

METHODS AND MATERIALS FOR
RESERVE DESIGN CRITERIA ◆ JURUPA AREA PLAN
(Preliminary Draft – Subject to Change)

This section describes the methods and materials used for reserve design for the Jurupa Area Plan. The approach primarily is map-based and incorporates available maps and databases, as described below. Anecdotal information from the habitat assessment workshops and communications with the wildlife agencies regarding biological issues, conservation priorities and specific project information are important components of the methodology. The following description of the reserve design methods is intended to provide the reader with the information necessary to understand and independently reconstruct the reserve design process.

➤ Target Acreages

As described in Section 3.1 of this document, as part of the MSHCP planning process, rough conservation acreage estimates were developed. As part of those rough acreage estimates, a target acreage of 510,000 acres was established for conservation within the 1.26 million-acre MSHCP study area comprised of approximately 357,000 acres of existing public/quasi-public lands and 153,000 acres of new conservation on private lands. In conjunction with development of rough acreage estimates, target conservation acreages were also established for Area Plan areas and cities within the MSHCP study area. For the Jurupa Area Plan, the total target conservation acreage was 6,300 to 6,390 acres, comprised of approximately 3,560 acres of existing public/quasi-public lands and 2,740 to 2,830 acres of new conservation on private lands. These target acreages were used in development of the criteria-based conservation plan for the Jurupa Area Plan.

➤ Identify Preliminary Planning Species

Several wildlife and plant species were identified to provide guidelines for reserve design. Listed species known from the Plan Area were the highest priority, with reserve design issues species such as Bell's sage sparrow (requires large patches of undisturbed habitat) and bobcat (wildlife corridors) also as high priority. The following species were chosen to provide reserve design guidance:

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- Bell's sage sparrow (requires large patches of undisturbed habitat)
- Delhi sands flower-loving fly (listed invertebrate tied to Delhi sands)
- California gnatcatcher (need to conserve core populations/patches)
- loggerhead shrike (generalist, but declining)
- Cooper's hawk (requires riparian and woodland habitats)
- least Bell's vireo (requires riparian habitat)
- southwestern willow flycatcher (requires riparian habitat)
- sharp-shinned hawk (wintering migrant)
- San Bernardino kangaroo rat (listed mammal)
- bobcat (wildlife corridors)
- Santa Ana River woolly-star (listed plant species tied to alluvial fan scrub)
- many-stemmed dudleya (listed plant species tied to clay soils)

➤ Identify Key Biological Issues/Areas

Since the MSHCP planning process began in spring of 1999, information regarding biological resources and land planning issues has become available through the species and habitat assessment workshops, the MSHCP sensitive species database, and meetings with the wildlife agencies. The following resource issues, in no particular order of priority, were identified for the Jurupa Area Plan:

1. Conservation of existing wetlands and wetlands functions and values in the Jurupa Area Plan portion of the Santa Ana River, with a focus on conserving existing habitats in the river.
2. Conservation of alluvial fan sage scrub associated with the Santa Ana River to support key populations of Santa Ana woolly-star.
3. Conservation of clay soils to support key populations of many-stemmed dudleya, known to occur along the Jurupa Area Plan portion of the Santa Ana River.
4. Conserve known populations of least Bell's vireo and southwestern willow flycatcher along the Santa Ana River.

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5. Provide for and maintain a continuous linkage along the Santa Ana River from the northern boundary of the Area Plan to the western boundary.
 6. Conservation of Delhi sands soil series occurring within agricultural lands along the western and northeastern boundary of the Jurupa Area Plan to support known key populations of the Delhi sands flower-loving fly.
 7. Conserve large intact habitat blocks consisting of coastal sage scrub, chaparral and grasslands to support known locations of coastal California gnatcatcher.
 8. Conserve grassland and coastal sage scrub supporting known populations of San Bernardino kangaroo rat in the Jurupa Mountains.
 9. Conserve grasslands adjacent to sage scrub for foraging habitat for raptors.
- Identify General Reserve Configuration and Management Issues

The NCCP biological tenets for reserve design and other general design considerations also were incorporated:

1. Representativeness of Riverside Lowlands bioregion.
2. Representativeness of other habitats in subarea plan area.
3. Habitat contiguity
4. Large habitat blocks
5. Minimize edge effects
6. Consideration of "directional" influences such as migration/dispersal patterns, rain, wind, fire (Habitat Assessment Workshop)

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7. Special microhabitats (Habitat Assessment Workshop)
8. Minimum 1.5 mile dispersal patches for gnatcatchers (Habitat Assessment Workshop)
9. Patch sizes supporting 5-10 pairs of gnatcatchers is important (Habitat Assessment Workshop)
Ridgelines and riparian areas for movement of bobcats and mountain lions (Habitat Assessment Workshop)

➤ Map Resources

The following map resources were used in the design of the hardline reserve:

- Vegetation Map (3,000-scale)
- Selected planning species (3000-scale)
- Open Space, Trails and Critical Circulation Study (includes SP areas, roads and parcels)
- CSS Habitat Quality Map (3,000 scale)
- Conceptual conservation scenario (3,000 scale acetate)
- Land use plan (3,000 scale)
- DOQQs
- Parcel Map (3,000 scale acetate)
- Existing reserves, conservation banks, BLM lands, other public lands (3,000 scale acetate)
- Soils Map (Knecht 1971)
- Edge area map
- Delhi sands soils map (USFWS 2000)

➤ Methods

Drawing the hardline reserve generally involved the following steps:

1. Compile map/data sources.
2. Compile area plan biological issues based on preliminary mapping, criteria analyses, pers. communications with agencies.

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3. Rough sketch of reserve boundaries based on map data combined with identified key biological issues, without reserves, etc. Refine map based on other constraints and opportunities (still to be completed).
 - existing and planned land uses
 - parcel maps
 - existing conserved habitat
 - minimization of edge habitat

Following drawing of the conceptual hardline reserve, the reserve within the plan area was overlain with USGS quarter sections (i.e., 160-acre cells) and a spreadsheet matrix was created that included an arbitrary quadrat cell identification number, USGS section, USGS quarter section, and township and range such that each cell is an area in real space with a legal description, but without being tied to a specific county assessors legal parcel. Reserve criteria were written for each cell that provide an explicit description for conservation within each quarter section cell that would allow one to generally re-create the hardline reserve. For example, a criterion for a cell might be "conserve coastal sage scrub in north one-half of cell to provide uninterrupted habitat connections to cells to west, north and east." The criteria are written with the intent that the "naive observer" could re-create the reserve system.

➤ Results

As described under Methods, the conceptual hardline reserve assembled for the Jurupa Area Plan for analysis purposes was overlain with USGS quarter section cells and cell groupings. A map display was prepared depicting the cells and cell groupings as illustrated in *Figure ?*. Criteria were written for each cell or cell grouping to describe the anticipated conservation within each cell or cell grouping based on the conceptual hardline reserve. The criteria statements first describe the geographic configuration of a fraction or percent of a cell grouping anticipated to be conserved. A brief statement of the biological resources toward which conservation efforts in the particular cell or cell grouping should be directed is also provided. The criteria matrix for the Jurupa Area Plan is presented in *Table ?*. As noted in the footnote to the criteria matrix presented in *Table ?*, the criteria are based on the existing MSHCP vegetation map. It is understood that biological conditions are dynamic and will change. In cases where the vegetation description does not match existing conditions at the time of reserve assembly, the generalized geographic descriptions for each cell should take precedence to ensure that the overall reserve ultimately assembled conforms with the target acreage and generalized configuration analyzed in the MSHCP.

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To further guide long-term reserve assembly and monitoring efforts, the Jurupa Area Plan was divided into three subunits. Subunit boundaries are depicted on the cells and cell groupings map display (Figure ?). For each subunit, target conservation acreages have been established along with a description of the general conservation objectives for each subunit. The general conservation objectives are based on the planning species and biological issues for the Jurupa Area Plan presented in the Methods section. Target acreages and conservation objectives for the subunits within the Jurupa Area Plan are presented below.

Subunit 1: Santa Ana River - North

Target acreage range for new conservation
on private lands within subunit: 115 - 120

Cell included within subunit: 610, 617, 699 and 700.

Conservation objectives within subunit:

- Key planning species within this subunit include the following:
 - ! loggerhead shrike
 - ! Cooper's hawk
 - ! southwestern willow flycatcher
 - ! sharp-shinned hawk
 - ! least Bell's vireo
 - ! Santa Ana River woolly-star
 - ! many-stemmed dudleya

- Important biological issues within this subunit include:
 - ! Conservation of existing wetlands and wetlands functions and values in the Jurupa Area Plan portion of the Santa Ana River, with a focus on conserving existing habitats in the river;
 - ! Conservation of alluvial fan sage scrub associated with the Santa Ana River to support key populations of Santa Ana woolly-star;
 - ! Conservation of clay soils to support key populations of many-stemmed dudleya, known to occur along the Jurupa Area Plan portion of the Santa Ana River;
 - ! Conserve known populations of least Bell's vireo and southwestern willow flycatcher along the Santa Ana River; and

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- ! Provide for and maintain a continuous linkage along the Santa Ana River from the northern boundary of the Area Plan to the western boundary.

Subunit 2: Jurupa Mountains

Target acreage range for new conservation on private lands within subunit:

2,160 - 2,230

Cell groups included within subunit:

A, B, C and D.

Cells included within subunit:

10, 42, 43, 11, 14, 16, 40, 44, and 50.

Conservation objectives within subunit:

- Key planning species within this subunit include the following:

- ! San Bernardino kangaroo rat
- ! bobcat
- ! Bell's sage sparrow
- ! California gnatcatcher
- ! loggerhead shrike
- ! Cooper's hawk
- ! sharp-shinned hawk

- Important biological issues within this subunit include:

- ! Conserve large intact habitat blocks consisting of coastal sage scrub, chaparral and grasslands to support known locations of coastal California gnatcatcher;
- ! Conserve grassland and coastal sage scrub supporting known populations of San Bernardino kangaroo rat in the Jurupa Mountains;
- ! Conserve grasslands adjacent to sage scrub for foraging habitat for raptors.

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Subunit 3: Delhi Sands Area

Target acreage range for new conservation
on private lands within subunit: 460 - 470

Cells included within subunit: 2, 21, 22, 35, 55, 68, 118, 168, and 252

Conservation objectives within subunit:

- Key planning species within this subunit include the following:
 - ! Delhi sands flower-loving fly

- Important biological issues within this subunit include:
 - ! Conservation of Delhi sands soil series occurring within agricultural lands along the western and northeastern boundary of the Jurupa Area Plan to support known key populations of the Delhi sands flower-loving fly.

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CELL GROUP	QUADRAT NUMBER	TOWNSHIP AND RANGE	USGS SECTION	QUARTER SECTION	CRITERIA
Subunit 1: Santa Ana River - North					
	610	T2S-R6W	29	SE	Conserve southeast one-fourth of cell. Focus conservation on riparian scrub/woodlands/forests and adjacent uplands intermixed with agricultural lands. Provide habitat connectivity to riparian habitat to the south in cell #700 and preserve east-west connectivity between existing public reserves to the east and cell #699 to the west.
	617	T2S-R6W	25	SW	Conserve 6% of the southwest corner of the northeast section of cell. Focus conservation on riparian scrub/woodlands/forests. Provide habitat connection between existing reserves to the east and west in the Santa Ana River.
	699	T2S-R6W	32	NW	Conserve north one-half of cell less the northeastern one-sixteenth corner and northwestern one-tenth of cell. Focus conservation on riparian scrub/woodlands/forests and adjacent uplands intermixed with agricultural lands north side of the Santa Ana River.
	700	T2S-R6W	32	NE	Conserve northern most one-fourth of cell. Focus conservation on riparian scrub/woodlands/forests and adjacent uplands intermixed with agricultural lands on north side of the Santa Ana River. Provide habitat connectivity to riparian habitat to the north in cell #610 and preserve east-west connectivity between existing public reserves to the east and cell #699 to the west.
Subunit 2: Jurupa Mountains					
A	12	T2S-R6W	03	NE	Conserve north one-half of cell grouping and one-fourth of east-central portion of cell grouping. Focus conservation on coastal sage scrub and grasslands habitats to preserve core habitat in Jurupa Mountains.
	39	T2S-R6W	03	SE	
B	17	T2S-R6W	01	NW	Conserve north two-thirds of cell grouping. Focus conservation on coastal sage scrub and chaparral habitats to preserve core habitat in Jurupa Mountains.
	45	T2S-R6W	01	SW	
	76	T2S-R6W	12	NW	
C	15	T2S-R5W	06	NW	Conserve north two-thirds of cell grouping. Focus conservation on coastal sage scrub and grasslands habitats to preserve core habitat in Jurupa Mountains.
	18	T2S-R6W	01	NE	
	46	T2S-R6W	01	SE	
	47	T2S-R5W	06	SW	
	75	T2S-R6W	12	NE	
	78	T2S-R5W	07	NW	

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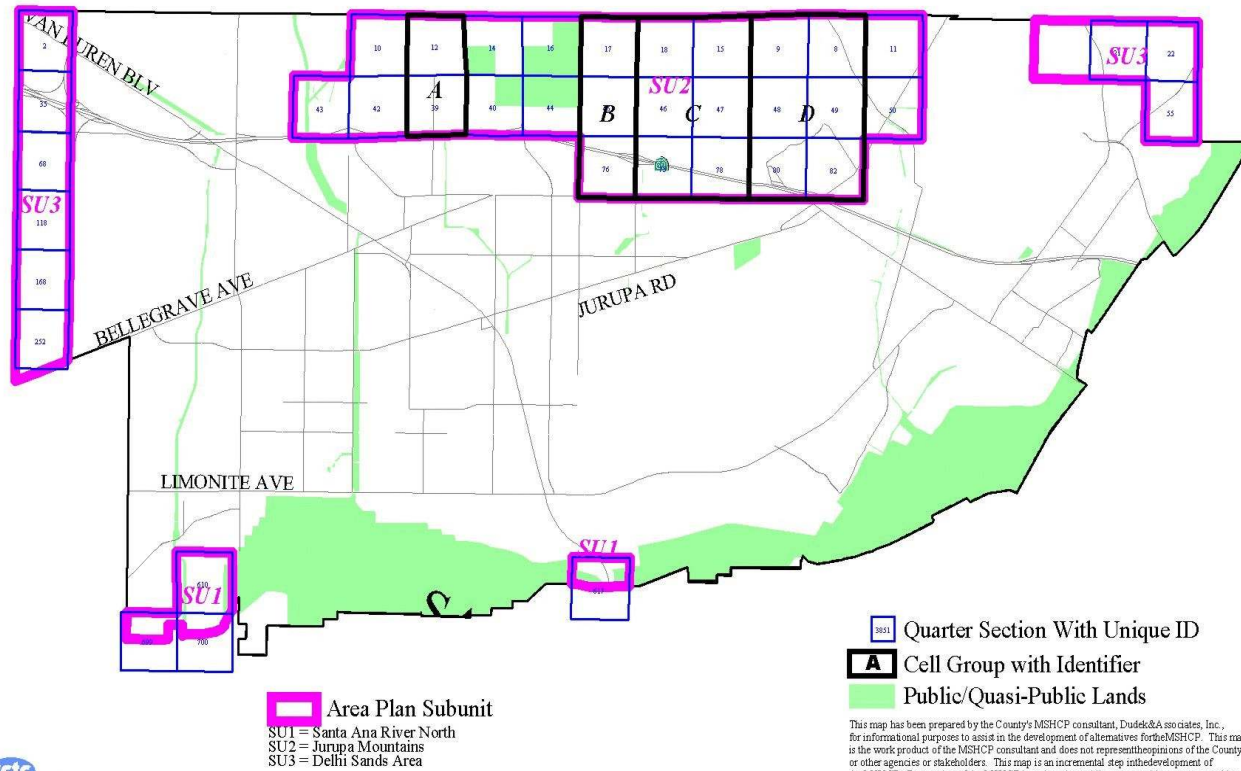
CELL GROUP	QUADRAT NUMBER	TOWNSHIP AND RANGE	USGS SECTION	QUARTER SECTION	CRITERIA
D	8	T2S-R5W	05	NW	Conserve west one-half and northeast one-fourth of cell grouping. Focus conservation on coastal sage scrub, grasslands and water habitats intermixed with agricultural habitats to preserve core habitat in Jurupa Mountains.
	9	T2S-R5W	06	NE	
	48	T2S-R5W	06	SE	
	49	T2S-R5W	05	SW	
	80	T2S-R5W	07	NE	
	82	T2S-R5W	08	NW	
	10	T2S-R6W	03	NW	Conserve southeast two-thirds of cell. Focus conservation on coastal sage scrub and grasslands habitats to preserve core habitat in Jurupa Mountains.
	42	T2S-R6W	03	SW	Conserve northeast three-fourths of cell. Focus conservation on coastal sage scrub and grasslands habitats to preserve core habitat in Jurupa Mountains.
	43	T2S-R6W	04	SE	Conserve east-central 6% of cell. Focus conservation on coastal sage scrub to preserve core habitat in Jurupa Mountains.
	11	T2S-R5W	05	NE	Conserve north one-half of cell grouping. Focus conservation on coastal sage scrub to preserve core habitat in Jurupa Mountains.
	14	T2S-R6W	02	NW	Conserve north one-half and southeast one-fourth of cell. Focus conservation on coastal sage scrub, chaparral and grasslands to preserve core habitat in Jurupa Mountains.
	16	T2S-R6W	02	NE	Conserve northeast one-fourth of cell. Focus conservation on coastal sage scrub and chaparral to preserve core habitat in Jurupa Mountains.
	40	T2S-R6W	02	SW	Conserve northwest one-fourth of cell and north one-half of southeast quarter of cell. Focus conservation on coastal sage scrub and grasslands to preserve core habitat in Jurupa Mountains.
	44	T2S-R6W	02	SE	Conserve southeast one-fourth of cell. Focus conservation on coastal sage scrub and grasslands to preserve core habitat in Jurupa Mountains.
	50	T2S-R5W	05	SE	Conserve 6% of the west-central portion of cell. Focus of conservation shall be grasslands in west-central portion of cell contiguous with grasslands in cell #49 to the west.
Subunit 3: Delhi Sands Area					
	2	T2S-R6W	06	NW	Conserve southern two-thirds of cell south of Van Buren Blvd. Focus conservation on Delhi series soil co-occurring on agricultural lands for the recovery of the Delhi Sands flower-loving fly.
	21	T2S-R5W	03	NE	Conserve northern most one-fourth of cell. Focus conservation on Delhi series soil co-occurring on agricultural lands for the recovery of the Delhi Sands flower-loving fly.
	22	T2S-R5W	02	NW	Conserve eastern most one-fourth of cell less the northeastern one-eighth of cell. Focus conservation on Delhi series soil co-occurring on agricultural




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CELL GROUP	QUADRAT NUMBER	TOWNSHIP AND RANGE	USGS SECTION	QUARTER SECTION	CRITERIA
					lands for the recovery of the Delhi Sands flower-loving fly.
	35	T2S-R6W	06	SW	Conserve north one-third of cell north of SR-60 and southwest two-thirds of cell south of SR-60. Focus conservation on Delhi series soil co-occurring on agricultural lands for the recovery of the Delhi Sands flower-loving fly.
	55	T2S-R5W	02	SW	Conserve eastern most one-fourth of cell. Focus conservation on Delhi series soil co-occurring on agricultural lands for the recovery of the Delhi Sands flower-loving fly.
	68	T2S-R6W	07	NW	Conserve southeast one-sixth and northwest one-eighteenth corner of cell. Focus conservation on Delhi series soil co-occurring on agricultural lands for the recovery of the Delhi Sands flower-loving fly.
	118	T2S-R6W	07	SW	Conserve cell the northeast, southeast and southwest quarters of cell. Focus conservation on Delhi series soil co-occurring on agricultural lands for the recovery of the Delhi Sands flower-loving fly.
	168	T2S-R6W	18	NW	Conserve north one-half of cell and southeast one-eighth of cell. Focus conservation on Delhi series soil co-occurring on agricultural lands for the recovery of the Delhi Sands flower-loving fly.
	252	T2S-R6W	18	SW	Conserve northeastern 3% of cell. Focus conservation on Delhi series soil co-occurring on agricultural lands for the recovery of the Delhi Sands flower-loving fly.

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-  Quarter Section With Unique ID
-  Cell Group with Identifier
-  Public/Quasi-Public Lands

 Area Plan Subunit
 SU1 = Santa Ana River North
 SU2 = Jurupa Mountains
 SU3 = Delhi Sands Area

This map has been prepared by the County's MSHCP consultant, Dudek&Associates, Inc., for informational purposes to assist in the development of alternatives for the MSHCP. This map is the work product of the MSHCP consultant and does not represent the opinions of the County or other agencies or stakeholders. This map is an incremental step in the development of the MSHCP. Preparation of the MSHCP is an iterative public process with many opportunities for public review.



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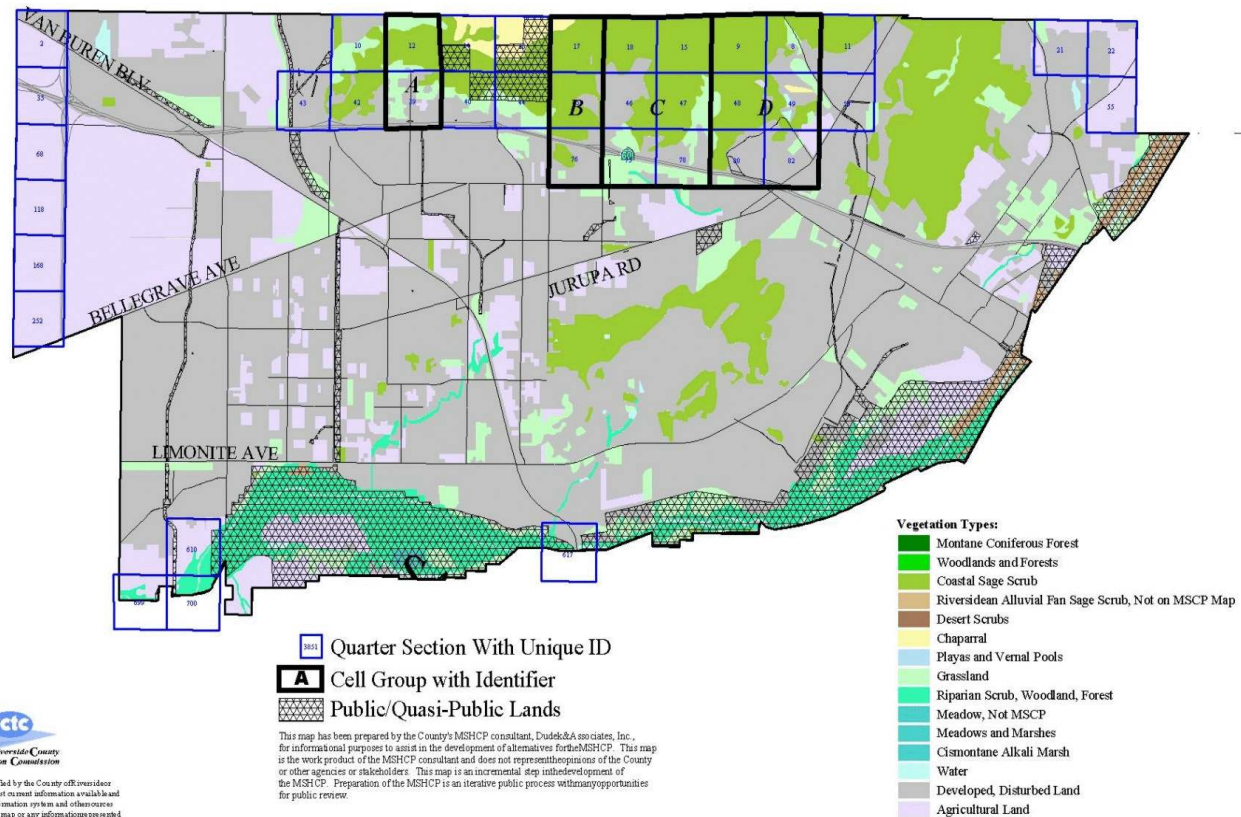
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Jurupa Area Plan With Quarter Sections, Cell Groups & Subunits Keyed to MSHCP Criteria



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Jurupa Area Plan With Vegetation, Quarter Sections and Cell Groups Keyed to MSHCP Criteria

