Appendix H

Spatial Summary for Oxydemeton-methyl Uses

Use List

The following use list is derived from label use information. It is used as a basis for the spatial analysis for oxydemeton-methyl uses.

Table 1 Use list from labels

Category	Use
Cultivated Crops	Lima beans, sugar beets, broccoli, broccoli raab, Brussels sprouts, cabbage, cauliflower, clover grown for seed, sweet corn, cotton, cucurbits (cucumbers, pumpkins, summer squash, winter squash, watermelons, musk melons [cantaloupes], other melons, head lettuce, Spanish onions, peppermint, spearmint, safflower, ornamental plants grown for cut flowers
Orchards and vineyards	Non-bearing fruit trees (apples, apricots, cherries, crab apples, nectarines, peaches, plums, prunes, quinces), non-bearing grapes, walnuts
Pasture/Hay	Alfalfa grown for seed

Terrestrial Use Determination

Sources and Methods

Base mapping layers for the terrestrial analysis component were obtained from the National Land-cover Dataset (NLCD 2001) for the majority of land use types and the California GAP data (6/98) for the orchards and vineyard uses. The NLCD is a recently released national land use dataset and the GAP is from the Biogeography Lab from UCLA-Santa Barbara. These raster files were converted to vector and used in the analysis. The rights-of-way landuse layer was derived from TeleAtlas (2006) for roads and rail, and the U.S. Department of Transportation's National Pipeline Dataset (1999). Table 2 shows the land-cover sources used.

Table 2 Land cover data sources.

Land Cover Data Sources			
Layer name	**Base source**	**Description**	**non-NASS**
Cultivated Crops	NLCD	Grid code 82: Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation. This class also includes all land being actively tilled.	No
Developed, High Intensity	NLCD	Grid code 24: Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to100 percent of the total cover.	Yes
Developed, Low Intensity	NLCD	Grid code 22: Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49 percent of total	Yes

Land Cover Data Sources			
Layer name	**Base source**	**Description**	**non-NASS**
		cover. These areas most commonly include single-family housing units.	
Developed, Medium Intensity	NLCD	Grid code 23: Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79 percent of the total cover. These areas most commonly include single-family housing units.	Yes
Developed, Open Space	NLCD	Grid code 21: Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.	Yes
Forest	NLCD	Grid codes 41,42,43: Deciduous, evergreen and mixed. Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover.	Yes
Open Water	NLCD	Grid code 11: All areas of open water, generally with less than 25% cover of vegetation or soil.	Yes
Orchards and vineyards	CA GAP	Grid codes 11210, 11211 and 11212. This is the only CA GAP reference.	No
Pasture/Hay	NLCD	Grid codes 81: Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.	No
Wetlands	NLCD	Grid codes 90, 95: Woody wetlands and emergent herbaceous.	Yes
Rights-of-Way	US DOT; TeleAtlas	A derived class, using road, rail, and pipeline coverages.	Yes
Turf	NLCD	A derived NLCD class based on developed classes and the impervious surface layer with corrections applied.	Yes

U.S. Department of Agriculture's National Agriculture Statistics Service (NASS) census dataset, 2002 was used to determine whether a crop was grown in a particular county. This census dataset provides survey information over five years on agricultural practices and is used mainly for cultivated or agriculture crops. Chemical labeled uses were matched to NASS uses; an agriculture use match would result in a mapped area for one or more counties. For uses that are not agricultural, the use is assumed to occur in every county where that particular land-cover occurs within California (*i.e.* a 'forestry' labeled use is assumed to potentially occur in all California counties where NLCD indicates there is forest land-cover).

The 'Initial Area of Concern' represents the use type and its occurrence in the NASS or NLCD datasets. These are the areas where the pesticide has potential to be applied. The 'Action Area' represents the 'Initial Area of Concern' plus a buffer distance. There may not always be a buffer distance in which case the 'Action Area' is the same as the 'Initial Area of Concern'. The overlap of the 'Action Area' with CRLF habitat areas is named 'Overlapping Area' and is the target of spatial analysis. The ratio of Overlapping Area to CRLF habitat area is reported for each of eight Recovery Units (RU1 to RU8).

There are three types of CRLF habitat areas considered in this assessment: Critical Habitat (CH); Core Areas; and California Natural Diversity Database (CNDDB) occurrence sections (EPA Region 9). Critical habitat areas were obtained from the U.S. Fish and Wildlife Service's (USFWS) final designation of critical habitat for the CRLF (USFWS 2006). Core areas were obtained from USFWS's Recovery Plan for the CRLF (USFWS 2002). The occurrence sections represent an EPA-derived subset of occurrences noted in the CNDDB. They are generalized by the Meridian Range and Township Section (MTRS) one square mile units so that individual habitat areas are obfuscated. As such, only occurrence section counts are provided and not the area potentially affected.

Spatially Determined Analysis for Terrestrial Uses

Table 3 Terrestrial spatial summary results by recovery unit for all use which includes cultivated and orchard/vineyard landcover classes.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Initial Area of Concern - all uses (no buffer, km^2)	3	56	16	36	126	333	375	326	**1271**
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	2	0	8	71	140	44	58	8	331

Table 4 Terrestrial spatial summary results by recovery unit for all uses with a 3460m buffer.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Action Area (Initial area of concern plus buffer, km^2)	1091	607	321	1730	2289	2242	2610	1185	**12075**
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	3	0	32	225	249	84	80	28	701

Table 4 Terrestrial spatial summary results by recovery unit for broccoli, cauliflower, Brussels sprouts, and lettuce uses (Cole Crops) buffered to 3460 meters.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Action Area (Initial area of concern plus buffer, km^2)	312	591	316	1725	2275	2228	2566	947	**10960**
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929

# Occurrence sections affected	0	0	23	194	225	56	74	5	572

Habitat Area Overlap for Oxydemeton-methyl Uses

Habitat Area includes Core and Critical Habitat areas. Sections are not included in the calculations.

All Uses with a 0 meter buffer

Recovery Unit 1 3,654 total area (sq km)

	Habitat Area	Use Overlap %
Amador	1.5	0.0%
Butte	0.7	0.0%
Calaveras	0.2	0.0%
El Dorado	0.8	0.0%
Mariposa	0.0	0.0%
Plumas	0.0	0.0%
Tuolumne	0.0	0.0%

Total area for RU 1: 3 0.1%

Recovery Unit 2 2,742 total area (sq km)

	Habitat Area	Use Overlap %
Lake	51.8	1.9%
Napa	2.6	0.1%
Shasta	0.8	0.0%
Tehama	0.2	0.0%
Yolo	0.8	0.0%

Total area for RU 2: 56 2.0%

Recovery Unit 3 1,320 total area (sq km)

	Habitat Area	Use Overlap %
Napa	5.9	0.4%
Solano	0.0	0.0%
Sonoma	10.3	0.8%

Total area for RU 3: 16 1.2%

Recovery Unit 4 3,278 total area (sq km)

	Habitat Area	Use Overlap %
Alameda	29.3	0.9%
Contra Costa	4.3	0.1%
San Joaquin	0.2	0.0%
San Mateo	1.2	0.0%
Santa Clara	0.8	0.0%

Total area for RU 4: 36 1.1%

Recovery Unit 5 3,647 total area (sq km)

	Habitat Area	Use Overlap %
Monterey	42.7	1.2%
San Luis Obispo	35.2	1.0%
San Mateo	17.0	0.5%
Santa Cruz	30.7	0.8%

Total area for RU 5: 126 3.4%

Recovery Unit 6 5,307 total area

	Habitat Area	Use Overlap %
Fresno	4.2	0.1%
Kern	0.2	0.0%
Merced	18.7	0.4%
Monterey	113.5	2.1%
San Benito	114.5	2.2%
San Luis Obispo	58.8	1.1%
Santa Clara	3.8	0.1%
Santa Cruz	19.6	0.4%

Total area for RU 6: 333 6.3%

Recovery Unit 7 4,916 total area

	Habitat Area	Use Overlap %
Los Angeles	0.0	0.0%
San Luis Obispo	36.4	0.7%
Santa Barbara	291.0	5.9%
Ventura	47.7	1.0%

Total area for RU 7: 375 7.6%

Recovery Unit 8 3,326 total area

	Habitat Area	Use Overlap %
Los Angeles	0.4	0.0%
Orange	0.4	0.0%
Riverside	101.8	3.1%
San Bernardino	0.1	0.0%
San Diego	223.1	6.7%

Total area for RU 8: 326 9.8%

All Uses with a 3460 meter buffer

Recovery Unit 1 3,654 total area (sq km)

	Habitat Area (sq km)	Use Overlap %
Amador	197.3	5.4%
Butte	46.8	1.3%
Calaveras	225.0	6.2%
El Dorado	502.7	13.8%
Mariposa	12.4	0.3%
Plumas	41.6	1.1%
Sacramento	20.1	0.5%
Tuolumne	42.6	1.2%
Yuba	3.2	0.1%

Total area for RU 1: 1,092 29.9%

Recovery Unit 2 2,742 total area (sq km)

	Habitat Area (sq km)	Use Overlap %
Lake	367.5	13.4%
Napa	72.1	2.6%
Shasta	61.5	2.2%
Tehama	26.7	1.0%
Yolo	79.6	2.9%

Total area for RU 2: 607 22.1%

Recovery Unit 3 1,320 total area (sq km)

	Habitat Area (sq km)	Use Overlap %
Marin	3.1	0.2%
Napa	138.2	10.5%
Solano	42.2	3.2%
Sonoma	137.5	10.4%

Total area for RU 3: 321 24.3%

Recovery Unit 4 3,278 total area (sq km)

	Habitat Area	Use Overlap %
Alameda	716.0	21.8%
Contra Costa	490.3	15.0%
San Joaquin	43.8	1.3%
San Mateo	223.8	6.8%
Santa Clara	255.8	7.8%

Total area for RU 4: 1,730 52.8%

Recovery Unit 5 3,647 total area (sq km)

	Habitat Area	Use Overlap %
Monterey	392.0	10.7%
San Luis Obispo	980.1	26.9%
San Mateo	457.5	12.5%
Santa Clara	1.9	0.1%
Santa Cruz	457.8	12.6%

Total area for RU 5: 2,289 62.8%

Recovery Unit 6 5,307 total area

	Habitat Area	Use Overlap %
Fresno	99.9	1.9%
Kern	51.2	1.0%
Merced	312.6	5.9%
Monterey	605.0	11.4%
San Benito	558.2	10.5%
San Luis Obispo	439.1	8.3%
Santa Clara	122.8	2.3%
Santa Cruz	54.0	1.0%

Total area for RU 6: 2,243 42.3%

Recovery Unit 7 4,916 total area

	Habitat Area	Use Overlap %
Los Angeles	42.2	0.9%
San Luis Obispo	103.9	2.1%
Santa Barbara	2,053.7	41.8%
Ventura	411.1	8.4%

Total area for RU 7: 2,611 53.1%

Recovery Unit 8 3,326 total area

	Habitat Area	Use Overlap %
Los Angeles	250.9	7.5%
Orange	42.7	1.3%
Riverside	189.4	5.7%
San Bernardino	72.8	2.2%
San Diego	601.6	18.1%
Ventura	27.2	0.8%

Total area for RU 8: 1,185 35.6%

Overlap analysis on Cole Crops with a 3460 meter buffer

Recovery Unit 1 **3,654 total sq km habitat area**

	Habitat Area (km^2)	Habitat Area Overlap %
Butte	10.4	0.3%
Calaveras	225.0	6.2%
El Dorado	0.8	0.0%
Mariposa	12.4	0.3%
Plumas	34.7	1.0%
Sacramento	15.7	0.4%
Tuolumne	9.6	0.3%
Yuba	3.2	0.1%
Total sq km for RU 1:	**312**	**8.5%**

Recovery Unit 2 **2,742 total sq km habitat area**

	Habitat Area (km^2)	Habitat Area Overlap %
Lake	361.1	13.2%
Napa	70.2	2.6%
Shasta	61.5	2.2%
Tehama	26.7	1.0%
Yolo	71.3	2.6%
Total sq km for RU 2:	**591**	**21.5%**

Recovery Unit 3 **1,320 total sq km habitat area**

	Habitat Area (km^2)	Habitat Area Overlap %
Marin	3.1	0.2%
Napa	133.2	10.1%
Solano	42.2	3.2%
Sonoma	137.5	10.4%
Total sq km for RU 3:	**316**	**23.9%**

Recovery Unit 4 **3,278 total sq km habitat area**

	Habitat Area (km^2)	Habitat Area Overlap %
Alameda	713.7	21.8%
Contra Costa	487.5	14.9%
San Joaquin	43.8	1.3%
San Mateo	223.8	6.8%
Santa Clara	255.8	7.8%
Total sq km for RU 4:	**1,725**	**52.6%**

Recovery Unit 5 **3,647 total sq km habitat area**

	Habitat Area (km^2)	Habitat Area Overlap %
Monterey	392.0	10.7%
San Luis Obispo	980.1	26.9%
San Mateo	456.7	12.5%
Santa Clara	1.9	0.1%
Santa Cruz	444.7	12.2%
Total sq km for RU 5:	**2,275**	**62.4%**

Recovery Unit 6 **5,307 total sq km habitat area**

	Habitat Area (km^2)	Habitat Area Overlap %

Fresno	85.4	1.6%
Kern	51.2	1.0%
Merced	312.2	5.9%
Monterey	605.0	11.4%
San Benito	558.2	10.5%
San Luis Obispo	439.0	8.3%
Santa Clara	122.8	2.3%
Santa Cruz	54.0	1.0%
Total sq km for RU 6:	**2,228**	**42.0%**

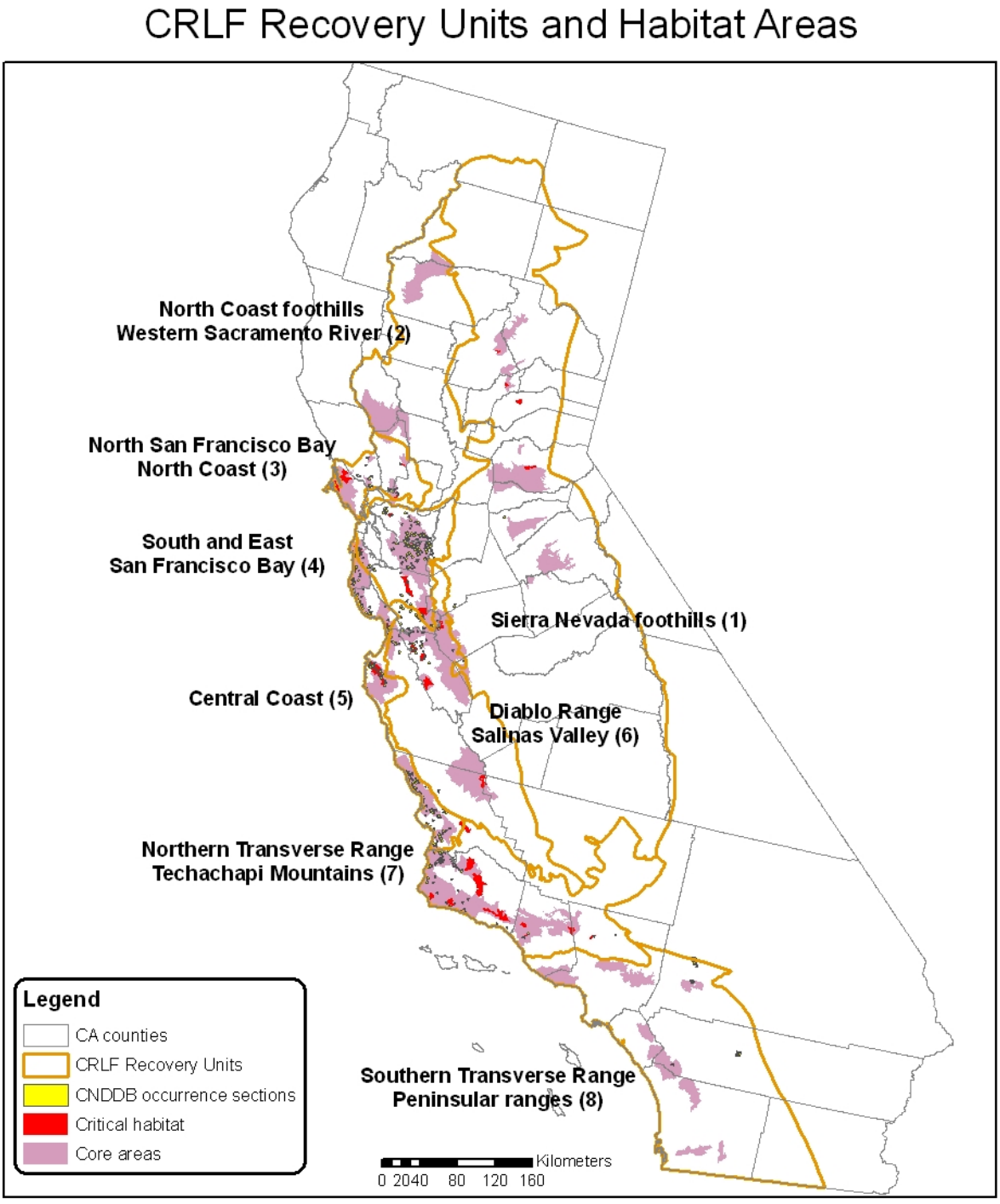
Recovery Unit 7 **4,916 total sq km habitat area**

	Habitat Area (km^2)	Habitat Area Overlap %
Los Angeles	4.8	0.1%
San Luis Obispo	103.9	2.1%
Santa Barbara	2,053.6	41.8%
Ventura	404.1	8.2%
Total sq km for RU 7:	**2,566**	**52.2%**

Recovery Unit 8 **3,326 total sq km habitat area**

	Habitat Area (km^2)	Habitat Area Overlap %
Los Angeles	51.2	1.5%
Orange	42.7	1.3%
Riverside	184.2	5.5%
San Bernardino	72.8	2.2%
San Diego	569.2	17.1%
Ventura	27.2	0.8%
Total sq km for RU 8:	**947**	**28.5%**

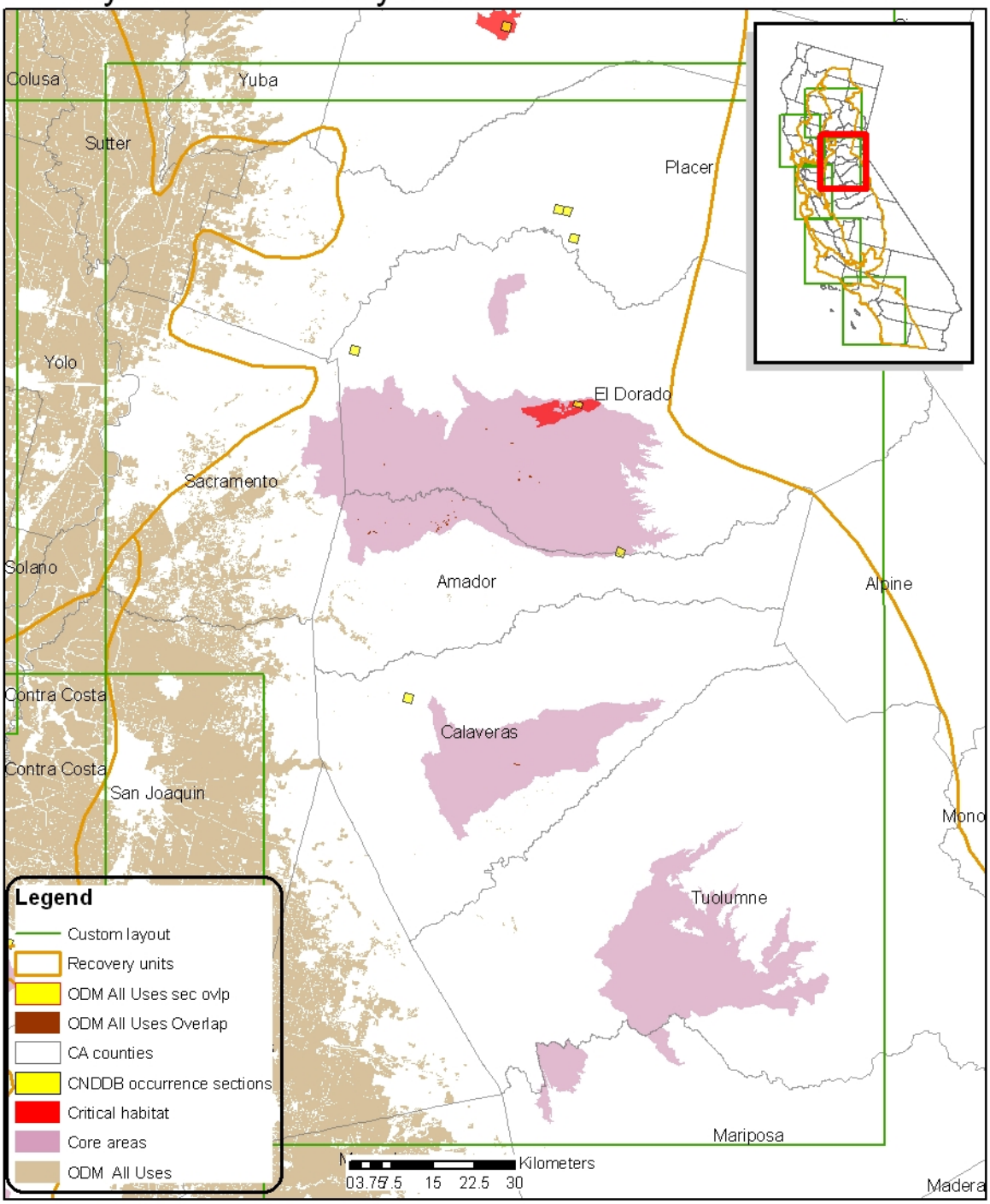
Reference Maps



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. June, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

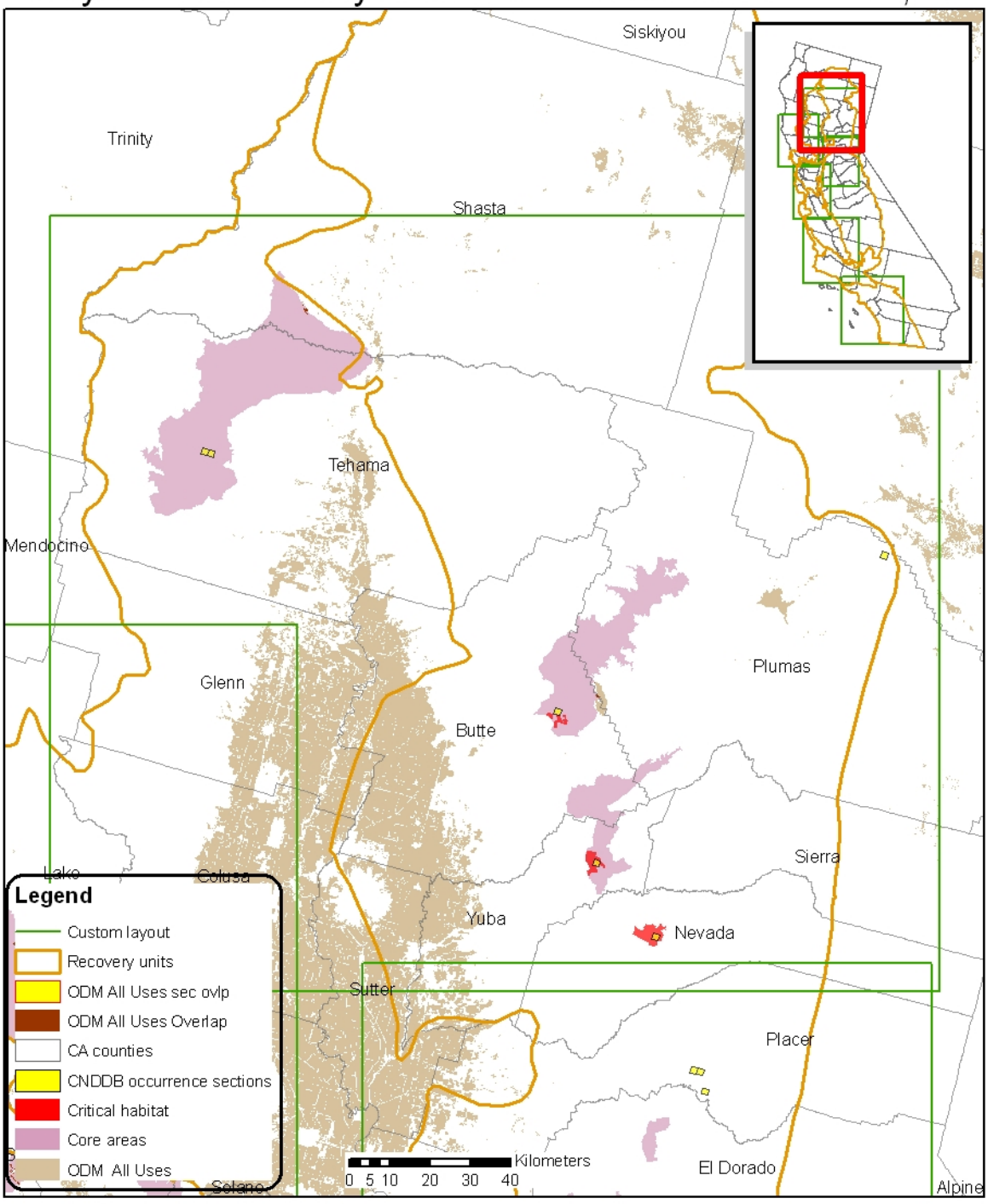
Oxydemeton-methyl Initial Area of Concern - RU 1



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

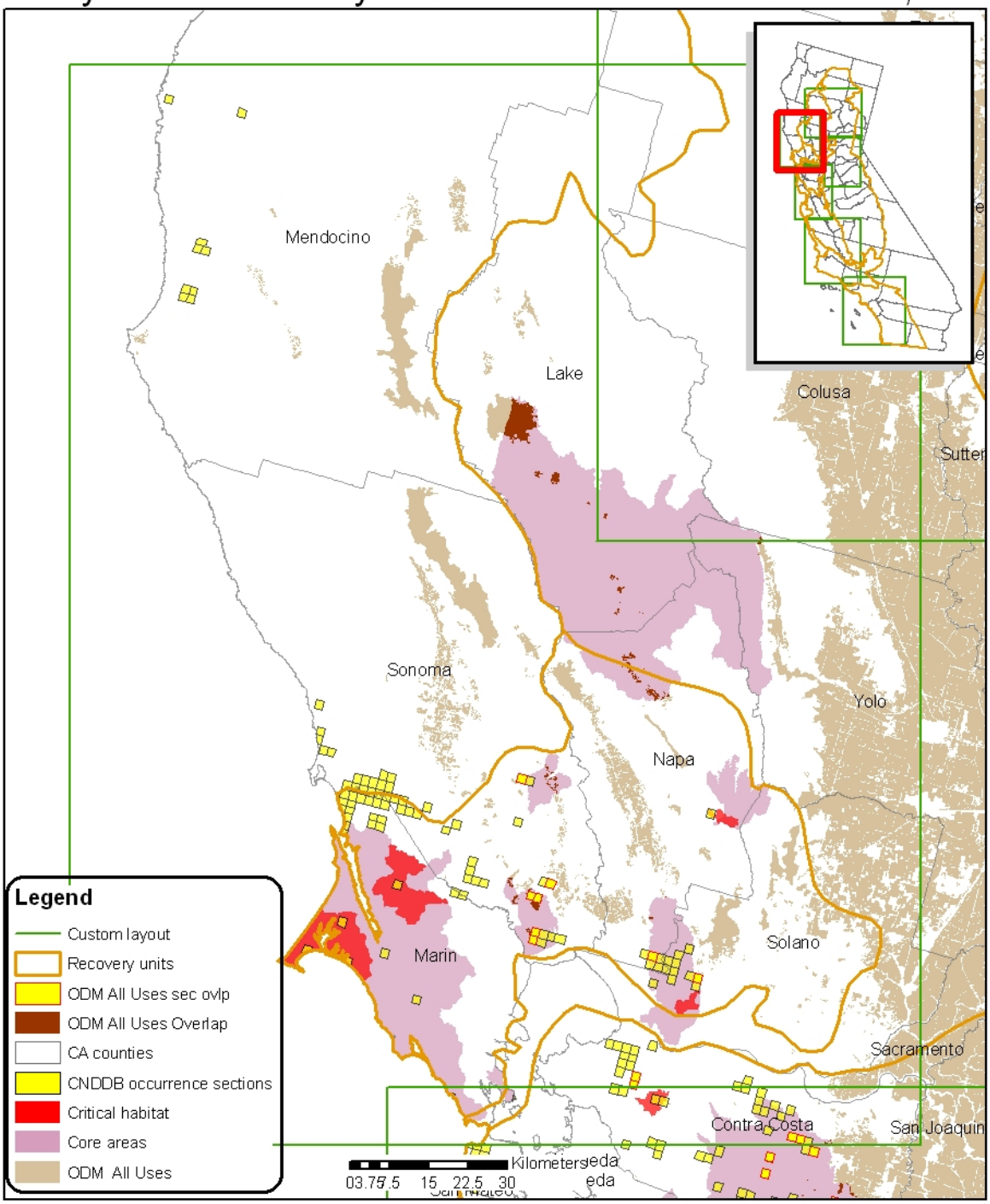
Oxydemeton-methyl Initial Area of Concern - RU 1, 2



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

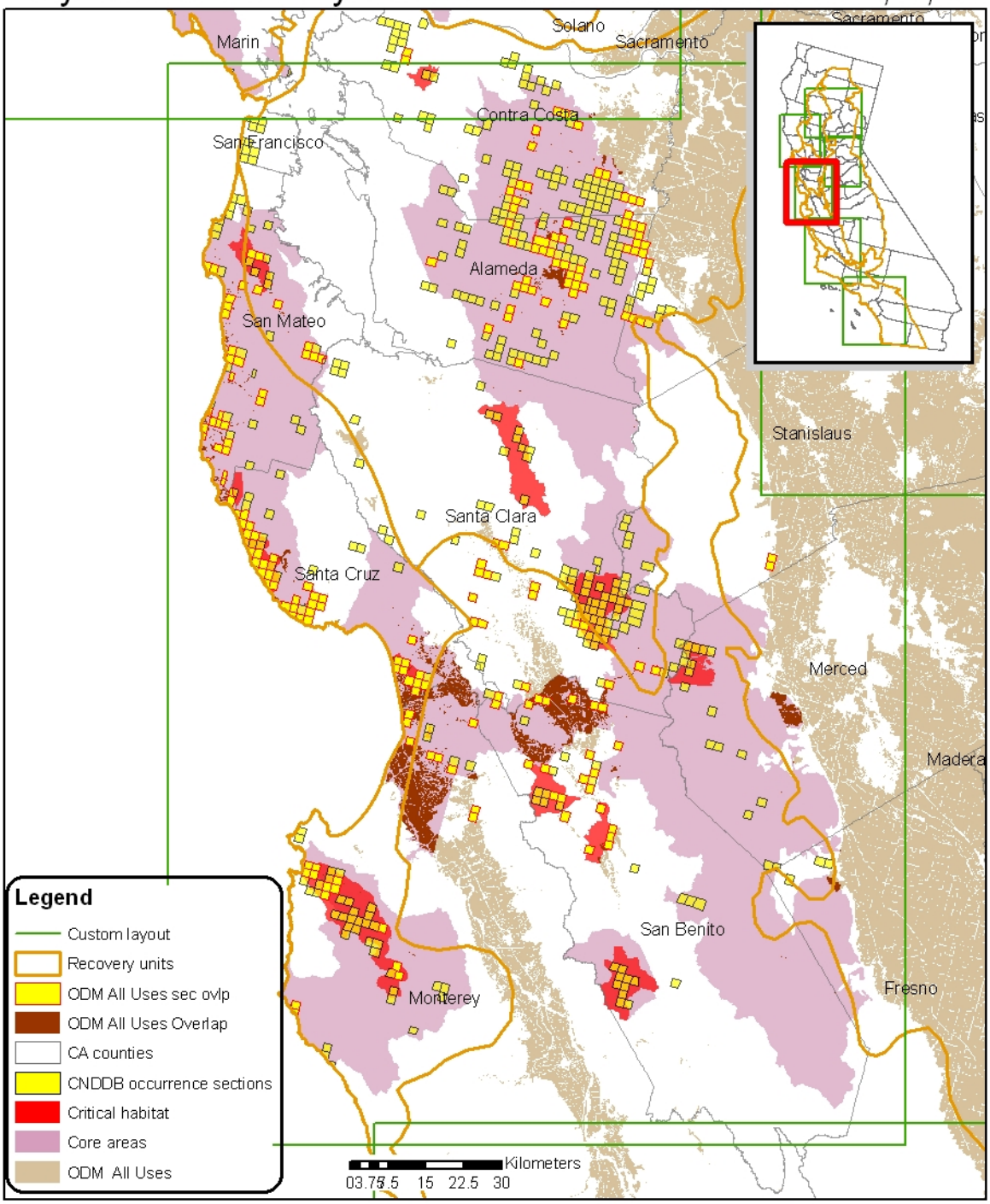
Oxydemeton-methyl Initial Area of Concern - RU 2, 3



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

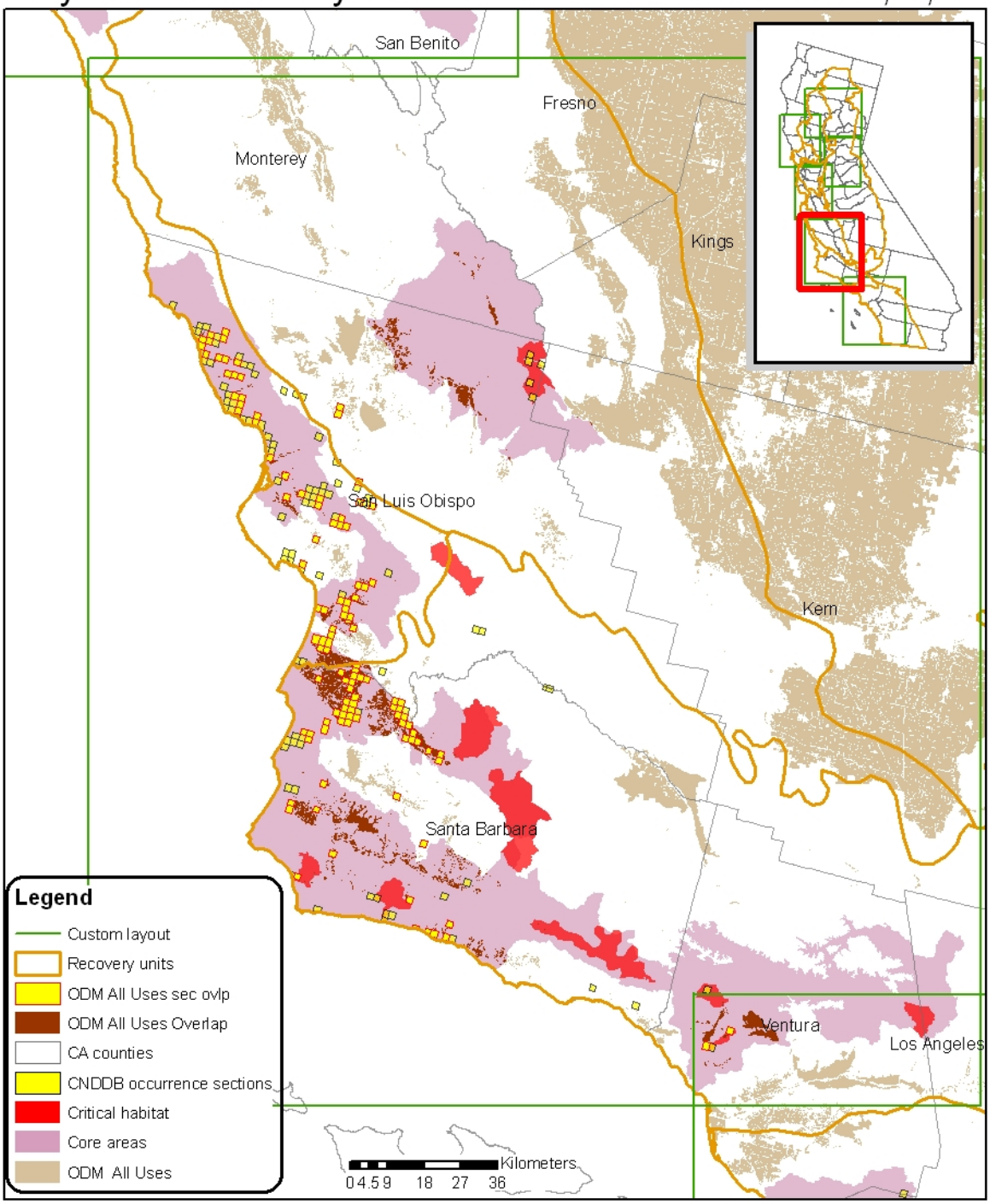
Oxydemeton-methyl Initial Area of Concern - RU 4, 5, 6



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

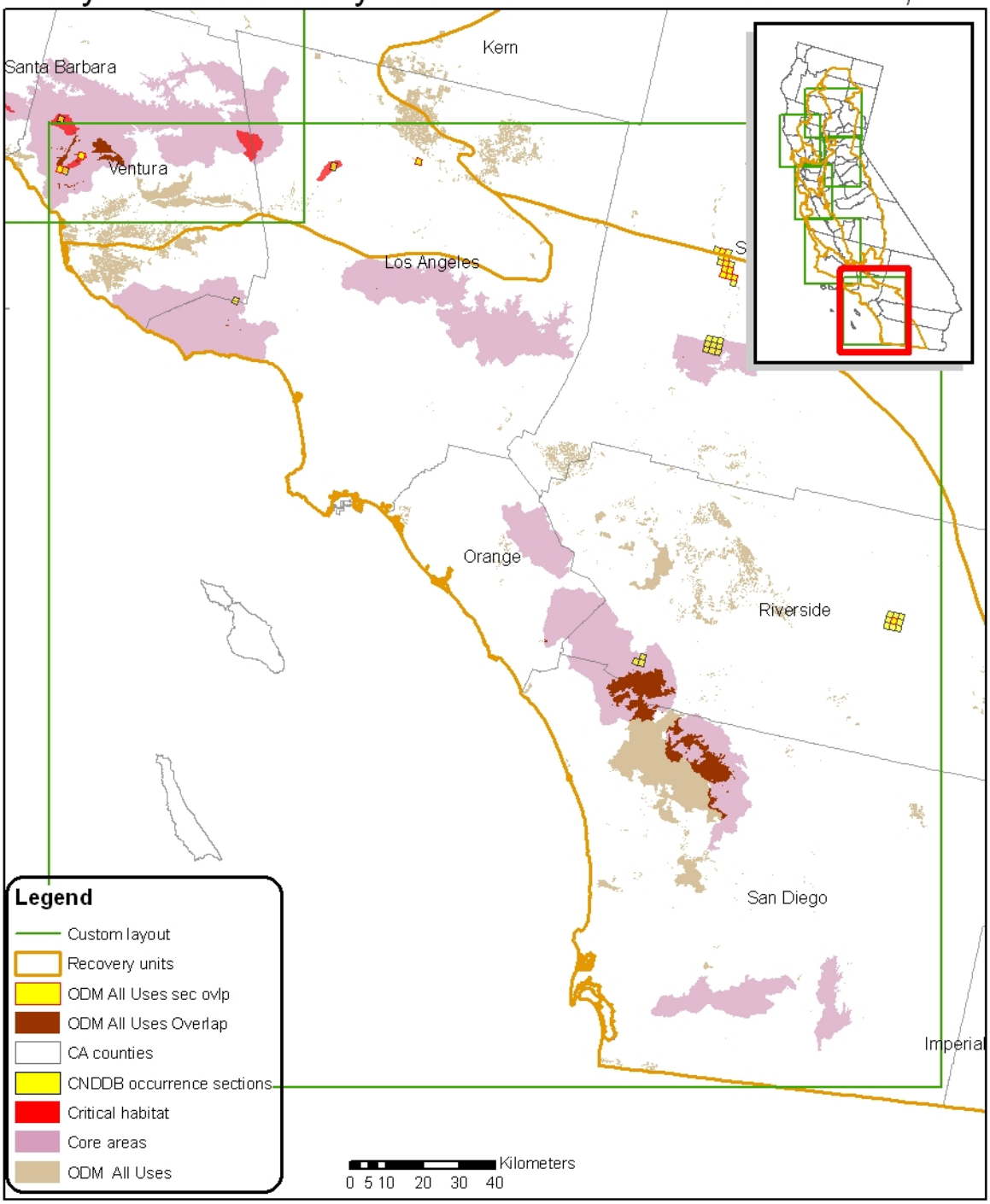
Oxydemeton-methyl Initial Area of Concern - RU 5, 6, 7



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

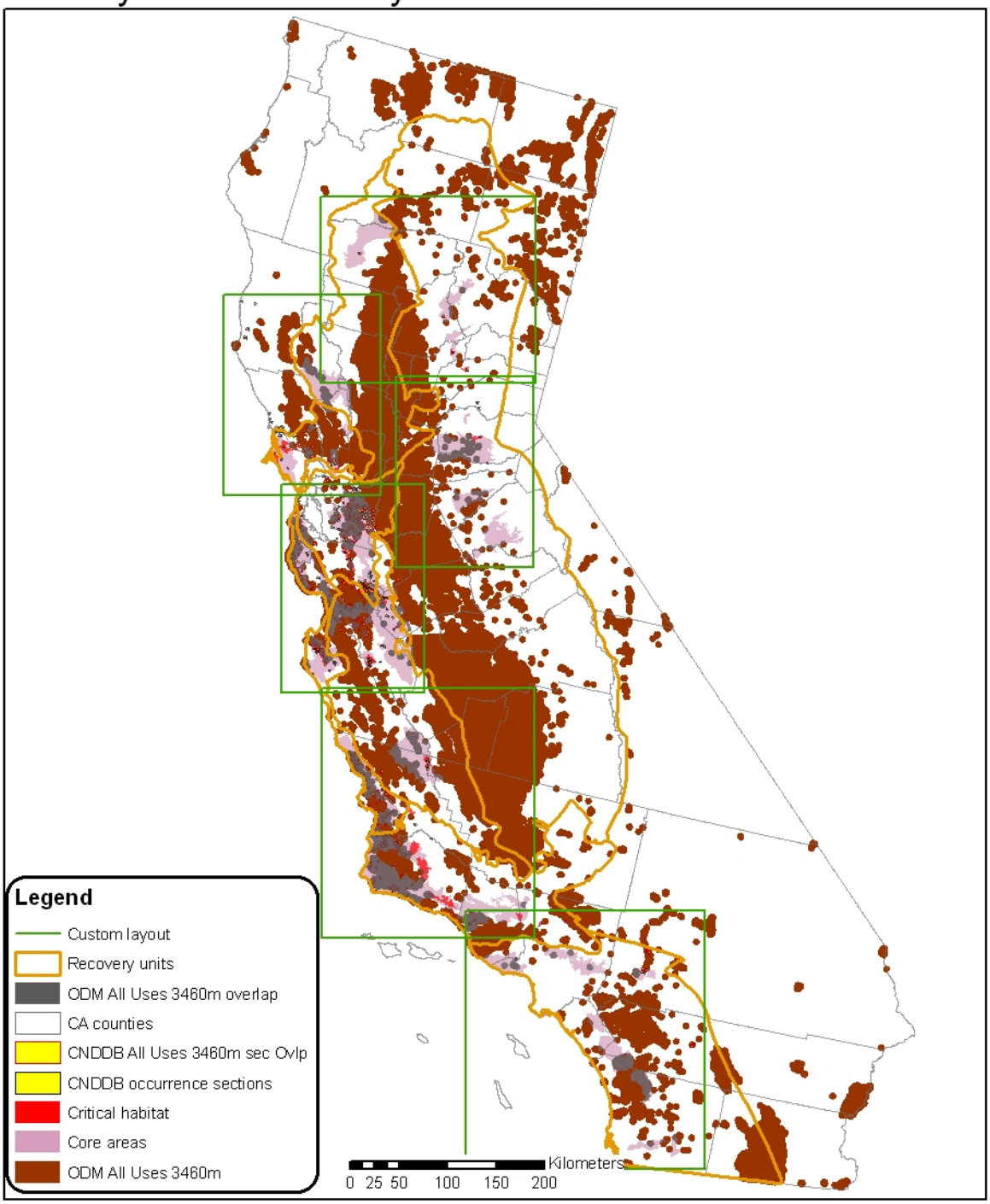
Oxydemeton-methyl Initial Area of Concern - RU 7, 8



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

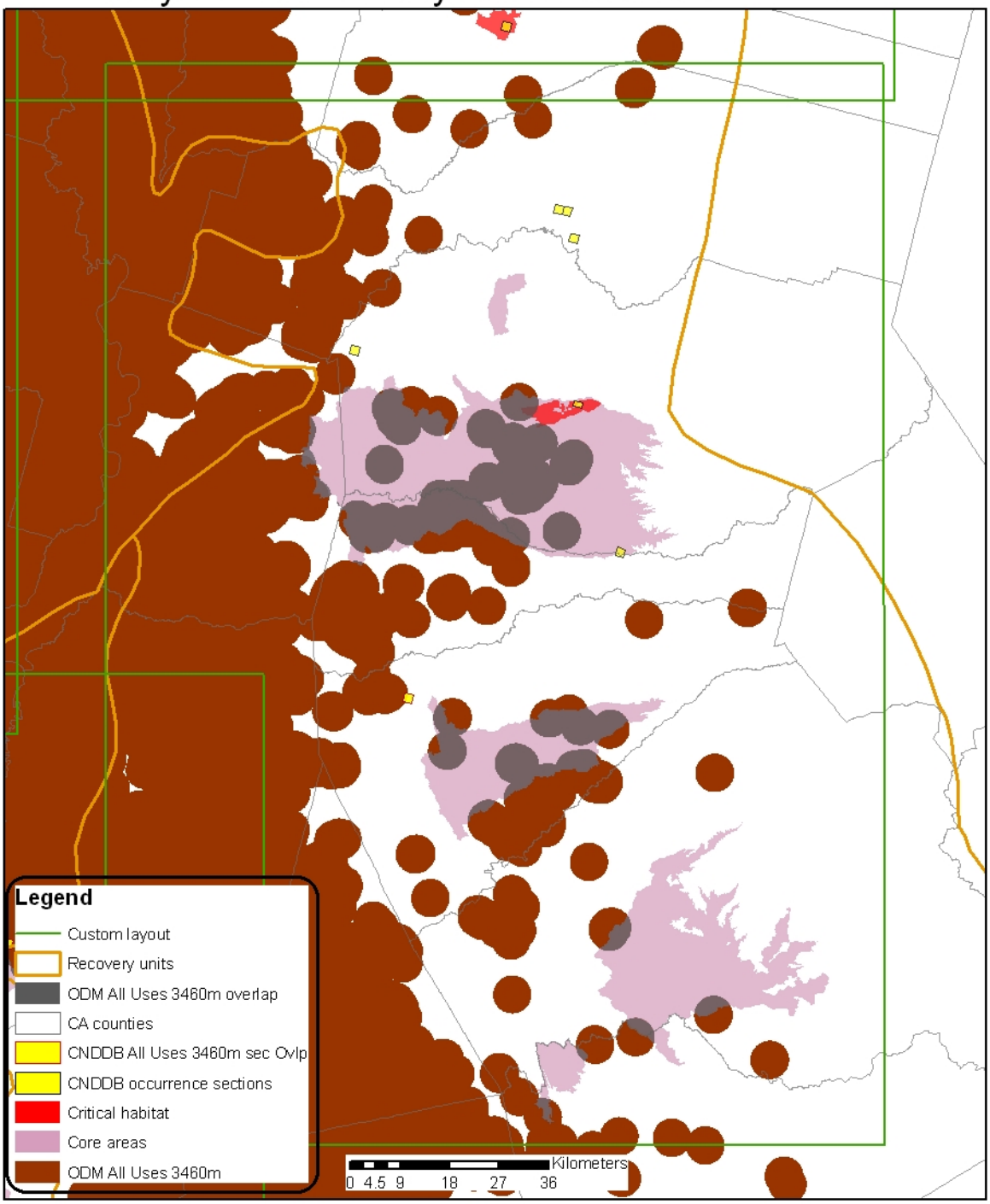
Oxydemeton-methyl All Uses 3460m Action Area



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

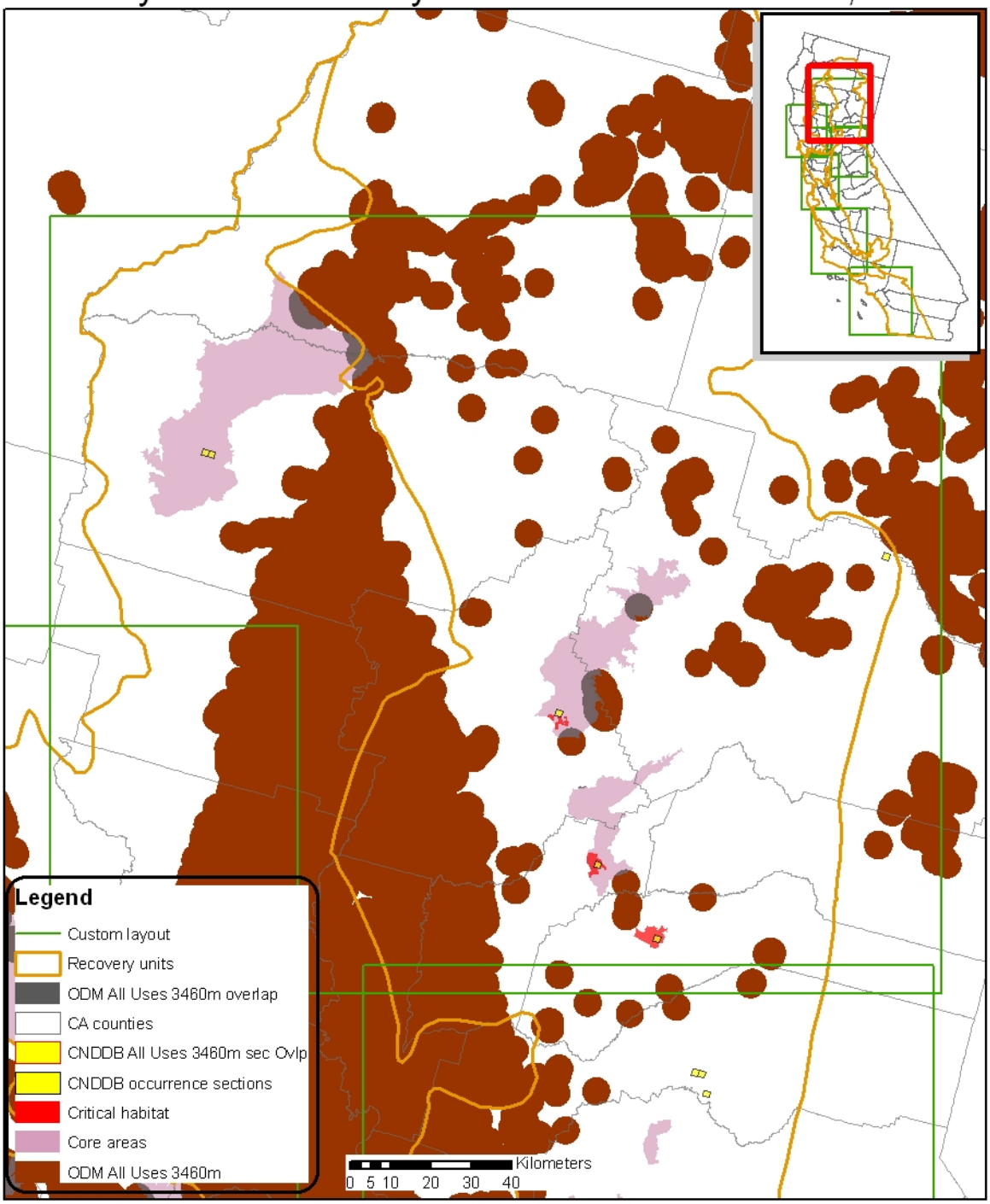
Oxydemeton-methyl All Uses 3460m - RU 1



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

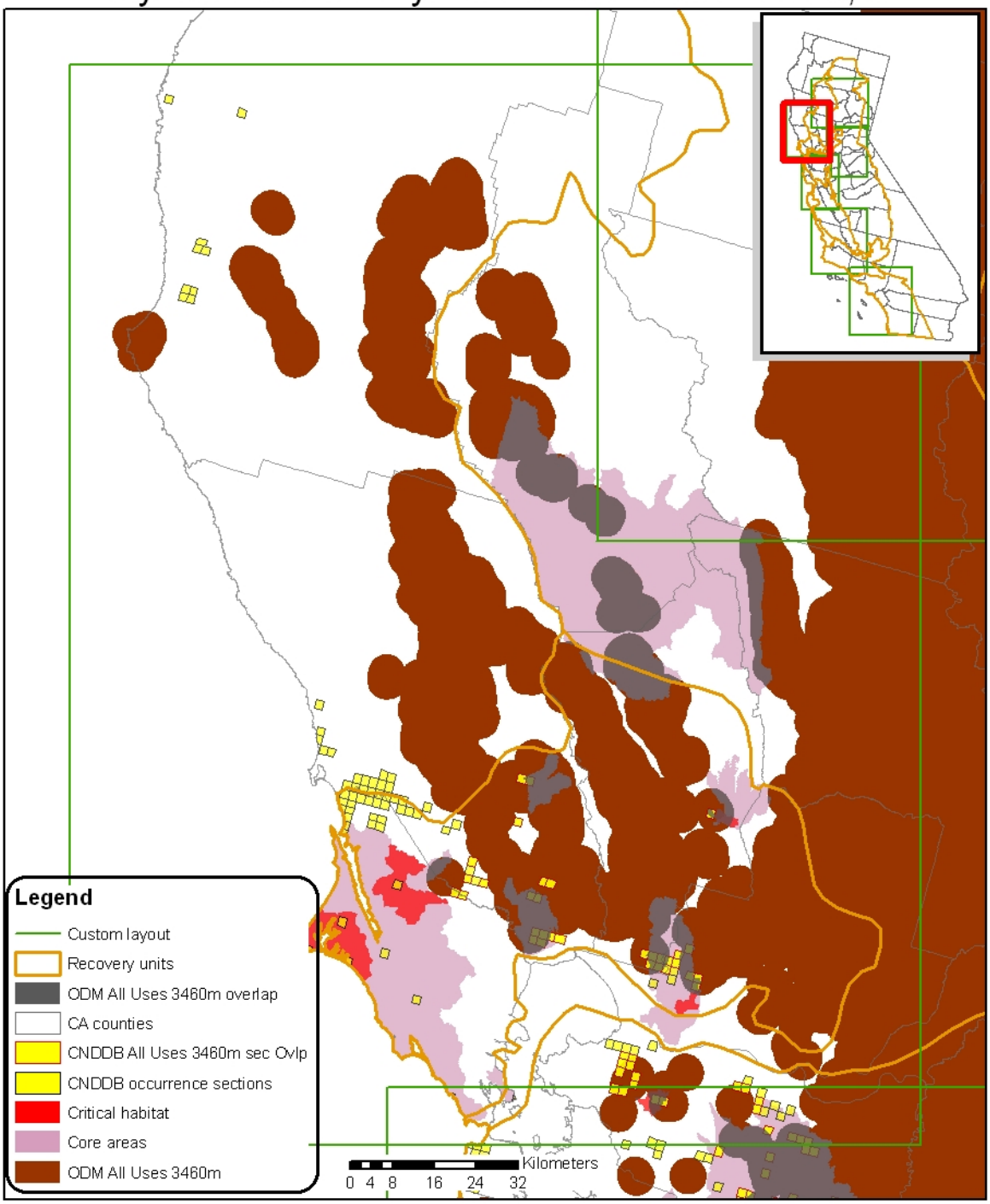
Oxydemeton-methyl All Uses 3460m - RU 1, 2



Compiled from California County boundaries (ESRI, 2002),
USDA National Agriculture Statistical Service (NASS, 2002)
Gap Analysis Program Orchard/ Vineyard Landcover (GAP)
National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

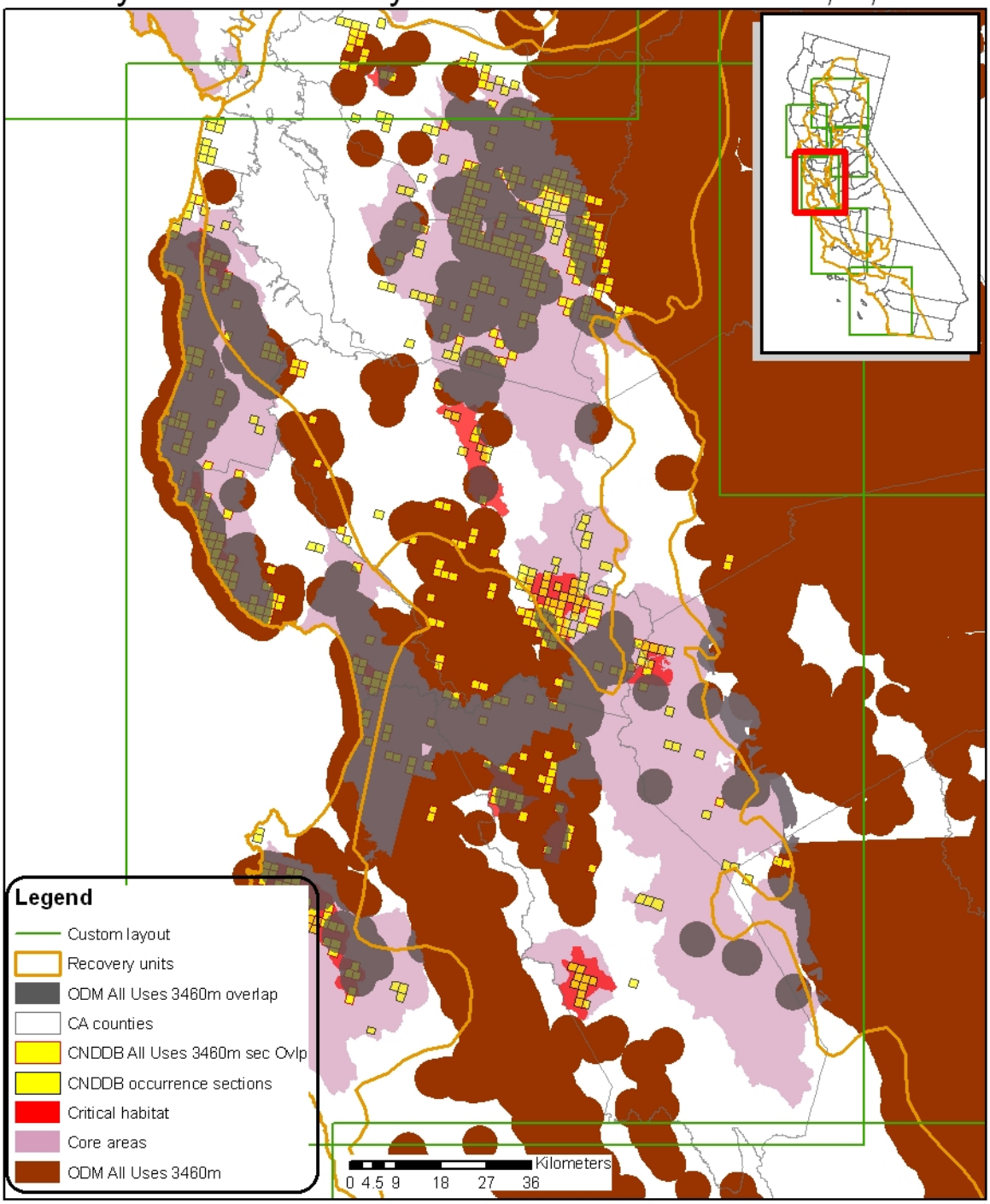
Oxydemeton-methyl All Uses 3460m - RU 2, 3



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

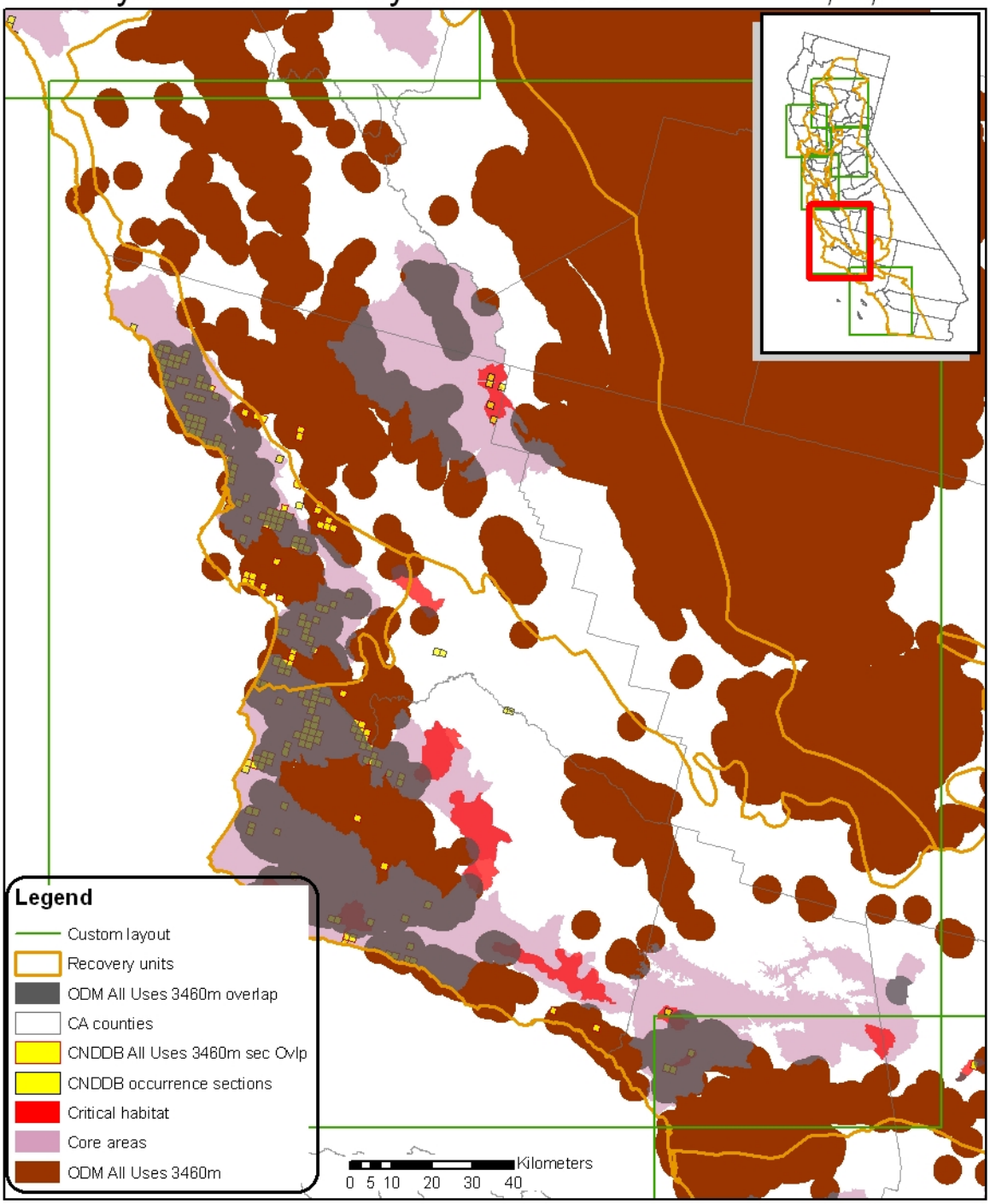
Oxydemeton-methyl All Uses 3460m - RU 4, 5, 6



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

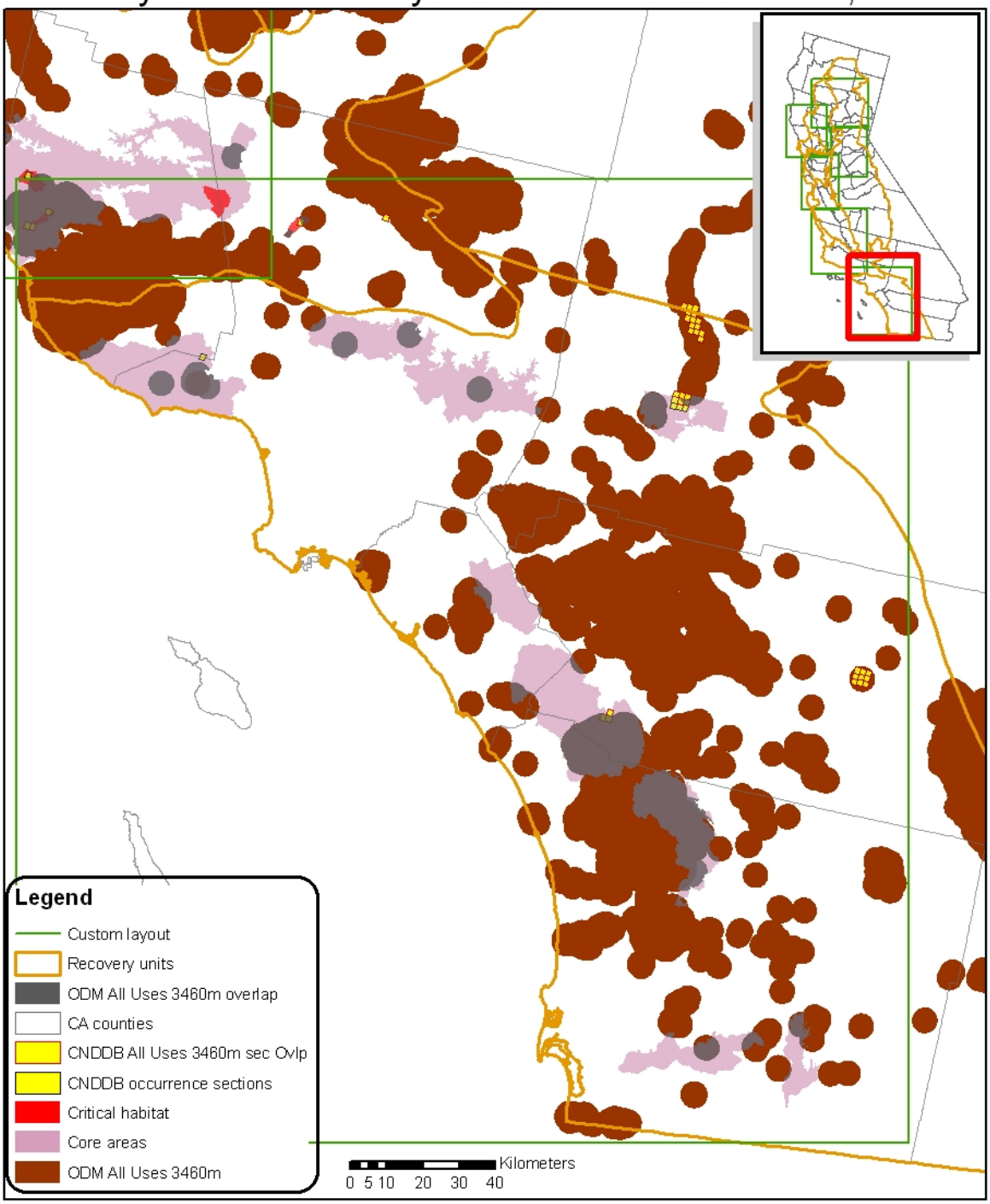
Oxydemeton-methyl All Uses 3460m - RU 5, 6, 7



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

Oxydemeton-methyl All Uses 3460m - RU 7, 8



Compiled from California County boundaries (ESRI, 2002),
USDA National Agriculture Statistical Service (NASS, 2002)
Gap Analysis Program Orchard/ Vineyard Landcover (GAP)
National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

Spatially Determined Analysis for Waterbodies

The aquatic analysis uses a downstream dilution model to determine the downstream extent of exposure in streams and rivers. The downstream component, combined with the initial area of concern, define the aquatic action area. The downstream extent includes the area where the EEC could potentially be above levels that would exceed the most sensitive LOC. The model calculates two values, the dilution factor (DF) and the threshold Percent Cropped Area (PCA). The dilution factor (DF) is the maximum RQ/LOC, and the threshold PCA is the inverse value represented as a percent.

The dilution model uses the NHDPlus data set (http://www.horizon-systems.com/nhdplus/) as the framework for the downstream analysis. The NHDPlus includes several pieces of information that can be used to analyze downstream effects. For each stream reach in the hydrography network, the data provide a tally of the total area in each NLCD land cover class for the upstream cumulative area contributing to the given stream reach. Using the cumulative land cover data provided by the NHDPlus, an aggregated use class is created based on the classes listed in Table 4. A cumulative PCA is calculated for each stream reach based on the aggregate use class (divided by the total upstream contribution area).

The dilution model traverses downstream from each stream segment within the initial area of concern. At each downstream node, the threshold PCA is compared to the aggregate cumulative PCA. If the cumulative PCA exceeds the threshold then the stream segment is included in the downstream extent. The model continues traversing downstream until the cumulative PCA no longer exceeds the threshold. The additional stream length by the downstream analysis is presented in Table 5.

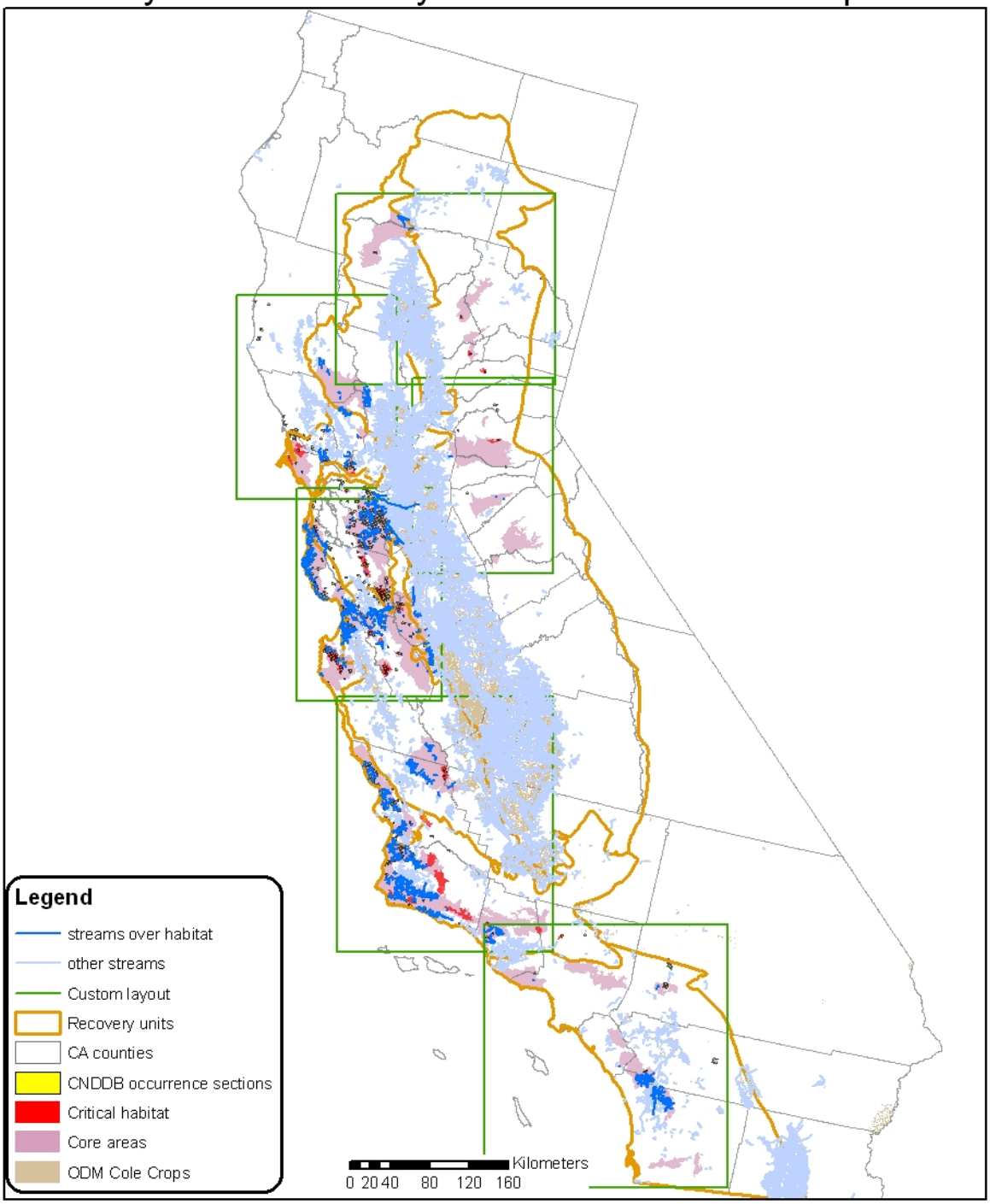
Table 5 Aquatic spatial summary results.

Measure	**Total**
Total California stream kilometers	332,962
Total stream kilometers in initial area of concern	49,130
Total stream kilometers added downstream	843
Total stream kilometers in final action area	49,973

Table 6 Stream miles affecting habitat where Cole Crops are used.

Recovery Unit	**Stream Length (km)**
1	269
2	179
3	130
4	484
5	772
6	788
7	891
8	373

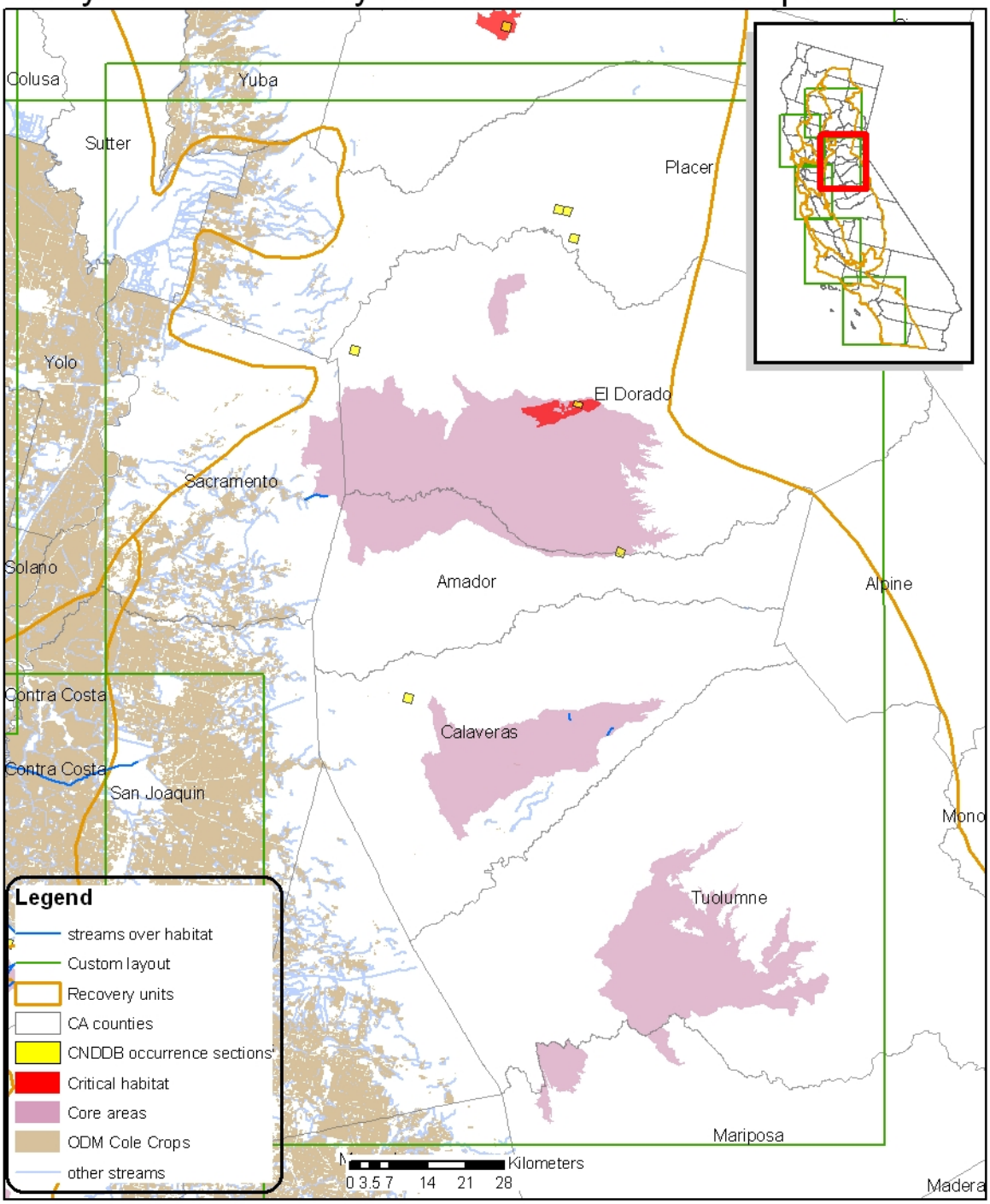
Oxydemeton-methyl Streams and Cole Crops



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

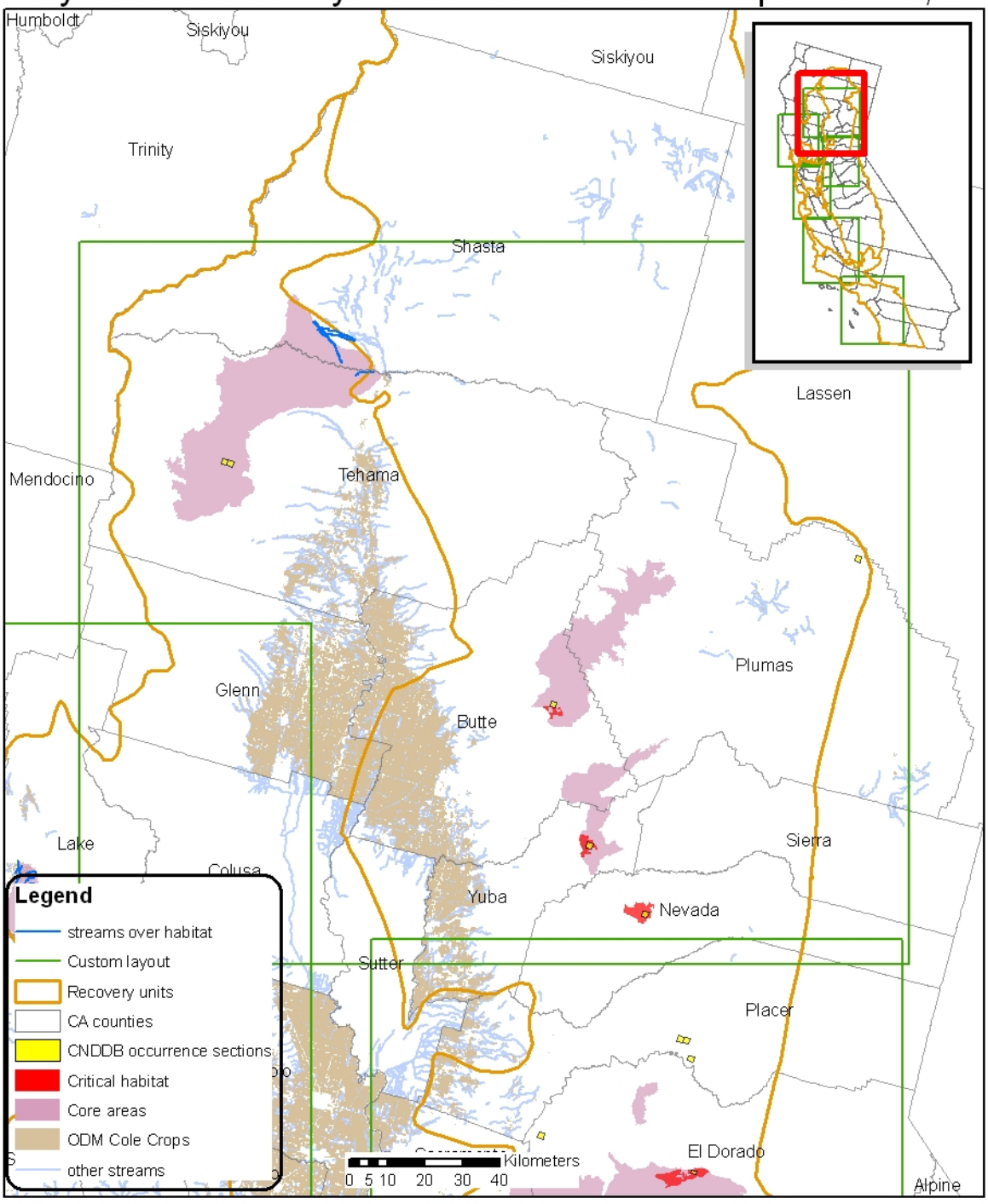
Oxydemeton-methyl Streams and Cole Crops - RU 1



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

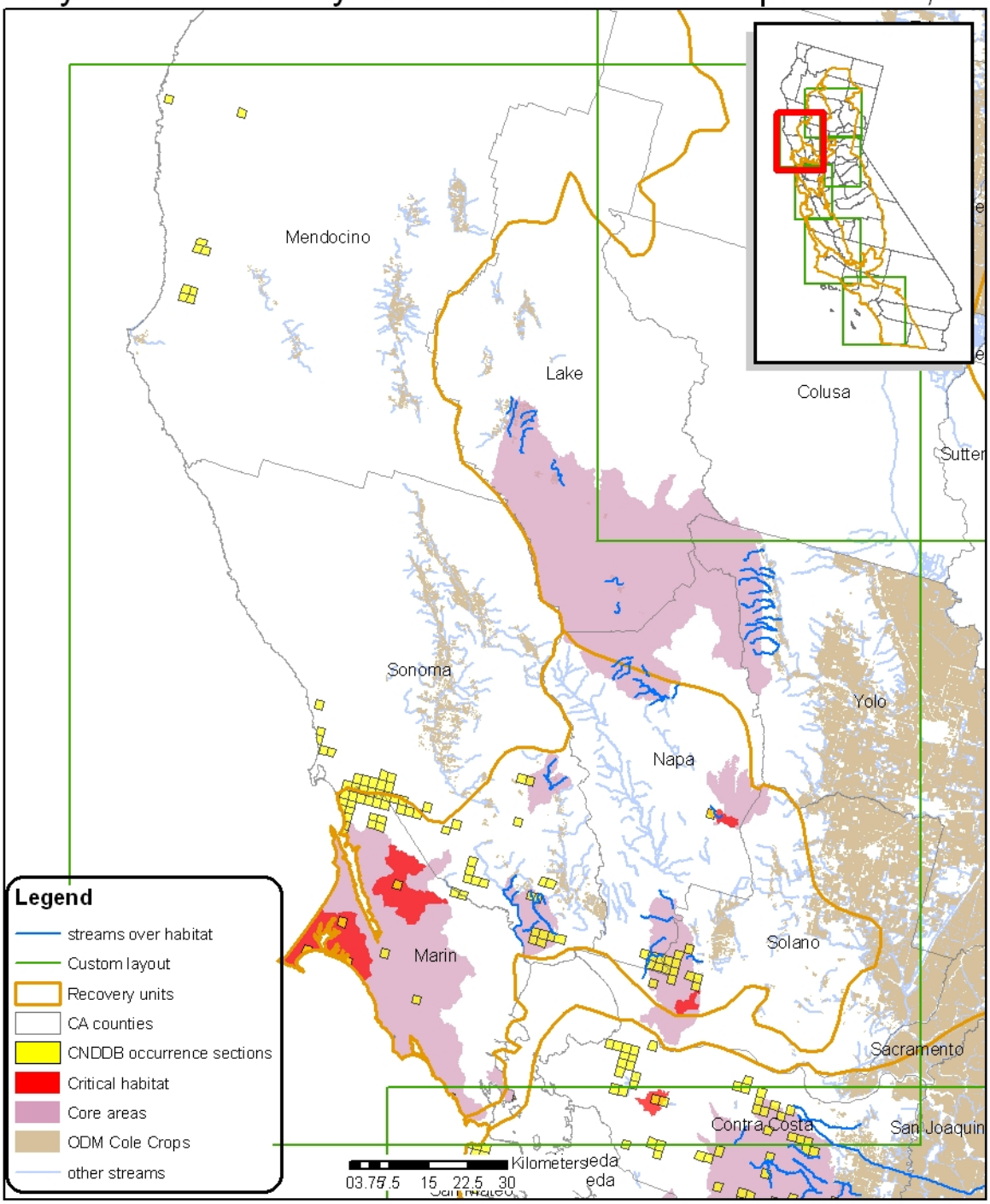
Oxydemeton-methyl Streams and Cole Crops - RU 1, 2



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

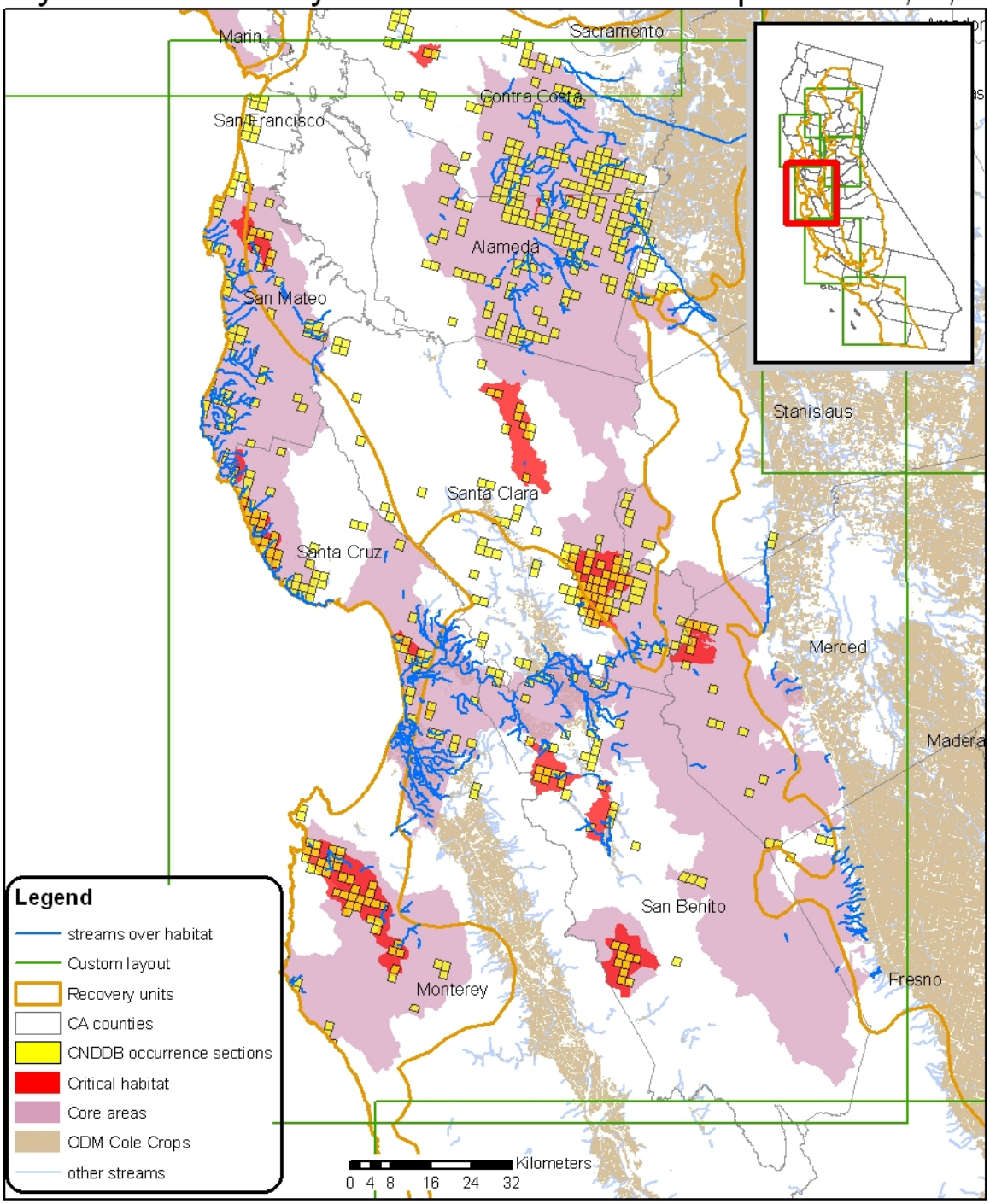
Oxydemeton-methyl Streams and Cole Crops - RU 2, 3



Compiled from California County boundaries (ESRI, 2002),
USDA National Agriculture Statistical Service (NASS, 2002)
Gap Analysis Program Orchard/ Vineyard Landcover (GAP)
National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

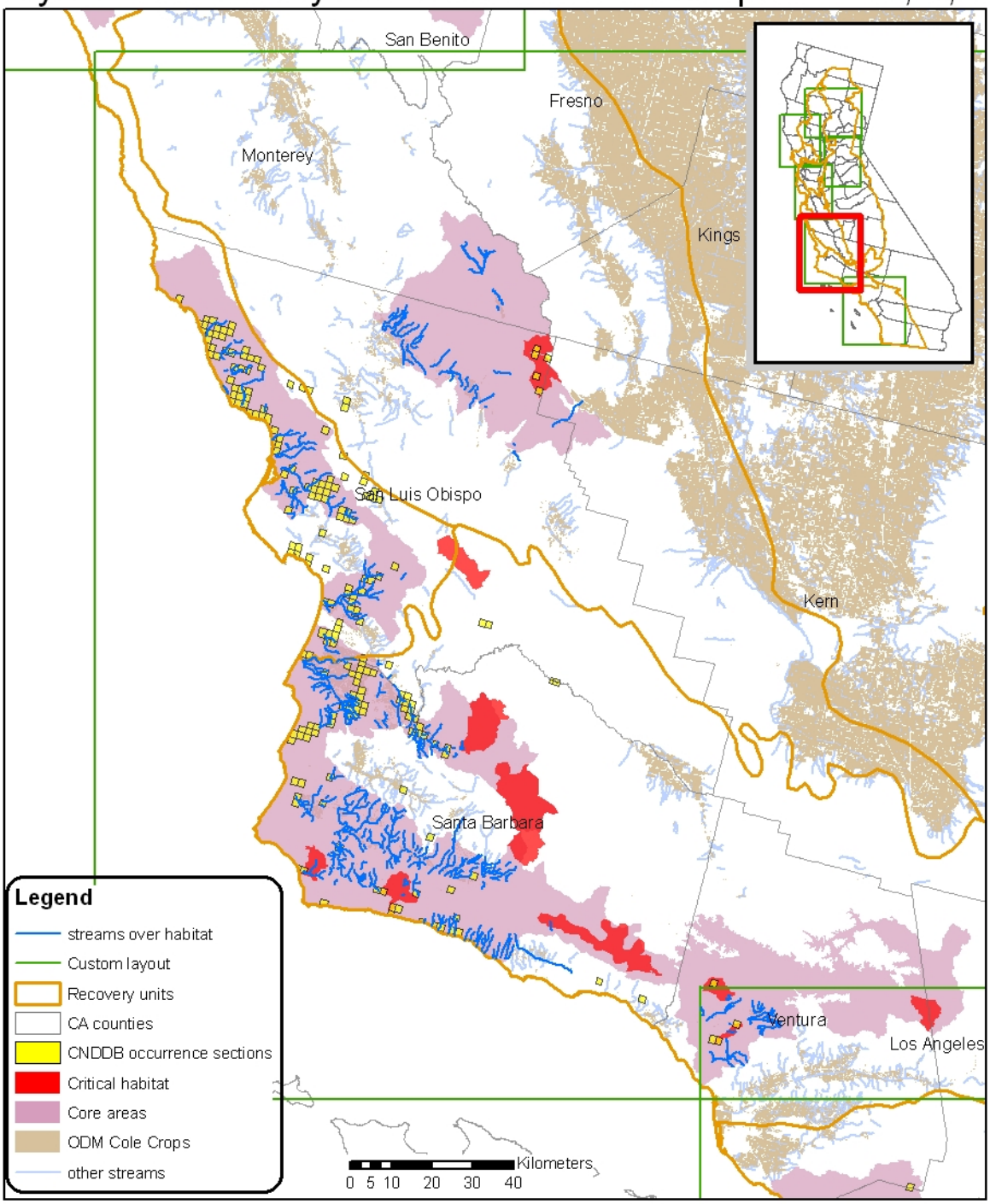
Oxydemeton-methyl Streams and Cole Crops - RU 4, 5, 6



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

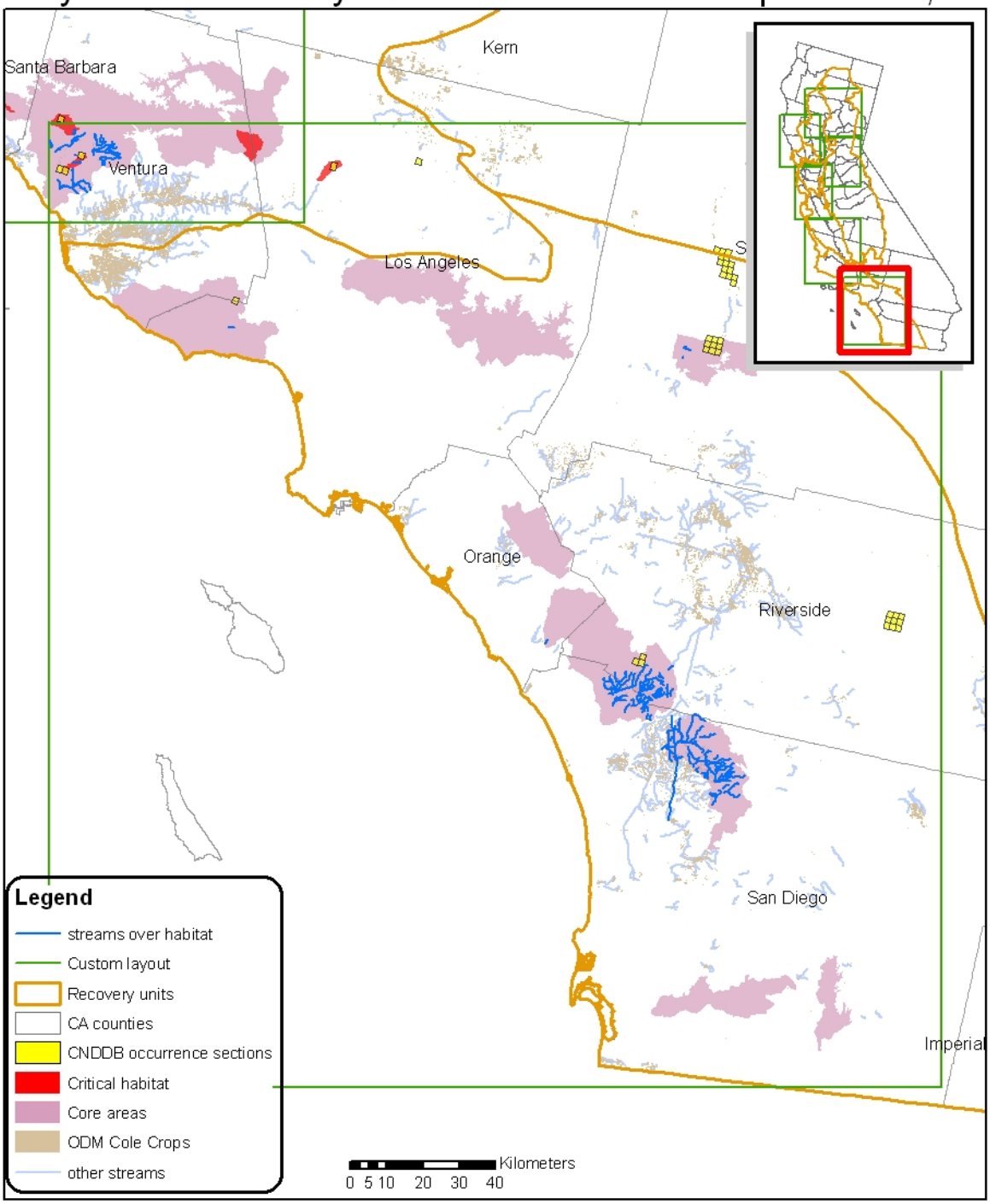
Oxydemeton-methyl Streams and Cole Crops - RU 5, 6, 7



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

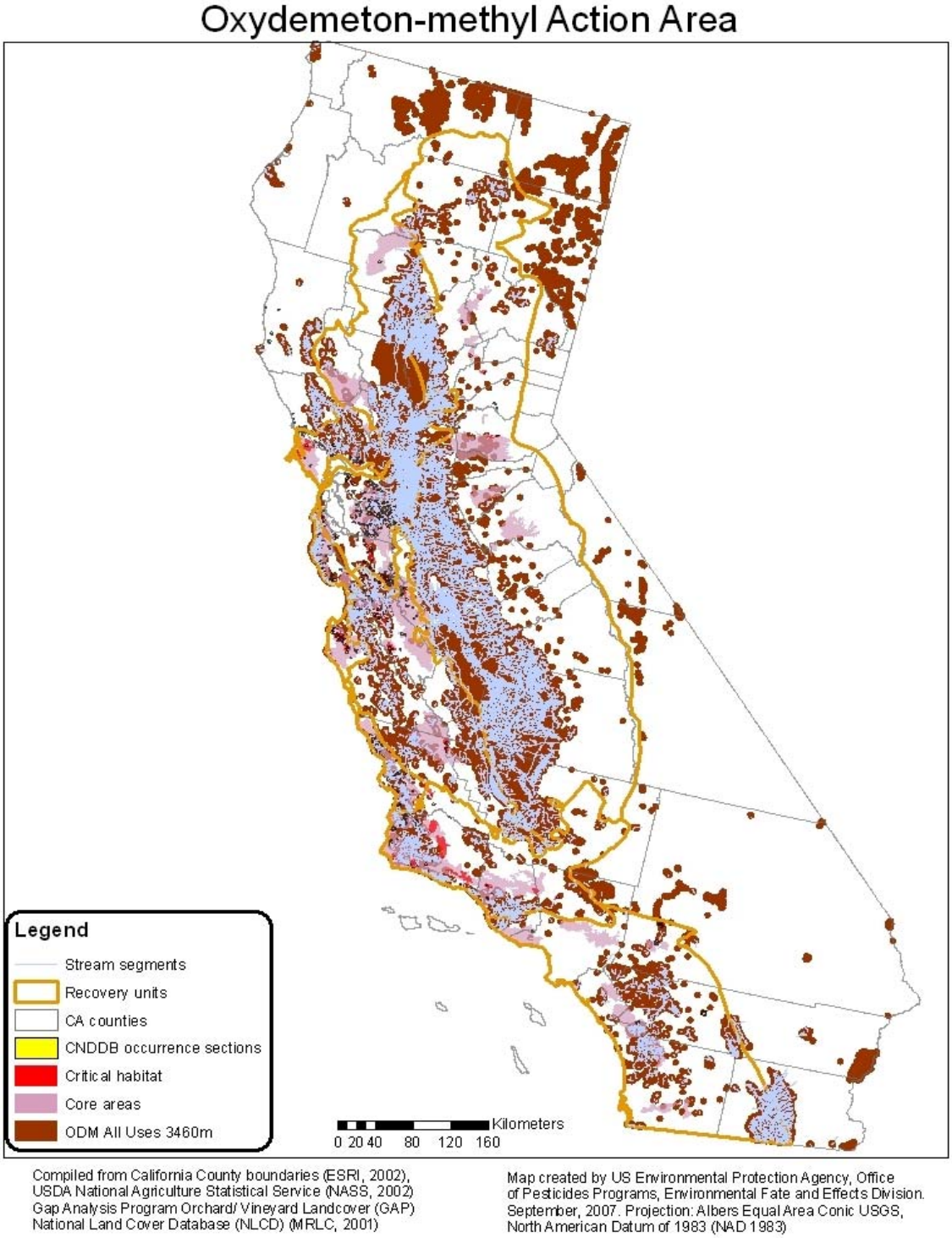
Oxydemeton-methyl Streams and Cole Crops - RU 7, 8



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. September, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

Final Action Area map for ODM based on terrestrial uses of concern with 11,338-ft buffer and a downstream dilution factor of 3.7.



A Note on Limitations and Constraints of Tabular and Geospatial Sources

The geographic data sets used in this analysis are limited with respect to their accuracy and timeliness. The NASS Census of Agriculture (NASS 2002) contains adjusted survey data collected prior to 2002. Small use sites, and minor uses (e.g., specialty crops) tend to be underrepresented in this dataset. The National Land Cover Dataset (NLCD 2001) represents the best comprehensive collection of national land use and land cover information for the United States representing a range of years from 1994 – 1998. Because the NLCD does not explicitly include a class to represent orchard and vineyard landcover, California Gap Analysis Project data (CaGAP 1998) were overlaid with the NCLD and used to identify these areas.

Hydrographic data are from the NHDPlus dataset (http://www.horizon-systems.com/nhdplus/). NHDPlus contains the most current and accurate nationwide representation of hydrologic data. In some isolated instances, there are, however, errors in the data including missing or disconnected stream segments and incorrect assignment of flow direction. Spatial data describing the recovery zones and core areas are from the US Fish and Wildlife Service. The data depicting survey sections in which the species has been found in past surveys is from the California Natural Diversity Database (http://www.dfg.ca.gov/bdb/html/cnddb.html).

The relatively coarse spatial scale of these datasets precludes use of the data for highly localized studies, therefore, tabular information presented here is limited to the scale of individual Recovery Units. Additionally, some labeled uses are not possible to map precisely due to the lack of appropriate spatial data in NLCD on the location of these areas. To account for these uncertainties, the spatial analysis presented here is conservative, and may overestimate the areal extent of actual pesticide use in California.

References for GIS Maps

Crop Maps

ESRI, 2002. Detailed Counties, ESRI data and maps. (1:24,000) www.esri.com

GAP. Gap Analysis. National Biological Information Infrastructure. www.nbii.gov

NASS, 2002. USDA National Agriculatural Statistics Service. www.nass.usda.gov

MRLC, 2001. Multiresolution Land Characteristics (MRLC) www.mrlc.gov

Habitat Maps

US FWS 2002 California red-legged frog General Recovery Zones

US FWS 2002 California red-legged frog Core Areas

US FWS 2005 Final Critical Habitat for California red-legged frog

CNDDB Occurrence Sections – California Natural Diversity Database
http://www.dfg.ca.gov/bdb/html/cnddb.html

ESRI, 2002. Detailed Counties, ESRI data and maps. (1:24,000) www.esri.com