

**WORKER ENVIRONMENTAL AWARENESS
PROGRAM (WEAP)**

Paleontological Resources

GENESIS SOLAR ENERGY PROJECT

Submitted to:

**California Energy Commission
Sacramento, California**

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1.0 PALEONTOLOGICAL RESOURCES

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to explain the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include fossilized, partially fossilized, or unfossilized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains.

1.1 Setting

The project area comprises several different geological formations with the potential to contain significant paleontological resources. The GSEP site is located in the Mojave Desert; a broad interior region of isolated mountain ranges separated by expanses of desert plains. It has an interior enclosed drainage and many playas. (*photo, figure*)

Several fossils have been documented in the local region in soil and rock layers that may be encountered during construction of the GSEP. Fossils found nearby include a pocket mouse specimen recovered from lake sediments in the southwest part of Ford Dry Lake, approximately 4 miles southwest of the Project site. Fossil remains of tortoise, horse and camels were found about 20 miles northwest of the site.

Since fossils are the remains of plants and animals that are now extinct, they are nonrenewable resources. Construction-related impacts to these resources primarily involve ground disturbance. If they are destroyed, the evidence of these extinct plants and animals is gone forever, along with evidence of the type of environment and climate in which they lived.

To ensure that fossils will be available for future generations to study and enjoy, fossils are protected by both state and federal laws and regulations. For this project, the CEC requires that important fossils be salvaged and preserved in a public museum. Details concerning this process can be found in the Paleontological Resources Mitigation Monitoring Plan (PRMMP).

1.2 Regulation and Protection of Paleontological Resources

Fossils are protected by federal, state, and local laws and agency guidelines across the country. Unauthorized collecting or disturbing of fossils is illegal, and can result in fines and imprisonment. If a site worker collects or intentionally disturbs a fossil within the GSEP area, it can result in a work stoppage, and potential job loss. The following is a list of State and Federal regulations designed to protect paleontological resources;

- **National Environmental Policy Act:** Recognizes the continuing responsibility of the Federal government to “preserve important historic, cultural, and natural aspects of our national heritage ...”
- **Paleontological Resources Preservation Act:** Sets forth regulations and provisions pertaining to paleontological resources on all federally administered lands and affirms the authority of the U.S. Bureau of Land Management policies already in place.

- **Federal Land Management and Policy Act:** Does not refer specifically to fossils; however, “significant fossils” are understood and recognized in policy as scientific resources. Permits that authorize the collection of significant fossils for scientific purposes are issued under its authority.
- **American Antiquities Act of 1906:** Establishes a penalty for disturbing or excavating any historic or prehistoric ruin or monument or object of antiquity on Federal lands as a maximum fine of \$500 or 90 days in jail.
- **National Historic Preservation Act of 1966:** Provides for the survey, recovery, and preservation of significant paleontological data when such data may be destroyed or lost due to a Federal, federally licensed, or federally funded project.
- **Code of Federal Regulations Title 43:** Prohibits, without a permit, the collection of scientific resources, including vertebrate fossils. Also prohibits the use of fossils found on Federal lands for commercial purposes.

1.3 Paleontological Monitors

There will be a Paleontological Resource Monitor (PRM) on-site to respond to discoveries that are made during the course of ground disturbances within the GSEP area.

In the event that a fossil resource is discovered, the PRM will have the authority to halt or redirect work until the significance of the find is determined. Once the fossil resource is salvaged and the necessary information collected, the PRM will notify the Compliance Project Manager (CPM), and the CPM will notify the supervisor that the area is clear for work to resume.

1.4 Examples of Paleontological Resources

Construction of the Project will require ground disturbances within geologic sediments that have a demonstrated potential to yield significant fossil resources. In the general vicinity of the Project area, fossilized remains of mammals such as camel, horse; llama, pocket mouse; turtles; invertebrates; and petrified wood have been recovered from within the same sediments that will be impacted during construction activities.

During ground disturbing activities you may find:

- Bone
- Turtle shell
- Turtle carapace (shell)
- Teeth
- Horse (Equidae) tooth
- Marine shells

- Petrified wood or plant material
- Fossilized leaves

(Additional examples or photographs of paleontological resources that could be uncovered in the project area are available in Appendix C and will be provided as part of the training video)

1.5 Site Worker Responsibilities

Scientifically important fossils could be found in any project excavation, no matter how deep, and can be difficult to distinguish from modern remains. Site workers should always contact a project paleontologist if any fossils are found.

There are four steps you should take if you find a fossil or anything that you think could be a fossil:

1. **Stop work** in the immediate area (20 foot radius)
2. **Do not touch it**, move it, or disturb it in any way. The reason for this is that the way that it is positioned in the ground provides important data to paleontologists.
3. **Mark the area with flagging** to make sure no one else working in the area disturbs the fossil.
4. **Immediately contact a Paleontological Resource Monitor and the construction foreman or your supervisor.** The paleontologist will examine the fossil remains, document them and collect them, and inform your supervisor when it is OK to resume work in the area.

APPENDIX C
PALEONTOLOGICAL RESOURCE PHOTOS

**Paleontological Resources Photos for the Worker's Environmental Awareness
Program (WEAP) for GSEP**



Miscellaneous small vertebrate bones



Turtle carapace



Petrified wood



Fossil leaves



Fossil invertebrates



Scattered fossil bone (mammoth)



Fossil tusk fragments



Pocket Gopher (*Thomomys bottae*) femurs and humeri



Mule Deer (*Odocoileus hemionus*) lower second premolar



Hare (*Lepus*) tibia



Horse (*Equidae*) tooth