ATTACHMENT 3

Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Plan (Required)	☑ Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Stormwater Maintenance Notification / Agreement (when applicable)	☐ Included ☑ Not Applicable

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

Attachment 3a must identify:

- ☑ Specific maintenance indicators and actions for proposed structural BMP(s). This must be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- ☑ How to access the structural BMP(s) to inspect and perform maintenance
- ☑ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☑ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☑ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☑ Recommended equipment to perform maintenance
- ☑ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For all Structural BMPs, Attachment 3b must include a draft maintenance agreement in the County's standard format depending on the Category (PDP applicant to contact County staff to obtain the current maintenance agreement forms). Refer to Section 7.3 in the BMP Design Manual for a description of the different categories.

ATTACHMENT 3A: STRUCTURAL BMP MAINTENANCE INFORMATION

BIOFILTRATION WITH PARTIAL RETENTION / BIOFILTRATION AND PERVIOUS PAVING

Typical Maintenance Indicator(s) for Vegetated BMPs	**Maintenance Actions**	**Frequency**
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation.	After storm event
Poor vegetation establisment	Re-seed, re-plant, or reestablish vegetation per original plans.	Monthly
Overgrown vegetation	Mow or trim as appropriate, but not less than the design height of the vegetation per original plans when applicable (e.g. a vegetated swale may require a minimum vegetation height).	Monthly
Erosion due to concentrated irrigation flow	Repari/re-seed/re-plant eroded areas and adjust the irrigation system.	Upon inspection
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, The county must be contacted prior to any additional repairs or reconstruction.	Upon inspection
Standing water for longer than 96 hours flollowing a storm event*	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains (where applicable), or repairing/replacing clogged or compacted soils.	After storm event
Obstructed inlet or outlet structure	Clear obstructions	Monthly
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	Monthly
Loss of 3" mulch layer	Replenish mulch layer to maintain 3" layer for proper treatment and designed ponding depths	Upon inspection

Typical Maintenance Indicator(s) for Pervious Paving BMPs	**Maintenance Actions**	**Frequency**
Standing water in permeable paving area	Flush fine Sediment from paving and subsurface gravel. Provide routine vacuuming of permeable paving areas to prevent clogging.	Upon Inspection
Damage to permeable paving surface	Repair or replace damaged surface as appropriate.	Upon inspection

ACCESS TO BMPS

Parcel 1 Access (PR-1): Access to BMP on parcel 1 will be from a proposed driveway designed south of the pad that reaches up to the designed BMP. The access is 3' from the paved road and driveway access easement. Access comes from Bear Valley Parkway.

Parcel 2 Access (PR-1 & SD-D): Access to BMP on parcel 2 will be from a proposed driveway designed north of the pad that reaches the proposed development, along the west edge of the proposed pad area and to the designed BMP. Access comes from Birch Ave, approximately 20 ft. east along a proposed paved road and driveway easement, and southwest along the pad, approximately 130 ft.

Parcel 3 Access (BF-1): Access to BMP on parcel 3 will be from a proposed driveway designed north of the parcels 2 and 3, and off of Birch Ave. Access to be via a driveway easement.

Parcel 4 Access (BF-1): Access to BMP on parcel 4 will be from a proposed driveway designed south of the parcels 1 and 4, and off of Bear Valley Parkway. Access to be via a driveway easement*.

*See Attachment 1D for access.

FEATURES FOR INSPECATIONS

BMPs 1-4 will be fitted with a 3'x3' catch basin with a hydromodification orifice located on the inside. Ease of inspection will come from an open grate that can allow for visual inspections. Also, the catch basins will have access to allow for ease of entering for physical inspection. All underdrains leading to the catch basins will be fitted with cleanouts in cases where clogs may occur uphill from the catch basin orifice. Any obstructions to the grates can be accessed from the surface of the BMP and visual inspection of the BMP vegetated media can be corrected from the surface.

RECOMMENDED EQUIPMENT TO PERFORM MAINTENANCE

Equipment to be used on the BMPs should be light in weight or hand held equipment so as to avoid damaging the soils media or vegetative growth. If light weight machinery is to be used, work should be done so as to avoid more damage to the BMP and minimal reconstruction should be done so as to restore the BMP to property functioning conditions. After work is done with light machinery, allowing the soils media to revegetate per landscaping recommendations should be allowed.

TRAINING AND CERTIFICATION

All training and certification for the vegetation and soils media to be under the guidance of the a landscaper and by County of San Diego standards. The design implementation is to be done per

grading plans and by civil engineering design under the inspection of the County of San Diego.

Restoration or replacement of permeable paving/pavers can be done by the professionals acquired to construct the facilities in compliance with this PDP. General maintenance can be done by general contractors, i.e., debris clearing and vacuuming, per this PDP.

ATTACHMENT 4

County of San Diego PDP Structural BMP Verification for Permitted Land Development Projects

This page was left intentionally blank.

County of San Diego BMP Design Manual Verification Form	
Project Summary Information	
Project Name	
Record ID (e.g., grading/improvement plan number)	
Project Address	
Assessor's Parcel Number(s) (APN(s))	
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	
Responsible Party for Construction Phase	
Developer's Name	
Address	
Email Address	
Phone Number	
Engineer of Work	
Engineer's Phone Number	
Responsible Party for Ongoing Maintenance	
Owner's Name(s)*	
Address	
Email Address	
Phone Number	
*Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information for the Board or property manager at time of project closeout.	

County of San Diego BMP Design Manual Verification Form Page 2 of 4					
Stormwater Structural Pollutant Control & Hydromodification Control BMPs* (List all from SWQMP)					
Description/Type of Structural BMP	**Plan Sheet #**	**STRUCT-URAL BMP ID#**	**Maint-enance Category**	**Maintenance Agreement Recorded Doc #**	**Revisions**
PR-1	3	BMP1	1	To be recorded at final stage	n/a
PR-1	3	BMP2	1	To be recorded at final stage	n/a
BF-1	3	BMP3	1	To be recorded at final stage	n/a
BF-1	3	BMP4	1	To be recorded at final stage	n/a
*All Priority Development Projects (PDPs) require a Structural BMP					

Note: If this is a partial verification of Structural BMPs, provide a list and map denoting Structural BMPs that have already been submitted, those for this submission, and those anticipated in future submissions.

County of San Diego BMP Design Manual Verification Form Page 3 of 4

Checklist for Applicant to submit to PDCI:

- ☐ Copy of the final accepted SWQMP and any accepted addendum.
- ☐ Copy of the most current plan showing the Stormwater Structural BMP Table, plans/cross-section sheets of the Structural BMPs and the location of each verified as-built Structural BMP.
- ☐ Photograph of each Structural BMP.
- ☐ Photograph(s) of each Structural BMP during the construction process to illustrate proper construction.
- ☐ Copy of the approved Structural BMP maintenance agreement and associated security

By signing below, I certify that the Structural BMP(s) for this project have been constructed and all BMPs are in substantial conformance with the approved plans and applicable regulations. I understand the County reserves the right to inspect the above BMPs to verify compliance with the approved plans and Watershed Protection Ordinance (WPO). Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Please sign your name and seal.

Professional Engineer's Printed Name:

_____

Professional Engineer's Signed Name:

_____

Date:_____

[SEAL]

County of San Diego BMP Design Manual Verification Form Page 4 of 4

COUNTY - OFFICIAL USE ONLY:

For PDCI: Verification Package #: _____

PDCI Inspector: _____

Date Project has/expects to close: _____

Date verification received from EOW: _____

By signing below, PDCI Inspector concurs that every noted Structural BMP has been installed per plan.

PDCI Inspector's Signature: _____ Date: _____

FOR WPP:

Date Received from PDCI: _____

WPP Submittal Reviewer: _____

WPP Reviewer concurs that the information provided for the following Structural BMPs is acceptable to enter into the Structural BMP Maintenance verification inventory:

List **acceptable** Structural BMPs:

WPP Reviewer's Signature: _____ Date: _____

ATTACHMENT 5

Copy of Plan Sheets Showing Permanent Storm Water BMPs, Source Control, and Site Design

This is the cover sheet for Attachment 5.

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

☑ Structural BMP(s) with ID numbers matching Step 6 Summary of PDP Structural BMPs
☑ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
☑ Details and specifications for construction of structural BMP(s)
☑ Signage indicating the location and boundary of structural BMP(s) as required by County staff
☑ How to access the structural BMP(s) to inspect and perform maintenance
☑ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
☑ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
☑ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
☑ Recommended equipment to perform maintenance
☑ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
☑ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
☑ All BMPs must be fully dimensioned on the plans
☑ When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number must be provided. Photocopies of general brochures are not acceptable.
☑ Include all source control and site design measures described in Steps 4 and 5 of the SWQMP. Can be included as a separate exhibit as necessary.

T.P.M. NO. 21225

SHEET 1 OF 3

PRELIMINARY GRADING PLAN
STEEVE TPM
APN 234-120-66

ATTACHMENT 5: SWQMP PLAN SHEET COPIES AND BMP DETAILS AND SPECIFICATIONS

SHEET 1 OF 3

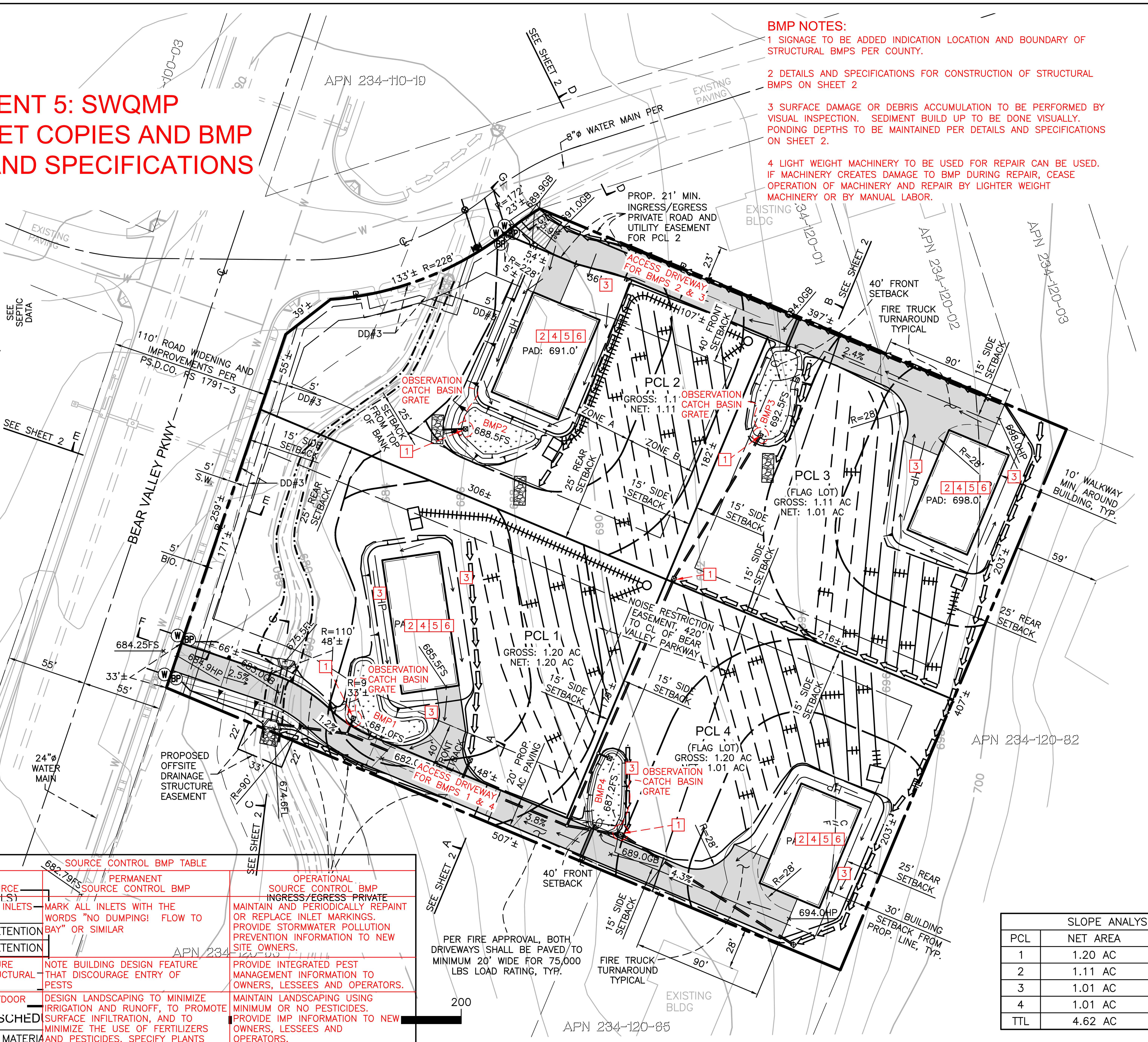
LEGEND:
- 100-YR INUNDATION LIMITS
- 2:1 FILL SLOPE
- 2:1 CUT SLOPE
- BMP
- BUILDING, CONCEPTUAL
- CATCH BASIN
- CENTER LINE NEW PER DOC
- FIRE HYDRANT PER ESCONDIDO DWG W-3-E
- FIRE ZONE, 50'
- HEAD WALL
- HOSE PULL (TO BE LESS THAN 150' TO FARTHEST EDGE OF BUILDING)
- PERVIOUS PAVING
- PRIMARY LEACH LINES
- RESERVE LEACH LINES
- SEPTIC TANK
- SEPTIC TANK/PUMP CHAMBER
- STORM DRAIN
- STORM DRAIN SYSTEM PER S.D. CO. RS 1791-3 (EX.)
- SWALE (EX.)
- SWITCH BOX, 300 GAL
- TIGHT LINE
- TRENCH DRAIN
- WATER LINE MAIN (EX.)
- WATER METER PER ESCONDIDO DWG W-1-E, BFP PER ESCONDIDO DWG W-10-E
- WING WALL

BMP NOTES:
1 SIGNAGE TO BE ADDED INDICATION LOCATION AND BOUNDARY OF STRUCTURAL BMPS PER COUNTY.

2 DETAILS AND SPECIFICATIONS FOR CONSTRUCTION OF STRUCTURAL BMPS ON SHEET 2

3 SURFACE DAMAGE OR DEBRIS ACCUMULATION TO BE PERFORMED BY VISUAL INSPECTION. SEDIMENT BUILD UP TO BE DONE VISUALLY. PONDING DEPTHS TO BE MAINTAINED PER DETAILS AND SPECIFICATIONS ON SHEET 2.

4 LIGHT WEIGHT MACHINERY TO BE USED FOR REPAIR CAN BE USED. IF MACHINERY CREATES DAMAGE TO BMP DURING REPAIR, CEASE OPERATION OF MACHINERY AND REPAIR BY LIGHTER WEIGHT MACHINERY OR BY MANUAL LABOR.



DISTURBED AREA	
PCL	ACRES
1	0.44
2	0.35
3	0.32
4	0.32

BMP (SEE SHEET 3 FOR DETAILS)	
PCL	TYPE
1	BIOFILTRATION W/PARTIAL RETENTION
2	BIOFILTRATION W/PARTIAL RETENTION
3	BIO[illegible]
4	BIO[illegible]

SPECULATIVE CONSTRUCTION SCHED[illegible]

PCL	CONSTRUCTION TIME ESTIMATES		MATERIAL GRADED ([illegible]	
	COMMENCE*	END	CUT	F[illegible]
1	7/10/17	[illegible]	[illegible]	[illegible]
2	8/1/17	[illegible]	[illegible]	[illegible]
3	7/20/17	[illegible]	587	[illegible]
4	7/1/17	8/1/17	938	[illegible]

*NOTE: ACTUAL DATES OF COMMENCEMENT ARE UNDETERMINABLE [illegible] LENGTH OF TIME THAT WILL TRANSPI[illegible] IN PART DUE TO REGULATORY PROC[illegible] DELAYS AND UNKNOWN REQUIREMENTS.

SOURCE CONTROL BMP TABLE

	POSSIBLE POLLUTANT SOURCE	PERMANENT SOURCE CONTROL BMP	OPERATIONAL SOURCE CONTROL BMP
1	ON-SITE DRAIN INLETS	MARK ALL INLETS WITH THE WORDS "NO DUMPING! FLOW TO BAY" OR SIMILAR	MAINTAIN AND PERIODICALLY REPAINT OR REPLACE INLET MARKINGS. PROVIDE STORMWATER POLLUTION PREVENTION INFORMATION TO NEW SITE OWNERS.
2	NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTRL	NOTE BUILDING DESIGN FEATURE THAT DISCOURAGE ENTRY OF PESTS	PROVIDE INTEGRATED PEST MANAGEMENT INFORMATION TO OWNERS, LESSEES AND OPERATORS.
3	LANDSCAPE/OUTDOOR PESTICIDES USE	DESIGN LANDSCAPING TO MINIMIZE IRRIGATION AND RUNOFF, TO PROMOTE SURFACE INFILTRATION, AND TO MINIMIZE THE USE OF FERTILIZERS AND PESTICIDES. SPECIFY PLANTS THAT ARE TOLERANT TO SATURATED SOIL CONDITIONS AT BIORETENTION PLANTERS. USE PEST-RESISTANT PLANTS.	MAINTAIN LANDSCAPING USING MINIMUM OR NO PESTICIDES. PROVIDE IMP INFORMATION TO NEW OWNERS, LESSEES AND OPERATORS.
4	FIRE SPRINKLER TEST WATER	CONNECT FIRE SPRINKLER TEST WATER TO SANITARY SEWER.	DISPOSE FIRE SPRINKLER LINE FLUSH WATER INTO SANITARY SEWER.
5	ROOF DRAINS	DIRECT ALL ROOF DRAINS TOWARDS LANDSCAPE BUFFER AREAS OR INTO BIORETENTIONS THROUGH STORM DRAIN SYSTEM	ROUTINELY CLEAN ROOF DRAIN OPENINGS FROM DEBRIS AND FOLIAGE
6	ROOFING, GUTTERS AND TRIM	AVOID ROOFING, GUTTERS AND TRIM MADE OF COPPER OR OTHER UNPROTECTED METALS THAT MAY LEACH INTO RUNOFF.	

SCALE: 1 INCH = 50 FEET

[illegible] ESCONDIDO IRRIGATION [illegible] OF O.R., REC. 8-1-1895.

[illegible] TEMPORARY OVERHEAD ELECTRIC EASEMENT TO SDG&E PER DOC. 2013-0411651 OF O.R., REC. 7-1-2013. CANNOT BE PLOTTED.

3 SLOPE AND DRAINAGE EASEMENT TOGETHER WITH A TEMPORARY CONSTRUCTION EASEMENT TO COUNTY OF SAN DIEGO PER DOC. 2013-0745339 OF O.R., REC. 12-31-2013.

ROGER W. STEEVE AS TRUSTEE OF THE ROGER W. STEEVE LIVING TRUST DATED JUNE 27, 2011
ROLF G. STEEVE, JR. AS TRUSTEE OF THE ROLF G. STEEVE, JR. TRUST DATED JULY 6, 2012

ADDRESS: BEAR VALLEY PKWY/BIRCH AVE ESCONDIDO, CA 92027

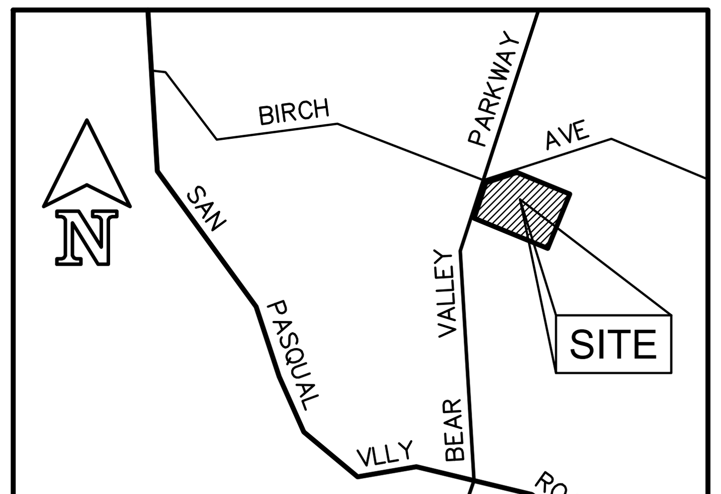
PHONE: (760) 822-4669

1. COMPLETE TAX ASSESSOR'S NUMBER: 234-120-66
2. ABBREVIATED LEGAL DESCRIPTION: PARCEL 4, PM 4770
3. GENERAL PLAN REGIONAL CATEGORY: SEMI-RURAL 1
4. COMMUNITY/SUBREGIONAL PLAN AREA: NORTH COUNTY METRO
5. LAND USE DESIGNATION(S): SEMI-RURAL RESIDENTIAL (SR-1)
6. EXISTING ZONING: A70, 1AC
7. GRADING: 850 C.Y. CUT, 3,050 C.Y. FILL, 2,200 C.Y. IMPORT
8. TOPOGRAPHY: 2FT CONTOURS, CITY OF ESCONDIDO, ORTHOPHOTO MAP, SHEET INDEX NO. 1986-6316
9. TAX RATE AREA: T 74082
10. ASSOCIATED PERMITS: N/A
11. LOCATION AND STATUS OF EXISTING LEGAL ACCESS TO SUBJECT PROPERTY FROM A PUBLICLY MAINTAINED ROAD, (I.E. RECORDED EASEMENT, UNRECORDED IDENTIFY AND SPECIFY WIDTH): ACCESS TO PROPERTY IS BEAR VALLEY PARKWAY, A COUNTY MAINTAINED ROAD, R-O-W 110'
12. WATER SOURCE/WATER DISTRICT: ESCONDIDO WATER DISTRICT
13. SEPTIC/SEWER DISTRICT: ON-SITE SEPTIC
14. FIRE DISTRICT: RINCON DEL DIABLO MUNICIPAL WATER DISTRICT
15. SCHOOL DISTRICT: ESCONDIDO UNION ELEMENTARY SCHOOL DISTRICT AND ESCONDIDO HIGH SCHOOL DISTRICT

ZONE		
USE REGULATIONS		A70
ANIMAL REGULATIONS		L
DEVELOPMENT REGULATIONS	DENSITY	–
	LOT SIZE	1AC
	BUILDING TYPE	C
	MAXIMUM FLOOR AREA	–
	FLOOR AREA RATIO	–
	HEIGHT	G
	LOT COVERAGE	–
	SETBACK	C
	OPEN SPACE	–
SPECIAL AREA REGULATIONS		–

SOLAR ACCESS STATEMENT
ALL LOTS WITHIN THIS SUBDIVISION HAVE A MINIMUM OF 100 SQUARE FEET OF SOLAR ACCESS FOR EACH FUTURE DWELLING/COMMERCIAL/INDUSTRIAL UNIT ALOWED BY THIS SUBDIVISION.

SLOPE ANALYSIS DATA		
PCL	NET AREA	SLOPE
1	1.20 AC	6.5%
2	1.11 AC	6.0%
3	1.01 AC	3.6%
4	1.01 AC	3.3%
TTL	4.62 AC	4.7%



VICINITY MAP
NO SCALE (GOOGLE MAPS)

PRELIMINARY GRADING PLAN NOTE:
THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN A VALID GRADING PERMIT BEFORE COMMENCING SUCH ACTIVITY.

SEPTIC DATA				
PCL	TANK SIZE	PUMP TANK SIZE	PRIMARY LEACH	RESERVE LEACH
1	1,000 GAL	1,000 GAL	570 L.F.	570 L.F.
2	1,000 GAL	1,000 GAL	570 L.F.	575 L.F.
3	1,000-1,200 GAL	–	570 L.F.	575 L.F.
4	1,000-1,200 GAL	–	570 L.F.	570 L.F.

BILL YEN & ASSOCIATES, INC.
CIVIL ENGINEERING · SURVEYING · SITE PLANNING
13071 POWAY ROAD, POWAY, CA 92064-4519
(858) 679-8010 · FAX (858) 679-8015

WILLIAM YEN, RCE 33730 — 3/28/2017 DATE

W:\WO1408STEEVEPM\TPM\GP.DWG
PLOTTED: 3/28/2017

WO1408

FIRE PROTECTION NOTES:

FIRE HYDRANT LOCATIONS: GROUP R-3 AND U OCCUPANCIES: AN APPROVED WATER SUPPLY CAPABLE OF SUPPLYING THE REQUIRED FIRE FLOW FOR FIRE PROTECTION SHALL BE PROVIDED TO ALL PREMISES UPON WHICH FACILITIES, BUILDINGS, OR PORTIONS OF BUILDINGS ARE HEREAFTER CONSTRUCTED OR MOVED INTO OR WITHIN THE JURISDICTION. WHEN ANY PORTION OF THE FACILITY OR BUILD[illegible] N A PUBLIC STR[illegible]ILITY OR BUILDING, [illegible] SHALL BE PROVIDE[illegible]. EVERY 300 FEET [illegible]

GATES: NO[illegible]ACCESS ROADWAY W[illegible]M A ROAD TO A[illegible] OF THE ROADW[illegible]ADWAYS OF 24 FEE[illegible]ROSS A FIRE ACCES[illegible]

KEY-OPERATED SWITCH OVERRIDING ALL COMMAND FUNCTIONS AND OPENING THE GATE. A GATE ACCESSING MORE THAN FOUR RESIDENCES OR RESIDENTIAL LOTS OR A GATE ACCESSING HAZARDOUS INSTITUTIONAL, EDUCATIONAL OR ASSEMBLY OCCUPANCY GROUP STRUCTURE, SHALL ALSO BE EQUIPPED WITH AN APPROVED EMERGENCY TRAFFIC CONTROL-ACTIVATING STROBE LIGHT SENSOR OR OTHER DEVICE APPROVED BY THE FIRE CODE OFFICIAL, WHICH WILL ACTIVATE THE GATE ON THE APPROACH OF EMERGENCY APPARATUS WITH A BATTERY BACK-UP OR MANUAL MECHANICAL DISCONNECT IN CASE OF POWER FAILURE. AN AUTOMATIC GATE SHALL MEET FIRE DEPARTMENT POLICIES DEEMED NECESSARY BY THE FIRE CODE OFFICIAL FOR RAPID, RELIABLE ACCESS. AN AUTOMATIC GATE SERVING MORE THAN ONE DWELLING OR RESIDENTIAL LOT IN EXISTENCE AT THE TIME OF ADOPTION OF THIS CHAPTER IS REQUIRED TO INSTALL AN APPROVED EMERGENCY KEY-OPERATED SWITCH OR OTHER MECHANISM APPROVED BY THE FIRE CODE OFFICIAL, AT AN APPROVED LOCATION, WHICH OVERRIDES ALL COMMAND FUNCTIONS AND OPENS THE GATE. A PROPERTY OWNER SHALL COMPLY WITH THIS REQUIREMENT WITHIN 90 DAYS OF RECEIVING WRITTEN NOTICE TO COMPLY. WHERE THIS SECTION REQUIRES AND APPROVED KEY-OPERATED SWITCH, IT MAY BE DUAL-KEYED OR EQUIPPED WITH DUAL SWITCHES PROVIDED TO FACILITATE ACCESS BY LAW ENFORCEMENT PERSONNEL. ELECTRIC GATE OPENERS, WHERE PROVIDED, SHALL BE LISTED IN ACCORDANCE WITH UL 325. GATES INTENDED FOR AUTOMATIC OPERATION SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED TO COMPLY WITH THE REQUIREMENTS OF ASTM F2200.

DEAD END-TURNAROUNDS: ALL DEAD-END FIRE ACCESS ROADS IN EXCESS OF 150 FEET IN LENGTH SHALL BE PROVIDED WITH APPROVED PROVISIONS FOR TURNING AROUND EMERGENCY APPARATUS. A CUL-DE-SAC SHALL BE PROVIDED IN RESIDENTIAL AREAS WHERE THE ACCESS ROADWAY SERVES MORE THAN TWO STRUCTURES. THE MINIMUM UNOBSTRUCTED PAVED RADIUS WIDTH FOR A CUL-DE-SAC IN A RESIDENTIAL AREA SHALL BE 36 FEET. THE FIRE CODE OFFICIAL SHALL ESTABLISH A POLICY IDENTIFYING ACCEPTABLE TURNAROUNDS FOR VARIOUS PROJECT TYPES. PLEASE SEE ALTERNATIVE TURNAROUND DESIGNS FOR SINGLE FAMILY RESIDENCES.

SURFACE: FIRE APPARATUS ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS NOT LESS THAN 75,000 LBS. UNLESS AUTHORIZED BY THE FAHJ AND SHALL BE PROVIDED WITH AN APPROVED PAVED SURFACE AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.

ADDRESS NUMBERS: APPROVED NUMBERS AND/OR ADDRESSES SHALL BE PLACED ON ALL NEW AND EXISTING BUILDINGS AND AT APPROPRIATE ADDITIONAL LOCATIONS AS TO BE PLAINLY VISIBLE AND LEGIBLE FROM THE STREET OR ROADWAY FRONTING THE PROPERTY FROM EITHER DIRECTION OF APPROACH. SAID NUMBERS SHALL CONTRAST WITH THEIR BACKGROUND, AND SHALL MEET THE FOLLOWING MINIMUM STANDARDS AS TO SIZE: 4" HIGH WITH A 1/2" STROKE FOR RESIDENTIAL BUILDINGS, 6" HIGH WITH A 1/2" STROKE FOR COMMERCIAL AND MULTI-RESIDENTIAL BUILDINGS, 12" HIGH WITH A 1" STROKE FOR INDUSTRIAL BUILDINGS. ADDITIONAL NUMBERS SHALL BE REQUIRED WHERE DEEMED NECESSARY BY THE FIRE MARSHAL, SUCH AS REAR ACCESS DOORS, BUILDING CORNERS, AND ENTRANCES TO COMMERCIAL CENTERS. THE FIRE CODE OFFICIAL MAY ESTABLISH DIFFERENT MINIMUM SIZES FOR NUMBERS FOR VARIOUS CATEGORIES OF PROJECTS. PROVIDE ADDRESS ON A SIGN AT THE STREET ENTRANCE TO THE PROPERTY.

EASEMENT ADDRESS SIGNS: ALL EASEMENTS, WHICH ARE NOT NAMED DIFFERENTLY FROM THE ROADWAY, FROM WHICH THEY ORIGINATE, SHALL HAVE AN ADDRESS SIGN INSTALLED AND MAINTAINED, LISTING ALL STREET NUMBERS OCCURRING ON THAT EASEMENT, LOCATED WHERE THE EASEMENT INTERESTS THE NAMED ROADWAY. MINIMUM SIZE OF NUMBERS ON THAT SIGN SHALL BE 4 INCHES IN HEIGHT WITH A MINIMUM STROKE OF 3/8", AND SHALL CONTRAST WITH THE BACKGROUND.

HOSEPULL - FIRE APPARATUS ACCESS ROADS: GENERAL FIRE APPARATUS ACCESS ROADS, INCLUDING PRIVATE RESIDENTIAL DRIVEWAY, SHALL BE REQUIRED FOR EVERY BUILDING HEREAFTER CONSTRUCTED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FEET FROM THE CLOSEST POINT OF FIRE DEPARTMENT VEHICLE ACCESS. FIRE APPARATUS ACCESS ROADS, INCLUDING PRIVATE RESIDENTIAL DRIVEWAYS MORE THAN 150 FEET IN LENGTH, SHALL BE PROVIDED AND MAINTAINED IN COMPLIANCE WITH THIS SECTION AND THE MOST RECENT EDITION AND ANY AMENDMENTS THERETO, OF PUBLIC AND PRIVATE ROAD STANDARDS AS ADOPTED BY THE COUNTY OF SAN DIEGO (SAN DIEGO COUNTY STANDARDS FOR PRIVATE ROADS AND PUBLIC ROADS, SAN DIEGO COUNTY DEPARTMENT OF PUBLIC WORKS). THE FIRE CODE OFFICIAL MAY MODIFY THE REQUIREMENTS OF THIS SECTION IF THE MODIFICATION PROVIDES EQUIVALENT ACCESS.

RESPONSE MAP UPDATES: ANY NEW DEVELOPMENT, WHICH NECESSITATES UPDATING OF EMERGENCY RESPONSE MAPS BY VIRTUE OF NEW STRUCTURES, HYDRANTS, ROADWAYS OR SIMILAR FEATURES, SHALL BE REQUIRED TO PROVIDE MAP UPDATES IN A FORMAT (PDF AND/OR CAD FORMAT AS APPROVED BY THE FAHJ) OR COMPATIBLE WITH CURRENT DEPARTMENT MAPPING SERVICES, AND SHALL BE CHARGED A REASONABLE FEE FOR UPDATING ALL RESPONSE MAPS.

FUEL MODIFICATION: A FUEL MODIFICATION ZONE SHALL BE REQUIRED AROUND EVERY BUILDING THAT IS DESIGNED PRIMARILY FOR HUMAN HABITATION OR USE OR A BUILDING DESIGNED SPECIFICALLY TO HOUSE FARM ANIMALS. DECKS, SHEDS, GAZEBOS, FREESTANDING OPEN-SIDED SHADE COVERS AND SIMILAR ACCESSORY STRUCTURES LESS THAN 250 SQUARE FEET AND 30 FEET OR MORE FROM A DWELLING, AND FENCES MORE THAN FIVE FEET FROM A DWELLING, ARE NOT CONSIDERED STRUCTURES FOR THE ESTABLISHMENT OF A FUEL MODIFICATION ZONE. A FUEL MODIFICATION ZONE SHALL COMPLY WITH THE FOLLOWING:

ZONE A - WHEN A BUILDING OR STRUCTURE IN A HAZARDOUS FIRE AREA IS LOCATED 100 FEET OR MORE FROM THE PROPERTY LINE THE PERSON OWNING OR OCCUPYING THE BUILDING OR STRUCTURE SHALL MAINTAIN A FUEL MODIFICATION ZONE WITHIN 100 FEET OF THE BUILDING OR STRUCTURE. THE AREA WITHIN 50 FEET OF A BUILDING OR STRUCTURE SHALL BE CLEARED OF VEGETATION THAT IS NOT FIRE RESISTANT AND RE-PLANTED WITH FIRE-RESISTANT PLANTS. IN THE AREA BETWEEN 50 TO 100 FEET FROM A BUILDING ALL DEAD AND DYING VEGETATION SHALL BE REMOVED.

ZONE B - NATIVE VEGETATION MAY REMAIN IN THIS AREA PROVIDED THAT THE VEGETATION IS MODIFIED SO THAT COMBUSTIBLE VEGETATION DOES NOT OCCUPY MORE THAN 50%OF THE SQUARE FOOTAGE OF THIS AREA. WEEDS AND ANNUAL GRASSES TO BE MOWED TO A HEIGHT OF 4" TO 6". ANY CHIPPING THAT IS DONE ON SITE SHOULD BE SPREAD NOT TO EXCEED 6" IN HEIGHT. TREES MAY REMAIN IN BOTH AREAS PROVIDED THAT THE HORIZONTAL DISTANCE BETWEEN CROWNS OF ADJACENT TREES AND CROWNS OF TREES AND STRUCTURES IS NOT LESS THAN 10 FEET.

GENERAL SETBACKS: ALL STRUCTURES SHALL BE SET BACK A MINIMUM OF 30 FEET FROM ALL PROPERTY LINES AND OPEN SPACE EASEMENTS UNLESS THE COUNTY/CITY ZONING ORDINANCE REQUIRES A GREATER SETBACK. EXCEPTION: WHEN BOTH THE BUILDING OFFICIAL AND THE FAHJ DETERMINE THAT THE HAZARD FROM WILDFIRE IS NOT SIGNIFICANT OR WHEN THE TERRAIN, PARCEL SIZE OR OTHER CONSTRAINTS ON THE PARCEL MAKE THE REQUIRED SETBACK INFEASIBLE, THE BUILDING OFFICIAL MAY ALLOW THE SETBACK TO BE LESS THAN 30 FEET FROM THE PROPERTY LINE WHEN ALLOWED BY THE ZONING ORDINANCE.

FIRE SPRINKLERS: APPROVED AUTOMATIC FIRE SPRINKLER SYSTEMS ARE REQUIRED IN ALL NEW STRUCTURES. FOR THE PURPOSE OF FIRE-SPRINKLER SYSTEMS, BUILDINGS SEPARATED BY LESS THAN TEN (10) FEET FROM ADJACENT BUILDINGS SHALL BE CONSIDERED AS ONE BUILDING. FIRE BARRIERS, PARTITIONS AND WALLS, REGARDLESS OF RATING, SHALL NOT BE CONSIDERED AS CREATING SEPARATE BUILDINGS FOR PURPOSE OF DETERMINING FIRE SPRINKLER REQUIREMENTS. MEZZANINES SHALL BE INCLUDED IN THE TOTAL SQUARE FOOTAGE CALCULATION.

ROOFING COVERING & VALLEYS: CLASS "A" VERY HIGH FIRE HAZARD AREAS
A) ROOF GUTTERS - PREVENT DEBRIS ACCUMULATION
B) REPLACEMENT - MORE THAN 50% OR MORE 2,500 SQUARE FEET ROOF AREA

ATTIC VENTILATION: PREVENT INTRUSION OF FLAME AND EMBERS (EMBER RESISTANT "ER" APPROVED MODELS ONLY) INTO THE ATTIC.

EAVE OR CORNICE VENTS: NOT ALLOWED IN EXTERIOR OVERHANG AREAS
A) EAVE PROTECTION - SHALL BE PROTECTED BY IGNITION RESISTANT MATERIALS

SPARK ARRESTORS: ALL STRUCTURES HAVING A CHIMNEY, FLUE OR STOVEPIPE ATTACHED TO A FIREPLACE, STOVE, BARBECUE OR OTHER SOLID OR LIQUID FUEL BURNING EQUIPMENT OR DEVICE SHALL HAVE THE CHIMNEY, FLUE OR STOVEPIPE EQUIPPED WITH AN APPROVED SPARK ARRESTER. AN APPROVED SPARK ARRESTER IS A DEVICE INTENDED TO PREVENT SPARKS FROM ESCAPING INTO THE ATMOSPHERE, CONSTRUCTED OF WELDED OR WOVEN WIRE MESH, 12 GAUGE THICKNESS OR LARGER, WITH OPENINGS NO GREATER THAN 1/2 INCH, OR OTHER ALTERNATIVE MATERIAL THE FAHJ DETERMINES PROVIDES EQUAL OR BETTER PROTECTION.

GLAZING MATERIALS: ONE PANE TEMPERED ON DUAL PANE WINDOWS.

VINYL WINDOWS: MUST MEET THE FOLLOWING CHARACTERISTICS:
A. FRAME AND SASH ARE COMPRISED OF VINYL MATERIAL WITH WELDED CORNERS
B. METAL REINFORCEMENT IN THE INTERLOCK AREA
C. GLAZED WITH INSULATING GLASS, ANNEALED OR TEMPERED
D. ONE PANE TEMPERED OF DUAL PANE WINDOW(S)

SKYLIGHTS: ONE PANE TEMPERED GLASS.

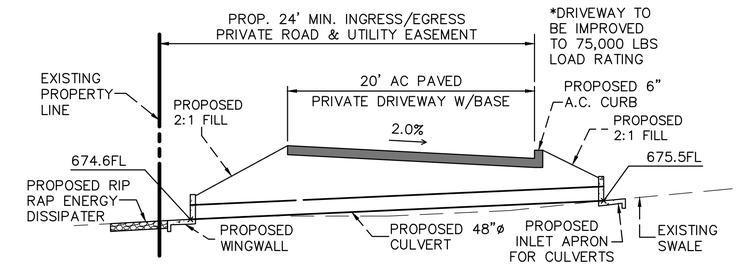
EXTERIOR WALLS: SHALL BE NONCOMBUSTIBLE, IGNITION-RESISTANT MATERIALS
A) EXTERIOR WALL COVERING - SHALL EXTEND FROM THE TOP THE FOUNDATION AND TERMINATE AT ROOF
B) REPAIR/REPLACEMENT OF EXTERIOR WALL - LESS THAN 30 FEET FROM PROPERTY LINE
C) EXTERIOR WALL VENTS - PREVENT INTRUSION OF FLAME AND EMBERS INTO THE STRUCTURE

EXTERIOR DOORS: APPROVED NONCOMBUSTIBLE CONSTRUCTION OR 20 MINUTE RATED.

COMBUSTIBLE FENCES AND OTHER COMBUSTIBLE ATTACHMENTS TO STRUCTURES: FENCES AND OTHER STRUCTURES LESS THAN FIVE FROM A BUILDING - NON-COMBUSTIBLE.

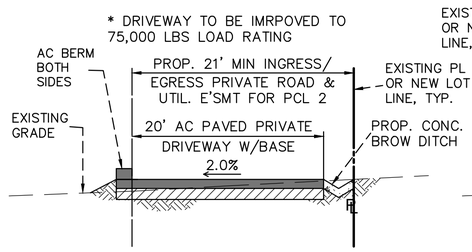
SMOKE DETECTORS: IN NEW CONSTRUCTION AND IN NEWLY CLASSIFIED GROUP R-3. 1 OCCUPANCIES, REQUIRED SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHEN SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE AND SHALL BE EQUIPPED WITH A BATTERY BACKUP. SMOKE ALARMS SHALL EMIT A SIGNAL WHEN THE BATTERIES ARE LOW. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVER CURRENT PROTECTION. SMOKE ALARMS MAY BE SOLELY BATTERY OPERATED WHEN INSTALLED IN EXISTING BUILDINGS; OR IN BUILDINGS WITHOUT COMMERCIAL POWER; OR IN BUILDINGS, WHICH UNDERGO ALTERATIONS, REPAIRS, OR ADDITIONS REGULATED BY SECTION 907-.2.11.5.

CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPOSURE: WILD LAND URBAN INTERFACE SPECIAL BUILDING CONSTRUCTION REGULATIONS ARE LOCATED IN THE 2013 CALIFORNIA BUILDING CODE AND AMENDMENTS FOR THE COUNTY OF SAN DIEGO FOR THE FOLLOWING CONSTRUCTIONS FEATURES:
A) SFM STANDARD 12-7A-1 EXTERIOR WALL SIDING AND SHEATHING
B) SFM STANDARD 12-7A-2 EXTERIOR WINDOWS
C) SFM STANDARD 12-7A-3 HORIZONTAL PROJECTIONS
D) SFM STANDARD 12-7A-4 DECKING
A) SFM STANDARD 12-7A-5 IGNITION-RESISTANT MATERIALS
PROJECT IN HIGH FIRE HAZARD SEVERITY ZONE COMPLY WITH CALIFORNIA BUILDING CODE CHAPTER 7A.



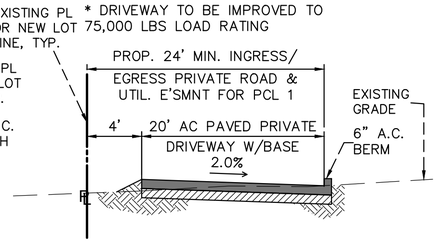
SECTION C-C: CULVERT

NO SCALE



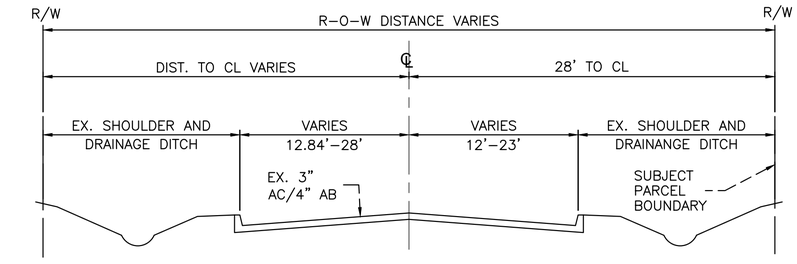
SECTION B-B: PRIVATE DRIVEWAY

NO SCALE



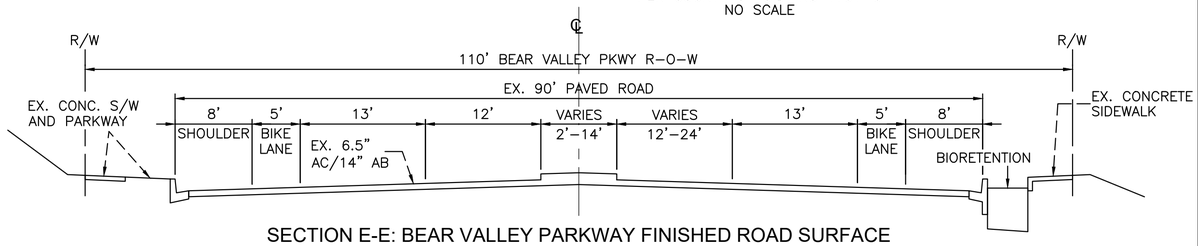
SECTION A-A: PRIVATE DRIVEWAY

NO SCALE



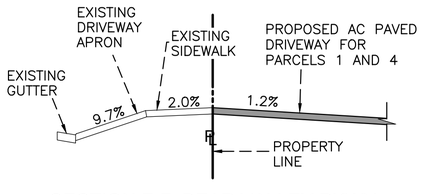
SECTION D-D: BIRCH AVE FINISHED ROAD SURFACE

PER COUNTY OF S.D. RS 1791-3
NO SCALE



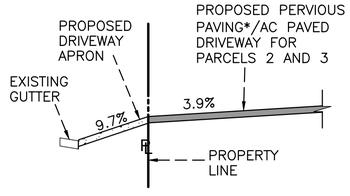
SECTION E-E: BEAR VALLEY PARKWAY FINISHED ROAD SURFACE

PER COUNTY OF S.D. RS 1791-3
NO SCALE



SECTION F-F: BEAR VALLEY PKWY

DRIVEWAY APRON
NO SCALE



SECTION G-G: BIRCH AVENUE DRIVEWAY APRON

NO SCALE

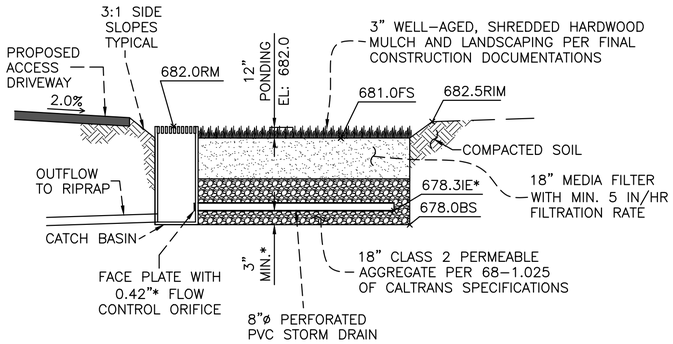
*FOR PERVIOUS AC PAVING, SEE POROUS PAVING DETAIL, SHEET 3

BILL YEN & ASSOCIATES, INC.
CIVIL ENGINEERING · SURVEYING · SITE PLANNING
13071 POWAY ROAD, POWAY, CA 92064-4519
(858) 679-8010 · FAX (858) 679-8015

3/28/2017
WILLIAM YEN, RCE 33730 DATE

ATTACHMENT 5: SWQMP PLAN SHEET COPIES AND BMP DETAILS AND SPECIFICATIONS

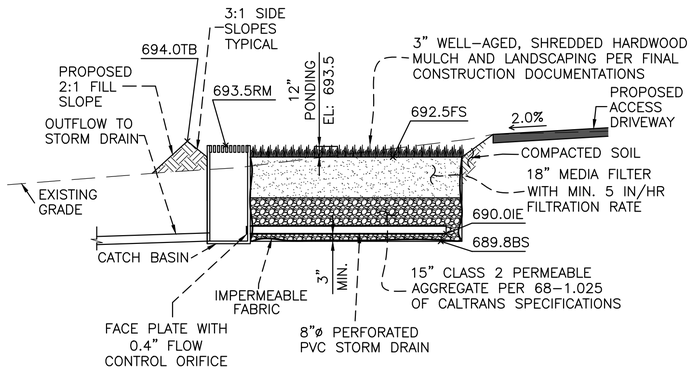
SHEET 3 OF 3



*BMP1 IS DESIGNED WITH THE MOST CONSERVATED FILTRATION AVAILABLE PER POTENTIAL INFILTRATION RATES SHOWN IN TABLE G.1-5 OF APPENDIX G OF THE BMPDM. IT IS DESIGNED AS A PR-1 AND WILL BE RECALCULATED WHEN SITE SPECIFIC INFILTRATION RATES ARE DETERMINED DURING THE FINAL ENGINEERING PROCESS.

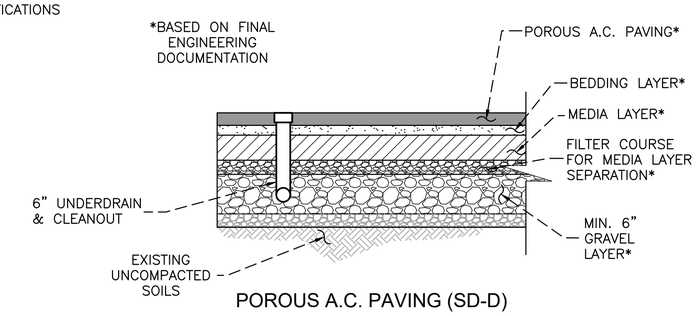
BMP1: BIOFILTRATION W/PARTIAL RETENTION (PR-1)

NO SCALE



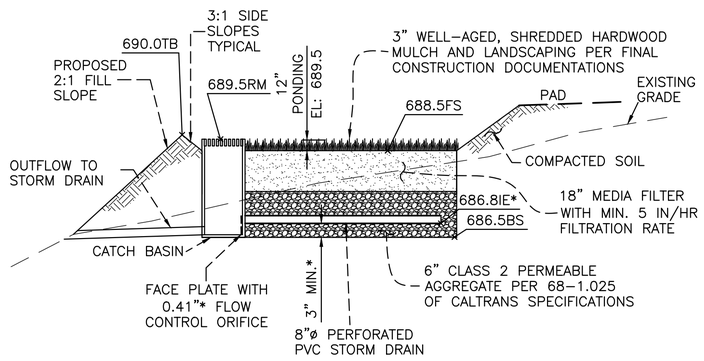
BMP3: BIOFILTRATION (BF-1)

NO SCALE



POROUS A.C. PAVING (SD-D)

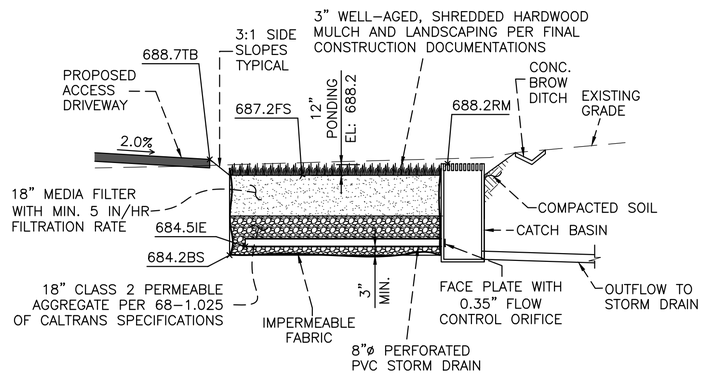
NO SCALE



*BMP2 IS DESIGNED WITH THE MOST CONSERVATED FILTRATION AVAILABLE PER POTENTIAL INFILTRATION RATES SHOWN IN TABLE G.1-5 OF APPENDIX G OF THE BMPDM. IT IS DESIGNED AS A PR-1 AND WILL BE RECALCULATED WHEN SITE SPECIFIC INFILTRATION RATES ARE DETERMINED DURING THE FINAL ENGINEERING PROCESS.

BMP2: BIOFILTRATION W/PARTIAL RETENTION (PR-1)

NO SCALE



BMP4: BIOFILTRATION (BF-1)

NO SCALE

BILL YEN & ASSOCIATES, INC.
CIVIL ENGINEERING · SURVEYING · SITE PLANNING
13071 POWAY ROAD, POWAY, CA 92064-4519
(858) 679-8010 · FAX (858) 679-8015

William Yen 3/28/2017

WILLIAM YEN, RCE 33730 DATE

This page was left intentionally blank.

ATTACHMENT 6

Copy of Project's Drainage Report

This is the cover sheet for Attachment 6.

If hardcopy or CD is not attached, the following information should be provided:

Title: Drainage Study, Steeve TPM 21225
Prepared By: William C. Yen, R.C.E. 33730
Date: 8/5/2016, revised 12/1/2016

This page was left intentionally blank.

ATTACHMENT 7

Copy of Project's Geotechnical and Groundwater Investigation Report

This is the cover sheet for Attachment 7.

If hardcopy or CD is not attached, the following information should be provided:

Title:
Prepared By:
Date:

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Diego County Area, California

February 24, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 9, Sep 17, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 3, 2014—Nov 22, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

San Diego County Area, California (CA638)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
RaB	Ramona sandy loam, 2 to 5 percent slopes	4.3	100.0%
Totals for Area of Interest		**4.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Diego County Area, California

RaB—Ramona sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: hbfr
Elevation: 250 to 3,500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ramona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 17 inches: sandy loam
H2 - 17 to 60 inches: sandy clay loam, clay loam
H2 - 17 to 60 inches: sandy clay loam, sandy loam
H3 - 60 to 74 inches:
H3 - 60 to 74 inches:

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very high (about 14.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Minor Components

Greenfield

Percent of map unit: 10 percent

Plecentia

Percent of map unit: 5 percent

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Qualities and Features

This folder contains tabular reports that present various soil qualities and features. The reports (tables) include all selected map units and components for each map unit. Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage, or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial

subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Soil Features–San Diego County Area, California									
Map symbol and soil name	**Restrictive Layer**				**Subsidence**		**Potential for frost action**	**Risk of corrosion**	
	Kind	**Depth to top**	**Thickness**	**Hardness**	**Initial**	**Total**		**Uncoated steel**	**Concrete**
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
		In	*In*		*In*	*In*			
RaB—Ramona sandy loam, 2 to 5 percent slopes									
Ramona		—	—		—	—	Low	Moderate	Low
Greenfield		—	—		—	—			
Plecentia		—	—		—	—			

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

This page was left intentionally blank.