

**Gopher Tortoise Requirements
For Operations-related Impacts
On Kennedy Space Center**

1.0 PURPOSE:

NASA is dedicated to the protection of natural resources at the Kennedy Space Center (KSC). The gopher tortoise (*Gopherus polyphemus*) is listed as a threatened species by the state of Florida Fish and Wildlife Conservation Commission (FWCC). KSC is committed to assuring compliance with state environmental laws and regulations, including those governing protected wildlife species such as the gopher tortoise. NASA has developed requirements to guide actions in circumstances when gopher tortoises or their habitat may be impacted by KSC operations. This requirement has been developed in coordination with the U.S. Fish and Wildlife Service (USFWS) at Merritt Island National Wildlife Refuge (MINWR).

2.0 REQUIREMENT GUIDELINES:

2.1 All projects (whether maintenance, demolition, or new construction) that might directly or indirectly impact tortoises or tortoise habitat will be identified through the KSC Environmental Checklist process and/or the Excavation Permit request. If potential impacts are anticipated, they will be noted in the Record of Environmental Consideration or as an excavation permit review response that is returned to the responsible party.

It is the responsibility of the proponent of any action that may impact gopher tortoises and/or tortoise habitat to ensure the proposed action has been evaluated by the NASA Environmental Management Branch (EMB), either through Environmental Checklist or Excavation Permit review, prior to the start of work.

2.2 Prior to the beginning of any activity with potential to impact tortoises or their habitat, a biological survey of the project area must be conducted.

2.3 The party responsible for the work must request the survey at least 10 working days prior to commencement of work. As part of the request, the responsible party must provide exact location, areas of impact, and scope of work being performed.

2.4 The EMB will then inform the USFWS MINWR, the FWCC gopher tortoise permit holder, that the EMB environmental contractor will be conducting the survey. The survey will include locating and marking potentially occupied tortoise burrows that may be affected by the project. After the survey of the area has been completed, a course of action will be determined as follows:

2.4.1 If gopher tortoise burrows are found in the path of work, the EMB's contractor will consult with the party responsible for the proposed work to ascertain whether the work plan can be altered to avoid impacting burrows. This is the most preferable option, not only for the tortoises, but also for many other species of wildlife that are known to use gopher tortoise burrows.

2.4.2 If burrow impacts are unavoidable, EMB and its contractor will be responsible for determining the presence or absence of tortoises within burrows to be impacted and the safe relocation of all tortoises collected.

2.4.2.1 All burrows to be impacted must be empty prior to construction. Occupancy may be determined by one of the following methods; burrow scoping with an infrared camera, bucket trapping at the mouth of the burrow, and/or excavation of the burrow.

Burrows that are occupied (or burrows for which occupancy cannot be reliably determined) will be trapped or excavated so that the tortoises can be removed. The EMB contractor will determine the appropriate method of removal. Only authorized personnel designated by the EMB may participate in the removal process.

Numerous factors (e.g., weather and seasonality) must be considered when selecting the appropriate method of capture and subsequent release. Tortoises will not be trapped or relocated when overnight low temperatures are expected to fall below 50° F. Gopher tortoise nesting season occurs from April through July. Eggs are typically deposited in the sand or dirt mound in front of the burrow opening and may be present as late as October. Excavating burrows should be avoided if possible during the nesting season.

2.4.2.2 Burrows that are near but not within the impact area and are unoccupied will be blocked to indicate that they are empty, but these burrows will be monitored until the work in the vicinity is finished in case they are reopened by a tortoise.

2.4.2.3 If the nature of the project is such that there will be no permanent habitat destruction or other long-lasting impacts, the EMB contractor may determine that the tortoises can be held for a short period of time (a few days at most) until the work is completed. At that time, the tortoises can be returned to their original locations and released.

2.4.2.4 If permanent impacts to the habitat are anticipated from the project, the tortoises will be translocated to a nearby site, as determined by the EMB contractor. Release sites will have appropriate tortoise habitat and resources and will preferably be within a distance that would normally be traversed by the tortoises being translocated.

In addition, displaced tortoises often do not stay in the areas to which they are relocated. These tortoises are at a higher risk for mortality as they often attempt to return to their original home ranges. Therefore, translocation will be used only as an absolute last resort for the safety of individual tortoises and conservation of the KSC gopher tortoise population. When necessary, active nests will also be removed and relocated to conditions mimicking the original nest site as closely as possible.

2.5 After tortoises have been removed from a work site, the EMB contractor will notify the responsible party and will schedule a time to provide guidance on tortoise awareness during construction. This guidance includes but is not limited to instituting measures to insure that tortoises remain excluded from the area for the duration of the project. This can be accomplished by fencing, vigilance by the workers on site to report any tortoises seen in the area, and checking blocked burrows for signs of reoccupancy. Tortoise sightings are to be reported immediately to the EMB contact for the project. Handling of the tortoise by anyone other than an authorized agent is prohibited.