FUGRO CONSULTANTS

PROJECT WORK PLAN

NEARSHORE FIELD EXPLORATION PROGRAM
LOPEZ DRIVE BRIDGE NO. 2 SEISMIC RETROFIT PROJECT
SAN LUIS OBISPO, CALIFORNIA

Prepared for:
QUINCY ENGINEERING, INC.
SACRAMENTO, CALIFORNIA

Fugro Project No. 04.62120107

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1.0 INTRODUCTION

1.1 PROJECT WORK PLAN

This Project Work Plan (PWP) provides our approaches specific to execution of the nearshore field exploration program. The Health Safety and Environmental (HSE) Plan addressing the nearshore geotechnical exploration project should be read in conjunction with this PWP.

HSE documentation specific to the onshore field exploration program are provided as separate documents.

1.2 PROJECT DESCRIPTION

Fugro has been contracted by Quincy Engineering, Inc. (QEI) to conduct a geotechnical study for the Lopez Drive Bridge No. 2 Retrofit Project. The project generally consists of evaluating the seismic stability and need to retrofit the existing Lopez Drive Bridge over Lopez Lake (County Bridge No. 49C0143) in San Luis Obispo County, California. The location of the site is shown on Plate 1 – Vicinity Map.

The approximate locations of the proposed explorations are presented on Plate 2 - Proposed Field Exploration Plan. The potential exists for the actual numbers of explorations to be decreased from what is shown depending upon findings from the exploration program.

1.3 PROJECT OBJECTIVES

The principal objective of the geotechnical field study is to explore and characterize the geotechnical conditions in the vicinity of the existing Lopez Drive Bridge. The scope of work described within this PWP is intended to provide additional characterization of the liquefaction potential and strength of the soils at the bridge site.

Following are the key items that Fugro will provide to achieve this objective:

- Provision of project specific documentation and plans related to the nearshore work scope.
- Supervision and management of field operations.
- Equipment mobilization to site for the geotechnical field program.
- Mobilization of nearshore geotechnical drilling equipment capable of drilling, sampling, coring, and advancing cone penetration test (CPT) soundings to depths necessary to provide additional characterization of the liquefaction potential and strength of the soils at the bridge site.
- Provision of detailed geotechnical boring logs.
- Preparation of samples and shipment to Fugro's San Luis Obispo geotechnical testing laboratory.
- Equipment demobilization from site at the completion of the nearshore field program.

1.4 PROPOSED FIELD WORK SCOPE

The proposed work scope to accomplish the nearshore geotechnical field exploration for this project consists of drilling and sampling two (2) nearshore borings and advancing up to nine (9) CPT soundings near the locations shown on Plate 2.

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1.5 HEALTH, SAFETY, AND ENVIRONMENT

During mobilization, all nearshore field personnel will participate in a meeting to address the project specific environmental procedures, HSE requirements, and the working procedures. Detailed information on the preparation procedures are provided in the project-specific HSE Plan developed for the nearshore work scope.

The implementation of Fugro's Health, Safety, and Environmental (HSE) program is our highest priority, and the Company is firmly committed to full compliance with federal, provincial, and local laws and ordinances. All decisions on policies and procedures are made within the framework of the applicable laws.

1.6 QUALITY POLICY AND OBJECTIVES

Fugro maintains a Quality Management System (QMS) which has been certified to comply with ISO 9001:2000. Although this standard is to ensure the effectiveness of the QMS and Customer Satisfaction, it is also the goal of Fugro to meet the aims of ISO 9004:2000 which promotes a holistic approach to quality and the efficiency of the QMS. The Project Manager for Fugro has been given the responsibility for the implementation and effectiveness of the contract quality system, supported by Fugro's QHSE Manager.

The Fugro Quality Policy is enforced throughout the Company and at the induction/re-induction of all employees and contractors. The Quality Policy also states the quality objectives that have been established to fulfill the policy and these objectives will be incorporated into the Project Work Plan as part of project initiation and planning.

Objectives	Performance Indicator
Ensure the services are supplied in accordance with ISO:9001:2000.	All verification documents completed.
Obtain data suitable for further characterization of the liquefaction potential and strength of the soils at the bridge site.	Final Report accepted as complete.
Provide a consistently high standard of service to QEI.	Feedback is obtained from the Client regularly by the Project Manager. Preliminary Results Review Meeting. Informal feedback at management level.
Ensure that the services meet the project specifications to the satisfaction of QEI.	Client specifications met or exceeded and signed off by QEI.
Facilitate continuous improvement within the project for all stakeholders.	All issues are recorded, followed-up and closed out. Innovative ideas encouraged and recorded in the Continual Improvement Process.
Ensure that staff follows the relevant practices.	Internal Audits are conducted on a regular basis.

2.0 PROJECT REFERENCES

Emergency contact telephone numbers and/or email for key organizations and personnel are provided on the Emergency Contacts sheet within the HSE Plan and are also provided herein for reference.

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2.1 PROPONENT

San Luis Obispo County	
Name:	Mr. Kidd Immel
Email:	kimmel@co.slo.ca.us
Tel:	805 781 5981
Name:	Ms. Katie Drexhage
Email:	kdrexhage@co.slo.ca.us
Tel:	805 781 4469

2.2 CLIENT

Quincy Engineering, Inc.	
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Email:	lances@quincyeng.com
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2.3 FUGRO

Fugro Consultants	
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Mobile:	805 701 2658
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Name:	Cathy Morris, Project HSE
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2.4 BARGE CONTRACTOR

Associated Pacific Constructors, Inc.	
Name:	Mr. Paul E. Gillen - President
Address:	495 Embarcadero, Morro Bay, CA 93442
Email:	paul@associatedpacific.com
Tel:	805 772 7472
Mobile:	805 234 5055

2.5 DRILLING & CPT CONTRACTOR

Gregg Drilling & Testing, Inc.	
Name:	Mr. Pat Keating
Address:	2726 Walnut Avenue, Signal Hill, CA 90755
Email:	pkeating@greggdrilling.com
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Mobile:	

2.6 MARINA

Lopez Lake Recreation Area	
Name:	Mr. Bob Yetter – Supervising Ranger
Address:	1087 Santa Rosa Street, San Luis Obispo, CA 93408
Email:	byetter@co.slo.ca.us
Tel:	805 473 7182
Mobile	805 710 2622
Name:	Ms. Kristin Brewer – Park Ranger III
Address:	1087 Santa Rosa Street, San Luis Obispo, CA 93408
Email:	khowland@co.slo.ca.us
Tel:	805 781 5930
Name:	Lake Lopez Marina
Tel:	805 489 1006

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3.0 FIELD EXPLORATION PROJECT EXECUTION

3.1 GENERAL

The nearshore field exploration phase of the geotechnical study consists of advancing two (2) nearshore borings and up to nine (9) CPTs from a floating spud barge in the vicinity of the existing Lopez Drive Bridge as shown on Plate 2.

3.2 PREDICTED GEOTECHNICAL CONDITIONS

The site is expected to consist of lakebed and alluvial sediments overlying Monterey Formation bedrock. Sediment thickness/depth to bedrock at the proposed locations is not presently known, but is interpreted to be up to about 76 feet based on explorations at the bridge abutments. The preliminary results of the initial two (2) CPTs and two (2) borings at the bridge piers will be evaluated while the field equipment is mobilized and a meeting will take place with the County of San Luis Obispo (County), QEI and Fugro staff to determine if any or all of the proposed seven (7) optional water-based CPT exploration will be required.

3.3 PERMITS, NOTIFICATIONS, AND RIGHTS-OF-ENTRY

All permits, notifications, and rights-of-entry for all land and marine-based activities associated with the nearshore geotechnical program are to be provided at no cost to Fugro prior to initiation of the field work scope. Fugro will obtain County well permits for the explorations, as necessary. An environmental permit summary prepared by the County and copies of the permits provided by the County are included in Appendix A.

3.4 OPERATIONS

All equipment used for the nearshore portion of the project are planned to be mobilized and demobilized from the Lake Lopez marina. Any conditions of the consents and licenses which affect the field operations will be incorporated into the procedures and method statements.

The Barge Contractor and Drilling/CPT Contractor shall not move the spud barge or transfer crew, equipment or materials on to and off the spud barge unless weather conditions are suitable and it is safe to carry out such operations. Barge and equipment moves and vessel transport will be coordinated with the Lake Lopez Marina, as necessary.

3.5 WORKING HOURS

Field operations for the barge operations will be conducted on a 10- to 12-hour basis, until the drilling program is completed. We estimate up to nine (9) field days to complete the field work program, including movement of the spud barge between exploration locations, but not including any weather delays. Following the initial mobilization, personnel will drive to the Marina parking lot for daily transport from the Courtesy or Boathouse dock to the barge for the nearshore works. Each morning the support boat will ferry the crew to the spud barge following discussions pertaining to the site works during the previous shift, safety concerns or issues if any, and anticipated site works for the upcoming shift.

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3.6 COORDINATE SYSTEMS

The coordinate system for reporting of the nearshore works is WGS84. Nearshore elevations shall be referenced to MSL or NAVD88 as appropriate. All coordinates and dimensions will be in feet.

3.7 TEMPORARILY OCCUPIED AREAS

3.7.1 Barge Contractor

Associated Pacific Constructors (APC) will occupy a cordoned, temporary laydown area measuring approximately 45 feet by 100 feet to move the barge components from the haul trailer to the launch trailer. The proposed APC laydown area is in the Lopez Lake Marina parking lot, as shown in Appendix B. We anticipate moving the barge components will take up to about 2 hours.

In addition, three (3) parking spaces and a storage area measuring approximately 25 feet by 25 feet will be occupied by APC for the duration of the field program. The proposed storage area and parking for two (2) trailers will be within the proposed laydown area, as shown in Appendix B. One (1) to two (2) parking spaces in the Marina parking lot will be occupied by APC crew vehicles.

3.7.2 Drilling & CPT Contractor

Four (4) parking spaces or an equivalent area will be occupied by Gregg Drilling & Testing (Gregg) for the duration of the field program. The proposed storage area and parking for one (1) trailer will be within the proposed laydown area, as shown in Appendix B. One (1) to two (2) parking spaces in the Marina parking lot will be occupied by Gregg crew vehicles.

3.7.3 Fugro, Client, and Proponent

One (1) to three (3) parking spaces in the Marina parking lot will be occupied by Fugro crew, QEI, and County vehicles for the duration of the field program.

3.8 LOGISTICAL SUPPORT

3.8.1 Marine Vessel Support

Marine-based transportation and logistical support for crew and equipment transfer from the shore will be provided by a support boat owned and operated by APC. The support boat will be tied to the barge during exploration operations and will park at the Courtesy or Boathouse dock between shifts. Vessel transport details and HSE documentation are provided in the nearshore HSE Plan.

3.8.2 Sample Transport

Samples will be transported from the barge at the end of the drilling/CPT program and subsequently transported to our testing laboratory in San Luis Obispo.

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4.0 NEARSHORE SITE INVESTIGATION PROJECT EXECUTION

4.1 NEARSHORE EXPLORATIONS

The nearshore boring/CPT program to explore and characterize the geotechnical conditions in the vicinity of the existing Lopez Drive Bridge consists of performing two (2) nearshore borings and up to nine (9) CPTs. The CPT soundings will be advanced to a maximum depth of approximately 125 feet below the existing mudline elevation and nearshore soil borings will be drilled to a maximum depth of 140 feet below the existing mudline elevation at or near the locations shown on Plate 2. The exploration locations are also summarized in the following table. The explorations will be advanced from the moon pool of the spud barge.

Summary of Nearshore Borings

Borehole / CPT		Approx. Water Depth (ft)	Estimated Boring / CPT Depth Below Mudline (ft)	Remarks
Latitude	Longitude			
35.187468	-120.458333	6	140 / 80	Pier CPT/Boring
35.187688	-120.458407	<5	140 / 80	Pier CPT/Boring
35.187458	-120.458781	<5	125	Optional CPT
35.187789	-120.458813	15	125	Optional CPT
35.187937	-120.458511	<5	125	Optional CPT
35.188236	-120.458451	<5	125	Optional CPT
35.187200	-120.458231	<5	125	Optional CPT
35.187495	-120.457978	25	80	Optional CPT
35.187821	-120.457741	<5	80	Optional CPT

4.2 FLOATING SPUD BARGE

The nearshore borings/CPT soundings will be advanced from the moon pool of the floating spud barge. The relatively stable barge deck provides a platform for drilling.

- The barge has a minimum draft of 1.2 feet (with a level/soft lakebed) and will be maneuvered into position by the support boat.
- The floating spud barge will be made up of four (4) sectional barges with a 14-inch-diameter moon pool in one of the interior barges to allow CPT/drilling operation.
- Final positioning accuracy of the barge is achieved by maneuvering the barge 'crab' style on alternately spudded legs.
- The barge will be fitted with an appropriate suite of life saving, first-aid, spill containment, and safety equipment.

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- High-visibility flashing lights on each corner of the barge will illuminate the outboard area to make the barge visible to other mariners for the duration of the project. An APC night watchman will monitor the barge from shore between work shifts.

4.2.1 Marine Operability

The following table summarizes realistic limits of weather conditions that can impact mobilization of the barge and/or crew. They are indicative guidelines only and can vary up or down subject to compounding effects and other environmental conditions. At all times, the decision of the Barge Master is final in determining the suitability of the conditions for the safety of personnel and equipment.

Summary of Weather Conditions vs. Barge Operations

Item No	Description	Max Wind Speed
1	Crew Evacuations	25 knots
2	Crew Transfer	20 – 25 knots
3	Moving Between Exploration Locations	20 – 25 knots
4	Fog	Visibility less than 1,500 feet approximately

If wind speed exceeds 25 knots and/or visibility is less than approximately 1,500 feet, the Barge Master will decide the appropriate course of action and direct the site crew as necessary.

4.2.2 Change of Weather

Weather and lake conditions will be monitored throughout the course of the nearshore site investigation and a weather forecast for at least 2 to 3 days in advance will be provided to the crew daily. At all times, the decision of the Barge Master is final in determining the suitability of the conditions for the safety of personnel and equipment. In the event of deteriorating weather conditions:

- Equipment should be retrieved from lakebed;
- Ensure light signals onboard the barge are operational; and
- Crew to be evacuated to shore.

In the event of extreme weather, the barge shall return to a safe haven identified prior to initiation of the nearshore drilling program.

4.2.3 Crew Transfer

Crew transfer will be conducted by the support boat. Once onsite, the vessel will approach the barge and passengers will carefully transfer onto the barge in accordance with the procedures included in the HSE Plan.

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4.3 KEY OPERATIONS

Key operations include the following:

- Transport of barge to the Lake Lopez Marina mobilization site
- Barge assembly, equipment installation and checks
- Towing/mobilization of equipment to first exploration location
- Subsequent moving between exploration locations
- Drilling, sampling, and/or CPT operations at each proposed location
- Crew transfers between barge and shore
- Fuelling and bunkering of vessels
- Food, water and consumables supply to the work site
- Sample handling onboard the barge and transfer to the shore
- Containerizing and transport of cuttings and drill fluid to shore
- Completion of sampling
- Demobilization from work site

4.4 MOBILIZATION

The spud barge will be mobilized at the Lopez Lake Marina where the APC equipment will be hauled and loaded on to a launch trailer. The trailer will shuttle components down the launch ramp into the water, where assembly will take place.

4.4.1 Barge Construction

The floating spud barge will be made up of four (4) sectional barges, and will be assembled adjacent to the Lopez Lake Marina launch ramp.

4.4.2 Typical Jack-up Layout

Details showing the proposed barge and drill rig layout are presented in Appendix C.

4.4.3 Mobilization of the Drill/CPT Rig

Following assembly of the spud barge, a ramp will be provided by APC to drive the Drill/CPT Rig from the launch ramp onto the barge.

4.4.4 Transit from Lopez Lake Marina to Lopez Drive Bridge

All deck items will be fastened and the Barge Master will complete a JHA form prior to leaving the assembly location. This will be a joint inspection with APC's representative and Fugro's Site Manager to ensure all equipment is ready to commence the works. Once all systems have been proved operationally satisfactory they will be fastened for transit to the first exploration location.

If consumables on the barge become depleted during the operations, re-supply of consumables will be performed using a support boat provided by APC.

4.5 PROGRAMMING OF WORKS

The work scope currently comprises two (2) nearshore borings and up to nine (9) CPTs to maximum depths of approximately 140 feet below the mudline.

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- We expect up to a 2-day effort to advance two (2) CPT soundings near each of the existing bridge piers. Following completion of the initial CPTs, we expect up to a 4-day effort to advance two (2) borings near the existing bridge piers.
- While the field equipment is still mobilized, a meeting will take place with the County, QEI and Fugro staff to determine if any of the optional additional CPT soundings will be performed. The decision will be based on preliminary information derived from previous subsurface information.
- If it is decided to collect additional subsurface information, we expect up to a 3-day effort to perform up to seven (7) CPT soundings off of the alignment of the existing bridge. Where possible, soundings will be located near the shoreline to help minimize the length of unsupported casing above the mudline, which can limit the depth of the CPT sounding.
- Water depths in the work area will be considered prior to moving from one location to the next in order to avoid grounding the barge.
- Besides water depths, weather conditions will also be considered to establish the presence of a safe window of operation. The decision of the Barge Master is final in determining the suitability of the conditions for the safety of personnel and equipment.
- The Barge Master is responsible for coordinating positioning of the barge.
- All location moves will be started allowing time to complete the move and spudding-down before end of shift. The time to perform moves will be assessed once on site and the decision on whether to make a move or not towards the end of a shift will be taken by the Barge Master after consultation with the field team.

4.6 DRILLING AND CPT METHODOLOGY

4.6.1 General

The following summarizes the general exploration methodology.

- Drilling and CPT soundings are performed through the 14-inch-diameter moon pool on the barge.
- Prior to advancing the CPT or boring, the mudline will be sounded from the barge using a lightly-weighted tape. Casing will then be set from the barge deck level to several feet below the mudline, the depth of which may vary depending on the lakebed sediments. If hole stability problems occur during the course of the CPT/drilling/coring program, additional casing may be added. The exploration team will make a deliberate effort to minimize the quantity of mud stirred up while placing and removing the casing.
- Drilling fluid consisting of lake water will be used in the rotary and core-drilling process to cool the bit, remove the cuttings from the drill hole, and to stabilize the boring walls during the drilling process. In addition, rotary wash methods may be employed to help advance the CPT soundings. Water will be pumped from the lake into the holding tank aboard the deck of the barge by a submersible pump

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suspended from the drilling deck. The drilling fluids will be re-circulated in a baffled mud tank adjacent to the drill rig.

- If required, NSF60-certified bentonite clay slurry will be added to the water to stabilize the borehole and provide for circulation during the drilling and coring process. The slurry will be mixed onsite in the mud tank on an as-needed basis.
- Rotary drilling will be accomplished by advancing a rotating drill pipe into the subsurface with the top head drive of the drill rig. The drill pipe and/or coring pipe assemblies are fitted with drill bits at the bottom that allow the drill string to progress downward into the subsurface. The bits are selected based on the material being penetrated. As the drill pipe progresses into the subsurface, drilling fluid is pumped from the mud tank, through the top drive mechanism, down the pipe, through the drill bit, and up the annulus of the drilled hole (space between the pipe and the drilled hole) where it returns back into the mud tank. As the fluid passes through the bit, the drill cuttings are incorporated into the fluid and returned to the mud tank. As the fluid circulates through the mud tank, the drilled cuttings settle from suspension. The fluid continues to be circulated through the system as drilling progresses toward total depth.
- Sampling will be performed within soil materials (if encountered) using grab, pushed, or driven sampling techniques as appropriate.
- Bedrock materials will be continuously cored using an H (3.1-inch) Q3 triple-tube wireline coring assembly.
- The drilling fluid and solids will be drummed and sealed aboard the barge, transported to shore, labeled and left at a location within 10 minutes of the site until the drums can be picked up for disposal. A proposed location for the drums is shown in Appendix B.
- Upon completion of borings, drilling mud will be flushed from the borings with lake water and the borings will be backfilled from total depth to the mudline with imported clean sand placed as the drilling rods are removed.

4.6.2 Procedure for Advancing the CPT in Soils

The CPT provides an essentially continuous profile of the soil conditions encountered at the sounding location that can be used to estimate the thickness and extent of soil layers. The CPT log is easily compared between points of exploration to help identify whether or not strata are continuous and similar between points of exploration.

The CPT soundings will be performed using an electronic piezocone penetrometer. The penetrometer will be advanced into the ground using the drill rig's hydraulic ram assembly. The piezocone has a diameter of approximately 1.7 inches. Cone tip resistance (q_c), sleeve friction (f_s), and penetration pore pressures measured behind the tip (u_2) will be recorded during penetration using an on-board computer. Data will be collected from the penetrometer at approximately 2 centimeter intervals to provide a nearly continuous profile of the subsurface conditions encountered during penetration. The friction ratio (FR) will be computed for each value of q_c and f_s recorded.

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4.6.3 Procedure for Advancing the Borehole in Soils

We anticipate the subsurface profile will consist of lakebed and alluvial sediments overlying bedrock and the borehole will initially be advanced using a rotary drill technique. Sediment samples will be taken with a grab sample (near mudline surface in soft materials), Shelby tube, modified California sampler or split spoon sampler. Should unconsolidated sands, gravels or weathered formations be encountered that cause borehole instability, additional casing may be required to be advanced to a depth suitable to isolate this formation. Sampling and testing will be attempted in front of advancing the conductor casing. Boreholes will be advanced in unconsolidated sediments using drag-bit, tri-cone, or another non-coring device (NCD) to reach the previous depth prior to re-initiating sampling and/or testing.

The decision on whether boreholes will be advanced by standard rotary drilling or coring will be made by the Fugro engineer/geologist in consultation with the driller based on their interpretation of material encountered at the time.

4.6.4 Sampling Procedures

All sampling will be completed in accordance with ASTM standards. Both the driller and the engineer/geologist on shift will keep accurate logs of all activities performed and all recovered materials.

The sampling program for cohesive materials will involve pushing thin-walled 3-inch Shelby tubes to collect undisturbed samples as described below. Sampling in granular materials will consist of percussion sampling as described below. Coring into bedrock will be performed using an H (3.9-inch) Q3 triple-tube wireline coring assembly.

4.6.4.1 Push Sampling

High-quality cohesive samples can be collected by pushing a 3-inch Shelby tube into the soil. After the boring is drilled to the desired sampling depth, the drill bit is raised to the deck and the sampler is attached at the base of the drill pipe. The drill pipe is then lowered to the base of the hole and the sampler pushed about 24 inches into the soil using the drill rig hydraulic system. The sampler is retrieved by hydraulically pulling the sampler and drill pipe out of the soil and the entire drill string recovered to the surface. After retrieving the sampler, the soil sampler is removed from the drill pipe, the boring is advanced, and the sampling process is repeated.

4.6.4.2 Standard Penetration Testing

Granular materials will be recovered by conventional percussion sampling using the 3-inch outside diameter (OD) modified California or 2-inch OD Standard Penetration Testing (SPT) sampler in general accordance with ASTM Standards. The sampler will be attached to the base of the drill pipe after the boring has been advanced to the desired sampling depth similar to the push sampling effort. The top of the drill pipe is attached to a 140-lb sliding weight that is dropped about 30-in sufficient times to obtain 18-inch sampler penetration, or to a maximum of 50 blows. The number of blows required to advance the sampler each 6-inch interval is recorded on the boring log.

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4.6.5 Procedure for Q3 Rotary Core Drilling

Rock coring will be conducted using the *Q3* wireline, triple-barrel coring system. This coring system produces a high quality, 3.1-inch core with a hole diameter of 3.9 inches. The Q3 system has specifically been developed for mixed sediments and weak rock materials. The core run interval will typically be about 5 ft, but may be determined based on the material characteristics and drilling operations. During drilling, the penetration rate, pull down pressure, rotation, and weight on bit is monitored and recorded. The core is retrieved by hydraulically pulling the core barrel out of the drilling rod and the drill string is recovered to the surface. After retrieving the core barrel, the core is removed from the core barrel, the core barrel is returned to the drill rod, coring advances, and the sampling process is repeated.

4.6.6 Sample Handling

The following outlines our general procedure for sample storage and shipping:

- Soil samples will be immediately logged, sealed, and labelled with project number, date, depth, boring number, etc. upon collection.
- After filling and labelling the core boxes, the core boxes will be photographed in color with the inside cover label of the core box shown in the photograph to document the intervals of the core box contents.
- The samples will be transported from the barge at the end of drilling/CPT program.

4.6.7 Drill Cuttings and Drilling Fluid Containment and Disposal

All drilling fluid used in the nearshore program will primarily consist of lake water. If necessary, the lake water will be augmented with NSF60-certified bentonite clay slurry.

- During drilling, the cuttings will be containerized in open-top 55 gallon drums aboard the barge.
- The exploration team will make a deliberate effort to minimize the quantity of bentonite mud introduced into the lake during drilling operation. However, it should be expected that some drilling mud will enter the water as part of the over-water drilling program. All site personnel will follow the Bentonite Slurry Spill Prevention and Response Plan prepared by the County, QEI and Fugro, and included in the HSE Plan.
- Following completion of the borehole, the drill fluid will be containerized in the 55 gallon drums and sealed for transport.
- The filled drums will be labelled (indicating boring number, contents, and date of drilling), and offloaded from the barge once the nearshore works are completed.
- The drilling mud and soil cuttings are anticipated to be non-hazardous and will be tested for CAM17 metals prior to disposal. The County will provide a location within a 10 minute-drive of the work area to store the drums until they can be picked up. A proposed location for the drums is shown in Appendix B.

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4.6.8 Boring Backfill

Upon completion of borings, drilling mud will be flushed from the borings with lake water and the borings will be backfilled from total depth to the mudline with imported clean sand placed as the drilling rods are removed.

4.6.9 Barge Move Operations

Following completion of the drilling, sampling, and testing at each location, equipment will be fastened for a location move, and the barge will be maneuvered to the next location. Barge movement is the full responsibility of the Barge Master. At the discretion of the Barge Master, non-essential personnel may be removed from the barge during relocation operations. The movement procedures described in the Barge Master's JSA will be followed.

Under certain circumstances, spuds may become stuck and difficult to retract from the lakebed. At the discretion of the Barge Master, non-essential personnel may be removed from the barge during spud extraction operations. The procedures described in the Barge Master's JSA will be followed to extract stuck spuds.

4.6.10 Emergency Spill Arrangements

Equipment observations will be performed during mobilization and daily during the work shift to help reduce most typical environmental emergency response scenarios resulting from damaged hydraulic lines and hoses etc. Engineering controls will be in place including impermeable liners and spill response kits located on the barge for immediate deployment.

Equipment lubricants and fuels will be containerized appropriately with sealed lids and held on site at designated locations in approved containers. Lubricants will be placed in safe areas outside of pathways to minimize contact. Flammable materials will be stored separately in approved containment. MSDS sheets will be available on site for all lubricants and operations fluids (e.g., fuel).

In case of a spill of hydraulic oil, a broken hose or fuel spill, there is an emergency spill kit located on the deck of the barge. In the event any of the fluids make it into the water then oil dispersants will be used and the oil boom deployed from the barge.

- The Barge Master or Site Manager will stop all works and assess the situation.
- Ensure suitable PPE is donned including eye wear, gloves and suitable overalls as required. If in doubt then refer to the COSHH register with the relevant material safety data sheet(s). If handling fuels, then ensure the correct protective gloves are being used to stop Diesel or Petrol being absorbed by skin.
- Using the absorbent pads all spill fluid must be contained on deck and dealt with using the spill equipment provided.
- If fluids have made it into the water, crew members will assist with the deployment of the spill boom(s).
- Fugro Site manager will make the call to the emergency services as required. Project personnel will be contacted via phone immediately and notified of the incident.

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Products used for the nearshore works and corresponding MSDS's are included in the HSE Plan. Additional details for emergency spill response procedures for the nearshore exploration program are provided for in the nearshore HSE Plan.

4.6.11 Demobilization

Following completion of the nearshore boring program, the barge will be towed to and demobilized at the Lopez Lake Marina launch ramp.

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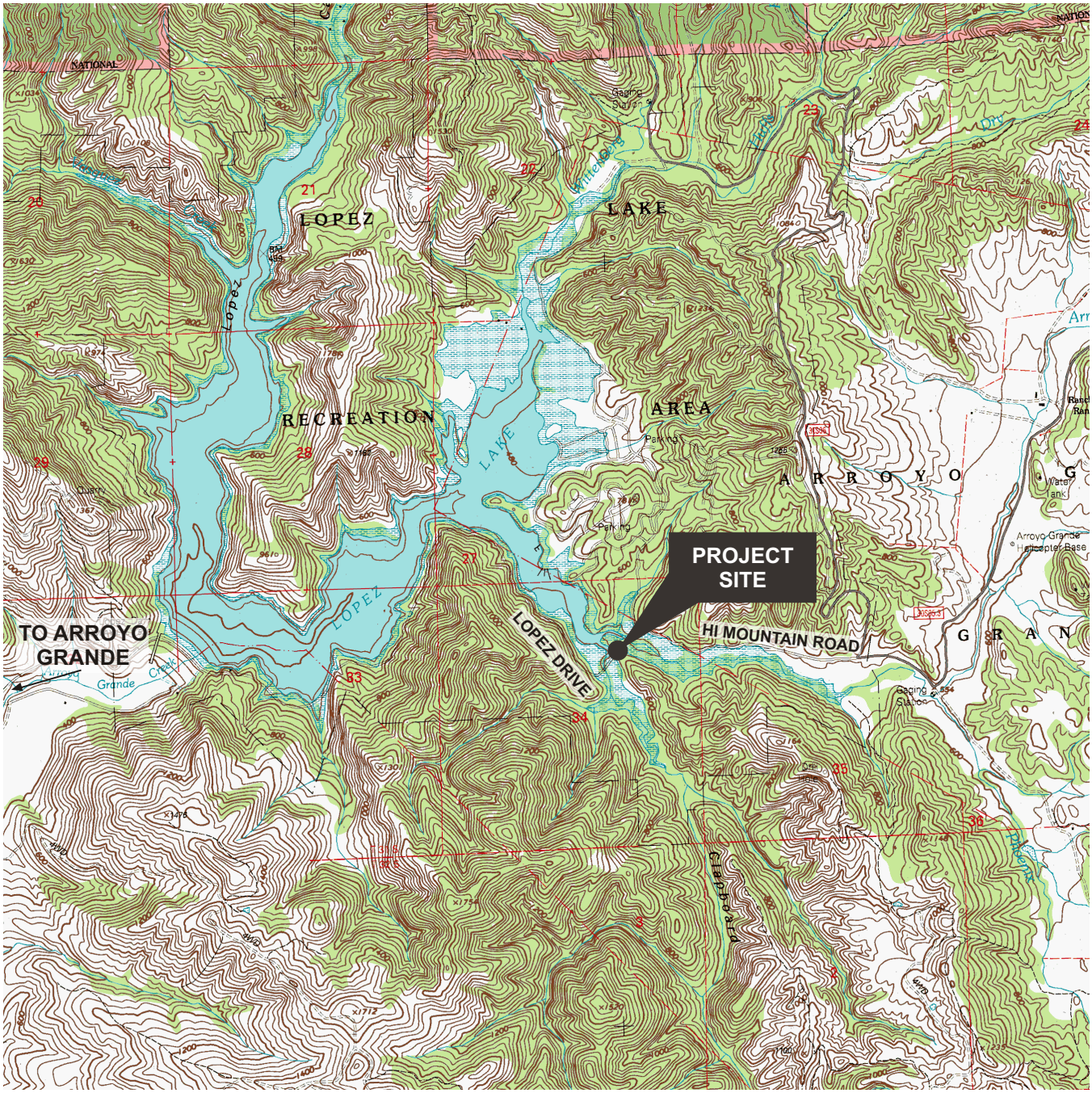
PLATES

Use or disclosure of data contained herein is subject to the restrictions contained in the Disclosure Statement on the Title Page of this Project Work Plan document.



BASE MAP SOURCE: USGS 7.5' Tar Spring Ridge 1995 Quadrangle.

NORTH

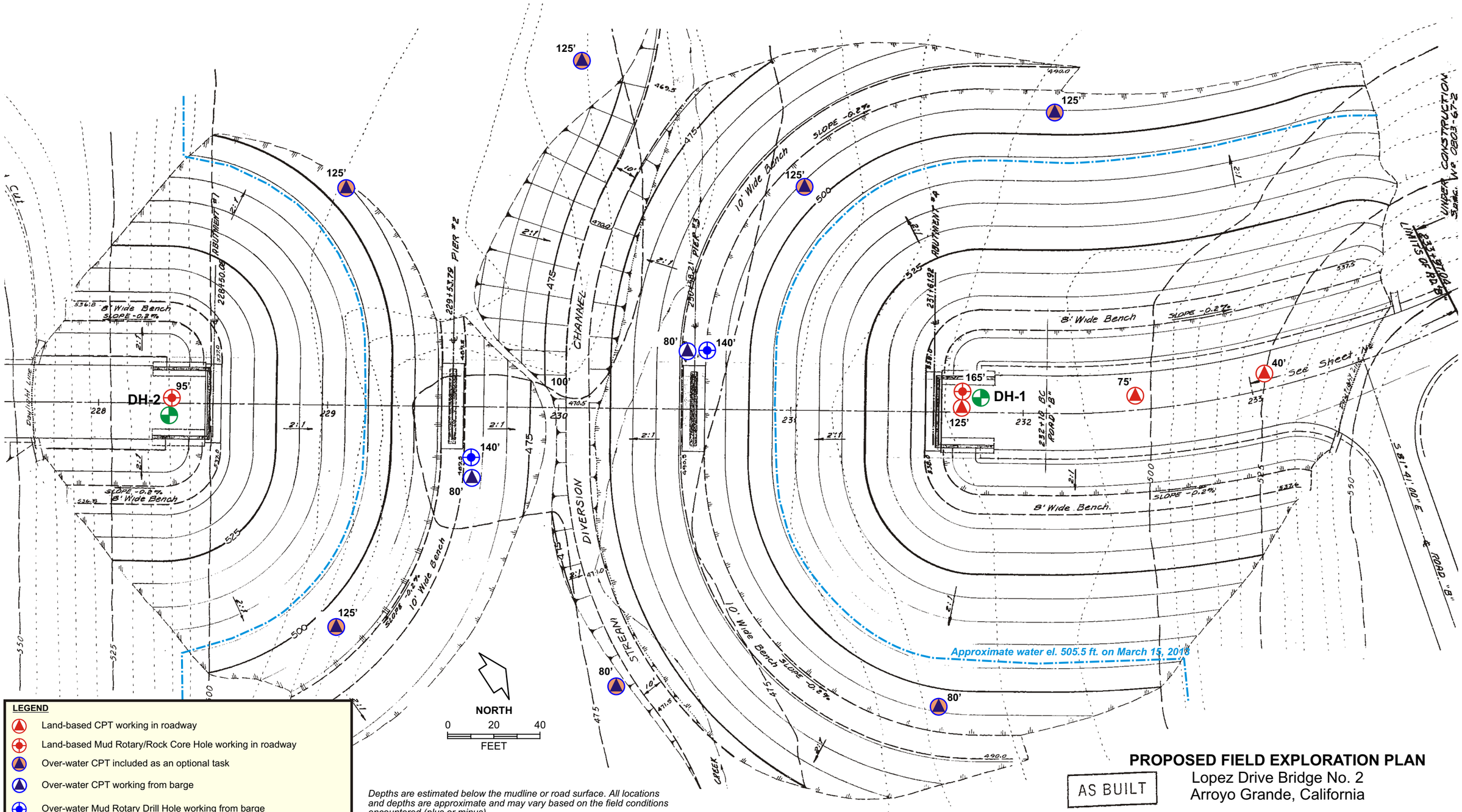
0 1500 3000

FEET

VICINITY MAP

Lopez Drive Bridge No. 2

Arroyo Grande, California



Depths are estimated below the mudline or road surface. All locations and depths are approximate and may vary based on the field conditions encountered (plus or minus).

AS BUILT

PROPOSED FIELD EXPLORATION PLAN
Lopez Drive Bridge No. 2
Arroyo Grande, California

APPENDIX A

PERMITS PROVIDED BY COUNTY OF SAN LUIS OBISPO

USE OR DISCLOSURE OF DATA CONTAINED HEREIN IS SUBJECT TO THE RESTRICTIONS CONTAINED IN THE DISCLOSURE STATEMENT ON THE TITLE PAGE OF THIS DOCUMENT.

SAN LUIS OBISPO COUNTY
DEPARTMENT OF PUBLIC WORKS
Paavo Ogren, Director
County Government Center, Room 206 • San Luis Obispo CA 93408 • (805) 781-5252
Fax (805) 781-1229 email address: pwd@co.slo.ca.us

ENVIRONMENTAL PERMIT SUMMARY FORM

Date: November 7, 2013

To: Kidd Immel, Project Manager

From: Katie Drexhage

Subject: **Environmental Review & Permit Status for the** Lopez Drive Bridge #2 Geotechnical Survey; 300452

The environmental review and regulatory permit processes for the above referenced project are complete. The following is a summary of the environmental requirements for the project:

Permit	Status	Attachments?
CEQA Review	Categorical exemption, 6.13.13	X
NEPA Review	Not applicable	
Coastal Permit	Not applicable, not in coastal zone	
CZMA	Not applicable, not in coastal zone	
CDFG 1602	No Agreement Needed Letter, 1600-2013-0107-R4	X
USACOE 404	NWP 6, non-reporting	X
NMFS ESA	Not applicable, no listed species effects	
USFWS ESA	Not applicable, no listed species effects	
RWQCB 401	NOA, 7.22.13	X
NPDES	Not applicable, less than 1 acre disturbance	

Measure #	**Special Environmental Conditions**	**Responsibility: Contractor, County or Both**
1	Notify the Environmental Programs Division if the project description changes. Your contact for this project is Katie Drexhage.	County
2	If sensitive or listed species or cultural resources are identified during construction, all work will stop and the Environmental Programs Division will be contacted to determine next steps.	Both
3	Boring and CPT locations will avoid areas of vegetation and other potentially sensitive biological or cultural resources.	Both
4	During drilling, the drilling fluid is confined to the bore hole and circulation tank. At the conclusion of drilling, the drilling fluid is pumped into 55 gallon drums and hauled off site to an approved disposal location.	Contractor
5	Lake water will be used as the drilling fluid if possible; but likely new drilling fluid (primarily bentonite) will be necessary to stabilize the hole for sampling.	Contractor
6	The Spill Prevention and Response Plan prepared for the project will be on site at all times and all work personnel will be trained on the contents of said plan.	Both

California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Region 4 – Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4593
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

KI
EW

RECEIVED
NOV - 6 2013
COUNTY OF SAN LUIS OBISPO
DEPARTMENT OF PUBLIC WORKS

October 31, 2013

Dave Flynn
County of San Luis Obispo, Department of Public Works
County Government Center, Room 207
San Luis Obispo, California 93408

Subject: No Lake or Streambed Alteration Agreement Needed
Notification No. 1600-2013-0107-R4
Lopez Drive Bridge #2 Geotechnical Survey—San Luis Obispo County

Dear Mr. Flynn:

The California Department of Fish and Wildlife (Department) has reviewed your Notification of Lake or Streambed Alteration (Notification) received by the Department on June 20, 2013, and the additional, supplemental materials submitted to the Department in response to our Incomplete Letter. The Department has determined that your Project is subject to the Notification requirement in Fish and Game Code Section 1602, including payment of the Notification fee.

The Department has also determined that your Project as described in the original Notification and the supplemental materials will not substantially adversely affect an existing fish or wildlife resource within Lopez Lake. As a result, you will not need a Lake or Streambed Alteration Agreement for your Project if it is implemented according to the Project description as described, including the proposed term for work and implementation of all proposed avoidance and mitigation measures to protect fish and wildlife resources. You are responsible for complying with all applicable local, State, and Federal laws in completing your work. A copy of this letter and your Notification with all attachments should be available at all times at the work site.

Please note that if you change your Project so that it differs materially from the Project described in your original Notification, you will need to submit a new Notification and corresponding fee to the Department.

Thank you for notifying us of your Project. If you have any questions, please contact Mr. Robb Tibstra, Environmental Scientist, at (805) 594-6116, or Robert.Tibstra@wildlife.ca.gov.

Sincerely,

Jeffrey R. Single, Ph.D.
Regional Manager

ec: Robb Tibstra, Environmental Scientist, CDFW

Notice of Applicability for Lopez Drive Bridge #2 Geotechnical Survey, 300452
Striegel, Devon@Waterboards
to:
kdrexhage@co.slo.ca.us
07/22/2013 02:45 PM
Cc:
"dflynn@co.slo.ca.us"
Hide Details
From: "Striegel, Devon@Waterboards" <Devon.Striegel@waterboards.ca.gov>

To: "kdrexhage@co.slo.ca.us" <kdrexhage@co.slo.ca.us>

Cc: "dflynn@co.slo.ca.us" <dflynn@co.slo.ca.us>

Dear Mr. Dave Flynn,

Thank you for the opportunity to review your Notice of Intent to comply with the General Water Quality Certification of 2012 Nationwide Permits Order Number SB12002GN (Certification of NWPs). Having determined that the Lopez Drive Bridge #2 Geotechnical Survey, 300452 project qualifies for coverage under the Certification of NWPs, we issue this Notice of Applicability (NOA). This NOA is submitted to you in lieu of a formal letter.

We anticipate no further action on your application. Should new information come to our attention that indicates a water quality problem, we may reassess the applicability of the Certification of NWPs, or issue Individual WDRs.

If you have any questions or concerns please feel free to contact me.

Thank you,

Devon Striegel
Section 401 Assistant
Central Coast Regional Water Control Board
895 Aerovista Place,
Suite 101
San Luis Obispo, CA
Phone: 805-549-3876
DStriegel@waterboards.ca.gov

NOTICE OF EXEMPTION

SAN LUIS OBISPO COUNTY DEPARTMENT OF PLANNING AND BUILDING
976 OSOS STREET • ROOM 200 • SAN LUIS OBISPO • CALIFORNIA 93408 • (805) 781-5600

Promoting the Wise Use of Land • Helping to Build Great Communities

Lopez Drive Bridge #2 Geotechnical Survey, ED12-193, 300452

Project Title

Lopez Drive Bridge #2, north of the City of Arroyo Grande, just south of Hi Mountain Road and the Lake Lopez Recreation Area

Project Location - Specific

San Luis Obispo

Project Location – County

Use a track-mounted drill rig on top of a barge to conduct 2 geotechnical borings & 9 cone penetration tests to facilitate a bridge replacement analysis. No vegetation removal or disturbance is necessary.

Description of Nature and Purpose of Project

County of San Luis Obispo

Name of Public Agency Approving Project

Department of Public Works - County Government Center Room 207, San Luis Obispo, CA 93408

Name of Person or Agency Carrying Out Project/Beneficiaries of Project

(ENDORSED)
FILED
JUN 13 2013
JULIE L. RODEWALD COUNTY CLERK
BY ANGELA McCORMICK
DEPUTY CLERK

Exempt Status: (Check One)

☐	Ministerial	{Sec. 21080(b)(1); 15268}
☐	Declared Emergency	{Sec. 21080(b)(3); 15269(a)}
☐	Emergency Project	{Sec. 21080(b)(4); 15269(b)(c)}
☒	Categorical Exemption.	{Sec. 15306 ; Class: 6 }
☐	Statutory Exemption	{Sec.____}

Reasons why project is exempt: Basic data collection which does not result in a serious or major disturbance to an environmental resource.

Eric Wier (805) 788-2766

Contact Person **Telephone**

If filed by applicant:

1. Attach certified document of exemption finding
2. Has a notice of exemption been filed by the public agency approving the project?
   Yes ☐ No ☐

Signature Ellen Carroll Date June 10, 2013

Name (Print) Ellen Carroll Title Env. Coordinator

\\Svr2900fs\divisions\Enviromental\002 Current Project Folders\Lopez Dr Bridge No 2 Replacement\02 Environmental Document\Geotech\Bridge geotech CE.doc

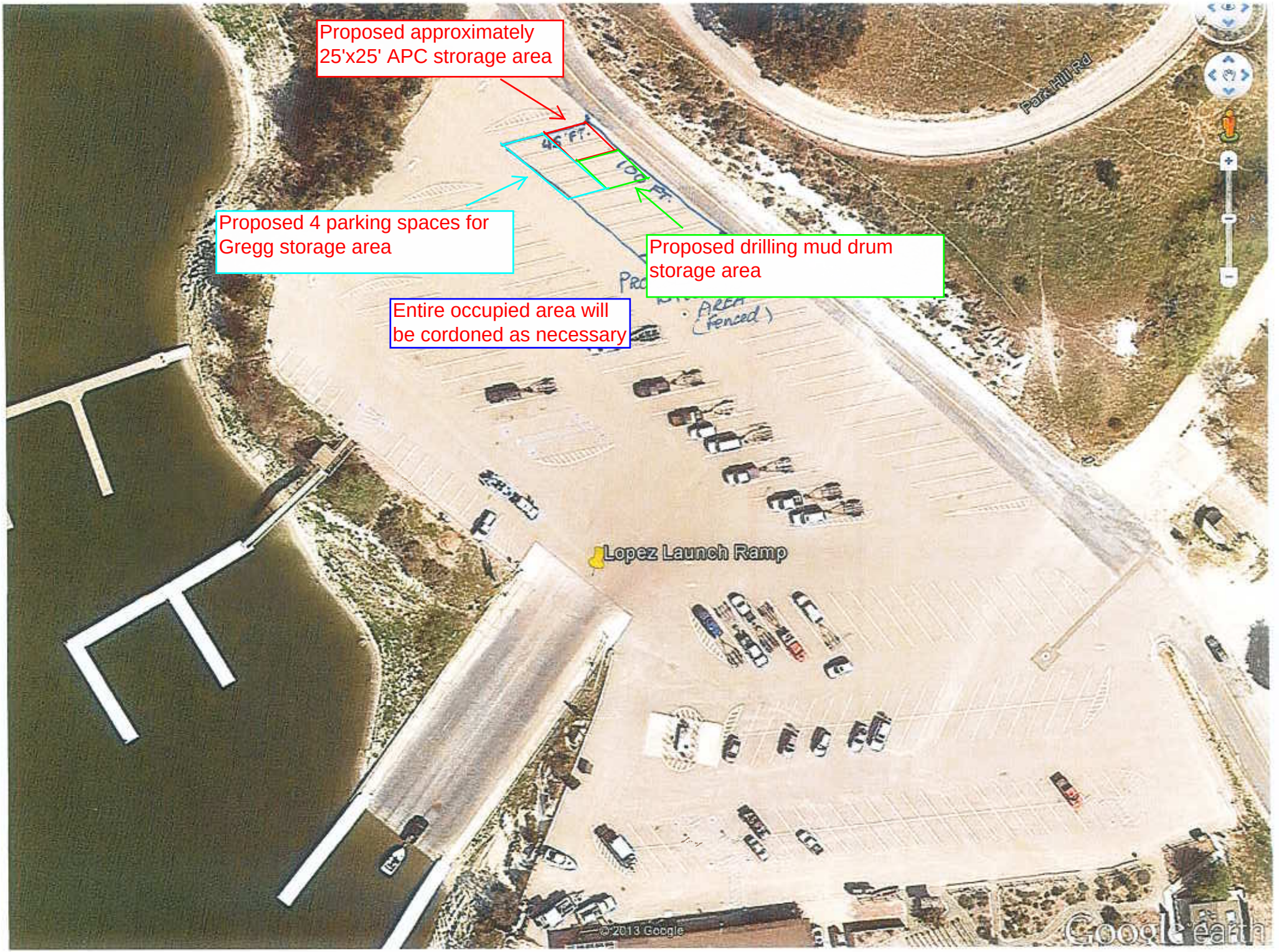
APPENDIX B

SITE MAPS

USE OR DISCLOSURE OF DATA CONTAINED HEREIN IS SUBJECT TO THE RESTRICTIONS CONTAINED IN THE DISCLOSURE STATEMENT ON THE TITLE PAGE OF THIS DOCUMENT.

Courtesy and Boathouse Docks
Marina Parking Lot, up to 7 parking spaces occupied
Marina Rd
Park Hill Rd
Rocky Point Trail
Work Area
Lopez Dr
680 ft
Cougar Trail
© 2013 Google
Google
Imagery Date: 3/22/2013
lat 35.190591° lon -120.460969° elev 557 ft
Eye alt 3492 ft

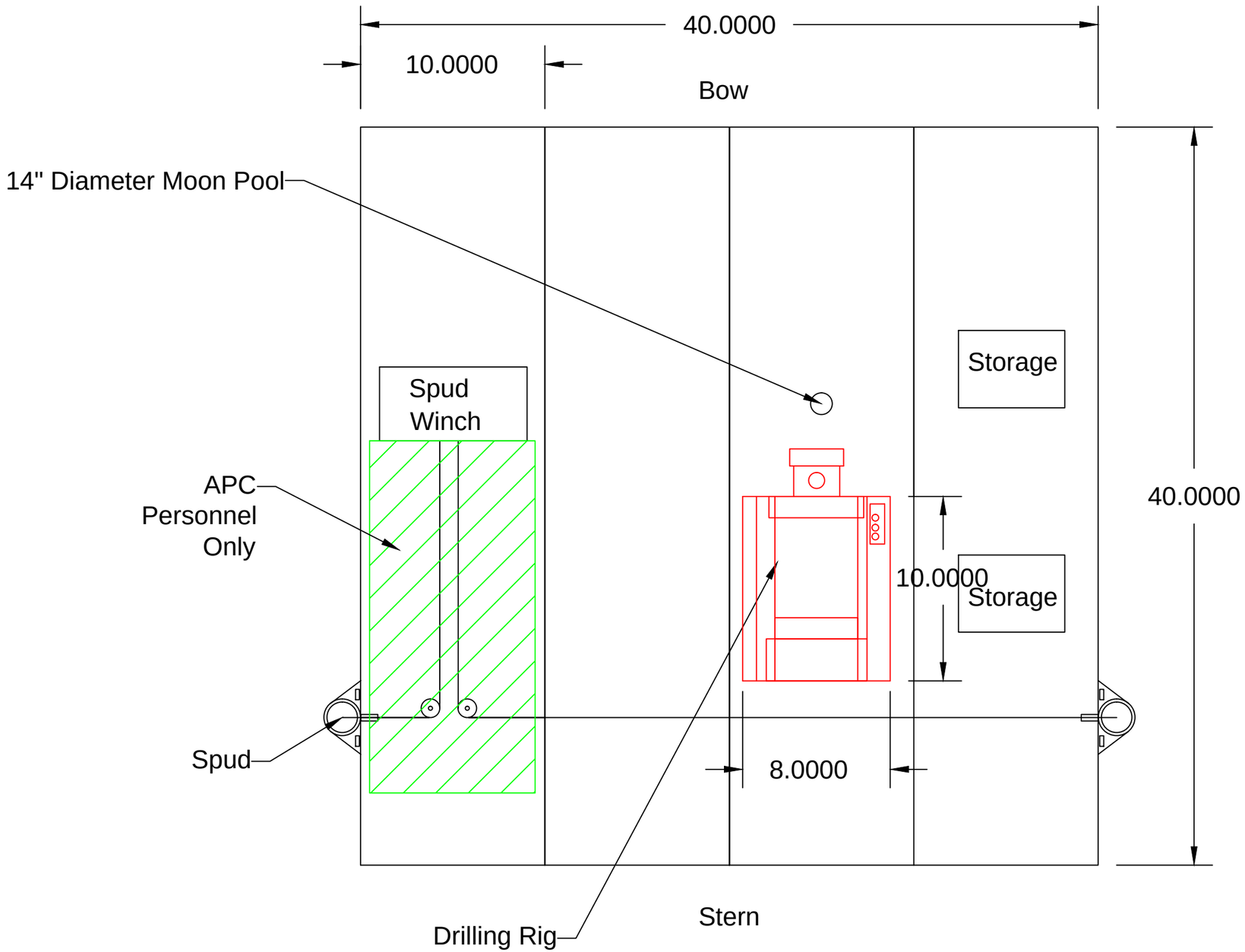
45' FT.
100 FT.
PROPOSED TEMP LAYDOWN AREA (fenced)
Proposed approximately 45'x100' temporary laydown area (cordoned)
Lopez Launch Ramp
Park Hill Rd
© 2013 Google
Google earth


Proposed approximately 25'x25' APC strorage area
Proposed 4 parking spaces for Gregg storage area
Proposed drilling mud drum storage area
Entire occupied area will be cordoned as necessary
Lopez Launch Ramp
Park Hill Rd
© 2013 Google
Google earth

APPENDIX C

PROPOSED BARGE LAYOUT

USE OR DISCLOSURE OF DATA CONTAINED HEREIN IS SUBJECT TO THE RESTRICTIONS CONTAINED IN THE DISCLOSURE STATEMENT ON THE TITLE PAGE OF THIS DOCUMENT.



Items	lbs
40' x 10' x 5' (4)	80,000
Spud Pockets	5,000
Connector Pins	750
Truck	40,000
Misc. Equipment	10,000
Total lbs	135,750

Total Draft	1.36'
Total Freeboard	3.64'

0 2.5' 5' 10'

Scale

APC Float Layout
Lopez Lake Project
Associated Pacific Constructors, Inc.
1/13/2014

Associated Pacific Constructors, Inc.
• Offshore • Nearshore • Onshore