3.4 Soils

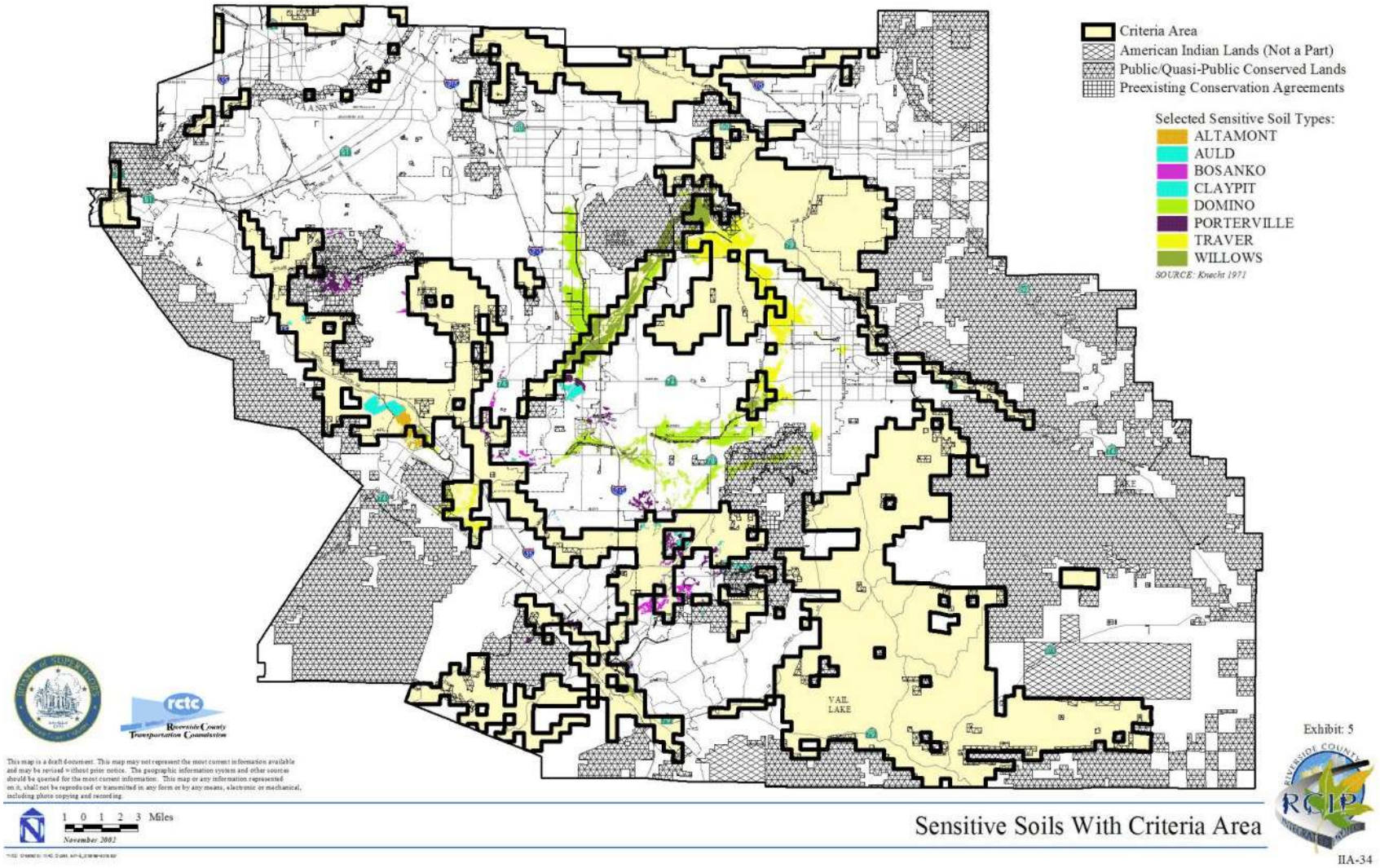
To aid in conservation area delineation and evaluation, certain soil types known to be associated with listed and sensitive plant species in certain regions of the Plan Area were digitized. Two general classes of soils were digitized: clay soils and Traver-Domino-Willows association soils. Soils maps from the *Soil Survey of Western Riverside Area, California* (Knecht 1971) were used. It should be understood that the soil maps are at least 30 years old, are not rectified and linework does not necessarily match real topography. They do, however, provide an overview of where important soils generally occur in the Plan Area. (According to the Soil Conservation Service, the soils in Riverside County will be digitized over the next two years using newer flown and rectified aerials.)

The area for which the soils were digitized ranges from north of Lake Mathews in the northwest, east to the San Jacinto River and Hemet, south to Temecula, and southwest to Lake Elsinore and Alberhill. Based on the general soil map, the Traver-Domino-Willows association is well covered by this mapping effort (*Exhibit 5*). The only missing area of the Traver-Domino-Willows association is a mapping unit in the La Sierra area north of the Riverside Freeway (Highway 91).

Clay soils digitized within the Plan Area included the Bosanko, Auld, Altamont, and Porterville series (*Exhibit 5*). In addition, areas from which clay had been mined in the Alberhill area (known as "clay pit") were digitized. Within the Plan Area, clay soils support several listed threatened or endangered species: Munz's onion (*Allium munzii*), thread-leaved brodiaea (*Brodiaea filifolia*) and San Diego button celery (*Eryngium aristulatum* var. *parishii*). Other sensitive plant species occurring on clay soils include, Orcutt's brodiaea (*Brodiaea orcuttii*), long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*), small-flowered morning glory (*Convolvulus simulans*), many-stemmed dudleya (*Dudleya multicaulis)*, Palmer's grapplinghook (*Harpagonella palmeri*), graceful tarplant (*Holocarpha virgata* ssp. *elongata*), and small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*).

The Traver-Domino-Willows association includes saline-alkali soils largely located along floodplain areas of the San Jacinto River (including the inlet to Lake Elsinore) and Salt Creek within the Plan Area (*Exhibit 5*). Sensitive plants supported by the Traver-Domino-Willows soil association include two federally-listed species: San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*) and spreading navarretia (*Navarretia fossalis*). Other sensitive plant species found in this association include Parish's brittlescale (*Atriplex parishii*), Davidson's saltscale (*Atriplex serenana* var. *davidsonii*), and vernal barley (*Hordeum intercedens*).

A. MSHCP Conservation Area Description



A. MSHCP Conservation Area Description

Table 12 below summarizes the number of acres and percent conserved of mapped sensitive soils within the MSHCP Conservation Area, existing Public/Quasi-Public Lands, and areas designated as Rural/Mountainous land use. The remaining areas are categorized as "Out" in *Table 12*. None of the soils were mapped on Indian Land.

TABLE 12. ACREAGE AND PERCENT CONSERVED OF SELECT SENSITIVE SOILS

		Additional Reserve Lands	Existing Public/Quasi-Public Lands	Total Conserved	Rural/ Mountainous	Out	Total Acreage
Clays							
Altamont	acres	315	0	**315**	0	570	**885**
	%	36	0	**36**	0	64	
Auld	acres	170	297	**467**	15	974	**1,456**
	%	12	20	**32**	0	67	
Bosanko	acres	191	420	**611**	3	1,499	**2,113**
	%	9	20	**29**	0	71	
Clay Pit	acres	254	15	**269**	0	583	**852**
	%	30	2	**32**	0	68	
Porterville	acres	96	894	**990**	47	2,140	**3,177**
	%	3	28	**31**	1	67	
Total Clays	**acres**	**1,026**	**1,626**	**2,652**	**65**	**5,766**	**8,483**
	%	**12**	**19**	**31**	**<1**	**68**	
Traver-Domino-Willows Association							
Domino	acres	610	1,445	**2,055**	0	9,648	**11,703**
	%	5	12	**17**	0	82	
Traver	acres	1,998	1,225	**3,223**	0	6,802	**10,025**
	%	20	12	**32**	0	68	
Willows	acres	3,561	1,701	**5,262**	0	1,804	**7,066**
	%	50	24	**74**	0	26	
Total T-D-W Association	**acres**	**6,169**	**4,371**	**10,540**	**0**	**18,254**	**28,794**
	%	**21**	**15**	**36**	**0**	**63**	

A total of 8,483 acres of clay soils was digitized. Approximately 2,652 acres (31%) of the total acreage of mapped clay soils would be conserved under the MSHCP, including 12% within the MSHCP Conservation Area and 19% on existing Public/Quasi-Public Lands. Of the conserved clays soils, 12% are comprised of the Altamont series, 18% of the Auld series, 23% of the Bosanko series, 37% of the Porterville series and 10% of clay pit.

A total of 28,794 acres of the Traver-Domino-Willows association was digitized. Approximately 10,540 acres (36%) of mapped soils of this association would be conserved under the MSHCP, including 17% of the Domino series, 32% of the Traver series, and 74% of the Willows series. Of the conserved soils in the Traver-Domino-Willows association, 19% are comprised of the Domino series, 31% of the Traver series, and 50% of the Willows series.

3.5 MSHCP Conservation Area Patch Size, Shape and Edge Effects

Size, shape, and spatial character are crucial factors integral to the long-term health and function of a biological reserve. A fundamental concept of conservation biology derived from island biogeography theory (MacArthur and Wilson 1967) is that patch or reserve size is important because larger reserves generally encompass a greater contiguous portion of the landscape and include a larger variety of Habitats and ecological niches than smaller reserves. Large reserves also provide greater protection for species against catastrophic events (*e.g.,* fires, flooding, and other human induced environmental changes) by including areas less likely to be affected by these events. The unaffected areas also may provide temporary refuge for species that can later colonize the affected area (*e.g.,* gnatcatchers eventually colonize burned coastal sage scrub as long at it does not type-convert to annual grassland).

While in theory large reserves usually are considered superior to smaller "satellite" reserves, several smaller reserves cumulatively may contain higher biological diversity by efficiently preserving nodes of Vegetation Communities or plant and wildlife species with limited distributions (*e.g.,* narrow endemics). Also, several smaller reserves may provide a hedge against catastrophic events that can devastate a single, large reserve. In conservation biology theory, this is known as the "single large or several small" reserves (SLOSS) tradeoff. In practice, reserves often must include both small and large reserve areas in order to preserve the greatest number and diversity of Vegetation Communities, Habitats and species.