Appendix C. Detailed analysis of final carbaryl action area and overlap of action area with CRLF core areas and critical habitat

C.1. Currently registered uses of carbaryl

Carbaryl is nationally registered for over 115 uses in agriculture, professional turf management, ornamental production, and residential settings. Carbaryl also is registered for use as a mosquito adulticide. Agricultural uses include tree fruit, nuts, fruit and vegetable, and grain crops. Carbaryl is used by homeowners in residential settings for lawn care, gardening (vegetables and ornamentals), and pet care (pet collars, powders, and dips, in kennels, and on pet sleeping quarters). Carbaryl also is used by nursery, landscape, and golf course industries on turf, annuals, perennials, and shrubs. A comprehensive list of these uses included in **Table C.1**. These uses are the basis for determining the initial action area for areas where carbaryl can be directly applied.

Table C.1. Carbaryl uses and their respective GIS landcovers used to depict the initial carbaryl action area for this assessment.

GIS Landcover	Uses
Orchard/vineyard	citrus, olives, almonds, chestnuts, pecans, filberts, walnuts, pistachios, peaches, apricots, cherries, nectarines, plums, prunes, pears, crabapples, oriental pears, apple, loquat, grapes
agricultural lands	asparagus, corn, strawberries, tomatoes, eggplant, peanuts, broccoli, Brussels sprouts, sweet potato, corn, lettuce, dandelion, endive, parsley, spinach, Swiss chard, sorghum, celery, horseradish, potato, parsnip, rutabaga, turnip, radish, rice, dry beans, fresh peas, dry peas, cow peas, southern peas, okra, sugar beet, alfalfa, birds foot trefoil, clover, melon, cucumber, pumpkin, squash, grass for seed, rural shelter belts, ornamentals, flowers, roses, peppers, cauliflower, cabbage, kohlrabi, Chinese cabbage, collards, kale, mustard greens, Hanover salad
residential (urban)	flower beds around buildings, roses, home lawn, lawns, parks, recreational areas, golf courses, sod farms, commercial lawns, rights-of-way, hedgerows, ditch banks, roadsides, ticks, grasshoppers
pasture	pasture, rangeland
non-urban forests	Forestry, tree plantations, Christmas trees, parks, rangeland trees

C.2. Determination of area where carbaryl is potentially directly applied (initial area of concern)

After determination of which uses will be assessed, an evaluation of the potential "footprint" of the use pattern is determined. This "footprint" represents the initial area of concern and is typically based on available land cover data. Local land cover data available for the state of California were analyzed to refine the understanding of potential carbaryl use. The initial area of concern is defined as all land cover types that represent the labeled uses described above. The initial area of concern is represented by 1) orchard and vineyard landcovers; 2) agricultural areas; 3) residential areas; 4) pastures and 5) non-urban forests.

Base mapping layers for determining the initial area of concern 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 C.2** shows the land-cover sources used.

Table C.1 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 cover. These areas most commonly include single-family housing units.	Yes
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).

In counties where a use has been identified, the use is associated with the appropriate landcover data set (**Table C.2**). It is assumed that this use is potentially grown in the area where the landcover has been identified. For example, almonds are grown in Kern County. According to CA GAP data, there are orchards or vineyards within Kern County. Therefore, it is assumed that almonds, which are grown in orchards, can be grown on any of the land specified by the CA GAP data as orchards or vineyards. This process is carried out for almonds in every county in California.

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, including the 5 landcover types relevant to carbaryl (agricultural, orchard/vineyard, pasture, residential and forestry). This area is depicted in Figure C.1.

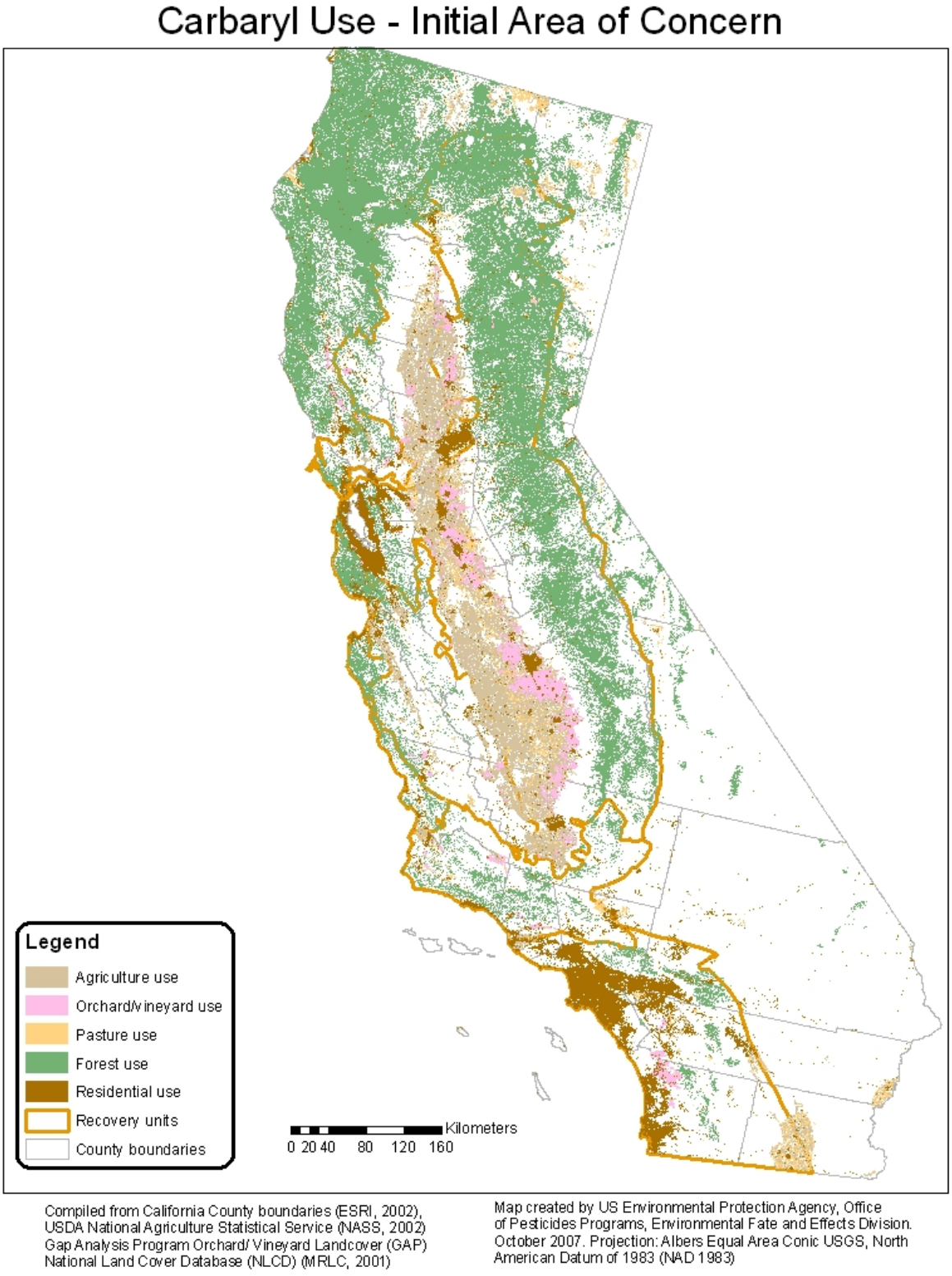

Figure C.1. Initial action area for uses of carbaryl.

C.3. Determination of area indirectly affected by carbaryl use

Since this screening level risk assessment defines taxa that are predicted to be exposed through runoff and drift to carbaryl at concentrations above the Agency's Levels of Concern (LOC), there is need to expand the action area to include areas that are affected indirectly by this federal action. Two methods are employed to define the areas indirectly affected by the federal action, and thus the total action area. These are the down stream dilution assessment for determining the extent of the affected lotic aquatic habitats (flowing) and the spray drift assessment for determining the extent of the affected terrestrial habitats. In order to define the final action areas relevant to uses of carbaryl, it is necessary to combine areas directly affected, as well as aquatic and terrestrial habitats indirectly affected by the federal action. It is assumed that lentic aquatic habitats (e.g. ponds, pools, marshes) overlapping with the terrestrial areas are also indirectly affected by the federal action.

Lotic aquatic action area

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 RQ/LOC ratios for each land cover category are depicted in Table C.3.

Table C.3. Down stream dilution factors used to determine extent of lotic action area for uses of carbaryl.

Action area title	Uses	Down stream dilution factor (RQ/LOC ratio)	Specific use group defining down stream dilution factor
Orchard/vineyard	citrus, olives, almonds, chestnuts, pecans, filberts, walnuts, pistachios, peaches, apricots, cherries, nectarines, plums, prunes, pears, crabapples, oriental pears, apple, loquat, grapes	660	Peaches
agricultural lands	asparagus, corn, strawberries, tomatoes, eggplant, peanuts, broccoli, Brussels sprouts, sweet potato, corn, lettuce, dandelion, endive, parsley, spinach, Swiss chard, sorghum, celery, horseradish, potato, parsnip, rutabaga, turnip, radish, rice, dry beans, fresh peas, dry peas, cow peas, southern peas, okra, sugar beet, alfalfa, birds foot trefoil, clover, melon, cucumber, pumpkin, squash, grass for seed, rural shelter belts, ornamentals, flowers, roses, peppers, cauliflower, cabbage, kohlrabi, Chinese cabbage, collards, kale, mustard greens, Hanover salad	30340	Rice
residential (urban)	flower beds around buildings, roses, home lawn, lawns, parks, recreational areas, golf courses, sod farms, commercial lawns, rights-of-way, hedgerows, ditch banks, roadsides, ticks, grasshoppers	336	Rights-of-way
pasture	pasture, rangeland	150	Rangeland
non-urban forests	Forestry, tree plantations, Christmas trees, parks, rangeland trees	136	Forestry

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 C.2**. 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 C.4-C.8** for the different use categories of carbaryl. The down stream miles of concern for this assessment are depicted in **Figures C.2-C.6**.

Table C.2 Aquatic spatial summary results for agricultural uses of carbaryl.

Measure	Total
Total California stream kilometers	332,962
Total stream kilometers in initial area of concern	56,404
Total stream kilometers added downstream	9,158
Total stream kilometers in final action area	65,562

Table C.5. Aquatic spatial summary results for orchard and vineyard uses of carbaryl.

Measure	Total
Total California stream kilometers	332,962
Total stream kilometers in initial area of concern	11,946
Total stream kilometers added downstream	3,431
Total stream kilometers in final action area	15,377

Table C.6. Aquatic spatial summary results for pasture uses of carbaryl.

Measure	Total
Total California stream kilometers	332,962
Total stream kilometers in initial area of concern	29,071
Total stream kilometers added downstream	8,559
Total stream kilometers in final action area	37,630

Table C.7. Aquatic spatial summary results for forestry uses of carbaryl.

Measure	Total
Total California stream kilometers	332,962
Total stream kilometers in initial area of concern	142,464
Total stream kilometers added downstream	26,676
Total stream kilometers in final action area	169,140

Table C.8. Aquatic spatial summary results for residential uses of carbaryl.

Measure	Total
Total California stream kilometers	332,962
Total stream kilometers in initial area of concern	104,061
Total stream kilometers added downstream	7,739
Total stream kilometers in final action area	111,800

Terrestrial and lentic aquatic action area

When considering the terrestrial habitats of the CRLF, spray drift from use sites onto non-target areas could potentially result in exposures of the CRLF, its prey and its habitat to carbaryl. Therefore, it is necessary to estimate the distance from the application site where spray drift exposures do not result in LOC exceedances for organisms within the terrestrial habitat. To account for this, first, the carbaryl application rate which does not result in an LOC exceedance is calculated for each terrestrial taxa of concern. AgDISP was then used to determine the distance required to reach EECs not exceeding any LOCs. These values are defined for each use in **Table C.9**.

Table C.9. Spray drift distances used to determine extent of terrestrial action area for uses of carbaryl.

Action area title	Uses	Spray drift distance not exceeding LOC (in feet)	Specific use group defining spray drift distance
Orchard/vineyard	citrus, olives, almonds, chestnuts, pecans, filberts, walnuts, pistachios, peaches, apricots, cherries, nectarines, plums, prunes, pears, crabapples, oriental pears, apple, loquat, grapes	10920	citrus
agricultural lands	asparagus, corn, strawberries, tomatoes, eggplant, peanuts, broccoli, Brussels sprouts, sweet potato, corn, lettuce, dandelion, endive, parsley, spinach, Swiss chard, sorghum, celery, horseradish, potato, parsnip, rutabaga, turnip, radish, rice, dry beans, fresh peas, dry peas, cow peas, southern peas, okra, sugar beet, alfalfa, birds foot trefoil, clover, melon, cucumber, pumpkin, squash, grass for seed, rural shelter belts, ornamentals, flowers, roses, peppers, cauliflower, cabbage, kohlrabi, Chinese cabbage, collards, kale, mustard greens, Hanover salad	6238	asparagus
residential (urban)	flower beds around buildings, roses, home lawn, lawns, parks, recreational areas, golf courses, sod farms, commercial lawns, rights-of-way, hedgerows, ditch banks, roadsides, ticks, grasshoppers	6293	turf
pasture	pasture, rangeland	3293	rangeland
non-urban forests	Forestry, tree plantations, Christmas trees, parks, rangeland trees	3293	forestry

To understand the area indirectly affected by the federal action due to spray drift from application areas of carbaryl, landcovers are considered as potential application areas. These areas are "buffered" using ArcGIS 9.2. In this process, the original landcover is modified by expanding the border of each polygon representing a field out to a designated distance, which in this case, is the distance estimated where carbaryl in spray drift does not exceed any LOCs. This effectively expands the action area relevant to terrestrial habitats so that it includes the area directly affected by the federal action, and the area indirectly affected by the federal action. The final terrestrial action areas of concern for this assessment are depicted in **Figures C.2-C.6**.

C.4. Determination of final action area for carbaryl uses

In order to define the final action areas relevant to uses of carbaryl, it is necessary to combine areas directly affected, as well as aquatic and terrestrial habitats indirectly affected by the federal action. This is done separately for each use with ArcGIS 9.2. Landcovers representing areas directly affected by carbaryl applications are overlapped with indirectly affected aquatic habitats (determined by down stream dilution modeling) and with indirectly affected terrestrial habitats (determined by spray drift modeling). It is assumed that lentic (standing water) aquatic habitats (*e.g*. ponds, pools, marshes) overlapping with the terrestrial areas are also indirectly affected by the federal action. The result is a final action areas for carbaryl uses on agricultural lands, orchards and vineyards, pastures, forests and residential areas are depicted in **Figures C.2-C.6.**

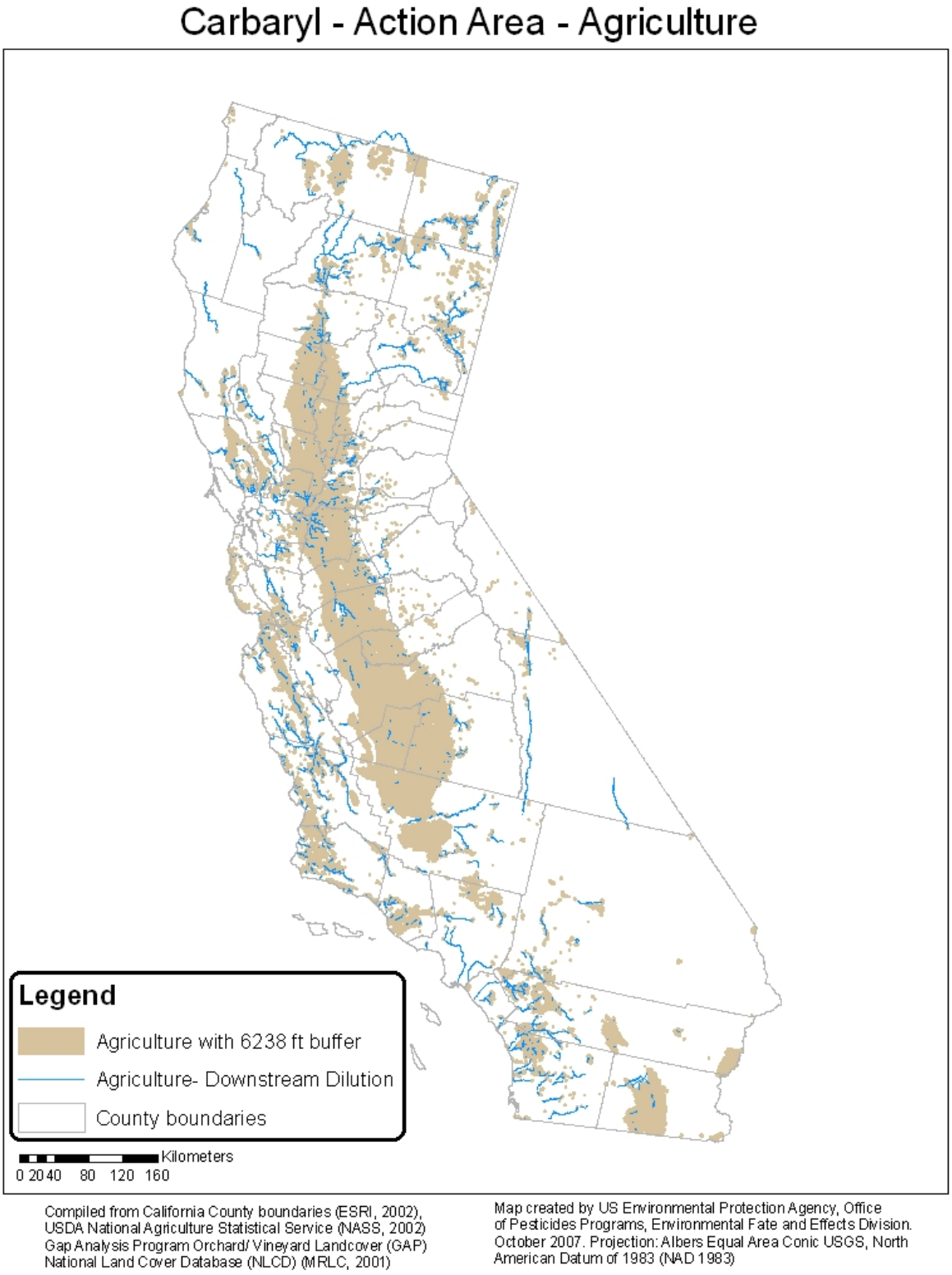

Figure C.2. Final action area for agricultural uses of carbaryl.

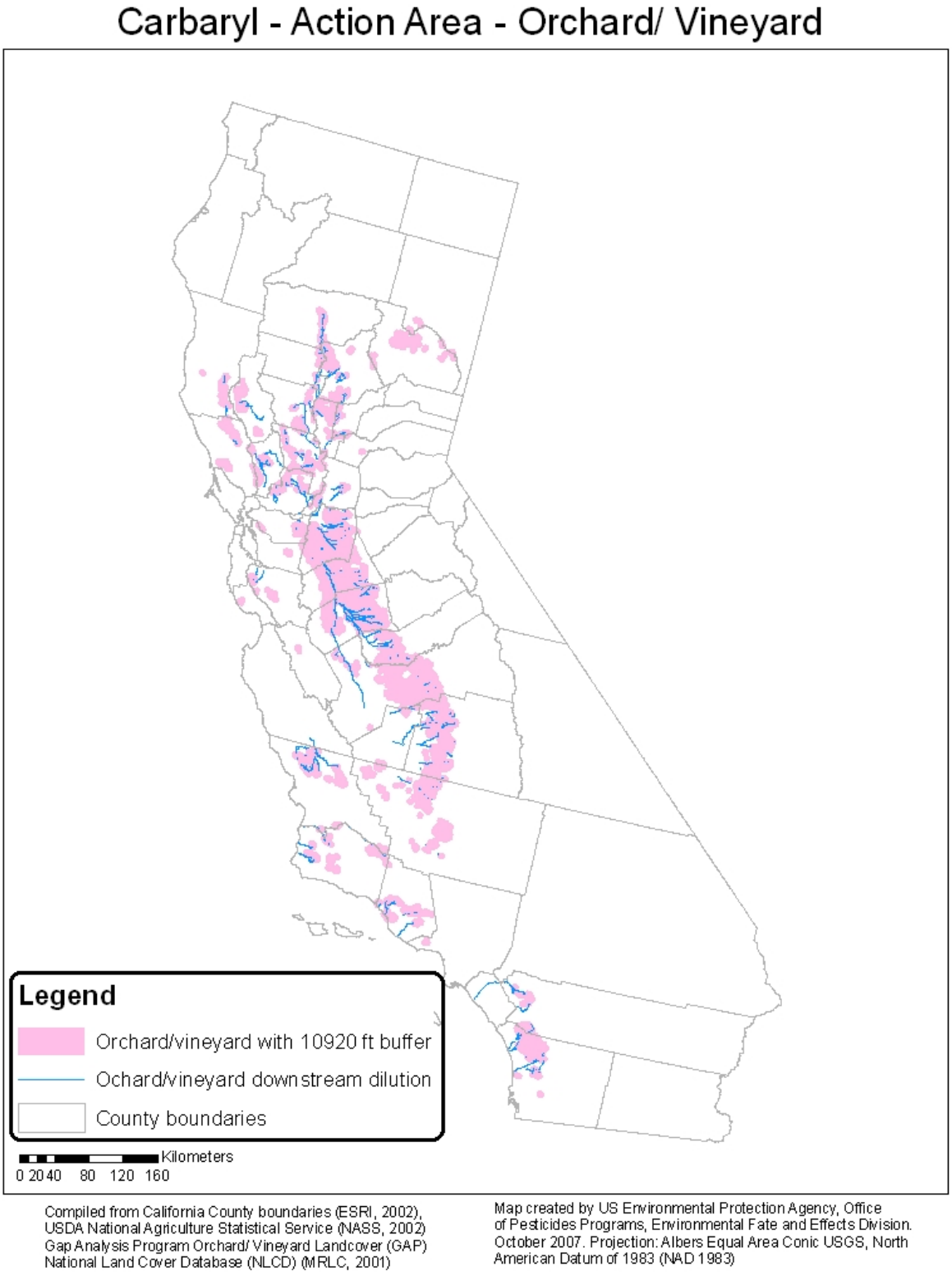

Figure C.3. Final action area for orchard and vineyard uses of carbaryl.

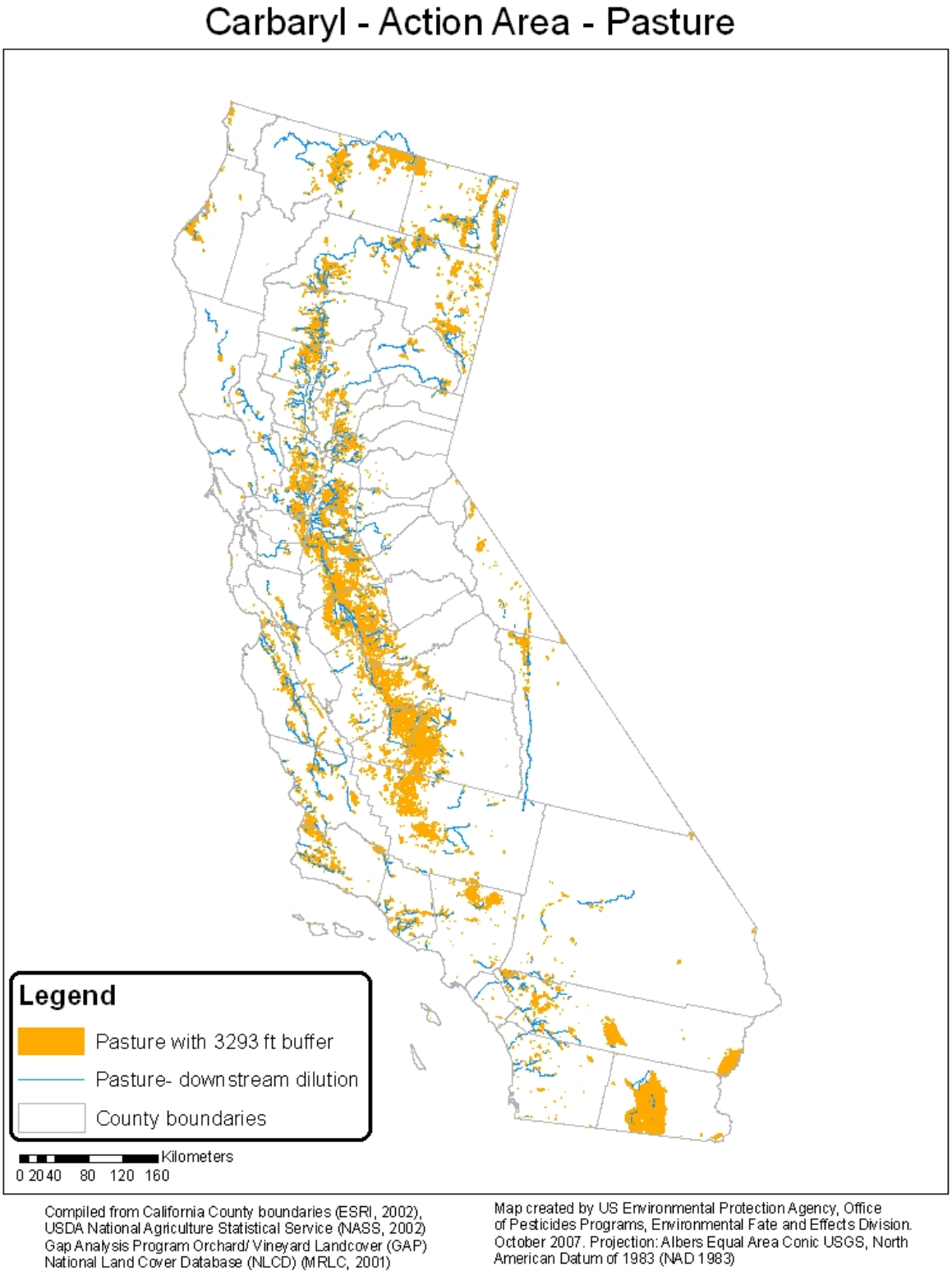

Figure C.4. Final action area for pasture uses of carbaryl.

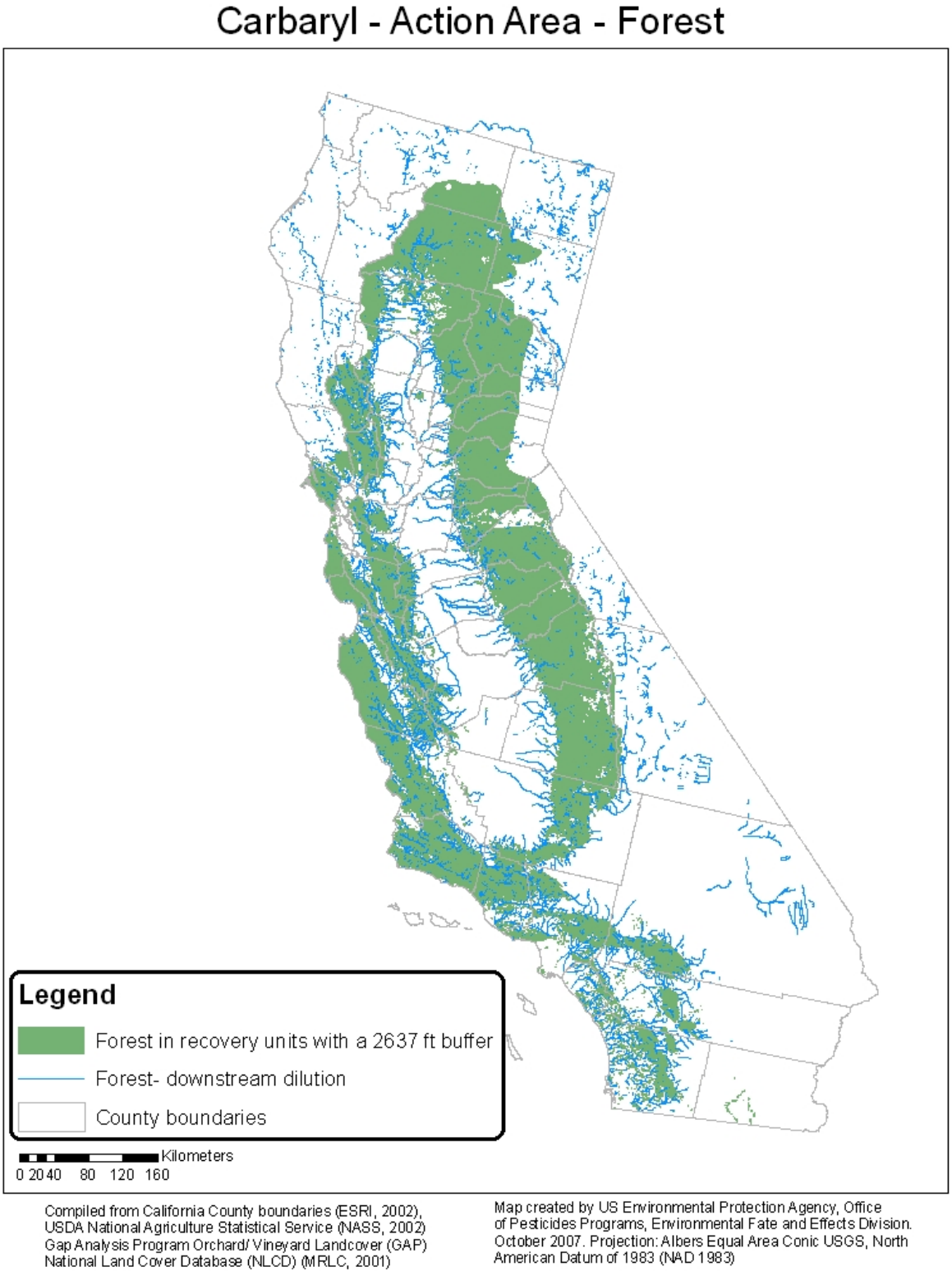

Figure C.5. Final action area for forestry uses of carbaryl.

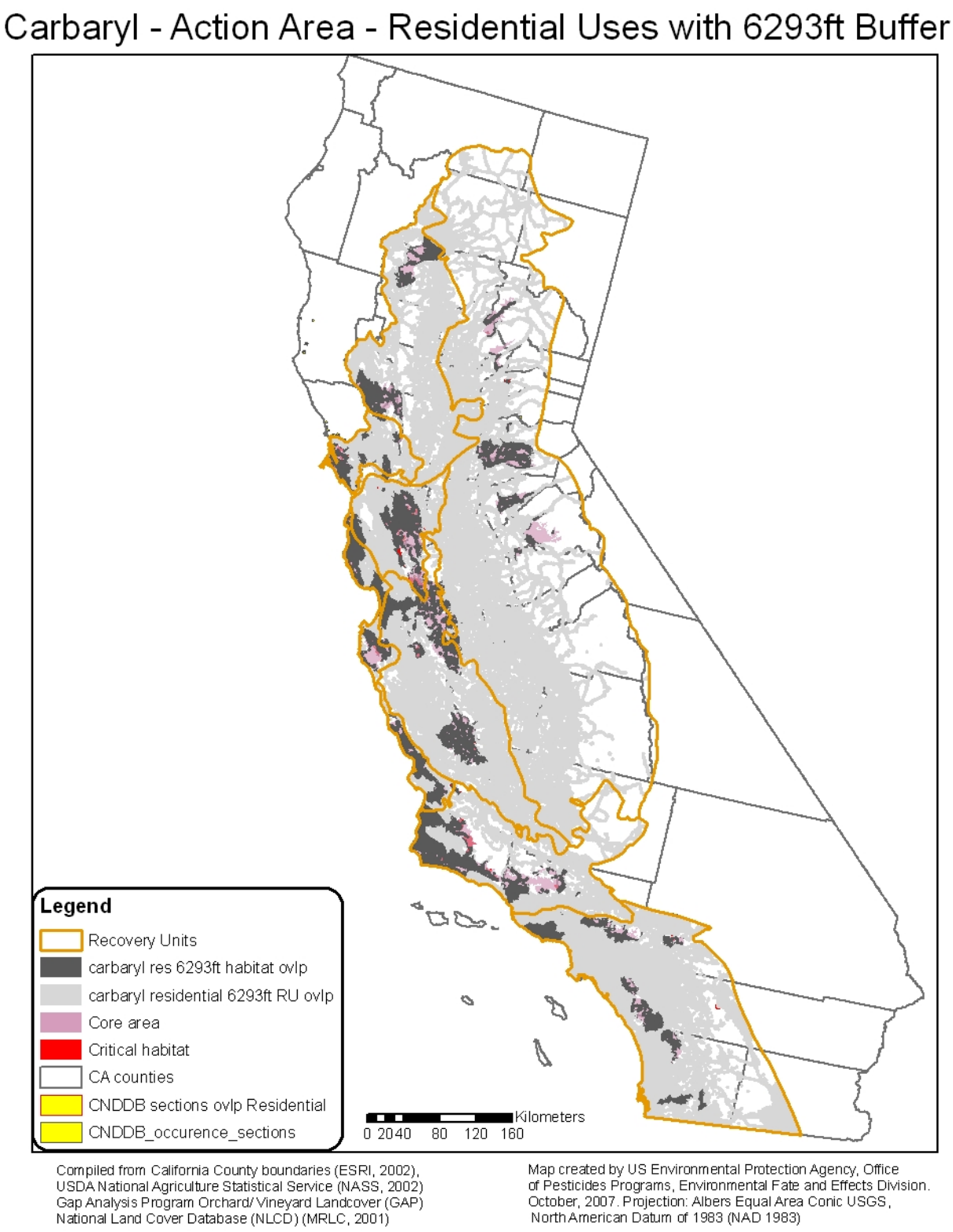

Figure C.6. Final action area for residential uses of carbaryl.

C.5. Determination of overlap between carbaryl action area and CRLF habitat

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) (**Figure C.7**). 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.

In order to confirm that uses of carbaryl have the potential to affect CRLF through direct applications to target areas and runoff and spray drift to non-target areas, it is necessary to determine whether or not the final action areas for carbaryl uses overlap with CRLF habitats. Spatial analysis using ArcGIS 9.2 indicates that lotic aquatic habitats within the CRLF core areas and critical habitats potentially contain concentrations of carbaryl sufficient to result in RQ values that exceed LOCs. In addition, terrestrial habitats (and potentially lentic aquatic habitats) of the final action areas overlap with the core areas, critical habitat and available occurrence data for CRLF (**Tables C.10-C.14**). Maps the overlap of CRLF core areas, critical habitat and occurrences and the total California action areas are depicted in **Figures C.8-C.14**

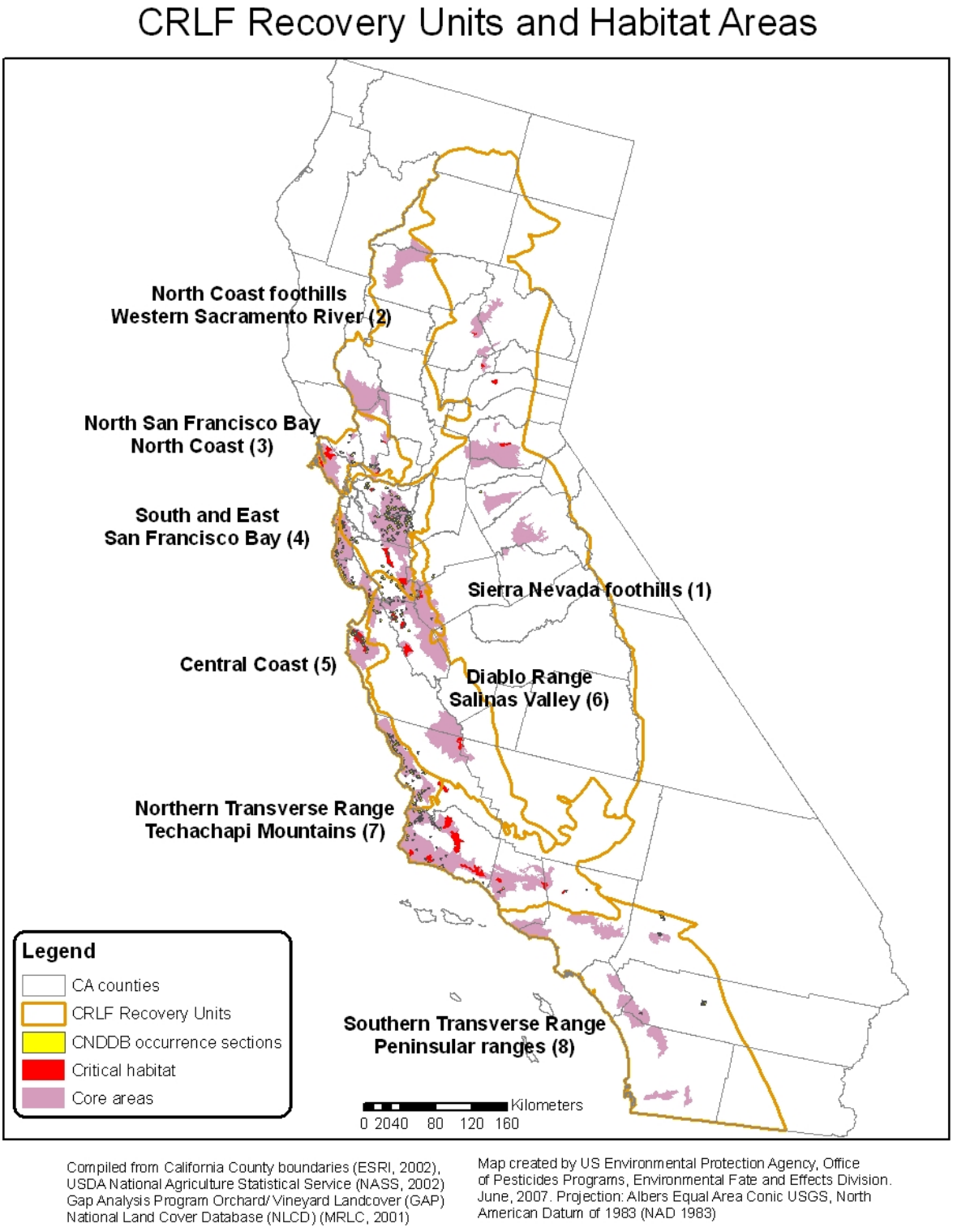

Figure C.7. Recovery units and areas relevant to the CRLF.

Table C.10. Terrestrial spatial summary results by recovery unit for agricultural uses of carbaryl.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Initial Area of Concern (no buffer)									33,814
Action Area (Initial area of concern plus 6238 ft. buffer)									93,236
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping area (sq km)	447	289	189	1010	1571	1494	1940	616	7,555
Percent area affected	*12%*	*11%*	*14%*	*31%*	*43%*	*28%*	*39%*	*19%*	*27%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	0	0	18	141	208	48	70	3	488

Table C.11. Terrestrial spatial summary results by recovery unit for orchard/vineyard uses of carbaryl.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Initial Area of Concern (no buffer)									7,716
Action Area (Initial area of concern plus 10920 ft. buffer)									38,839
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping area (sq km)	126	285	27	218	76	354	906	745	2,736
Percent area affected	*3%*	*10%*	*2%*	*7%*	*2%*	*7%*	*18%*	*22%*	*10%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	0	0	2	53	11	4	23	4	97

Table C.12. Terrestrial spatial summary results by recovery unit for pasture uses of carbaryl.

Measure	**RU1**	**RU2**	**RU3**	**RU4**	**RU5**	**RU6**	**RU7**	**RU8**	**Total**
Initial Area of Concern (no buffer)									7,556
Action Area (Initial area of concern plus 3293 ft. buffer)									46,915
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping area (sq km)	82	273	24	89	382	499	977	139	2465
Percent area affected	*2%*	*10%*	*2%*	*3%*	*10%*	*9%*	*20%*	*4%*	*9%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	0	0	2	26	79	22	48	1	178

Table C.13. Terrestrial spatial summary results by recovery unit for forestry uses of carbaryl.

Measure	**RU1**	**RU2**	**RU3**	**RU4**	**RU5**	**RU6**	**RU7**	**RU8**	**Total**
Initial Area of Concern (no buffer)									97,051 (All counties in California)
Action Area (Initial area of concern plus 3293 ft. buffer)									130,585 (within the recovery units)
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping area (sq km)	3643	2222	1205	2665	3453	2782	4400	2315	22,688
Percent area affected	*100%*	*81%*	*91%*	*81%*	*95%*	*52%*	*89%*	*70%*	*80%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	5	3	33	205	240	78	68	10	642

Table C.14. Terrestrial spatial summary results by recovery unit for residential uses of carbaryl.

Measure	**RU1**	**RU2**	**RU3**	**RU4**	**RU5**	**RU6**	**RU7**	**RU8**	**Total**
Initial Area of Concern (no buffer)									
Action Area (Initial area of concern plus 6293 ft. buffer)	163,914 (sq km, within the recovery unit)								
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping area (sq km)	2764	2154	1183	2614	3298	4168	3835	2895	22911
Percent area affected	*76%*	*79%*	*89%*	*80%*	*90%*	*79%*	*78%*	*87%*	*81%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	10	3	69	308	275	119	90	33	907

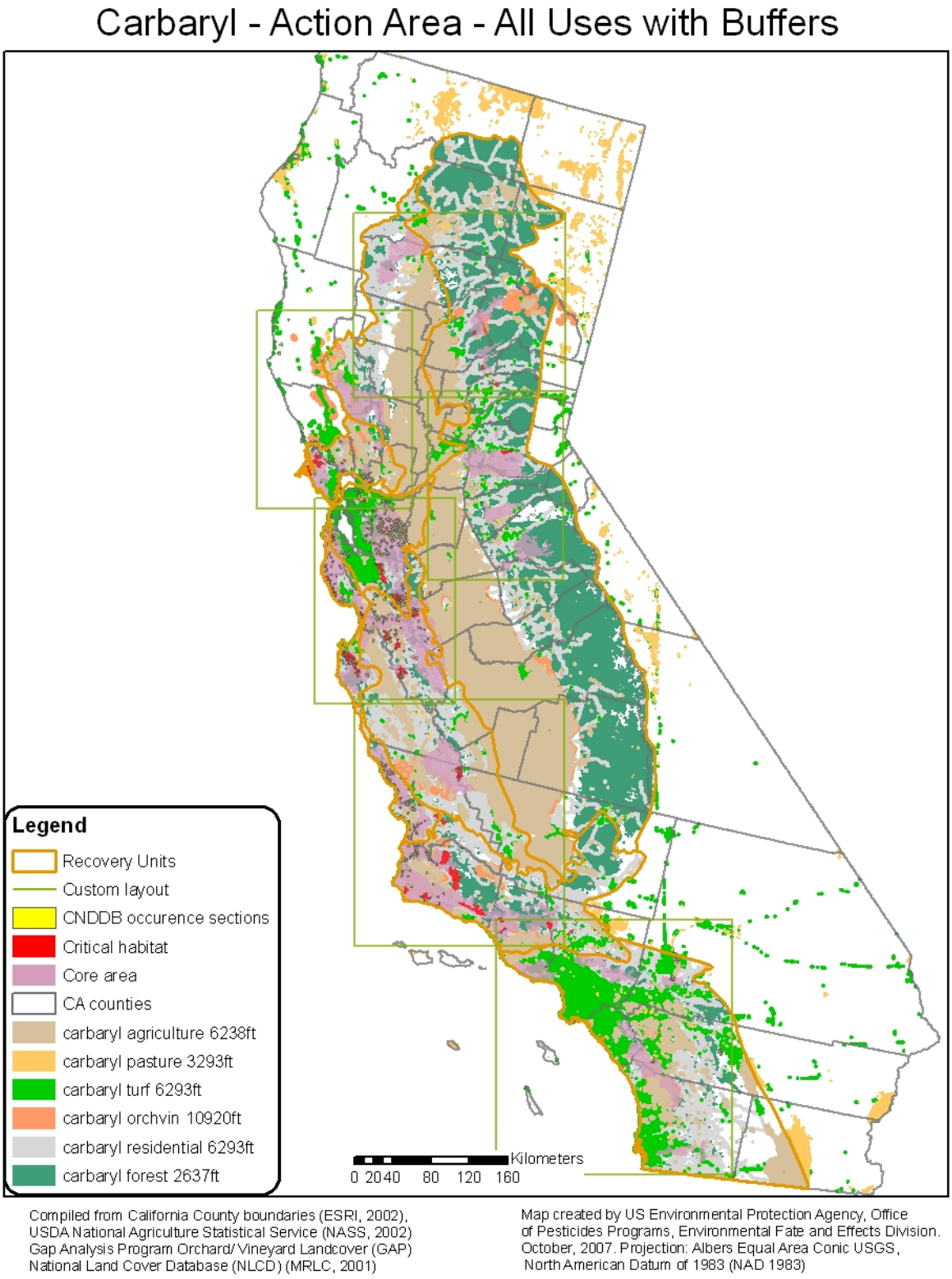

Figure C.8. Map of overlap between action area for carbaryl and CRLF core areas and critical habitat.

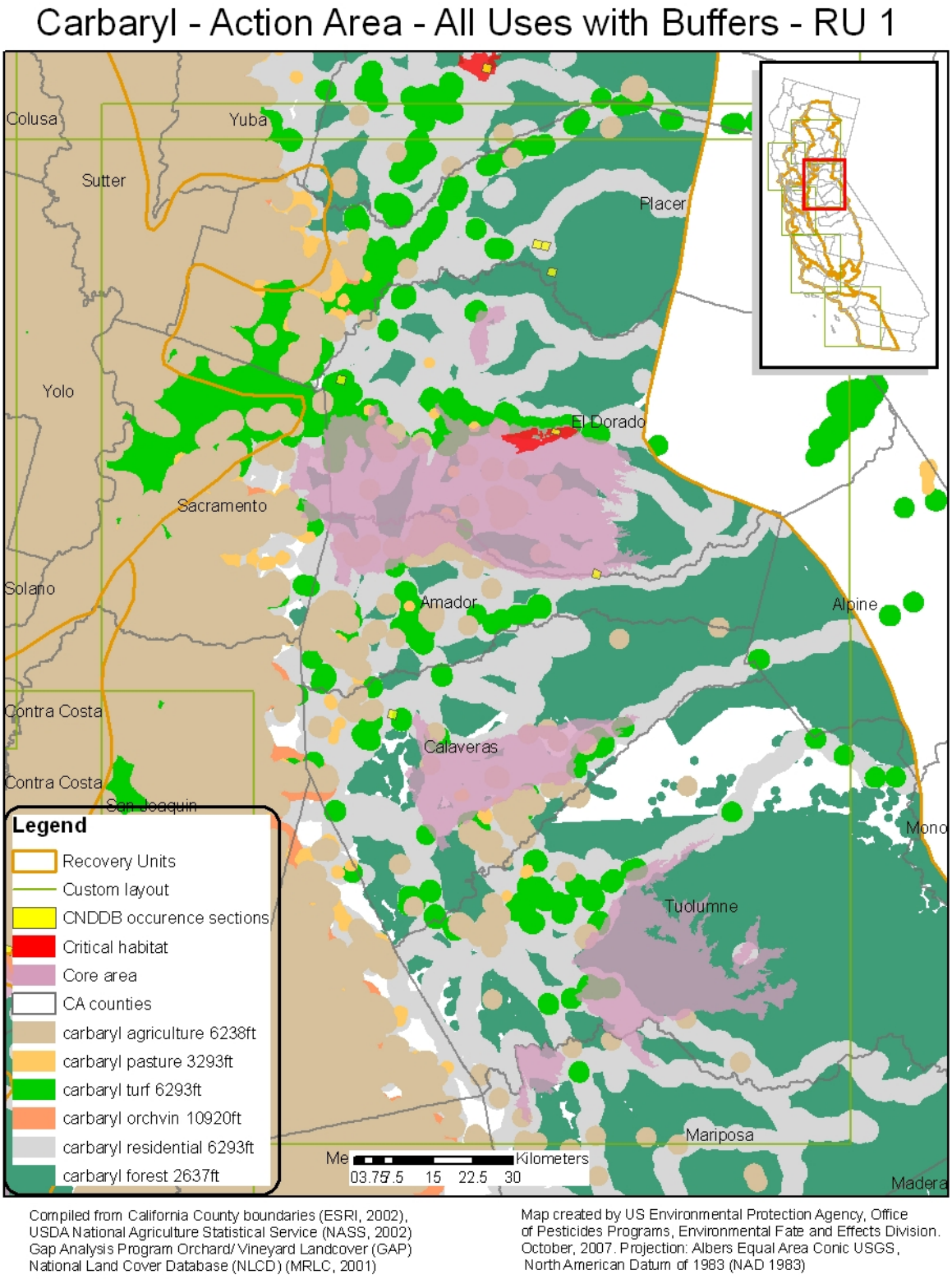

Figure C.9. Detailed map of overlap between action area for carbaryl and CRLF core areas and critical habitat: enlarged view of recovery unit 1.

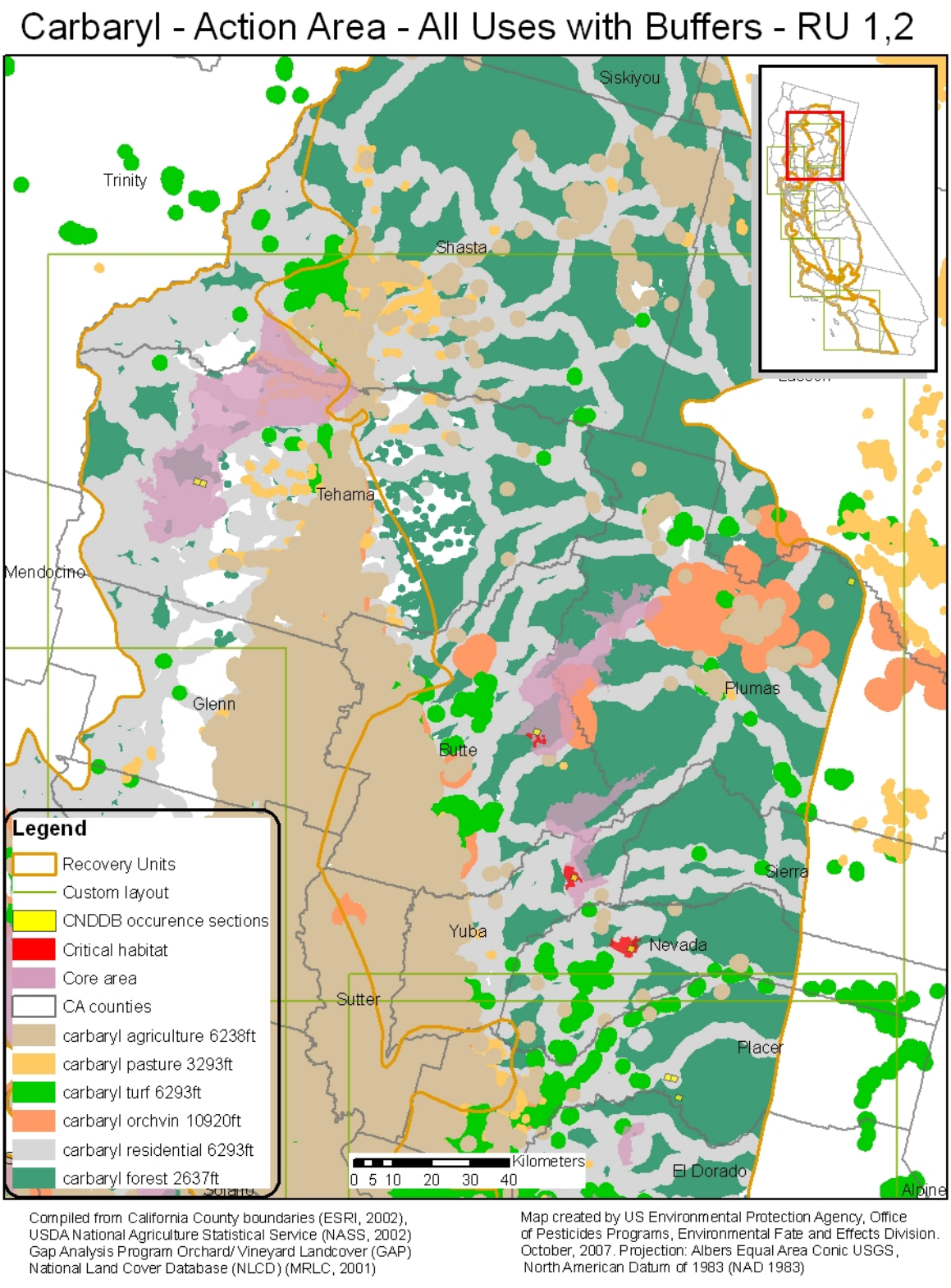

Figure C.10. Detailed map of overlap between action area for carbaryl and CRLF core areas and critical habitat: enlarged view of recovery units 1 and 2.

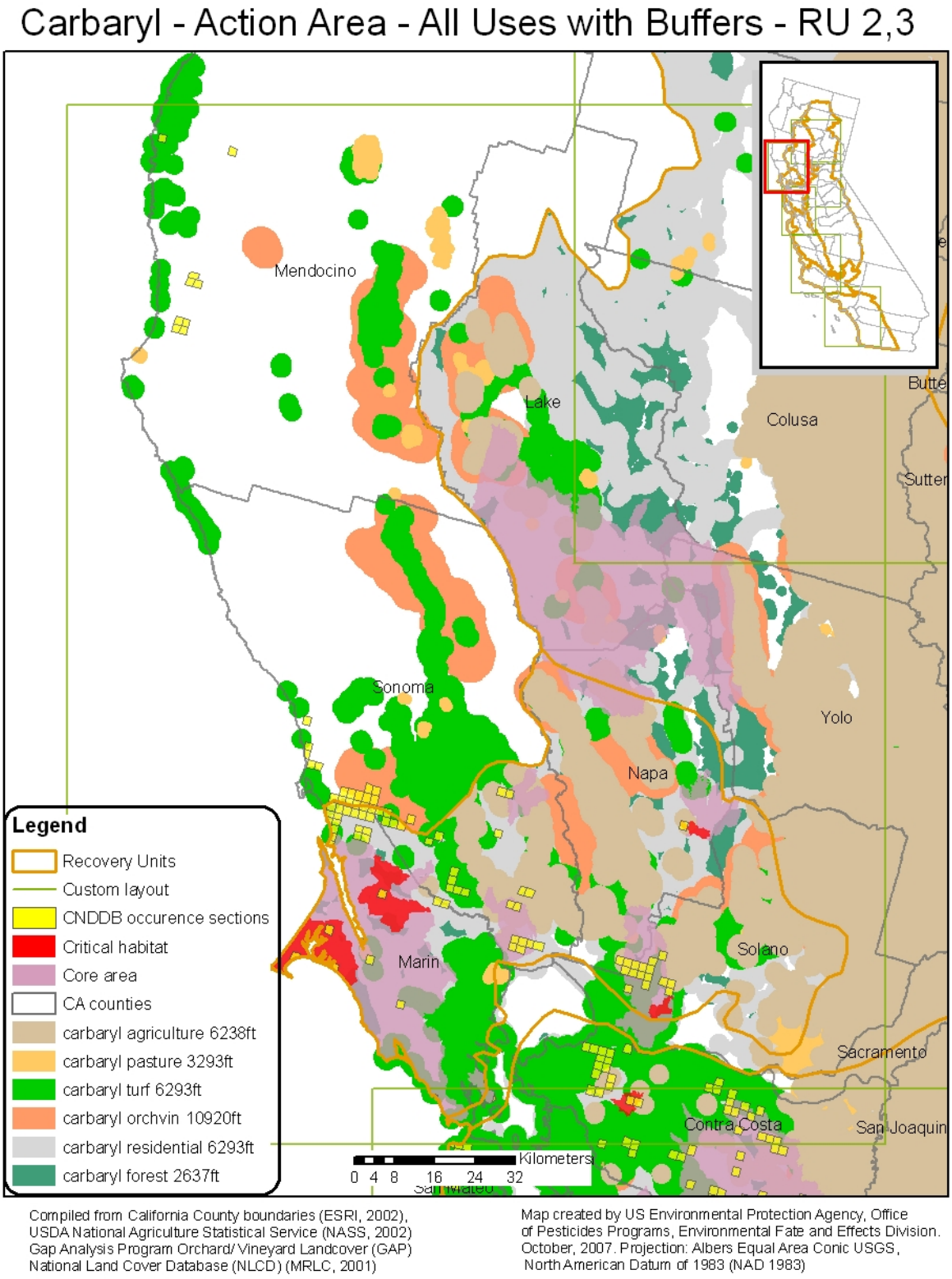

Figure C.11. Detailed map of overlap between action area for carbaryl and CRLF core areas and critical habitat: enlarged view of recovery units 2 and 3.

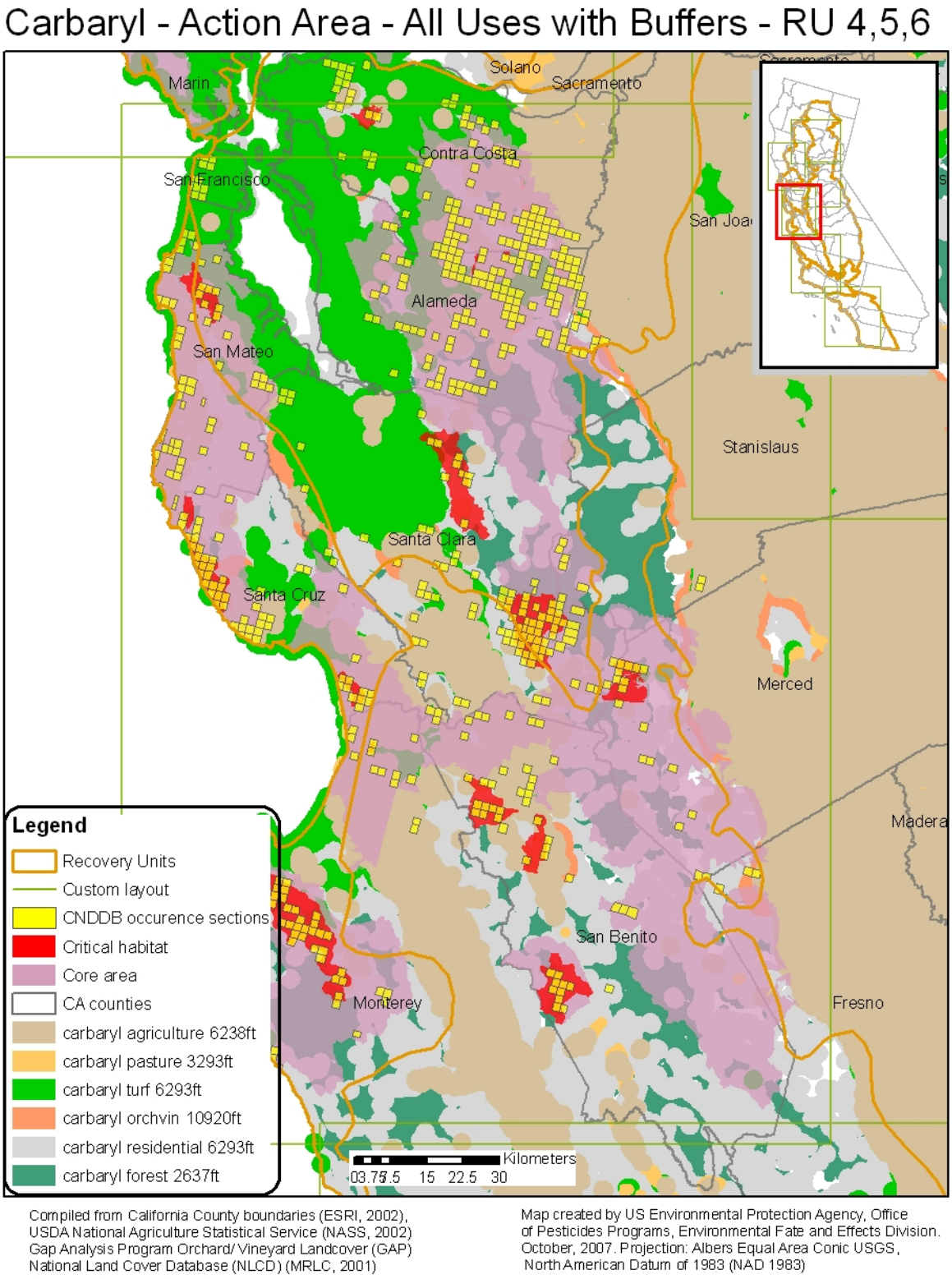

Figure C.12. Detailed map of overlap between action area for carbaryl and CRLF core areas and critical habitat: enlarged view of recovery units 4-6.

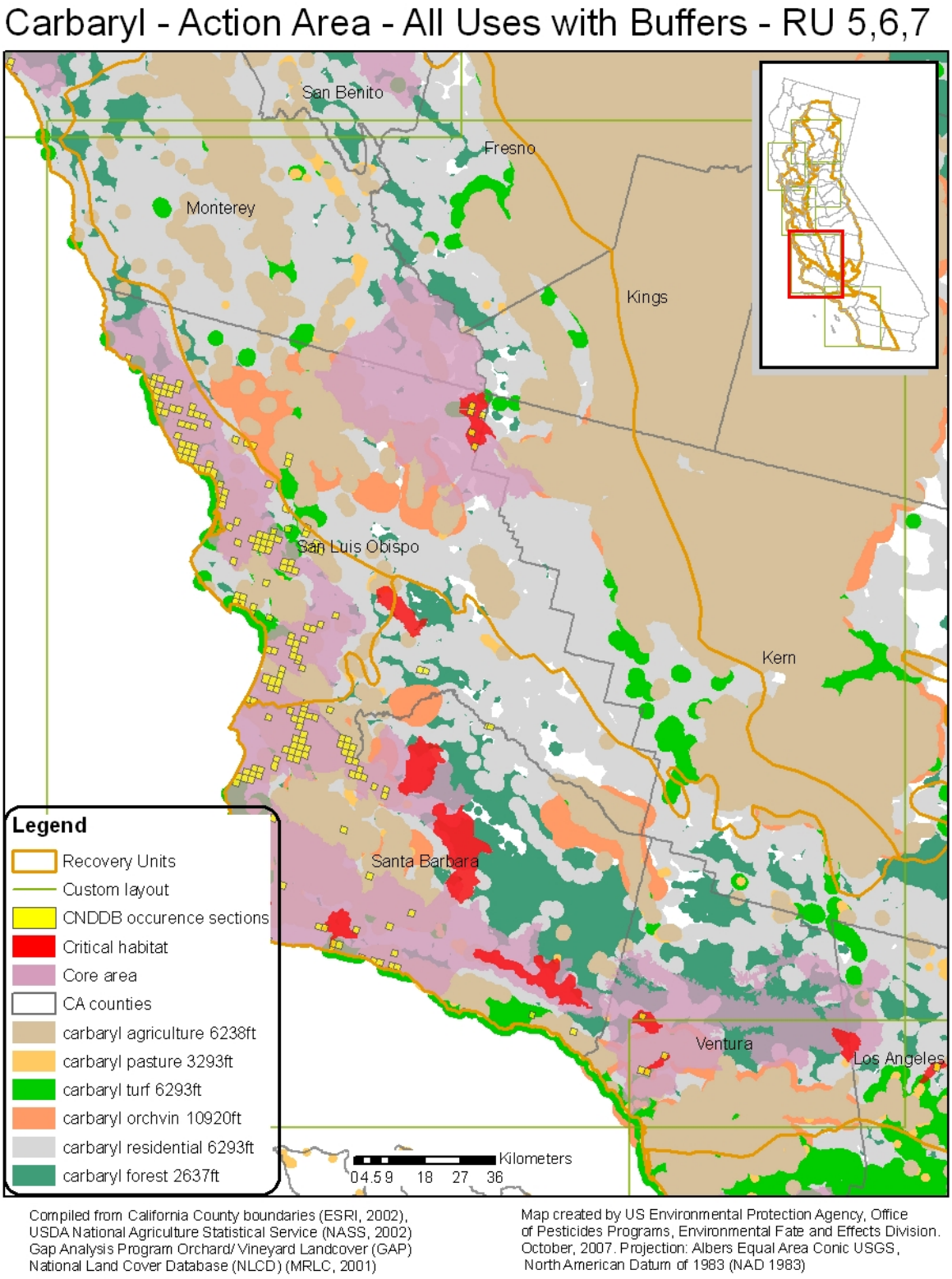

Figure C.13. Detailed map of overlap between action area for carbaryl and CRLF core areas and critical habitat: enlarged view of recovery units 5-7.

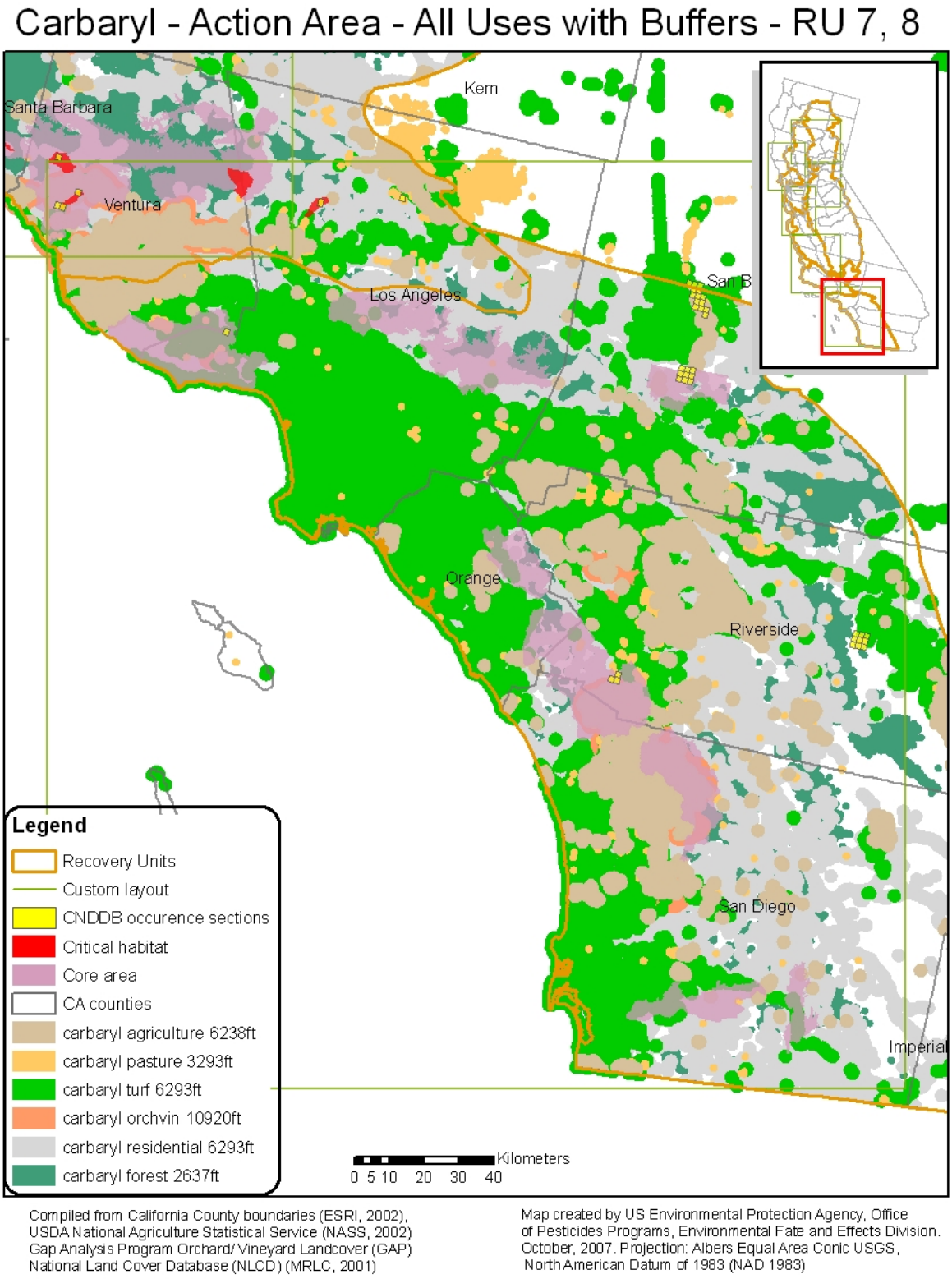

Figure C.14. Detailed map of overlap between action area for carbaryl and CRLF core areas and critical habitat: enlarged view of recovery units 7 and 8.

C.6. 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.

C.7. 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