

ASSESSMENT OF HOOVERFEST 1993 LAUNCH AREA

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This report outlines the environmental damage sustained to the north central section of the Hoover Prairie where fireworks were launched during Hooverfest 1993. The section under assessment is a semi-circle immediately south of the Hoover gravesite with vehicle tracks radiating from this central circular section (see map). The central section is 456.4 m^2 (4923.5 ft^2) and has a perimeter of 86.6 m (284.1 ft). The diameter (or straight edge) is 34.1m (111.9 ft) and the circular edge is 52.5m (172.2 ft).

Although the area impacted is small, the intensity of the impact is greater than expected. There is virtually no vegetation on the impacted area and the area is heavily littered with foil, wire "fuses", and cardboard pieces of the fireworks mortar shells. The area also has deep ruts left by vehicles associated with the event. From the central area, there is a vehicle track, approximately 35-40m (115-131 ft) in length, to the southwest. This track is easily followed because of the dead vegetation in it. These tracks end in a fork where dead vegetation has been piled up in each prong. There is another track approximately 10m (33 ft) in length branching from the gravesite nature trail. The vegetation on this track is approximately 50% dead and the living plants are flattened. It appears to be a spot where a vehicle backed up and then proceeded on the gravesite trail. The gravesite trail itself is extremely compacted.

When the extent of damage was realized, the area (both central section and tracks) was photographed and soil testing initiated. Unfortunately, before I had a chance to collect soil data for the area, a severe weather pattern entered the area causing flooding in much of the historic site for 2 days. The soil data collected is still valuable, however, because both the damaged and undamaged area were subjected to the same weather conditions (see map). A 500cm^3 (30.58 in^3) soil sample from the damaged area and 700cm^3 (52.84 in^3) from the

undamaged area were collected. This distance between these two samples is approximately 20m (65.6 ft). The site where the undamaged soil was taken was 95% covered by vegetation. By calculating a weight per volume for each sample, one can get a rough estimate of soil moisture. The damaged sample weighed 626g (1.378 lbs) and the undamaged sample weighed 1000g (2.2047 lbs). Therefore, the weight per volume of each sample was 1.252g/cm^3 (0.047 lb/in^3) and 1.428g/cm^3 (0.042 lb/in^3). Soil temperature of each sample was taken. The damaged soil was 27°C and the undamaged soil was 23°C.

The damaged soil was drier to the touch and crumbled easier than the undamaged soil. The damaged soil also contained dead plant material. The undamaged soil had live plant material in it as well as being more "sticky", i.e. it acted more like potters clay (pieces could be molded into a whole). In addition the undamaged soil sample came up in one large piece, whereas the damaged soil did not.

After taking these rough soil estimates, it is apparent that the removal of vegetation at the fireworks launch site has had some effect on soil characteristics. The soil in the damaged plot has less moisture and is hotter than the undamaged (or control) area. This can be explained in part by the fact that the vegetative cover (on the control site), by shading and root-soil interactions, causes the soil to be cooler and moister. These soil characteristics in turn encourage plant growth. Long term effects are unknown. Short term effects would include further drying of the soil and a lesser capacity to hold water until plants return. Such soil characteristics will encourage non-native species, such as Canada thistle, brome, etc. It is recommended that soil temperature and moisture (see appropriate SOP) readings continue to be taken each month for at least six months.

Plant populations have been affected by the fireworks launch. One species, garden coreopsis, was known only from a location within the fireworks launch site. It has not been found elsewhere in the prairie. Other species such as horsemint and butterfly milkweed were

thought to only occur in the damaged area (launch site and tracks), but have since been found elsewhere. However, loss of these plants on the damaged area presents a severe decrease in their total populations. Other shade-tolerant plants may be affected by the increase in light intensity bordering the damaged area. Since most of the plants in the damaged area were about to set seed, the future seedbank for many species has been impacted. This will affect future species composition on the area.

Trapping for small mammals in prairie management unit 2 was started on August 14, 1993, approximately one week after Hooverfest. Out of 2 trap days, and 100 traps (50 traps checked for 2 days), only one rodent has been captured. In my experience, this is a dismal capture ratio compared to previous trapping in May-July (average capture is 10-20 rodents per 50 traps). Capture success this low is highly unusual in almost any circumstance and more than likely due to the side effects of the fireworks (noise, light, falling debris). I have found fireworks "fallout" from the launch area to northern locations in prairie management unit 1 (see map). These fireworks side effects probably drove off a resident screech owl behind the gravesite as well as many other nesting bird species.

