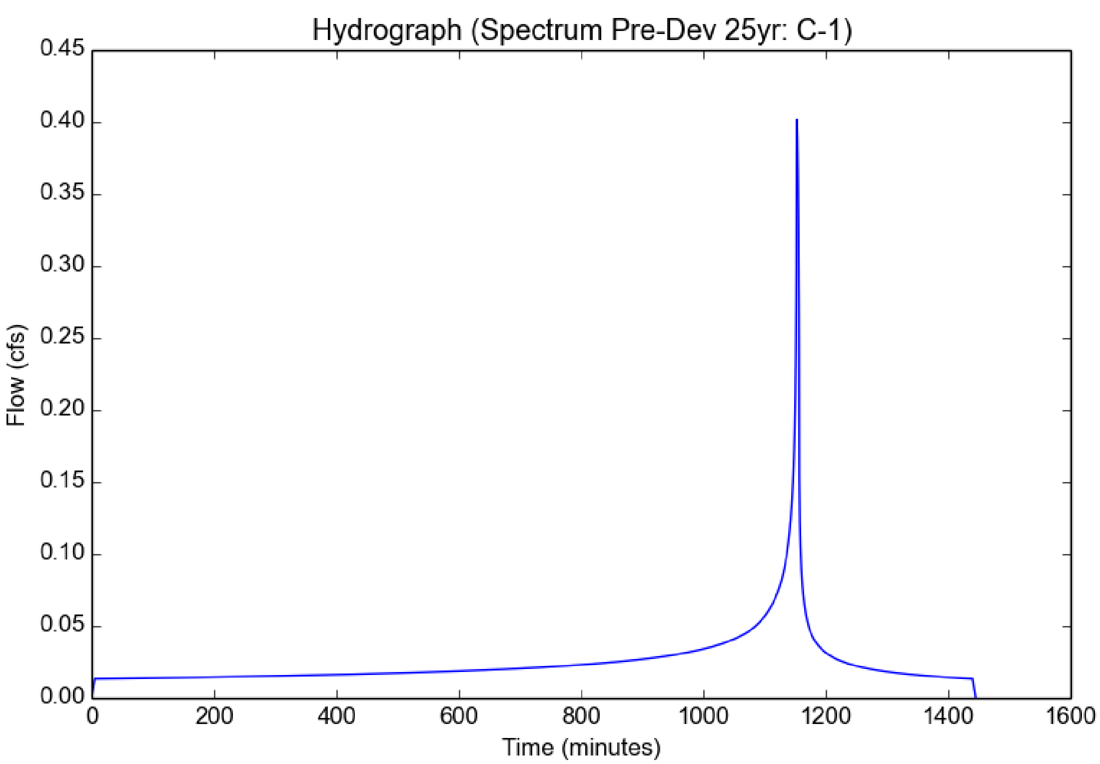
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 25yr
Subarea ID	C-1
Area (ac)	0.16
Flow Path Length (ft)	148.0
Flow Path Slope (vft/hft)	0.0162
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8874
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4017
Burned Peak Flow Rate (cfs)	0.4017
24-Hr Clear Runoff Volume (ac-ft)	0.0502
24-Hr Clear Runoff Volume (cu-ft)	2185.8947



Peak Flow Hydrologic Analysis

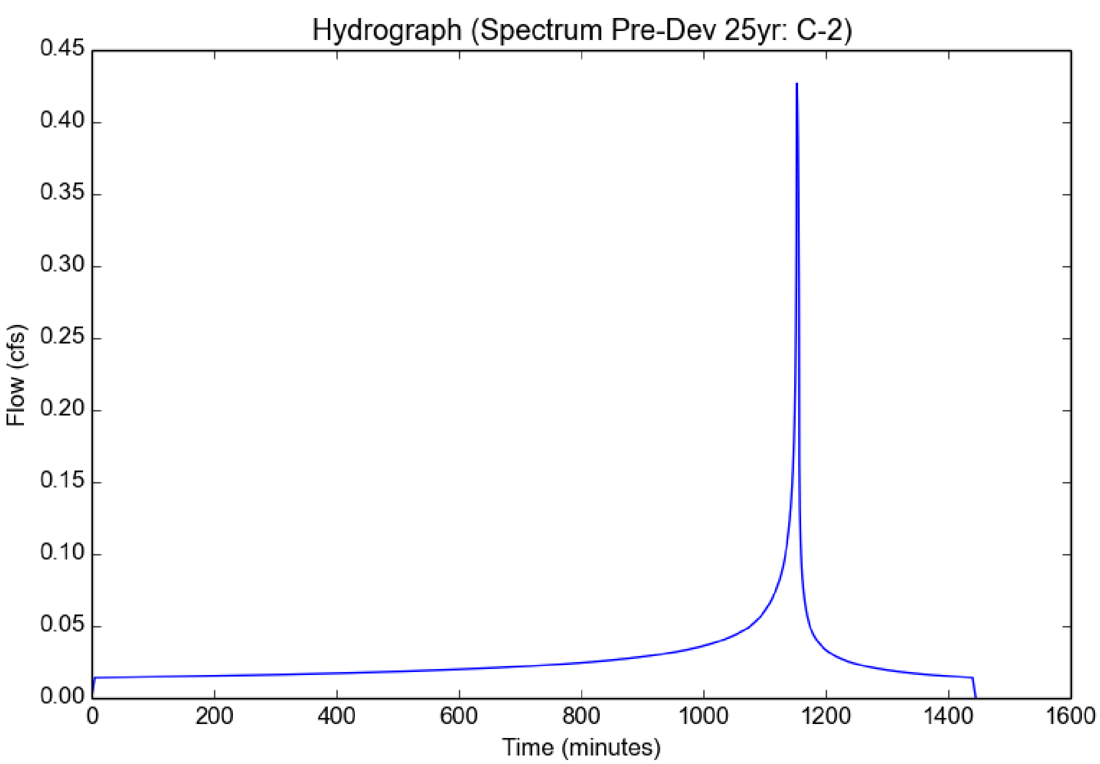
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 25yr
Subarea ID	C-2
Area (ac)	0.17
Flow Path Length (ft)	159.0
Flow Path Slope (vft/hft)	0.0057
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8874
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4268
Burned Peak Flow Rate (cfs)	0.4268
24-Hr Clear Runoff Volume (ac-ft)	0.0533
24-Hr Clear Runoff Volume (cu-ft)	2322.5132



Peak Flow Hydrologic Analysis

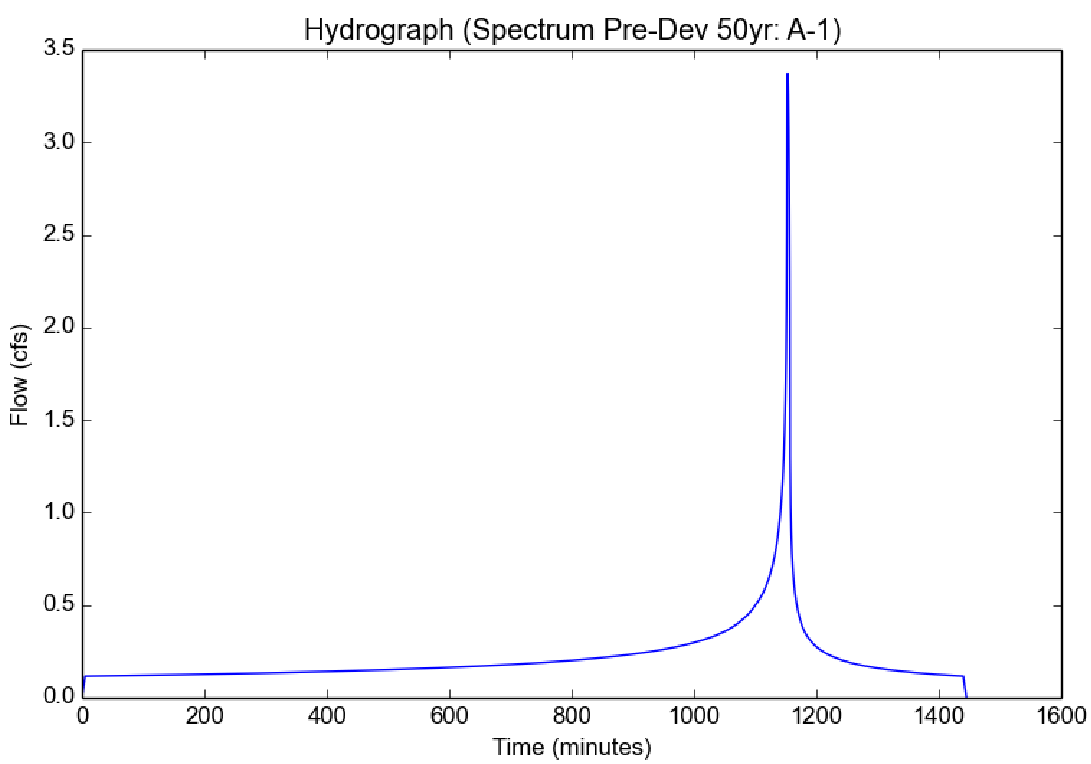
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 50yr
Subarea ID	A-1
Area (ac)	1.17
Flow Path Length (ft)	264.0
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8944
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.3715
Burned Peak Flow Rate (cfs)	3.3715
24-Hr Clear Runoff Volume (ac-ft)	0.4372
24-Hr Clear Runoff Volume (cu-ft)	19043.9499



Peak Flow Hydrologic Analysis

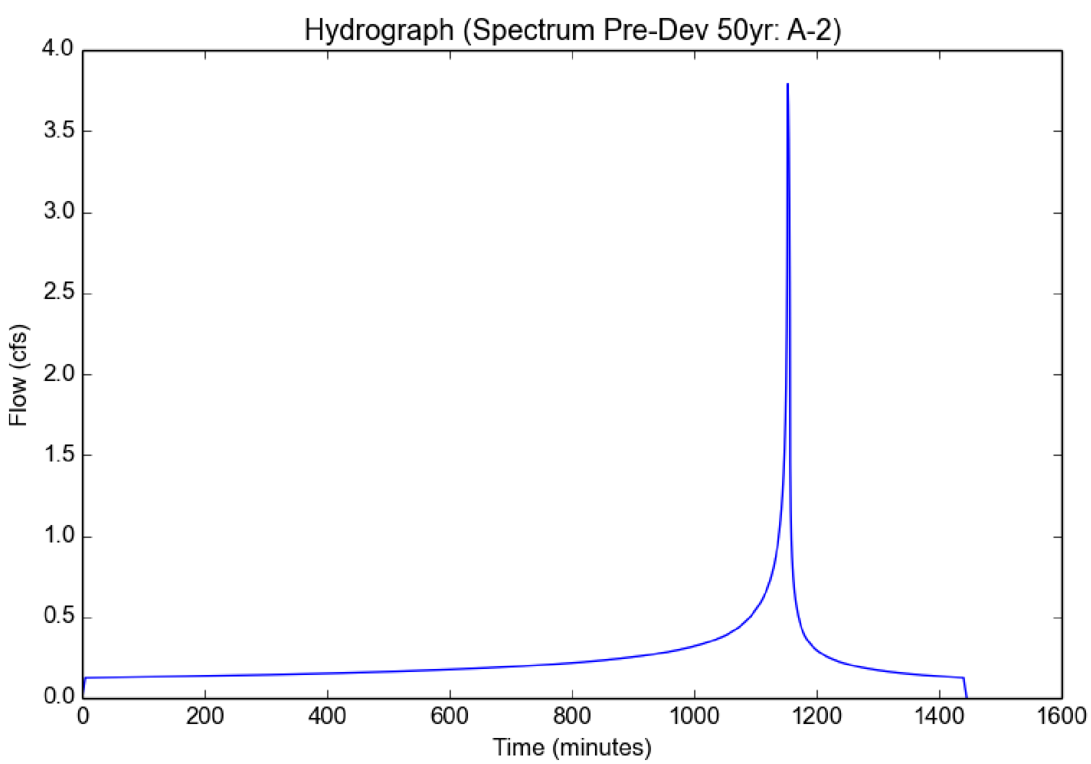
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 50yr
Subarea ID	A-2
Area (ac)	1.32
Flow Path Length (ft)	263.0
Flow Path Slope (vft/hft)	0.0133
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8913
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.7905
Burned Peak Flow Rate (cfs)	3.7905
24-Hr Clear Runoff Volume (ac-ft)	0.4727
24-Hr Clear Runoff Volume (cu-ft)	20591.4567



Peak Flow Hydrologic Analysis

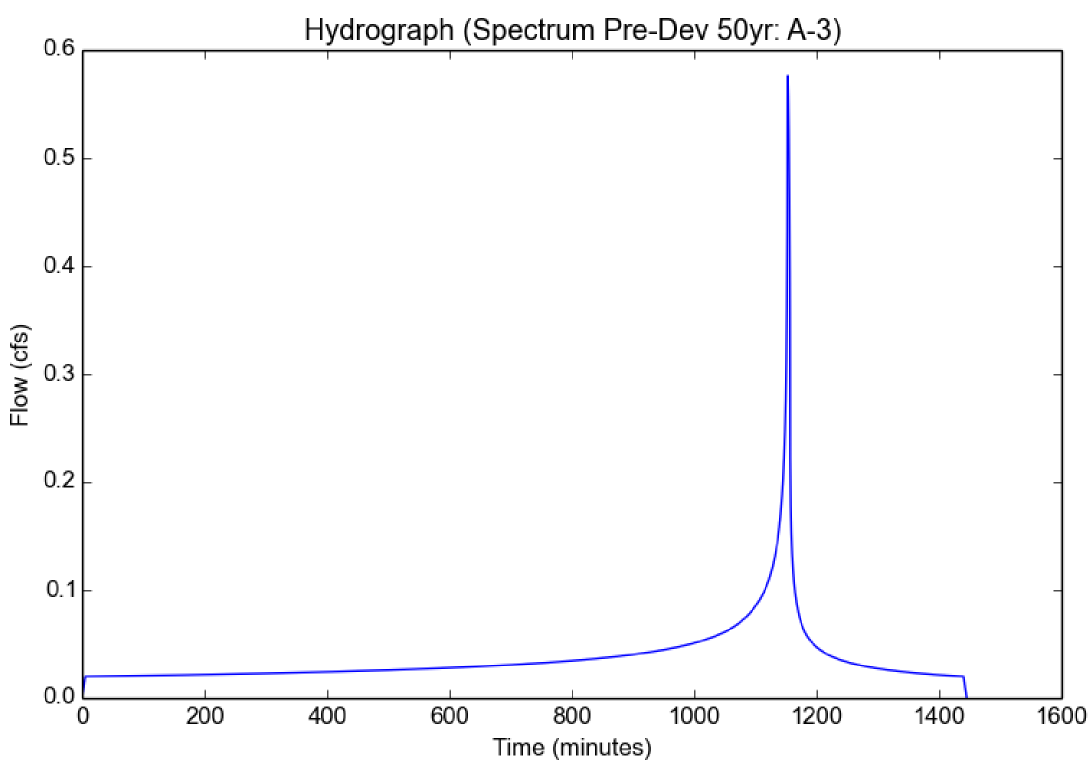
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 50yr
Subarea ID	A-3
Area (ac)	0.2
Flow Path Length (ft)	141.0
Flow Path Slope (vft/hft)	0.0177
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8944
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5763
Burned Peak Flow Rate (cfs)	0.5763
24-Hr Clear Runoff Volume (ac-ft)	0.0747
24-Hr Clear Runoff Volume (cu-ft)	3255.376



Peak Flow Hydrologic Analysis

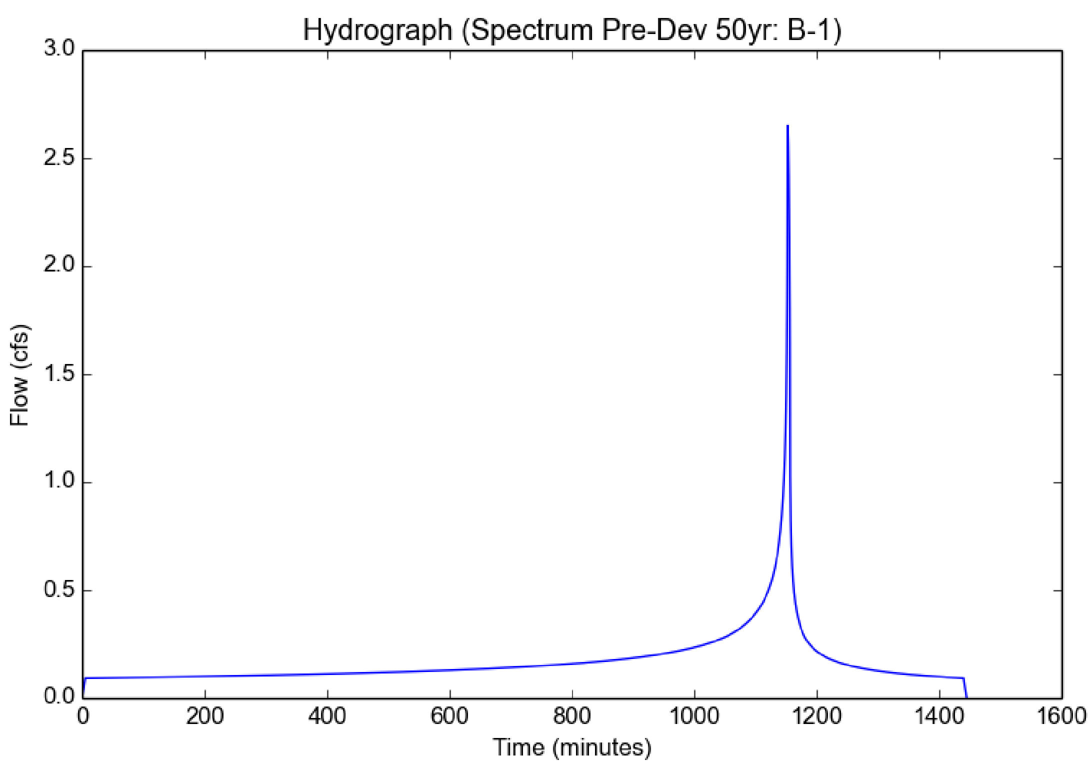
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 50yr
Subarea ID	B-1
Area (ac)	0.92
Flow Path Length (ft)	255.0
Flow Path Slope (vft/hft)	0.0106
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8944
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.6511
Burned Peak Flow Rate (cfs)	2.6511
24-Hr Clear Runoff Volume (ac-ft)	0.3438
24-Hr Clear Runoff Volume (cu-ft)	14974.7298



Peak Flow Hydrologic Analysis

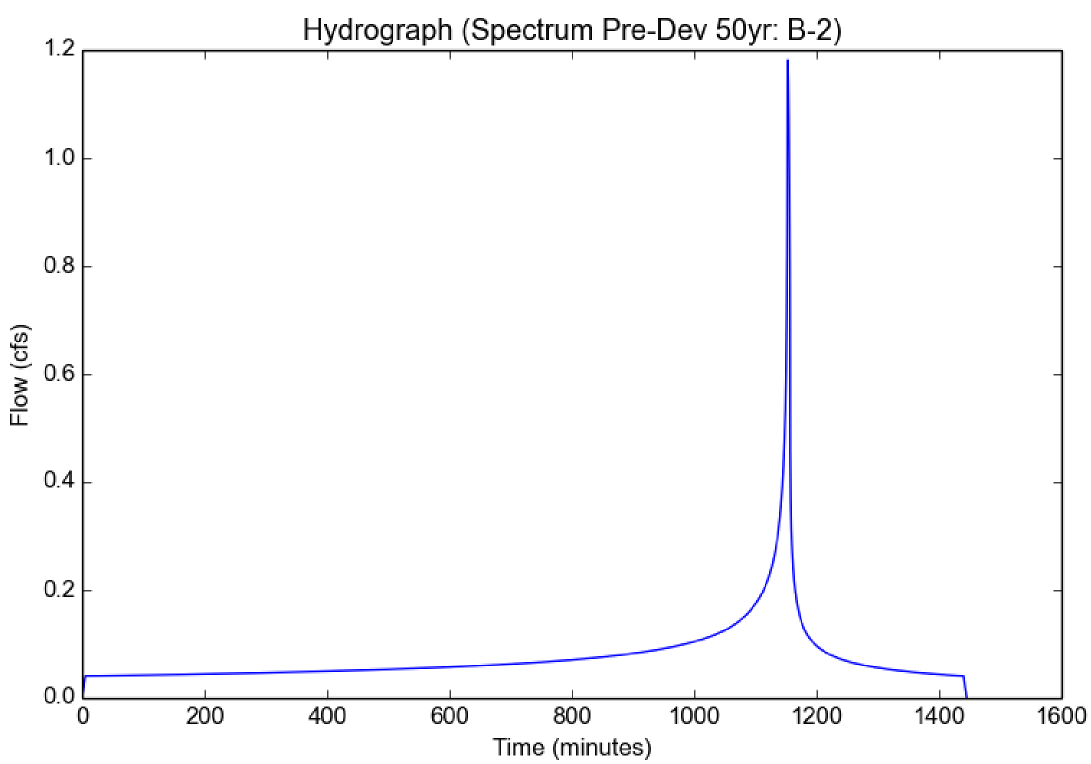
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 50yr
Subarea ID	B-2
Area (ac)	0.41
Flow Path Length (ft)	219.0
Flow Path Slope (vft/hft)	0.0105
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8944
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.1815
Burned Peak Flow Rate (cfs)	1.1815
24-Hr Clear Runoff Volume (ac-ft)	0.1532
24-Hr Clear Runoff Volume (cu-ft)	6673.5209



Peak Flow Hydrologic Analysis

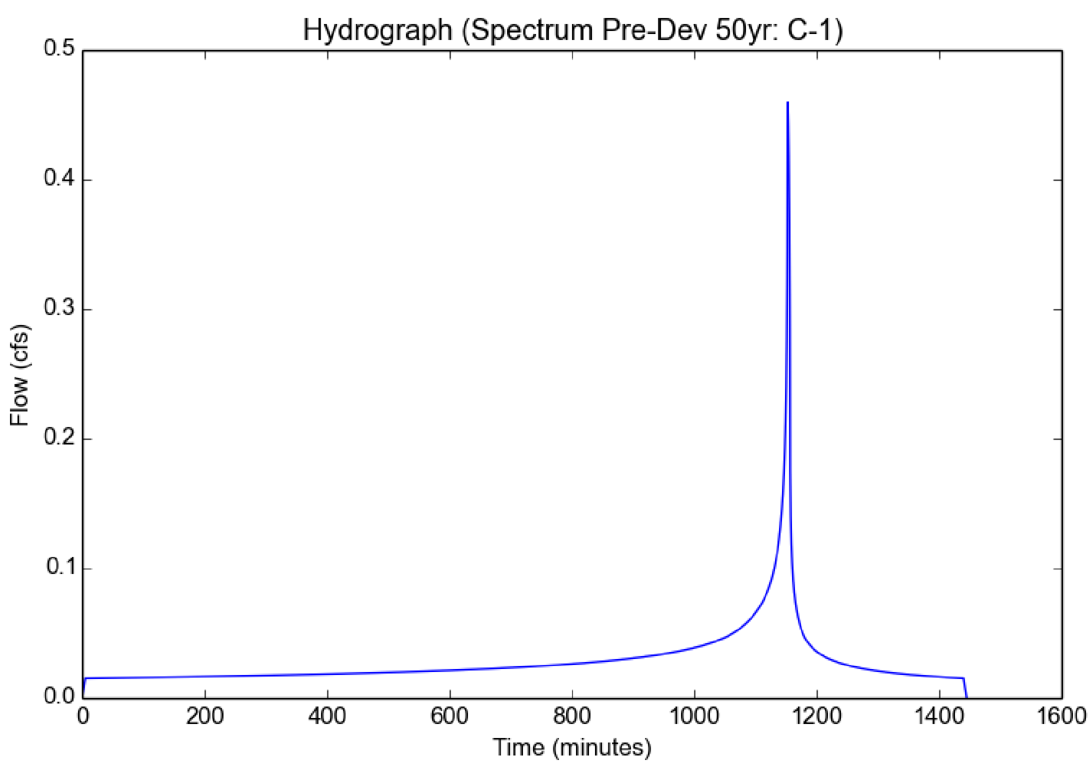
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 50yr
Subarea ID	C-1
Area (ac)	0.16
Flow Path Length (ft)	148.0
Flow Path Slope (vft/hft)	0.0162
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8913
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4595
Burned Peak Flow Rate (cfs)	0.4595
24-Hr Clear Runoff Volume (ac-ft)	0.0573
24-Hr Clear Runoff Volume (cu-ft)	2495.9341



Peak Flow Hydrologic Analysis

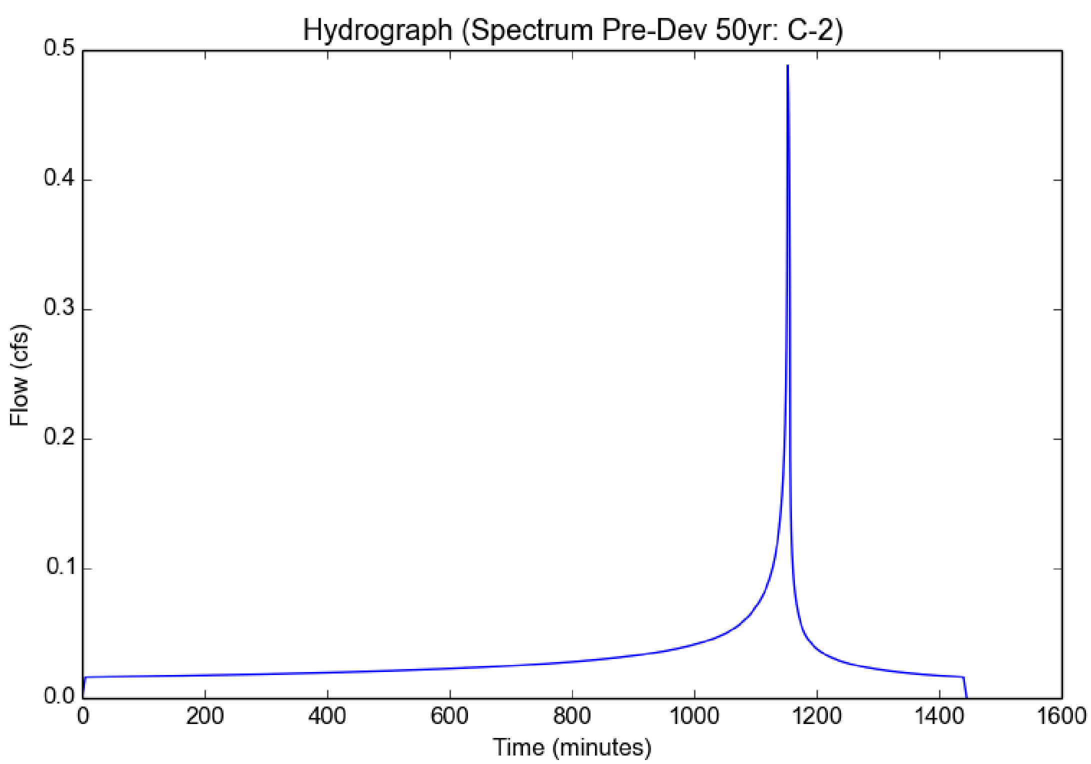
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Pre-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Pre-Dev 50yr
Subarea ID	C-2
Area (ac)	0.17
Flow Path Length (ft)	159.0
Flow Path Slope (vft/hft)	0.0057
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8913
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4882
Burned Peak Flow Rate (cfs)	0.4882
24-Hr Clear Runoff Volume (ac-ft)	0.0609
24-Hr Clear Runoff Volume (cu-ft)	2651.93



ATTACHMENT E

FEMA FLOODPLAIN MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later and from National Geospatial Intelligence Agency imagery produced at a scale of 1:4,000 from photography dated 2003 or later.

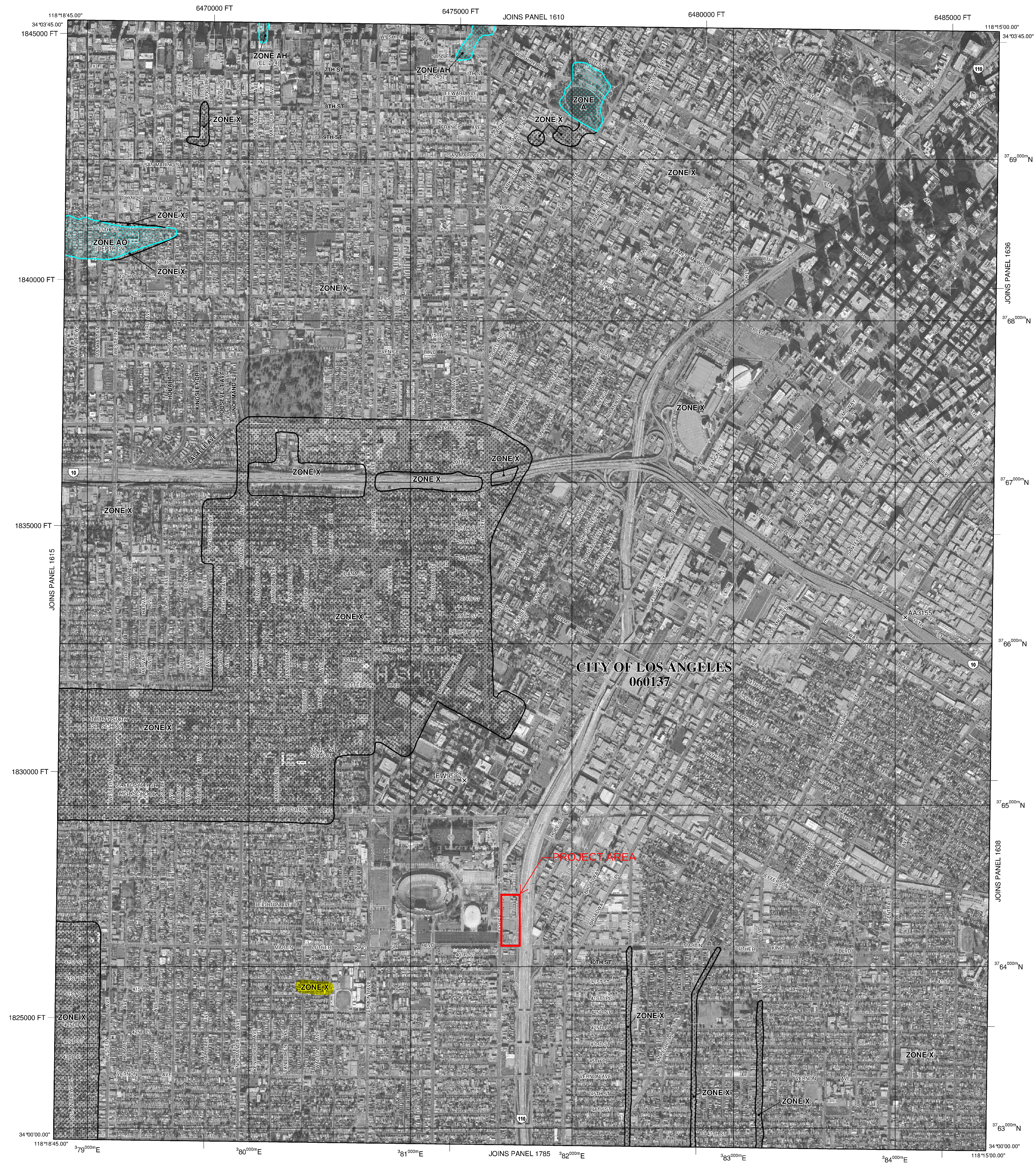
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data*) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

~~ 513 ~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A———A	Cross section line
23- - - - - -23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}75^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 11
6000000 FT	5000-foot grid ticks: California State Plane coordinate system, V zone (FIPSZONE 0405), Lambert Conformal Conic
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 26, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1620F

FIRM
FLOOD INSURANCE RATE MAP
LOS ANGELES COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 1620 OF 2350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES, CITY OF	060137	1620	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C1620F

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency

ATTACHMENT F

2010 CALIFORNIA 303(D) LIST

CATEGORY 5
2010 CALIFORNIA 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS*

Region	Water Body Name	Water Type	Watershed*/ Calwater/ USGS HUC	Estimated Area Assessed	Estimated Area Assessed	First Year Listed	TMDL Requirement Status**	Date***
4	Compton Creek	River & Stream	40515010 / 18070104	• Benthic-Macroinvertebrate Bioassessments ◦ Source Unknown	8.5 Miles	2010	5A	2021
				• Coliform Bacteria ◦ Nonpoint Source ◦ Point Source	8.5 Miles	1996	5A	2009
				• Copper ◦ Nonpoint Source ◦ Point Source	8.5 Miles	1996	5B	2005
				• Lead ◦ Nonpoint Source ◦ Point Source	8.5 Miles	1996	5B	2005
				• Trash ◦ Nonpoint Source	8.5 Miles	2006	5B	2008
				• pH ◦ Nonpoint Source ◦ Point Source	8.5 Miles	1996	5B	2004

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

** TMDL requirement status definitions for listed pollutants are: A= TMDL still required, B= being addressed by USEPA approved TMDL, C= being addressed by action other than a TMDL

*** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date, B= Date USEPA approved TMDL, and C= Completion date for action other than a TMDL

ATTACHMENT G

LID SIZING METHODOLOGY

ATTACHMENT G

LID Sizing Methodology

Step 1: Calculate the Design Volume

Infiltration facilities shall be sized to capture and infiltrate the design capture volume (V_{design}) based on the runoff produced from a 1.1-inch (0.092 ft) storm event.

V_{design} (cu ft) = 0.092 (ft) x Catchment Area (sq ft)

Catchment Area = (Impervious Area x 0.9) + (Pervious Area x 0.1)

Step 2: Determine the Design Infiltration Rate

$$K_{sat,\ design} = K_{sat,\ measured}/FS$$

FS = Infiltration factor of Safety of 3

Step 3: Calculate BMP Surface Area

Determine the minimum infiltrating surface area necessary to infiltrate the design volume:

$$A_{min} = (V_{design} \times 12 \text{ in/ft}) / (T \times K_{sat,\ design})$$

Where:

A_{min} = Minimum infiltrating surface area (ft^2)
T = Drawdown time (hours), 48 hours

Step 4: Calculate the Total Storage Volume*

Determine the storage volume of the infiltration unit to be filled with media for capturing the design capture volume.

$$V_{storage} = V_{design} / n$$

Where:

$V_{storage}$ = Minimum media storage of the infiltration facility (ft^3)
n = void ratio (use 0.40 for gap graded gravel)

** Note: Dry wells with gravel fill will not store the entire design volume; additional storage to capture the remaining design volume will be required upstream of the dry well. For purposes of this Project, upstream detention facilities will be utilized in addition to multiple drywells.*

Step 5: Calculate the Media Storage Depth

Determine the depth of the infiltration unit to be filled with media for capturing the design capture volume. The depth shall not exceed 8 feet – except for dry well(s).

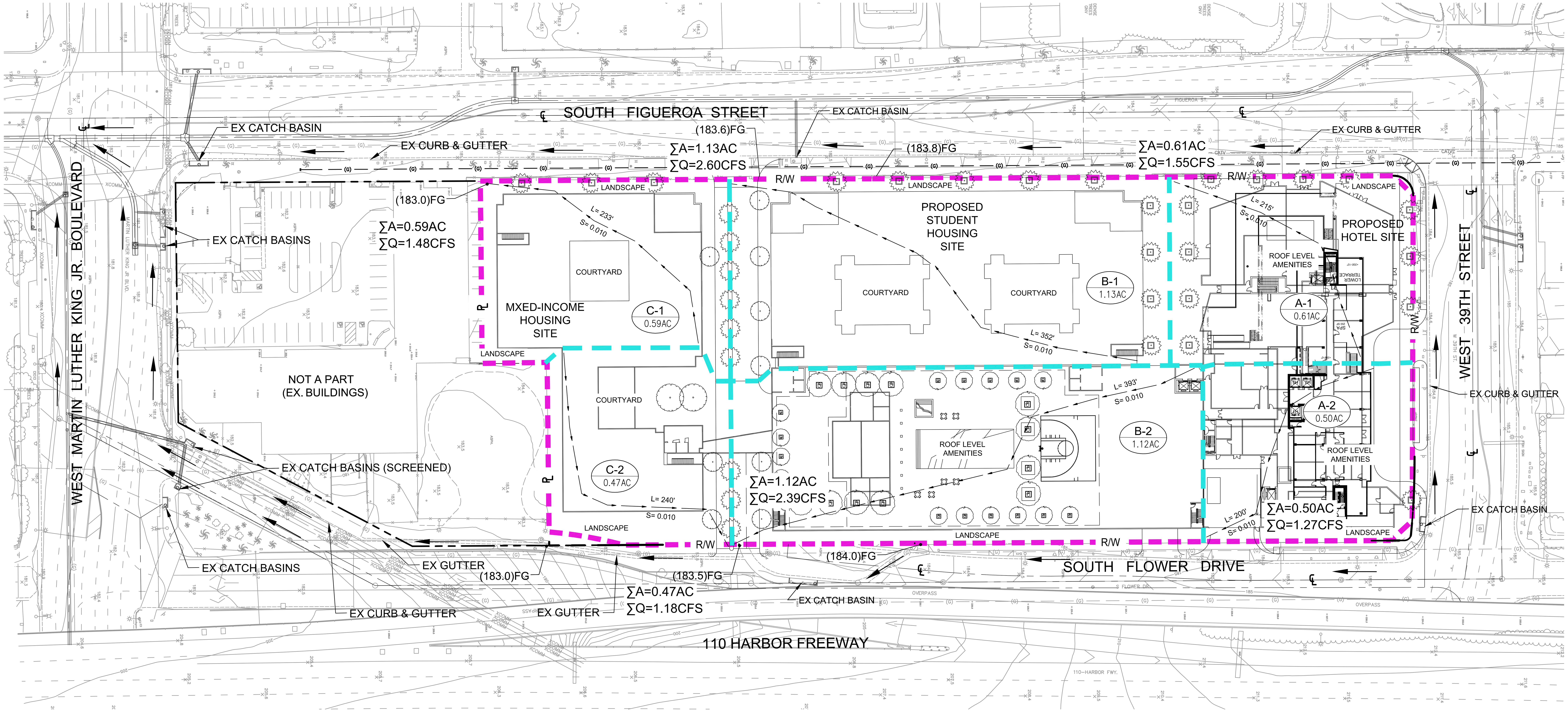
$$D_{media} = V_{storage} / A_{min}$$

Where:

D_{media} = Depth of media storage

ATTACHMENT H

PROPOSED ON-SITE HYDROLOGY MAP



HYDROLOGIC RUN-OFF CALCULATIONS

SITE PARAMETERS:
50 YR ISOHYET = 5.40 IN
25 YR ISOHYET = 4.74 IN
SOIL CLASSIFICATION = 006

SUB-AREA	OUTFALL LOCATION	TOTAL (Ac)	% IMP	Q25 (cfs)	Q50 (cfs)	LID WATER QUALITY Qpm (cfs)	LID WATER QUALITY Vm (cf)
A-1	SOUTH FIGUEROA STREET	0.61	96	1.55	1.76	0.22	2,097
A-2	SOUTH FLOWER DRIVE	0.50	96	1.27	1.45	0.19	1.719
B-1	SOUTH FIGUEROA STREET	1.13	86	2.60	2.97	0.31	3,526
B-2	SOUTH OF SOUTH FLOWER DRIVE	1.12	86	2.39	2.94	0.30	3,495
C-1	SOUTH FIGUEROA STREET	0.59	86	1.48	1.69	0.18	1,841
C-2	SOUTH OF SOUTH FLOWER DRIVE	0.47	86	1.18	1.35	0.15	1,467
TOTAL	TOTAL RUN-OFF	4.42	–	10.47	12.16	1.35	14,145

LENGEND

X / X.XXAC — TRIBUTARY AREA NUMBER ACREAGE
R/W
CENTERLINE
HYDROLOGY TRIBUTARY AREA
HYDROLOGY SUB-AREA
℄ — CENTER LINE
℘ — PROPERTY LINE
FLOW DIRECTION
FLOW PATH

40' 0' 20' 40'
SCALE: 1" = 40'

SPECTRUM DEVELOPMENT

THE FIG

PROPOSED HYDROLOGY MAP

05.06.2016
1415.001

FUSCOE ENGINEERING
600 Wilshire Boulevard, Suite 1470
Los Angeles, California 90017
tel 213.988.8802 * fax 213.988.8803
www.fuscoe.com

F:\PROJECTS\1415\001\EXHIBITS\1415-001-HYD1PH.DWG (05-06-16 5:19:20PM) Plotted by: Archie Domidon

ATTACHMENT I

HYDROCALC HYDROLOGY RESULTS FOR PROPOSED SITE

Peak Flow Hydrologic Analysis

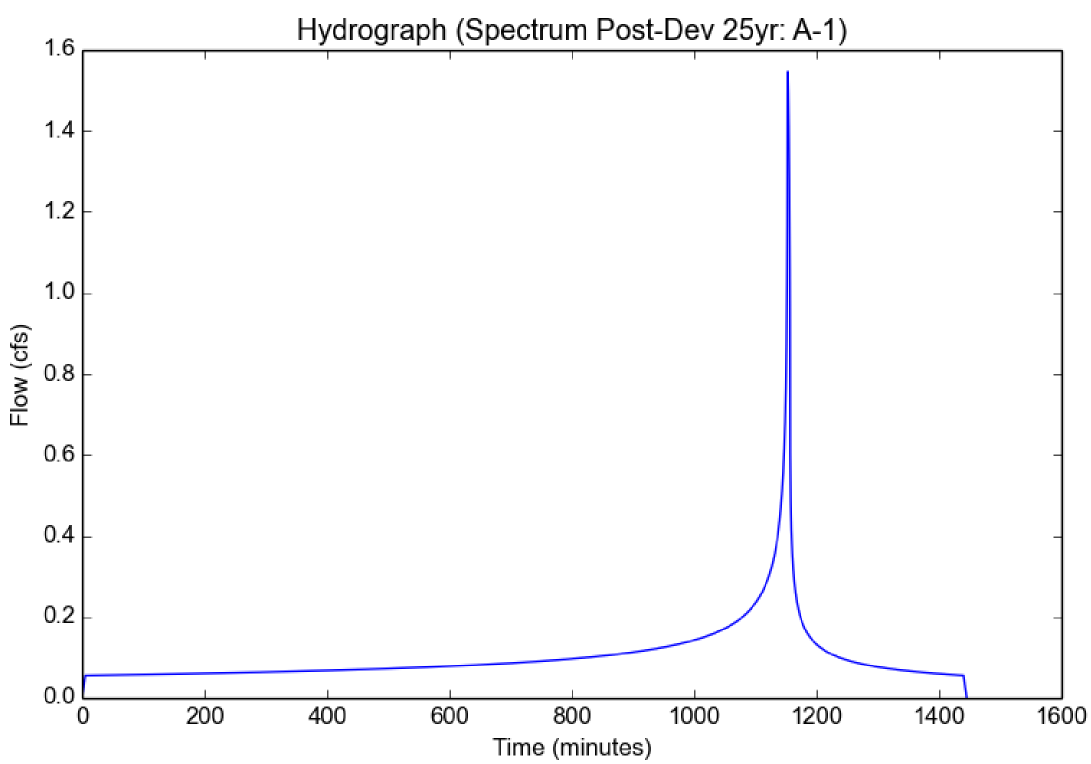
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 25yr
Subarea ID	A-1
Area (ac)	0.61
Flow Path Length (ft)	215.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.96
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8964
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.5468
Burned Peak Flow Rate (cfs)	1.5468
24-Hr Clear Runoff Volume (ac-ft)	0.2083
24-Hr Clear Runoff Volume (cu-ft)	9074.2858



Peak Flow Hydrologic Analysis

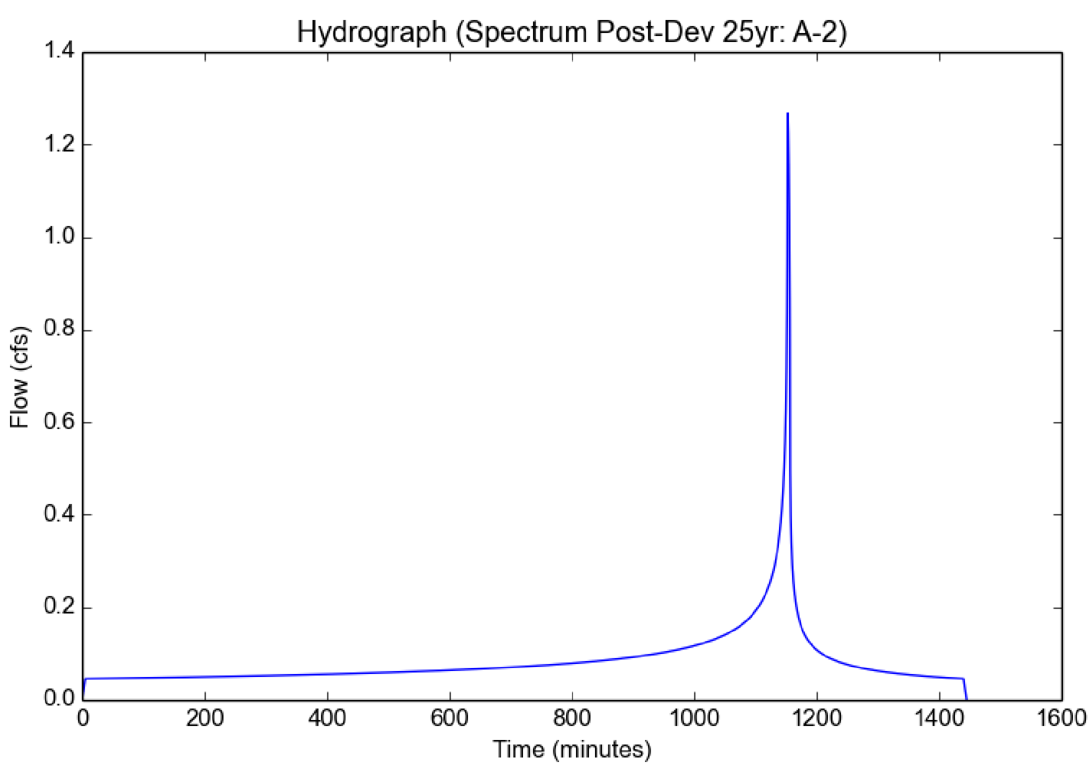
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 25yr
Subarea ID	A-2
Area (ac)	0.5
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.96
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8964
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2679
Burned Peak Flow Rate (cfs)	1.2679
24-Hr Clear Runoff Volume (ac-ft)	0.1708
24-Hr Clear Runoff Volume (cu-ft)	7437.9392



Peak Flow Hydrologic Analysis

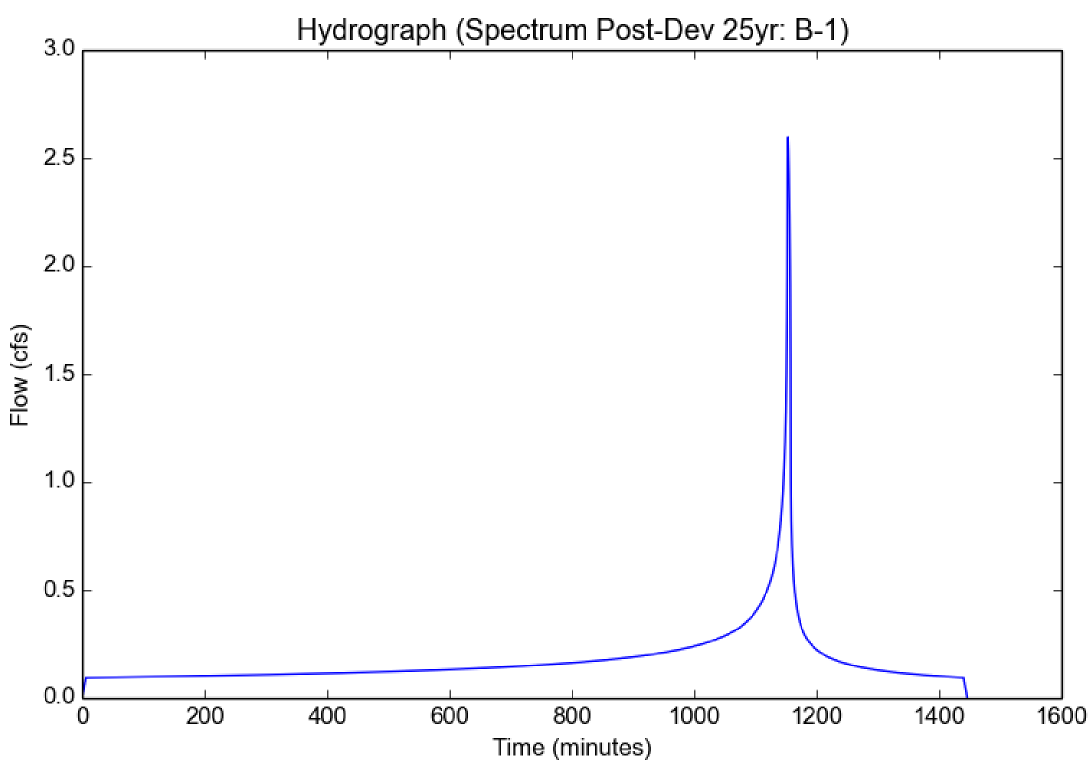
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 25yr
Subarea ID	B-1
Area (ac)	1.13
Flow Path Length (ft)	352.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.5964
Undeveloped Runoff Coefficient (Cu)	0.7939
Developed Runoff Coefficient (Cd)	0.8852
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.597
Burned Peak Flow Rate (cfs)	2.597
24-Hr Clear Runoff Volume (ac-ft)	0.3544
24-Hr Clear Runoff Volume (cu-ft)	15437.1597



Peak Flow Hydrologic Analysis

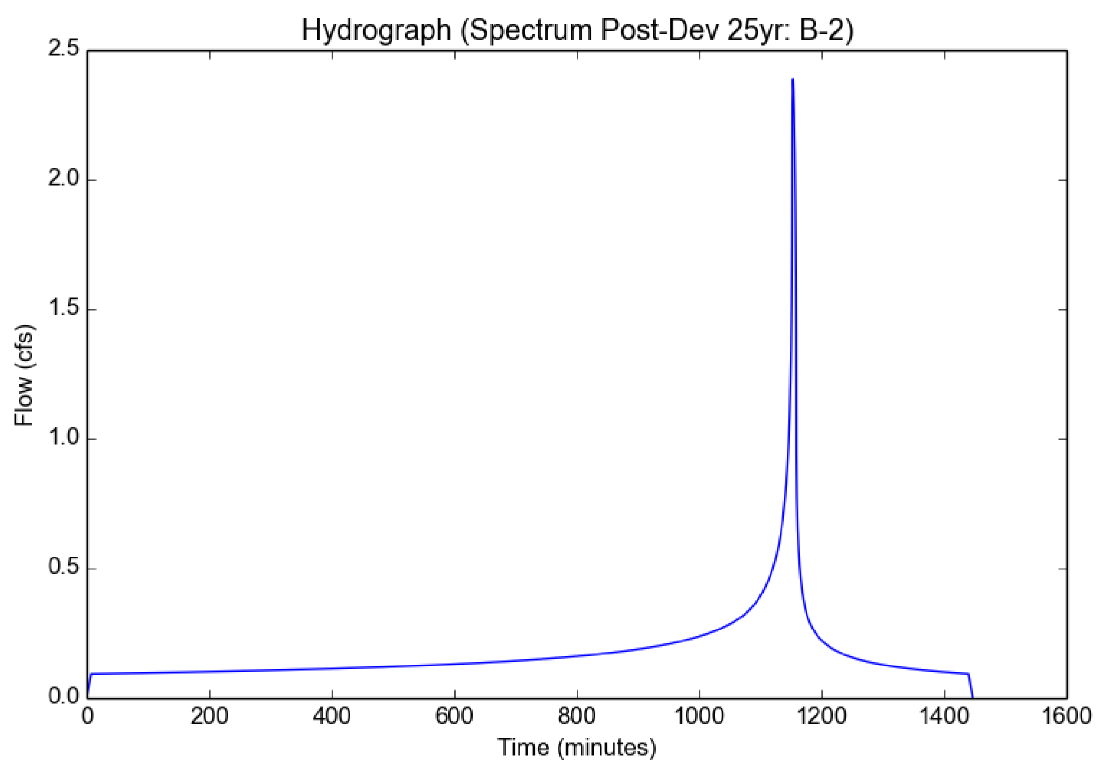
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 25yr
Subarea ID	B-2
Area (ac)	1.12
Flow Path Length (ft)	393.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.415
Undeveloped Runoff Coefficient (Cu)	0.7778
Developed Runoff Coefficient (Cd)	0.8829
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	2.388
Burned Peak Flow Rate (cfs)	2.388
24-Hr Clear Runoff Volume (ac-ft)	0.3512
24-Hr Clear Runoff Volume (cu-ft)	15299.6436



Peak Flow Hydrologic Analysis

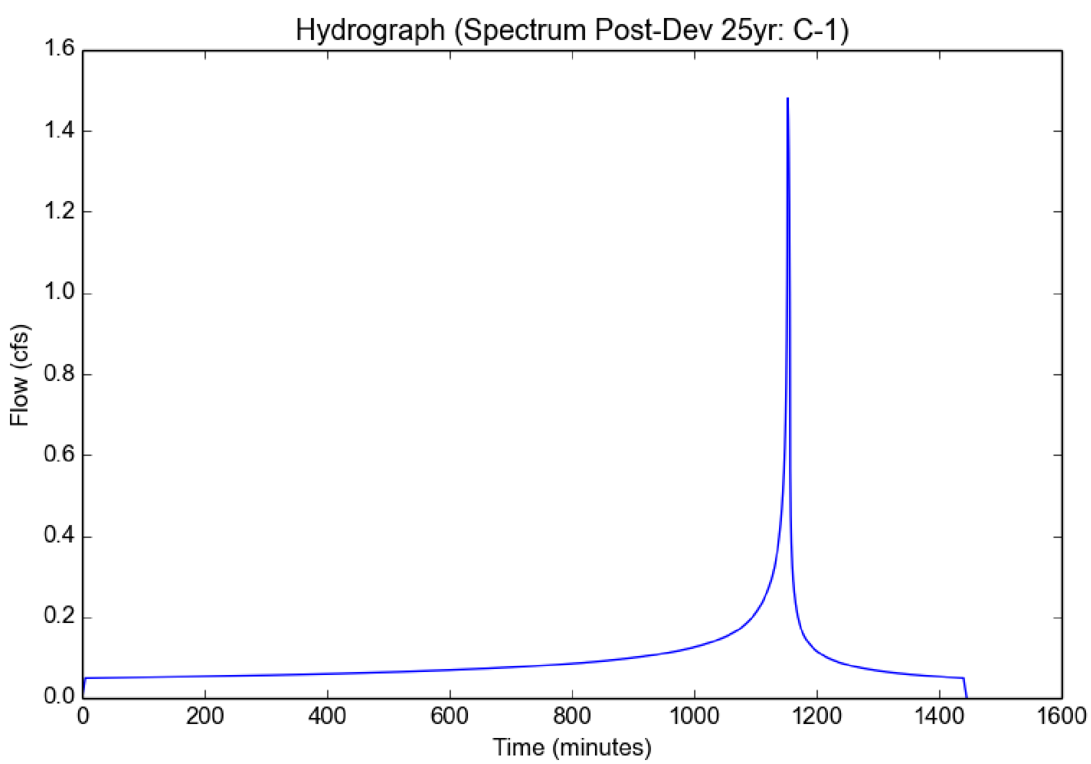
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 25yr
Subarea ID	C-1
Area (ac)	0.59
Flow Path Length (ft)	233.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8874
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.4811
Burned Peak Flow Rate (cfs)	1.4811
24-Hr Clear Runoff Volume (ac-ft)	0.185
24-Hr Clear Runoff Volume (cu-ft)	8060.4869



Peak Flow Hydrologic Analysis

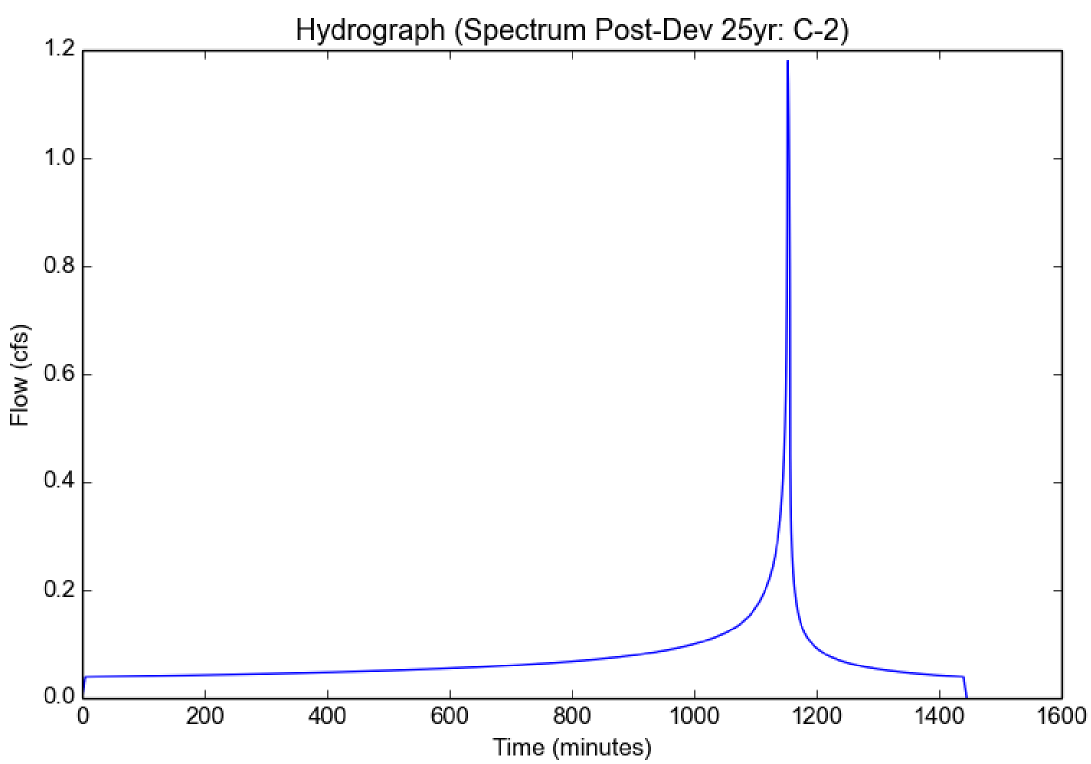
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 25yr
Subarea ID	C-2
Area (ac)	0.47
Flow Path Length (ft)	240.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.7412
Peak Intensity (in/hr)	2.8287
Undeveloped Runoff Coefficient (Cu)	0.8103
Developed Runoff Coefficient (Cd)	0.8874
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.1798
Burned Peak Flow Rate (cfs)	1.1798
24-Hr Clear Runoff Volume (ac-ft)	0.1474
24-Hr Clear Runoff Volume (cu-ft)	6421.0658



Peak Flow Hydrologic Analysis

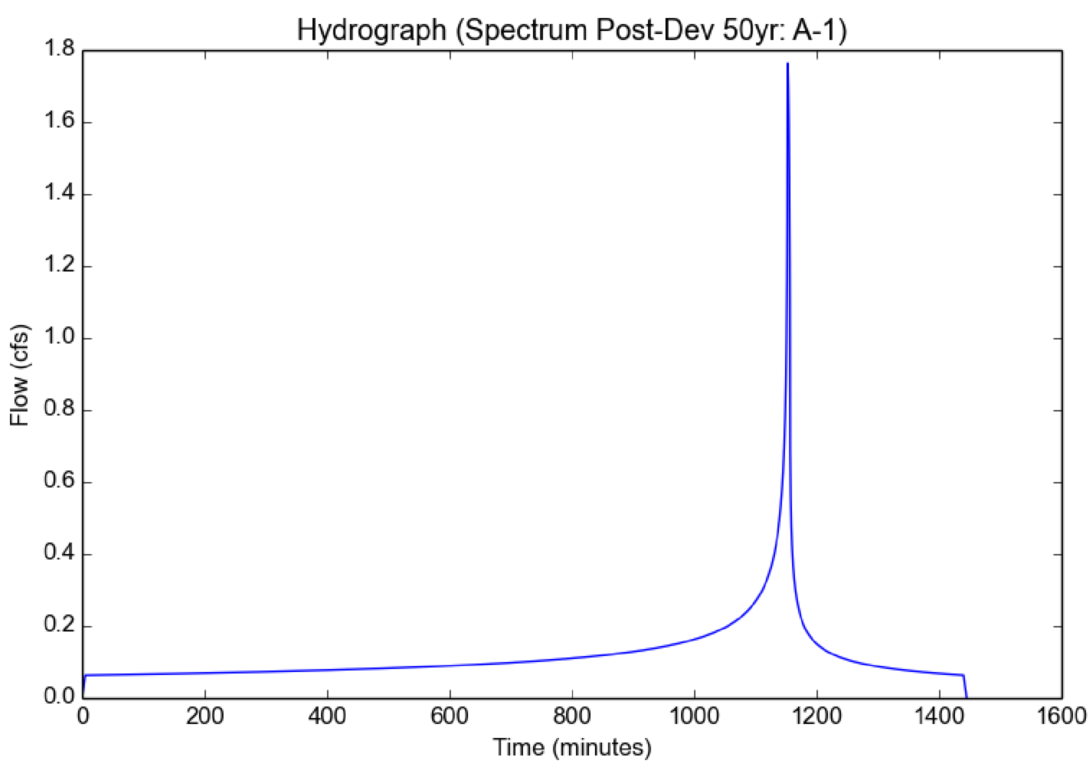
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 50yr
Subarea ID	A-1
Area (ac)	0.61
Flow Path Length (ft)	215.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.96
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8975
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.7639
Burned Peak Flow Rate (cfs)	1.7639
24-Hr Clear Runoff Volume (ac-ft)	0.2374
24-Hr Clear Runoff Volume (cu-ft)	10342.0449



Peak Flow Hydrologic Analysis

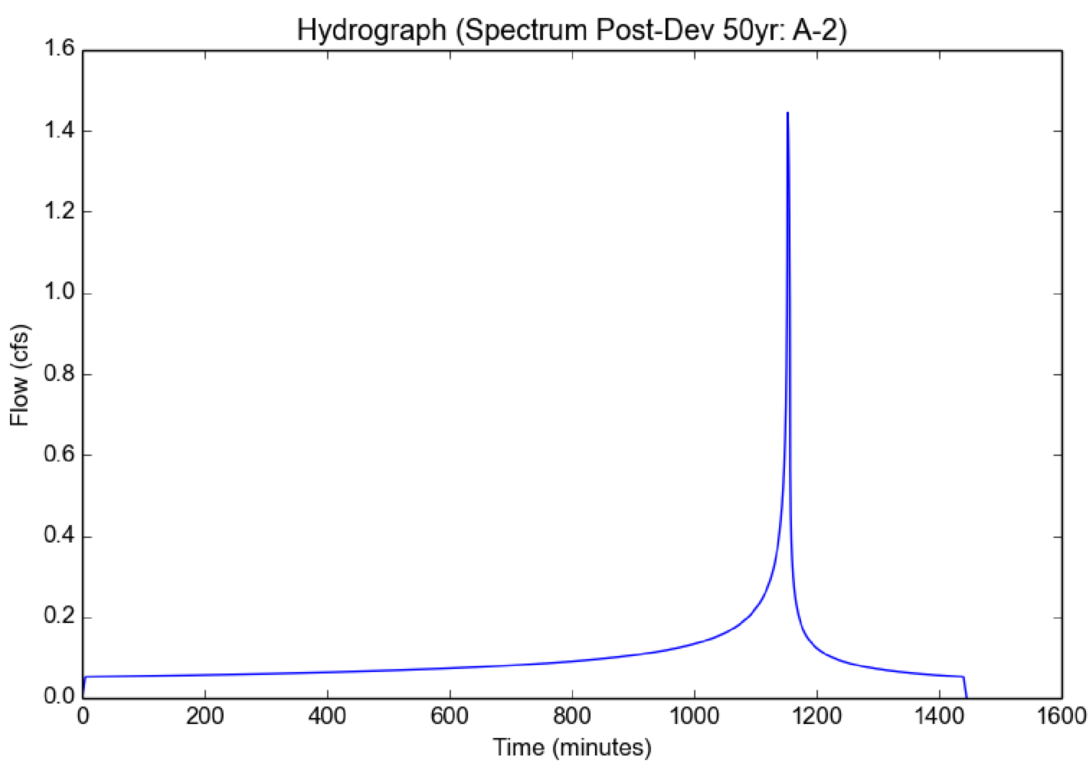
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 50yr
Subarea ID	A-2
Area (ac)	0.5
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.96
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8975
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.4458
Burned Peak Flow Rate (cfs)	1.4458
24-Hr Clear Runoff Volume (ac-ft)	0.1946
24-Hr Clear Runoff Volume (cu-ft)	8477.086



Peak Flow Hydrologic Analysis

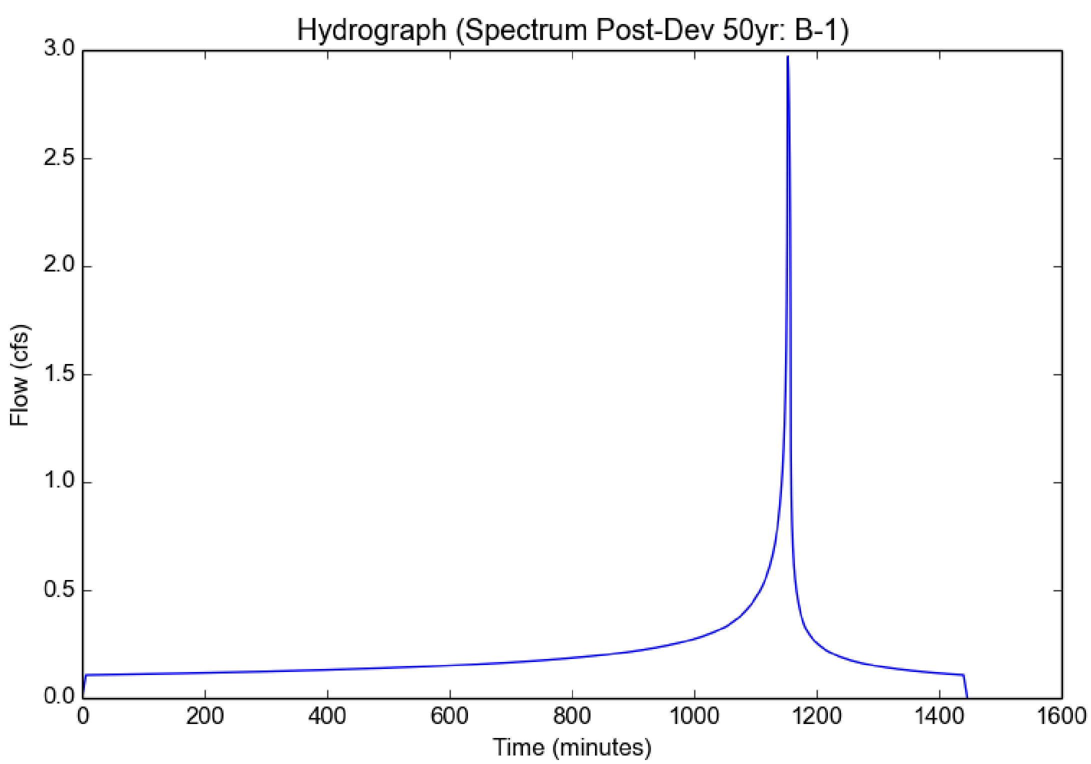
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 50yr
Subarea ID	B-1
Area (ac)	1.13
Flow Path Length (ft)	352.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	2.9572
Undeveloped Runoff Coefficient (Cu)	0.8193
Developed Runoff Coefficient (Cd)	0.8887
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.9697
Burned Peak Flow Rate (cfs)	2.9697
24-Hr Clear Runoff Volume (ac-ft)	0.4047
24-Hr Clear Runoff Volume (cu-ft)	17626.5924



Peak Flow Hydrologic Analysis

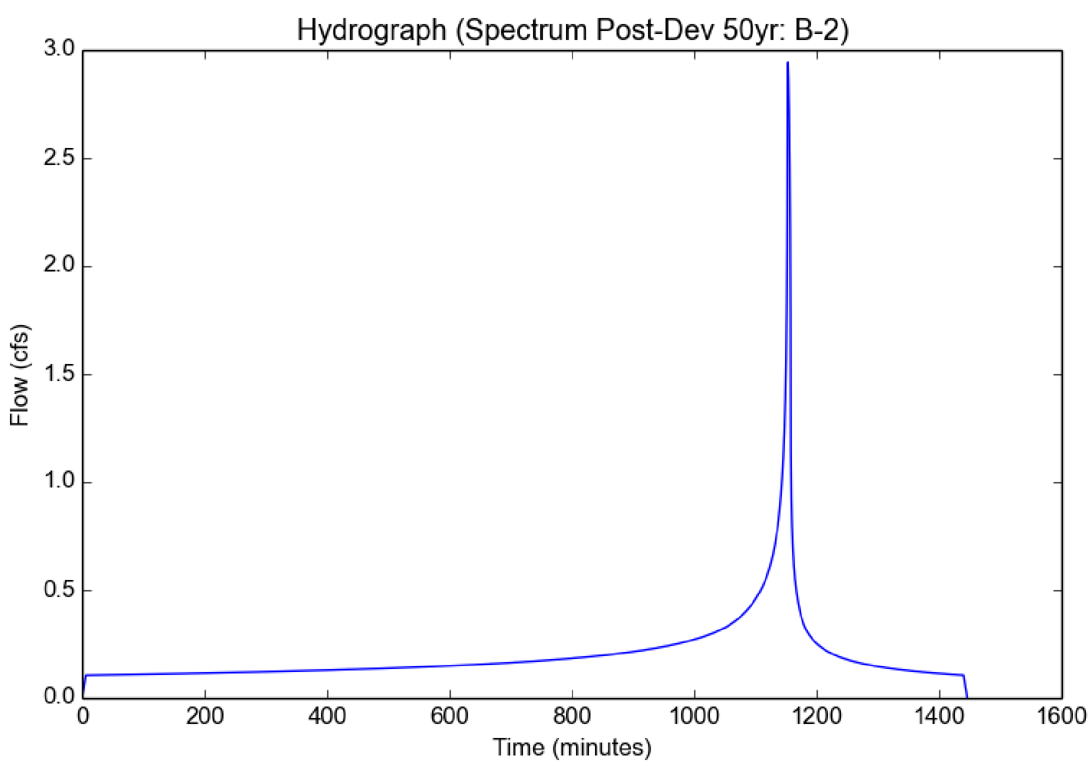
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 50yr
Subarea ID	B-2
Area (ac)	1.12
Flow Path Length (ft)	393.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	2.9572
Undeveloped Runoff Coefficient (Cu)	0.8193
Developed Runoff Coefficient (Cd)	0.8887
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.9434
Burned Peak Flow Rate (cfs)	2.9434
24-Hr Clear Runoff Volume (ac-ft)	0.4011
24-Hr Clear Runoff Volume (cu-ft)	17470.6049



Peak Flow Hydrologic Analysis

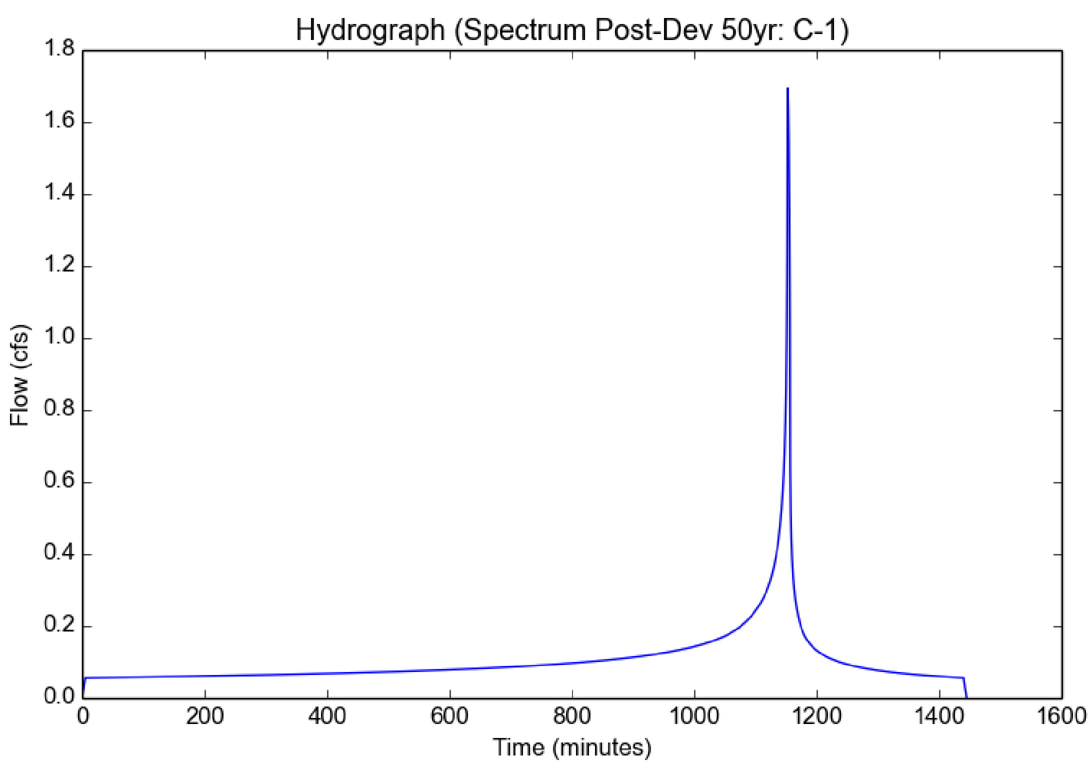
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 50yr
Subarea ID	C-1
Area (ac)	0.59
Flow Path Length (ft)	233.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8913
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.6942
Burned Peak Flow Rate (cfs)	1.6942
24-Hr Clear Runoff Volume (ac-ft)	0.2113
24-Hr Clear Runoff Volume (cu-ft)	9203.7572



Peak Flow Hydrologic Analysis

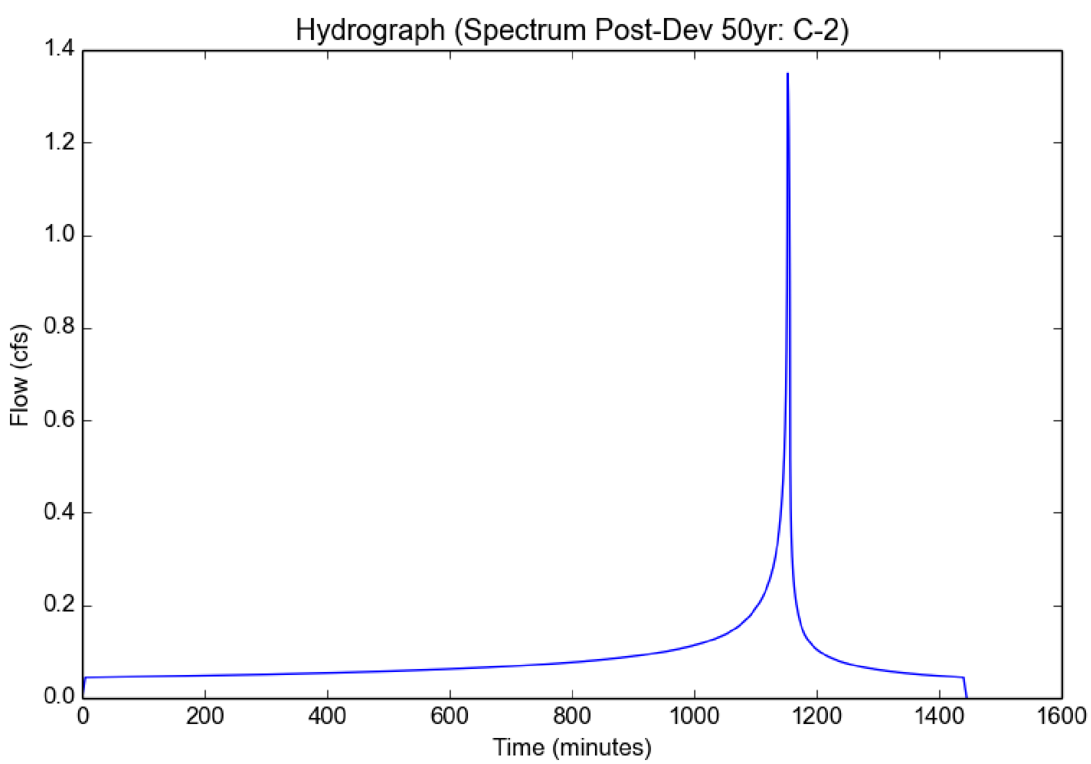
File location: F:/Projects/1415/001/_Support Files/Reports/Hydrology/EIR LEVEL/Spectrum Post-Dev 25yr Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev 50yr
Subarea ID	C-2
Area (ac)	0.47
Flow Path Length (ft)	240.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.4
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.4
Peak Intensity (in/hr)	3.2218
Undeveloped Runoff Coefficient (Cu)	0.8379
Developed Runoff Coefficient (Cd)	0.8913
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.3496
Burned Peak Flow Rate (cfs)	1.3496
24-Hr Clear Runoff Volume (ac-ft)	0.1683
24-Hr Clear Runoff Volume (cu-ft)	7331.8066



ATTACHMENT J

LA COUNTY GIS 85TH PERCENTILE MAP

Hydrology Map

A GIS viewer application to view the data for the hydrology manual.

LAYERS

- [x] 50yr Two Tenths (Rainfall)
- [ ] DPA Zones
- [x] Soils 2004
- [ ] TG Page
- [x] Final 85th Percentile, 24-hr Rainfall
- [ ] Final 95th Percentile, 24-hr Rainfall
- [ ] 1-year, 1-hour Rainfall Intensity

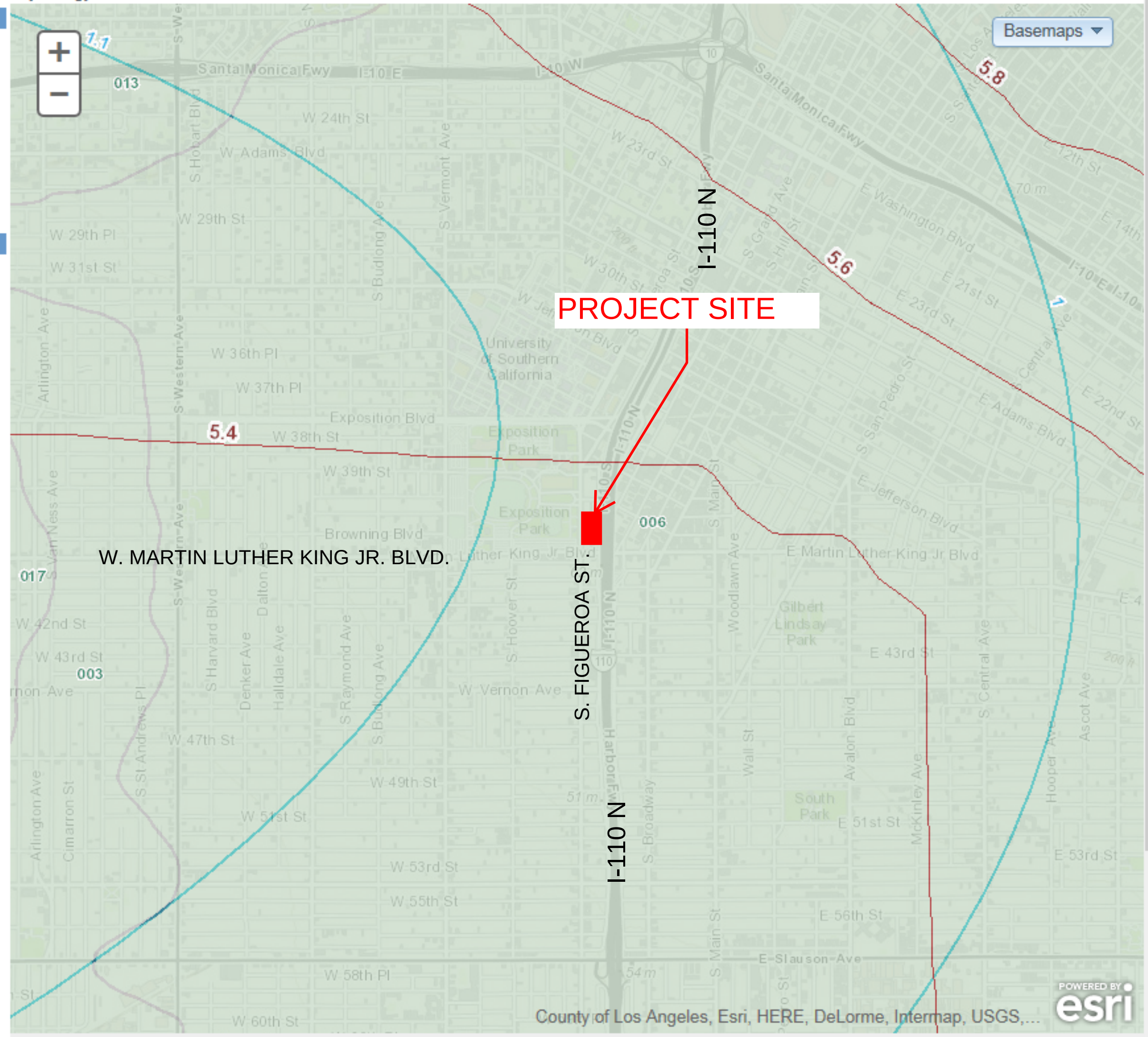
SEARCH

Zoom to TG Page:

Enter Address, Cross Street, or Parcel No.:

(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

Search



Map Tips

ATTACHMENT K

LID CALCULATIONS

Peak Flow Hydrologic Analysis

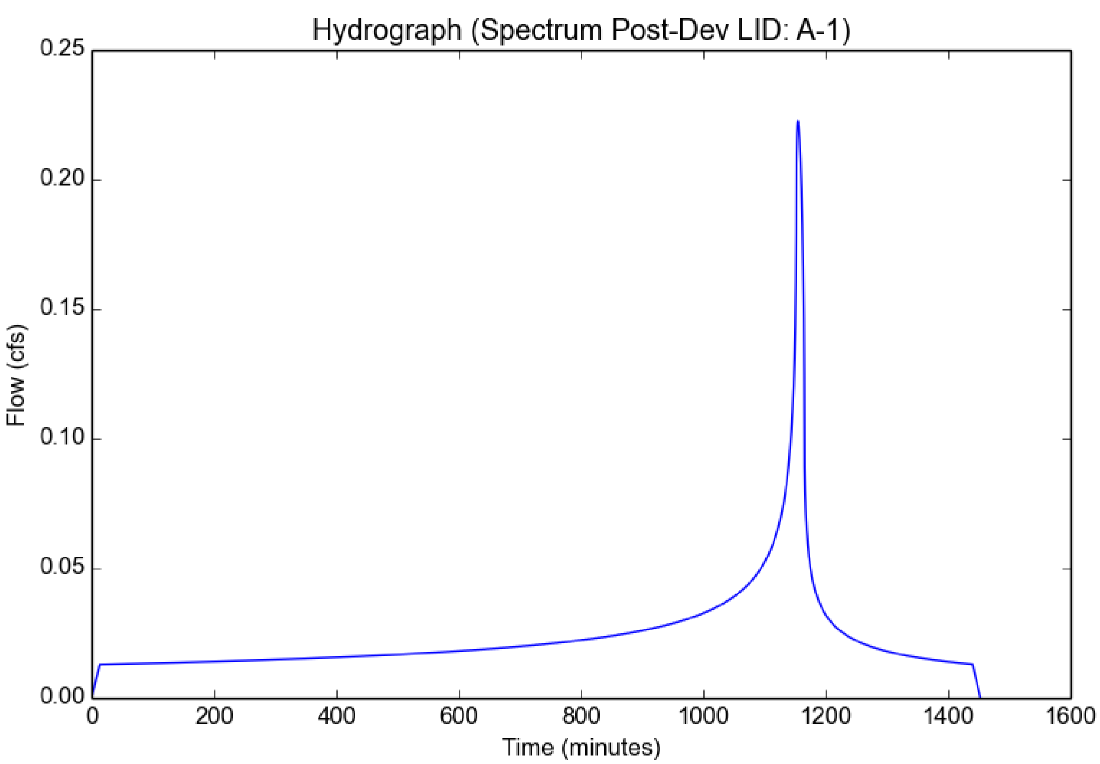
File location: F:/Projects/1415/001/_Support Files/Reports/LID/EIR LEVEL/Spectrum Post-Dev LID Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev LID
Subarea ID	A-1
Area (ac)	0.61
Flow Path Length (ft)	215.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.96
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4188
Undeveloped Runoff Coefficient (Cu)	0.1839
Developed Runoff Coefficient (Cd)	0.8714
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	0.2226
Burned Peak Flow Rate (cfs)	0.2226
24-Hr Clear Runoff Volume (ac-ft)	0.0481
24-Hr Clear Runoff Volume (cu-ft)	2097.054



Peak Flow Hydrologic Analysis

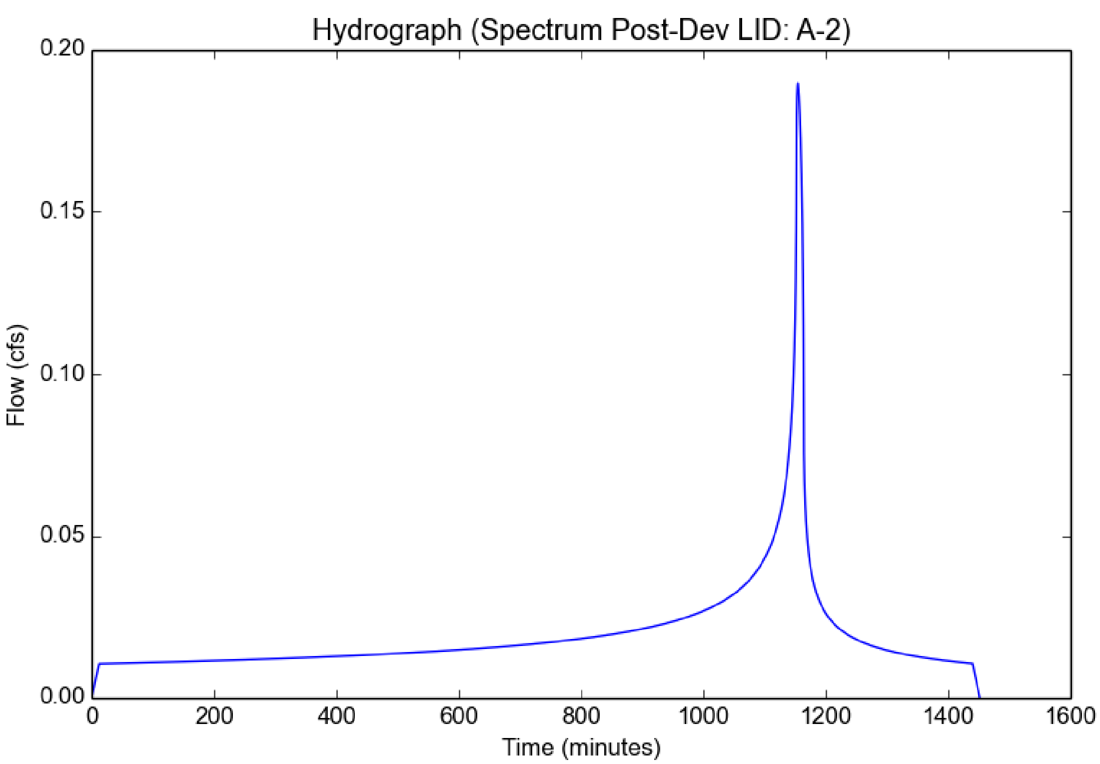
File location: F:/Projects/1415/001/_Support Files/Reports/LID/EIR LEVEL/Spectrum Post-Dev LID Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev LID
Subarea ID	A-2
Area (ac)	0.5
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.96
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4349
Undeveloped Runoff Coefficient (Cu)	0.2115
Developed Runoff Coefficient (Cd)	0.8725
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.1897
Burned Peak Flow Rate (cfs)	0.1897
24-Hr Clear Runoff Volume (ac-ft)	0.0395
24-Hr Clear Runoff Volume (cu-ft)	1718.998



Peak Flow Hydrologic Analysis

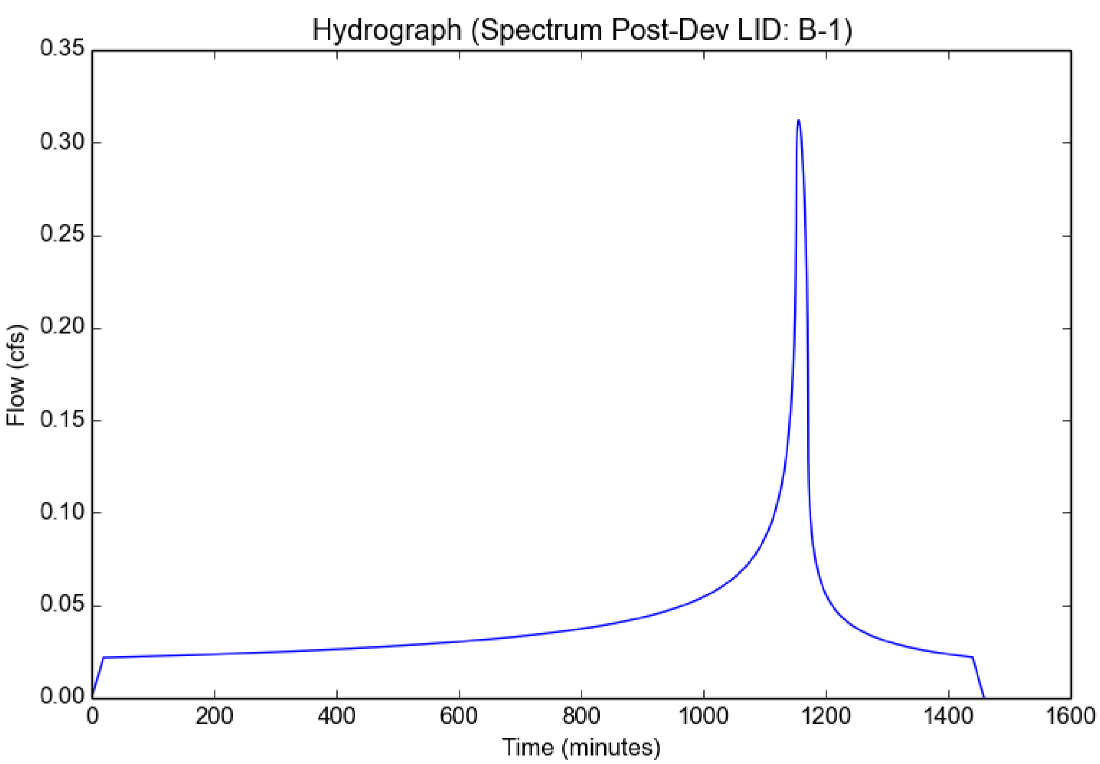
File location: F:/Projects/1415/001/_Support Files/Reports/LID/EIR LEVEL/Spectrum Post-Dev LID Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev LID
Subarea ID	B-1
Area (ac)	1.13
Flow Path Length (ft)	352.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.3504
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.788
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	0.312
Burned Peak Flow Rate (cfs)	0.312
24-Hr Clear Runoff Volume (ac-ft)	0.0809
24-Hr Clear Runoff Volume (cu-ft)	3526.1585



Peak Flow Hydrologic Analysis

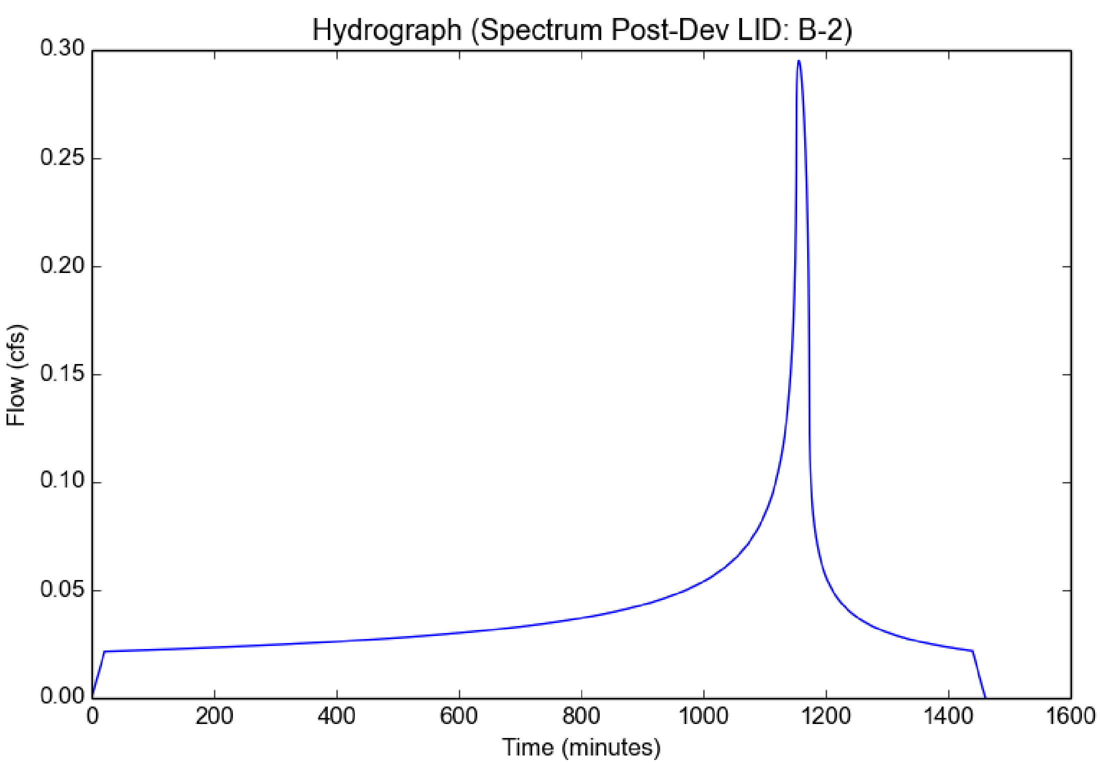
File location: F:/Projects/1415/001/_Support Files/Reports/LID/EIR LEVEL/Spectrum Post-Dev LID Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev LID
Subarea ID	B-2
Area (ac)	1.12
Flow Path Length (ft)	393.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.3343
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.788
Time of Concentration (min)	21.0
Clear Peak Flow Rate (cfs)	0.2951
Burned Peak Flow Rate (cfs)	0.2951
24-Hr Clear Runoff Volume (ac-ft)	0.0802
24-Hr Clear Runoff Volume (cu-ft)	3494.9571



Peak Flow Hydrologic Analysis

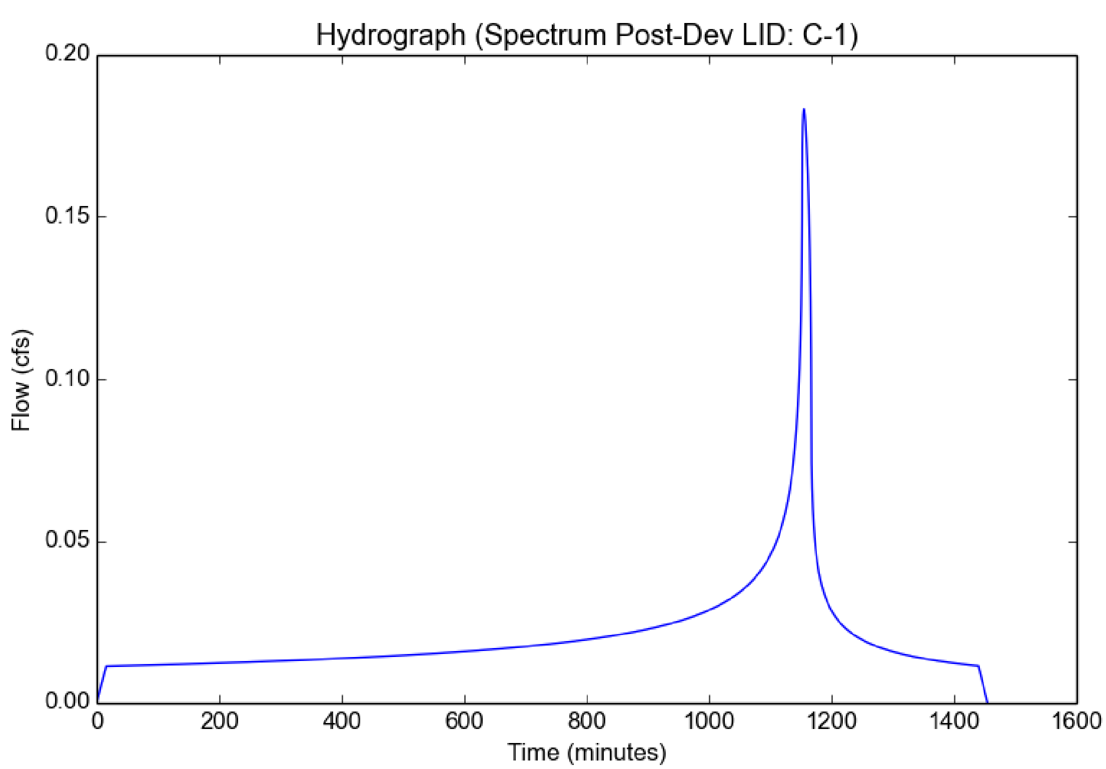
File location: F:/Projects/1415/001/_Support Files/Reports/LID/EIR LEVEL/Spectrum Post-Dev LID Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev LID
Subarea ID	C-1
Area (ac)	0.59
Flow Path Length (ft)	233.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.3916
Undeveloped Runoff Coefficient (Cu)	0.1371
Developed Runoff Coefficient (Cd)	0.7932
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.1833
Burned Peak Flow Rate (cfs)	0.1833
24-Hr Clear Runoff Volume (ac-ft)	0.0423
24-Hr Clear Runoff Volume (cu-ft)	1841.4525



Peak Flow Hydrologic Analysis

File location: F:/Projects/1415/001/_Support Files/Reports/LID/EIR LEVEL/Spectrum Post-Dev LID Report.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Spectrum Post-Dev LID
Subarea ID	C-2
Area (ac)	0.47
Flow Path Length (ft)	240.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.86
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.3916
Undeveloped Runoff Coefficient (Cu)	0.1371
Developed Runoff Coefficient (Cd)	0.7932
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.146
Burned Peak Flow Rate (cfs)	0.146
24-Hr Clear Runoff Volume (ac-ft)	0.0337
24-Hr Clear Runoff Volume (cu-ft)	1466.9198