

APPENDIX F
Paleontological Resources Assessment



PALEONTOLOGICAL RESOURCES ASSESSMENT OF THE LITTLE CORONA INFILTRATION PROJECT, NEWPORT BEACH, ORANGE COUNTY, CALIFORNIA

Prepared for:

Richard Beck
Michael Baker/RBF Consulting

Authors:

Kim Scott M.S., Sherri Gust, M.S, and Alyson Caine, M.S.

Principal Investigator:

Sherri Gust, M.S.,

April 2015

Cogstone Project Number: 3193

Type of Study: Paleontological Resources Assessment

Paleontological Localities: None

USGS Quadrangle: Laguna Beach 7.5'

Area: 0.1 acres

Key Words: late Holocene beach deposits (low sensitivity), Miocene Monterey Formation (moderate sensitivity)

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EXCECUTIVE SUMMARY

The purpose of this study is to determine the potential adverse effects on paleontological resources during Project activities on 0.1 acres of Little Corona Beach. The proposed Project consists of the diversion of water from Buck Gully Creek into a subsurface infiltration gallery in which the Creek water will percolate through the sand in order to improve beach conditions.

The Project will take place on late Holocene beach deposits and Miocene Monterey Formation on the north-west corner of the Project. No known fossils are located within the Project Area; however, there are records of hundreds of specimens collected from the Monterey Formation in Orange County. Fossils recovered include some plant and marine invertebrate fossils but mostly marine vertebrate fossils including fish, turtle, birds, whales, and pinnipeds. The Monterey Formation is assigned moderate sensitivity for fossil resources. The majority of the Project Area is mapped as late Holocene beach deposits which are too young to contain fossil resources.

An intensive pedestrian paleontological resources survey of the Project Area was completed on April 3, 2015 by Alyson Caine, a Cogstone cross-trained paleontologist. During the survey, no paleontological resources were observed within or immediately adjacent to the Project Area. However, the intended construction may encounter sensitive paleontological resources due to the planned depth of excavations.

We recommend that all construction personnel receive paleontological resources sensitivity training prior to construction. Unanticipated finds during excavation require that the Project halt work in the vicinity of the find (minimum 50-foot radius) until it can be evaluated by a qualified paleontologist.

INTRODUCTION

PURPOSE OF STUDY

The purpose of this study is to determine the potential effects of the Little Corona Infiltration Project on paleontological resources during Project activities along approximately 0.1 acres of coastline where the Buck Gully Creek discharges into the Pacific Ocean on Little Corona Beach, Newport Beach, California (Figure 1).



Figure 1. Project Vicinity

PROJECT DESCRIPTION

The Little Corona Infiltration Project is part of the City of Newport Beach's, Newport Coast Watershed Management Plan designed to improve beach conditions at Little Corona Beach. The Project will consist of the construction of a subsurface infiltration gallery that will accept low flow creek water from the Buck Creek (Figure 2 and 3).

Buck Creek is naturally an intermittent stream flowing only during and after rainy periods. Increases in development upstream of Buck Gully, specifically irrigation and landscaping, has caused the Buck Creek to flow perennially over the Little Corona beach. The subsurface infiltration gallery will divert the low-flow creek water through a large sand filter, allowing the creek water to percolate slowly into the ocean.

PROJECT PERSONNEL

Cogstone Resource Management Inc. (Cogstone) conducted the paleontological resources studies. Sherri Gust served as the Project Manager and supervised all work. Ms. Gust is a qualified Paleontologist and has a M.S. in Anatomy (Evolutionary Morphology) from the University of Southern California, a B.S. in Anthropology from the University of California at Davis and over 35 years of experience in California.

Kim Scott prepared portions of this report. Scott has a M.S. in Biology with an emphasis in paleontology from California State University, San Bernardino and over 19 years of experience in California paleontology and geology. Alyson Caine performed the survey of the Project Area and prepared portions of this report, including the survey results. Ms. Caine is cross-trained in paleontology and has a M.S. in Archaeology from Durham University. Qualifications of Cogstone personnel are provided in Appendix A.

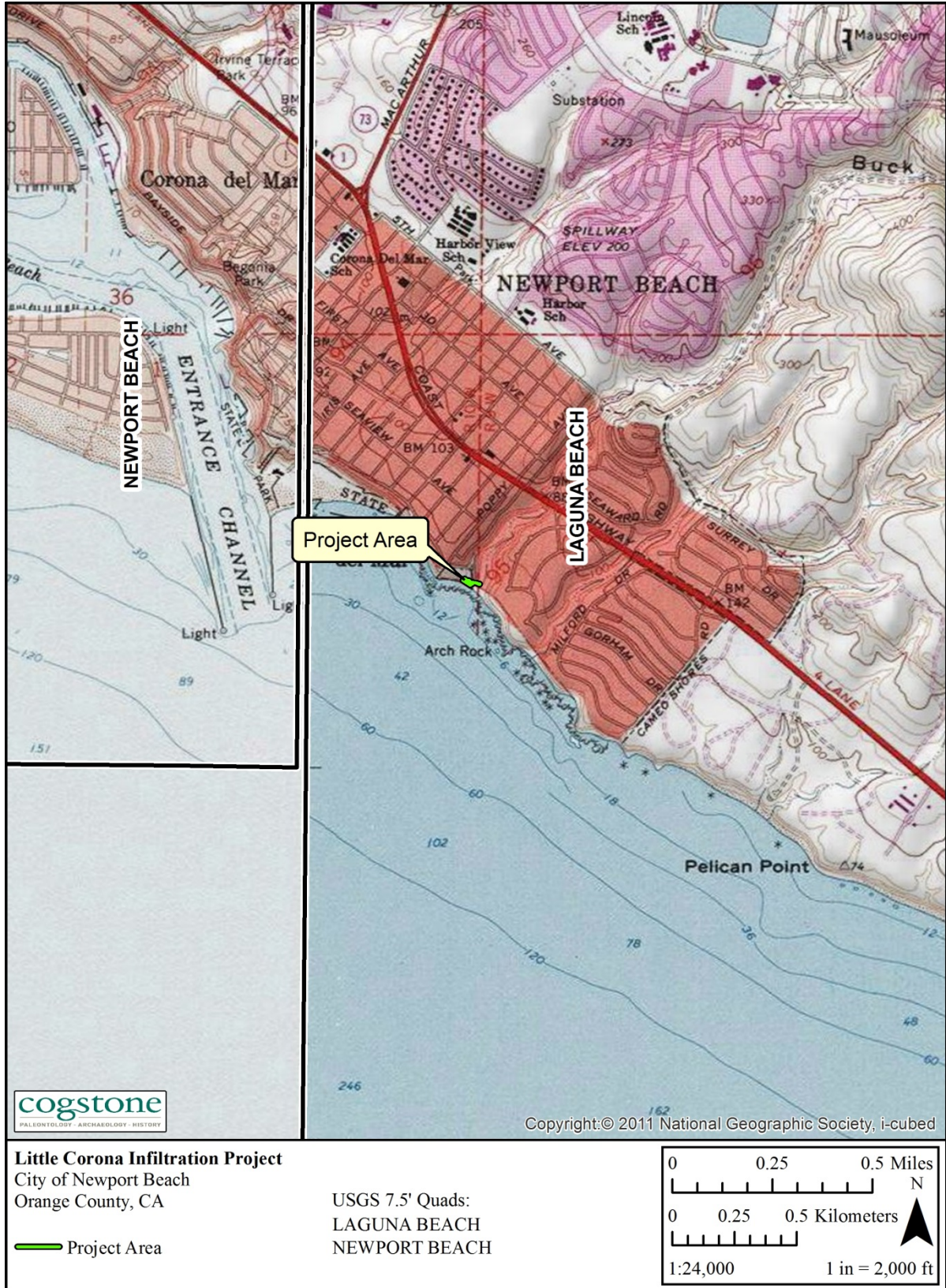


Figure 2. Project Area



Figure 3. Project Aerial

REGULATORY ENVIRONMENT

STATE LAWS AND REGULATIONS

This project is subject to state legislation and guidelines regarding paleontological resources. Paleontological resources are protected by state law. This protection covers all vertebrate fossils (animals with backbones) and any unique paleontological locality.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA (Chapter 1, Section 21002) states that: It is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

If paleontological resources are identified during the Preliminary Environmental Analysis Report (PEAR), or other initial project scoping studies (e.g., Paleontological Evaluations Report (PER), Preliminary Environmental Study (PES), etc.), as being within the proposed project area, the sponsoring agency (Caltrans or local) must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the resource.

PUBLIC RESOURCES CODE (PRC)

Section 50987.5 states that no person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any ... vertebrate paleontological site, including fossilized footprints, ..., or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

DEFINITION OF SIGNIFICANCE FOR PALEONTOLOGICAL RESOURCES

Only qualified, trained paleontologists with specific expertise in the type of fossils being evaluated can determine the scientific significance of paleontological resources. Fossils are considered to be significant if one or more of the following criteria apply:

- 1) The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct;
- 2) The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
- 3) The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas;
- 4) The fossils demonstrate unusual or spectacular circumstances in the history of life;
- 5) The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

As so defined, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important. Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy.

Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important. Paleontological remains are recognized as nonrenewable resources significant to the history of life (Scott and Springer 2003).

BACKGROUND

REGIONAL GEOLOGY

The San Joaquin Hills exists as a portion of the Pacific Plate within the California Geomorphic Province known as the Peninsular Ranges. The following discussion of the Peninsular Range Province is provided by the California Geologic Survey (Wagner, 2002):

“The Peninsular Ranges are a series of ranges separated by northwest trending valleys, subparallel to faults branching from the San Andreas Fault. The trend of the topography is similar to the Coast Ranges, but the geology is more like the Sierra Nevada, with granitic rock intruding the older metamorphic rocks. The Peninsular Ranges extend into lower Californian and are bound on the east by the Colorado Desert. The Los Angeles Basin and the island group (Santa Catalina, Santa Barbara, and the distinctly terraced San Clemente and San Nicholas islands), together with the surrounding continental shelf (cut by deep submarine fault troughs) are included in this province.”

STRATIGRAPHY

Most of the project is mapped as late Holocene beach deposits with some Miocene Monterey Formation on the north western corner of the project (Morton and Miller, 2006; Figure 4).

MONTEREY FORMATION

Deep marine deposits of the middle Miocene (~10 – 15 million years old) Monterey Formation consist of siliceous and diatomaceous siltstones and sandstones. This unit is well known to produce marine invertebrate and vertebrate fossils (Morton and Miller, 2006).

LATE HOLOCENE BEACH DEPOSITS

These sand-rich beach deposits are active or recently active and unconsolidated (Morton and Miller, 2006).

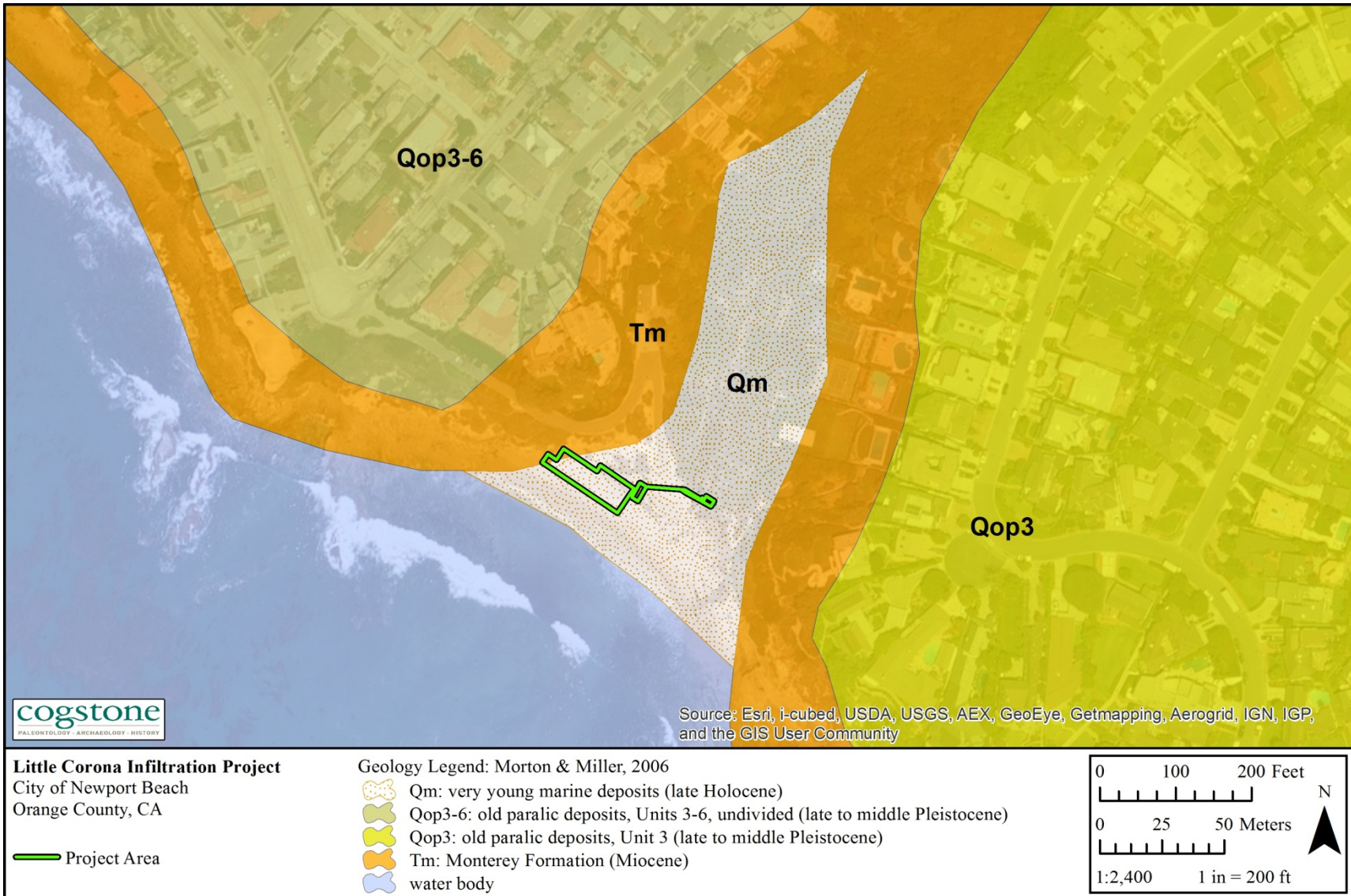


Figure 4. Project Geology

LITERATURE REVIEW AND RECORD SEARCHES

A paleontology record search was requested from the Department of Vertebrate Paleontology at the Natural History Museum of Los Angeles County (Appendix B). Additionally, we reviewed geological and paleontological literature, on-line fossil locality databases, and geological topographic maps.

PALEONTOLOGICAL RESOURCES

The Natural History Museum of Los Angeles County, Department of Vertebrate Paleontology reported one fossil locality in the Monterey Formation near Crystal Cove which is south of the Project Area. A fossil of a mackerel (Scombridae) was recovered from these deposits (McLeod, 2015; Appendix B). Although the online data from the Cooper Center does not list the location of where fossils were collected, they do have records of hundreds of specimens collected from the Monterey Formation in Orange County. Fossils recovered include some plant and marine invertebrate fossils but mostly marine vertebrate fossils from fish to turtles and birds to whales and pinnipeds.

The majority of the Project Area is mapped as late Holocene beach deposits which are too young to contain fossil resources. No localities are known from these deposits, however older and potentially fossiliferous formations do occur at depth and may be encountered during excavations.

SURVEY RESULTS

An intensive pedestrian paleontological resources survey of the Project Area was completed on April 3, 2015 by Alyson Caine, a Cogstone cross-trained paleontologist. The survey consisted of walking parallel transects, spaced at no greater than 10-meter intervals within the Project Area while closely inspecting the ground surface.

Ground visibility along the length of the Project Area was excellent (80 to 100 percent) over the beach (Figures 5-9) and directly on top of concrete weir (Figure 7 and 8). Ground visibility was poor (0 to 40 percent) over a portion of the Project Area surrounding the beach due to the density of vegetation (Figures 8 and 9). Within the hilltops and slopes, vegetation consists of: Coastal Sage Scrub, Native Valley Grassland, and Maritime Chaparral. No paleontological resources were observed within or immediately adjacent to the Project Area.



Figure 5. Overview of Little Corona Beach Project Area, facing southeast



Figure 6. Overview of Project Area, showing creek discharge, facing southeast



Figure 7. Concrete weir and surrounding vegetation, facing west



Figure 8. Concrete weir and creek discharge, facing north



Figure 9. Monterey Formation north of the Project Area, facing northwest

PALEONTOLOGICAL SENSITIVITY

A multilevel ranking system was developed by professional resource managers, the Potential Fossil Yield Classification system (PFYC; BLM 2007). Using the PFYC system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts. This ranking is not intended to be applied to specific paleontological localities or small areas within units. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher PFYC value; instead, the relative abundance of localities is intended to be the major determinant for the value assignment.

The Monterey Formation is assigned a PFYC value of 3a with a moderate sensitivity for fossil resources. The late Holocene beach deposits are assigned a PFYC value of 2 with a low sensitivity for fossil resources (Table 1; Figure 10).

Table 1. Paleontological Sensitivity Rankings

PFYC ranking	5: very high	4: high	3a: moderate-patchy	3b: moderate-undemonstrated	2: low	1: very low
Rock Units						
late Holocene beach deposits					X	
Monterey Formation			X			

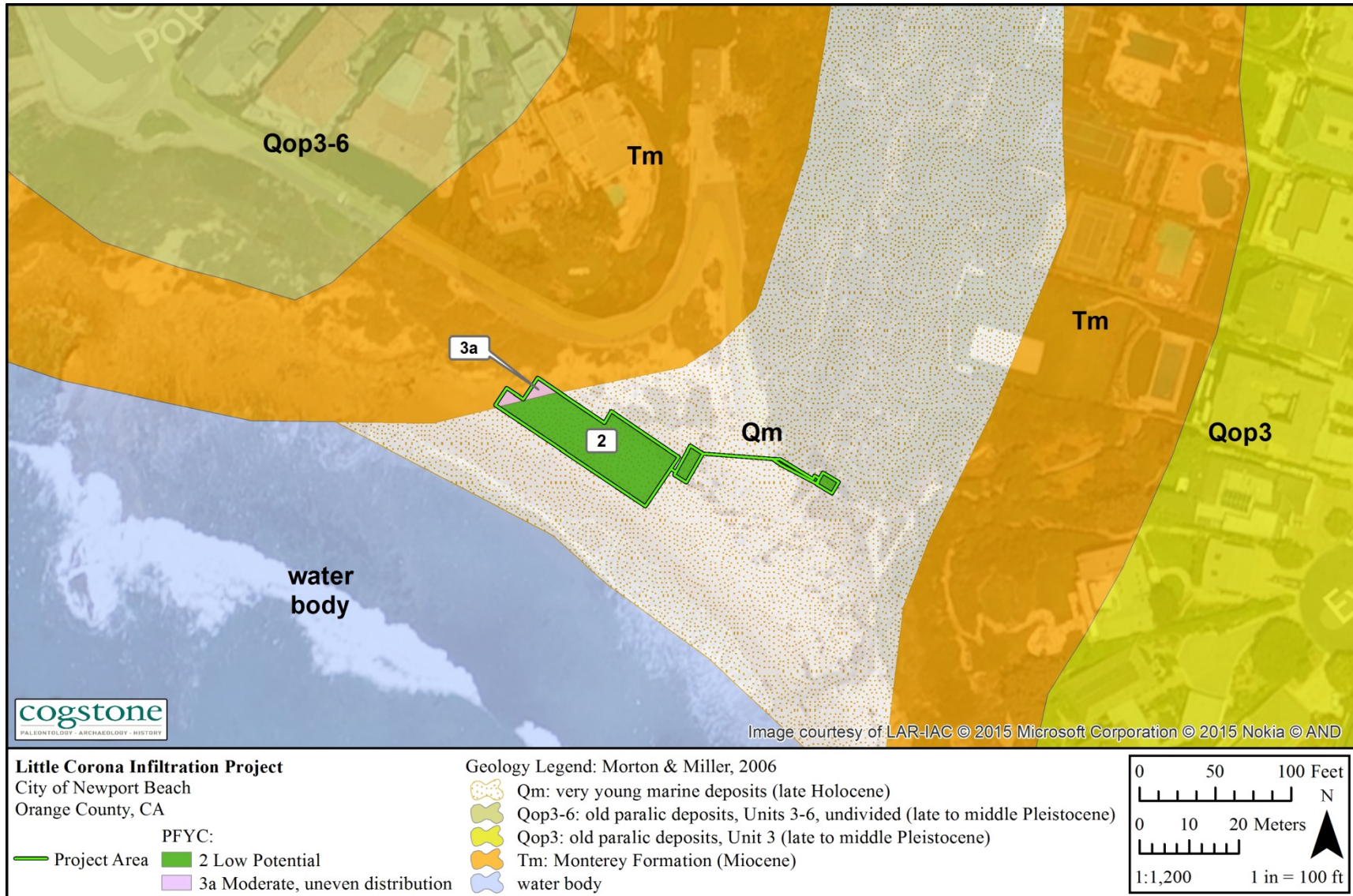


Figure 10. Paleontological Sensitivity Map

CONCLUSIONS AND RECOMMENDATIONS

No paleontological resources are known within the Project Area; however, the Monterey Formation has a moderate sensitivity for fossil resources, while the beach deposits have a low potential for fossil resources.

During the survey, no paleontological resources were observed within or immediately adjacent to the Project Area. Although no resources were observed during the survey of the Project Area, intended construction may encounter sensitive paleontological resources due to their planned excavation depth of four feet.

We recommend that all construction personnel receive paleontological resources sensitivity training prior to construction. Unanticipated finds during excavation require that the Project halt work in the vicinity of the find (minimum 50 foot radius) until it can be evaluated by a qualified paleontologist.

REFERENCES CITED

Bureau of Land Management (BLM).

- 2007 Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands. Online at:
http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/coop_agencies/paleontology_library.Par.76283.File.dat/IM-2008-009-cor.pdf

Eisentraut, P. and J. Cooper

- 2002 Final Report- Development of a model curation program for Orange County's Archaeological and Paleontological Collections. Available online at
<http://anthro.fullerton.edu/orangecocuration/>

Morton, D. M. and F. K. Miller

- 2006 Geologic map of the San Bernardino and Santa Ana 30'x60' quadrangles, California version 1.0. *United States Geological Survey Open File Report 2006-1217*. Digital preparation by P. M. Cossette and K. R. Bouvard.

Scott, E. and K. Springer

- 2003 CEQA and fossil preservation in southern California. *The Environmental Monitor*, Winter: 4-10, 17.

Wagner, D.L.

- 2002 California Geomorphic Provinces. California Geologic Survey Note 36. Website:
http://www.consrv.ca.gov/cgs/information/publications/cgs_notes/note_36/note_36.pdf

APPENDIX A: QUALIFICATIONS



SHERRI GUST, RPA

Principal Investigator for Archaeology and Paleontology

EDUCATION

- 1994 M. S., Anatomy (Evolutionary Morphology), University of Southern California, Los Angeles
1979 B. S., Anthropology (Physical), University of California, Davis

SUMMARY QUALIFICATIONS

Ms. Gust is an Orange County Certified Professional Paleontologist and Archaeologist and a Registered Professional Archaeologist with more than 34 years of experience in cultural resources management. She is accepted as a principal investigator for both prehistoric and historical archaeology by the State Office of Historic Preservation's Information Centers and exceeds the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*. She has managed more than 800 projects at Cogstone and has a reputation for professional work, regulatory compliance and client satisfaction. She has conducted technical studies and prepared cultural resources chapters for CEQA/EIR compliance documents for project-level and program-level Specific Plans, General Plans, Master Plans, and Zoning Amendments for mixed-use, residential, commercial and industrial developments. She has expertise in research, survey, assessment of impacts/effects, significance criteria and determinations, management plans, mitigation implementation, and bone identification and analysis.

SELECTED PROJECTS

Gilbert Avenue Safety Improvements, Anaheim, CA. Managed record searches, survey, and historic resources assessment and prepared Caltrans documents including the Historic Property Survey Report, Historic Resources Evaluation Report and Archaeology Survey Report. Project Manager and Principal Archaeologist. 2014

Laguna Coast Wilderness Park Trail, Laguna Beach, CA. Conducted assessment of improvements to Lizard's Trail. Managed cultural resources record search, survey, impact assessment and report with recommendations. Sub to Michael Baker. Principal Archaeologist. 2014

Bicycle Lane Improvements on Westminster Avenue, Seal Beach, CA. Managed record searches, survey, National Register of Historic Places eligibility assessment and prepared Caltrans documents including the Historic Property Survey Report, Historic Resources Evaluation Report and Archaeology Survey Report. Project Manager. 2014

Historic Town Center Master Plan Update EIR, San Juan Capistrano, CA. Conducted a survey and assessment to determine the potential effects on cultural resources of potential changes to the Historic Town Center Master Plan area in support of a project-level EIR. Managed archaeological and paleontological record searches, research, and survey plus Native American consultation for the 31-acre town center. Evaluated resources, including updated site records and impact assessment. Principal author of report. Sub to the Templeton Planning Group. Principal Archaeologist and Paleontologist. 2011

Interstate 5 HOV Lane Extension, Caltrans District 12, San Juan Capistrano, Dana Point, and San Clemente, Orange County, CA. Provided a Paleontological Mitigation Plan (PMP) and an updated evaluation under subcontract to ECORP Consulting. Principal Paleontologist. 2012

Shea Baker Ranch EIR, Lake Forest, Orange County, CA. Prepared an Archaeological and Paleontological Programmatic Assessment Report to update existing mitigation measures for a 387-acre residential and mixed-use community development project under subcontract to The Planning Center. Principal Investigator. 2011



KIM SCOTT
Principal Investigator for Paleontology
Field & Lab Director

EDUCATION

- 2013 M.S. Biology with paleontology emphasis, California State University San Bernardino
2000 B.S., Geology with paleontology emphasis, University of California, Los Angeles

SUMMARY QUALIFICATIONS

Ms. Scott has more than 18 years of experience in California paleontology. She is a qualified geologist and paleontologist with extensive survey, monitoring, and fossil salvage experience throughout the Inland Empire. Ms. Scott has conducted field work for water, transportation and energy new construction and improvement projects throughout California. She has prepared sections of Paleontological Mitigation Plans and compliance reports. In addition, she has special skills in fossil preparation (cleaning and stabilization) and in the preparation of stratigraphic sections and other documentation for fossil localities. Scott serves as company safety officer and is the author of the company safety and paleontology manuals. She is a Member of the Society of Vertebrate Paleontology, Geological Society of America and others.

SELECTED PROJECTS

Heacock Channel Improvement, Phase I Survey, March Air Reserve Base / March Joint Powers Authority, Moreno Valley, Riverside County, CA. Conducted field survey and prepared an assessment report to determine the potential Project-related effects on cultural and paleontological resources during construction activities for channel improvements on approximately 50 acres. The proposed project is a multi-jurisdictional and includes the design and construction of a flood control channel to protect residential, commercial, federal, public and privately owned properties within the City of Moreno Valley and March Air Reserve Base. Sub to Albert A. Webb Consulting. Field Director. 2013-2014

Ground Water Regional Replacement and Recharge Project (R3), Mojave Water Agency, San Bernardino County, CA. Prepared a Cultural and Paleontological Resources Management Plan, including an updated assessment, and submitted to SHPO. Cultural resources sensitivity training was provided to all construction personnel. Both archaeological and paleontological monitoring was performed. Sub to Michael Baker Intl./RBF Consulting. Principal Investigator. 2010-2012

Oro Grande Wash Recharge Project, Mojave Water Agency, Hesperia and Victorville, San Bernardino County, CA. Paleontological Resources Assessment and paleontological mitigation monitoring for a 40-acre water intake, conveyance and recharge facilities. Paleontological resources sensitivity training was provided to all construction personnel. Funds provided by the U.S. Bureau of Reclamation and U.S. Department of the Interior, through the American Recovery and Reinvestment Act, were utilized for a maximum of 50 percent of the project. The Project Study Area (PSA) encompassed 40.4 acres. Sub to Carollo Engineers. Field Director. 2010-2012

Central Operations Facility, Mojave Water Agency, Apple Valley, Hesperia, San Bernardino County, CA. Provided archaeological and paleontological monitoring services during construction of a new Central Operations Facility. Co-authored Paleontological Monitoring Compliance Report. The new facility is located within a 73.4-acre parcel west of Deep Creek Road in unincorporated Apple Valley. The 73.4 acre parcel will be subdivided to accommodate the Central Operations Facility (1.84 acres) and a San Bernardino County Museum High Desert Interpretive Center (29.4 acres). The remaining 43.1 acres located primarily within the Mojave River are to be used for future river recharge area and access for MWA maintenance vehicles. Field Director 2012-2013



ALYSON CAINE

Archaeologist and Cross-trained Paleontologist

Education

- 2013 M.Sc., Paleopathology, Archaeology, Durham University, Durham, United Kingdom
- 2012 B.A., Anthropology (Human Biology Track), Sociology Minor, Temple University, Philadelphia, Pennsylvania

Summary Qualifications

Ms. Caine is a qualified archaeologist and cross trained paleontologist, with three years of professional and academic training in prehistoric bioarchaeology and osteology. She has experience with analysis, identification of human skeletal remains, survey, and monitoring. She has received at least 8 hours of paleontological training and has one year of paleontological experience.

Selected Projects

Purple Line Extension (Westside), Los Angeles County Metropolitan Transportation Authority, Beverly Hills, Los Angeles County, CA. In support of the project-related advanced utilities relocations at the La Cienega, Fairfax, and La Brea stations, participated in WEAP training and conducted dual archaeological/paleontological monitoring during ground disturbing activities. Field Technician. 2015

Hidden Oaks Country Club Specific Plan and TT 18869, Chino Hills, San Bernardino County, CA. Conducted a cultural and paleontological resources survey in support of the cultural section of the project EIR for this proposed 537-acre residential project with minimum 5-acre per lot constraints. Services included records search, Sacred Lands search, NAHC consultation, field survey. Field Technician. 2015

1200 S. Figueroa Project, Jamison Development, Los Angeles, CA. The project involves construction of a 36-floor twin tower mixed-use residential and retail complex in downtown Los Angeles adjacent to the Staples Center and Los Angeles Convention Center. Participated in training and provided on call paleontological spot check monitoring during all grading and other significant ground-disturbing activities. Field Technician. 2015

Figueroa Central, Tohigh Construction Investment, Lend Lease, Los Angeles, CA. The project involves construction of a high rise multi-use complex on a 4.5-acre site east of the Staples Center in downtown Los Angeles, including 2 levels of underground parking. Participated in training and provided on call paleontological spot check monitoring during all grading and other significant ground-disturbing activities. Field Technician. 2015

Sweany Water Pipeline Refurbishment, Phase II, Laguna Beach County Water District, Laguna Beach, Orange County, CA. Supported a cultural and paleontological resources assessment for inclusion in the project-related CEQA environmental document. Identified site records and mapped out sites. Field Technician. 2015

APPENDIX B: PALEONTOLOGICAL RECORDS SEARCH



Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Vertebrate Paleontology Section
Telephone: (213) 763-3325
Fax: (213) 746-7431
e-mail: smcleod@nhm.org

26 March 2015

Cogstone Resource Management, Inc.
1518 West Taft Avenue
Orange, CA 92865-4157

Attn: Megan Wilson, Archaeologist and GIS Technician

re: Vertebrate Paleontology Records Check for paleontological resources for the proposed Little Corona Project, Cogstone Project # 3193, in the City of Newport Beach, Orange County, project area

Dear Megan:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Little Corona Project, Cogstone Project # 3193, in the City of Newport Beach, Orange County, project area as outlined on the portion of the Laguna Beach USGS topographic quadrangle map that you sent to me via e-mail on 9 March 2015. We do not have any vertebrate fossil localities that lie directly within the project boundaries, but we do have localities nearby from the same sedimentary deposits that occur in the proposed project area.

In the immediate drainage of Buck Gully the surface deposits consist of younger Quaternary Alluvium, derived as a mixture of fluvial and beach deposits. These deposits are unlikely to contain significant vertebrate fossils. In the cliff face there are exposures of the marine Miocene Monterey Formation. Our closest Monterey Formation locality is LACM 7290, southeast of the proposed project area in Crystal Cove State Park, that produced a fossil specimen of mackerel, Scombridae, within the tide zone. On top of the bluffs there are surface deposits of older Quaternary Alluvium, as either marine or terrestrial deposits. Our closest vertebrate fossil locality from the older Quaternary deposits is LACM 4254, just west of north of the proposed project area along MacArthur Boulevard north of the Pacific Coast Highway, that produced a fossil specimen of marine duck, *Chendytes*. Further northwest of the proposed

project area, along Jamboree Boulevard just north of the Pacific Coast Highway, our older Quaternary locality LACM 5466 produced a fossil specimen of horse, *Equus*.

Shallow excavations in the younger Quaternary Alluvium exposed in the immediate drainage of Buck Gully in the proposed project area probably will not uncover significant vertebrate fossils. Deeper excavations in that there that extend down into older deposits, as well as any excavation in the Monterey Formation or the older Quaternary deposits exposed in the proposed project area, may well uncover significant fossil vertebrate remains. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,



Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice