

Attachment F

**Preliminary
STANDARD URBAN STORMWATER
MITIGATION PLAN
(SUSMP)**

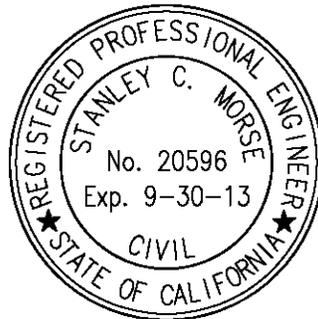
FOR

**E&B Oil Development Project
Phase 2 – Drilling and Testing
555 6th Street
CITY OF HERMOSA BEACH
LOS ANGELES COUNTY, CALIFORNIA**

DATE PREPARED: April 9, 2013

**PREPARED FOR:
E&B Natural Resources Management Corporation
1600 Norris Road
Bakersfield, CA 93308
661 679-1730**

PREPARED BY:



Stanley Morse



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I. INTRODUCTION

The municipal stormwater National Pollutant Discharge Elimination System (NPDES) permit (Los Angeles County) issued to Los Angeles County and 85 cities (Permittees) by the Los Angeles County Regional Water Quality Control Board NPDES No. CAS004001 requires the development and implementation of a program addressing storm water pollution issues in development. The Standard Urban Stormwater Mitigation Plan (SUSMP) was developed as part of the municipal storm water program to address storm water pollution from new development and redevelopment projects. The SUSMP contains a list of minimum required Best Management Practices (BMPs) that must be used for certain types of projects. Additional BMPs may be required by ordinance or code adopted by the City and applied generally or on a case-by-case basis. Developers must incorporate appropriate SUSMP requirements into the project plans. The City may approve a proposed project plan as part of a development plan approval process or prior to issuing planning approval for the projects covered by the SUSMP requirements. All projects that fall into one of the following categories require a SUSMP:

1. Single-family hillside homes (only development of one acre or more of surface area is subject to the SUSMP numerical design criteria requirement);
2. Ten or more unit homes (includes single-family homes, multifamily homes, condominiums, and apartments);
3. Automotive service facilities (SIC codes 5013, 5014, 5541, 7532-7534, and 7536-7539);
4. Restaurants (SIC code 5812);
5. 100,000 or more square feet of impervious surface in industrial/commercial development;
6. Retail gasoline outlet;
7. Parking lot 5,000 square feet or more of surface area or with 25 or more parking spaces;
8. **Redevelopment projects in subject categories that meet redevelopment thresholds; and**
9. Location within or directly adjacent to or discharging directly to an environmentally sensitive area if the discharge is likely to impact a sensitive biological species or habitat and the development creates 2,500 square feet or more of impervious surface.

* "Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to, the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land-disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to these SUSMPs, the Design Standards apply only to the addition, and not to the entire development.

This Standard Urban Stormwater Mitigation Plan (SUSMP) for the proposed project is intended to comply with the requirements of the County of Los Angeles Storm Water Municipal Separate Storm Sewer System (MS4) permit and the City of Hermosa Beach requirements for project compliance with the SUSMP as it relates to Category 8 priority projects.

This SUSMP is intended to include all BMPs and their operations and maintenance as required in the post construction conditions of the proposed project in the ultimate condition with Phase 2 – Terminus Condition.

Site conditions during construction will be covered under the State General Construction Permit NPDES CAS000002 Order No. 2009-009-DWQ until the Notice of Termination has been filed and accepted by the State Water Resources Control Board. The proposed project will be required to acquire coverage under the State Industrial Permit prior to commencement of any industrial type operations or activities.

II. PROJECT DESCRIPTION

The project site at 555 6th Street consists of 1.3 acres located in the City of Hermosa Beach, County of Los Angeles. The project site is located within an area that has light manufacturing land uses with the exception of the Veterans Parkway (Hermosa Valley Greenbelt/Trail) and Ardmore Park to the east across Valley Drive. The project site is currently being utilized by the City of Hermosa as a maintenance yard that will be relocated to another location.

The proposed project provides for the development of an onshore drilling and production site that will utilize directional drilling of wells to access oil and gas reserves in the Torrance Oil Field. In its ultimate condition with the completion of Phase 4, the proposed project will have up to 30 oil and gas wells, four water injection wells, and supporting production equipment. The proposed project will reclaim and treat most of the storm water to reduce water demand and protect storm water runoff quality as it pertains to the SUSMP requirements. All surfaces within the perimeter wall will be impervious and the runoff will be collected and treated onsite before it is injected by water injection wells into the oil-producing reservoir below the oil-water contact line. There is a 10-foot landscape area along the project frontage on Valley Drive and 6th Street. The landscape area will allow for some infiltration and provide treatment of the storm water and irrigation runoff. The landscape area and the entrance driveway off of Valley Drive will drain to Valley Drive and 6th Street through surface gutters and curb cores in the ultimate Phase 4 condition.

The proposed project will be completed in four phases. The purpose of Phase 1 is to prepare the project site for Phase 2. The purpose of Phase 2 is to conduct drilling and testing of wells in order to determine the potential productivity and economic viability of the proposed project. If it is determined that the production of oil and gas on the project site would not be viable, the proposed project would be terminated. This Phase 2 terminus condition is the subject of this SUSMP.

Phase 1: Site Preparation will consist of the following construction activities:

- Construction of redesigned intersection
- Construction of underground utilities along 6th Street and Valley Drive
- Tree removal along Valley Drive (1)
- Demolition and removal of existing buildings, paving, asphalt, chain link fence and masonry
- Construction of retaining walls along western property boundary and a portion of the southern property boundary
- Rough grading, including well cellar excavation and placement of crushed aggregate throughout the proposed project site
- Construction of 8'x12'x40' well cellar
- Installation of electric service
- Installation of landscape area (with rolled asphalt curb along 6th Street)
- Installation of 32-foot noise attenuation wall
- Install crushed aggregate base

The purpose of Phase 1: Site Preparation is to prepare the project site for Phase 2. Phase 1 provides for the demolition and removal of the existing structures and facilities on the proposed project site; construction of retaining walls along the westerly property boundary and, rough grading to allow for construction of a well cellar for three test oil wells and one water injection well; installation of the temporary production equipment, and provision of a level area for the drill rig; installation of electrical service; installation of a chain link construction fence; sound attenuation wall installation, and temporary landscaping along Valley Drive and 6th Street.

During Phase 1, the portion of the project site located within the perimeter fencing will be graded to drain to a temporary retention basin located near the southern portion of the proposed project which

will contain the 100-year flood volumes from the portion of the site located outside of the containment areas. The entire project site will be covered with crushed aggregate base during Phase 1.

The landscape areas outside of the perimeter fence will allow for some infiltration and provide treatment of the storm water and irrigation runoff before it is directed to Valley Drive via curb cores and 6th Street via openings in the rolled asphalt curbs.

Phase 2: Drilling and Testing will consist of the following activities:

- Install construction trailer and associated utilities
- Delivery and setup of drill rig and associated equipment
- Install temporary oil, water and gas handling equipment
- Drill three test sites and one water injection well
- Testing of wells
- Removal of drill rig and associated equipment

Phase 2: Drilling and Testing would involve drilling up to three test oil wells and one water injection well at the proposed project site, installation of temporary production facilities, disposal of the produced gas via an onsite gas combustor, and the trucking of the produced oil to the oil receiving facility in Torrance. The purpose of Phase 2 is to determine the potential productivity and economic viability of the proposed project. If Phase 2 yields the quantity and quality of production that E&B deems economically viable, the proposed project would proceed to Phase 3.

Crushed aggregate base provided in Phase 1 will be utilized as the base material throughout the project site. An approximately 6-inch berm will be provided around the well cellar to avoid surface flows from entering the well cellar. After the setup of the drill rig and the associated equipment and the installation of the temporary production equipment and storage tanks, three secondary containment areas will be provided by earthen berms with impervious liners.

Drainage outside of the well cellar berm and the secondary containment berms will be directed towards a temporary retention basin located near the southern boundary of the proposed project which will contain the 100-year flood volumes. The well cellar and the secondary containment areas will contain the incident rainfall 100-year flood volumes. See Phase 2 Drilling and Testing Storm Water Mitigation Plan (SWMP) in Exhibit Section of this SUSMP for actual berm heights and locations.

The storm water within the secondary containment areas will be either sent to the temporary production equipment to be processed and injected into the oil-bearing reservoir below the oil-water contact line or trucked offsite to an approved location.

The storm water within the well cellar will be sent to the temporary production equipment to be processed and injected into the oil-bearing reservoir below the oil-water contact line. The storm water in the temporary retention basin will be sent to the temporary production equipment to be processed. After it is processed, the storm water will be injected into the oil-bearing reservoir below the oil-water contact line. See Phase 2 Drilling and Testing Storm Water Mitigation Plan (SWMP) in Exhibit Section of this SUSMP.

Phase 2: Terminus will consist of the following activities:

- Removal of all temporary equipment.
- Abandonment of all wells.
- Removal of containment berms and secondary containment materials.
- Grade site to accommodate sump condition.
- Remove temporary retention basin.

- Construction earthen berms along perimeter of the project.

If the proposed project is not deemed economically viable, the temporary production equipment, construction trailer and sound attenuation walls would be removed. The three test oil wells and one water injection well would be properly abandoned in accordance with all applicable requirements. The project site would be left in smooth graded condition with site improvements including retaining walls, perimeter chain link fence, and perimeter landscaping. The runoff contained within the perimeter fence will be directed to a depressed area that will detain the 100-year flood volumes. An 8-inch high earthen berm will be installed inside the perimeter fence to eliminate any storm water surface flows discharging from the project site. All storm water will be retained on-site to infiltrate or evaporate.

As constructed in Phase 1, the landscape areas outside of the perimeter fence will be vegetated to allow for some infiltration and provide treatment of the storm water and irrigation runoff before it is directed to Valley Drive via curb cores and 6th street via openings in the rolled asphalt curbs.

The SWMP will include the proposed project in its ultimate condition with the Phase 2 - Terminus Condition and will delineate all storm drain conveyance systems within the project boundary. Site specific details are shown on Phase 2 Terminus Storm Water Mitigation Plan (SWMP) in Exhibit Section of this SUSMP

III. Site Description

The project site consists of approximately 1.3 acres located at 555 6th Street within an urbanized area in the southern portion of the City of Hermosa Beach within the Santa Monica Bay Watershed of Los Angeles County (Figure 1).

With the exception of the landscape areas outside of the perimeter walls along Valley Drive and 6th Street, the project site will not discharge storm water runoff from the project site.



Figure 1

The project site is bounded by 6th Street to the south, Valley Drive to the east, a light manufacturing building to the north and three light manufacturing multi-story buildings and a parking area to the west. The project site is owned by the City of Hermosa Beach and is currently being utilized as a maintenance yard. (Figure 2)



Scale: 1"=80' +/-

Figure 2

The project site is relatively flat with average elevations ranging from 55 to 42 feet above mean sea level (MSL). Surficial drainage is generally in a southwest direction. The zoning designation for the project site per the City of Hermosa Beach's Zoning Ordinance is M-1 (Light Manufacturing). The proposed project would be consistent with the zoning designation.

As depicted in Figure 1, site is located within the Santa Monica Bay Watershed.

Groundwater was encountered at depths between 47.7 and 49.3 feet during the subsurface investigation for the site.

The proposed project site is located within the jurisdiction of the Los Angeles Regional Water Quality Control Board (Region 4) and within the South Santa Monica Watershed (Hydrologic Unit 18070104030). Existing runoff from the project site does not discharge directly to the bay. See Figure 4 below.

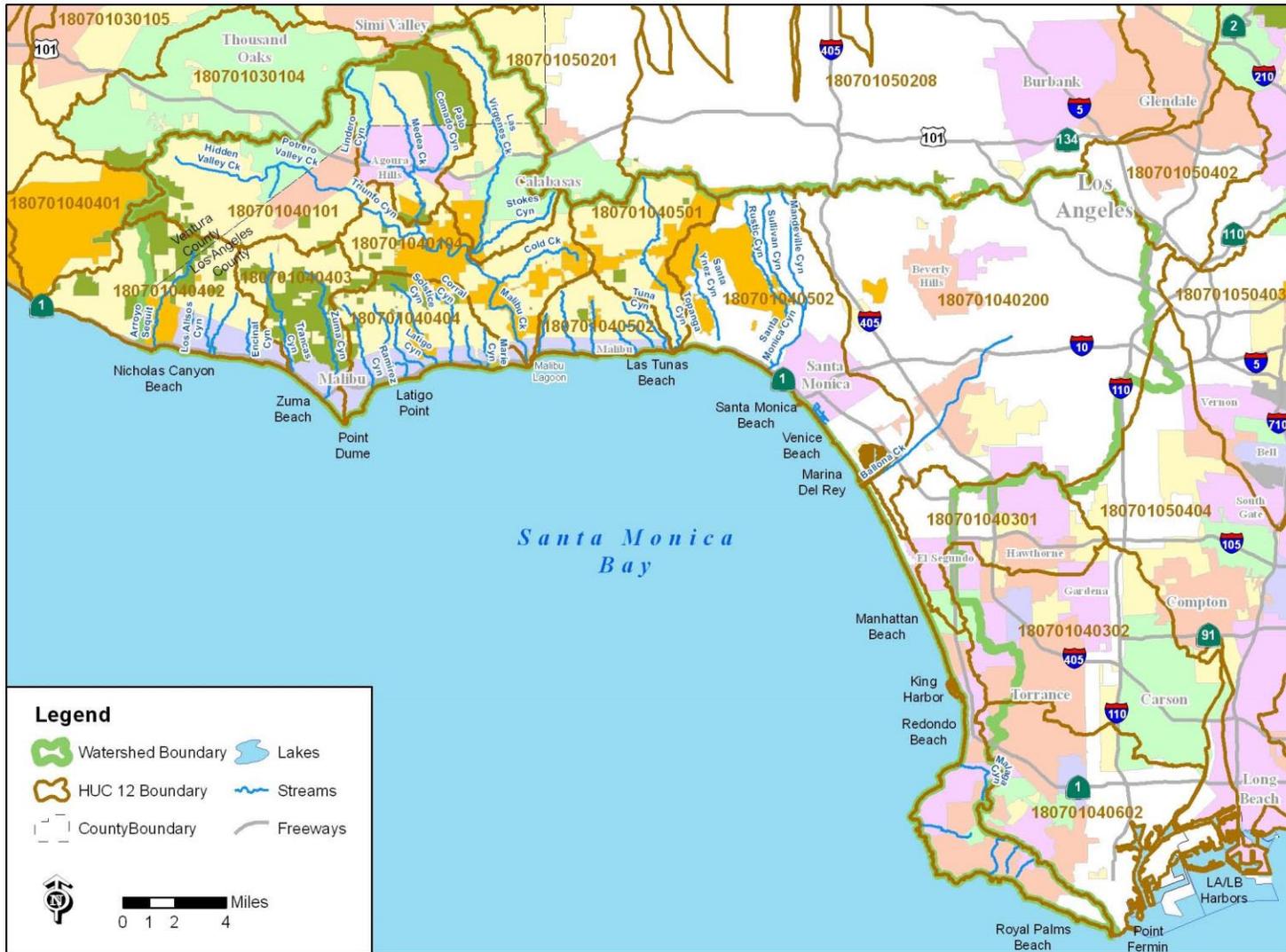


Figure B-2: Santa Monica Bay Watershed Management Area Hydrologic Units.

Figure 4

IV. SUSMP PROVISIONS APPLICABLE TO ALL CATEGORIES

The following SUSMP provisions are applicable to all development categories:

1. PEAK STORM WATER RUNOFF DISCHARGE RATES

With the exception of the landscape area outside of the perimeter wall, no storm water will be leaving the project site. Therefore, post-development peak storm water runoff discharge rates will not need to be addressed.

Existing Condition:

The project site is currently being utilized as a maintenance yard for the City of Hermosa Beach and contains various drainage areas.

Developed Condition Phase 2:

In the developed condition, the project site area within the perimeter wall will consist of crushed aggregate base impervious area. Runoff areas outside the containment areas within the perimeter drain towards a temporary retention basin. From there, the runoff will be processed and injected with water injection wells into the oil-producing reservoir below the oil-water contact.

The runoff within the three (bermed) containment areas will be processed and injected or disposed of at an off-site location. The well cellar will have a berm installed as necessary to avoid any of the surface flows from entering the well cellar.

Developed Condition Phase 2 Terminus:

In the developed condition, the project site area within the perimeter wall will consist of crushed aggregate base impervious area or natural ground as required by the City of Hermosa Beach. An 8-inch high earthen berm will be installed inside the perimeter fence to eliminate any storm water surface flows discharging from the project site. All storm water will be retained on-site to infiltrate and evaporate.

2. CONSERVE NATURAL AREAS

There are no natural areas on the project site that could be conserved. Additionally, the following concepts will be utilized:

- Drought tolerant plants will be planted in landscaped areas.

3. STORM WATER POLLUTANTS OF CONCERN

Storm water runoff from the portion of the project site outside the perimeter wall has little potential to contribute oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the storm water conveyance system. Pollutants of concern consist of any pollutants that exhibit one or more of the following characteristics: current loading or historic deposits of the pollutant that are impacting the beneficial uses of a receiving water, elevated levels of the pollutant are impacting the sediments of a receiving water and/or have the potential to bio accumulate in organisms therein, or the detectable inputs of the pollutant are at concentrations or loads considered potentially toxic to humans and/or flora and fauna.

The proposed project has been designed to eliminate pollutant discharge by reclaiming the project site's storm water within the perimeter walls that are not within the containment areas. The runoff will be disposed of as a part of the water injection process for Phase 2 project operations.

The proposed project will use a combination of non-structural, structural and treatment Best Management Practices (BMP's), as discussed below.

The following non-structural BMPs will be incorporated to reduce the potential of contributing pollutants in runoff:

Employee Education

The Owner/Lessee will distribute practical information guidelines regarding the operations of the project site as they pertain to applicable ongoing Post Construction activities as required by the SUSMP. See SUSMP Exhibit IV – Educational Materials.

4. SLOPES AND CHANNELS

The proposed project site is relatively flat, with no slopes or channels to preserve.

Site Design and Landscape Planning (CASQA SD-10)

The development incorporates landscaping into its site design to allow for some infiltration and providing treatment of the runoff areas. The Owner/Lessee shall be responsible for installation and maintenance of these areas.

Efficient Irrigation (CASQA SD-12)

Efficient irrigation devices will be installed in the landscape areas to minimize runoff of excessive irrigation water. As a part of the design of all landscape irrigation, including, but not limited to, such provisions as water sensors compliant with Assembly Bill (AB) 1881, programmable irrigation times (for short cycles), automatic zone irrigation systems, etc., will be used. Such areas will be maintained by the Owner/Lessee.

5. STORM DRAIN SYSTEM STENCILING AND SIGNAGE

Storm Drain Stencils (CASQA SD-13)

No storm drain structures are a part of the proposed project.

6. OUTDOOR MATERIAL STORAGE AREAS

Outdoor storage areas refer to storage areas or storage facilities solely for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system.

The drainage from these areas of the project site will not discharge to any storm waters conveyances systems with the watershed.

7. TRASH STORAGE AREAS

A trash storage area refers to an area where a trash receptacle or receptacles are located for use as a repository for solid wastes. The forces of water or wind can easily transport loose trash and debris into nearby storm drain inlets, channels, and/or creeks.

These receptacles will be stored in accordance with the City ordinances that apply to this type of outdoor storage area. Additionally, the receptacles lids shall be equipped with watertight lids and will remain closed at all times. Trash removal service will be provided on a weekly basis (minimum) by the local waste management entity.

8. PROOF OF ONGOING BMP MAINTENANCE

Improper maintenance of BMPs is one of the most common reasons why water quality controls will not function as designed or which may cause the system to fail entirely. It is important to consider the responsible party for maintenance of a permanent BMP and what equipment is required to perform the maintenance properly. The Owner may enter into a Maintenance Covenant Agreement for the property subject to Standard Urban Stormwater Mitigation Program (SUSMP) requirements. The document is attached as Exhibit III – Maintenance Covenant.

9. DESIGN STANDARDS FOR STRUCTURAL OR TREATMENT CONTROL BMPS

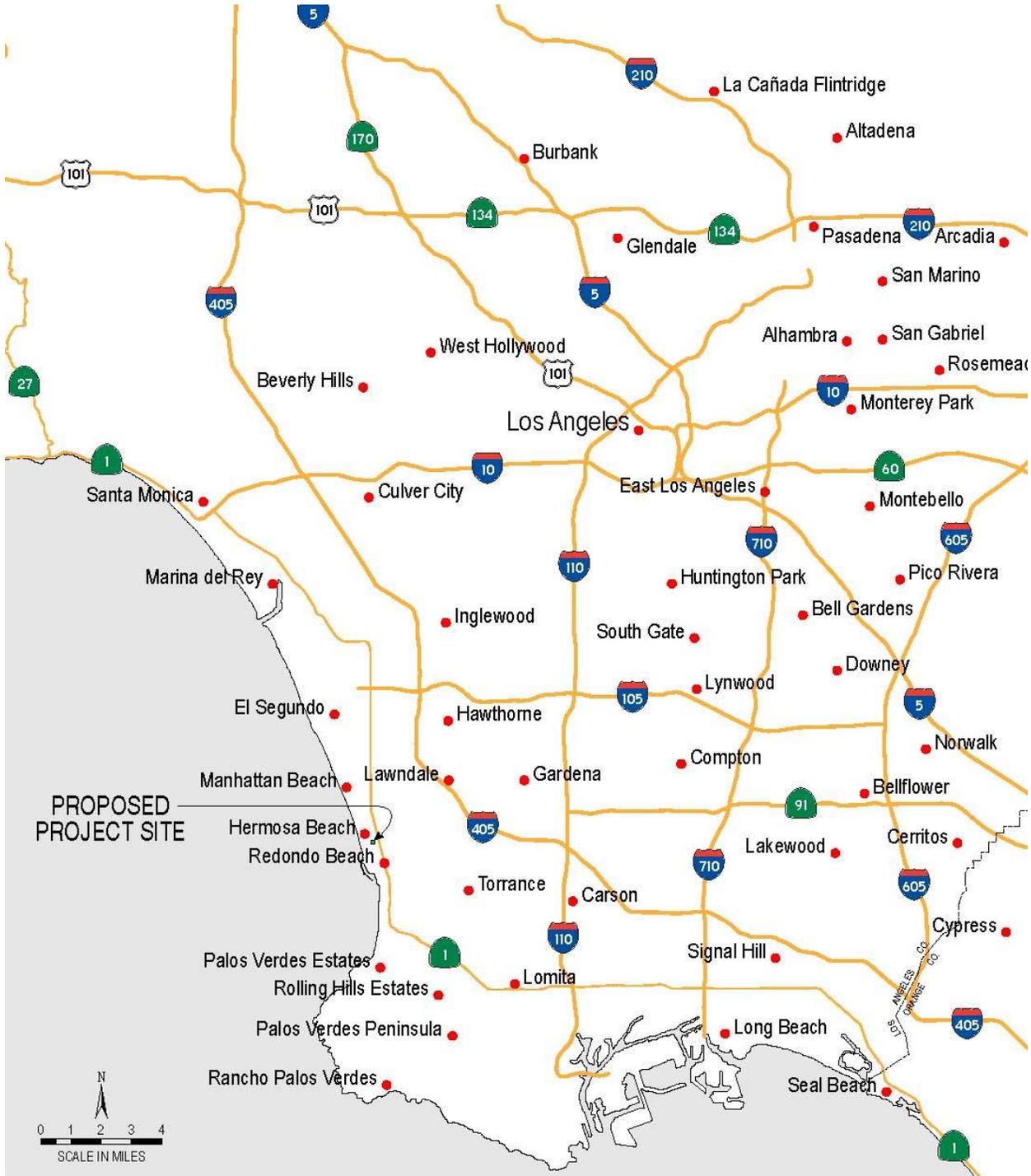
The proposed project includes the storm water treatment of flows from the project site that are not within the containment areas. These flows are conveyed to the temporary retention basin, processed and disposed of by injection wells into the oil-producing reservoir below the oil-water contact line.

V. PROVISIONS APPLICABLE TO INDIVIDUAL PRIORITY PROJECT CATEGORIES

Not applicable to the proposed project.

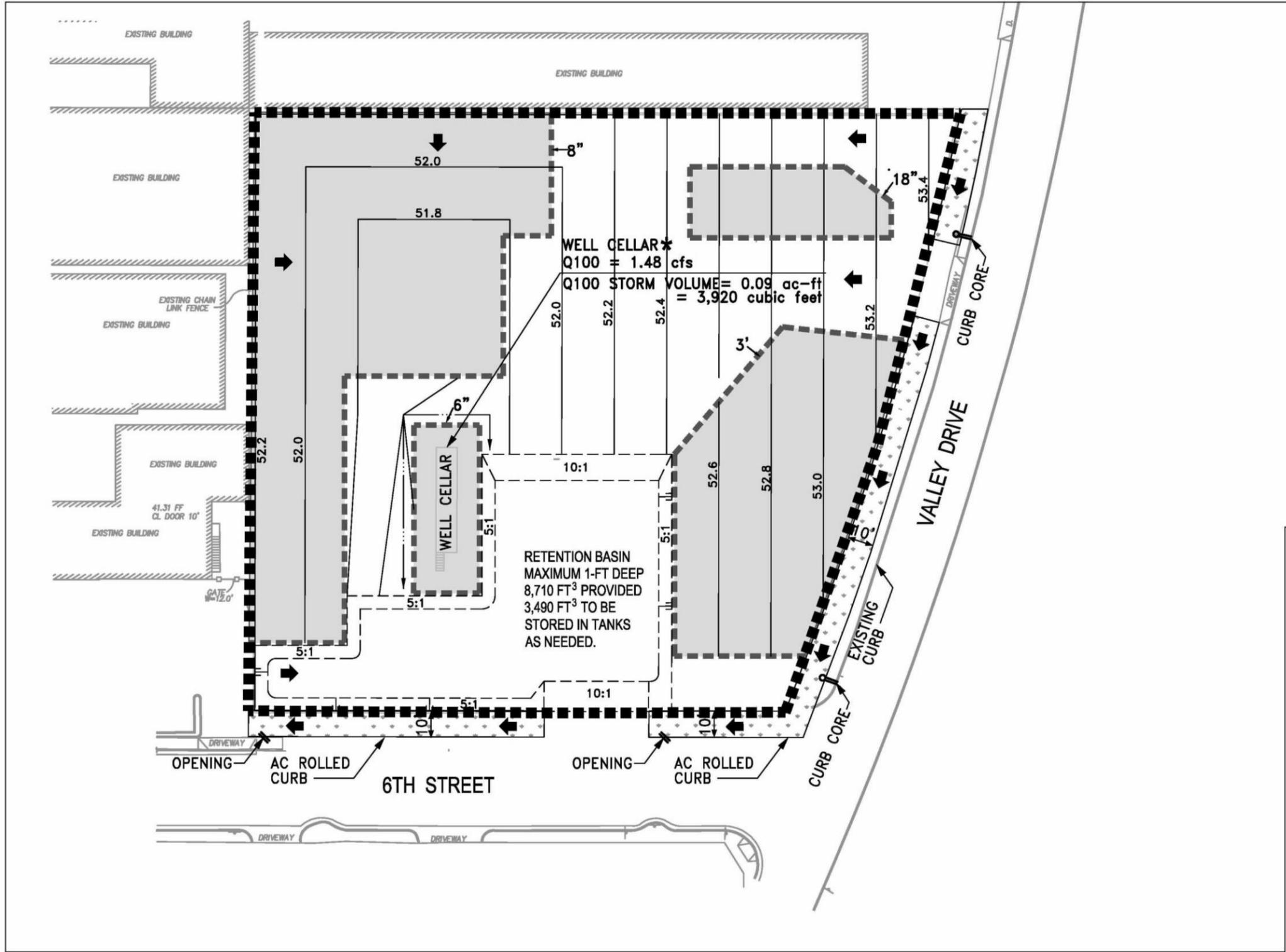
EXHIBITS

EXHIBIT I – VICINITY MAP



Source: Northcutt & Associates; Google Earth aerial dated March 7, 2011

**EXHIBIT II – STORM WATER MITIGATION PLAN
(SUSMP) SITE MAP**



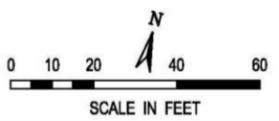
E&B Oil Development Project

LEGEND

- ■ ■ ■ ■ DRAINAGE AREA BOUNDARY
- ➔ DIRECTION OF SURFACE FLOW
- - - - - - STORM WATER DRAIN TO TEMP. PRODUCTION EQUIPMENT
- ← L=220' SURFACE FLOW LENGTH (FEET)
- ▨ LANDSCAPING
- ▤ SUB AREA BOUNDARY (CONTAINMENT)

STORM WATER MITIGATION PLAN PLANNING APPLICATION PHASE 2 DRILLING AND TESTING

MDS CONSULTING
 MORSE 17320 Redhill Ave. Suite 350 Irvine, CA 92614
 SCHULTZ Voice: 949-251-8821 FAX: 949-251-0516
 PLANNERS ENGINEERS SURVEYORS



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EXHIBIT III – MAINTENANCE COVENANT

RECORDING REQUESTED BY AND MAIL TO:

CITY OF HERMOSA BEACH
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
1315 VALLEY DRIVE
HERMOSA BEACH, CALIFORNIA 90254

Space above this line is for Recorder's use

MAINTENANCE COVENANT FOR STANDARD URBAN STORMWATER MITIGATION (SUSMP) REQUIREMENTS

Pursuant to Section 106.4.3 of the County of Los Angeles Building Code and Title 12, Chapter 12.8 of the Los Angeles County Code relating to the control of pollutants carried by stormwater runoff, structural and/or treatment control Best Management Practices (BMP's) will be installed on the following property:

LEGAL DESCRIPTION

ASSESSOR'S ID # _____
LOT NO. N/A

TRACT NO. 70622

ADDRESS: 555 6th Street Hermosa Beach, CA 90254

I (we) _____, hereby certify that I (we) am (are) the legal owner(s) of
(Legal Name of Property Owners)

property indicated above, and as such owners for the mutual benefit of future purchasers, their heirs, successors, and assigns, do hereby fix the following protective conditions to which their property, or portions thereof, shall be held, sold and/or conveyed.

That owner(s) shall maintain the drainage devices such as paved swales, bench drains, inlets, catch basins, downdrains, pipes, and water quality devices to be installed on the property indicated above and as shown on plans to be permitted by the City of Hermosa Beach, in a good and functional condition to safeguard the property owners and adjoining properties from damage and pollution.

That owner(s) shall conduct maintenance inspection of all Structural or Treatment Control BMP's on the property at least once a year and retain proof of the inspection, including vegetated swales, buffer strips and drain inserts. Said maintenance inspection shall verify the legibility of all required stencils and signs and shall repaint and label as necessary.

That owner(s) shall maintain all elements of the Standard Urban Stormwater Mitigation Plan and update the plan as necessary to reflect onsite conditions, including "Good Housekeeping" practices described in Exhibit IV of the SUSMP, as it relates common homeowner activities, including but not limited to automotive care, pet care, landscaping, painting, pool maintenance and recycling of wastes.

That owner(s) shall provide printed educational materials with any sale of the property, which provide information on what stormwater management facilities are present, the type(s) and location(s) of maintenance signs that are required, and how the necessary maintenance can be performed.

Owner(s):

By: _____ Date: _____

By: _____ Date: _____

(PLEASE ATTACH NOTARY)

EXHIBIT IV – EDUCATIONAL MATERIALS

Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-



yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids in the street or gutter. Take them to your local auto parts store, gas station or repair shop, or a household hazardous waste Roundup for recycling.

1 (888)CLEAN LA
www.888CleanLA.com

...not automotive fluids.



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Car Care Tips:

You can keep your car running smoothly and efficiently, and at the same time help prevent stormwater pollution by taking these easy steps...

- When changing vehicle fluids — motor oil, transmission, brake and radiator fluids — drain them into separate drip pans to avoid spills. Do not combine these fluids. Do not dispose of these fluids in the street, gutter or garbage. It is illegal.
- If a spill occurs, use kitty litter, sawdust or cornmeal for cleanup. Do not hose or rinse with water.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of an auto parts store or gas station that recycles these fluids, or for the location of a local household hazardous waste Roundup.
- Regularly check and maintain your car to keep it running safely and efficiently. Water runoff from streets, parking lots and driveways picks up oil and grease drippings, asbestos from brake linings, zinc from tires and organic compounds and metals from spilled fuels and carries them to the ocean.



Printed on recycled paper

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Storm Drains are for Rain...

More than 390,000 times each month,



lawns and gardens throughout LA County are overwatered. This can cause fertilizers and pesticides on grass and plants to flow into storm drains and to the ocean, untreated — harming the environment.

Please use fertilizers and pesticides wisely, not before a rain, and water carefully.

...not fertilizer.



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Fertilizing Tips:

Fertilizers contain toxic chemicals that are harmful to people and the environment. You can keep your lawn and garden green and, at the same time, solve the pollution problem by taking these easy steps.

- Do not over-fertilize and do not fertilize near ditches, gutters or storm drains.
- Follow the directions on the label carefully.
- Do not overwater after fertilizing. Overflow water and your fertilizer will run into the street, down the storm drain and into the ocean.
- Do not fertilize before a rain.
- Store fertilizers and chemicals in a covered area and in sealed containers to prevent runoff.
- Do not blow, sweep, hose or rake leaves or other yard trimmings into the street, gutter or storm drain.



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Storm Drains are for Rain...

More than 130,000 times each month,



L.A. County residents wash their dirty paint brushes under an outdoor faucet. This dirty rinse water flows into the street, down the storm drain and to the ocean, untreated.

Wash water-based paint brushes in the sink and take old paint and paint-related products to a household hazardous waste Roundup.

...not paint.



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Painting Tips:

All paints and solvents contain toxic chemicals that can be dangerous to people and harmful to the environment. Please handle these products carefully by taking these easy steps.

- Never dispose of paint or paint-related products in the gutters or storm drains. This is called illegal dumping. Take them to a household hazardous waste Roundup. Call 1 (888)CLEAN LA or visit www.888CleanLA.com to locate a Roundup near you.
- Buy only what you need. Reuse leftover paint for touch-ups or donate it to a local graffiti paint-out program. Recycle or use up excess paint.
- Clean water-based paint brushes in the sink.
- Oil-based paints should be cleaned with thinner that can be reused. Set the used thinner aside in a closed jar to settle-out paint particles.
- Store paints and paint-related products in rigid, durable and watertight containers with tight-fitting covers.



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More than 200,000 times each month,

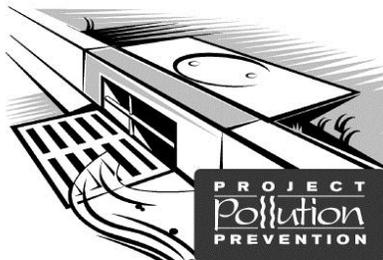


lawns and gardens throughout LA County are sprayed with pesticides. Overwatering or rain causes pesticides on leaves and grass to flow into the storm drain and to the ocean — untreated.

Please use pesticides wisely, not before a rain, and water carefully.

1 (888)CLEAN LA
www.888CleanLA.com

...not pesticides.



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Pesticide Tips:

You can keep your lawn and garden green and at the same time solve the pollution problem by taking these easy steps...

- Never dispose of lawn or garden chemicals in storm drains. This is called illegal dumping. Take them to a household hazardous waste roundup. Call 1(888)CLEAN LA or visit www.888CleanLA.com to locate a roundup or collection facility near you.
- More is not better. Use pesticides sparingly. "Spot" apply, rather than "blanket" apply.
- Read labels! Use only as directed.
- Use non-toxic products for your garden and lawn whenever possible.
- If you must store pesticides, make sure they are in a sealed, water-proof container that cannot leak.
- When watering your lawn, use the least amount of water possible so it doesn't run into the street and carry pesticide chemicals with it. Don't use pesticides before a rain storm. You will not only lose the pesticide, but also will be harming the environment.



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Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-



yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids, recyclable products, or household hazardous wastes into the street or gutter. Take them to your local auto repair station, recycling center or a household hazardous waste roundup.

1(888)CLEAN LA
www.888CleanLA.com

...they're not recycling centers.



Recycling Tips:

You can help keep your community clean, protect our area waterways and make the beaches safe for ocean swimmers by putting recyclable materials where they belong — at a recycling center or household hazardous waste roundup. Never throw or pour anything into the streets or gutters...

- When changing vehicle fluids – transmission, hydraulic and motor oil, brake and radiator fluid – drain them into a drip pan to avoid spills. Do not combine these fluids. Do not dispose of them in the street, gutter or in the garbage. It is illegal.
- Other materials that should be taken to a household hazardous waste Roundup are: paint and paint-related materials, household cleaners, batteries, pesticides and fertilizers, pool chemicals, and aerosol products.
- Aluminum, glass, plastic and newspapers should be placed in your curbside recycling bin or taken to a local recycling center.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of a center that recycles these fluids, or for the location of a local household hazardous waste Roundup.



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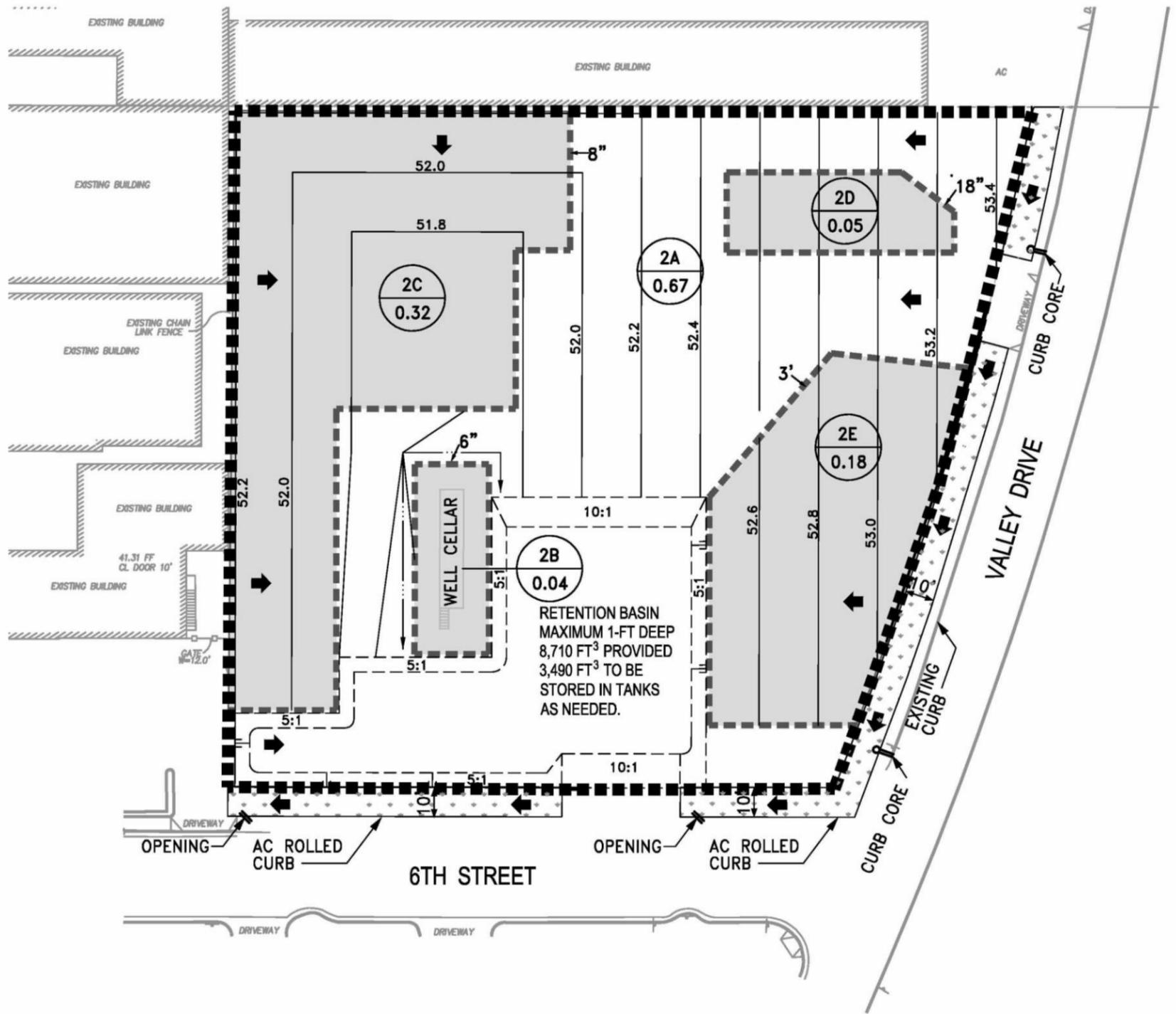
EXHIBIT V – BMP RESPONSIBILITY AND FREQUENCY MATRIX

	<u>BMP</u>	<u>RESPONSIBILITY</u>	<u>INSPECTION/MAINTENANCE/FREQUENCY</u>
	Employee Education	Property Owner/Lessee	Information to be provided to employees at initial hire and annually thereafter.
	Activity Restrictions	Property Owner/Lessee	Information to be provided to employees at initial hire and annually thereafter.
CASQA SD-10	Site Design and Landscape Planning	Property Owner/Lessee	Once a week, in conjunction with landscape maintenance activities and prior to finalizing any replanting schemes, verify that plants continue to be grouped according to similar water requirements in order to reduce excess irrigation runoff.
CASQA SD-12	Efficient Irrigation	Property Owner/Lessee	Once a week, in conjunction with maintenance activities. This may include provision of water sensors, programmable irrigation times (for short cycles), etc. Verify that runoff minimizing landscape design continues to function by checking that water sensors are functioning properly, that irrigation heads are adjusted properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather and day or night time temperatures. All irrigation equipment shall comply with AB 1881 standards.
	Temporary Retention Basin/Depressed Area	Property Owner/Lessee	Remove accumulated trash and debris.

APPENDIX A – BMP FLOW RATE CALCULATIONS AND DETAILS

Not Applicable to this project due to lack of storm water discharging from the proposed project site.

APPENDIX B – HYDROLOGY EXHIBITS



CALCULATION RESULTS			
AREA	PEAK FLOW (CFS)	STORM VOLUME (ACRE) (CUBIC FT.)	
2A	1.88	0.28	12,197
2B	0.08	0.01	436
2C	0.98	0.14	6,098
2D	0.15	0.02	871
2E	0.55	0.08	3,485

CONTAINMENT AREAS 2C, 2D & 2E ARE ASSUMED 100% IMPERMEABLE (PLASTIC LINED AREA)
 AREA 2A ASSUMED 2% IMPERMEABLE (C.A.B.)
 AREA 2B ASSUMED 20% IMPERMEABLE (CONCRETE & C.A.B.)

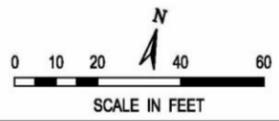
E&B Oil Development Project

- LEGEND**
- DRAINAGE AREA BOUNDARY
 - ➔ DIRECTION OF SURFACE FLOW
 - ← L=220' SURFACE FLOW LENGTH (feet)
 - ⊙ 1 / 0.75 AREA DESIGNATION AREA (acre)
 - ▨ LANDSCAPING
 - ▭ SUB AREA BOUNDARY (CONTAINMENT AREA)

100 YEAR STORM HYDROLOGY MAP PLANNING APPLICATION PHASE 2 DRILLING AND TESTING

MDS CONSULTING
 PLANNERS ENGINEERS SURVEYORS

MORSE 17320 Redhill Ave. Suite 350 Irvine, CA 92614
 SCHULTZ Voice: 949-251-8821 FAX: 949-251-0516



A:\847701\EXHIBITS\Hydrology Phase 2.dwg 4/9/13

**Preliminary
STANDARD URBAN STORMWATER
MITIGATION PLAN
(SUSMP)**

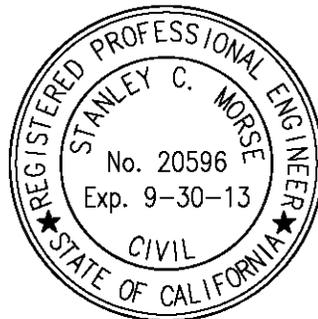
FOR

**E&B Oil Development Project
Phase 4 – Development and Operations
555 6th Street
CITY OF HERMOSA BEACH
LOS ANGELES COUNTY, CALIFORNIA**

DATE PREPARED: April 9, 2013

**PREPARED FOR:
E&B Natural Resources Management Corporation
1600 Norris Road
Bakersfield, CA 93308
661 679-1730**

PREPARED BY:



Stanley Morse

   
17320 REDHILL AVENUE, SUITE 350, IRVINE, CA 92614
949.251.8821 MDSConsulting.net

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APPENDIX A - BMP FLOW RATE CALCULATIONS AND DETAILS

APPENDIX B - HYDROLOGY EXHIBITS

I. INTRODUCTION

The municipal stormwater National Pollutant Discharge Elimination System (NPDES) permit (Los Angeles County) issued to Los Angeles County and 85 cities (Permittees) by the Los Angeles County Regional Water Quality Control Board NPDES No. CAS004001 requires the development and implementation of a program addressing storm water pollution issues in development. The Standard Urban Stormwater Mitigation Plan (SUSMP) was developed as part of the municipal storm water program to address storm water pollution from new development and redevelopment projects. The SUSMP contains a list of minimum required Best Management Practices (BMPs) that must be used for certain types of projects. Additional BMPs may be required by ordinance or code adopted by the City and applied generally or on a case-by-case basis. Developers must incorporate appropriate SUSMP requirements into the project plans. The City may approve a proposed project plan as part of a development plan approval process or prior to issuing planning approval for the projects covered by the SUSMP requirements. All projects that fall into one of the following categories require a SUSMP:

1. Single-family hillside homes (only development of one acre or more of surface area is subject to the SUSMP numerical design criteria requirement);
2. Ten or more unit homes (includes single-family homes, multifamily homes, condominiums, and apartments);
3. Automotive service facilities (SIC codes 5013, 5014, 5541, 7532-7534, and 7536-7539);
4. Restaurants (SIC code 5812);
5. 100,000 or more square feet of impervious surface in industrial/commercial development;
6. Retail gasoline outlet;
7. Parking lot 5,000 square feet or more of surface area or with 25 or more parking spaces;
8. **Redevelopment projects in subject categories that meet redevelopment thresholds; and**
9. Location within or directly adjacent to or discharging directly to an environmentally sensitive area if the discharge is likely to impact a sensitive biological species or habitat and the development creates 2,500 square feet or more of impervious surface.

* "Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to, the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land-disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to these SUSMPs, the Design Standards apply only to the addition, and not to the entire development.

This Standard Urban Stormwater Mitigation Plan (SUSMP) for the proposed project is intended to comply with the requirements of the County of Los Angeles Storm Water Municipal Separate Storm Sewer System (MS4) permit and the City of Hermosa Beach requirements for project compliance with the SUSMP as it relates to Category 8 priority projects.

This SUSMP is intended to include all BMPs and their operations and maintenance as required in the post construction conditions of the proposed project in the ultimate condition with Phase 4 – Development and Operations.

Site conditions during construction will be covered under the State General Construction Permit NPDES CAS000002 Order No. 2009-009-DWQ until the Notice of Termination has been filed and accepted by the State Water Resources Control Board. The proposed project will be required to acquire coverage under the State Industrial Permit prior to commencement of any industrial type operations or activities.

II. PROJECT DESCRIPTION

The project site at 555 6th Street consists of 1.3 acres located in the City of Hermosa Beach, County of Los Angeles. The project site is located within an area that has light manufacturing land uses with the exception of the Veterans Parkway (Hermosa Valley Greenbelt/Trail) and Ardmore Park to the east across Valley Drive. The project site is currently being utilized by the City of Hermosa as a maintenance yard that will be relocated to another location.

The proposed project provides for the development of an onshore drilling and production site that will utilize directional drilling of wells to access oil and gas reserves in the Torrance Oil Field. In its ultimate condition with the completion of Phase 4, the proposed project will have up to 30 oil and gas wells, four water injection wells, and supporting production equipment. The proposed project will reclaim and treat most of the storm water to reduce water demand and protect storm water runoff quality as it pertains to the SUSMP requirements. All surfaces within the perimeter wall will be impervious and the runoff will be collected and treated onsite before it is injected by water injection wells into the oil-producing reservoir below the oil-water contact line. There is a 10-foot landscape area along the project frontage on Valley Drive and 6th Street. The landscape area will allow for some infiltration and provide treatment of the storm water and irrigation runoff. The landscape area and the entrance driveway off of Valley Drive will drain to Valley Drive and 6th Street through curb cores.

Phase 4: Development and Operations will consist of the following activities:

- Drill rig delivery, setup and removal
- Drill oil and injection wells resulting in up to 30 oil and gas wells and four water injection wells
- Remove 32-foot noise attenuation wall
- Conduct routine maintenance and operations
- Conduct major maintenance

Phase 4: Development and Operations would maximize oil and gas recovery from the reservoir by drilling the additional wells (up to a total of 30 oil and gas well and four water injection wells) and activating the permanent production facility for the ongoing operations of the proposed project.

All surfaces within the perimeter walls will be impervious. As shown on the SWMP sheet 1 of 1 in Exhibit II Section of this SUSMP, drainage areas of the project site located outside the containment area will drain to inlets. From there, the runoff is pumped to the containment area. From the containment area there will be controlled flow to the two underground drain sumps located under the onsite access road. As shown in SWMP sheet 1 of 1 in Exhibit Section II of this SUSMP, the containment area (6 feet below grade) that contains the tank farm and gas processing unit and the area that contains the oil water separation equipment will drain via an underground storm drainage system which will discharge into the two underground drain sumps. The runoff in the underground drain sumps will be pumped to the production equipment to be processed. After it is processed, the runoff will be pumped to the water injection wells which will inject the processed runoff into the oil-producing reservoir below the oil-water contact line.

In addition, the drainage area that includes the entrance driveway at Valley Drive and the landscaped area on the north side of the entrance will be directed towards Valley Drive. The landscape areas outside of the perimeter fence will allow for some infiltration and provide treatment of the storm water and irrigation runoff before it is be directed to Valley Drive and 6th street via curb cores. See SWMP sheet 1 of 1 located in Exhibit Section II of this SUSMP.

Parking for Phase 4 includes four off-street parking spaces on the southern portion of project site.

Site-specific details are shown on SWMP sheet 1 of 1 located in Exhibit Section II of this SUSMP.

The SWMP includes the proposed project in its ultimate condition (completion of Phase 4) and will include all storm drain conveyances systems within the project boundary.

III. Site Description

The project site consists of approximately 1.3 acres located at 555 6th Street within an urbanized area in the southern portion of the City of Hermosa Beach within the Santa Monica Bay Watershed of Los Angeles County (Figure 1).

With the exception of the landscape areas outside of the perimeter walls along Valley Drive and 6th Street, the project site will not discharge storm water runoff from the project site.



Figure 1

The project site is bounded by 6th Street to the south, Valley Drive to the east, a light manufacturing building to the north and three light manufacturing multi-story buildings and a parking area to the west. The project site is owned by the City of Hermosa Beach and is currently being utilized as a maintenance yard. (Figure 2)



Scale: 1"=80' +/-

Figure 2

The project site is relatively flat with average elevations ranging from 55 to 42 feet above mean sea level (MSL). Surficial drainage is generally in a southwest direction. The zoning designation for the project site per the City of Hermosa Beach's Zoning Ordinance is M-1 (Light Manufacturing). The proposed project would be consistent with the zoning designation.

As depicted in Figure 1, site is located within the Santa Monica Bay Watershed.

Groundwater was encountered at depths between 47.7 and 49.3 feet during the subsurface investigation for the site.

The proposed project site is located within the jurisdiction of the Los Angeles Regional Water Quality Control Board (Region 4) and within the South Santa Monica Watershed (Hydrologic Unit 18070104030). Existing runoff from the project site does not discharge directly to the bay. See Figure 4 below.



Figure B-2: Santa Monica Bay Watershed Management Area Hydrologic Units.

Figure 4

IV. SUSMP PROVISIONS APPLICABLE TO ALL CATEGORIES

The following SUSMP provisions are applicable to all development categories:

1. PEAK STORM WATER RUNOFF DISCHARGE RATES

With the exception of the landscape area outside of the perimeter wall, no storm water will be leaving the project site. Therefore, post-development peak storm water runoff discharge rates will not need to be addressed.

Existing Condition:

The project site is currently being utilized as a maintenance yard for the City of Hermosa Beach and contains various drainage areas.

Developed Condition:

In the developed condition, the project site area within the perimeter wall will consist of 100% impervious area. Runoff from the project site will generally drain to two drainage areas that will be directed into two underground drain sump tanks located within the onsite access drive. From there, the runoff will be treated and pumped to the water injection wells from where it will be injected into the oil-producing reservoir below the oil-water contact.

2. CONSERVE NATURAL AREAS

There are no natural areas on the project site that could be conserved. Additionally, the following concepts will be utilized:

- Drought tolerant plants will be planted in landscaped areas.

3. STORM WATER POLLUTANTS OF CONCERN

Storm water runoff from the portion of the project site within the perimeter walls has the potential to contribute oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the storm water conveyance system. Pollutants of concern consist of any pollutants that exhibit one or more of the following characteristics: current loading or historic deposits of the pollutant that are impacting the beneficial uses of a receiving water, elevated levels of the pollutant are impacting the sediments of a receiving water and/or have the potential to bio accumulate in organisms therein, or the detectable inputs of the pollutant are at concentrations or loads considered potentially toxic to humans and/or flora and fauna.

The proposed project has been designed to eliminate pollutant discharge reclaiming the project site's storm water within the perimeter walls for the Phase 4 ultimate project operations.

The proposed project will use a combination of non-structural, structural and treatment Best Management Practices (BMP's), as discussed below.

The following non-structural BMPs will be incorporated to reduce the potential of contributing pollutants in runoff:

Employee Education

The Owner/Lessee will distribute practical information guidelines regarding the operations of the project site as they pertain to applicable ongoing Post Construction activities as required by the SUSMP. See SUSMP Exhibit IV – Educational Materials.

4. SLOPES AND CHANNELS

The proposed project site is relatively flat, with no slopes or channels to preserve.

Site Design and Landscape Planning (CASQA SD-10)

The development incorporates landscaping into its site design to allow for some infiltration and providing treatment of the runoff areas. The Owner/Lessee shall be responsible for installation and maintenance of these areas.

Efficient Irrigation (CASQA SD-12)

Efficient irrigation devices will be installed in the landscape areas to minimize runoff of excessive irrigation water. As a part of the design of all landscape irrigation, including, but not limited to, such provisions as water sensors compliant with Assembly Bill (AB) 1881, programmable irrigation times (for short cycles), automatic zone irrigation systems, etc., will be used. Such areas will be maintained by the Owner/Lessee.

5. STORM DRAIN SYSTEM STENCILING AND SIGNAGE

Storm Drain Stencils (CASQA SD-13)

No storm drain structures are a part of the proposed project.

6. OUTDOOR MATERIAL STORAGE AREAS

Outdoor storage areas refer to storage areas or storage facilities solely for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system.

The drainage from these areas of the project site will not discharge to any storm waters conveyances systems with the watershed.

7. TRASH STORAGE AREAS

A trash storage area refers to an area where a trash receptacle or receptacles are located for use as a repository for solid wastes. The forces of water or wind can easily transport loose trash and debris into nearby storm drain inlets, channels, and/or creeks.

These receptacles will be stored in accordance with the City ordinances that apply to this type of outdoor storage area. Additionally, the receptacles lids shall be equipped with watertight lids and will remain closed at all times. Trash removal service will be provided on a weekly basis (minimum) by the local waste management entity.

8. PROOF OF ONGOING BMP MAINTENANCE

Improper maintenance of BMPs is one of the most common reasons why water quality controls will not function as designed or which may cause the system to fail entirely. It is important to consider the responsible party for maintenance of a permanent BMP and what equipment is required to perform the maintenance properly. The Owner may enter into a Maintenance Covenant Agreement for the property subject to Standard Urban Stormwater Mitigation Program (SUSMP) requirements. The document is attached as Exhibit III – Maintenance Covenant.

9. DESIGN STANDARDS FOR STRUCTURAL OR TREATMENT CONTROL BMPS

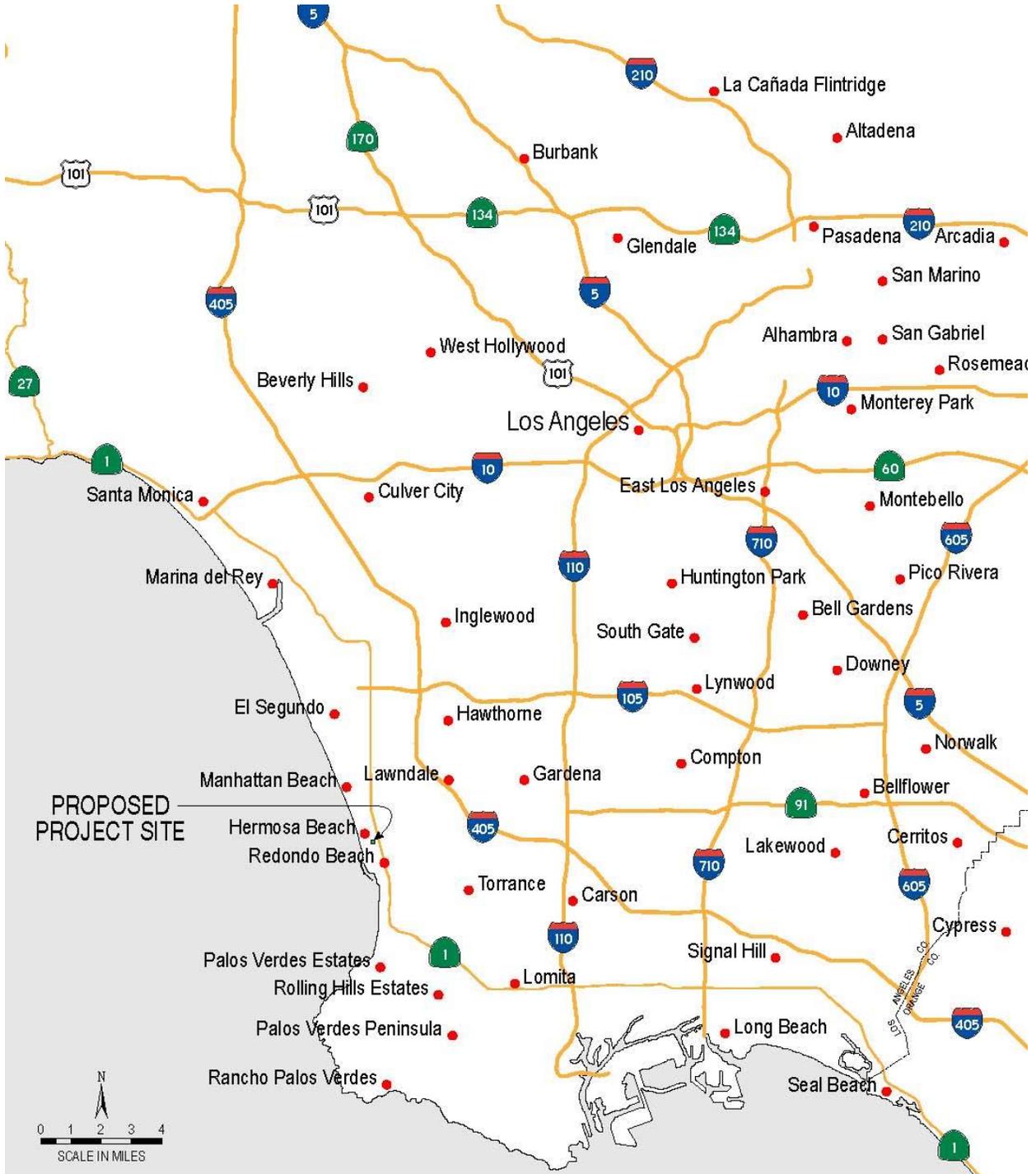
The proposed project includes the storm water treatment of flows from the project site that are not within the containment areas. These flows are conveyed to the temporary retention basin, processed and disposed of by injection wells into the oil-producing reservoir below the oil-water contact line.

V. PROVISIONS APPLICABLE TO INDIVIDUAL PRIORITY PROJECT CATEGORIES

Not applicable to the proposed project.

EXHIBITS

EXHIBIT I – VICINITY MAP



Source: Northcutt & Associates; Google Earth aerial dated March 7, 2011

EXHIBIT II – STORM WATER MITIGATION PLAN (SUSMP) SITE MAP

EXHIBIT III – MAINTENANCE COVENANT

RECORDING REQUESTED BY AND MAIL TO:

CITY OF HERMOSA BEACH
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
1315 VALLEY DRIVE
HERMOSA BEACH, CALIFORNIA 90254

Space above this line is for Recorder's use

MAINTENANCE COVENANT FOR STANDARD URBAN STORMWATER MITIGATION (SUSMP) REQUIREMENTS

Pursuant to Section 106.4.3 of the County of Los Angeles Building Code and Title 12, Chapter 12.8 of the Los Angeles County Code relating to the control of pollutants carried by stormwater runoff, structural and/or treatment control Best Management Practices (BMP's) will be installed on the following property:

LEGAL DESCRIPTION

ASSESSOR'S ID # _____
LOT NO. N/A

TRACT NO. 70622

ADDRESS: 555 6th Street Hermosa Beach, CA 90254

I (we) _____, hereby certify that I (we) am (are) the legal owner(s) of
(Legal Name of Property Owners)

property indicated above, and as such owners for the mutual benefit of future purchasers, their heirs, successors, and assigns, do hereby fix the following protective conditions to which their property, or portions thereof, shall be held, sold and/or conveyed.

That owner(s) shall maintain the drainage devices such as paved swales, bench drains, inlets, catch basins, downdrains, pipes, and water quality devices to be installed on the property indicated above and as shown on plans to be permitted by the City of Hermosa Beach, in a good and functional condition to safeguard the property owners and adjoining properties from damage and pollution.

That owner(s) shall conduct maintenance inspection of all Structural or Treatment Control BMP's on the property at least once a year and retain proof of the inspection, including vegetated swales, buffer strips and drain inserts. Said maintenance inspection shall verify the legibility of all required stencils and signs and shall repaint and label as necessary.

That owner(s) shall maintain all elements of the Standard Urban Stormwater Mitigation Plan and update the plan as necessary to reflect onsite conditions, including "Good Housekeeping" practices described in Exhibit IV of the SUSMP, as it relates common homeowner activities, including but not limited to automotive care, pet care, landscaping, painting, pool maintenance and recycling of wastes.

That owner(s) shall provide printed educational materials with any sale of the property, which provide information on what stormwater management facilities are present, the type(s) and location(s) of maintenance signs that are required, and how the necessary maintenance can be performed.

Owner(s):

By: _____ Date: _____

By: _____ Date: _____

(PLEASE ATTACH NOTARY)

EXHIBIT IV – EDUCATIONAL MATERIALS

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Car Care Tips:

You can keep your car running smoothly and efficiently, and at the same time help prevent stormwater pollution by taking these easy steps...

- When changing vehicle fluids — motor oil, transmission, brake and radiator fluids — drain them into separate drip pans to avoid spills. Do not combine these fluids. Do not dispose of these fluids in the street, gutter or garbage. It is illegal.
- If a spill occurs, use kitty litter, sawdust or cornmeal for cleanup. Do not hose or rinse with water.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of an auto parts store or gas station that recycles these fluids, or for the location of a local household hazardous waste Roundup.
- Regularly check and maintain your car to keep it running safely and efficiently. Water runoff from streets, parking lots and driveways picks up oil and grease drippings, asbestos from brake linings, zinc from tires and organic compounds and metals from spilled fuels and carries them to the ocean.



Printed on recycled paper

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lawns and gardens throughout LA County are overwatered. This can cause fertilizers and pesticides on grass and plants to flow into storm drains and to the ocean, untreated — harming the environment.

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www.888CleanLA.com

Fertilizing Tips:

Fertilizers contain toxic chemicals that are harmful to people and the environment. You can keep your lawn and garden green and, at the same time, solve the pollution problem by taking these easy steps.

- Do not over-fertilize and do not fertilize near ditches, gutters or storm drains.
- Follow the directions on the label carefully.
- Do not overwater after fertilizing. Overflow water and your fertilizer will run into the street, down the storm drain and into the ocean.
- Do not fertilize before a rain.
- Store fertilizers and chemicals in a covered area and in sealed containers to prevent runoff.
- Do not blow, sweep, hose or rake leaves or other yard trimmings into the street, gutter or storm drain.



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Storm Drains are for Rain...

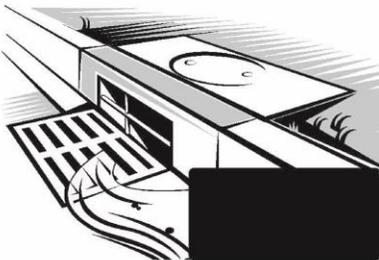
More than 130,000 times each month,



L.A. County residents wash their dirty paint brushes under an outdoor faucet. This dirty rinse water flows into the street, down the storm drain and to the ocean, untreated.

Wash water-based paint brushes in the sink and take old paint and paint-related products to a household hazardous waste Roundup.

...not paint.



1 (888)CLEAN LA
www.888CleanLA.com

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Painting Tips:

All paints and solvents contain toxic chemicals that can be dangerous to people and harmful to the environment. Please handle these products carefully by taking these easy steps.

- Never dispose of paint or paint-related products in the gutters or storm drains. This is called illegal dumping. Take them to a household hazardous waste Roundup. Call 1(888)CLEAN LA or visit www.888CleanLA.com to locate a Roundup near you.
- Buy only what you need. Reuse leftover paint for touch-ups or donate it to a local graffiti paint-out program. Recycle or use up excess paint.
- Clean water-based paint brushes in the sink.
- Oil-based paints should be cleaned with thinner that can be reused. Set the used thinner aside in a closed jar to settle-out paint particles.
- Store paints and paint-related products in rigid, durable and watertight containers with tight-fitting covers.



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More than 200,000 times each month,

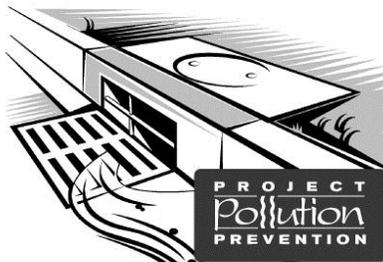


lawns and gardens throughout LA County are sprayed with pesticides. Overwatering or rain causes pesticides on leaves and grass to flow into the storm drain and to the ocean — untreated.

Please use pesticides wisely, not before a rain, and water carefully.

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Pesticide Tips:

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- More is not better. Use pesticides sparingly. "Spot" apply, rather than "blanket" apply.
- Read labels! Use only as directed.
- Use non-toxic products for your garden and lawn whenever possible.
- If you must store pesticides, make sure they are in a sealed, water-proof container that cannot leak.
- When watering your lawn, use the least amount of water possible so it doesn't run into the street and carry pesticide chemicals with it. Don't use pesticides before a rain storm. You will not only lose the pesticide, but also will be harming the environment.



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Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-



yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids, recyclable products, or household hazardous wastes into the street or gutter. Take them to your local auto repair station, recycling center or a household hazardous waste roundup.

1(888)CLEAN LA
www.888CleanLA.com

...they're not recycling centers.



Recycling Tips:

You can help keep your community clean, protect our area waterways and make the beaches safe for ocean swimmers by putting recyclable materials where they belong — at a recycling center or household hazardous waste roundup. Never throw or pour anything into the streets or gutters...

- When changing vehicle fluids – transmission, hydraulic and motor oil, brake and radiator fluid – drain them into a drip pan to avoid spills. Do not combine these fluids. Do not dispose of them in the street, gutter or in the garbage. It is illegal.
- Other materials that should be taken to a household hazardous waste Roundup are: paint and paint-related materials, household cleaners, batteries, pesticides and fertilizers, pool chemicals, and aerosol products.
- Aluminum, glass, plastic and newspapers should be placed in your curbside recycling bin or taken to a local recycling center.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of a center that recycles these fluids, or for the location of a local household hazardous waste Roundup.



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EXHIBIT V – BMP RESPONSIBILITY AND FREQUENCY MATRIX

<u>BMP</u>		<u>RESPONSIBILITY</u>	<u>INSPECTION/MAINTENANCE/FREQUENCY</u>
	Employee Education	Property Owner/Lessee	Information to be provided to employees at initial hire and annually thereafter.
	Activity Restrictions	Property Owner/Lessee	Information to be provided to employees at initial hire and annually thereafter.
CASQA SD-10	Site Design and Landscape Planning	Property Owner/Lessee	Once a week, in conjunction with landscape maintenance activities and prior to finalizing any replanting schemes, verify that plants continue to be grouped according to similar water requirements in order to reduce excess irrigation runoff.
CASQA SD-12	Efficient Irrigation	Property Owner/Lessee	Once a week, in conjunction with maintenance activities. This may include provision of water sensors, programmable irrigation times (for short cycles), etc. Verify that runoff minimizing landscape design continues to function by checking that water sensors are functioning properly, that irrigation heads are adjusted properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather and day or night time temperatures. All irrigation equipment shall comply with AB 1881 standards.
	Drainage Sump/Basin	Property Owner/Lessee	Remove any accumulated trash and debris.

APPENDIX A – BMP FLOW RATE CALCULATIONS AND DETAILS

Not Applicable to this project due to lack of storm water discharging from the proposed project site.

APPENDIX B – HYDROLOGY EXHIBIT

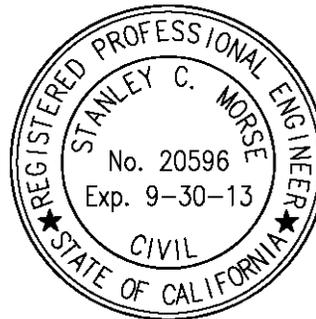
Preliminary Hydrology Study
for
E&B Oil Development Project
555 6th Street

CITY OF HERMOSA BEACH
LOS ANGELES COUNTY, CALIFORNIA

DATE PREPARED: April 9, 2013

PREPARED FOR:
E&B Natural Resources Management Corporation
1600 Norris Road
Bakersfield, CA 93308
661 679-1730

PREPARED BY:



Stanley Morse



17320 REDHILL AVENUE, SUITE 350, IRVINE, CA 92614
949.251.8821 MDSConsulting.net

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- * Site/Project Description/Discussion
- * Location Map

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- * Hydrology Calculations – 100 Year Storm
 - * Phase 2 Condition
 - * Phase 2 Terminus
 - * Phase 4 Condition

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- * NOAA Atlas 14, Volume 6, Version 2, Point Precipitation Frequency Estimate
- * Hydrologic Map (Soil Classification)
- * Hydrology Maps
 - * Phase 2 Condition
 - * Phase 2 Terminus
 - * Phase 4 Condition

Site/Project Description/Discussion

The project site consists of 1.3 acres located at 555 6th Street in the City of Hermosa Beach, County of Los Angeles. The project site is located within an area that has light manufacturing land uses with the exception of the Veterans Parkway (Hermosa Valley Greenbelt/Trail) and Ardmore Park to the east across Valley Drive. The project site is currently being utilized by the City of Hermosa as a maintenance yard that will be relocated to another location.

The proposed project provides for the development of an onshore drilling and production site that will utilize directional drilling of wells to access oil and gas reserves in the Torrance Oil Field. In its ultimate condition with the completion of Phase 4: Development and Operations, the proposed project will have up to 30 oil and gas wells, four water injection wells, and supporting production equipment. The proposed project will reclaim and treat most of the storm water to reduce water demand and protect storm water runoff quality as it pertains to the SUSMP requirements. All surfaces within the perimeter wall will be impervious and the runoff will be collected and treated onsite before it is injected by water injection wells into the oil-producing reservoir below the oil-water contact line. There is a 10-foot landscape area along the project frontage on Valley Drive and 6th Street. The landscape area will allow for some infiltration and provide treatment of the storm water and irrigation runoff. The landscape area and the entrance driveway off of Valley Drive will drain to Valley Drive and 6th Street through curb cores.

There are existing local sumps on the project site with existing storm drains. These drains will be removed from the site during the completion of Phase 1: Site Preparation.

The purpose of this report is to calculate the storm runoffs on three stages of the project, the interim condition known as Planning Application Phase 2: Drilling and Testing and the ultimate condition known as Planning Application Phase 4 Development and Operations and Phase 2 Terminus if the project is deemed not economically viable.

PHASE 2: Drilling and Testing

Phase 2: Drilling and Testing would involve drilling up to three test oil wells and one water injection well at the proposed project site, installation of temporary production facilities, disposal of the produced gas via an onsite gas combustor, and the trucking of the produced oil to the oil receiving facility in Torrance. The purpose of Phase 2 is to determine the potential productivity and economic viability of the proposed project. If Phase 2 yields the quantity and quality of production that E&B deems economically viable, the proposed project would proceed to Phase 3.

Crushed aggregate base provided in Phase 1 will be utilized as the base material throughout the project site. An approximately 6-inch berm will be provided around the well cellar to avoid surface flows from entering the well cellar. After the setup of the drill rig and the associated equipment and the installation of the temporary production equipment and storage tanks, three secondary containment areas will be provided by earthen berms with impervious liners.

Drainage outside of the well cellar berm and the secondary containment berms will be directed towards a temporary retention basin located near the southern boundary of the proposed project which will contain the 100 year flood volumes. The well cellar and the secondary containment areas will contain the incident rainfall 100 year flood volumes. See the Phase 2 Project Drilling and Testing 100 Year Storm Hydrology Map Exhibit located in Section C of this report for actual berm heights and locations.

The storm water within the secondary containment areas will be either sent to the temporary production equipment to be processed and injected into the oil-bearing reservoir below the oil-water contact line or trucked offsite to an approved location.

The storm water within the well cellar will be sent to the temporary production equipment to be processed and injected into the oil-bearing reservoir below the oil-water contact line. The storm water in the temporary detention basin will be sent to the temporary production equipment to be processed. After it is processed, the storm water will be injected into the oil-bearing reservoir below the oil-water contact line.

If the proposed project is not deemed economically viable, the temporary production equipment, construction trailer and sound attenuation walls would be removed. The three test oil wells and one water injection well would be properly abandoned in accordance with all applicable requirements. The project site would be left in smooth graded condition with site improvements including retaining walls, perimeter chain link fence, and perimeter landscaping. The runoff contained within the perimeter fence will be directed to a depressed area that will detain the 100 year flood volumes. An 8-inch high earthen berm will be installed inside the perimeter fence to eliminate any storm water surface flows discharging from the project site. All storm water will be retained on-site to infiltrate or evaporate.

As constructed in Phase 1, the landscape areas outside of the perimeter fence will be vegetated to allow for some infiltration and provide treatment of the storm water and irrigation runoff before it is be directed to Valley Drive via curb cores and 6th street via openings in the rolled asphalt curbs. . See the Phase 2 Project Terminus 100 Year Storm Hydrology Map Exhibit located in Section C of this report.

Phase 4: Development and Operation

Phase 4: Development and Operations would maximize oil and gas recovery from the reservoir by drilling the additional wells (up to 30 oil and gas well and four water injection wells) and activating the permanent production facility for the ongoing operations of the proposed project.

All surfaces within the perimeter walls will be impervious. As shown on the Hydrology Map sheet 3 of 3 in Section C of this Hydrology Study, the drainage within the perimeter wall in the portions of the project site outside the containment area will drain to inlets. From the containment area there will be controlled flow to the two underground drain sumps located under the onsite access road. As shown in the Phase 4 100 Year Storm Hydrology Map Exhibit located in Section C of this report, the containment area (6 feet below grade) that contains the tank farm and gas processing unit and the area that contains the oil water separation equipment will drain via an underground storm drainage system which will discharge into the two underground drain sumps. The runoff in the underground drain sumps will be pumped to the production equipment to be processed. After it is processed, the runoff will be pumped to the water injection wells which will inject the processed runoff into the oil-producing reservoir below the oil-water contact line.

In addition, the drainage area that includes the entrance driveway at Valley Drive and the landscaped area on the north side of the entrance will be directed towards Valley Drive. The landscape areas outside of the perimeter fence will allow for some infiltration and provide treatment of the storm water and irrigation runoff before it is be directed to Valley Drive and 6th street via curb cores. . See the Phase 4 100 Year Storm Hydrology Map Exhibit located in Section C of this report.

The grading and drainage within the perimeter walls for the proposed project site is designed to detain a 100 year frequency, 24-hour duration storm event. Runoffs from the landscaped and driveway will be conveyed to 6th Street and Valley Drive via surface flow and curb cores.

Phase 2 and Phase 4

The calculated peak flow rates and storm volume are as follows:

Phase 2 condition

Retention: $Q_{100} = 1.88$ cfs, storm volume = 0.28 acre-ft

Well Cellar: $Q_{100} = 0.8$ cfs, storm volume = 0.01 acre-ft

Containment Areas: $Q_{100} = 1.68$ cfs, storm volume = 0.24 acre-ft

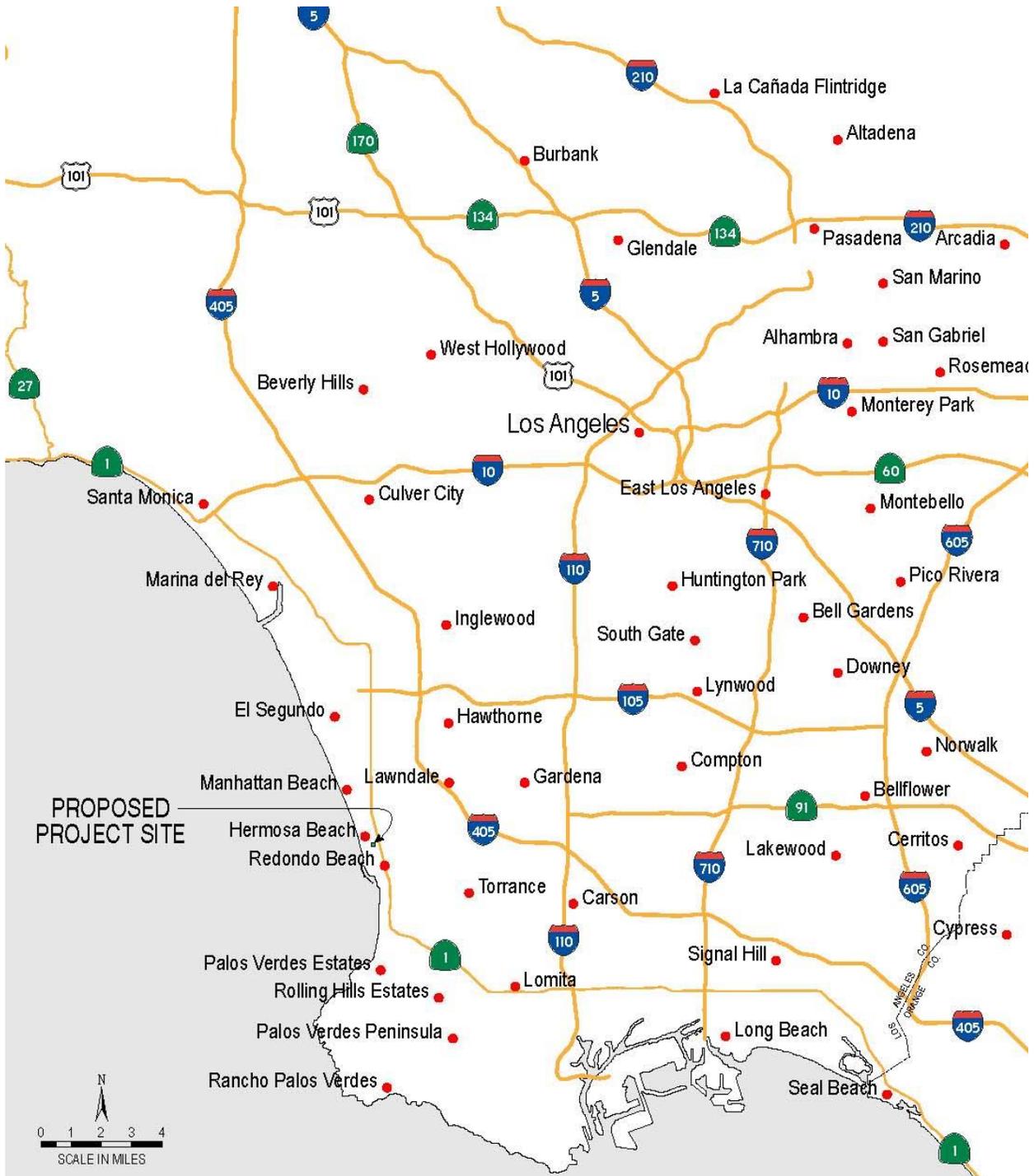
Phase 4 condition $Q_{100} = 3.67$ cfs, storm volume = 0.51 acre-ft

Phase 2 Terminus Condition

A third map, Planning Application Phase 2 Terminus, has been included in the event the proposed project does not proceed to Phases 3 and 4. The map delineates the water surface ponding limits for a 100-year frequency, 24-hour duration storm event, and the depth and volume when the well cellar structure is removed.

Phase 2 Terminus condition $Q_{100} = 1.33$ cfs, storm volume = 0.07 acre-ft

The method used in the calculating the storm runoff is based on the County of Los Angeles Hydrology Manual. A copy of the Hydrologic Map showing the soil type for the project site is included in this report. The precipitation frequency used is based on NOAA Atlas 14, Volume 6, Version 2. A copy of the point frequency table is also included in this report.



Source: Northcutt & Associates; Google Earth aerial dated March 7, 2011

VICINITY MAP

PLANNING APPLICATION PHASE 2 – 100-YR FREQUENCY STORM

Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
2A	0			0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
0.67	0.02	3	0.67	1	3
Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope
5.7	345	0.005	5.7	345	0.005

Input File

Check Here If Subarea Parameters Are Defined In An Input File

Import "tcdata.xls" File

Calculate Single Tc From Subarea Parameters Provided In Input File

Calculate Tc's For Multiple Subareas And Create Tc Results File

Calculation Results

Subarea Number	Intensity	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)	
2A	3.12	0.46	0.9	<input checked="" type="checkbox"/> Calculate Runoff Volume

Calculate Tc
Cancel

Tc Equation

$$Tc = (10)^{-0.507} * (Cd * I)^{-0.519} * (L)^{0.483} * (S)^{-0.135}$$

Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)
6	1.88	n/a	0.28

Tc Calculator					
Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
2B	0			0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
.04	.20	3	0.04	0.2	3
Rainfall Isohyet (In.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (In.)	Flow Path Length (ft.)	Flow Path Slope
5.7	35	0.005	5.7	35	0.005
Input File					
<input type="checkbox"/> Check Here If Subarea Parameters Are Defined In An Input File <input type="button" value="Import 'tcddata.xls' File"/>					
<input type="radio"/> Calculate Single Tc From Subarea Parameters Provided In Input File					
<input checked="" type="radio"/> Calculate Tc's For Multiple Subareas And Create Tc Results File					
Calculation Results					
Subarea Number	Intensity	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)	<input checked="" type="checkbox"/> Calculate Runoff Volume	
2B	3.4	0.49	0.57	<input type="button" value="Calculate Tc"/>	
Tc Equation					<input type="button" value="Cancel"/>
$Tc = (10)^{-0.507} * (Cd * I)^{-0.519} * (L)^{0.483} * (S)^{-0.135}$					
Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)		
5	0.08	n/a	0.01		

Tc Calculator

Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
2C	0			0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
0.32	1.0	3	0.32	1	3
Rainfall Isohyet (In.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (In.)	Flow Path Length (ft.)	Flow Path Slope
5.7	180	0.005	5.7	180	0.005

Input File

Check Here If Subarea Parameters Are Defined In An Input File

Import "tcdata.xls" File

Calculate Single Tc From Subarea Parameters Provided In Input File

Calculate Tc's For Multiple Subareas And Create Tc Results File

Calculation Results

Subarea Number	Intensity	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)	<input checked="" type="checkbox"/> Calculate Runoff Volume
2C	3.4	0.49	0.9	<input type="button" value="Calculate Tc"/>
<input type="button" value="Cancel"/>				

Tc Equation

$$Tc = (10)^{-0.507} * (Cd * I)^{-0.519} * (L)^{0.483} * (S)^{-0.135}$$

Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)
5	0.98	n/a	0.14

Tc Calculator

Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
2D	0		0	0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
0.05	1.0	3	0.05	1	3
Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope
5.7	70	0.01	5.7	70	0.01

Input File

Check Here If Subarea Parameters Are Defined In An Input File

Import "tcddata.xls" File

Calculate Single Tc From Subarea Parameters Provided In Input File

Calculate Tc's For Multiple Subareas And Create Tc Results File

Calculation Results

Subarea Number	Intensity	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)	<input checked="" type="checkbox"/> Calculate Runoff Volume
2D	3.4	0.49	0.9	<input type="button" value="Calculate Tc"/>
<input type="button" value="Cancel"/>				

Tc Equation

$$Tc = (10)^{-0.507} * (Cd * I)^{-0.519} * (L)^{0.483} * (S)^{-0.135}$$

Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)
5	0.15	n/a	0.02

Tc Calculator

Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
2E	0			0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
0.18	1.0	3	0.18	1	3
Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope
5.7	125	0.007	5.7	125	0.007

Input File

Check Here If Subarea Parameters Are Defined In An Input File

Import "tcddata.xls" File

Calculate Single Tc From Subarea Parameters Provided In Input File

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Calculation Results

Subarea Number	Intensity	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)	<input checked="" type="checkbox"/> Calculate Runoff Volume
2E	3.4	0.49	0.9	<input type="button" value="Calculate Tc"/>
<input type="button" value="Cancel"/>				

Tc Equation

$$Tc = (10)^{-0.507} * (Cd * I)^{-0.519} * (L)^{0.483} * (S)^{-0.135}$$

Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)
5	0.55	n/a	0.08

PLANNING APPLICATION PHASE 2 TERMINUS – 100-YR FREQUENCY STORM

Tc Calculator

Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
3A	0		4A	0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
1.26	0	3	1.26	0	3
Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope
5.7	260	0.007	5.7	260	0.007

Input File

Check Here If Subarea Parameters Are Defined In An Input File

Import "tcddata.xls" File

Calculate Single Tc From Subarea Parameters Provided In Input File

Calculate Tc's For Multiple Subareas And Create Tc Results File

Calculation Results

Subarea Number	Intensity	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)	Calculate Runoff Volume
3A	2.58	0.41	0.41	<input checked="" type="checkbox"/>

Calculate Tc

Cancel

Tc Equation

$$Tc = (10)^{-0.507 * (Cd * I)^{-0.519 * (L)^{0.483 * (S)^{-0.135}}$$

Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)
9	1.33	n/a	0.07

PLANNING APPLICATION PHASE 4 – 100-YR FREQUENCY STORM

AREA 4A

Tc Calculator

Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
4A	0		4A	0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
0.72	1.0	3	0.72	1	3
Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope
5.7	245	0.005	5.7	245	0.005

Input File

Check Here If Subarea Parameters Are Defined In An Input File

Import "tcdata.xls" File

Calculate Single Tc From Subarea Parameters Provided In Input File

Calculate Tc's For Multiple Subareas And Create Tc Results File

Calculation Results

Subarea Number	Intensity	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)	<input checked="" type="checkbox"/> Calculate Runoff Volume
4A	3.4	0.49	0.9	<input type="button" value="Calculate Tc"/>
<input type="button" value="Cancel"/>				

Tc Equation

$$T_c = (10)^{-0.507} * (C_d * I)^{-0.519} * (L)^{0.483} * (S)^{-0.135}$$

Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)
5	2.2	n/a	0.31

Total Peak Flow = 2.20 + 1.47* = 3.67 cfs

Total Storm Volume = 0.31 + 0.20* = 0.51 acre-ft

*From Area 2B. See next page

PLANNING APPLICATION PHASE 4 – 100-YR

AREA 4B

Tc Calculator

Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
4B	0		4A	0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
.48	1.0	3	0.48	1	3
Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope
5.7	220	0.005	5.7	220	0.005

Input File

Check Here If Subarea Parameters Are Defined In An Input File

Import "tcdata.xls" File

Calculate Single Tc From Subarea Parameters Provided In Input File

Calculate Tc's For Multiple Subareas And Create Tc Results File

Calculation Results

Subarea Number: 4B Intensity: 3.4 Undeveloped Runoff Coefficient (Cu): 0.49 Developed Runoff Coefficient (Cd): 0.9 Calculate Runoff Volume

Calculate Tc **Cancel**

Tc Equation: $T_c = (10)^{-0.507} * (C_d * I)^{-0.519} * (L)^{0.483} * (S)^{-0.135}$

Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)
5	1.47	n/a	0.2

PLANNING APPLICATION PHASE 4 – 100-YR

AREA 4C

Tc Calculator

Subarea Parameters Manual Input			Subarea Parameters Selected		
Subarea Number	Fire Factor		Subarea Number	Fire Factor	
4C	0		4A	0	
Area (Acres)	Proportion Impervious	Soil Type	Area (Acres)	Proportion Impervious	Soil Type
.06	.95	3	0.06	0.95	3
Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope	Rainfall Isohyet (in.)	Flow Path Length (ft.)	Flow Path Slope
5.7	95	0.007	5.7	95	0.007

Input File

Check Here If Subarea Parameters Are Defined In An Input File

Import "tcddata.xls" File

Calculate Single Tc From Subarea Parameters Provided In Input File

Calculate Tc's For Multiple Subareas And Create Tc Results File

Calculation Results

Subarea Number	Intensity	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)	<input checked="" type="checkbox"/> Calculate Runoff Volume
4C	3.4	0.49	0.88	

Tc Equation

$$Tc = (10)^{-0.507} * (Cd * I)^{-0.519} * (L)^{0.483} * (S)^{-0.135}$$

Tc Value (min.)	Peak Flow Rate (cfs)	Burned Peak Flow Rate (cfs)	24-Hour Runoff Volume (acre-ft)
5	0.18	n/a	0.02



NOAA Atlas 14, Volume 6, Version 2
 Location name: **Hermosa Beach, California, US***
 Coordinates: **33.8590, -118.3950**
 Elevation: **53ft***
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

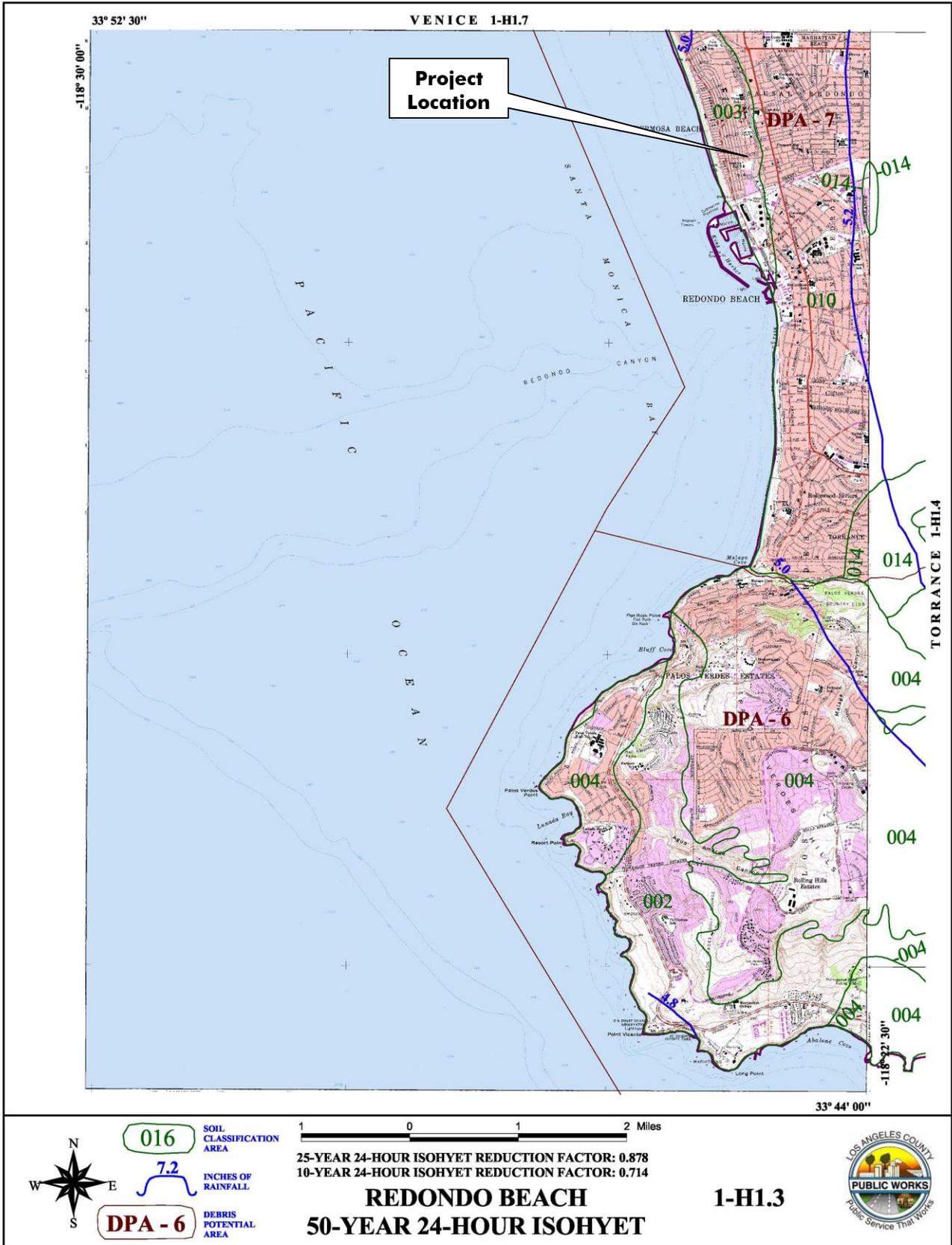
PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.123 (0.103-0.148)	0.163 (0.136-0.196)	0.215 (0.179-0.260)	0.267 (0.213-0.314)	0.314 (0.251-0.398)	0.358 (0.280-0.463)	0.403 (0.306-0.535)	0.449 (0.331-0.614)	0.510 (0.360-0.731)	0.559 (0.380-0.830)
10-min	0.176 (0.148-0.212)	0.233 (0.196-0.282)	0.308 (0.257-0.372)	0.368 (0.305-0.450)	0.450 (0.360-0.570)	0.513 (0.401-0.664)	0.577 (0.439-0.767)	0.643 (0.474-0.880)	0.732 (0.516-1.05)	0.801 (0.544-1.19)
15-min	0.213 (0.179-0.257)	0.282 (0.236-0.340)	0.372 (0.311-0.450)	0.446 (0.369-0.544)	0.545 (0.435-0.689)	0.621 (0.485-0.803)	0.698 (0.531-0.927)	0.777 (0.574-1.06)	0.885 (0.624-1.27)	0.968 (0.658-1.44)
30-min	0.291 (0.244-0.351)	0.385 (0.323-0.465)	0.508 (0.424-0.614)	0.608 (0.503-0.742)	0.743 (0.594-0.940)	0.847 (0.661-1.10)	0.953 (0.724-1.27)	1.06 (0.783-1.45)	1.21 (0.852-1.73)	1.32 (0.898-1.96)
60-min	0.416 (0.349-0.500)	0.550 (0.461-0.663)	0.725 (0.606-0.877)	0.868 (0.719-1.06)	1.06 (0.847-1.34)	1.21 (0.944-1.57)	1.36 (1.03-1.81)	1.52 (1.12-2.07)	1.72 (1.22-2.47)	1.89 (1.28-2.80)
2-hr	0.607 (0.509-0.731)	0.797 (0.668-0.961)	1.04 (0.872-1.26)	1.24 (1.03-1.52)	1.51 (1.21-1.91)	1.72 (1.34-2.22)	1.92 (1.46-2.55)	2.13 (1.57-2.92)	2.41 (1.70-3.45)	2.63 (1.79-3.90)
3-hr	0.744 (0.624-0.896)	0.977 (0.818-1.18)	1.28 (1.07-1.55)	1.52 (1.26-1.86)	1.85 (1.47-2.33)	2.09 (1.63-2.71)	2.34 (1.78-3.11)	2.59 (1.91-3.55)	2.93 (2.07-4.19)	3.19 (2.17-4.73)
6-hr	1.04 (0.868-1.25)	1.36 (1.14-1.64)	1.79 (1.49-2.16)	2.13 (1.76-2.59)	2.58 (2.06-3.27)	2.93 (2.29-3.79)	3.27 (2.49-4.35)	3.63 (2.68-4.96)	4.10 (2.89-5.86)	4.46 (3.03-6.62)
12-hr	1.31 (1.10-1.58)	1.74 (1.46-2.10)	2.30 (1.92-2.78)	2.75 (2.28-3.35)	3.35 (2.68-4.24)	3.81 (2.98-4.93)	4.28 (3.25-5.68)	4.75 (3.50-6.50)	5.38 (3.80-7.70)	5.87 (3.99-8.71)
24-hr	1.67 (1.47-1.92)	2.25 (1.98-2.59)	3.00 (2.64-3.47)	3.61 (3.15-4.21)	4.43 (3.75-5.35)	5.07 (4.20-6.24)	5.71 (4.62-7.19)	6.36 (5.01-8.24)	7.24 (5.48-9.78)	7.93 (5.79-11.1)
2-day	1.98 (1.75-2.26)	2.72 (2.40-3.14)	3.68 (3.24-4.26)	4.46 (3.90-5.21)	5.52 (4.67-6.66)	6.33 (5.25-7.80)	7.16 (5.79-9.03)	8.01 (6.30-10.4)	9.15 (6.92-12.4)	10.0 (7.34-14.0)
3-day	2.21 (1.95-2.55)	3.07 (2.71-3.55)	4.20 (3.69-4.86)	5.11 (4.47-5.97)	6.36 (5.38-7.67)	7.32 (6.06-9.01)	8.29 (6.71-10.5)	9.29 (7.32-12.0)	10.7 (8.05-14.4)	11.7 (8.56-16.3)
4-day	2.40 (2.12-2.77)	3.37 (2.98-3.89)	4.64 (4.09-5.37)	5.67 (4.96-6.63)	7.08 (5.99-8.55)	8.17 (6.77-10.1)	9.28 (7.50-11.7)	10.4 (8.20-13.5)	12.0 (9.05-16.2)	13.2 (9.63-18.4)
7-day	2.76 (2.44-3.18)	3.92 (3.46-4.53)	5.46 (4.81-6.33)	6.73 (5.88-7.86)	8.46 (7.16-10.2)	9.81 (8.13-12.1)	11.2 (9.05-14.1)	12.6 (9.94-16.4)	14.6 (11.0-19.7)	16.1 (11.8-22.5)
10-day	2.96 (2.61-3.41)	4.24 (3.74-4.90)	5.94 (5.23-6.88)	7.35 (6.42-8.58)	9.28 (7.85-11.2)	10.8 (8.95-13.3)	12.4 (9.99-15.6)	14.0 (11.0-18.1)	16.2 (12.3-21.9)	18.0 (13.1-25.1)
20-day	3.53 (3.12-4.07)	5.07 (4.48-5.86)	7.15 (6.29-8.28)	8.88 (7.76-10.4)	11.3 (9.54-13.6)	13.2 (10.9-16.2)	15.2 (12.3-19.1)	17.2 (13.6-22.3)	20.1 (15.2-27.1)	22.4 (16.4-31.3)
30-day	4.21 (3.72-4.86)	6.00 (5.30-6.94)	8.42 (7.42-9.76)	10.5 (9.13-12.2)	13.3 (11.3-16.1)	15.6 (12.9-19.2)	17.9 (14.5-22.6)	20.4 (16.1-26.5)	23.9 (18.1-32.3)	26.7 (19.5-37.3)
45-day	5.02 (4.44-5.80)	7.02 (6.20-8.11)	9.74 (8.57-11.3)	12.0 (10.5-14.1)	15.3 (12.9-18.4)	17.9 (14.8-22.0)	20.6 (16.7-26.0)	23.5 (18.5-30.5)	27.6 (20.9-37.2)	30.9 (22.6-43.1)
60-day	5.89 (5.21-6.80)	8.05 (7.11-9.30)	11.0 (9.70-12.8)	13.5 (11.8-15.8)	17.1 (14.5-20.7)	20.0 (16.6-24.6)	23.0 (18.6-29.1)	26.3 (20.7-34.1)	30.7 (23.4-41.7)	34.7 (25.3-48.4)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical





016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

 25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878

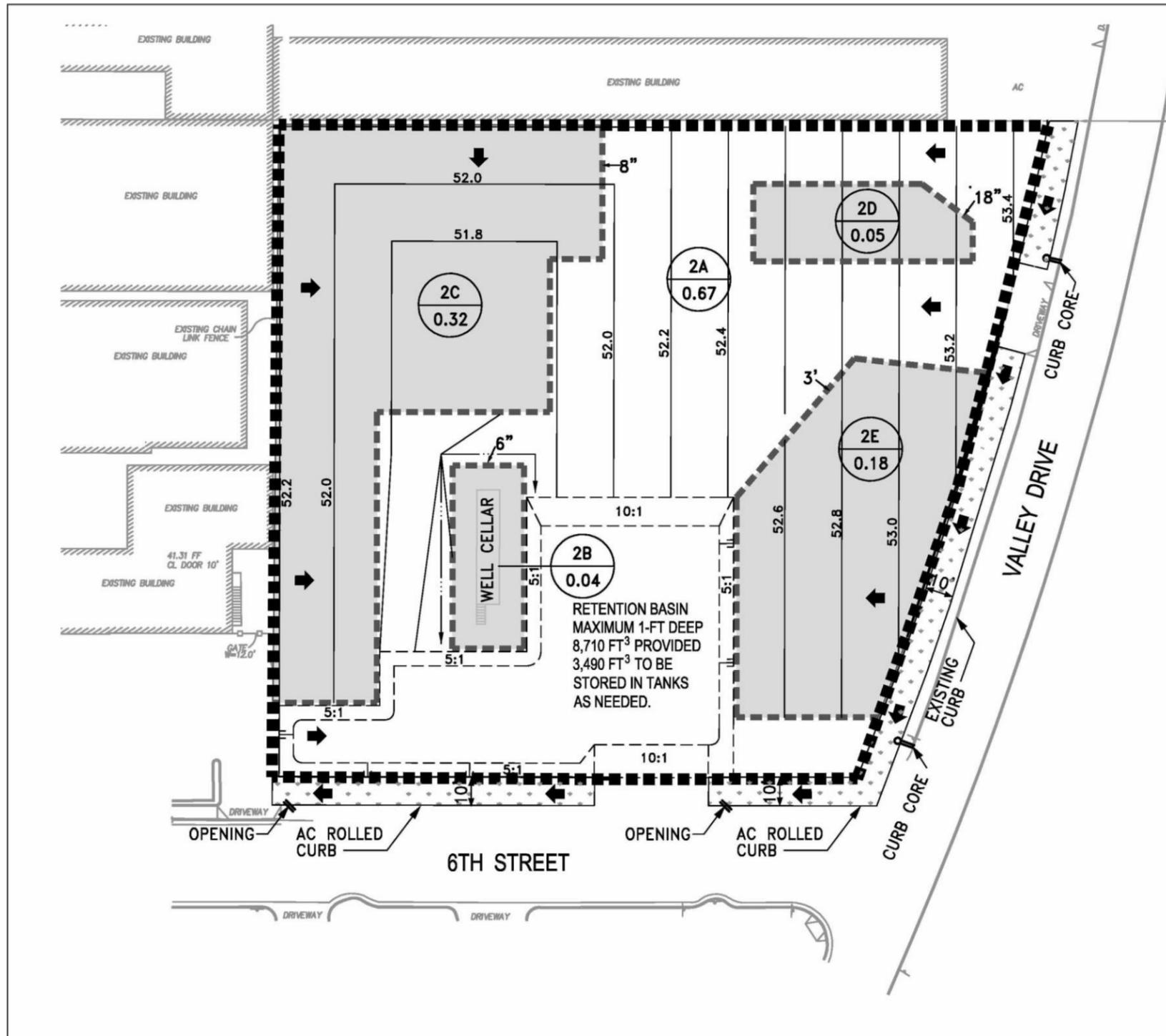
 10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

REDONDO BEACH

50-YEAR 24-HOUR ISOHYET

1-H1.3





CALCULATION RESULTS			
AREA	PEAK FLOW (CFS)	STORM VOLUME (ACRE)	STORM VOLUME (CUBIC FT.)
2A	1.88	0.28	12,197
2B	0.08	0.01	436
2C	0.98	0.14	6,098
2D	0.15	0.02	871
2E	0.55	0.08	3,485

CONTAINMENT AREAS 2C, 2D & 2E ARE ASSUMED 100% IMPERMEABLE (PLASTIC LINED AREA)
 AREA 2A ASSUMED 2% IMPERMEABLE (C.A.B.)
 AREA 2B ASSUMED 20% IMPERMEABLE (CONCRETE & C.A.B.)

E&B Oil Development Project

LEGEND

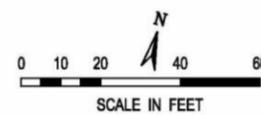
- DRAINAGE AREA BOUNDARY
- ➔ DIRECTION OF SURFACE FLOW
- ← L=220' SURFACE FLOW LENGTH (feet)
- ① AREA DESIGNATION
0.75 AREA (acre)
- ▨ LANDSCAPING
- ▭ SUB AREA BOUNDARY (CONTAINMENT AREA)

100 YEAR STORM HYDROLOGY MAP PLANNING APPLICATION PHASE 2 DRILLING AND TESTING

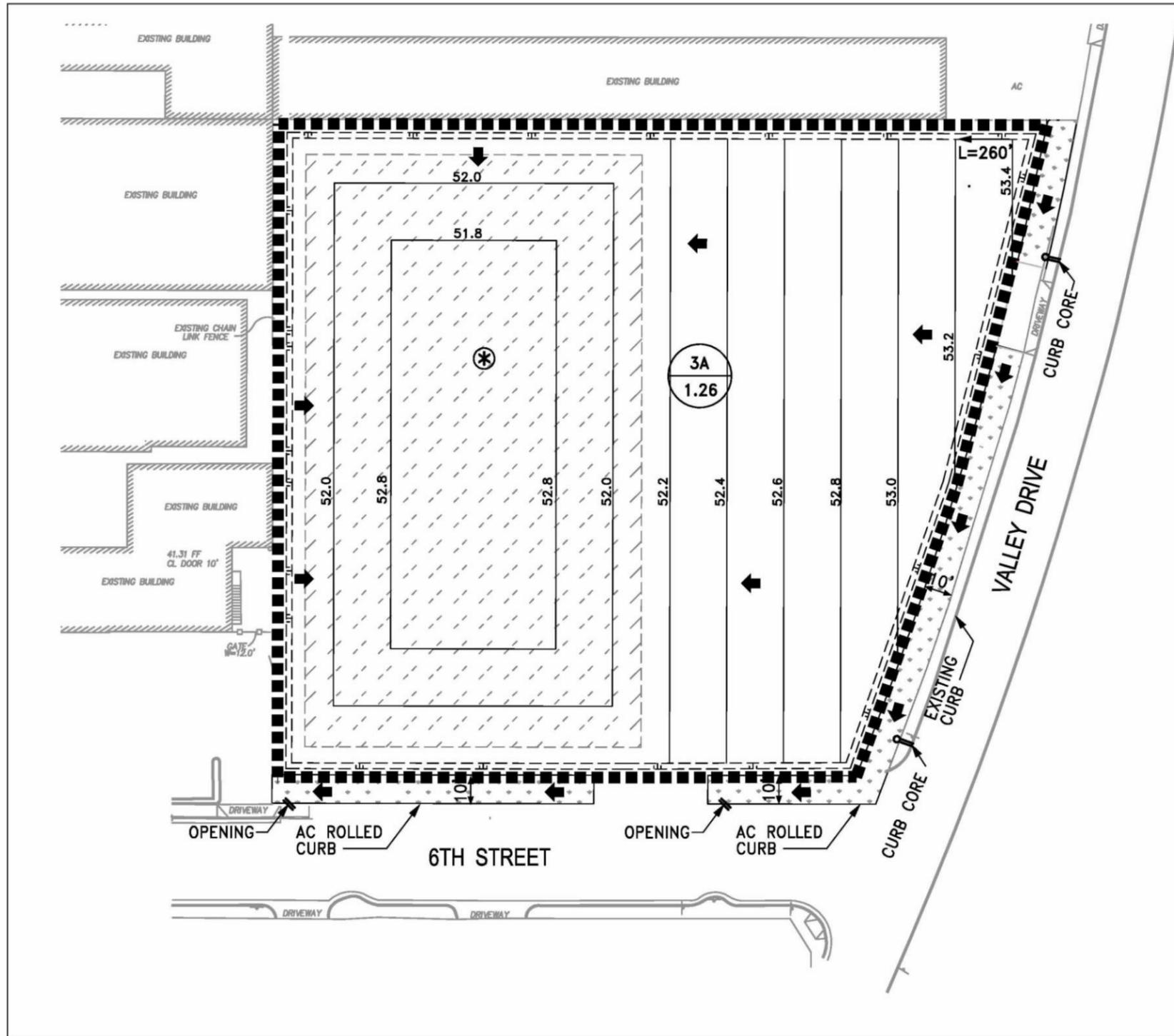
MDS CONSULTING
 PLANNERS ENGINEERS SURVEYORS

MORSE 17320 Redhill Ave.
 Suite 350
 Irvine, CA 92614
 Voice: 949-251-8821
 FAX: 949-251-0516

SCHULTZ



A:\84700\EXHIBITS\Hydrology Phase 2.dwg 4/08/13



⊛ PONDING ELEVATION = 52.1 ±
 BOTTOM OF EARTH BASIN = 51.8
 VOLUME EARTH BASIN = 4,600 cubic feet

Q100 STORM VOLUME = 0.07 ac-ft
 = 3,050 cubic feet
 Q100 = 1.33 CFS

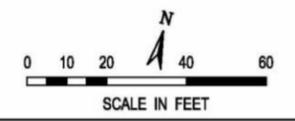
ANY CAB REMAINING OR NATIVE SOILS WILL BE
 SCARIFIED BY DISCING (OR EQUIVALENT) TO
 PROVIDE 100% PERVIOUS SURFACE.

E&B Oil Development Project

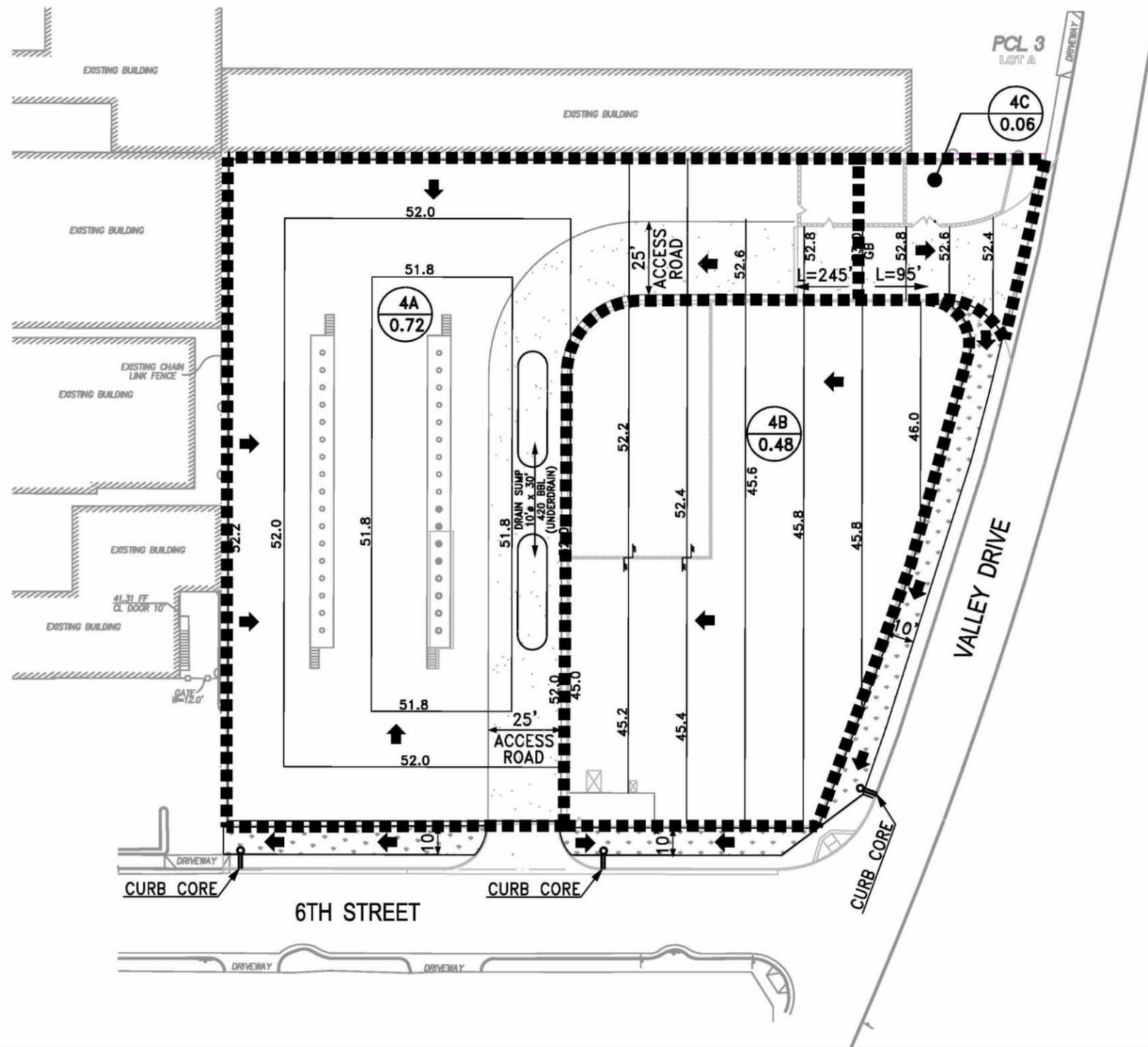
- LEGEND**
- ■ ■ ■ ■ DRAINAGE AREA BOUNDARY
 - ➔ DIRECTION OF SURFACE FLOW
 - ← L=220' SURFACE FLOW LENGTH (feet)
 - ⊙ 1 / 0.75 AREA DESIGNATION AREA (acre)
 - ▨ LANDSCAPING
 - == 8" HIGH EARTH BERM

100 YEAR STORM HYDROLOGY MAP PLANNING APPLICATION PHASE 2 PROJECT TERMINUS

MDS CONSULTING
 MORSE 17320 Redhill Ave.
 Suite 350
 Irvine, CA 92614
 SCHULTZ Voice: 949-251-8821
 FAX: 949-251-0516
 PLANNERS ENGINEERS SURVEYORS



I:\84700\EXHIBITS\Hydrology Phase 2 Terminus.dwg 4/08/13



CALCULATION RESULTS			
AREA	PEAK FLOW (CFS)	STORM VOLUME (ACRE)	STORM VOLUME (CUBIC FT.)
4A	2.20	0.31	13,504
4B	1.47	0.20	8,712
TOTAL	3.67	0.51	22,216
4C	0.18	0.02	871

AREAS 4A & 4B, ASSUMED 100% IMPERMEABLE (P.C.C.)
 AREA 4C, ASSUMED 95% IMPERMEABLE (P.C.C.)

E&B Oil Development Project

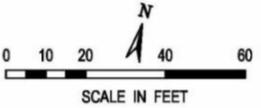
- LEGEND**
- DRAINAGE AREA BOUNDARY
 - ➔ DIRECTION OF SURFACE FLOW
 - AREA DRAIN SYSTEM
 - ← L=220' SURFACE FLOW LENGTH (FEET)
 - ① 0.75 AREA DESIGNATION AREA (ACRES)
 - ▨ LANDSCAPING

100 YEAR STORM HYDROLOGY MAP PLANNING APPLICATION PHASE 4

MDS CONSULTING
 PLANNERS ENGINEERS SURVEYORS

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 SCHULTZ

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 FAX: 949-251-0516



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