DOCKETED	
Docket Number:	24-OPT-02
Project Title:	Compass Battery Energy Storage
TN #:	255579
Document Title:	Appendix 4-15B_Water Quality Management Plan Part 1
Description:	The Water Quality Management Plan has been prepared to comply with the requirements of the local NPDES Stormwater Program.
Filer:	Erin Phillips
Organization:	Dudek
Submitter Role:	Applicant Consultant
Submission Date:	4/8/2024 4:30:51 PM
Docketed Date:	4/8/2024

Appendix 4.15B

Water Quality Management Plan

Water Quality Management Plan (WQMP)

Project Name:

COMPASS BATTERY STORAGE PROJECT

Prepared for:

Broad Reach Power Company

39343 Camino Capistrano

San Juan Capistrano, California 92675

Prepared by:

Sargent & Lundy

Engineer: Brian Wood

Registration No. 72627

55 E. Monroe St.

Chicago, IL 60603

312-269-2000

Engineer's Seal

Prepared on:

02-23-2024

Project Owner's Certification			
Permit/Application No.		Grading Permit No.	
Tract/Parcel Map No.		Building Permit No.	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			CUP: 21-008 APN: 637-082-71 and SBE804-30-17B-3

This Water Quality Management Plan (WQMP) has been prepared for Broad Reach Power Company by Sargent & Lundy (S&L). The WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the San Diego Region (South Orange County). Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner: Compass Energy Storage LLC			
Title	Senior Vice President and Secretary		
Company	Broad Reach Power Company		
Address	333 Clay Street, Suite 2800, Houston, TX 77002		
Email	jalvord@broadreachpower.com		
Telephone #	240-893-2738		
Signature		Date	02-XX-2024

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Section 1 Discretionary Permit(s) and Water Quality Conditions

Project Infomation			
Permit/Application No.		Site Address or Tract/Parcel Map No.	39343 Camino Capistrano, San Juan Capistrano, CA 92675
Additional Information/ Comments:			
Water Quality Conditions			
Water Quality Conditions from prior approvals or applicable watershed-based plans	There were no prior approvals for this project.		

Section 2 Project Description

The proposed Battery Storage project is located in the northern portion of the City of San Juan Capistrano, just south of the Saddleback Church located at 29251 Camino Capistrano, San Juan Capistrano, California. The project is located in South Orange County and the total amount of land to be developed will be approximately 11.84 acres. The final land cover of the proposed improvements will consist of paved internal roads, gravel substation area, seeded drainage ditches, and concrete surfacing for foundations and level spreader, as shown on Attachment E. The existing site within the footprint of development consists of some vegetation, impervious surface, and dirt roads. There will be a 20-foot wide vegetative buffer surrounding the site. The side slopes grading to the existing surfaces will be seeded, as shown on Attachment E. The existing site is a combination of Hydrologic Soil Groups (HSG) A (147), C (207) and D (101) as shown in Attachment I. Any excess material or waste collected onsite will be hauled offsite. The proposed project will take place within the site boundaries except for the improvement of the access road leading to the site. The site will be owned by Broad Reach Power Company. The site is located within the San Juan watershed and is located directly west of lower Oso Creek.

Due to the existing topography of the site, a level spreader will be installed to protect Oso Creek from future erosion by diverting significant offsite runoff around the site.

2.1 General Description

Description of Proposed Project		
Site Location	South of the Saddleback Church located at 29251 Camino Capistrano, San Juan Capistrano, California within South Orange County, as shown on Exhibit	
Project Area (ft^2): 515,750	Number of Dwelling Units: 0	SIC Code: 3691 and 5063
Narrative Project Description:	The proposed Battery Storage project will be approximately 11.84 acres. The final land cover of the site will consist of paved internal roads, gravel substation area, seeded drainage ditches, and impervious surfacing for foundations and level spreader. There will be a vegetative buffer surrounding the site. The existing site consists of some vegetation, impervious surface, and dirt roads. The side slopes grading to the existing surfaces will be seeded. The existing site is a combination of Hydrologic Soil Groups (HSG) A, C and D. Any of material or waste collected onsite will be hauled offsite. This development is considered a Priority Project because creates over 10,000 square feet of impervious surfacing.	

Project Area	Pervious (Grass and Dirt)		Impervious (Gravel, Concrete, Pavement, and Water Impoundment)	
	Area (acres)	Percentage	Area (acres)	Percentage
Pre-Project Conditions	10.04	84.80%	1.80	15.20%
Post-Project Conditions	1.66	14.02%	10.18	85.98%

2.2 Post Development Drainage Characteristics

Onsite Drainage Area

The proposed site modifications will capture stormwater runoff from 10.18 acres of the 11.84-acre limit of disturbance within the Battery Storage project boundary that currently drains to the east of the site along with 13.91 acres of offsite flow that drains southward from the north of the site. The remaining 1.66 acres of developed land was used to implement drainage infrastructure that divert offsite flows around the site and grading back to existing ground surfaces. Throughout the remaining body of this text, onsite will refer to the 10.18 acres of development that comprise the overall pad and offsite will refer to the new drainage infrastructure, limits of grading, and land to the north and west of the site that flows through the proposed site location into Oso Creek. The proposed onsite drainage area consists of gravel, pavement, and impervious surfaces which can be seen in Attachment E. To convey stormwater runoff into the underground detention basin, a storm drain system is designed using gravity flow.

An underground detention basin will be provided along the eastern and northern portion of the site running underneath proposed roads. The buried detention basin is being provided by the vendor Advanced Drainage Systems (ADS) and will be designed in accordance with the South Orange County TGD and the City of San Juan Capistrano's BMP checklist to meet the stormwater management requirements for an underground detention basin on the site. The proposed system will discharge into a sump. Within the sump, a pump will be used to pump the stormwater north to an existing outfall which will then discharge into a channelized portion of Oso Creek.

Offsite Drainage Area:

Runoff from the area north and west of the site currently drain through the proposed site location and into Oso Creek. The surfacing of the area is mostly vegetation and pervious surfacing, as shown on Attachment J. Stormwater runoff from these areas have been delineated into three separate sub catchments known as Offsite Drainage Area North, Offsite Drainage Area West, and Offsite Drainage Area South. Offsite Drainage Area North flows south from the north end of the site and will be intercepted via a gravity storm sewer system to be conveyed into the underground detention system. Offsite Drainage Area West and South will be collected into a seeded drainage ditch that has a highpoint to bifurcate these two flows. Offsite Drainage Area West will flow into one portion of the seeded drainage ditch, enter a double barrel box culvert that runs at grade underneath the site, discharge into a riprap protected seeded swale, and flow into the northern tip of the proposed level spreader. Offsite Drainage Area South enters the other portion of the seeded drainage ditch and flows around the southern edge of the site and discharge into the midpoint of the proposed level spreader. The combined flows from Offsite Drainage Area West and South that enter and exit the level spreader will be restricted to peak flow at or below pre-developed peak flow rates.

2.3 Property Ownership/Management

The entire site is operated by Broad Reach Power Company. The SDG&E substation will be transferred to SDG&E once the substation is constructed. There will there be no association formed to be responsible for long-term maintenance. The different property lines can be shown on Attachment C.

Section 3 Site & Watershed Characterization

3.1 Site Conditions

3.1.1 Existing Site Conditions

The existing 10.18-acre area of the site is to the south of the Saddleback Church located at 29251 Camino Capistrano, San Juan Capistrano, California. An area north and west of the site (58.62 acres) currently drains into the proposed Battery Storage area. Therefore, the total pre-construction drainage area is 68.80 acres of runoff from the 58.62-acre area north and west of proposed site and 10.18 acres within the proposed onsite delineation, which is shown on Attachment J. The overall drainage pattern is south-eastward, draining towards Oso Creek to the east of the site. The current site is located at the foot of a steep hill with slope grades as steep as 50% at some locations, as shown on Attachment J. There is an existing water line that will be rerouted at the site, as shown on Attachment C.

Existing Land Uses

Land Use Description	Total Area (acres)	Impervious Area (acres)	Pervious Area (acres)	Imperviousness (%)
Dirt	0.82	0.00	0.82	0%
Impervious	0.98	0.98	0.00	100%
Grass	8.38	0.00	8.38	0%
Total	10.18	0.98	9.20	9.63%

3.1.2 Infiltration-Related Characteristics

3.1.2.1 Hydrogeologic Conditions

During geotechnical exploration at the site (Attachment G), groundwater was found in multiple site borings at depths of approximately 47 ft to 70 ft below grade which correlate to elevations 139 ft to 170 ft. The site falls within the limits of the San Juan Valley Groundwater Basin as shown in the Sustainable Groundwater Management Act (SGMA's) Groundwater Map (Attachment F.) Groundwater levels fluctuations occur due to seasonal variations in rainfall, runoff, and other factors. Due to the clayey nature of onsite soils, any fluctuations would likely be long term and would not be impacted significantly by surface water. In addition, due to the nature of the soils, infiltration will not be incorporated into the stormwater design. A list of the groundwater elevations can be seen in the Geotechnical Report (Attachment G).

There were no contaminated soils encountered during soil exploration nor were any wells located within the limits of the site.

3.1.2.2 Soil and Geologic Infiltration Characteristics

The existing site is a combination of Hydrologic Soil Groups (HSG) A, C and D. The existing site is covered by grass, dirt roads, and an impervious surfacing. This can be seen in Attachment I. Curve numbers are taken from the NRCS TR-55. Because the site is a combination of soil types and surfacing, a composite curve number was used. Below is a table outlining these calculations. The subsurface investigation completed by Terracon in November 2021 shows that the lowest infiltration rate between P-3, P-4, P-7, and P-8 was 0.04 in/hr (as shown in Attachment G). The Geotechnical Report can be seen in Attachment G.

Pre-Construction Composite Curve Number

Onsite Drainage Area						
HSG	Impervious		Dirt		Grass (Fair)	
	CN	Acres	CN	Acres	CN	Acres
A	98	0.98	72	0.42	49	3.39
C	98	0.00	87	0.40	79	4.29
D	98	0.00	89	0.00	84	0.71
Composite	71.212					

Post-Construction Composite Curve Number

Onsite Drainage Area						
HSG	Impervious		Gravel		Pavement	
	CN	Acres	CN	Acres	CN	Acres
A	98	0.00	76	3.00	98	2.00
C	98	0.05	89	3.47	98	1.34
D	98	0.00	91	0.11	98	0.21
Composite	88.375					

3.1.2.3 Geotechnical Conditions

As stated on page 10 of the Geotechnical Report (Attachment G), percolation rates were higher in the surface soils, which could lead to perched water conditions on top of the underlying less permeable soils. Due to the nature of the site, the perched water could move laterally. These conditions are unfavorable to allow infiltration and maintain safe conditions at the project site.

3.1.2.4 Summary of Infiltration Opportunities and Constraints of Existing Site

Because of the low infiltration rates and the perched water located at this site, using infiltration was not feasible at the project site. In order to manage stormwater, an underground detention basin will be utilized to both treat and store stormwater onsite. This underground detention basin will include an impervious liner surrounding the basin system that will not allow water to infiltrate into the ground.

3.2 Proposed Site Development Activities

3.2.1 Overview of Site Development Activities

The development will be a battery storage site with an adjacent substation. The site will not be occupied and will only require periodic maintenance activities. Activities to be conducted periodically will be maintenance of the underground basin and landscaping of the site. The site is changing from mostly pervious surfacing like dirt and grass to mostly gravel and impervious surfacing. The site is at the bottom of a steep hill and will utilize a level spreader to mitigate erosive runoff conditions. Industry standard earthwork cut and fill will be used to construct the site. The overall drainage pattern of the site is still from west to east, but at a milder slope. This can be seen on Attachment E.

3.2.2 Project Attributes Influencing Stormwater Management

The proposed Compass Energy Storage Project (Project) will be composed of lithium-ion batteries, inverters, medium-voltage (MV) transformers, a switchyard, a collector substation, and other associated equipment to interconnect into the SDG&E Trabuco to Capistrano 138 kV transmission line (Point of Interconnection). The batteries will be installed in non-habitable enclosures.

The Project will be connected to the SDG&E electric transmission system. Electric energy will be transferred from the existing power grid to the Project batteries for storage and from the Project batteries to the power grid when additional electricity is needed.

During operation there will be no waste generated on site and there will be minimum traffic to the area except to maintain the underground detention basin and landscaping. There will be no discharge to any environmentally sensitive features.

The proposed land surfacing of the site will consist of impervious concrete pads for foundations, paved roads, and gravel surfacing in the substation area. Surrounding the site will be a 20-foot vegetative buffer.

There will be run on to the site from an offsite area to the north and west of the project site. The run on from Offsite Drainage Area North will be collected via a storm drain system to be stored in the underground detention system. Offsite Drainage Area West and South will be managed by proposed drainage infrastructure and discharged into a level spreader to maintain or reduce peak flow rates. Runoff from the onsite drainage area will be contained within the underground detention area on site which is sized for the 100-year storm event.

Proposed Land Uses

Land Use Description	Total Area (acres)	Impervious Area (acres)	Pervious Area (acres)	Imperviousness (%)
Gravel Surfacing	6.58	6.58	0	100%
Impervious Surfacing	0.05	0.06	0	100%

Pavement	3.55	3.55	0.00	100%
Total	10.18	10.08	0.00	100%

3.2.3 Effects on Infiltration and Harvest and Use Feasibility

The project site has the potential for perched groundwater conditions resulting from infiltration as discussed in the Geotechnical Report. Because of these conditions no infiltration will be used in the design of the underground storage unit.

3.3 Receiving Waterbodies

The stormwater collected in the underground detention system will be pumped north to an existing outfall by an underground force main. This water will then be discharged into a channelized portion of Oso Creek.

3.4 Stormwater Pollutants or Conditions of Concern

Pollutants or Conditions of Concern				
Pollutant	Expected from Proposed Land Uses/Activities (Yes or No)	Receiving Waterbody Impaired (Yes or No)	Priority Pollutant from WQIP or other Water Quality Condition? (Yes or No)	**Pollutant of Concern (Primary, Other, or No)**
Suspended-Solids	Yes	No	No	No
Nutrients	Yes	No	No	No
Heavy Metals	No	N/A	N/A	No
Bacteria/Virus/Pathogens	No	N/A	Yes	Primary
Pesticides	No	N/A	N/A	No
Oil and Grease	No	No	No	No
Toxic Organic Compounds	No	N/A	N/A	No
Trash and Debris	No	N/A	N/A	No
Dry Weather Runoff	No	N/A	Yes	Primary

3.5 Hydrologic Conditions of Concern

Does a hydrologic condition of concern exist for this project?

☐ No – An HCOC does not exist for this receiving water because:

- ☐ Project discharges directly to a protected conveyance (bed and bank are concrete lined the entire way from the point(s) of discharge to a receiving lake, reservoir, embayment, or the Ocean
- ☐ Project discharges directly to storm drains which discharge directly to a reservoir, lake, embayment, ocean or protected conveyance (as described above)
- ☐ The project discharges to an area identified in the WMAA as exempt from hydromodification concerns

☒ Yes – An HCOC does exist for this receiving water because none of the above are applicable.

3.6 Critical Course Sediment Yield Areas

The onsite and offsite drainage area may require an assessment due to the existence of sediment yield areas as shown in the critical course sediment yield map provided in Attachment L.

Section 4 Site Plan and Drainage Plan

4.1 Drainage Management Area Delineation

The site has one drainage management area that is composed of different surfacing types. The offsite surface runoff is broken up into three DMAs that is mostly vegetation and pervious surfacing. The four DMAs were made up of the gravel surfacing, paved roads, impervious surfacing, water impoundment, grass, and dirt. The BMP selected for the project site is the underground detention basin. It was selected because of the project site's anisotropic hydraulic conductivity.

The offsite area of the site has significant slopes exceeding 10%. DMAs were selected in order to maximize retention by being sized to treat the 100-year storm.

4.2 Overall Site Design BMPs

Minimize Impervious Area – Impervious areas will be minimized to where it is necessary. At the project site a vegetative buffer will be installed to increase the pervious area offsite. Runoff will be detained onsite in an underground detention pond. Impervious surfacing is required due to the site's intended use for operation and safety. Additionally, the overall site plan was reduced from a previous version.

Maximize Natural Infiltration Capacity- Due to the anisotropic infiltration rates of the soil causing perched water conditions, no infiltration can occur onsite as stated in the Geotechnical Report.

Preserve Existing Drainage Patterns and Time of Concentration- The existing drainage pattern is from west to southeast, discharging into Oso Creek. The proposed site will capture 44.71 acres of the runoff from the offsite area draining towards the site and reroute it around the site and back to its natural watercourse. 13.91 acres of offsite runoff will be collected along with 10.18 acres of runoff from onsite and will not discharge into

Oso Creek via its natural drainage pattern but will instead be pumped up to the existing outfall north of the site into a channelized portion of Oso Creek.

Disconnect Impervious Areas- Disconnected impervious areas will not be used in order to be able to access the battery storage and substation areas, which requires convenient access for maintenance and emergencies. A vegetative buffer will be added between the site and its surrounding in order to add additional pervious areas.

Protect Existing Vegetation and Sensitive Areas- There are no discharges to sensitive areas from either onsite or offsite.

Revegetate Disturbed Areas – Side slopes will be vegetated once the site is constructed, including grass lining of the drainage ditches, as well as a vegetative buffer that will be constructed.

Soil Stockpiling and Site Generated Organics – Soil stockpiling will not occur during regular site activities within the project site. The site will not be inhabited and will only be visited for maintenance of the underground detention basin and equipment and periodic landscaping activities.

Firescaping- Plants will be selected to minimize the risks of fire. Vegetation will be selected in accordance to the zone of the battery storage area.

Water Efficient Landscaping- Water efficient landscaping will be incorporated into our landscape design and plant selection, as well as in our landscaping plan.

Slopes and Channel Buffers- Slope and channel buffers will be stabilized to decrease the potential for erosion of slopes. Oso Creek will not be disturbed with any construction activities.

4.3 DMA Characteristics and Site Design BMPs

4.3.1 Project Area (Onsite)

The gravel surfacing onsite is located as shown on Attachment E. The total area of the gravel surfacing is 6.58 acres. The gravel surfacing is 100% impervious. The site drains to catch basins which will collect the runoff and convey it to the underground detention basin via a storm sewer system. The catch basins are provided with 12" sediment traps and will be maintained in order to keep them free from debris and sediment buildup from normal operations. This area will not infiltrate into the ground per the recommendations of the Geotechnical Report.

The impervious surfacing onsite is located as shown on Attachment E. Impervious surfacing is used for foundations. The total area of the impervious surfacing is 0.06 acres and is 100% impervious. The site drains to catch basins which will collect the runoff and convey it to the underground detention basin via a storm sewer system. The catch basins are provided with 12" sediment traps and will be maintained in order to keep them free from debris and sediment buildup from normal operations. This area will not infiltrate into the ground per the recommendations of the Geotechnical Report.

The paved roads onsite is located as shown on Attachment E. The total area of pavement is 3.55 acres and is 100% impervious. The site drains to catch basins which will collect the runoff and convey it to the underground detention basin via a storm sewer system. The catch basins are provided with 12" sediment traps and will be maintained in order to keep them free from debris and sediment buildup from normal operations. This area will not infiltrate into the ground per the recommendations of the Geotechnical Report.

4.3.2 Offsite Runoff

The area that currently drains through the site from offsite is shown on Attachment J. This area consists of natural vegetation and consists of slopes over 50%. The natural topography drains from west to southeast and currently sheet flows into Oso Creek. The total area of the surfacing is 58.62 acres. The surfacing is 0% impervious. Offsite runoff from the north will be collected via a storm drain system and stored in the underground detention basin. Offsite runoff from the west and south drains to a drainage ditch system high pointed at the boundary of the two drainage areas delineation to separate the two flows. The western drainage area flows into the drainage ditch and into a double barrel box culvert that runs at grade west to east through the site. The box culverts then discharge into a riprap protected grass lined swale that feeds into the northern point of the proposed level spreader. The southern drainage area flows into the drainage ditch and is diverted around the south of the site into the midpoint of the proposed level spreader. Flows from both the western and southern drainage areas terminate into the level spreader which will then discharge water to its natural watercourse. The diversion ditch and level spreader system will be maintained in order to keep it free from debris and sediment buildup from normal operations.

4.3.3 DMA Summary

Drainage Management Areas				
DMA (Number/Description)	Total Area (acres)	Imperviousness (%)	Infiltration Feasibility Category (Full, Partial, or No Infiltration)	Hydrologic Source Controls Used
Project Site (Onsite)	10.18	100%	No Infiltration	Underground Detention Basin
Offsite Drainage Area North	13.91	0.00%	Partial	Underground Detention Basin
Offsite Drainage Area West	17.01	0.59%	Partial	Diversion Ditch, Box Culvert, and Level Spreader
Offsite Drainage Area South	27.70	0.36%	Partial	Diversion Ditch and Level Spreader

4.4 Source Control BMPs

Non-Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**Reason Source Control is Not Applicable**
		Included	**Not Applicable**	
N1	Education for Property Owners, Tenants, and Occupants	☐	☒	No tenants or occupants onsite
N2	Activity Restrictions	☐	☒	Will rarely be any employees or people onsite.
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☒	☐	
N6	Local Industrial Permit Compliance	☐	☒	There are no fuel dispensing areas.
N7	Spill Contingency Plan	☒	☐	
N8	Underground Storage Tank Compliance	☐	☒	There will be no underground structures except the detention pond, which will only hold water.
N9	Hazardous Materials Disclosure Compliance	☐	☒	There will be no hazardous material onsite.
N10	Uniform Fire Code Implementation	☒	☐	
N11	Common Area Litter Control	☐	☒	The battery storage area will be uninhabited.
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	No loading docks will be onsite.
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☐	☒	There will be minimum traffic.
N16	Retail Gasoline Outlets	☐	☒	There will be no gasoline outlets

At the proposed site, landscape management will be used to maintain the vegetative buffer at the site. BMP maintenance will be provided per the O&M manual to make sure the underground detention basin is

functioning as required. A spill contingency plan will be provided for the substation equipment that contain hazardous materials. The batteries will be LFP batteries. These batteries are made with a lithium iron phosphate ($LiFePO_4$) cathode. The materials are non-toxic. Lithium iron phosphate is thermally and structurally stable meaning that it won't fluctuate during overcharge or short circuit conditions, or if handled incorrectly. LFP batteries are also incombustible, which makes these particular batteries the safest lithium chemistry to use in energy projects. LFP batteries contain no toxic or rare earth materials. Unlike other types of lithium batteries, the internal chemicals found within LFP batteries will not degrade over time or cause leakage that harms the environment.

A uniform fire code will be implemented and will be in compliance with Article 80 of the Uniform Fire Code. Employee training will be provided to any employee coming onto the site for maintenance or landscaping activities. As a part of the maintenance requirements for the site, catch basins will be inspected for buildup of sediment or debris.

Structural Source Control BMPs

Identifier	Name	Check One		Reason Source Control is Not Applicable
		Included	Not Applicable	
S1	Provide storm drain system stenciling and signage	☐	☒	Site does not drain directly to the ocean.
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	No outdoor material storage areas will be onsite. All material will be hauled offsite.
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☐	☒	No trash and waste storage areas will be onsite. All material will be hauled offsite
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☒	☐	
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☒	☐	
S6	Dock areas	☐	☒	No dock areas onsite.
S7	Maintenance bays	☐	☒	No maintenance bays onsite.
S8	Vehicle wash areas	☐	☒	No wash areas onsite.
S9	Outdoor processing areas	☐	☒	No processing areas onsite.

S10	Equipment wash areas	☐	☒	No equipment wash areas onsite.
S11	Fueling areas	☐	☒	No fueling areas.
S12	Hillside landscaping	☒	☐	
S13	Wash water control for food preparation areas	☐	☒	No food preparation onsite.
S14	Community car wash racks	☐	☒	No community car wash racks.

Efficient landscaping will be provided onsite in order to prevent onsite waste. The irrigation will be designed to each landscape area's specific water requirements, as well as employing natural vegetation that have similar water requirements. Oso Creek will be protected from erosion by installing the vegetative buffer and level spreaders. Landscaping will be provided for the vegetative buffer and the surrounding side slopes of the site.

Section 5 BMP

5.1 BMPs in DMA 1

The onsite underground detention basin will be used for the DMA onsite and the northern offsite DMA. The underground detention basin will allow no infiltration due to anisotropic hydraulic conductivity causing perched water as detailed in the Geotechnical Report in Attachment G. The underground basin system will be lined with a membrane to prevent any infiltration into the groundwater. The stormwater will then be pumped to an existing outfall directly north of the site where it will be discharged into a channelized portion of Oso Creek. The BMP will be sized to contain the 100-year storm for the onsite and northern offsite surface runoff. The post-development site plan for onsite and offsite is shown in Attachment E and J, respectively.

5.1.2 Structural LID BMP for DMA 1

The BMP selected at the site is an underground detention basin. The BMP number is BIO-4. This BMP type treats TSS, nutrients and oil and grease. The BMP sizing was calculated using the flow rate from worksheet 9 as shown in Attachment H. This flow rate is then used to calculate the required area of the detention basin. This area is less than the area provided at the project site, as shown in Section 5.2.

The BMP is an underground detention basin supplied by Advanced Drainage Systems, Inc. (ADS). It is made up of several chambers within a perimeter stone envelope. The chambers are wrapped in a non-woven geotextile and have a layer of stone under the chambers. The ADS chambers can be seen in Attachment K. These chambers deviate from Appendix G because the chambers are below ground versus at grade. This BMP system, in conjunction with a pump, will be designed to manage the 100-year storm event while meeting the 36-hour drawdown requirements.

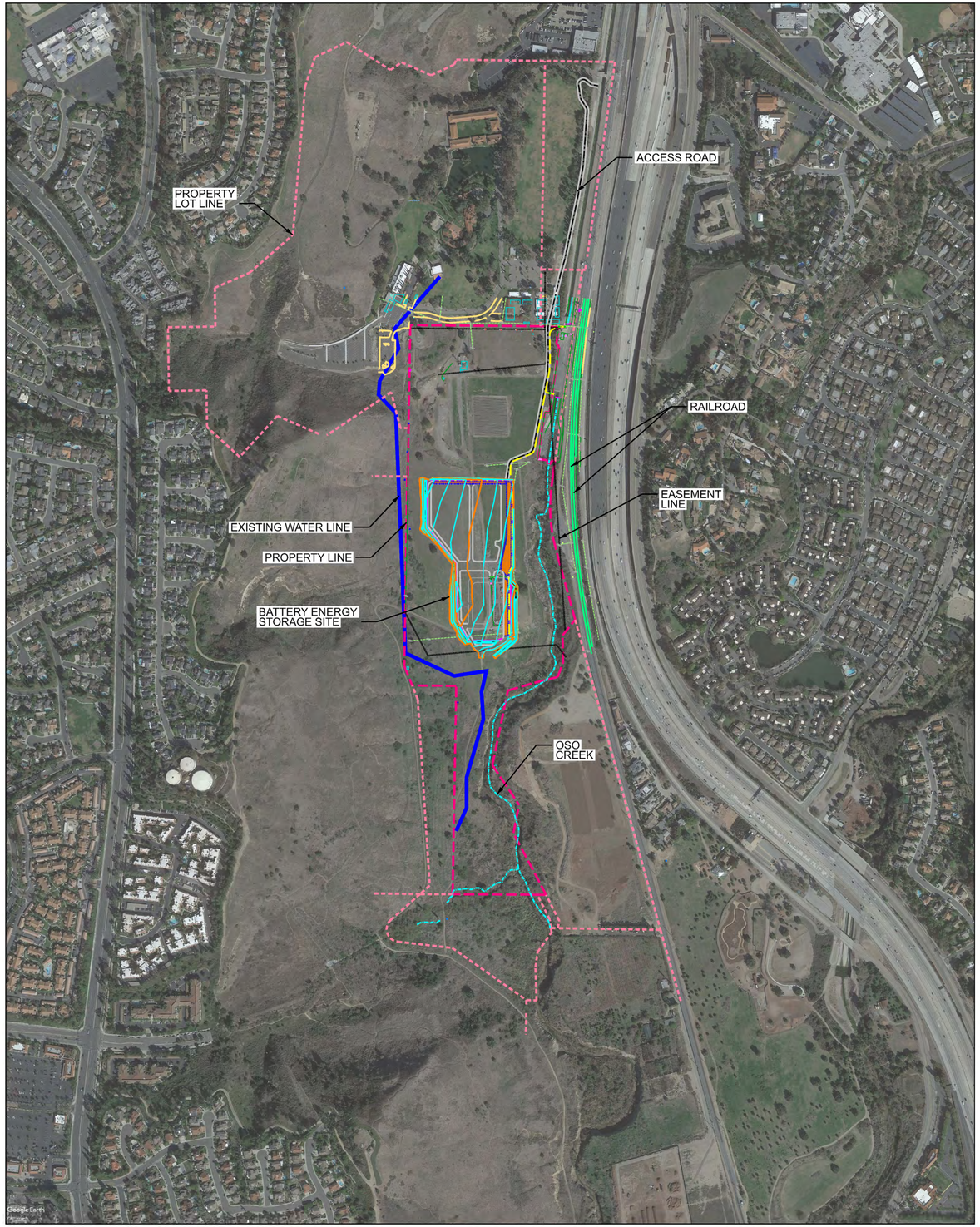
5.2 Summary of LID BMPs

This data is a summary of the above discussion, as well as the calculation on Attachment H.

	Underground Detention Basin	**Units**
Flow Rate (Per Example E.9)	0.3651	cfs
C	0.0475	
i	0.2125	In/hr
Drainage Area	24.09	Acres
Area Required	9533.98	Sq. Ft
Area Required	0.22	Ac
Area Provided	4.02	Ac

Section 7 Educational Materials Index

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



PERMIT ONLY
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NORTH

400' 0' 400' 800'
GRAPHIC SCALE
1" = 400'

NOTES

1. GEOTECHNICAL ENGINEERING REPORT PREPARED BY TERRACON CONSULTANTS, INC. "BROAD REACH POWER COMPASS BESS, SAN JAUN CAPISTRANO, ORANGE COUNTY, CA", NOVEMBER 3, 2021, REVISION 1.
2. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE DRAWING CSK-002.

REFERENCE DRAWINGS

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HOLD INFORMATION

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RELEASE INFORMATION

REV.	DATE	DESCRIPTION
0A	04-22-2022	ISSUED FOR PERMIT
0B	06-17-2022	ISSUED FOR PERMIT
0C	02-23-2024	ISSUED FOR PERMIT

ISSUE PURPOSE:	PERMIT
SPECIFICATION:	-
PROJECT NO.:	14089-012

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CAD FILE NAME:	EXHIBIT-CMP-001.DWG
PREPARED BY:	JC
REVIEWED BY:	MT
APPROVED BY:	--

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CHICAGO, ILLINOIS 60603-5780

BROAD REACH POWER

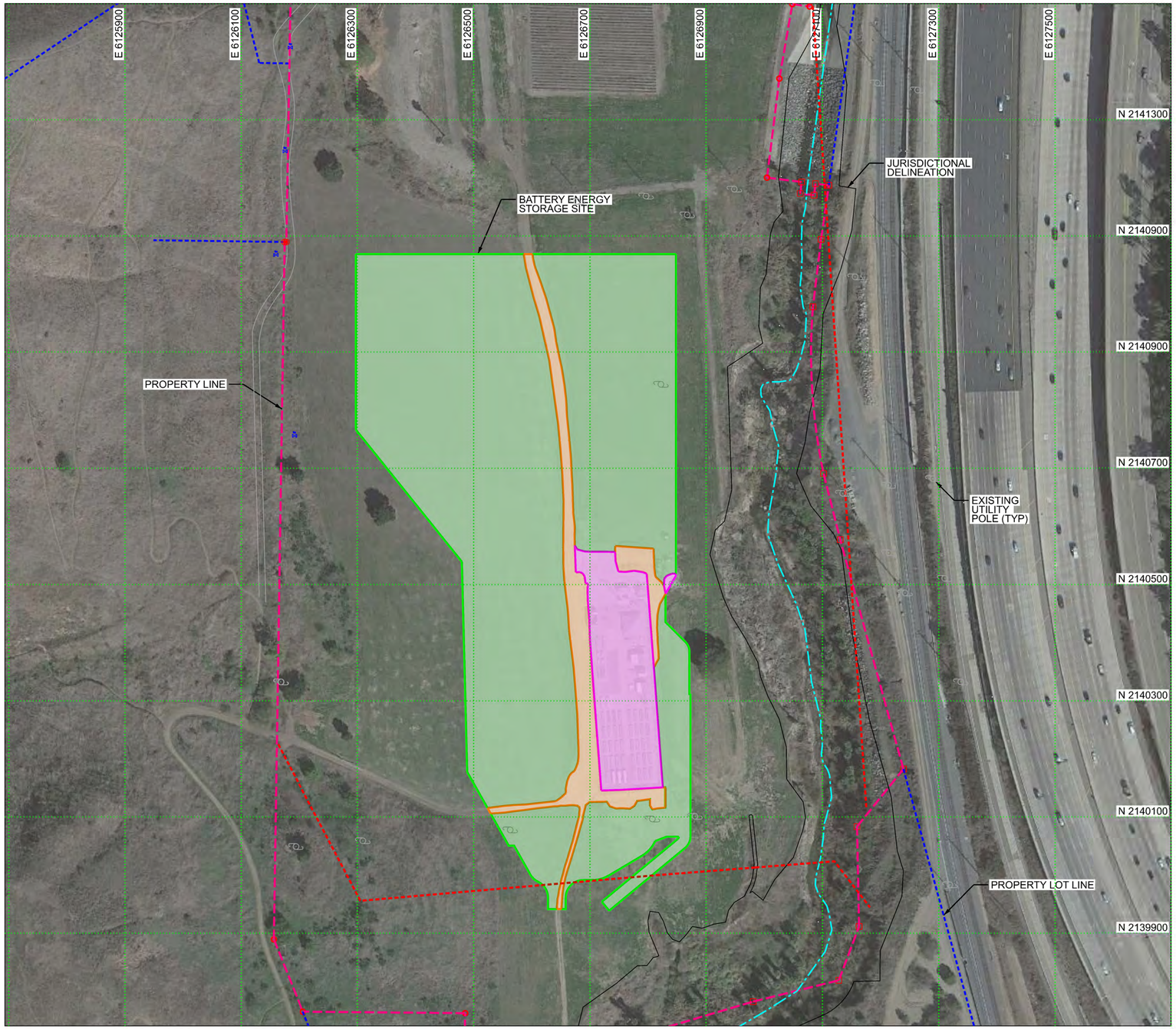
PROJECT

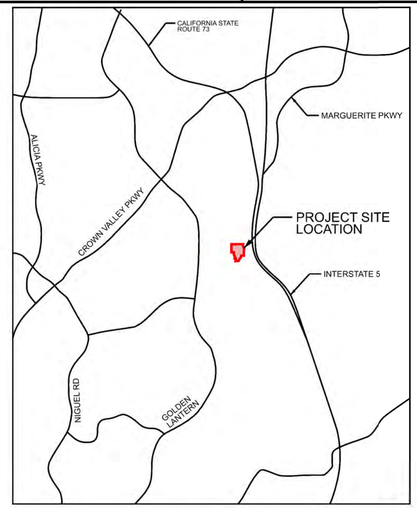
COMPASS
BATTERY ENERGY STORAGE

DRAWING TITLE

SITE PLAN

DRAWING NUMBER	REVISION
EXHIBIT-CMP-001	0C
SHEET 1 OF 1	





KEY PLAN
SCALE: 1" = 800'

PERMIT ONLY
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LEGEND

- PROPERTY LINE
- PROPERTY LOTS
- EASEMENT
- IMPERVIOUS SURFACING (0.98 AC)
- DIRT SURFACING (0.82 AC)
- GRASS FAIR SURFACING (8.38 AC)

NOTES

1. GEOTECHNICAL ENGINEERING REPORT PREPARED BY TERRACON CONSULTANTS, INC. "BROAD REACH POWER COMPASS BESS, SAN JAUN CAPISTRANO, ORANGE COUNTY, CA", NOVEMBER 3, 2021, REVISION 1.
2. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE DRAWING CSK-002.

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NORTH

100' 0' 100' 150'
GRAPHIC SCALE
1" = 100'

HOLD INFORMATION

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RELEASE INFORMATION

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0B	06-17-2022	ISSUED FOR PERMIT
0C	02-23-2024	ISSUED FOR PERMIT

ISSUE PURPOSE:	PERMIT
SPECIFICATION:	-
PROJECT NO.:	14089-012

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BROAD REACH POWER

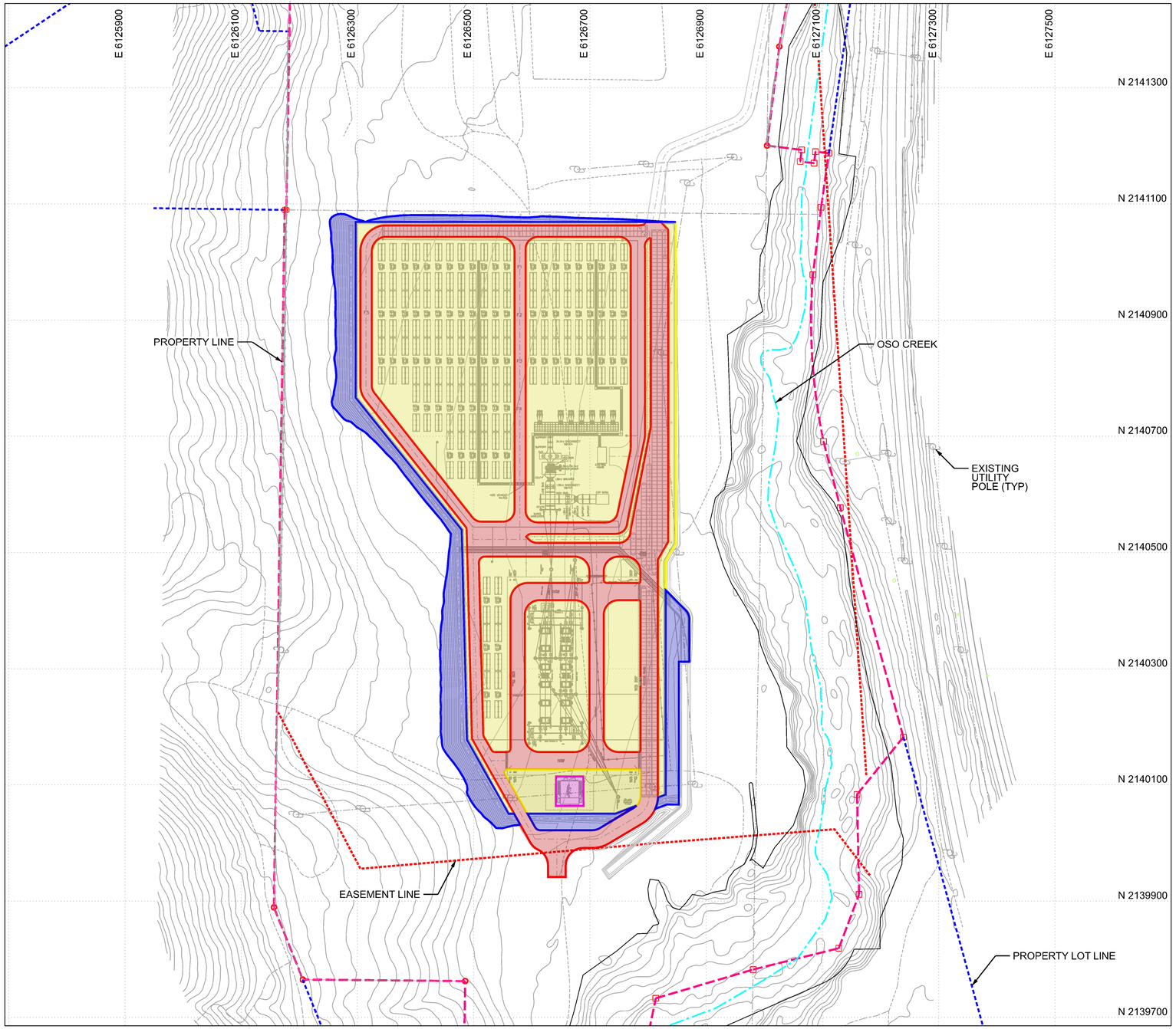
PROJECT

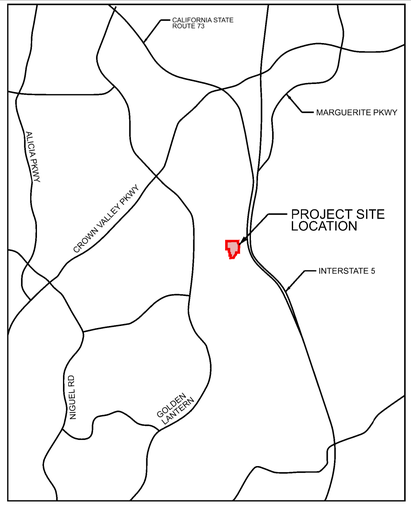
COMPASS
BATTERY ENERGY STORAGE

DRAWING TITLE

PRE-DEVELOPED PLAN

DRAWING NUMBER	REVISION
EXHIBIT-CMP-002	0C
SHEET 1 OF 1	





KEY PLAN
SCALE: 1" = 800'

PERMIT ONLY
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LEGEND

- PROPERTY LINE
- PROPERTY LOTS
- EASEMENT
- IMPERVIOUS AREA (0.05 AC)
- GOOD GRASS CONDITION SURFACING (1.66 AC)
- GRAVEL SURFACING (6.58 AC)
- PAVEMENT SURFACING (3.55 AC)

NOTES

1. GEOTECHNICAL ENGINEERING REPORT PREPARED BY TERRACON CONSULTANTS, INC. "BROAD REACH POWER COMPASS BESS, SAN JAUN CAPISTRANO, ORANGE COUNTY, CA", NOVEMBER 3, 2021, REVISION 1.
2. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE DRAWING CSK-002.

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NORTH

100' 0' 100' 150'
GRAPHIC SCALE
1" = 100'

HOLD INFORMATION

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0C	02-23-2024	ISSUED FOR PERMIT

ISSUE PURPOSE:	PERMIT
SPECIFICATION:	-
PROJECT NO.:	14089-012

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CHICAGO, ILLINOIS 60603-5780

BROAD REACH POWER

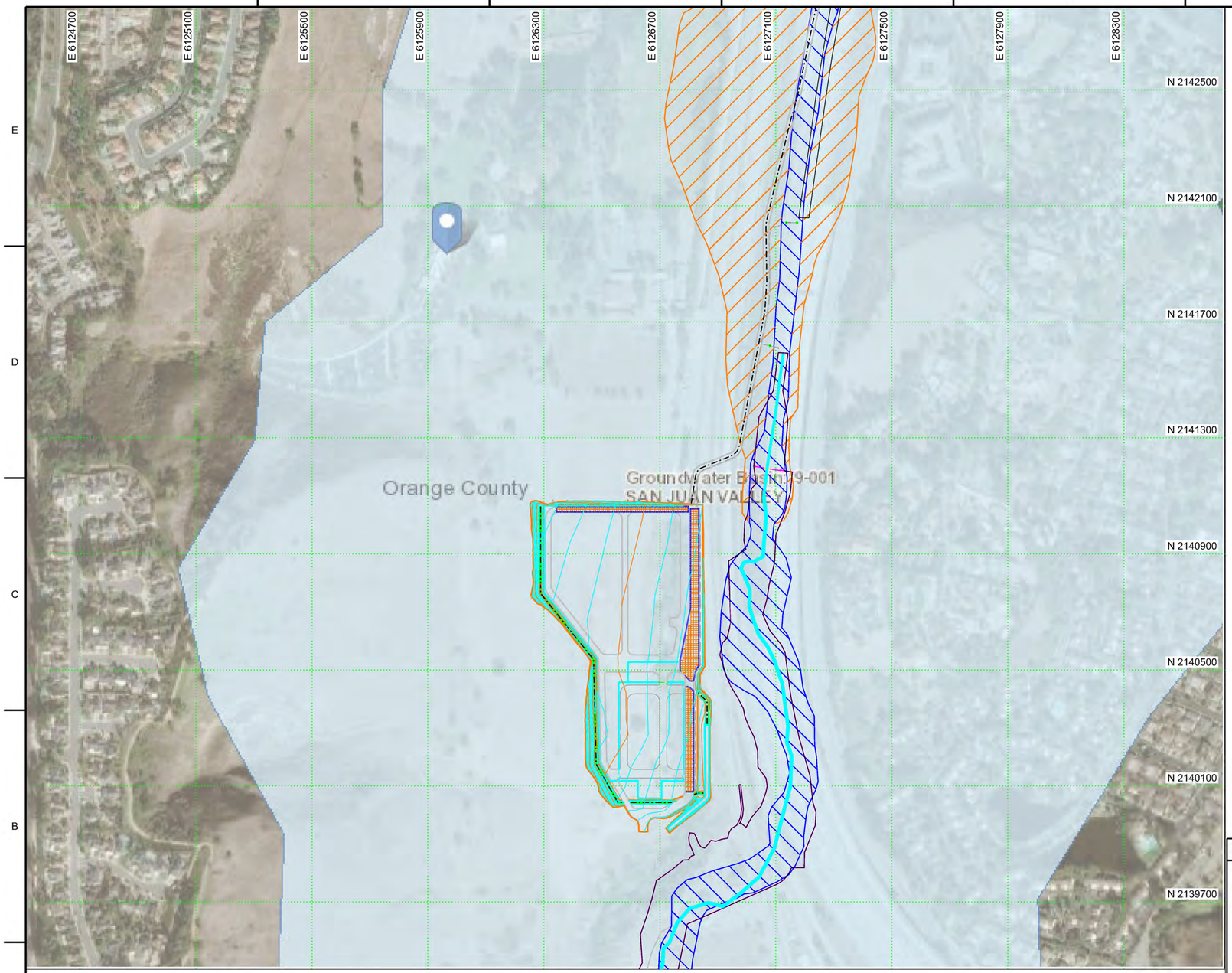
PROJECT

COMPASS
BATTERY ENERGY STORAGE

DRAWING TITLE

POST DEVELOPED PLAN

DRAWING NUMBER	REVISION
EXHIBIT-CMP-003	0C
SHEET 1 OF 1	



HOLD INFORMATION	
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ISSUE PURPOSE:	PERMIT
SPECIFICATION:	-
PROJECT NO.:	14089-012

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CAD FILE NAME:	ATTACHMENT 3.DWG
PREPARED BY:	JC
REVIEWED BY:	MT
APPROVED BY:	--

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NORTH

200' 0' 200' 400'

GRAPHIC SCALE
1" = 200'

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BROAD REACH POWER

NOTES

1. GEOTECHNICAL ENGINEERING REPORT PREPARED BY TERRACON CONSULTANTS, INC. "BROAD REACH POWER COMPASS BESS, SAN JAUN CAPISTRANO, ORANGE COUNTY, CA", NOVEMBER 3, 2021, REVISION 1.
2. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE DRAWING CMP-CS-002.

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PROJECT

COMPASS
BATTERY ENERGY STORAGE

DRAWING TITLE

GROUNDWATER BASIN MAP

DRAWING NUMBER	REVISION
ATTACHMENT 3	0B
SHEET 1 OF 1	

Geotechnical Engineering Report

Broad Reach Power Compass BESS
San Juan Capistrano, Orange County, CA
November 3, 2021
Terracon Project No. 60215170

Prepared for:
Sargent & Lundy
Chicago, Illinois

Prepared by:
Terracon Consultants, Inc.
Tustin, California

November 3, 2021

Sargent & Lundy
55 E. Monroe
Chicago, Illinois 60603

Attn: Mr. Matthew A. Braet
P: (312) 269-2642
E: Matthew.A.Braet@SargentLundy.com

Re: Geotechnical Engineering Report
Broad Reach Power Compass BESS
San Juan Capistrano, Orange County, CA
Terracon Project No. 60215170

Dear Mr. Braet:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. P60215170 dated June 30, 2021. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, access roads, and infiltration systems for the proposed project.

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

Sincerely,
Terracon Consultants, Inc.

Victor V. Nguyen, E.I.T.
Staff Engineer

Scott G. Lawson, P.E., G.E.
Senior Geotechnical Engineer

APR Review by F. Fred Buhamdan, P.E

REGISTERED PROFESSIONAL ENGINEER
SCOTT G. LAWSON
No. GE 2829
Exp. 9/30/23
GEOTECHNICAL
STATE OF CALIFORNIA

REPORT TOPICS

Note: This report was originally delivered in a web-based format. Orange Bold text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the *GeoReport* logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

Geotechnical Engineering Report
Broad Reach Power Compass BESS
San Juan Capistrano, Orange County, CA
Terracon Project No. 60215170
November 3, 2021

INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the proposed Compass Battery Energy Storage System (BESS) facility for Broad Reach Power to be located in San Juan Capistrano, Orange County, California. Approximate coordinates for the center of the site are 33.53205°N, 117.67753°W. The purpose of these services is to provide information and geotechnical engineering recommendations relative to subsurface conditions and construction of the proposed BESS and infiltration systems.

Terracon's geotechnical engineering scope of work for this project included the advancement of 30 test borings to approximate depths ranging between 5 and 101½ feet below existing ground surface (bgs) within and adjacent to the proposed BESS facility footprint.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and as separate graphs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The proposed project consists of design and construction of the new Compass BESS facility to be located in the City of San Juan Capistrano, Orange County, California. Approximate coordinates for the center of the site are 33.53205 °N, 117.67753 °W.
Existing Improvements	Site is mostly undeveloped with native grasses and trees. A garden center with several small buildings is located near the center of the site.
Current Ground Cover	Exposed soils with sparse vegetation, and denser vegetation on the hillside to the west.

Item	Description
Existing Topography (from Google Earth Pro)	Within the footprint of the proposed facility, the eastern half is relatively flat with approximate elevations ranging from 206 to 212 feet above mean sea level (MSL). The western half has a gradual slope down towards the east with approximate elevations ranging from 230 feet to 212 feet MSL. Immediately to the west of the facility footprint are tall slopes ascending several hundred feet. Immediately to the east of the facility footprint is Oso Creek which steeply descends as much as 40 feet to an approximate bottom elevation of 169 feet MSL. Stability assessment of the eastern and western surrounding slopes is not included in our scope of work and is being evaluated by Sargent & Lundy (S&L) based on data provided by Terracon.

PROJECT DESCRIPTION

Item	Description
Proposed Structures	■ 138/34kV transformers supported on mat foundations. ■ Batteries supported on slabs or mat foundations. ■ A 138kV transmission line pole supported by a drilled pier may be included in the project, but the location is currently unknown. ■ A San Diego Gas & Electric (SDG&E) substation will be constructed within the project footprint, with equipment foundations similar to those described above. We understand that a "buried" retaining wall will be constructed near the eastern edge of the project site to limit the impact of erosion occurring along the banks of the adjacent Oso Creek. In addition, we understand based on discussions with S&L that other retaining walls are being considered to achieve final site grades. Details regarding these walls were not available at the time this report was prepared. We understand that geotechnical engineers with S&L will be responsible for the geotechnical design and evaluation of these walls, using geotechnical data and recommendations provided in this report.
Finished Grade Elevation	Finished grade elevation was not provided at the time of preparation of this report.
Grading	Grading plans were not provided at the time of preparation of this report. Based on our understanding of the conceptual site plan and the existing topography of the site, we anticipate that cuts as much as 20 feet and fill on the order of 5 may be required in order to reach final grade elevation.
Infiltration Systems	Based on our communications with S&L, infiltration systems (such as retention basins or bio-swales) are anticipated for on-site stormwater management.
Access Roads	We understand that unpaved roads will be constructed onsite to access BESS areas.

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface soil and groundwater conditions based upon our review of the data and our understanding of the geologic setting and planned construction.

The geotechnical characterization forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. As noted in **General Comments**, the characterization is based upon widely spaced exploration points across the site, and variations are likely.

Geologic Conditions

The site is situated on a stream terrace west of and adjacent to Oso Creek in Orange County, California. Oso Creek forms a canyon that dissects a portion of the San Joaquin Hills - a coastal range of southern California. The hills are formed in layered sedimentary formations that include the Capistrano Formation. The Capistrano Formation consists of poorly-consolidated, fossiliferous, marine sandy-siltstone and mudstone. Capistrano beds are susceptible to landsliding as evidenced by landslide deposits mapped west of the site. The stream terrace area of the site is underlain by colluvium derived from adjacent hillsides and alluvial stream deposits of Oso Creek. A regional geologic map is included in the **Site Location** section.

Earthquake faults are not mapped within or projecting toward the site. The buried San Joaquin Hills thrust fault underlies the San Joaquin Hills approximately 5 kilometers northwest of the site. More distant faults include the Newport-Inglewood fault zone and the Elsinore fault zone located approximately 10 kilometers southwest and 29 kilometers northeast of the site, respectively.

Subsurface Conditions

Based on the results of the borings performed for our subsurface exploration, alluvial and colluvial soils were encountered extending to approximate boring depths of 26½ to 76½ feet bgs. Landslide deposits (Qls) were encountered in borings B-4, B-5, B-6, and B-11 extending to approximate depths of 10 to 50 feet bgs. Capistrano Formation (Tc) bedrock was encountered beneath alluvial/colluvial and landslide deposits beginning at approximate boring depths ranging from 26½ to 62 feet bgs. Soil deposits generally consisted of interbedded layers of soft to hard lean clay with variable amounts of sand and gravel, silt with varying amounts of sand, and silty clay with varying amounts of sand and gravel. Interbedded layers of loose to very dense sand with varying amounts of silt and clay were encountered in borings B-2, B-3, B-10, and B-17 from depths of approximately 31½ to 40, 51½ to 65, 51½ to 76½, and 50 to 76½ feet bgs, respectively. Materials of the Capistrano Formation were generally recovered as interbedded layers of very stiff to hard elastic silt with trace sand, lean clay with varying amounts of sand and silt, and silty clay with varying amounts of sand. The following table summarizes the approximate depth to Capistrano formational materials.

Boring ID	Depth to Capistrano Formation Materials (ft, bgs)	Corresponding Elevation at Top of Formation (feet, MSL)	Boring Termination Depth (ft, bgs)
B-4	50	197	91½
B-5	62	192	76½
B-6	40	194	51
B-11	55	185	91½
B-12	40	192	76½
B-13	60	189	76½
B-14	30	194	51½
B-15	60	153	101½
B-19	26½	190½	51½
B-24	35	181	76½
B-25	41½	167½	76½

Conditions encountered at each boring location are indicated on the individual boring logs shown in the **Exploration Results** section and are attached to this report. Stratification boundaries on the boring logs represent the approximate location of changes in native soil types; in situ, the transition between materials may be gradual.

Lab Results

Laboratory tests were conducted on selected soil formational material samples and the test results are presented in the **Exploration Results** section and on the boring logs. Atterberg limits test results indicate that the on-site soils generally have low to medium plasticity. A modified proctor test conducted in accordance with ASTM D1557 indicates that the near surface sandy lean clay soil tested has a maximum dry density of 120.8 pcf and corresponding optimum moisture content of 13.3 percent. Expansion index testing on near surface soils from borings B-1 and B-17 indicate that these soils have expansion indices of 39 and 64 corresponding to low to medium expansion potential as determined by ASTM D4829. Consolidation testing performed on four samples collected from borings within the upper 10 feet indicated negligible to moderate swell. R-value testing conducted on a near surface silty clay soil sample indicated an R-Value of 27.

The following tables summarize the results of direct shear and unconsolidated undrained triaxial testing. Additional information for these tests is provided in the **Exploration Results** section.

Direct Shear Strength Test Results

Boring ID	Depth (ft, bgs)	USCS Material Type	Friction Angle (degree)[1]	Cohesion (psf)[1]
B-10	10	CL	25	300
B-12	10	CL	33	650
B-13	10	CL	32	1,050

1. Values are peak values.

Unconsolidated Undrained Triaxial Test Results

Boring ID	Depth (ft, bgs)	USCS Material Type	Ultimate Undrained Shear Strength (ksf) [1]
B-5	60	CL-ML	4.16
B-13	30	CL	3.87
B-19	45	CL-ML[2]	3.29

1. Unconsolidated undrained conditions.
2. Capistrano Formation material recovered as CL-ML.

Electrical Resistivity Testing

Terracon performed field measurements of soil electrical resistivity for the support of grounding design. Soil resistivity data was obtained along three traverses selected by the client and shown in the **Exploration Plan**. The testing was performed in general accordance with ASTM G57 - Wenner Four Electrode Method. The Wenner arrangement (equal electrode spacing) was used with the 'a'-spacing of 3, 5, 7, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 140, and 160 feet. The "a" spacing is generally considered to be the depth of influence of the test. The electrical resistivity test results are presented in **Exploration Results**.

Groundwater Conditions

Groundwater was encountered in 4 of the 30 borings advanced at the site. Boring specific groundwater observations can be found on the logs in the **Exploration Results** section of this report. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.