

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Disturbance of Soil and Vegetation by the
Johnson Valley-Parker Motorcycle Race
of October 8, 1983, in Wilderness Study Area 304A,
California and Vicinity

by

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

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Documentation of soil and vegetation disturbance by the annual Johnson Valley-Parker motorcycle races (Fig. 1) was begun in 1980 under a U.S.G.S. study of surface processes in arid lands. As a private citizen acting under non-official expression regulations, I presented and interpreted data from 1980-1982 races (Wilshire, 1983). Here I report observations made between one day and one month after the 1983 race. These observations were made on easily accessible parts of the course; the systematic monitoring at more remote specific stations has been discontinued.

The 1983 race, held on October 8, was preceded by a week of intermittent rains. An October 4 storm caused flooding and highway closures at Vidal Junction, California, 2 miles south of the race course, and at other locations. Rainfall from some of the sparse recording stations in the California desert (fig. 1) for this period are:

Eagle Mountain: Oct. 4, 0.48"

Iron Mountain: Oct. 4, 0.78"

Barstow: Oct. 1, 0.35"; Oct. 2, 0.30", Oct. 5, 0.30", Oct. 7, 0.05"

Needles: Oct. 4, 0.95"

The rain left standing water on parts of the race course in Wilderness Study Area (WSA) 304A, and wetted soil to depths of at least 10cm over much of the course. A month after the race, sandy and gravelly soil was still damp immediately below the surface (less than 1cm), and fine-grained saline soil near Bristol Dry Lake was still damp at the surface.

These moist soil conditions greatly increased the physical impacts of the vehicles (Figs. 2-3). Racers attempting to avoid water-covered areas widened the zone of disturbed ground (Figs. 2,4). Ruts left by single passes of motorcycles on wet fine-grained soil are commonly 15-20 cm deep, and range to 30cm. By contrast, single tracks on the same soils when dry (Wilshire, 1983) indented the surface less than 3 cm. The width of the zone of heavy impact ranged up to 57 m in wet areas of WSA 304A, and total width (including groups of tracks off the main route) ranged up to 97m.

Rutting was greater on fine-grained soils (fig. 3) than on soils with high gravel contents (Figs. 5,6). Rutting of soil with high sand contents (Fig. 7) was intermediate.

The extent of randomly-distributed vehicular disturbance ("pit play") in the vicinity of Pit 3 (SW side of the Iron Mountains) was the same as I observed in previous events (Wilshire, 1983), but was much more extensive around Pit 2 (SE corner of WSA 304A) than previously (Figs. 8-9). The Bureau of Land Management (1980) allocated four acres for pits, which are typically along the course alignment. Figure 10 shows that the extent of heavy impact (50-100% of the surface directly impacted) was 5.8 acres, and of moderate impact (10-50% of the surface directly impacted) was 6.9 acres. A

conservative (minimum) estimate of an additional 46 acres of light impact (isolated tracks and groups of tracks) was made by reconnaissance traverses around the pit area.

Even though the area has received several rain storms, one of particular severity in August, 1983, in the year preceding the 1983 race, both concentrated and isolated tracks from previous races remain conspicuous (Figs. 4, 11). In addition, isolated tank tracks made in 1964 are still readily visible (Wilshire, 1983), suggesting that deep ruts from the 1983 race will remain visible for two decades or more.

References

- Bureau of Land Management, 1980, Final Environmental Impact Statement, Johnson Valley to Parker Motorcycle Race: U.S. Department of the Interior, 112 p.
- Wilshire, H. G., 1983, Off-road vehicle recreation management policy for public lands in the United States: A case history: Environmental Management, v. 7, p. 489-500.

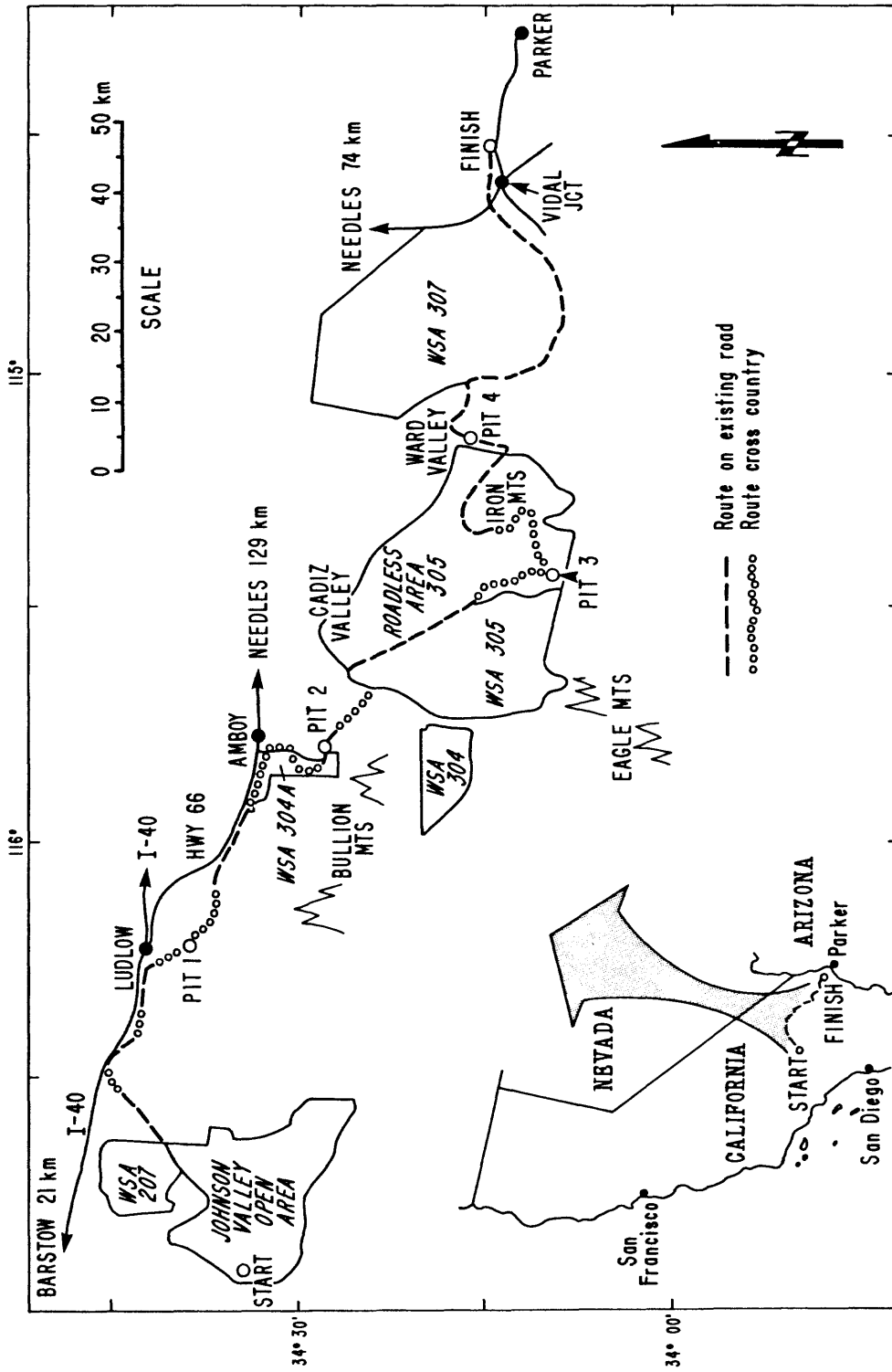


Figure 1. Johnson Valley-Parker motorcycle race course. Modified from Wilshire (1983)



Figure 2. Deep (to 30 cm) ruts left by motorcycles traversing a surface that was covered by standing water at the time of the 1983 race. Northeastern part of Wilderness Study Area 304A. Photographed 11/7/83.



Figure 3. Rutted fine-grained saline soil in northeastern part of Wilderness Study Area 304A. The width of the zone of severe impact here is about 60 m. Photographed 11/7/83.



Figure 4. Diversion of course to right around what was a body of standing water during the race. An old route extends across left side of the photograph. East side of Wilderness Study Area 304A. Photographed 11/7/83.



Figure 5. Shallow rutting of gravelly soils, north-central part of Wilderness Study Area 304A. Winter annuals were largely destroyed in the tracks. Photographed 10/9/83.



Figure 6. Moderate rutting in gravelly soils, north-central part of Wilderness Study Area 304A. Winter annuals were largely destroyed in the tracks. Photographed 10/9/83.

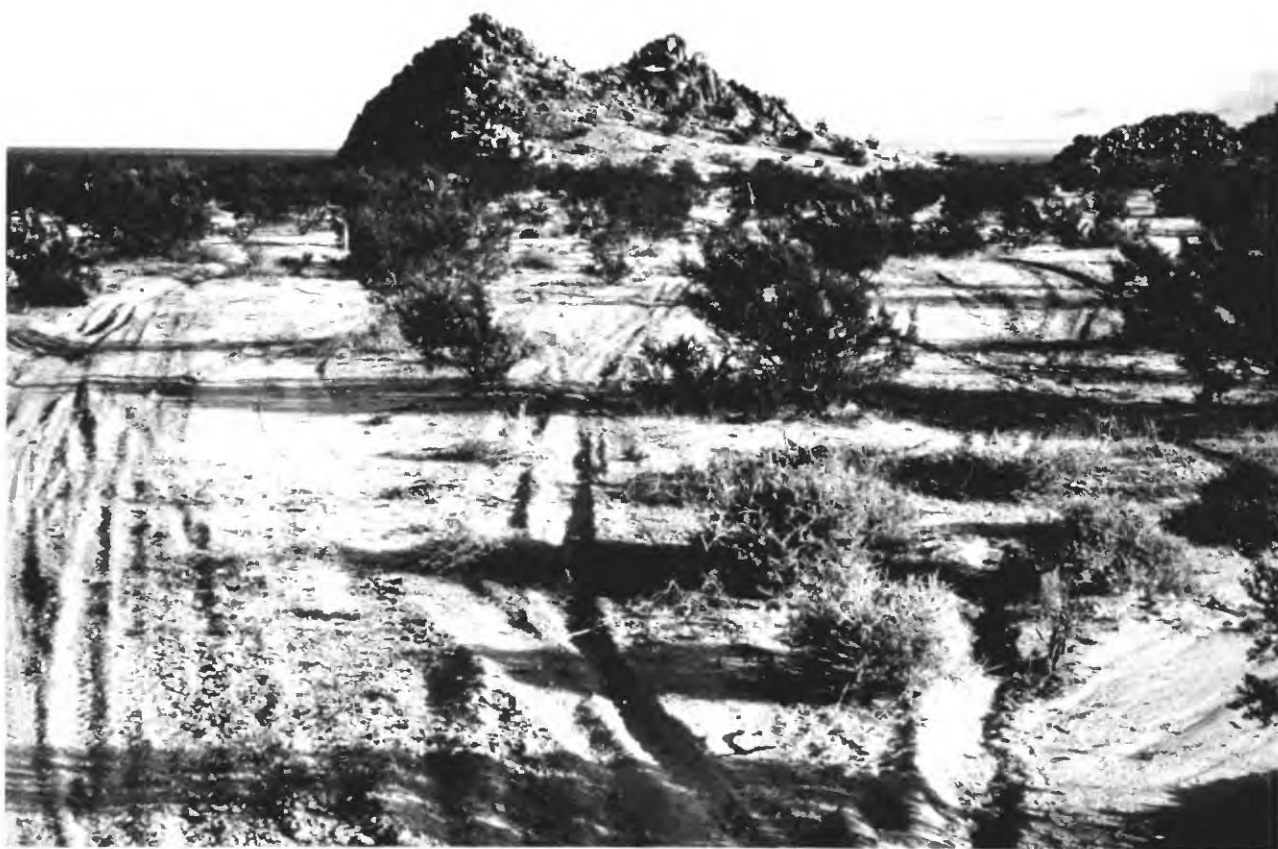


Figure 7. Intermediate rutting in isolated tracks on very sandy soil north of Pit 3. Photographed 10/20/83.



Figure 8. Heavy-impact zone in Pit 2. Photographed 11/2/83.



Figure 9. Isolated 4-wheel-vehicle tracks, south side of Pit 2. Photographed 11/2/83.

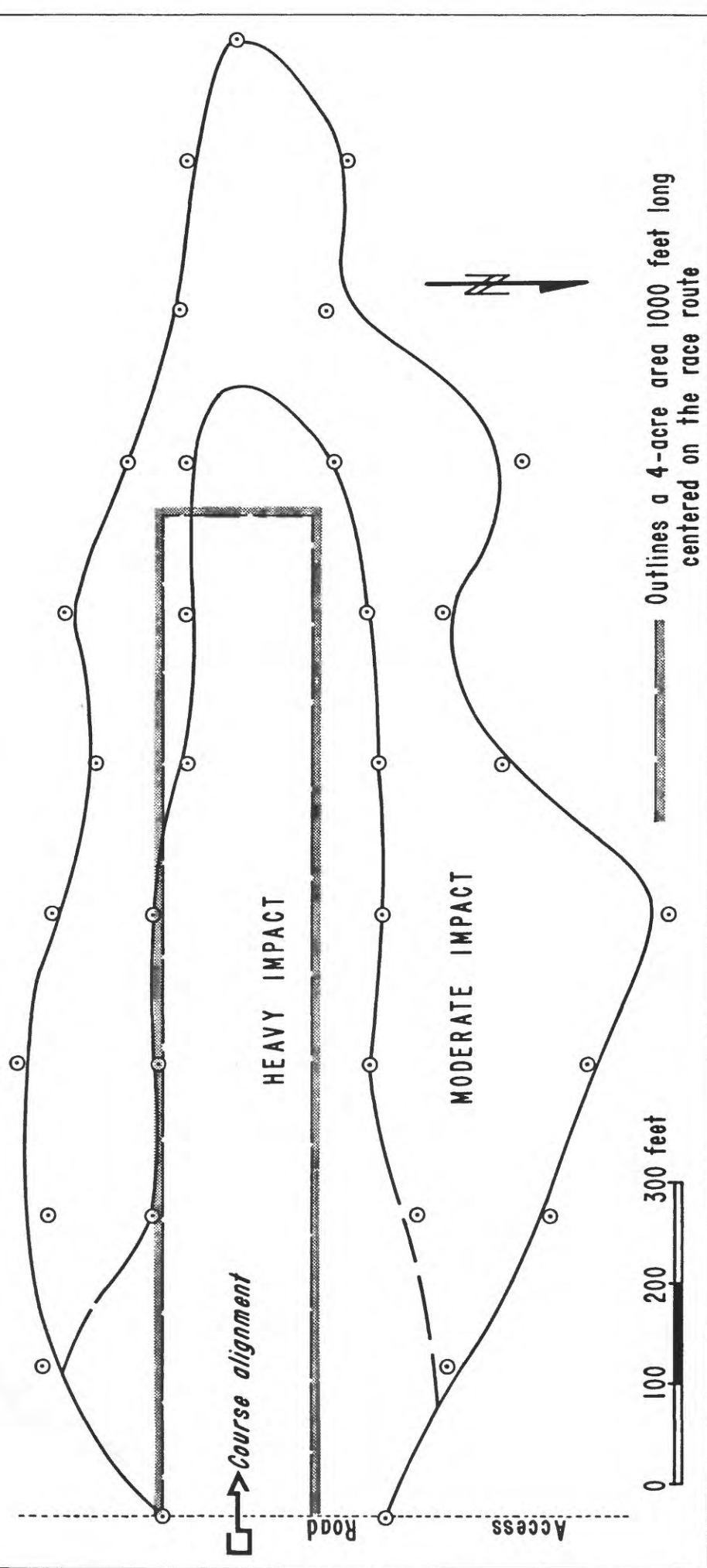


Figure 10. Sketch map of Pit 2 showing zones of heavy (50-100% of surface directly impacted) and moderate (10-50% of surface directly impacted) impact. Area of heavy impact was approximately 252,000 square feet (5.8 acres); area of moderate impact was approximately 302,000 square feet (6.9 acres). Area of isolated tracks and groups of tracks beyond the zone of moderate impact was estimated to be at least 46 acres.



Figure 11. Two motorcycle tracks made in the 1983 event, and a single track made in one of the three previous events. Northeastern part of Wilderness Study Area 304A. Photographed 11/7/83.