Appendix IS-5

Hydrology Report

700 South Flower Street, Suite 2100 Los Angeles, CA 90017 213.418.0201 kpff.com

ROMAINE AND SYCAMORE
HYDROLOGY AND WATER QUALITY REPORT
948 N SYCAMORE AVE, LOS ANGELES
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PREPARED BY:

KPFF Consulting Engineers
700 S Flower Street, Suite 2100
Los Angeles, CA 90017
(213) 418-0201

Table of Contents

1. INTRODUCTION 1
2. ENVIRONMENTAL SETTING 1
   - 2.1. Surface Water Hydrology 1
   - 2.2. Surface Water Quality 3
   - 2.3. Groundwater Hydrology 4
   - 2.4. Groundwater Quality 5
3. PROPOSED PROJECT 7
   - 3.1. Construction 7
     - 3.1.1. Surface Water Hydrology 7
     - 3.1.2. Surface Water Quality 7
     - 3.1.3. Groundwater Hydrology 8
     - 3.1.4. Groundwater Quality 8
   - 3.2. Operation 9
     - 3.2.1. Surface Water Hydrology 9
     - 3.2.2. Surface Water Quality 13
     - 3.2.3. Groundwater Hydrology 14
     - 3.2.4. Groundwater Quality 15
   - 3.3. CONCLUSION 16

Appendix

Figure 1	Project Survey
Figure 2	Existing Site Drainage
Figure 3	Proposed Site Drainage
Figure 4A-B	Peak Flow Hydrologic Analysis (Existing Site)
Figure 5A-B	Peak Flow Hydrologic Analysis (Post- Site)
Figure 6	Peak Flow Hydrologic Analysis for Proposed LID Design Volume
Figure 7	LA County Hydrology Data Map
Figure 8	Los Angeles River Watershed Map
Figure 9	FEMA Flood Insurance Rate Map
Figure 10	California Department of Water Resources, Dam Breach Inundation Map
Exhibit 1	Typical Local Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs)

1. INTRODUCTION

The Project proposes a new commercial development on an 89,396-square-foot (2.05 acre) Project Site located at 948 Sycamore Avenue in the Hollywood Community Plan Area of the City of Los Angeles (the Project). The Project would include 200,990 square feet of new commercial development comprised of 194,597 square feet of office uses and 6,393 square feet of retail uses. These uses would be located in a new 14-story, 196-foot tall (216 feet to the top of the elevator penthouse) building comprised of one lobby/retail level, five levels of aboveground parking, and eight levels of office uses above four levels of subterranean parking. Upon completion, 267,894 square feet of floor area would be located within the Project Site, including the existing floor area to remain, resulting in a maximum floor area ratio (FAR) of 3:1. The Project would also provide approximately 809 vehicular parking spaces and 64 bicycle parking spaces within four subterranean parking levels and five aboveground levels

2. ENVIRONMENTAL SETTING

2.1. SURFACE WATER HYDROLOGY

2.1.1. REGIONAL

The Project Site is located within the Ballona Creek Watershed (Watershed) in the Los Angeles Basin. The Watershed encompasses an area of approximately 130 square miles extending from the Santa Monica Mountains and the Ventura-Los Angeles County line on the north, to the Harbor Freeway (110) on the east, Santa Monica to the west, and to the Baldwin Hills on the south. Ballona Creek is a 9-mile-long flood protection channel that drains the Watershed to the Pacific Ocean. The major tributary areas to Ballona Creek include Centinela Creek, Sepulveda Canyon Channel, Benedict Canyon Channel, and numerous storm drains. Refer to Figure 9 for the Ballona Creek Watershed Map.

2.1.2. LOCAL

Offsite underground storm drain facilities in the Project vicinity (see Figure 2) consist of the following:

- **Romaine Street:** There is a City owned and maintained 27-inch reinforced concrete pipe (RCP) mainline coming from the west on Romaine Street that turns north on North Sycamore Street. There are 3 catch basin curb inlets on the north side of Romaine Street and North Sycamore Street.

- **North Sycamore Avenue:** As mentioned above, there is a 27-inch RCP mainline coming from the west on Romaine Street that turns north on North Sycamore Street. There are 3 catch basin curb inlets on the north side of Romaine Street and North Sycamore Street. Furthermore, there are a couple of curb drains located along

eastern side of North Sycamore Avenue that discharges the roof drainage from the existing building.

- **North Orange Drive:** There are no underground storm drain infrastructure on North Orange Drive, however there are a couple of curb drains that discharges the roof drain from the existing building on the western side of North Orange Drive.

The stormwater runoff from the Project Site is discharged either via curb drains from the existing building or via sheet flow from the existing parking lot. The water from the site sheet flows towards the southwest where it enters catch basins located at northeast corner of Willoughby Avenue and La Brea Avenue. The offsite storm drainage catch basins and underground storm drainage pipes which convey stormwater through various underground pipe networks into the Ballona Creek. Ballona Creek flows generally west and south, ultimately discharging into the Pacific Ocean at Santa Monica Bay.

2.1.3. PROJECT SITE

Under existing conditions, the Project Site is divided into two drainage areas, which are described below and shown in Figure 2.[1] These drainage areas are determined by the drainage patterns and flow paths of stormwater that are tributary to a common point or area.

- The drainage from Area A, the north portion of the Project Site consisting of the existing building to remain in place, is directed via building roof drains that discharges through 4 curb drains and sheet flows into an existing curb inlet catch basin located at the northeastern side of Willoughby Avenue and La Brea Avenue.

- The drainage from Area B, the south portion of the Project Site that consists of an existing parking lot generally sheet flows southwest until it enters the catch basin located at the northeastern side of Willoughby Avenue and La Brea Avenue

The Project Site consists of minimal pervious areas including a few small, landscaped areas in the parking lot. The existing Project Site is approximately 99.5% impervious. A summary of existing impervious conditions is found in Table 1a below.

Figure 4 shows all the input parameters used for analyzing the existing Project Site. Table 1a shows the existing volumetric flow rates and volumes generated by a 50-year storm event within the proposed Project boundary.

[1] The drainage areas tributary to each discharge point or area were determined from a topographical survey and site observations.

Table 1a- Existing Drainage Stormwater Runoff Calculations for Project Area				
Drainage Area	Area (Acres)	Percent Imperviousness (%)	Q50 (cfs) (volumetric flow rate measured in cubic feet per second)	V50 (cf) (volume of flow measured in cubic feet)
A	1.10	100	3.48	21,028
B	0.95	98.9	3.01	18,001
Total	**2.05**	**99.5%**	**6.49**	**39,029**

2.2. SURFACE WATER QUALITY

2.2.1. REGIONAL

As stated above, the Project Site lies within the Ballona Creek Watershed. Constituents of concern listed for Ballona Creek under California's Clean Water Act Section 303(d) List include Copper, Cyanide, Indicator Bacteria, Lead, Toxicity, Trash, Viruses (Enteric), and Zinc.[2]

2.2.2. LOCAL

In general, urban stormwater runoff occurs following precipitation events, with the volume of runoff flowing into the drainage system depending on the intensity and duration of the rain event. Contaminants that may be found in stormwater from developed areas include sediments, trash, bacteria, metals, nutrients, organics and pesticides. The source of contaminants includes surface areas where precipitation falls, as well as the air through which it falls. Contaminants on surfaces such as roads, maintenance areas, parking lots, and buildings, which are usually contained in dry weather conditions, may be carried by rainfall runoff into drainage systems. The City of Los Angeles typically installs catch basins with screens to capture debris before entering the storm drain system. In addition, the City conducts routine street cleaning operations, as well as periodic cleaning and maintenance of catch basins, to reduce stormwater pollution within the City.

2.2.3. PROJECT SITE

Based on the design survey by KPFF shown in Figure 1 (dated March 30, 2022), site observations, and the fact that the existing site was developed prior to the enforcement of storm water quality Best Management Practices (BMPs) design, implementation and

[2] 2020 CALIFORNIA 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS, https://www.waterboards.ca.gov/water_issues/programs/tmdl/2020_2022state_ir_reports_revised_final/apx-c-catreports/category5_report.shtml; accessed July 7, 2022.

maintenance, it appears the Project Site currently does not implement BMPs and has no means of treatment for stormwater runoff.

2.3. GROUNDWATER HYDROLOGY

2.3.1. REGIONAL

Groundwater use for domestic water supply is a major beneficial use of groundwater basins in Los Angeles County. The City of Los Angeles overlies the Los Angeles Coastal Plain Groundwater Basin (Basin). The Basin comprises the Hollywood, Santa Monica, Central, and West Coast Subbasins. Groundwater flow in the Basin is generally south-southwesterly and may be restricted by natural geological features. Replenishment of groundwater basins occurs mainly by percolation of precipitation throughout the region via permeable surfaces, spreading grounds, and groundwater migration from adjacent basins, as well as injection wells designed to pump freshwater along specific seawater barriers to prevent the intrusion of salt water.

2.3.2. LOCAL

Within the Basin, the Project Site specifically overlies the Hollywood Subbasin (Subbasin), which underlies the northern portion of the Basin. The Subbasin is bounded on the north by the Santa Monica Mountains and the Hollywood fault, on the east by the Elysian Hills, on the west by the Inglewood fault zone, and on the south by the La Brea High, formed by an anticline that brings impermeable rocks close to the surface.[3]

Groundwater in the Subbasin is replenished by percolation of precipitation and stream flow from the Santa Monica Mountains to the north. Urbanization in this area has decreased the amount of pervious surface area allowing direct percolation. Therefore, natural recharge is somewhat limited. The natural safe yield of the Subbasin is estimated to be approximately 3,000 acre-feet per year (AFY).

The primary producer from the Subbasin is the City of Beverly Hills, which currently owns and operates 4 groundwater production wells in the Subbasin. These wells have a combined capacity of 2,083 gallons per minute (gpm) and are treated by a reverse osmosis desalter.[4] Groundwater flow within the Subbasin generally flows east to west. The Project Site is located in the central portion of the Subbasin.

2.3.3. PROJECT SITE

The total area of the Project Site is approximately 2.05 acres. As noted above, the Project Site is currently occupied by an existing multi-story building and surface parking. Due to

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[3] Coastal Plain of Los Angeles Groundwater Basin, Hollywood Subbasin, https://data.cnra.ca.gov/dataset/34cdc58b-3892-400b-9234-30b1ee0e7d8b/resource/0dd1909a-15ac-4785-8f8f-b44da9bc3ee3/download/4-011.02_coastal-plain-of-los-angeles_hollywood_basinboundarydescription.pdf, accessed July 7, 2022.

[4] City of Beverly Hills Urban Water Management Plan; accessed July 7, 2022.

the minimal pervious condition of the Project Site (0.5%), there is a small recharge potential under the existing conditions.

As described in the *Geotechnical Investigation Report* prepared for the Project Site by GeoPentech (May 3, 2022)., the measured groundwater level is approximately 16-18 feet bgs. Based on measured groundwater levels in the Project Site vicinity and the depth of proposed construction to an estimated 73 feet bgs, groundwater is expected to be encountered. As stated above, construction activities for the Project would include demolition of an existing hardscape areas, excavating down to an estimated depth of 73 feet bgs to build up the underground structure, building up the structures, and constructing hardscape and landscape around the structures. Since measured groundwater was discovered at a depth of 16-18 feet bgs temporary dewatering operations are expected. When groundwater is encountered during the construction, temporary pumps and filtration would be utilized in compliance all applicable regulations and requirements, including with all relevant NPDES requirements related to construction and discharges from dewatering operations. The temporary dewatering will be active during excavation and during the construction of the basement slabs and basement walls. The walls and slab will be designed to withstand hydrostatic and buoyant forces and the groundwater is expected to return to measured levels. No operational dewatering is expected or anticipated. Therefore, the Project would not substantially deplete groundwater supplies in a manner that would result in a net deficit in aquifer volume or lowering of the local groundwater table.

2.4. GROUNDWATER QUALITY

2.4.1. REGIONAL

As stated above, the City of Los Angeles overlies the Los Angeles Coastal Plain Groundwater Basin, which falls under the jurisdiction of the Los Angeles Regional Water Quality Control Board (LARWQCB). According to LARWQCB's Basin Plan, water quality objectives applying to all ground waters of the region include Trash, Nutrients (Algae), Ammonia, Indicator Bacteria, Oil, Copper, Lead, Scum/Foam, Taste and Odor.[5]

2.4.2. LOCAL

As stated above, the Project Site specifically overlies the Hollywood Subbasin. Based upon LARWQCB's Basin Plan, constituents of concern listed for the Hollywood Subbasin include boron, chloride, sulfate, Total Dissolved Solids (TDS), and nitrate.[6] There are

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[5] Final California 2018 Integrated Report (303(d) List/305(b) Report) Regional Board 4 - Los Angeles Region, https://www.waterboards.ca.gov/water_issues/programs/tmdl/2018state_ir_reports_final/apx_c_state_factsheets/01095.shtml, accessed July 7, 2022.

[6] Ibid.

currently three active wells within one mile of the Project Site[7]. Wells 2642P, 2642M and 2671A.

2.4.3. PROJECT SITE

The Project Site show a very small potential for groundwater recharge. The parking lot is primarily impervious but has planters that could contribute to groundwater recharge. Due to the small perviousness of the Project Site (0.5%), there is a small potential for surface water-borne contaminants to percolate into groundwater and affect groundwater quality. Nonetheless, groundwater quality may be impacted by past and existing activities at the Project Site.

The below discussion is based upon a review of relevant previous investigations and on-site explorations conducted as part of the Phase I Environmental Site Assessment (ESA) dated September 25, 2021 for the Project Site by BA Environmental. As a part of the investigation BA Environmental found no records of former or existing USTs in federal, state, and local environmental databases and at the LACFD. However, the subject property formerly had a boiler. A 1930 building permit was for the installation of a UST. The permit stated "Underground oil storage tank to be placed near to and at lower level than building footing." The size of this UST is unknown. The building permit did not indicate that location of the UST; however, it was likely located near the boiler room. During the BA Environmental reconnaissance, a square access cover was observed in the sidewalk outside of the southeastern corner of the subject building. This access cover was approximately 18 to 20 inches from the curb. Former building and fire codes required that fill ports for USTs had to be within 18 inches of the curb. Upon removing the cover, the box was observed to contain an approximate 4 to 6 inch pipe which contained a plug. This could have been the fill port for the oil storage tank. It is BA Environmental's opinion that the former UST constitutes a recognized environmental condition (REC) and may still be present.

In the event that contaminated soils are encountered during construction, including those associated with USTs or the abandoned railroad tracks, evaluation of the nature and extent of the contamination would be required. Appropriate handling, disposal, and/or treatment is required to be performed in accordance with applicable regulatory requirements, including South Coast Air Quality Management District (SCAQMD) Rule 1166 and under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit issued for the project.

[7] Los Angeles County Department of Public Works, Groundwater Wells Data, http://dpw.lacounty.gov/general/wells/ accessed July 8, 2022.

3. PROPOSED PROJECT

3.1. CONSTRUCTION

3.1.1. SURFACE WATER HYDROLOGY

The Project would maintain the existing building on the north side and demolish the parking lot on the south side. The site slopes an average of 1.2% towards the southwest.

It is anticipated that up to approximately 150,000 CY of soil would be graded and exported to construct the Project. These activities have the potential to temporarily alter existing drainage patterns and flows on the Project Site by exposing the underlying soils, modifying flow direction, and making the Project Site temporarily more permeable. Also, exposed and stockpiled soils could be subject to erosion and conveyance into nearby storm drains during storm events. In addition, on-site watering activities to reduce airborne dust could contribute to pollutant loading in runoff.

As the construction site would be greater than one acre, the Project would be required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit. In accordance with the requirements of this permit, the Project would implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies BMPs and erosion control measures to be used during construction to manage runoff flows and prevent pollution. BMPs would be designed to reduce runoff and pollutant levels in runoff during construction. The NPDES and SWPPP measures are designed to (and would) contain and treat, as necessary, stormwater or construction watering for dust reduction on the Project Site so runoff does not impact off-site drainage facilities or receiving waters. Construction activities would be temporary, and flow directions and runoff volumes during construction would be controlled.

In addition, the Project would be required to comply with all applicable City grading permit regulations that require necessary measures, plans, and inspections to reduce sedimentation and erosion. Thus, through compliance with all NPDES Construction General Permit requirements, including preparation of a SWPPP, implementation of BMPs, and compliance with applicable City grading regulations, the Project would not substantially alter the Project Site drainage patterns in a manner that would result in substantial erosion, siltation, or flooding on- or off-site. Similarly, adherence to standard compliance measurements in construction activities would avoid flooding, substantially increasing or decreasing the amount of surface water flow from the Project Site into a water body, or a permanent, adverse change to the movement of surface water.

3.1.2. SURFACE WATER QUALITY

Construction activities such as earth moving, maintenance/operation of construction equipment, and handling/storage/disposal of materials could contribute to pollutant loading

in stormwater runoff. However, as previously discussed, the Project would be required to obtain coverage under the NPDES Construction General Permit (order No. 2009-0009-SWQ, as well as its subsequent amendments 2010-0014-DWQ and 2012-0006-DWQ). In accordance with the requirements of the permit, the Project Applicant would prepare and implement a site-specific SWPPP adhering to the California Stormwater Quality Association (CASQA) BMP Handbook. The SWPPP would specify BMPs to be used during construction. BMPs would include, but would not necessarily be limited to: erosion control, sediment control, non-stormwater management, and materials management BMPs. Refer to Exhibit 1 for typical SWPPP BMPs implemented during the construction of development projects.

With the implementation of site-specific BMPs included as part of the required SWPPP and Erosion Control Plan, the Project would reduce or eliminate the discharge of potential pollutants from the stormwater runoff. In addition, the Project Applicant would be required to comply with City grading permit regulations, which require implementation of necessary measures, plans (including a wet weather erosion control plan if construction occurs during the rainy season), and inspection to reduce sedimentation and erosion. Therefore, with compliance with NPDES requirements and City grading regulations, construction of the Project would not result in discharge that would cause: (1) pollution which would alter the quality of the water of the State (i.e. Ballona Creek) to a degree which unreasonably affects beneficial uses of the waters; (2) contamination of the quality of the water 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. Furthermore, construction of the Project would not result in discharges that would cause regulatory standards to be violated in Los Angeles River.

3.1.3. GROUNDWATER HYDROLOGY

As stated above, construction activities for the Project would include demolition of existing hardscape areas, excavating down to a maximum depth of 73 feet bgs to build up the underground structure, building up the structures, and constructing hardscape and landscape around the structures. Since measured groundwater was discovered at a depth of 16-18 feet bgs temporary dewatering operations are expected. When groundwater is encountered during the construction, temporary pumps and filtration would be utilized in compliance all applicable regulations and requirements, including with all relevant NPDES requirements related to construction and discharges from dewatering operations. The temporary dewatering will be active during excavation and during the construction of the basement slabs and basement walls. The walls and slab will be designed to withstand hydrostatic and buoyant forces and the groundwater is expected to return to measured levels. No operational dewatering is expected or anticipated. Therefore, the Project would not substantially deplete groundwater supplies in a manner that would result in a net deficit in aquifer volume or lowering of the local groundwater table.

3.1.4. GROUNDWATER QUALITY

As discussed under section 2.4.3 the phase 1 Environmental Site Assessment revealed evidence of a potential RECs in connection with the Site. It is BA Environmental's opinion that the former UST constitutes a REC and may still be present. If the UST is present, it should be abandoned in accordance with all local, state and federal regulations.

During on-site grading and building construction, hazardous materials, such as fuels, paints, solvents, and concrete additives, could be used and would require proper management and, in some cases, disposal. The management of any resultant hazardous wastes could increase the opportunity for hazardous materials releases into groundwater. Compliance with all applicable federal, state, and local requirements concerning the handling, storage and disposal of hazardous waste, would reduce the potential for the construction of the Project to release contaminants into groundwater that could affect existing contaminants, expand the area or increase the level of groundwater contamination, or cause a violation of regulatory water quality standards at an existing production well.

3.2. OPERATION

3.2.1. SURFACE WATER HYDROLOGY

The Project will meet the requirements of the City's Low Impact Development (LID) standards.[9] Under section 3.1.3. of the LID Manual, post-construction stormwater runoff from a new development must be infiltrated, evapotranspirated, captured and used, and/or treated through high efficiency BMPs onsite for at least the volume of water produced by the greater of the 85th percentile storm or the 0.75-inch storm event. The LID Manual prioritized the selection of BMPs used to comply with stormwater mitigation requirement. The order of priority is:

1. Infiltration Systems
2. Stormwater Capture and Use
3. High Efficient Biofiltration/Bioretention Systems
4. Combination of Any of the Above

Feasibility screening delineated in the LID manual is applied to determine which BMP will best suit the Project. Based on the screening criteria, infiltration is not considered feasible as the primary LID system at the Project Site. Based on the geotechnical investigation on the site by GeoPentech and the shallow measured groundwater 16-18 feet bgs. Specifically, LID guidelines require that infiltration systems maintain at least ten feet of clearance to the groundwater, property line, and any building structure. Thus, due

[9] The Development Best Management Practices Handbook, Part B Planning Activities, 5th edition was adopted by the City of Los Angeles, Board of Public Works on May 9, 2016 to reflect Low Impact Development (LID) requirements.

to the Project's planned basement and excavation depth of 73 feet below the ground surface, infiltration is not considered feasible. Therefore, the Project will land in priority tier 2 – capture and use. The Project would implement capture and use systems to collect and store the first flush of stormwater runoff to satisfy LID requirements and use it for irrigation. Based on the proposed landscape area and irrigation demands, a capture and reuse system is feasible for the Site. Any capture and use system will be designed to comply with the latest City LID standards.

The post-project condition is approximately 80.25% impervious. The analysis includes the existing building to remain and the proposed office building with landscaped areas on the building roofs and podium.

Under the proposed conditions illustrated in Figure 3, the Project Site would consist of two drainage areas (A and B) that would drain via building roof drains, area drains, surface flow, and subterranean drainage to the proposed BMPs.

- **Drainage Area A** represents the existing building to remain.
- **Drainage Area B** represents the south portion of the site that will be redeveloped with the new office building.

Stormwater runoff from all drainage areas will be conveyed to the Project BMPs. Figure 5A-B shows all the input parameters used for analyzing the proposed Project Site.

Table 2a shows the proposed volumetric flow rates and volumes generated by a 50-year storm event for the Project.

Table 2a - Proposed Onsite Drainage Stormwater Runoff Calculations for Project Area

Drainage Area	Area (Acres)	Percent Imperviousness (%)	Q50 (cfs) (volumetric flow rate measured in cubic feet per second)	V50 (cf) (volume of flow measured in cubic feet)
A	1.03	100	3.26	19,689
B	1.02	60.3	3.23	13,334
Total	**2.05**	**80.25**	**6.49**	**33,023**

Compliance with the LID requirements for the Project Site would ensure stormwater treatment with post-construction BMPs that are required to control pollutants associated with storm events up to the 85th percentile storm event, per the City's Stormwater Program. In order to meet the LID requirements, it is estimated that 2,203 cubic feet of stormwater for the Project Site will need to be captured and treated on-site (see Figure 6). To capture and treat this LID design volume and comply with the LID ordinance the Applicant would likely install capture and use systems which may be supplemented by bio-filtration systems. The capture and use system would temporarily store the captured stormwater until the stored volume is entirely used through irrigation on the Project Site.

Table 3a summarizes the existing and post-Project 50-year design storm event peak flow rates from the Project Site.

Table 3a – Pre- and Post-Project 50-year frequency peak flow rates for Project Area

Drainage Area	**Project Site Area (Acres)**	**Pre-Project Q50 (cfs)** (volumetric flow rate measured in cubic feet per second)	**Post-Project Q50 (cfs)** (volumetric flow rate measured in cubic feet per second)	**Increase from Existing to Proposed Condition (%)**
Entire Site	2.05	6.49	6.49	0%

The Project would maintain the same 50-year peak flow rate from the entire Project Site. In addition, the Project would improve current conditions by capturing and treating the 85th percentile storm, and thus reducing the peak flow of the stormwater discharged to the public infrastructure.

In addition, as described above, as part of the SUSMP and LID strategy for the Project to manage post-construction stormwater runoff, the Project would include the installation of building roof drain downspouts, catch basins, and planter drains throughout the Project Site to collect roof and site runoff and direct stormwater to the approved installed BMP's. This on-site stormwater conveyance system would serve to prevent on-site flooding and nuisance water on the Project Site.

Table 4a summarizes the existing and post-Project 50-year design storm event 24-hour volumetric flows from the Project Site.

Table 4a– Pre- and Post-Project 50-year 24-hour volume flow for Project Area					
Drainage Area	**Project Site Area (Acres)**	**Pre-Project V50 (cf)** (volumetric flow measured in cubic feet)	**Post-Project V50 (cf)** (volumetric flow measured in cubic feet)	**Estimated Low Impact Development Treatment Volume** (volumetric flow measured in cubic feet)	**Decrease from Existing to Proposed Condition (%)**
Entire Site	2.05	39,029	33,023	2,203	21.0%

The Project would decrease the 50-year flow volume from the entire Project Site, and the Project would improve current conditions by capturing and treating the 85th percentile storm, thus decreasing the volume of the stormwater discharged to the public infrastructure.

Consequently, the base Project would not cause flooding during the 50-year developed storm event, would not create runoff which would exceed the capacity of existing or planned drainage systems, would not 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.

Earthquake-induced flooding can result from the failure of dams or other water-retaining structures resulting from earthquakes. According to California Department of Water Resources, Dam Breach Inundation Map (Refer to Figure 10), the Project Site is located in a potential dam inundation area. Dam safety regulations are the primary means of reducing damage or injury due to inundation occurring from dam failure. The California Division of Safety of Dams regulates the siting, design, construction, and periodic review of all dams in the State. In addition, the Los Angeles Department of Water and Power (LADWP) operates the dams in the Project Site area and mitigates the potential for overflow and seiche hazard through control of water levels and dam wall height. These measures include seismic retrofits and other related dam improvements completed under the requirements of the 1972 State Dam Safety Act. The City's Local Hazard Mitigation Plan,[10] dated January 2018, provides a list of existing programs, proposed activities and specific projects that may assist the City of Los Angeles in reducing risk and preventing loss of life and property damage from natural and human-caused hazards, including dam failure. The Hazard Mitigation Plan evaluation of dam failure vulnerability classifies dam failure as a moderate risk rating. Therefore, considering the above information and risk reduction projects, the risk of flooding from inundation by a seiche or dam failure is considered low.

[10] City of Los Angeles Emergency Management Department, Local Hazard Mitigation Plan, January 1, 2018.

Additionally, the Project Site is not located within a Special Flood Hazard Area (100-year floodplain) or Moderate Flood Hazard Area (500-year floodplain) identified by the Federal Emergency Management Agency (FEMA) and published in the Flood Insurance Rate Maps (FIRM).[11] The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 500-year floodplain are labeled Zone C or Zone X (unshaded). As shown on Figure 9, the Project Site is located within Zone X (unshaded) and is therefore located outside of the 100- and 500-year floodplain.[12]

3.2.2. SURFACE WATER QUALITY

As previously described, the Project would be required to implement SUSMP and LID requirements throughout the operational life of the Project. As part of these requirements, the Project would prepare a SUSMP which would outline the stormwater treatment measures or post-construction BMPs required to control pollutants of concern. In addition, consistent with LID requirements to reduce the quantity and improve the quality of rainfall runoff that leaves the Project Site, the Project would include the installation of a capture and use system as established by the LID Manual.

The LID Manual prioritizes BMPs with infiltration systems as the top tier priority BMP. Feasibility of the proposed infiltration BMP will be determined according to the criteria established in the LID manual, along with coordination with the City. Based on the explorations of the Project Site, infiltration is considered to be infeasible and based on the footprint of the proposed buildings and the depth of basement levels a capture and use system would be the main LID BMP system for the Project Site. As is typical of most urban developments, stormwater runoff from the Project Site has the potential to introduce pollutants into the stormwater system. Anticipated and potential pollutants generated by the Project are sediment, nutrients, pesticides, metals, pathogens, and oil and grease.

The pollutants listed above are expected to, and would in fact, be mitigated through the implementation of approved LID BMPs. In addition, the implementation of the following LID BMPs would be included as part of the SUSMP for the Project to manage post-construction stormwater runoff.

- Promote evapotranspiration and infiltration, and the use of native and/or drought tolerant plants;

- Provide storm drain system stenciling and signage to discourage illegal dumping;

[11] FIRMs depict the 100-year floodplain as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. FIRMs depict the 500-year floodplain as Zone B or Zone X (shaded).

[12] Based on FIRM Number 06037C1605F, effective on 09/26/2008.

- Design material storage areas and loading docks within structures or enclosures to prevent leaks or spills of pollutants from entering the storm drain system;

- Provide evidence of ongoing BMP maintenance as part of a legal agreement with the City of Los Angeles. Recorded covenant and agreements for BMP maintenance are part of standard building permit approval processing; and

- Design post-construction structural or treatment control BMPs to infiltrate stormwater runoff. Stormwater treatment facilities and systems would be designed to meet the requirements of the SUSMP and LID Manual.

As described above, the Project Site currently does not have structural BMPs in place for the treatment of stormwater runoff from the existing impervious surfaces. Therefore, implementation of BMP systems proposed as part of the Project would result in a substantial improvement in surface water quality runoff from the Project Site. In implementation of BMPs, which would utilize the natural adsorption[13] and filtration characteristics of vegetated pervious surfaces, would allow for more opportunities to direct stormwater to flow through the planting media where pollutants are filtered, absorbed, and biodegraded by the soil and plants. However, due to the limited vegetated area of both the existing and proposed Project site, these effects are expected to be less significant than the proposed structural BMPs described above in terms of incremental improvement of existing conditions.

Based on the above, with implementation of BMPs such as those described above, 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 (i.e., Ballona Creek) 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 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. Furthermore, operation of the Project would not result in discharges that would cause regulatory standards to be violated in the Santa Monica Bay.

3.2.3. GROUNDWATER HYDROLOGY

The percolation of precipitation that falls on pervious surfaces is variable dependent upon the soil type, condition of the soil, vegetative cover, and other factors. The implementation of the Project would include the addition of pervious surfaces throughout the Project Site boundary. However, as the Project is located in a highly urbanized area, any reduction in groundwater recharge due to the overall net change in impervious area would be minimal in the context of the regional groundwater basin. The Project would include the installation of SUSMP and LID BMPs, which would mitigate at minimum the first flush or the

[13] Adsorption is the attachment of pollutants in water to soil particles, resulting in retention of pollutants.

equivalent of the greater between the 85th percentile storm and first 0.75-inch of rainfall for any storm event. The installed BMP systems will be designed with an internal bypass or overflow system to prevent upstream flooding due to large storm events. The stormwater which bypasses the BMP systems would discharge to an approved discharge point in the public right-of-way and not result in infiltration of a large amount of rainfall, which would affect groundwater hydrology, including the direction of groundwater flow.

3.2.4. GROUNDWATER QUALITY

Operational activities which could affect groundwater quality include spills of hazardous materials and leaking underground storage tanks. Surface spills from the handling of hazardous materials most often involve small quantities and are cleaned up in a timely manner, thereby resulting in little threat to groundwater. As discussed under section 2.4.3 the phase 1 Environmental Site Assessment revealed evidence of a potential RECs in connection with the Site. It is BA Environmental's opinion that the former UST constitutes a REC and may still be present. Construction of the proposed subterranean parking structures will remove any unforeseen UST's, any removal will go through the proper permits and City removal requirements. In addition to the underground LID BMP systems described above, multiple underground stormwater storage pipes/tanks may be operated by the Project. All tanks will be installed and maintained in compliance of all existing regulations.

In addition, while the development of expanded facilities would increase the use of existing on-site hazardous materials, compliance with all applicable existing regulations at the Project Site would prevent the Project 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, as defined in CCR, Title 22, Division 4, Chapter 15 and the Safe Drinking Water Act.

Furthermore, as described above, operation of the Project would not require extraction from the groundwater supply as the below ground walls would be designed to withstand hydrostatic and buoyant forces. The Project does not include the installation or operation of water wells, or any extraction or recharge system that is in the vicinity of the coast, an area of known groundwater contamination or seawater intrusion, a municipal supply well or spreading ground facility. The Project does not include surface or subsurface application or introduction of potential contaminants or waste materials during construction or operation. The Project is not anticipated to result in releases or spills of contaminants that could reach a groundwater recharge area or spreading ground or otherwise reach groundwater through percolation. Additionally, the Project would include the installation of structural BMPs as a means of pretreatment prior to capture and use of the first flush or equivalent of the greater between the 85th percentile storm event and the first 0.75-inch of rainfall for any storm event, which would allow for treatment of runoff generated on-site prior to contact with the groundwater below.

3.3. CONCLUSION

In conclusion, the Project will improve the Project Site's hydrologic function, as compared to existing conditions. The current site design and existing conditions allow the Applicant multiple options to install BMP systems that would comply with the City's LID requirements. Whereas stormwater from the Project Site currently either sheet flows into an underground storm drain network that ultimately discharges to the Santa Monica Bay, implementation of the Project would capture and treat stormwater on-site, improving water quality in receiving water bodies.

APPENDICES

FIGURE 1 - SURVEY

COMMENTS

DATES OF SURVEY . . . FEBRUARY 28, MARCH 1 & 2, 2022

SITE ADDRESSES . . . . 7000 ROMAINE STREET, 948 N. SYCAMORE AVENUE, 947 N. ORANGE DR. LOS ANGELES, CA 90038

APN NO. 5532-010-050

BOUNDARY LINES . . . WERE ESTABLISHED FROM THE RECOVERED CITY, COUNTY AND/OR PRIVATE ENGINEER MONUMENTS WHOSE CHARACTER AND SOURCE ARE SO NOTED ON THE SURVEY.

BASIS OF BEARINGS . . THE BEARING OF N89°54'30"E ALONG THE CENTERLINE OF ROMAINE STREET AS SHOWN ON THE MAP OF TRACT NO. 9677, AS RECORDED IN MAP BOOK 134, PAGES 15 & 16, WAS TAKEN AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BENCH MARK . . . . . CITY OF LA BM# 13-15270, CUT SPK IN S CURB SANTA MONICA BLVD; 7FT E OF MANSFIELD AVE END CB

ELEV. = 294.471 FT; NAVD 1988, RECORDED 2000

(#) . . . . . INDICATES PRELIMINARY TITLE REPORT EXCEPTION NUMBER PLOTTED HEREON.

LAND AREA . . . . . GROSS AREA 89,366 S.F. OR 2.052 ACRES, MORE OR LESS

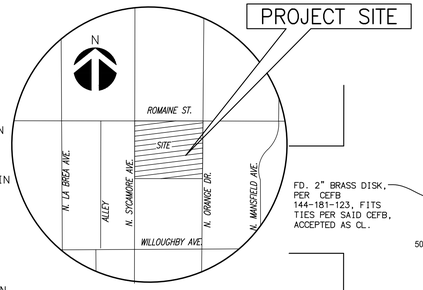
UTILITIES . . . . . ALL VISIBLE ABOVE-GROUND UTILITY FEATURES SHOWN ON THIS MAP WERE OBTAINED BY CONVENTIONAL MEANS. NO REPRESENTATION IS MADE AS TO THE COMPLETENESS OF SAID UTILITY INFORMATION AND ANY USER OF THIS INFORMATION SHOULD CONTACT THE UTILITY OR GOVERNMENT AGENCY DIRECTLY.

FLOOD INSURANCE RATE MAP. . . . . ZONE "X" AREA OF MINIMAL FLOOD HAZARD PER FLOOD INSURANCE RATE MAP (FIRM) MAP PANEL MAP NO. 06037C1605F EFFECTIVE DATE SEPTEMBER 26, 2008.

ZONING . . . . . MR1-1 (RESTRICTED INDUSTRIAL ZONE) (PER ZIMAS.LACITY.ORG)

PUBLIC ACCESS . . . PUBLIC ACCESS TO SITE FROM N. SYCAMORE AVE., N. ORANGE DR. & ROMAINE ST..

PARKING SPOTS . . . APPROXIMATELY 92 PARKING SPACES AT THE TIME OF SURVEY



VICINITY MAP
NOT TO SCALE

ABBREVIATIONS

CEFB	COUNTY ENGINEER FIELD BOOK
CL	CENTERLINE
EST'D	ESTABLISHED
INT	INTERSECTION
LS	LAND SURVEYOR
LT	LEAD & TACK
NTS	NOT TO SCALE
PL	PROPERTY LINE
PM	PUNCH MARKS
REC.	RECORD
SPK	SPIKE
S&W	SPIKE & WASHER

LEGAL DESCRIPTION

(PER FIRST AMERICAN TITLE INSURANCE COMPANY NATIONAL COMMERICAL SERVICES ORDER NO. NCS-1111741-ONT1 DATED JANUARY 20,2022 AT 7:30 A.M.)

REAL PROPERTY IN THE CITY OF LOS ANGELES, STATE OF CALIFONRIA, DESCRIBED AS FOLLOWS:

LOTS 35 TO 46 OF TRACT NO. 9677, IN THE CITY OF LOS ANGLES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 134 PAGES 15 AND 16 OF MAPS, IN THE OFFICE OF COUNTY RECORDER OF SAID COUNTY.

APN: 5532-010-050

EXCEPTIONS

(PER FIRST AMERICAN TITLE INSURANCE COMPANY NATIONAL COMMERICAL SERVICES ORDER NO. NCS-1111741-ONT1 DATED JANUARY 20,2022 AT 7:30 A.M.)

(3.) AN EASEMENT FOR PUBLIC UTILITES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 7120, PAGE 283 OF OFFICIAL RECORDS. (PLOTTED)

(AFFECTS LOTS 41 AND 42)

(4.) AN EASEMENT FOR PUBLIC UTILITES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 7194, PAGE 223 OF OFFICIAL RECORDS. (PLOTTED)

(AFFECTS LOTS 35, 36, 37, 44, 45 AND 46)

(5.) AN EASEMENT FOR PUBLIC UTILITES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 10179, PAGE 38 OF OFFICIAL RECORDS. (PLOTTED)

(AFFECTS LOT 43)

(6.) AN EASEMENT FOR PUBLIC UTILITES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 10183, PAGE 78 OF OFFICIAL RECORDS. (PLOTTED)

(AFFECTS LOTS 38, 39, AND 40)

(7.) AN EASEMENT FOR PUBLIC UTILITES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 15901, PAGE 80 OF OFFICIAL RECORDS. (PLOTTED)

(AFFECTS LOTS 38 THROUGH 43)

(8.) AN EASEMENT FOR PUBLIC UTILITES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED OCTOBER 25,1984 AS INSTRUMENT NO. 84-1276161 OF OFFICIAL RECORDS. (PLOTTED)

(AFFECTS LOTS 35 THROUGH 37 AND 44 THROUGH 46)

9. ANY FACTS, RIGHTS, INTERESTS OR CLAIMS THAT MAY EXIST OR ARISE BY REASON OF THE FOLLOWING MATTERS DISCLOSED BY AN ALTA/NSPS SURVEY MADE BY JRN CIVIIL ENGINEERS ON AUGUST 1, 2021 LAST REVISED NOVEMBER 29, 2021, DESIGNATED 20366:

(A) BUILDING EXTENDS OVER SOUTHERLY BORDERLINE ONTO SUBJECT LAND AS MUCH AS 0.3' N.

(B) WROGUTH IRON FENCE OF UNKNOWN OWNERSHIP LIES AS MUCH AS 0.3' E OF EASTERLY BORDERLINE OF SUBJECT LAND.

(C) BUILDING CORNER EXTENDS OVER NORTHERLY BORDERLINE BY AS MUCH AS 0.2' N.

(D) BUILDING EXTENDS OVER EASTERLY BORDERLINE BY AS MUCH AS 0.3' N.

(E) NORTH EDGE OF COLUMNS EXTEND OVER NORTHERLY BORDERLINE BY AS MUCH AS 0.3'.

(F) BUILDING LIES WITHIN EASEMENTS DESCRIBED IN SCHEDULE B-II ITEMS NO. 9, 10, 11, 12 & 13.

ALL OTHER ITEMS NOT SHOWN ABOVE ARE NOT A SURVEY MATTER.

SURVEYOR'S CERTIFICATE

TO (I) ONNI 7000 ROMAINE LLC, A DELWARE LIMITED LIABILITY COMPANY & (II) FIRST AMERICAN TITLE INSURANCE COMPANY NATIONAL COMMERICAL SERVICES:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 6(A), 7(A), 7(B)(1), 7(C), 8, 9, 11, 13, 14, 16, AND 19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON MARCH 2, 2022.

PREPARED UNDER THE DIRECTION OF:

06/08/2022

CHRISTOPHER M. JONES
CHRIS.JONES@KPFF.COM

LICENSED LAND SURVEYOR
CHRISTOPHER M. JONES
No.8193
STATE OF CALIFORNIA

SURVEYOR'S NOTES

NO OBSERVABLE EVIDENCE OF CEMETERY OR BURIAL GROUNDS ON SUBJECT PROPERTY.

NO OBSERVABLE EVIDENCE OF RECENT EARTH MOVING WORK OR BUILDING CONSTRUCTION.

NO OBSERVABLE EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.

NO OBSERVABLE EVIDENCE OF STREAMS OR TRAILS ON SUBJECT PROPERTY.

THERE WERE NOT ANY DEMARCATIONS OF WETLAND AREAS ON THE SUBJECT PROPERTY AT THE TIME OF THE SURVEY.

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

NO.	DATE	REVISIONS
6		
5		
4		
3		
2		
1		

PROJECT #	2200078
DATE PREPARED	03/30/2022
DRAWN BY	AA
CHECKED BY	CJ

948 N. SYCAMORE AVE

PREPARED FOR:
MR. MARK SPECTOR
ONNI GROUP
1031 SOUTH BROADWAY, SUITE 400
LOS ANGELES, CA 90015

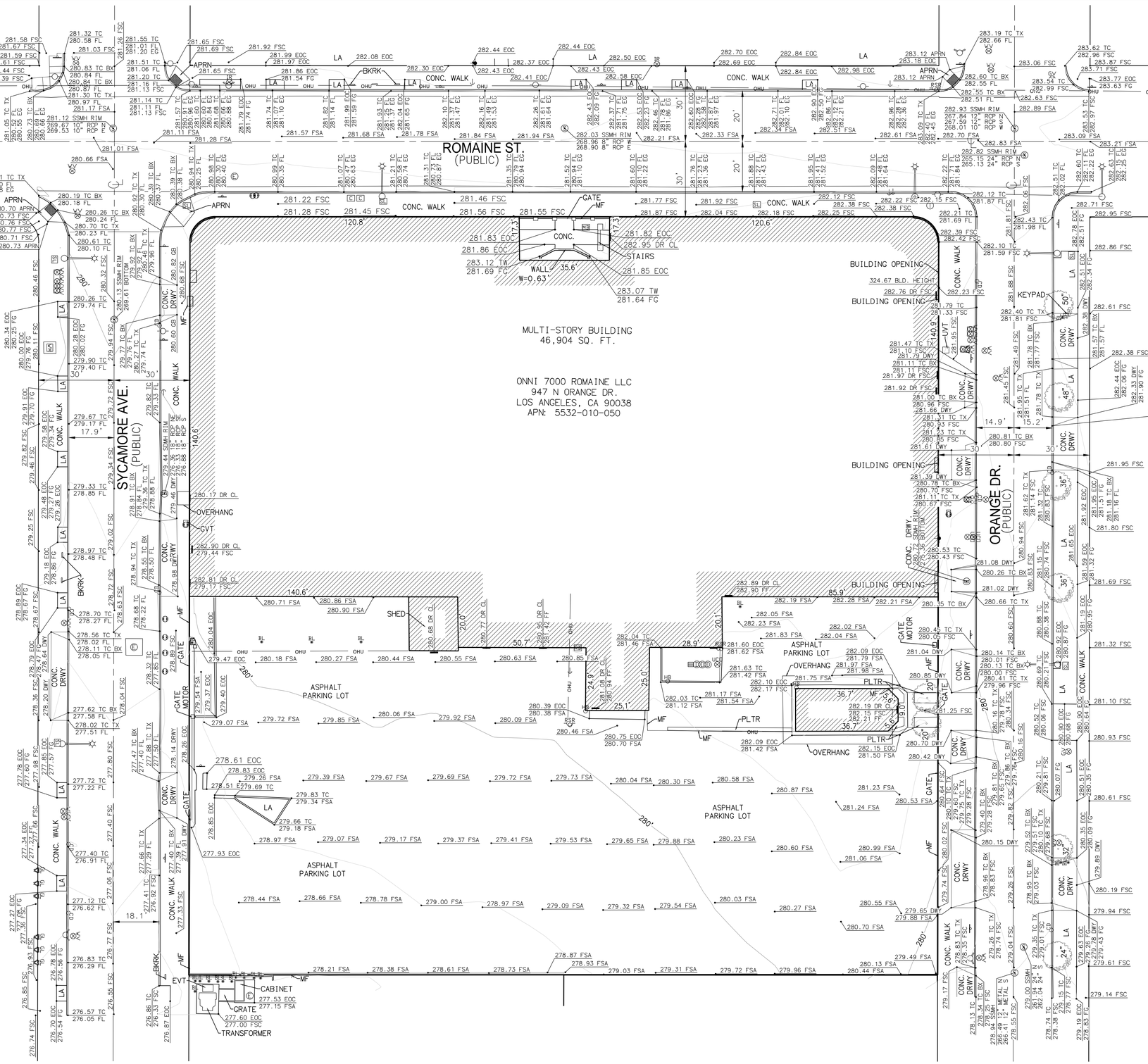
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O: 213.418.0201
F: 213.266.5294
www.kpff.com

ABBREVIATIONS

APRN	APRON
ASPH	ASPHALT
AD	AREA DRAIN
BKRK	BIKE RACK
BL	BOLLARD
BW	BACK OF WALK
℄	CENTERLINE
CD	CATCH BASIN
COL	COLUMN
CONC.	CONCRETE
DWY	DRIVEWAY
EG	EDGE OF GUTTER
ELEV	ELEVATION
EOC	EDGE OF CONCRETE
EVG	EDGE OF V-GUTTER
EVT	ELECTRICAL VAULT
FDC	FIRE DEPARTMENT CONNECTION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FSA	ASPHALT FINISHED SURFACE
FSC	CONCRETE FINISHED SURFACE
GB	GRADE BREAK
GVT	GAS VAULT
LA	LANDSCAPE
MF	METAL FENCE
NTS	NOT TO SCALE
PLTR	PLANTER
R/W	RIGHT-OF-WAY
SDMH	STORM DRAIN MANHOLE
SSMH	SANITARY STORM MANHOLE
SN	SIGN
TC	TOP OF CURB
TC BX	TOP OF CURB BOTTOM TRANSITION
TC TX	TOP OF CURB TOP TRANSITION
TW	TOP OF WALL
TYP.	TYPICAL
UCO	UNIDENTIFIED CLEANOUT
UPB	UNKNOWN PULLBOX
WL	WALL
WM	WATER METER
WV	WATER VALVE
WV	WATER VAULT

LEGEND

- AREA DRAIN (SQUARE)
- BOLLARD
- CURB DRAIN
- COMMUNICATION PULLBOX
- DOOR
- FIRE DEPARTMENT CONNECTION
- FIRE HYDRANT
- GUY
- HOSE BIB
- IRRIGATION CONTROL VALVE
- POLE
- RISER
- SANITARY SEWER MANHOLE
- SIGN
- STREET LIGHT
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N

0 10' 20'

SCALE: 1"=20'

NO.	DATE	REVISIONS
6		
5		
4		
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2		
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PROJECT #	2200078
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948 N. SYCAMORE AVE

PREPARED FOR:

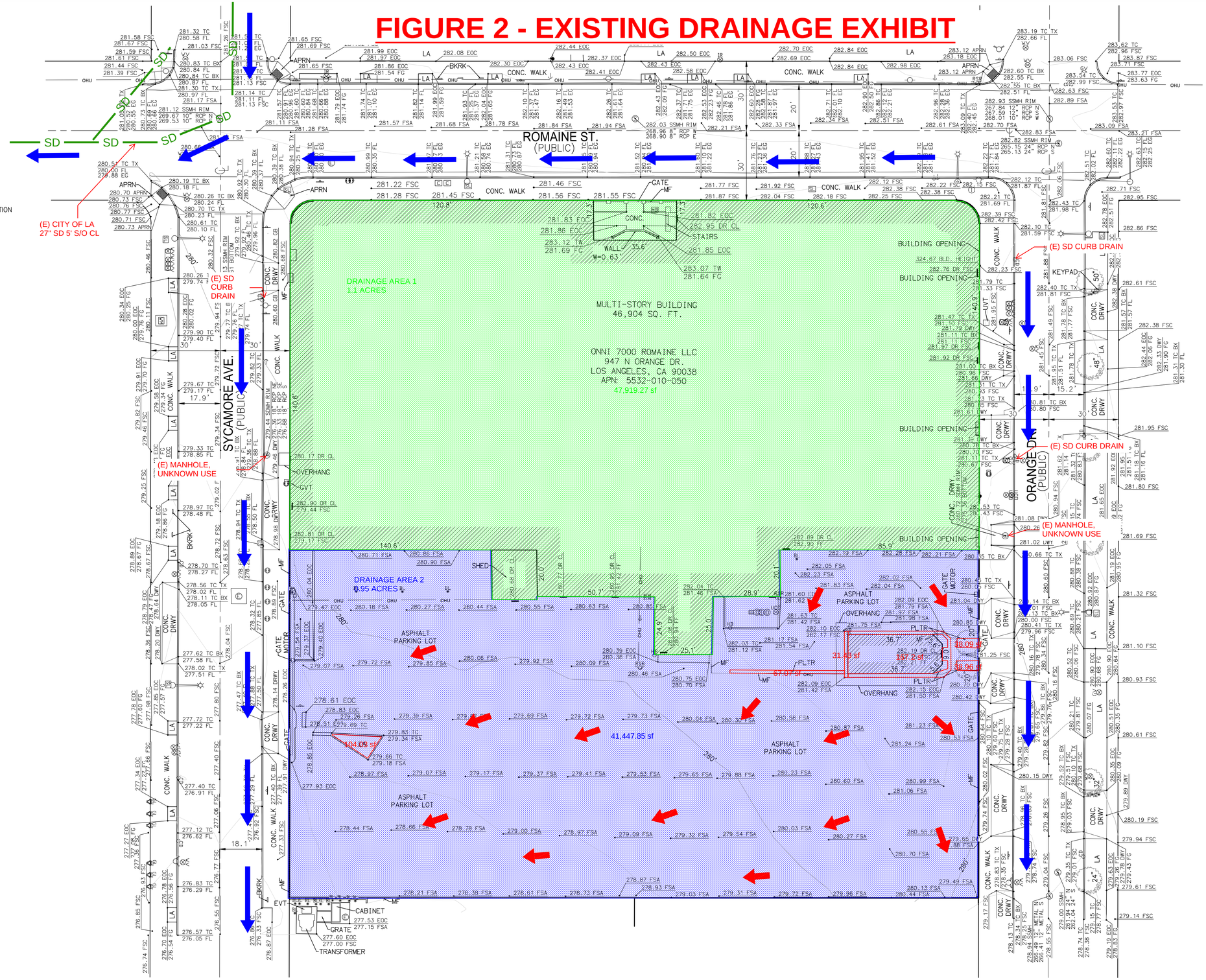
MR. MARK SPECTOR

ONNI GROUP
1031 SOUTH BROADWAY, SUITE 400
LOS ANGELES, CA 90015

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Los Angeles, CA 90017
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F: 213.266.5294
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FIGURE 2 - EXISTING DRAINAGE EXHIBIT



ABBREVIATIONS

APRN	APRON
ASPH	ASPHALT
AD	AREA DRAIN
BKRK	BIKE RACK
BL	BOLLARD
BW	BACK OF WALK
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- TREE
- UNIDENTIFIED CLEANOUT
- WATER METER
- WATER VALVE

PROJECT TOTAL AREA:
89,366 SF
(2.05 ACRES)

AREA 1
(1.10 ACRES)
100% IMP

AREA 2
(0.95 ACRES)
446.78 SF IN PA
98.9% IMP

LA HYDROLOGY DATA:
85TH PERCENTILE ISOHYET: 1.0 IN
50 YR: 5.90 IN
SOIL: 013

N

0 20' 40'

SCALE: 1"=40'

NO.	DATE	REVISIONS
6		
5		
4		
3		
2		
1		

PROJECT #	2200078
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FIGURE 3 - PROPOSED DRAINAGE EXHIBIT

ABBREVIATIONS

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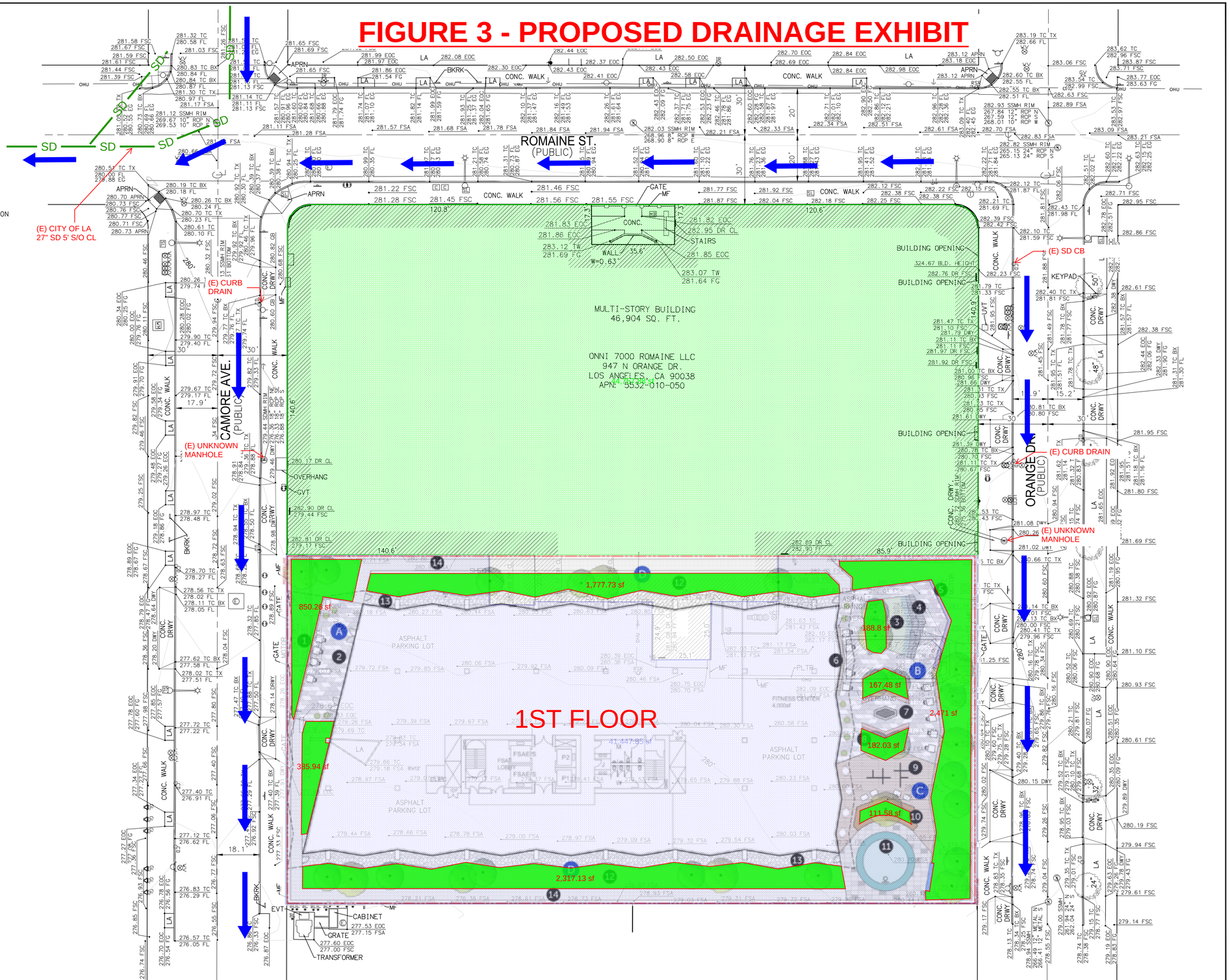
AREA 1
(1.03 ACRES)
100% IMP

AREA 2
(1.02 ACRES)
17,622.02 SF IN PA
60.3% IMP

LA HYDROLOGY DATA:
85TH PERCENTILE ISOHYET: 1.0 IN
50 YR: 5.90 IN
SOIL: 013

LEGEND:

PLANTER AREA



N

0 20' 40'

SCALE: 1"=40'

NO.	DATE	REVISIONS
6		
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4		
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PROJECT #	2200078
DATE PREPARED	03/30/2022
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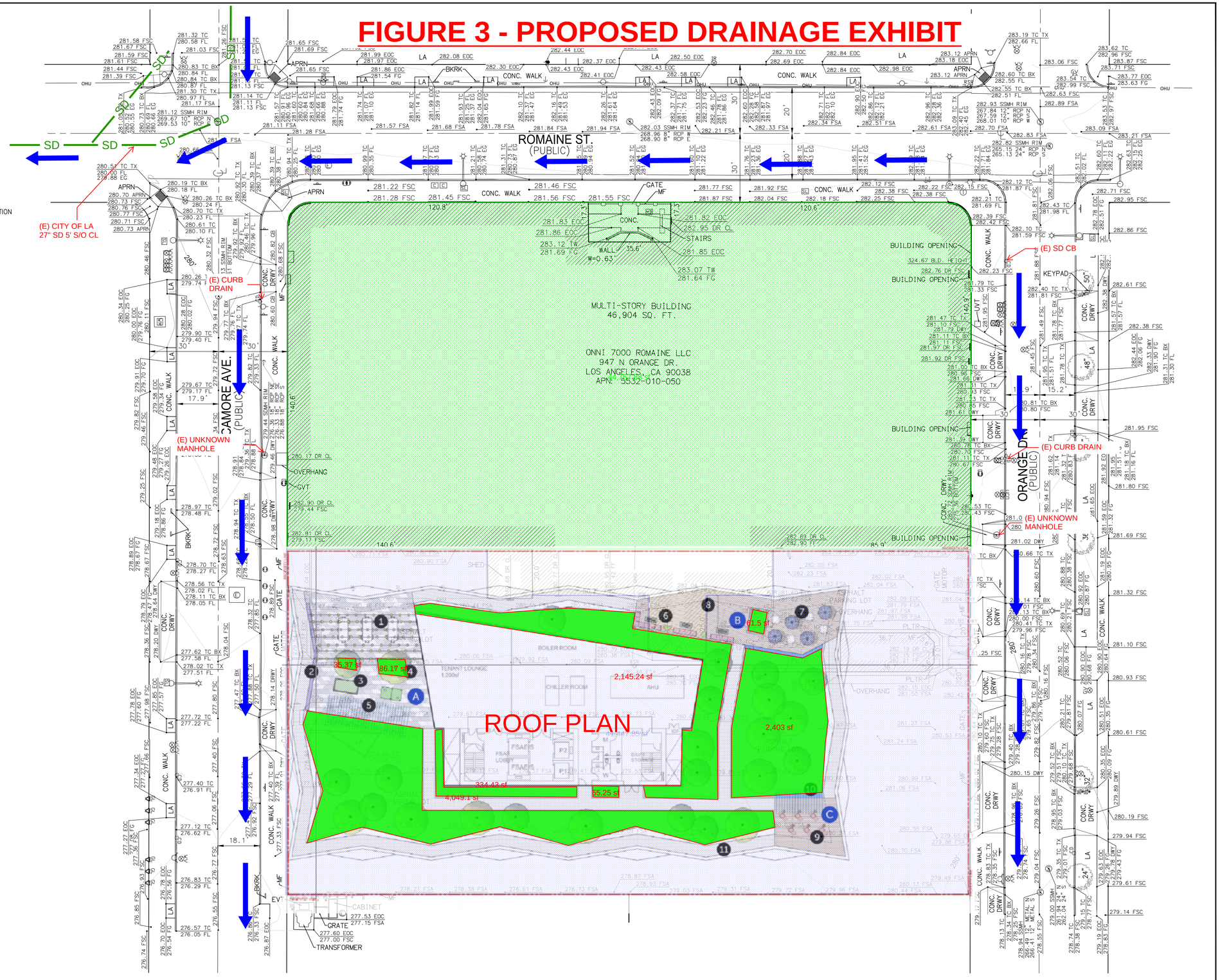
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60.3% IMP

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50 YR: 5.90 IN
SOIL: 013

LEGEND:

PLANTER
AREA

N

0 20' 40'

SCALE: 1"=40'

NO.	DATE	REVISIONS
6		
5		
4		
3		
2		
1		

PROJECT #	2200078
DATE PREPARED	03/30/2022
DRAWN BY	AA
CHECKED BY	CJ

948 N. SYCAMORE AVE

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Figure 4A

Peak Flow Hydrologic Analysis

File location: P:/2022/2200077 948 Sycamore/2 ENGR/Entitlements/Hydrology Technical Report/Updated Report/2022-06-15_948 Sycamore (Existing 5(
Version: HydroCalc 1.0.2

Input Parameters

Project Name	948 Sycamore
Subarea ID	Drainage Area 1
Area (ac)	1.1
Flow Path Length (ft)	299.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.9
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.9365
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	3.1987
Burned Peak Flow Rate (cfs)	3.1987
24-Hr Clear Runoff Volume (ac-ft)	0.4827
24-Hr Clear Runoff Volume (cu-ft)	21027.6095

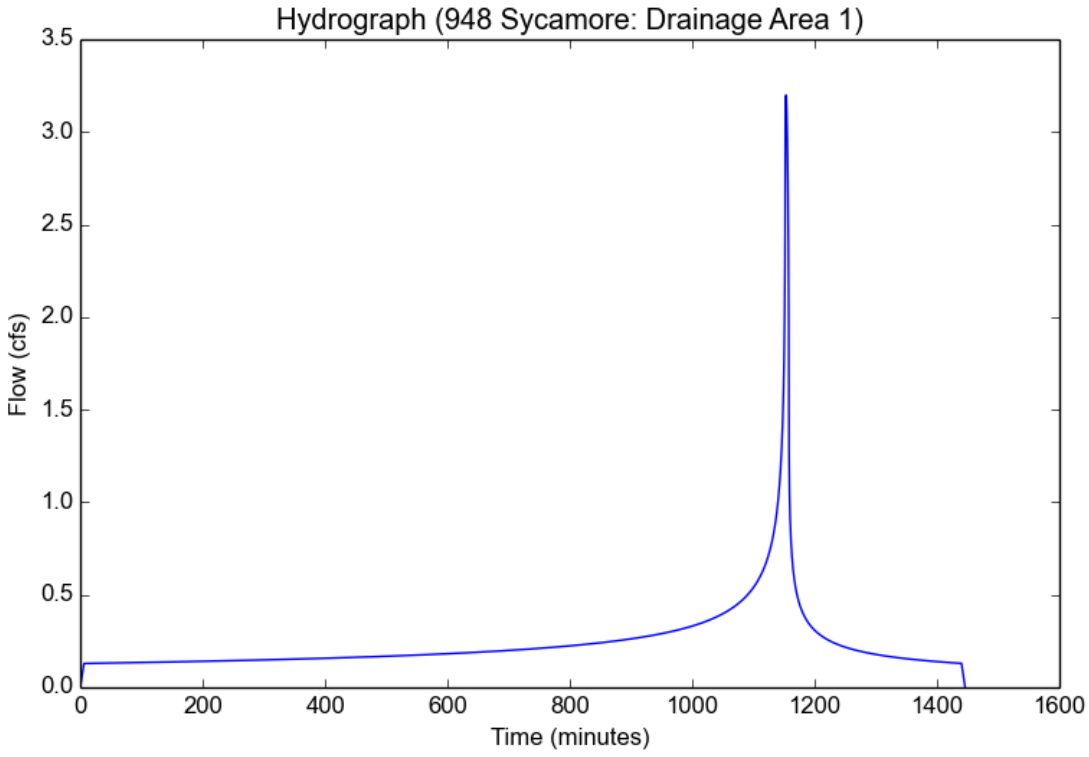


Figure 4B

Peak Flow Hydrologic Analysis

File location: P:/2022/2200077 948 Sycamore/2 ENGR/Entitlements/Hydrology Technical Report/Updated Report/2022-06-15_948 Sycamore (Existing 5(
Version: HydroCalc 1.0.2

Input Parameters

Project Name	948 Sycamore
Subarea ID	Drainage Area 2
Area (ac)	0.95
Flow Path Length (ft)	151.0
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.989
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9482
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.0097
Burned Peak Flow Rate (cfs)	3.0097
24-Hr Clear Runoff Volume (ac-ft)	0.4132
24-Hr Clear Runoff Volume (cu-ft)	18001.1345

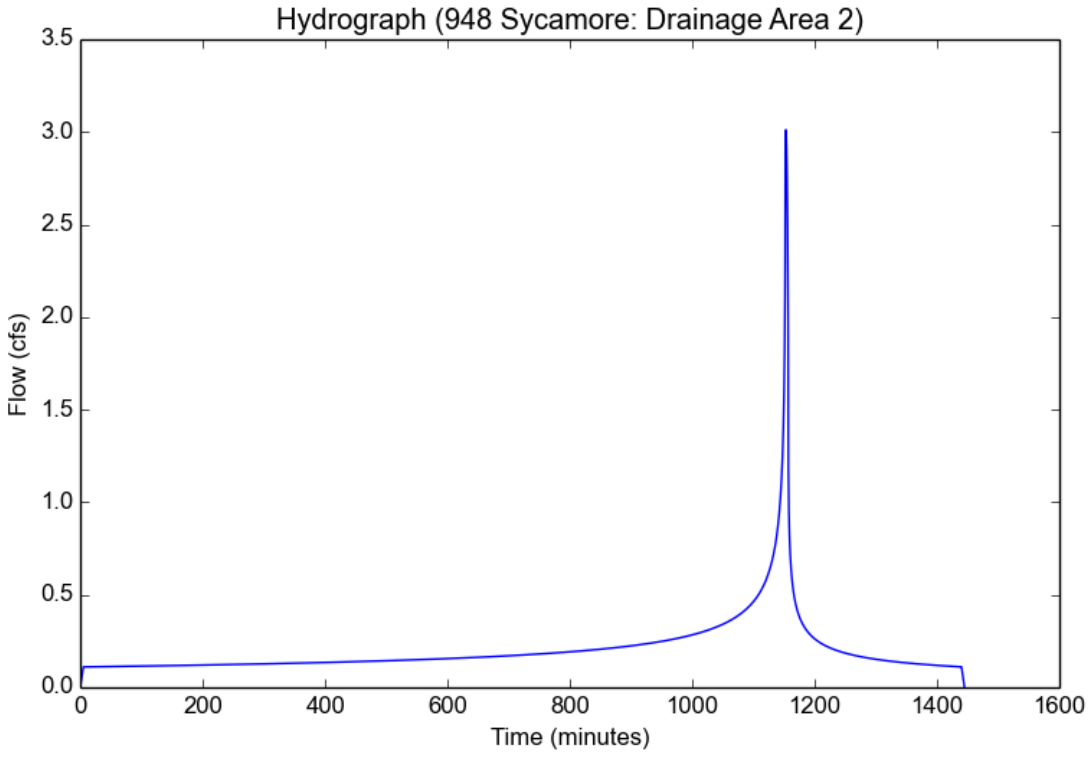


Figure 5A

Peak Flow Hydrologic Analysis

File location: P:/2022/2200077 948 Sycamore/2 ENGR/Entitlements/Hydrology Technical Report/Updated Report/Appendix/948 Sycamore - Drainage Ar
Version: HydroCalc 1.0.2

Input Parameters

Project Name	948 Sycamore
Subarea ID	Drainage Area 1
Area (ac)	1.03
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.9
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9482
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.2631
Burned Peak Flow Rate (cfs)	3.2631
24-Hr Clear Runoff Volume (ac-ft)	0.452
24-Hr Clear Runoff Volume (cu-ft)	19689.4862

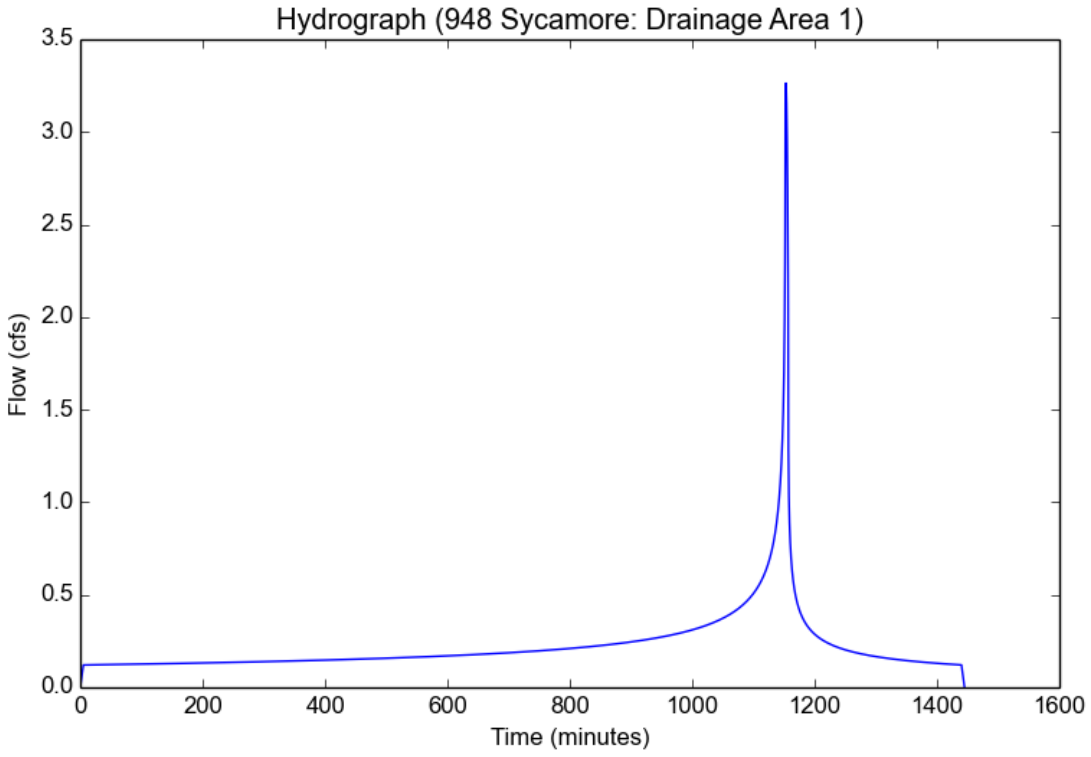


Figure 5B

Peak Flow Hydrologic Analysis

File location: P:/2022/2200077 948 Sycamore/2 ENGR/Entitlements/Hydrology Technical Report/Updated Report/Appendix/948 Sycamore - Drainage Ar
Version: HydroCalc 1.0.2

Input Parameters

Project Name	948 Sycamore
Subarea ID	Drainage Area 2
Area (ac)	1.02
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.603
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9482
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.2315
Burned Peak Flow Rate (cfs)	3.2315
24-Hr Clear Runoff Volume (ac-ft)	0.3061
24-Hr Clear Runoff Volume (cu-ft)	13334.28

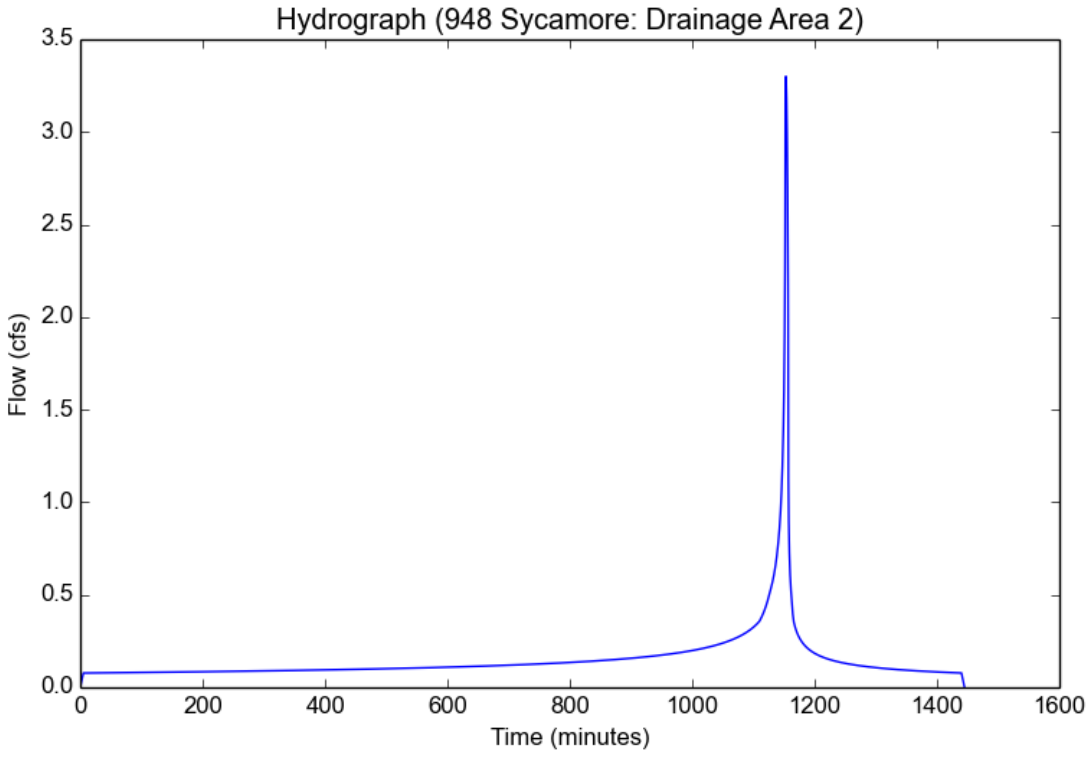


Figure 6

Peak Flow Hydrologic Analysis

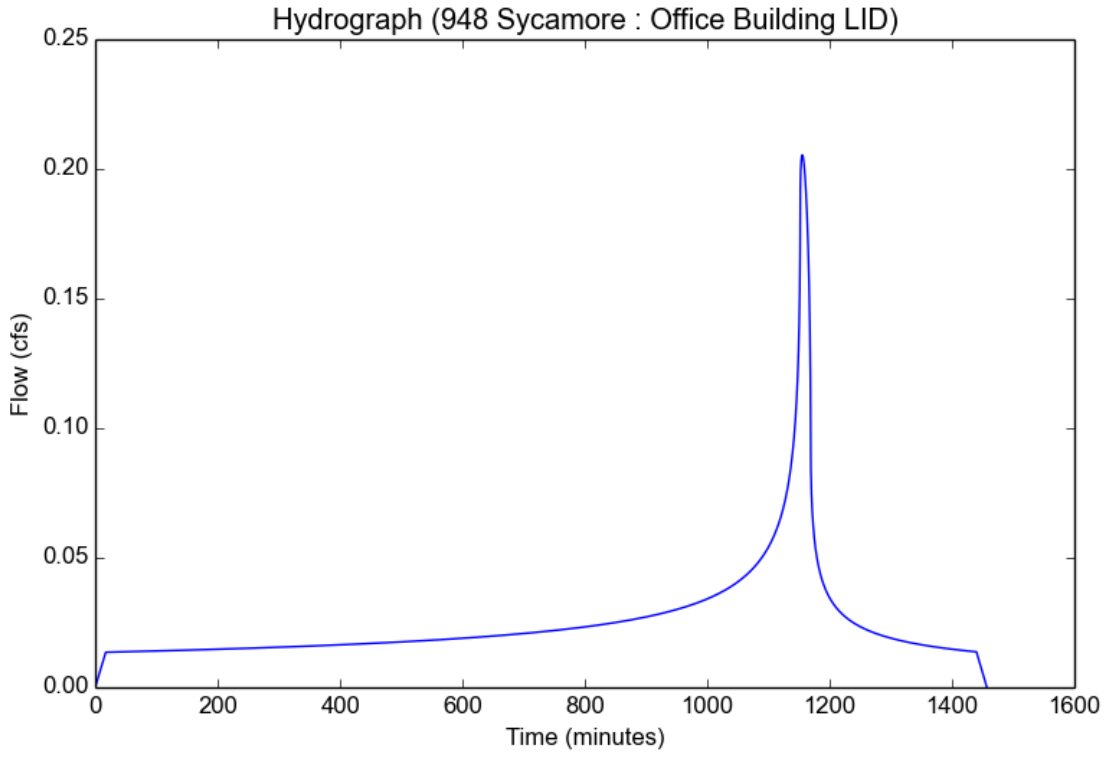
File location: P:/2022/2200077 948 Sycamore/2 ENGR/Entitlements/Hydrology Technical Report/Updated Report/Appendix/Figure6A_948 Sycamore (LID
Version: HydroCalc 1.0.2

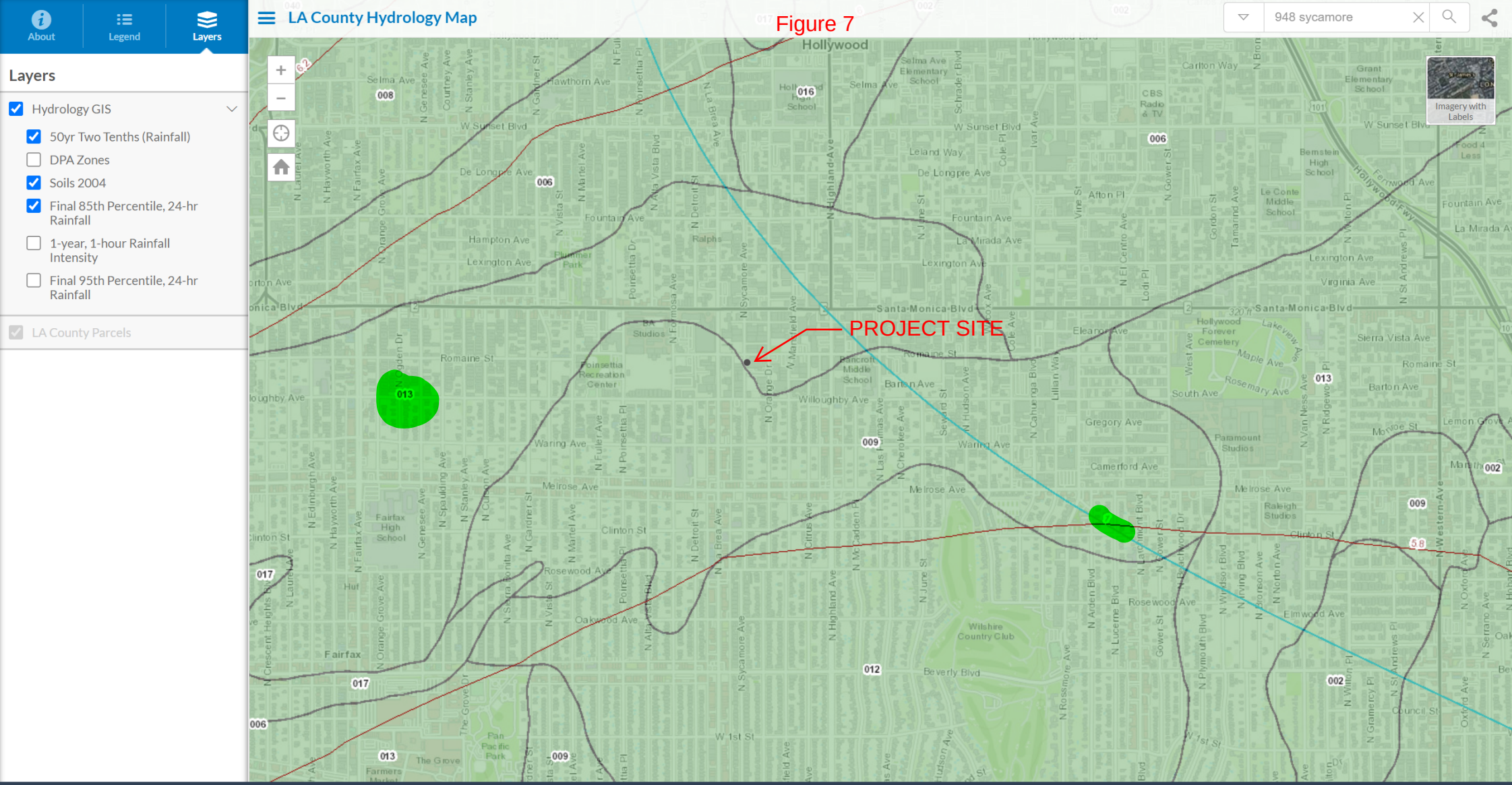
Input Parameters

Project Name	948 Sycamore
Subarea ID	Office Building LID
Area (ac)	1.02
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.03
Percent Impervious	0.603
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

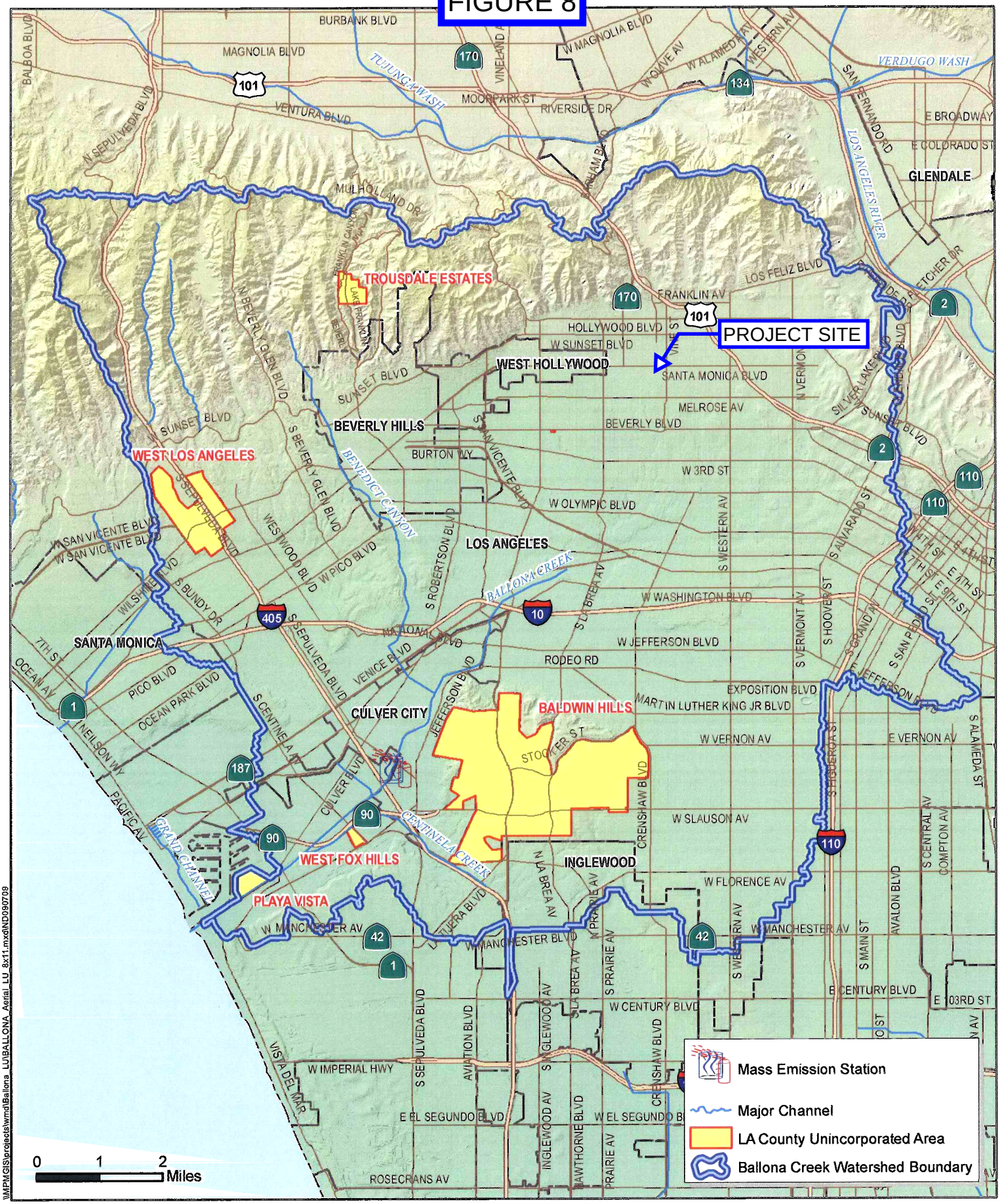
Modeled (85th percentile storm) Rainfall Depth (in)	1.03
Peak Intensity (in/hr)	0.3457
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.5824
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.2054
Burned Peak Flow Rate (cfs)	0.2054
24-Hr Clear Runoff Volume (ac-ft)	0.0506
24-Hr Clear Runoff Volume (cu-ft)	2202.738




About
Legend
Layers
LA County Hydrology Map
Figure 7
948 sycamore
Layers
Hydrology GIS
50yr Two Tenths (Rainfall)
DPA Zones
Soils 2004
Final 85th Percentile, 24-hr Rainfall
1-year, 1-hour Rainfall Intensity
Final 95th Percentile, 24-hr Rainfall
LA County Parcels
PROJECT SITE
Hollywood
Santa Monica Blvd
Romaine St
Willoughby Ave
Waring Ave
Melrose Ave
Clinton St
Rosewood Ave
Oakwood Ave
Fairfax
Beverly Blvd
W 1st St
Barton Ave
Fountain Ave
Lexington Ave
De Longpre Ave
W Sunset Blvd
Selma Ave
Hollywood Blvd
Imagery with Labels
lacounty.gov | Public Works FAQ | Privacy / Terms of Use | ADA / Accessibility | Feedback

BALLONA CREEK WATERSHED
Unincorporated County Areas

FIGURE 8



\\PW\GIS\projects\wmd\Ballona_LU\BALLONA_Aerial_LU_8x11.mxd\ND090709

FIGURE 9

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.

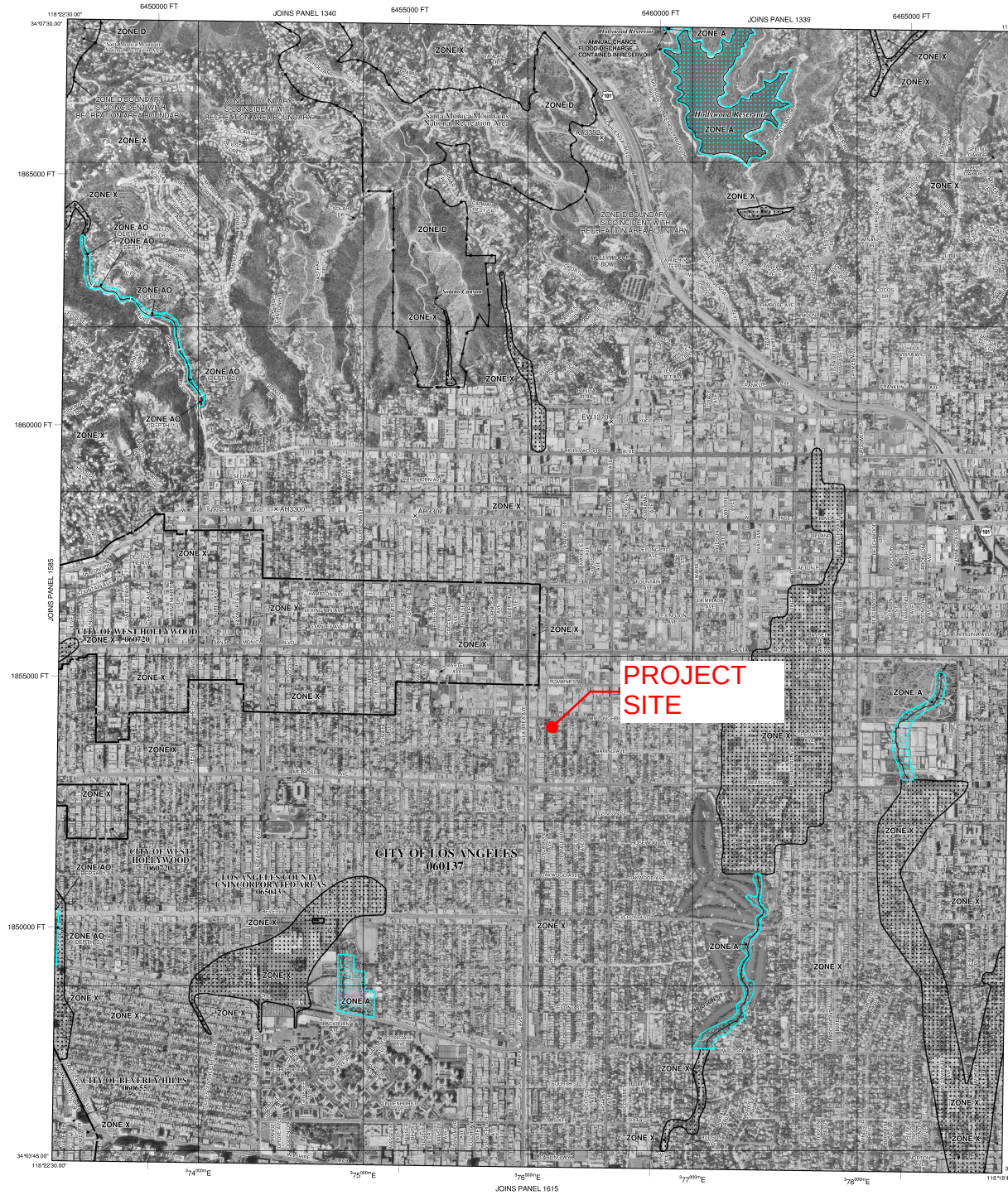
This map reflects more detailed and up–to–date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, 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)
- 4278 000mN — 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

PANEL 1605F

FIRM

FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 1605 OF 2350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	1605	F
BEVERLY HILLS, CITY OF	060655	1605	F
LOS ANGELES, CITY OF	060137	1605	F
WEST HOLLYWOOD, CITY OF	060720	1605	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.

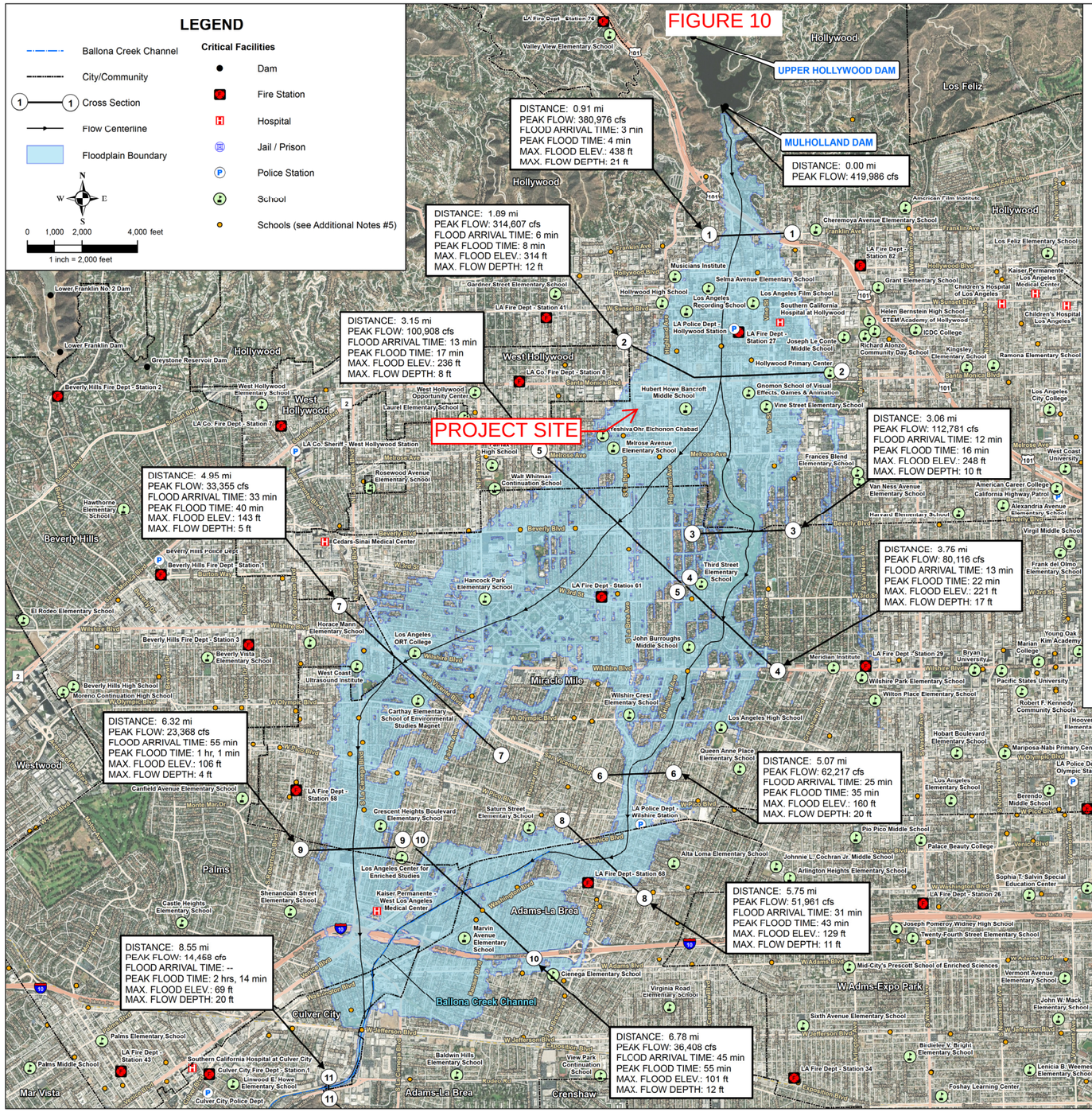
NATIONAL FLOOD INSURANCE PROGRAM

MAP NUMBER
06037C1605F

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency

FIGURE 10



Cross Section No.	Distance Downstream of Dam	Peak Flow	Flood Arrival Time		Peak Flood Time		Maximum Flood Elevation	Maximum Flow Depth
	(mi)	(cfs)	(hrs)	(min)	(hrs)	(min)	(ft)	(ft)
1	0.91	380,976		3		4	438	21
2	1.89	314,607		6		8	314	12
3	3.06	112,781		12		16	248	10
4	3.75	80,116		13		22	221	17
5	3.15	100,908		13		17	236	8
6	5.07	62,217		25		35	160	20
7	4.95	33,355		33		40	143	5
8	5.75	51,961		31		43	129	11
9	6.32	23,368		55	1	1	106	4
10	6.78	36,408		45		55	101	12
11	8.55	14,458	--	--	2	14	69	20

Notes:

1) The travel times are measured from the beginning of the simulation.
2) The Flood Arrival Time is based on minimum depth criteria of 1.0 foot.
3) The Peak Flood Time occurs when the maximum flood elevation is reached.
4) The Maximum Flood Elevation is the average maximum water surface elevation across the section.
5) The flow at Cross Section No. 11 is contained within the Ballona Creek Channel, and no overbank flow or inundated area occurs downstream of Cross Section No. 11.
6) The Peak Flow and Peak Flood Time were obtained from the FLO-2D output file HYCROSS.OUT.
7) The Flood Arrival Time was obtained from the hydrographs.
8) The Flood Arrival Time for Cross Section No. 11 is not provided because the flow is fully contained within the channel.
9) A hypothetical piping breach failure of Mulholland Dam was assumed with a worst case scenario initial water surface eevation (WSE) of 722.38 ft. The entire volume of water in Upper Hollywood Reservoir was added to volume of Lower Hollywood Reservoir, based on assumed breach of Upper Hollywood Dam.
10) All data files have a coordinate system of State Plane, Zone V, US Survey Feet with the survey datum set as horizontal datum of NAD 1983 and vertical datum of NAVD 1988.
11) The inundated area is mapped on three USGS topographic quadrangle maps (Beverly Hills, Hollywood, and Los Angeles 7.5' Quadrangles) with a vertical datum of NGVD 1929.
12) The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from the information shown on maps.
13) Due to density of map content, the following school types were not depicted: Adult Education, Early Childhood Education and Heat Start Schools, and Private and Charter Schools.

NO	DATE	REVISIONS	APPROVED	
1	11/9/2018	Added critical facilities, city/community boundaries, and disclaimer statement. Updated basemap using World Imagery.		
		DESCRIPTION	APPR.BY	DATE

OWNED BY:
Los Angeles Department of Water & Power
111 North Hope Street
Los Angeles, CA 90012-2607
Phone (213) 367-0855

ENGINEER / GENTERRA Consultants, Inc.
Douglas A. Harriman, PE, Project Engineer
Joseph J. Kulikowski, PE, GE, Project Manager

GENTERRA CONSULTANTS, INC.
Engineering & Geotechnical Services
15375 Barranca Parkway, Building L
Irvine, California 92618
Phone (949) 753-8766

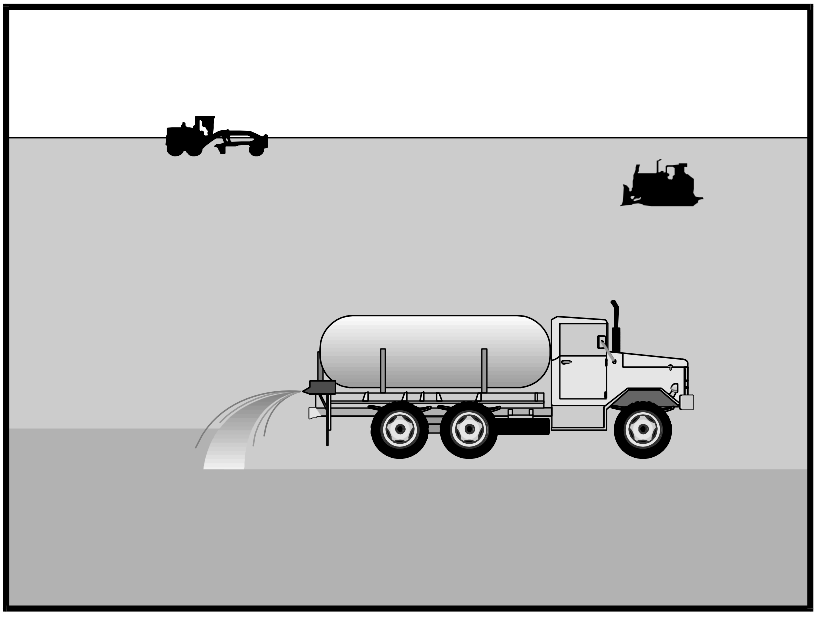
HOLLYWOOD RESERVOIR COMPLEX
Mulholland Dam, DWR Dam No. 06-017
Los Angeles County, California

FLOOD INUNDATION MAP WORST-CASE SCENARIO

DATE: DECEMBER 2013
PROJECT NO.: 333-DWP-TO4
SHEET: 1 OF 1
PLATE: 1

Soil Binders

EC-5



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch
EC-4 Hydroseeding
EC-6 Straw Mulch
EC-7 Geotextiles and Mats
EC-8 Wood Mulching

Description and Purpose

Soil binding consists of application and maintenance of a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surface to temporarily prevent water and wind induced erosion of exposed soils on construction sites.

Suitable Applications

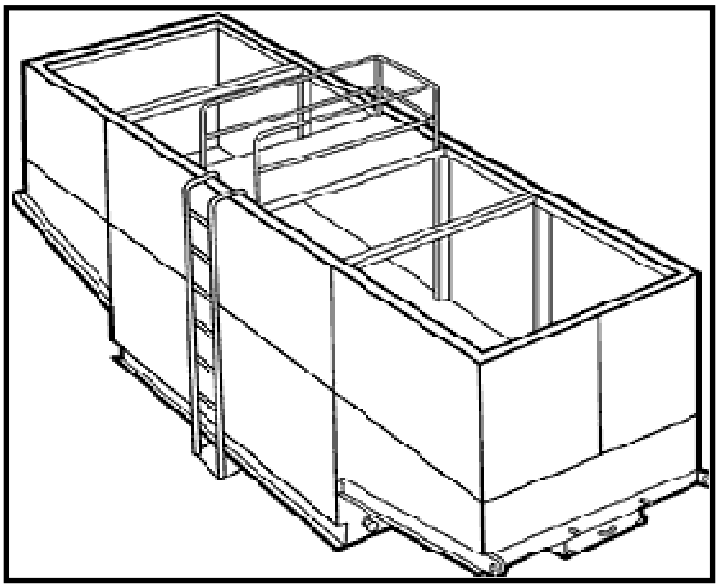
Soil binders are typically applied to disturbed areas requiring temporary protection. Because soil binders, when used as a stand-alone practice, can often be incorporated into the soil, they are a good alternative to mulches in areas where grading activities will soon resume. Soil binders are commonly used in the following areas:

- Rough graded soils that will be inactive for a short period of time
- Soil stockpiles
- Temporary haul roads prior to placement of crushed rock
- Compacted soil road base
- Construction staging, materials storage, and layout areas

Limitations

- Soil binders are temporary in nature and may need reapplication.

Dewatering Operations NS-2



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

SE-5: Fiber Roll

SE-6: Gravel Bag Berm

Description and Purpose

Dewatering operations are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation (stormwater) must be removed from a work location to proceed with construction work or to provide vector control.

The General Permit incorporates Numeric Effluent Limits (NEL) and Numeric Action Levels (NAL) for turbidity (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Discharges from dewatering operations can contain high levels of fine sediment that, if not properly treated, could lead to exceedences of the General Permit requirements.

Suitable Applications

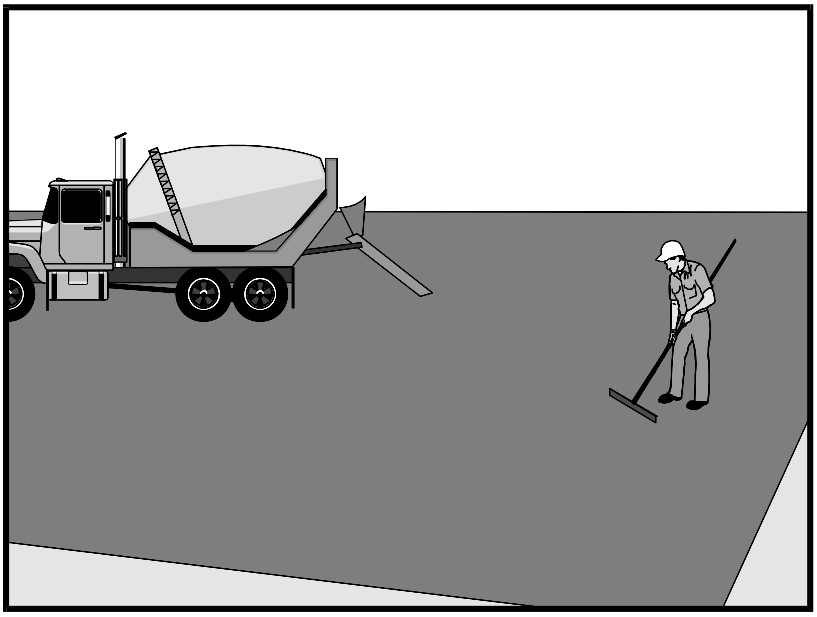
These practices are implemented for discharges of non-stormwater from construction sites. Non-stormwaters include, but are not limited to, groundwater, water from cofferdams, water diversions, and waters used during construction activities that must be removed from a work area to facilitate construction.

Practices identified in this section are also appropriate for implementation when managing the removal of accumulated precipitation (stormwater) from depressed areas at a construction site.

Stormwater mixed with non-stormwater should be managed as non-stormwater.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Paving and Grinding Operations NS-3



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☒

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runon and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

The General Permit incorporates Numeric Effluent Limits (NEL) and Numeric Action Levels (NAL) for pH and turbidity (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials associated with paving and grinding operations, including mortar, concrete, and cement and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

Suitable Applications

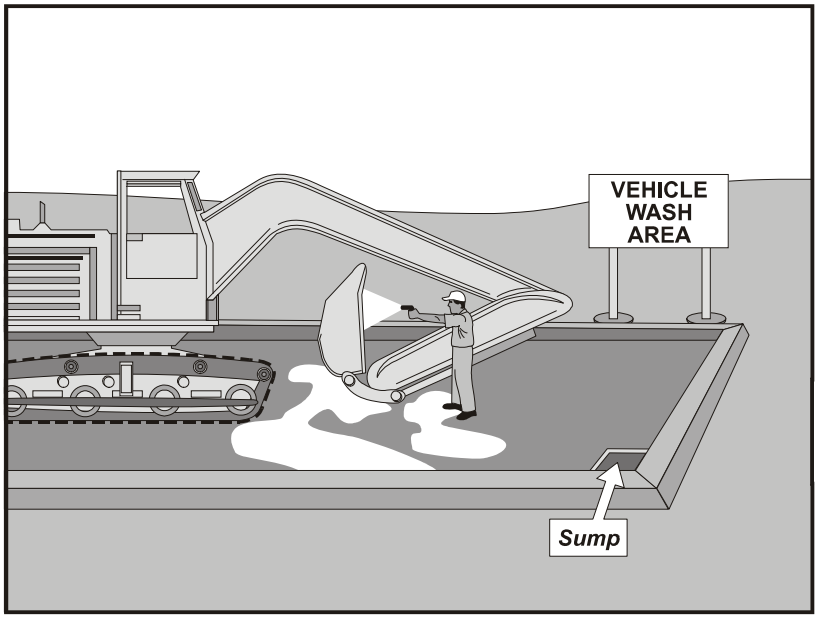
These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

Limitations

- Paving opportunities may be limited during wet weather.
- Discharges of freshly paved surfaces may raise pH to environmentally harmful levels and trigger permit violations.

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Vehicle and Equipment Cleaning NS-8



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Vehicle and equipment cleaning procedures and practices eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations. Procedures and practices include but are not limited to: using offsite facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors in proper cleaning procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment cleaning is performed.

Limitations

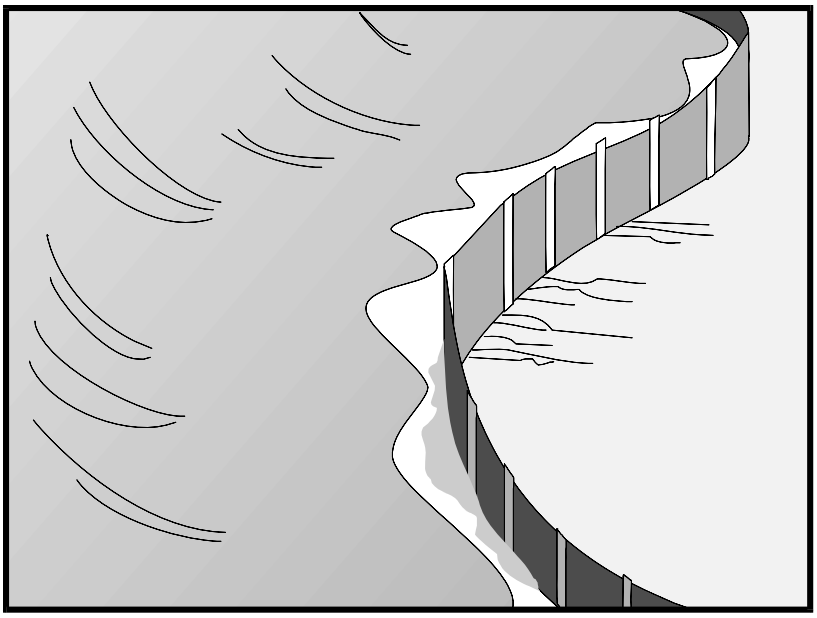
Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades. Sending vehicles/equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/Exit.

Implementation

Other options to washing equipment onsite include contracting with either an offsite or mobile commercial washing business. These businesses may be better equipped to handle and dispose of the wash waters properly. Performing this work offsite can also be economical by eliminating the need for a separate washing operation onsite.

If washing operations are to take place onsite, then:

Silt Fence SE-1



Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-10 Storm Drain Inlet Protection

SE-14 Biofilter Bags

Description and Purpose

A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

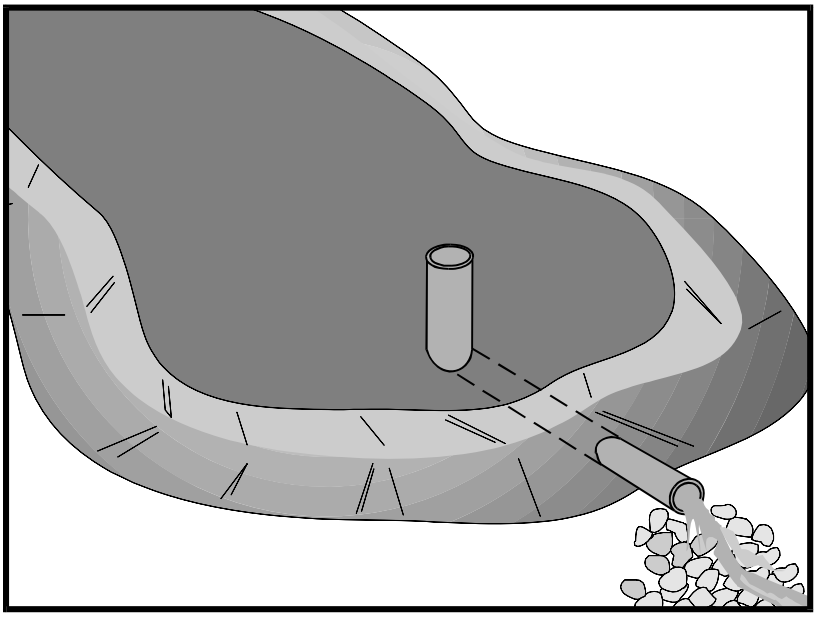
Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They could also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion and around inlets within disturbed areas (SE-10). Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Around inlets.
- Below other small cleared areas.

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Sediment Basin SE-2



Description and Purpose

A sediment basin is a temporary basin formed by excavation or by constructing an embankment so that sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out before the runoff is discharged.

Sediment basin design guidance presented in this fact sheet is intended to provide options, methods, and techniques to optimize temporary sediment basin performance and basin sediment removal. Basin design guidance provided in this fact sheet is not intended to guarantee basin effluent compliance with numeric discharge limits (numeric action levels or numeric effluent limits for turbidity). Compliance with discharge limits requires a thoughtful approach to comprehensive BMP planning, implementation, and maintenance. Therefore, optimally designed and maintained sediment basins should be used in conjunction with a comprehensive system of BMPs that includes:

- Diverting runoff from undisturbed areas away from the basin
- Erosion control practices to minimize disturbed areas on-site
  and to provide temporary stabilization and interim sediment controls (e.g., stockpile perimeter control, check dams, perimeter controls around individual lots) to reduce the basin's influent sediment concentration.

At some sites, sediment basin design enhancements may be required to adequately remove sediment. Traditional

Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

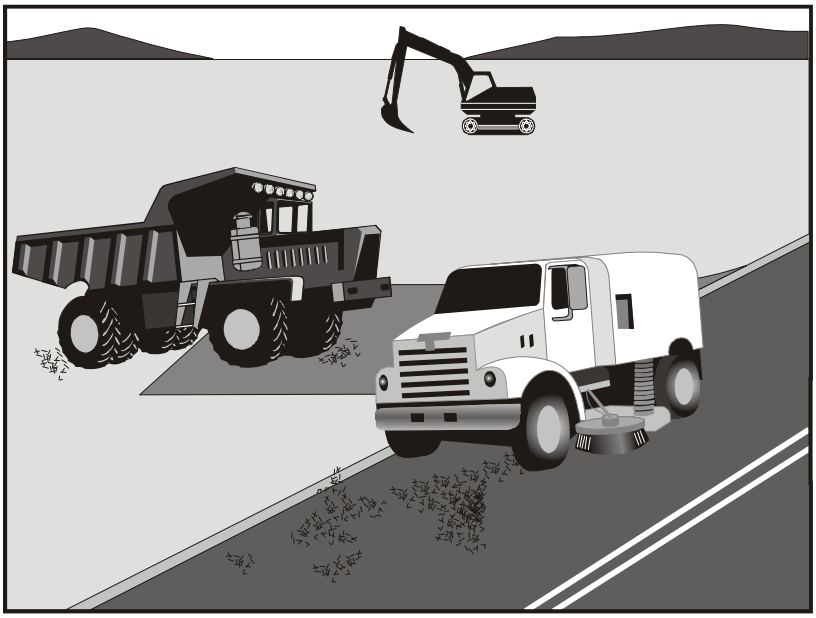
Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-3 Sediment Trap (for smaller areas)

Street Sweeping and Vacuuming SE-7



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

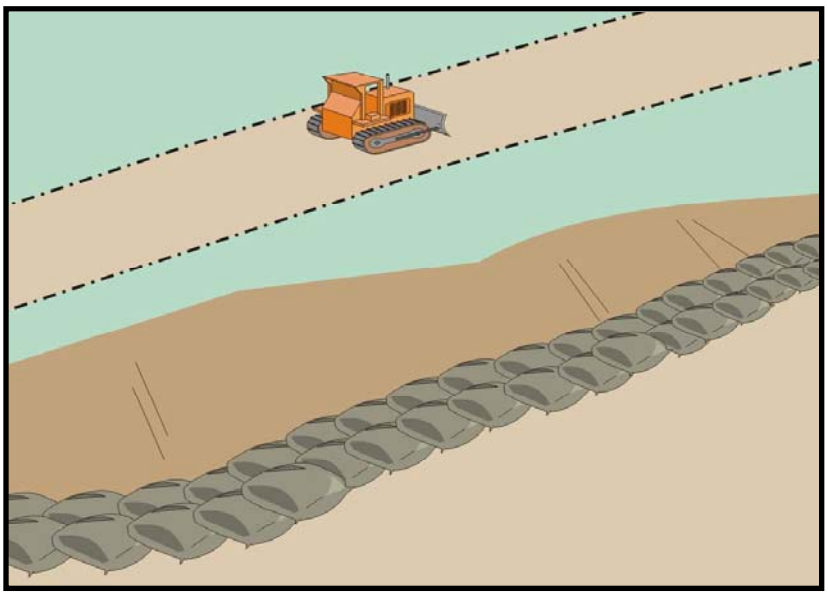
Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.

Sandbag Barrier SE-8



Categories		
EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Description and Purpose

A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept or to divert sheet flows. Sandbag barriers placed on a level contour pond sheet flow runoff, allowing sediment to settle out.

Suitable Applications

Sandbag barriers may be suitable:

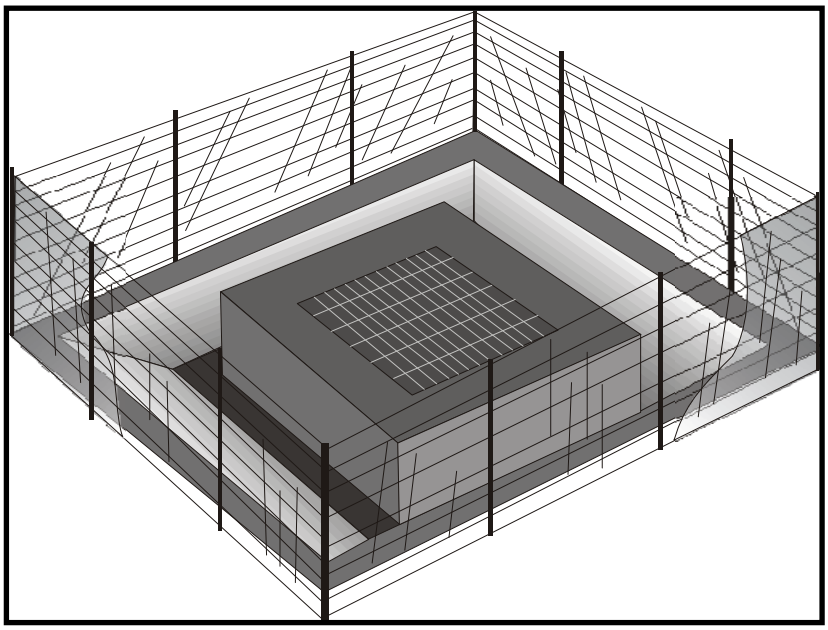
- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes.
  - As sediment traps at culvert/pipe outlets.
  - Below other small cleared areas.
  - Along the perimeter of a site.
  - Down slope of exposed soil areas.
  - Around temporary stockpiles and spoil areas.
  - Parallel to a roadway to keep sediment off paved areas.
  - Along streams and channels.
- As linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives
SE-1 Silt Fence
SE-5 Fiber Rolls
SE-6 Gravel Bag Berm
SE-14 Biofilter Bags

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Storm Drain Inlet Protection SE-10



Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☒
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence
SE-5 Fiber Rolls
SE-6 Gravel Bag Berm
SE-8 Sandbag Barrier
SE-14 Biofilter Bags

Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area in, around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction. Temporary geotextile storm drain inserts attach underneath storm drain grates to capture and filter storm water.

Suitable Applications

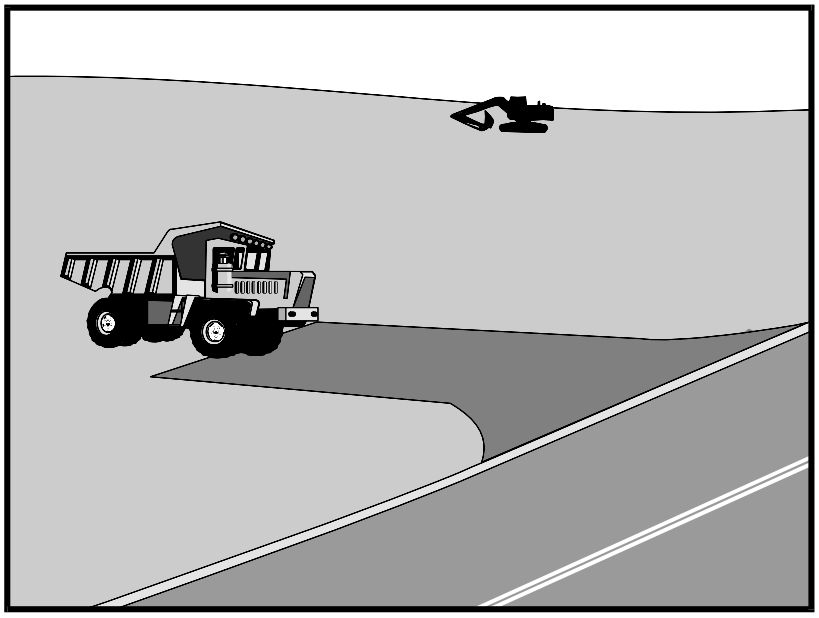
Every storm drain inlet receiving runoff from unstabilized or otherwise active work areas should be protected. Inlet protection should be used in conjunction with other erosion and sediment controls to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.

Limitations

- Drainage area should not exceed 1 acre.
- In general straw bales should not be used as inlet protection.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.

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Stabilized Construction Entrance/Exit TC-1



Categories		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

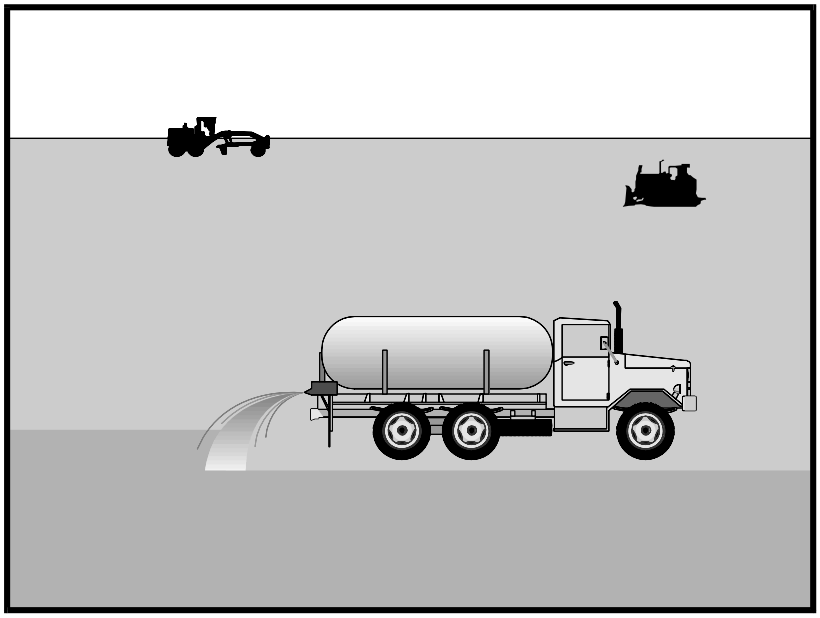
Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water

Wind Erosion Control WE-1



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	☑
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-5 Soil Binders

Description and Purpose

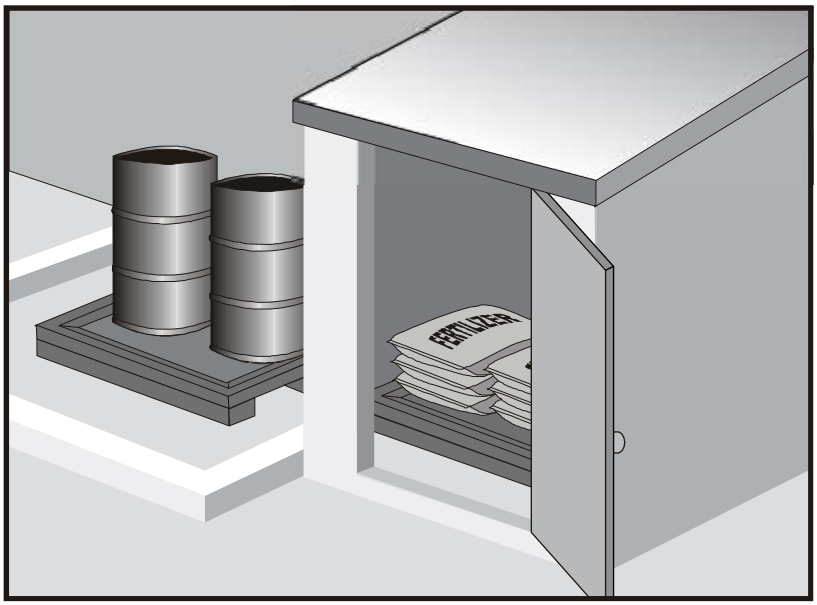
Wind erosion or dust control consists of applying water or other chemical dust suppressants as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

California's Mediterranean climate, with a short "wet" season and a typically long, hot "dry" season, allows the soils to thoroughly dry out. During the dry season, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment. Site conditions and climate can make dust control more of an erosion problem than water based erosion. Additionally, many local agencies, including Air Quality Management Districts, require dust control and/or dust control permits in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. Wind erosion control is required to be implemented at all construction sites greater than 1 acre by the General Permit.

Suitable Applications

Most BMPs that provide protection against water-based erosion will also protect against wind-based erosion and dust control requirements required by other agencies will generally meet wind erosion control requirements for water quality protection. Wind erosion control BMPs are suitable during the following construction activities:

Material Delivery and Storage WM-1



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in watertight containers and/or a completely enclosed designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

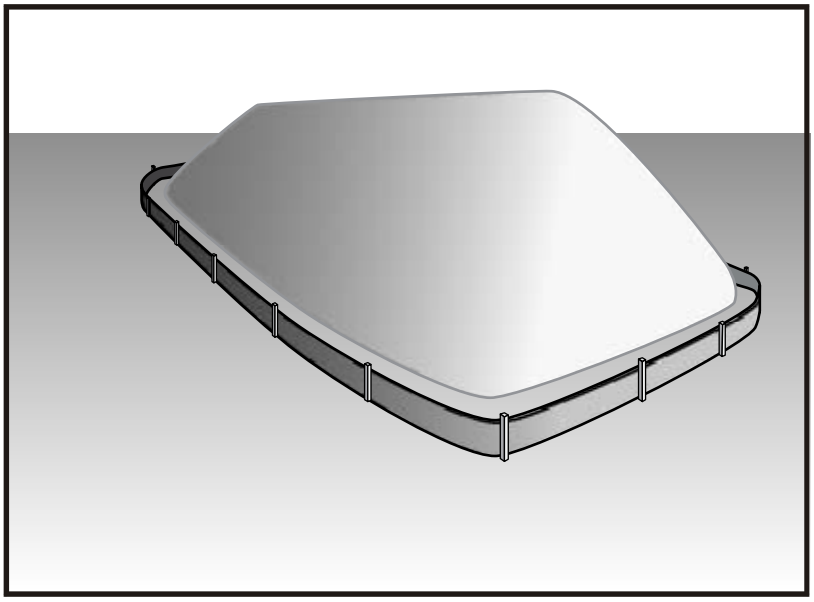
This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

Stockpile Management WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other loose materials.

Limitations

- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of Plastic materials and photodegradable plastics should be avoided.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles: