

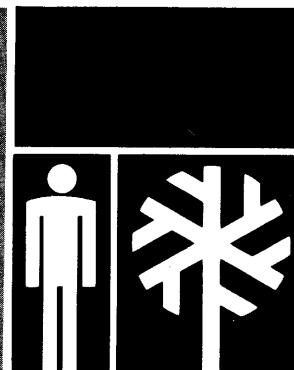
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development concept plan

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UBBELL TRADING POST

NATIONAL HISTORIC SITE / ARIZONA



DEVELOPMENT CONCEPT PLAN

HUBBELL TRADING POST NATIONAL HISTORIC SITE
ARIZONA

Denver Service Center
National Park Service
U.S. Department of the Interior

RECOMMENDED:

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October 24, 1979

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August 1, 1980

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NATURAL RESOURCES

Topography

Hubbell Trading Post lies in a shallow valley adjacent to the Pueblo Colorado Wash at an elevation of 1930 m (6,332 feet) above sea level. Low level sandstone buttes and mesas surround the site, which sits primarily on an upland terrace adjacent to the Pueblo Colorado. As shown on the topography map, the terrace is relatively level, making it conducive to irrigated agriculture.

Soils

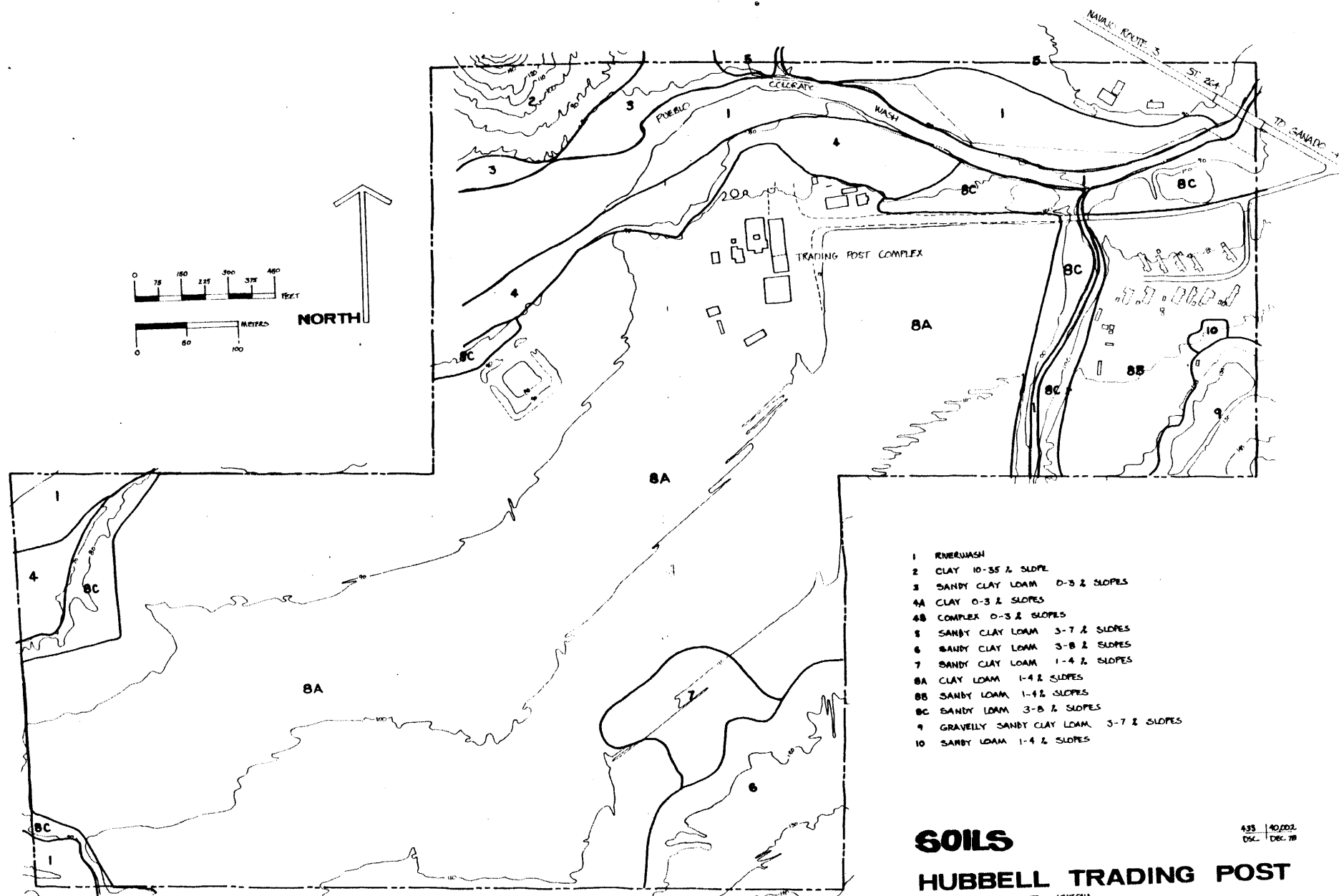
The soils of Hubbell Trading Post National Historic Site include clays, sandy clay loam and sandy loam. Most are deep, dry the parent material is primarily alluvium. As shown on the Soils map, the largest soil unit is a clay loam, well-drained soil formed from old stream alluvium (Earth Environmental Consultants (EEC, 1978). The soil has moderate permeability and runoff is slow.

Much of the site was cultivated by the Hubbell family with the aid of a ditch-fed irrigation system. According to a soil survey recently completed for the park, most of the soils that were cultivated are well suited for irrigated agriculture, while most soils outside the area of past cultivation are not (EEC, 1978). According to the survey report, most soils that were used for cropland would classify as Class I or Class II farmland when irrigated (EEC, 1978). According to the Arizona State Conservationist (Soil Conservation Service), all areas shown on the soils map as units 8A and 8B that are irrigated qualify as prime farmland.

As shown on the Soil Limitation map, most soils at the park have only a "slight" limitation for dwellings and other light buildings (EEC, 1978). However, some are subject to flooding, others are subject to high shrink-swell factors.

Floodplains

While the Pueblo Colorado Wash is dry much of the year, periodic intense rainfall causes flooding on the main stem and tributary washes. The Pueblo Colorado has a drainage basin above Hubbell Trading Post of 670 km² (270 square miles) of which one-third is impounded by a dam at Ganado Lake. The 100 year and 500 year floodplains, as reported by the Los Angeles District of the Corps of Engineers, are shown on the Floodplains map. Much of the site is located on a terrace above these flood levels and all of the park's historic structures are outside of the floodplains.

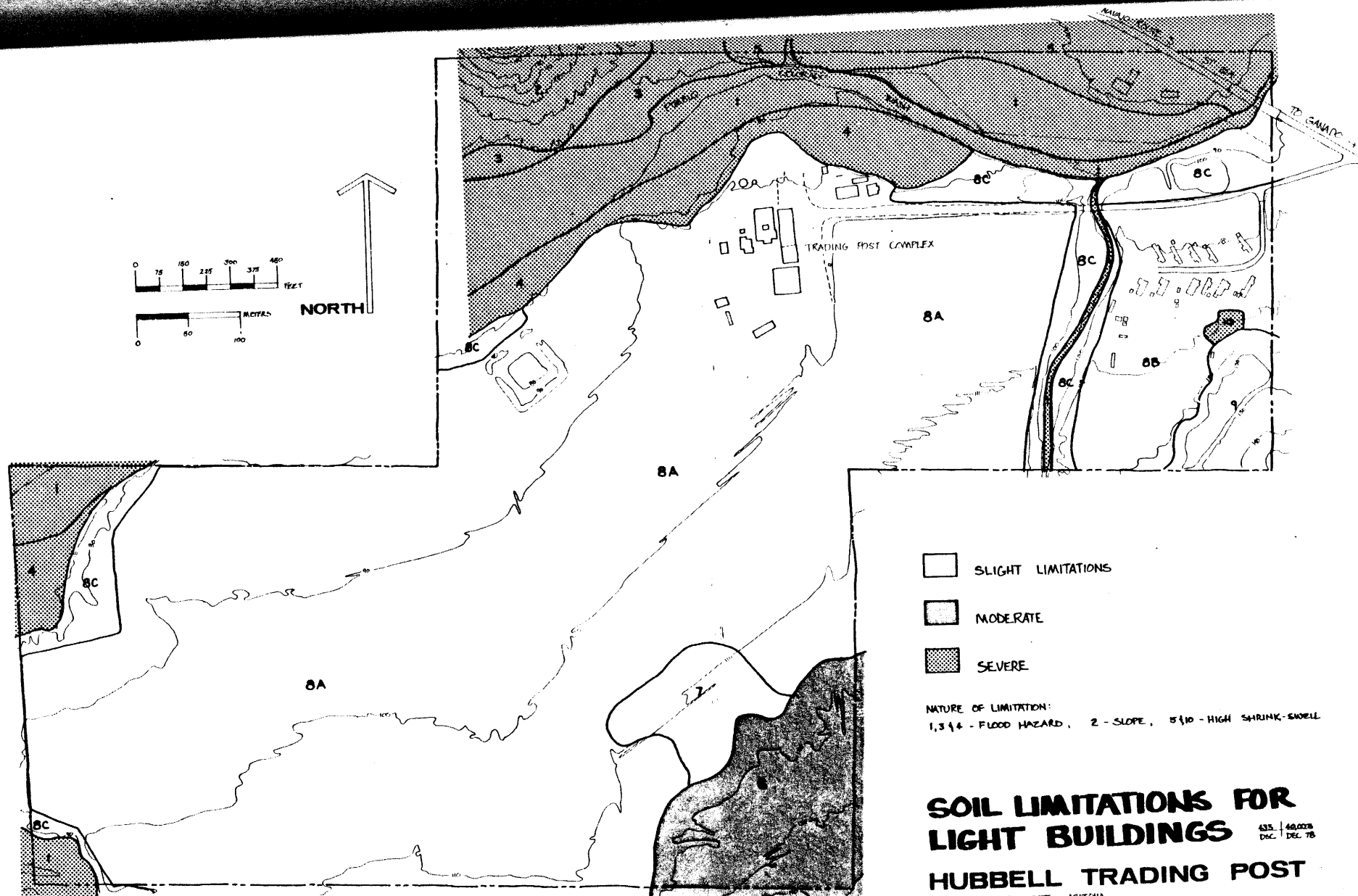


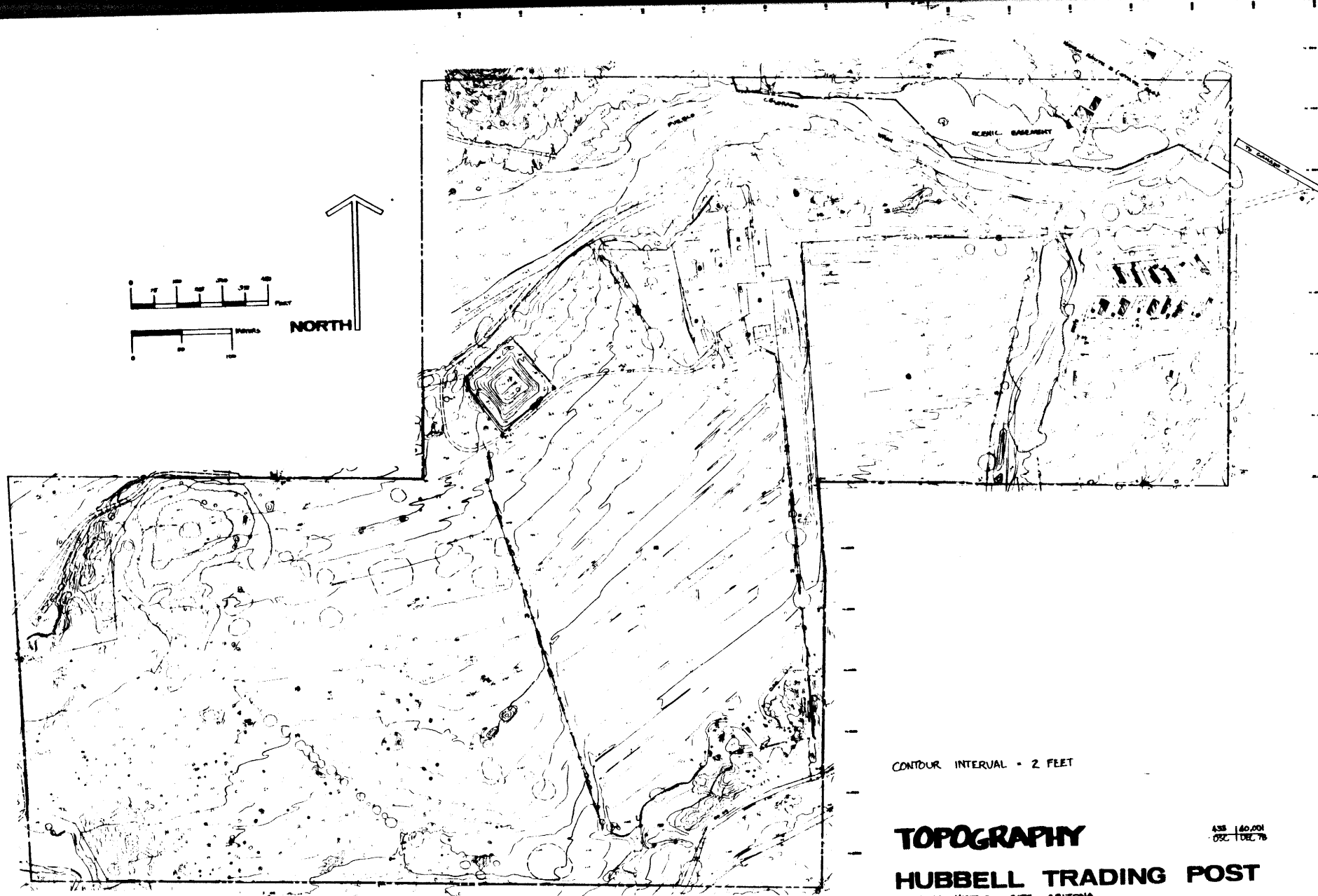
SOILS

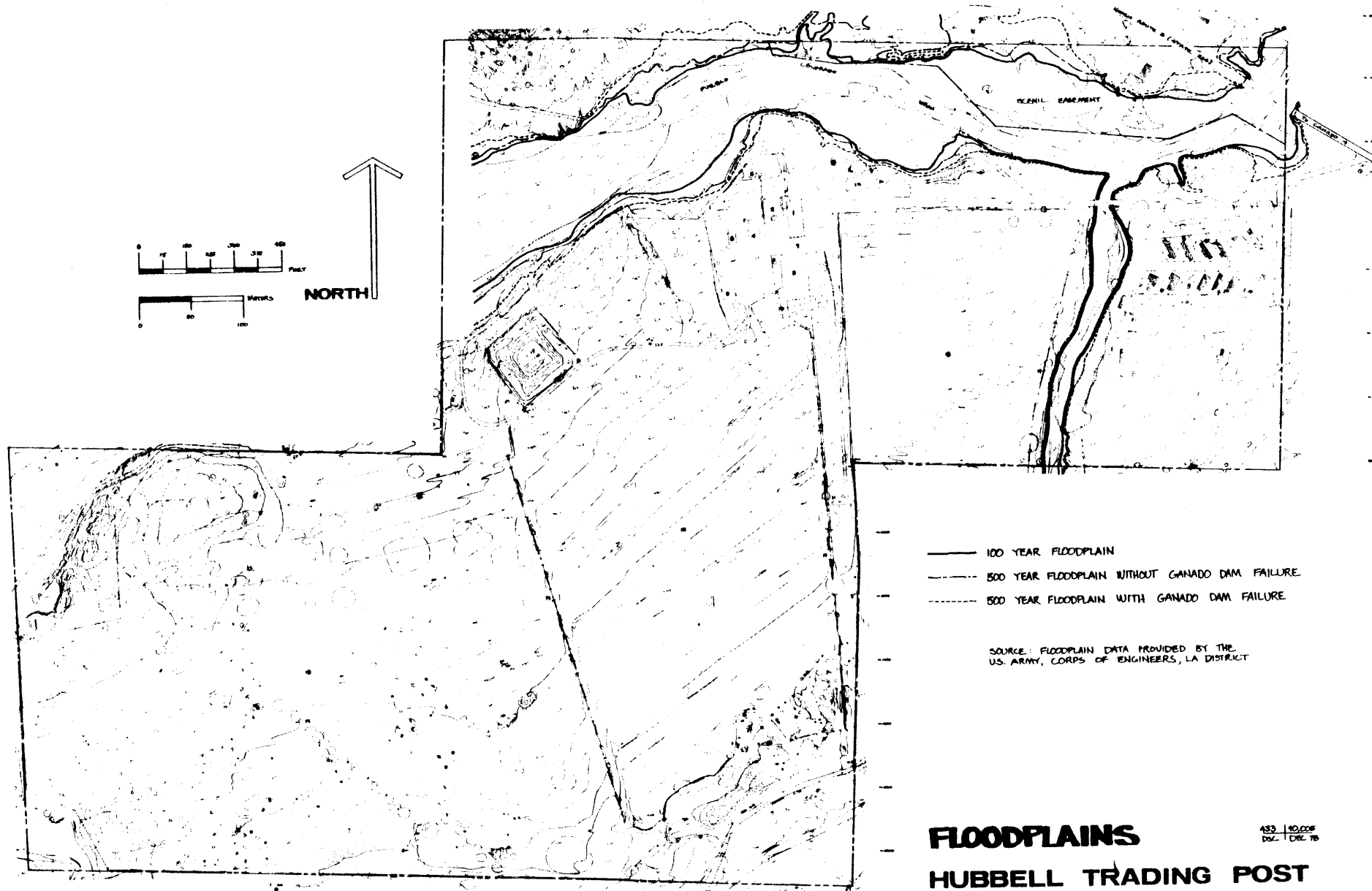
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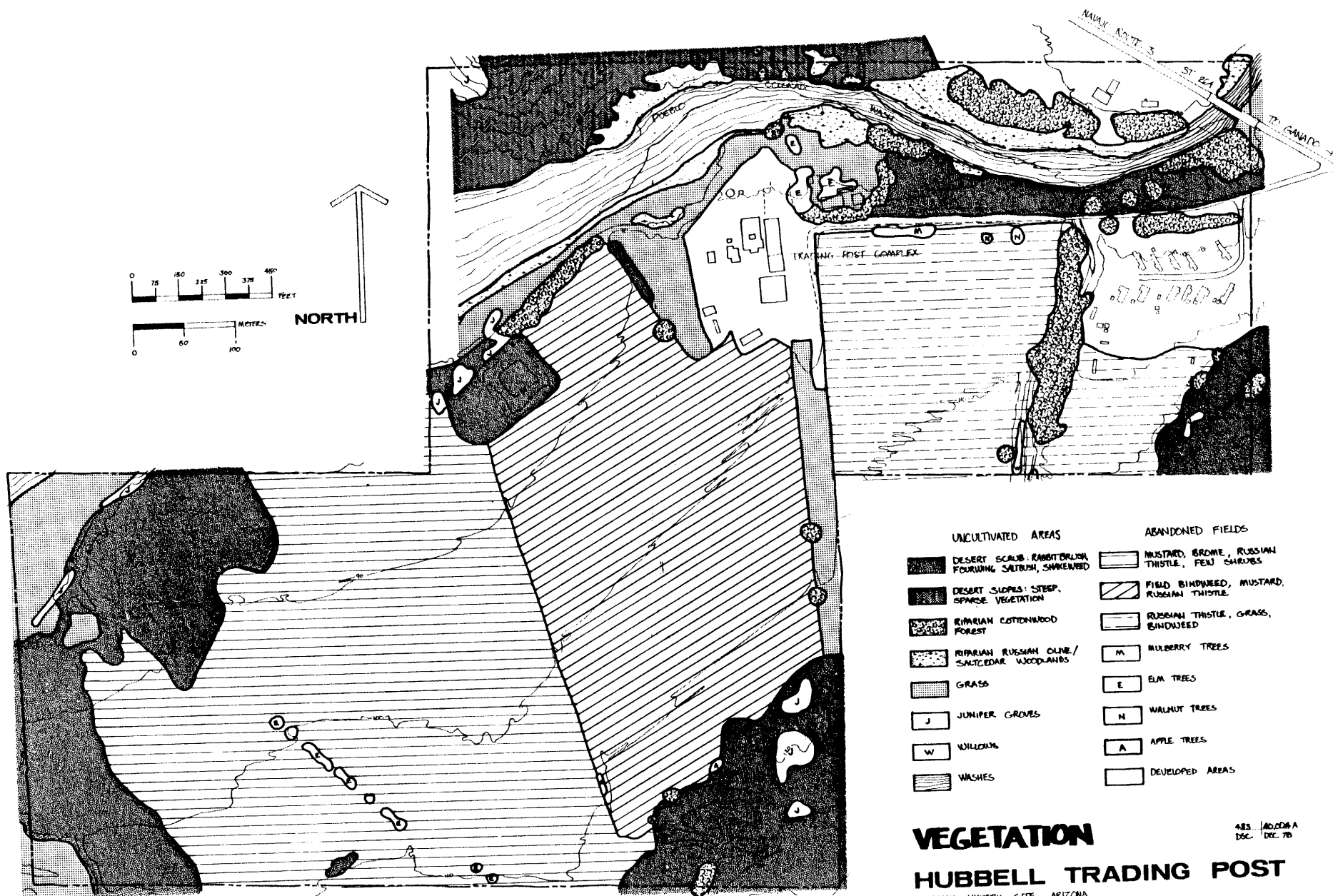


FLOODPLAINS

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VEGETATION

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SOURCE: VEGETATION MAP BY PHILLIPS, 1976

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Vegetation

As shown on the Vegetation map, The natural vegetation, largely removed for agricultural purposes, consists of scattered juniper and desert scrub. Rabbitbrush, fourwing saltbush and snakeweed are common. Due to their uncultivated status and grazing over the past 20 years, the irrigated fields now support weedy, non-native species such as field bindweed and russian thistle. Cottonwoods line the washes and the bottomlands of the Pueblo Colorado have been invaded by the non-natives, including russian olive and tamarisk. Prior to National Park Service acquisition of Hubbell Trading Post, non-natives such as elms were planted in the trading post area, especially on the school tract.

Endangered Species

There is no known endangered or threatened plant (Phillips, 1978) or animal species or critical habitat at Hubbell Trading Post National Historic Site.

Solar/Wind Energy

Using data collected at Winslow, Arizona, the mean percentage of annual possible sunshine in the region is 75 percent (275 days of clear to partly cloudy skies), varying between 61 percent of the days in January being clear or partly cloudy and June with 90 percent of its days clear or partly cloudy. The combination of high levels of solar incidence (averaging 450-500 langleys per day) and cool winters (winter minimum temperatures average below freezing) makes use of solar energy attractive.

The potential for use of wind energy at Hubbell Trading Post is also good from a meteorological standpoint. Winds out of the southwest are frequent and often intense, especially in the spring months of the year. The average annual wind velocity recorded at Winslow is 14.6 km per hour (9.1 mph).