Western Riverside County Vegetation Mapping Update

FINAL VEGETATION MAPPING REPORT

March 2015

Aerial Information Systems, Inc.

Redlands, California

Contents

I. Introduction

Aerial Information Systems, Inc. (AIS) was contracted by the Western Riverside County Regional Conservation Authority to perform an update to their original 2005 Western Riverside Vegetation Map. The project was funded through a Local Assistance Grant from the California Department of Fish and Wildlife (CDFW). The original vegetation layer was created in 2005 using a baseline image dataset created from 2000/01 Emerge imagery flown in early spring. The original map has been used to monitor and evaluate the habitat in the Western Riverside County Multi-species Habitat Conservation Plan (MSHCP).

An update to the original map was needed to address changes in vegetation makeup that have occurred in the intervening years due to widespread and multiple burns in the mapping area, urban expansion, and broadly occurring vegetation succession.

The update conforms to the standards set by the National Vegetation Classification System (NVCS) published in 2008 by the Federal Geographic Data Committee. *(*FGDC-STD-005-2008, Vegetation Subcommittee, Federal Geographic Data Committee, February 2008.) The update also adheres to the vegetation types as represented in the 2008-second edition of the Manual of California Vegetation (MCV2). Extensive ground based field data both within and nearby the western Riverside County mapping area has been acquired since the completion of the project in 2005. This additional data has resulted in the reclassification of several vegetation types that are addressed in the updated vegetation map.

The mapping area covers 1,017,364 acres of the original 1.2 million acres mapped in the 2005 study. The new study covers portions of the Upper Santa Ana River Valley, Perris Plain, and the foothills of the San Jacinto and Santa Ana Mountains but excludes US Forest Service land. (Figure 1) The final geodatabase includes both an updated 2012 vegetation map and a retroactively corrected 2005 vegetation base layer. Vegetative and cartographic comparisons between the newly created 2012 image-based map and the original vegetation map produced in 2005 are described in this report.

The Update mapping was performed using baseline digital imagery created in 2012 by the US Department of Agriculture – Farm Service Agency's National Agricultural Imagery Program (NAIP). Vegetation units were mapped using the National Vegetation Classification System (NVCS) to the Alliance and Association level as depicted in the MCV2. Approximately 55% of the study area is classified to vegetated or naturally occurring sparsely vegetated types; the remaining 45% is unvegetated, with over a third (36%) in urban development and an additional 9% in agriculture. (Figure 2)

A. Study Area

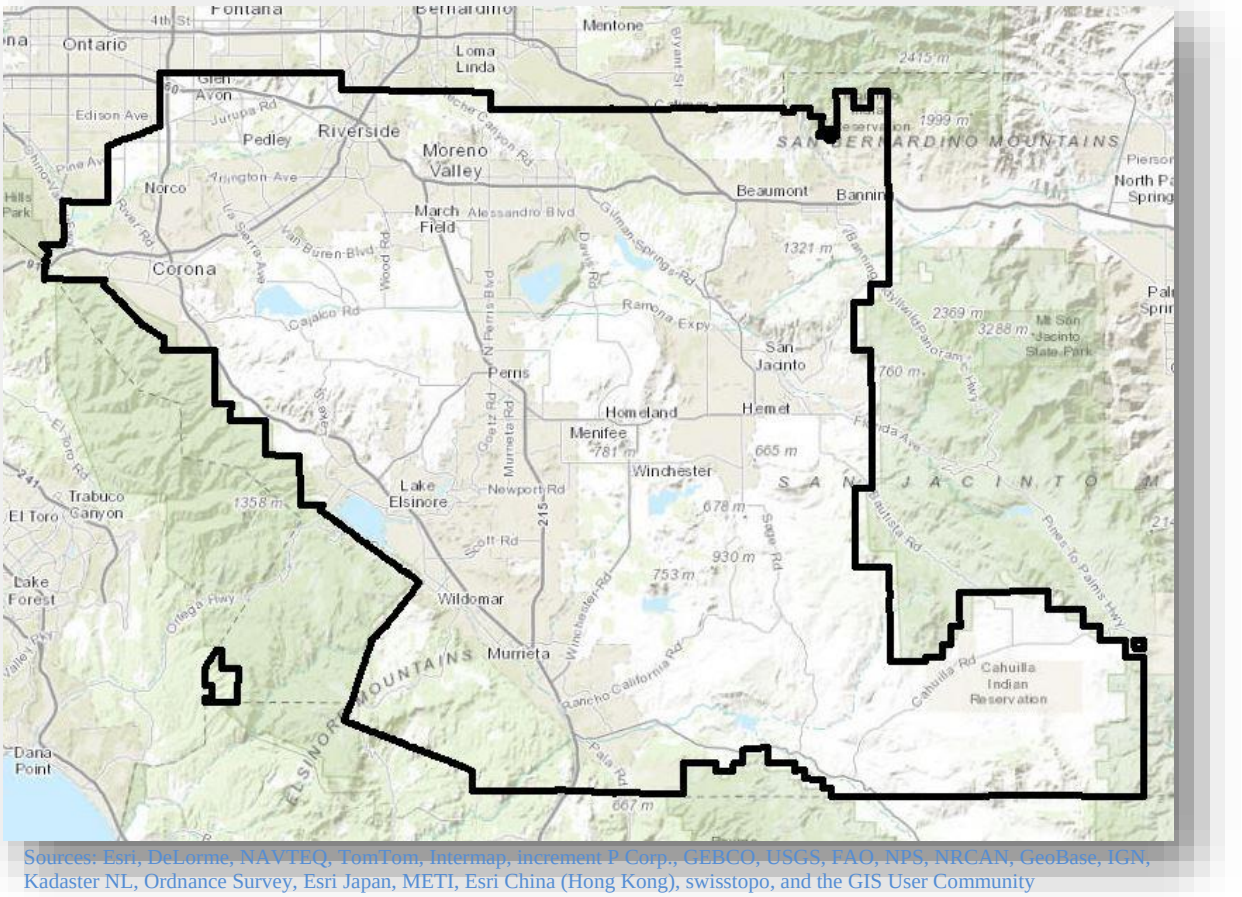
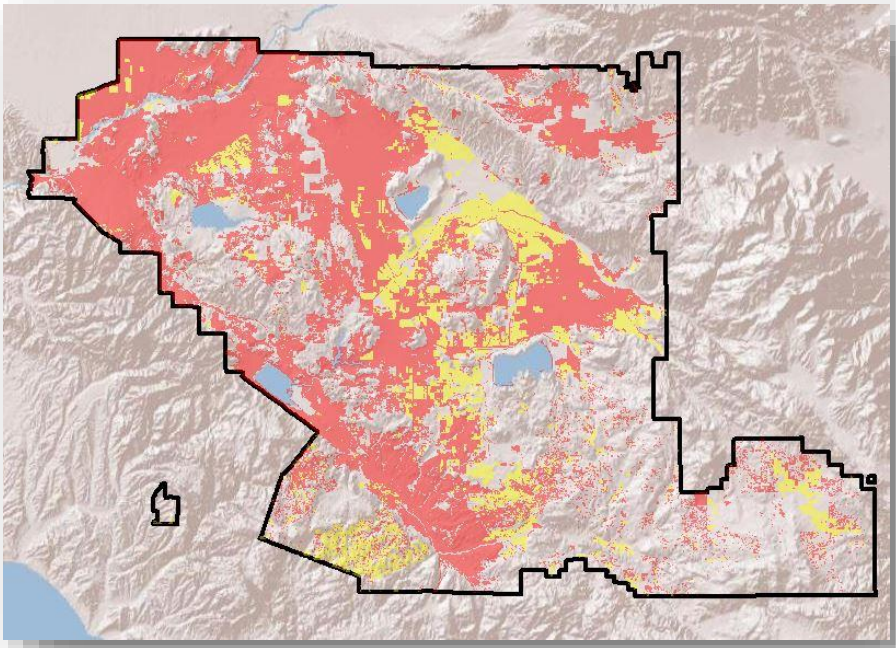


Figure 1: Study Area for Western Riverside County

The study as depicted above contains 1,017,364 acres (1,590 square miles). The region is bounded to the west by the Santa Ana Mountains and the east by the San Jacinto Mountains; to the south, the study follows the County Line; the study area's northern boundary roughly follows the northern boundary of USGS 7 ½ minute quadrangle maps between Corona and Cabazon.

Figure 2: Urban (red) and agriculture (yellow) in 2012



Agriculture and urban development account for nearly 456,000 acres in the MSHCP, nearly 45% of the total area. This represents an approximately 5% increase from the original 2005 mapping effort.

B. Project Background

In 2002, AIS was contracted by the California Department of Fish and Game (currently CDFW), to create a vegetation map for Western Riverside County, in support of the Western Riverside County Multi-species Habitat Conservation Plan (MSHCP). The project was performed over a three year period, from 2002-2005. Two different eras of imagery were used for the interpretations: Emerge imagery for the year(s) 2000/01, winter and early spring, natural color image dataset served as the baseline for the vegetation polygon registration and delineations, while year 2004 CIR imagery, obtained at a later stage of the project, was used to aid in the identification of the vegetation types.

The California Native Plant Society's (CNPS) Vegetation Alliances of Western Riverside County (2005) served as the project classification following NVCS guidelines. AIS performed three field reconnaissance visits in spring and fall of 2002. The field crew consisted of three photo interpreters from AIS, the state ecologist from CDFW, and CNPS field ecologists.

The field reconnaissance visits served two major functions. First, they enabled the photo interpreters to relate the vegetation ground conditions at each observation site to the signatures on the aerial imagery. Second, with guidance from ecologists in the field, the photo interpreters became familiar with the flora, vegetation assemblages, and local ecology of the study area. At

the same time, the ecologists gained understanding from the photo interpreters' perspective about assessing vegetation through the framework of map creation.

As preparation for the reconnaissance trips, AIS photo interpreters reviewed imagery on-screen to identify and select potential sites to visit. Sites were selected to represent different vegetation types and percent cover, as well as variations in geography, landform, and abiotic factors such as percent slope, aspect, shape of the slope, and elevation. AIS staff noted sites within the study area especially those in close proximity to roads and trails, which would facilitate travel to the sites for observation. Hard copy maps were created for clusters of several nearby sites.

During the reconnaissance visits, the crew traversed the area in two vehicles, stopping at sites the field crew deemed significant to study. Areas encountered in transit as well as areas of floristic or biogeographical significance were visited in the field as observation points. In addition, observation points were frequently taken to mark the transition between vegetation types, with the intent of helping photo interpreters to determine the edges of stands. A single observation point may have contained information about more than one stand. It was also possible for a given stand to be assessed in multiple places. Some stands of vegetation were remotely observed at a distance with the aid of binoculars. The location of these remote stands was determined using a compass and laser rangefinder.

At many observation points, the crew took color ground photos. The photo number, direction the photographer was facing, and other information about the photo was recorded on a field sheet and later input into computer files for easy reference. The crewmembers also recorded each location visited using a GPS unit and logged pertinent information on field sheets (See Figure 5 - CNPS/AIS field reconnaissance sites and CNPS Rapid Assessment Plots). The field data (GPS waypoints and site descriptions) and their corresponding linked ground photos were essential for correlating conditions seen on the aerial imagery to conditions on the ground, and were useful during the mapping effort.

The information gathered on the reconnaissance trips was used to assist the photo interpreters in the delineation and type identification of the vegetation units. However, during the photo interpretation process, it was common for the interpreters to encounter additional areas that were questionable or had confusing photo signatures. These questionable areas were delineated and described on hardcopy media, then delivered to CNPS field ecologists, who subsequently visited, and answered each of the questions. Common problems encountered by the photo interpreters included difficulty separating out many of the coastal shrub & chaparral types, and difficulties in post fire settings of recovering chaparral and coastal scrub where the cover was generally quite low.

The final vegetation map was delivered to DFG (DFW) in 2005 (the map is commonly referred to by the delivery date, rather than the baseline imagery or project start date, and will be referred to as such in this document). The 2005 map has been used to monitor and evaluate the habitat over the Western Riverside County MSHCP. The plan attempts to conserve over 500,000 acres of land, the largest MSHCP ever attempted, and is an integral piece of the network of Southern

California Habitat Conservation Plans and Natural Community Conservation Planning (Dudek 2001, Dudek 2003).

II. Western Riverside County Update Mapping Methodology

A. Overview

The major tasks for the Update project consisted of updating the original mapping classification to conform to the changes and refinements to the MCV2 classification, updating the existing vegetation map to 2012 conditions, retroactively correcting the 2005 vegetation interpretations, creating the final report and project metadata, and producing the final vegetation geodatabase.

After completion of the original 2005 vegetation map, CDFW crosswalked the original mapping units to the NVCS hierarchical names as defined in the Manual of California Vegetation (MCV). The original crosswalk was revised during the Update effort to reflect changes in the original MCV classification as depicted in the second edition (MCV2). Changes were minor and did not result in a significant effort in the updating process.

The updating process in many steps is similar to the creation of the original vegetation map. First, photo interpreters review the study area for terrain, environmental features, and probable vegetation types present. Questionable photo signatures on the new baseline imagery (2012 NAIP) were compared to the original 2000/01 Emerge imagery. Photo signatures for a given vegetation polygon were correlated between the two image datasets.

Production level updates to the linework and labeling commenced following the correlation of the two baseline image datasets and the subsequent refinement of photo interpretation criteria & biogeographical descriptions of the types. Existing datasets depicting topography, fire history, climate and past vegetation gathering efforts aided photo interpreters in their delineations and floristic assignments during the updating effort. The production updating effort took approximately 11 months.

B. Project Materials

Baseline Imagery used for the Photo Interpretation

The 2012 NAIP imagery served as the baseline imagery for the Update project. Although photo interpreters had access to higher resolution imagery, the NAIP imagery is a widely distributed and low cost product available to the public, and it was considered important to reference the data to source imagery available to all agencies both local and statewide. The 2012 NAIP imagery captures conditions in the mapping area shortly after the onset of the dry season in the month of June and depicts conditions after a lower than normal rainfall season. Image resolution (Image Pixel Size) is 1 meter and is natural color.

Online Imagery

While the NAIP 2012 imagery serves as the baseline imagery for floristic assignments, several online image datasets aided photo interpreters in defining floristic types and further refining the delineations of the vegetation stands. Imagery from Google Earth and the online imagery available through Esri's ArcGIS Online (typically Bing) were also used, as needed. The dates of the online imagery from Esri were unknown and variable but the dates of the imagery used in conjunction with Google Earth (GE) were acknowledged. Online imagery acquired through Esri was able to be geo-referenced to the polygon delineations. The GE imagery was used as a follow-on tool on an adjacent screen.

Important note: All updates to vegetation type and cover stature assignments are referenced temporally to the 2012 NAIP Imagery.

The table below shows all image datasets used in the mapping effort. Those denoted with an asterisk were accessed through on-line technology. NAIP 2014 imagery became available about midway through the project and was used to help "complete the story" of differing change scenarios in the mapping area. When noted, severe burns reflected on the 2014 imagery were mentioned in the comments field.

Image Name	Year Created	Resolution	Color
EMERGE	2000-2001	1-meter	Natural Color
NAIP	2014	1-meter	Natural Color
NAIP	2012	1-meter	Natural Color
NAIP	2012	1-meter	CIR
NAIP	2010	1-meter	Natural Color
NAIP	2005	1-meter	Natural Color
*Google Earth	Variable	Variable	Natural Color
*Esri	Variable	Sub-meter	Natural Color

Ancillary data

The following is a list of other datasets used by the photo interpreter in the mapping process.

Ancillary Data
WRIV 2002 Rapid Assessment & Recon Points (CNPS)
WRIV 2002 Quick Recon Points (AIS & CNPS)
CA Fire Data – Fire Perimeters through 2013
Western Riverside County Ag. Coalition Data
USGS Contour Data

Esri online Topo Maps
Esri online USA Topographic Maps

The use of contour data derived from digital elevation models and supplementary information from the ancillary datasets such as the ones in the table above are an important source of data for the photo interpreter. Vegetation communities have a wide range of image signature characteristics and overlapping signatures between differing vegetation communities can be extensive. It is therefore necessary for the photo interpreter to have a thorough understanding of the topographical setting (slope steepness, direction of the slope, shape of the slope, position of the vegetation stand on the slope) in addition to modal elevation in which the vegetation communities occur. These biogeographic variables along with substrate characteristics, flooding frequency and severity are but just a few of the features that help in defining where a stand of vegetation occurs in the landscape.

C. Retro-Mapping

A unique feature of the update process is the concept of retroactively correcting ("retro-mapping") the original 2005 dataset, in order to create a more accurate baseline for change analysis studies. These types of corrections were due primarily to the differences in resolution between the original 2000/01 Emerge imagery and the higher resolution 2012 NAIP (and the even finer resolution ancillary image datasets) available to the photo interpreters for the 2012 Update.

There were only minimal geospatial differences between the Emerge 2000/01 and NAIP 2012 imagery and most discrepancies were extremely difficult to quantify due to the lower quality and resolution of the Emerge dataset. Since this was an update product and not a geo-referencing exercise, the base 2005 linework was not revised when there was no change in vegetation and the image registration issues were minimal to imperceptible. An exception to this guideline was for slight geo-referencing issues along riparian corridors and woodlands, typically caused by tree canopy shadowing. In these situations polygon boundaries were typically reshaped to better fit the 2012 NAIP imagery. (Figure 3)

Figure 3: NAIP Image to the left depicts improved registration of a boundary that was delineating the shadows of canopy on the 2000 imagery. Red line – 2000 vegetation line; Black line – 2012 NAIP – The box represents ½ acre.

Retro-mapping of 2005 polygon attributes were more numerous than retro-line adjustments. In general, error levels were minimal. Typical revisions involved updating the cover density range for the polygons. During the 2005 mapping effort, the low sun angle of the 2000/01 Emerge imagery gave a false impression of higher vegetation density, resulting in a slight overestimation of the cover density assignment. Figure 4 illustrates a typical situation: in 2005, the chaparral polygon was assigned a cover density of 40-60% but the higher resolution 2012 image shows cover density of 25-40%. No physical change, fire or disturbance, was observed on the 2012 therefore the 2005 density class was revised to reflect the more correct lower density range.

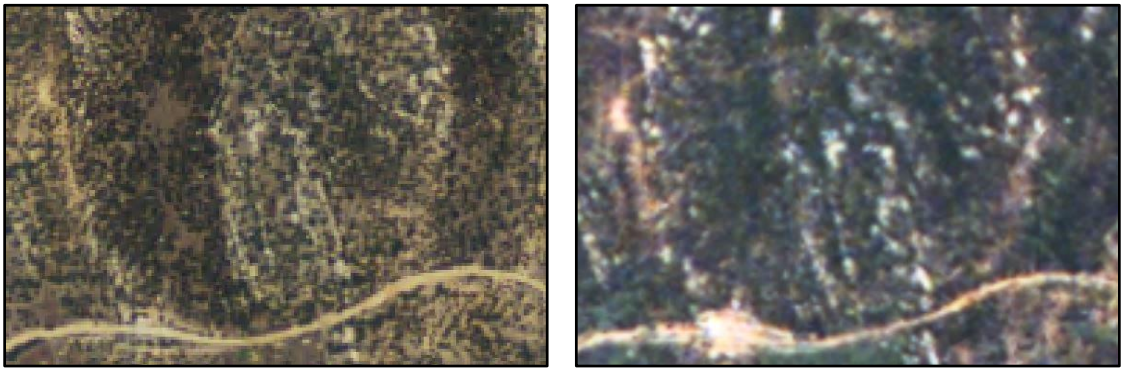


Figure 4 – Comparisons between 2012 (left) and low sun angle 2000 (right) imagery. Shrub cover in this example changed little and cover estimates were lowered on the original vegetation map from a Cover Class 4 to a 3. (40-60% down to a 25-40%)

D. Mapping Classification

The 2005 Western Riverside Mapping Classification (MapUnit2005 field) was developed by AIS photo interpreters before the final floristic classification was completed by CNPS. The mapping classification types were reviewed by DFW ecologists and accepted as valid types that upon completion of the Vegetation Alliances of Western Riverside County in August 2005 were integrated into the NVCS hierarchy. The mapping classification is currently crosswalked into existing NVCS groups, alliances and associations.

In updating the 2005 database to the 2012 NAIP imagery, photo interpreters used a combination of the original mapping classifications (in order to evaluate the vegetation consistently with the way it was done in the original mapping effort) and existing NVCS defined types in evaluating the 2012 vegetation. Vegetation updates were completed using the most recent version of the NVCS as depicted in the Second Edition to the Manual of California Vegetation (MCV2).

Users should refer to the Vegetation Alliances of Western Riverside County, CA Final Report for localized descriptions of the alliances and associations used in the WRIV 2012 Vegetation Map. Users of the product should refer to the MCV2 for regional descriptions at the alliance level from a statewide perspective.

E. Field Reconnaissance

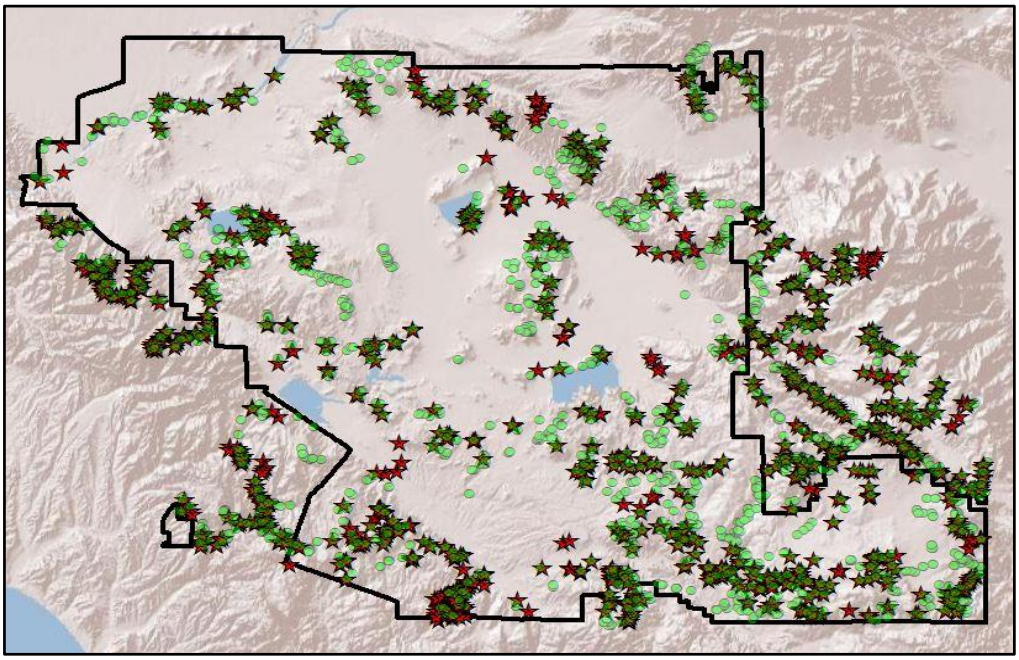
Since most of the signature correlations to the vegetation types were already accomplished during the original mapping in 2005, minimal reconnaissance was needed for the updating effort. During the vegetation updating process, no new floristic types, either at the association or alliance level were identified. Most non-spatial updates involved changes in cover density. Floristic change (such as from one vegetation type to another) more often than not, remained within the same alliance. For example, a stand of dense pure chamise (defined to the Chamise Association) that underwent a burn and was recovering with a combination of coastal scrub and chamise would be classified a Chamise Alliance, a more generalized category in the hierarchy. This type of change to a vegetation pattern does not require additional field reconnaissance in most circumstances.

However, for the 2012 Update, several days of reconnaissance were undertaken to verify commonly occurring changes to the vegetation. During this effort, no GPS points were acquired; generalized observations of change were characterized when repeated over the landscape. Throughout the production update phase, photo interpreters used existing reconnaissance and rapid assessment point data gathered during the reconnaissance effort in 2002. These included over 5,000 points (Figure 5), some of which were removed during this effort since they were located in US Forest Service Lands not mapped in the 2012 mapping effort.

Figure 5: Rapid Assessment & Field Reconnaissance Points

★ 2002 RA Points (CNPS)

● Reconnaissance Points (CNPS & AIS)



III. Photo Interpretation and Mapping Procedures

A. Photo Interpretation Process

Photo interpretation is the process of identifying map units based on their photo signature. All land cover features have a range of photo signatures. These signatures are defined by the color, texture, tone, size, and pattern exhibited on the aerial imagery. By observing the context and extent of the photo signatures associated with specific land cover types, the photo interpreter is able to identify and delineate the boundaries between plant communities or signature units on a digital image or map.

It should be noted that vegetation stature as well as the scale and resolution of the aerial imagery determine the visibility of individual plants. Trees and shrubs are usually visible as individuals on high-resolution digital imagery. However, grasses (other than bunch grass clumps) are rarely seen as individual plants.

Environmental factors such as elevation, slope, and aspect also play an important part in the photo interpretation decision-making process. Knowledge of these factors, and how plant communities respond to them, guides a photo interpreter in choosing from among other plant types with similar photo signatures. Ultimately, such knowledge enables vegetation mappers to create biogeographical models of expected vegetation communities where the vegetation types are indistinct on the imagery. This ecological approach produces a more accurate product than would be created by relying solely on extracting information from the imagery, which is subject to variations in color, clarity and ground conditions.

The detailed descriptions of each vegetation type mapped in the study area, found in the CNPS Vegetation Alliances of Western Riverside County, include examples of the types of information the photo interpreters incorporate into their understanding of the models. Some examples of these models include how one alliance may favor broad floodplains, while another is found in the immediate fringe of narrow well-defined channels. Some alliances may flourish on disturbed sites, while others cannot tolerate multiple frequencies of high intensity disturbance events such as fire. Moreover, some alliances are ubiquitous and found in a variety of settings.

These descriptions also discuss the importance of various plant species in the alliance. Frequently, complicated relationships exist between the relative covers of plants, such as in alliances named for indicator species having lower percent cover than other species present. Thus, both environmental setting and rules regarding relative cover factor into the intelligent delineation of vegetation polygons.

B. Map Updating Process

Update mapping is the process of revising the spatial and attribute data of an existing dataset using current sources of information for the purpose of change detection and trend analysis

studies. (2012 – Aerial Information Systems, Inc. New Jersey Department of Environmental Protection – 2012 Land Use / Land Cover Update & Impervious Surface Mapping Project).

For the Western Riverside Vegetation Mapping Update, linework and vegetation code assignments (floristics and stature) from the 2000/01 EMERGE Imagery was updated using the 2012 NAIP. Both sets of images were determined as the baseline datasets for the two efforts. It was determined, that geo-spatial differences between the two datasets were minimal, and the cost would be prohibitive to correct linework created in 2005 to the 2012 NAIP when differences were negligible.

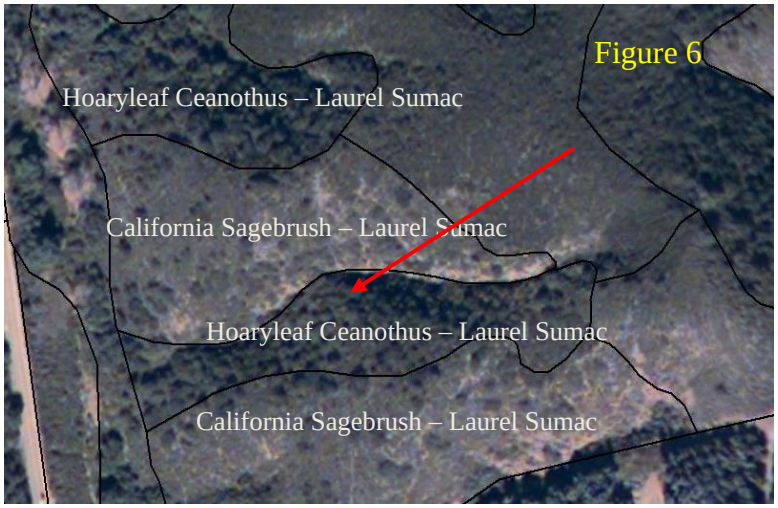
The following is a step-by-step summary of the processes involved in updating the vegetation map.

a. Each polygon was reviewed for change (either floristic type, cover, or disturbance related). Photo interpreters reviewed the polygon over the 2000 imagery and then the 2012 NAIP image.

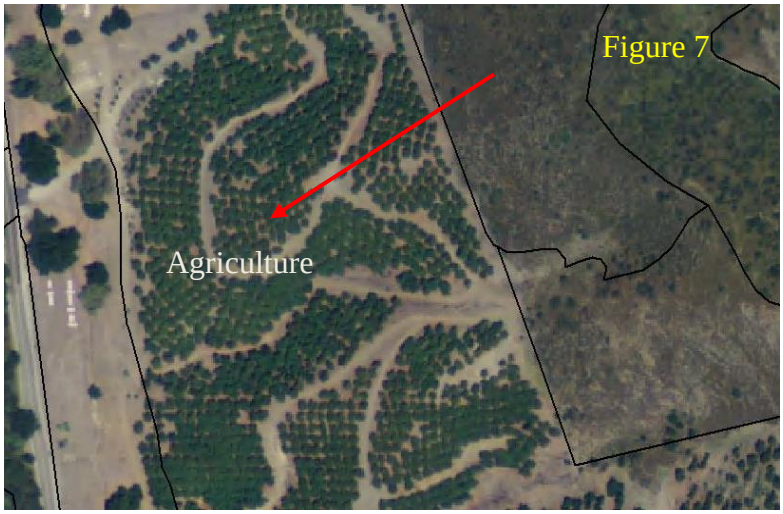
b. If no change was detected, photo interpreters reviewed the polygon configuration, floristic and cover assignments for possible retroactive change to the original 2005 vegetation map. Changing the original map using higher resolution imagery allows for a more realistic comparison when actual change is real. Retroactive updates (retro-code or retrofit) are to be expected in any vegetation update process where producers have a much clearer picture of the past and present conditions due to higher quality imagery. Most retroactive updates to the 2005 vegetation map were minor and were changed only at the finest levels of the classification. ***Note: Retroactive changes to the original product makes the earlier version delivered in 2005 obsolete. When reviewing the two datasets, it is important to use the 2015 delivery as the baseline map. Although increased accuracy is not quantifiable, it is likely that the 2005 retro-corrected map in the 2015 delivery is significantly more accurate than the original product. Comparisons of the two deliveries will highlight where retroactive changes occurred.***

c. If a change was detected in either the stand configuration or floristic/physiognomic coding assignments, photo interpreters would make the change and code the updated portion of the polygon with a new set of fields that informs the user as to which version of the map is assigned a particular

code. All historic attributes were kept intact. Note in Figure 6 the original floristic coding of 4 polygons (dissolved out of the final database to depict 2000

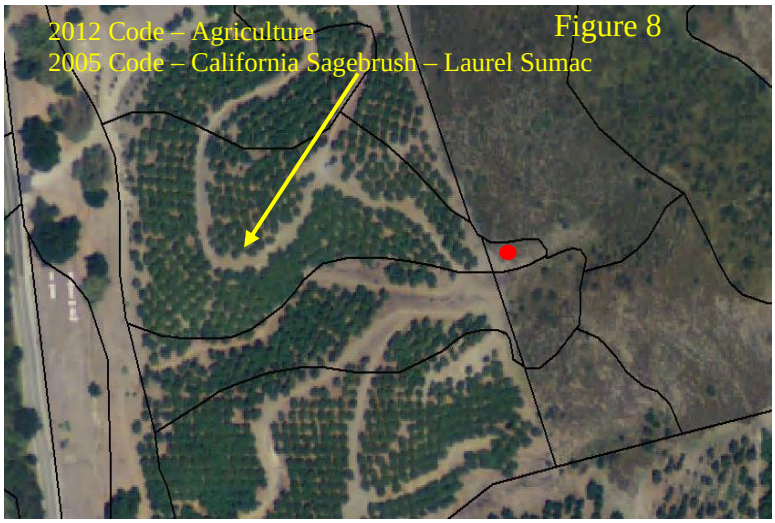


conditions) representing differing chaparral and coastal scrub types on the 2000 imagery which was the base for the 2005 vegetation map. Note in Figure 7 the change in the previous four floristic types to agriculture (Dissolved out to represent 2012 conditions). Adjacent stands of vegetation (not labeled) were



also updated to reflect floristic and cover reclassification based on adjacent agricultural disturbance.

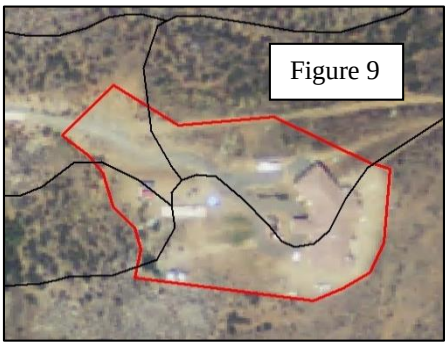
d. The linework in Figure 8 reflects the aggregate of the two databases over the 2012 imagery. Note that each polygon carries with it all of the attributes from the original 2005 vegetation map, (Floristic type, cover stature values, disturbance values etc.) along with the updated 2012 values for the same fields. All linework is contained within the one geodatabase.



e. Photo interpreters reviewed codes and linework for the polygon that was updated; then the polygon was "checked off" into an internal QC field showing that the polygon update was complete.

f. In some cases, remnant polygons that were once part of one stand but were still floristically intact were aggregated into the adjacent stand not converted to agriculture. Small remaining patches of vegetation generally do not retain the characteristics of the original vegetation stand and MMU constraints dictate that that polygon be aggregated with the adjacent natural vegetation. These aggregations were more common where floristic stature is similar to the unaffected adjacent stand. Note the small red dot in Figure 7 which is a small patch that was aggregated into the stand to the south. The polygon remains a distinct unit in order to depict 2005 conditions with the polygon to the west. It is aggregated into the three polygons to the southeast as a reclassified *Lotus scoparius* alliance.

An example of 4 completed change polygons from a landuse update are noted in figure 9 below over the 2012 NAIP imagery. The polygon in red includes the 4 updated polygons.



C. Overall Mapping Process

Just as the use of biogeographical models by experienced photo interpreters contributed to the production of a high-quality vegetation map, the use of reliable mapping procedures allowed the map to be produced in a highly efficient manner. For example, the study area was divided into 37 USGS 7.5 minute topographic quads. This expedited project workflow by enabling several staff members to work on the mapping effort simultaneously.

Using an on-screen heads-up digitizing method, the photo interpreters had at their disposal a suite of standard and custom ArcMap tools to facilitate the updating of polygons. The photo interpreters generally viewed the imagery at scales ranging from 1:1000 to 1:4000. They used variations in signature to draft boundaries separating areas of different vegetation types and/or distinct categories of percent cover of several stature levels. To assist in boundary placement and coding decisions, photo interpreters also referenced supplemental imagery, field reconnaissance data, and other ancillary data. These sources were displayed in the ArcMap session as needed.

Photo interpreters updated each polygon with the following attribute code string:

Vegetation Mapping Attributes
PI_2012
ConDensity2012
HWDensity2012
ShrubDensity2012
HerbDensity2012
Exotics2012
Disturbance2012
PI_2005
Density2005
Exotics2005
Disturbance2005
Comment

14 additional attributes were assigned using the 2012 & 2005 PICode fields and related to several excel tables containing tabular data:

Vegetation Mapping Attributes
MapUnit2012
ComName2012
NVCS_Name2012
NVCS_Level2012

MSHCP_Coll2012
WHR_Code2012
WHR_Name2012
MapUnit2005
ComName2005
NVCS_Name2005
NVCS_Level2005
MSHCP_Coll2005
WHR_Code2005
WHR_Name2005

4 Additional attributes (height & size) were automatically assigned through the modeling of the modal average of the floristic types. The height values were systematically reviewed and values depicting modal height were updated based on burn patterns and other post seral disturbance variables. Stand size assignments were not adjusted, as this proved too difficult to evaluate with the existing digital imagery.

Vegetation Mapping Attributes
SizeClass2012
HeightClass2012
SizeClass2005
HeightClass2005

The descriptions for the vegetation types (Groups, Alliances & Associations) are found in the CNPS Vegetation Alliances of Western Riverside County.

One additional attribute (WRIVVEG2012UID) has been added to the database in order to track the 2012 polygons in the event that subsequent editing takes place.

The PI updates were entered into the database as numeric values, which are easier to input and manipulate than alphanumeric codes. Numeric code values also allow for the hierarchical grouping of like vegetation communities, assisting the mapper to know at a glance, which alliances are found in a particular hierarchical grouping. A custom menu was developed by GIS staff that enabled code values to be assigned to their corresponding spatial extent efficiently and minimizing the possibilities for entry errors. Once the geodatabase neared completion, the numeric code values were correlated with the actual vegetation type names.

The 37 modules were edge-matched and checked for invalid codes and topology errors. Once finished, they were joined into one seamless geodatabase. The geodatabase was subject to further processing, edge-match checks, and review by a senior staff member before being delivered to the client. Quality control procedures implemented during the mapping effort and

before final delivery of the data improved the consistency and accuracy of the overall geodatabase.

D. Mapping Criteria

As discussed above, appropriate tools and reference sources, photo interpretation training, and knowledge of vegetation communities are all essential in creating a quality vegetation map. However, without the establishment and refinement of mapping criteria, a given vegetation map could be riddled with discrepancies, as different photo interpreters approach the task with different assumptions and styles. Guidelines and rules regarding exceptions, special situations, and minimum feature size are discussed and disseminated to all staff members before and during the mapping effort, which helps to create a clear and consistent product. Establishing criteria also makes the mapping process more efficient, as individual photo interpreters do not have to pause too long to consider how best to capture the more commonly occurring ambiguous situations that are confronted.

The specific criteria for each attribute for the final deliverables are discussed below under the appropriate heading.

E. Mapping Attributes

The following section describes each of the attributes mapped for the all of the vegetation within the defined study area.

PI_2005 & PI_2012 (MapUnit2005 & MapUnit2012)

This code corresponds to the vegetation mapping unit text field (MapUnit2005 & MapUnit2012). These two attributes are assigned to all the vegetation polygons in the geodatabase. The two MapUnit fields directly relate to the NVCS_Name & ComName fields. The code strings consist of either 3 or 4 digits.

Mapping Code

As stated above, the two PI fields are assigned to all polygons. The numeric codes within the PI_2005 & PI_2012 fields represent photo interpretation (PI) map units. These map units were originally created by the photo interpreters before the development of the final classification in 2005 to reflect what was observed in reconnaissance and perceptible on the imagery. These mapping units also directly crosswalk to the above NVCS & Common Name fields but have added historical value in that these are the codes used in part by photo interpreters that are more in line with what they could discern off the imagery; in this case, the original 2000/01 EMERGE dataset. For example, map unit 512 was used when photo interpreters noted varying cover of *Encelia farinosa* with minor amounts of *Eriogonum fasciculatum.* This particular mapping unit has been assigned the *Encelia farinosa* alliance in the NVCS_Name fields. The user of the map understands through the 512 code what the photo interpreters could actually identify. It is problematic in many

situations to assign this 512 value to an association level because of the difficulty in determining relative cover of the two species.

Vegetation Mapping Considerations

When the photo interpreter could not confidently classify a polygon at the alliance- or association level, or the vegetation was a mix that did not fit into an alliance-level or mapping unit, the polygon was assigned a broader group-level code.

For vegetation mapping, a minimum polygon size is an important consideration when creating and viewing a vegetation geodatabase. A minimum mapping unit (MMU) is established to ensure the map contains polygons of a workable, meaningful size. The choice of an MMU is influenced by the clarity of the imagery, the detail of the mapping classification, the purpose of the data, and time and budget constraints. MMU can vary for different categories of features being mapped. The Statewide mapping criteria has established different MMUs depending on the area being mapped (e.g., Desert mapping MMUs are different from Sierra Foothills MMUs).

For this project, there were two established MMUs: 2 acres for uplands and 1 acre

Figure 10

for special & wetland features. Updates to vegetation polygons may however leave splintering of polygons well below 1 acre in size. These fragment polygons remain in the database to better fit both the two image datasets when dissolved out into their respective years. The polygon (denoted by the arrow) above in Figure 10 is coded in land use in 2012 and a vegetation type in 2005. The 2005 database dissolves out the small polygon as part of the stand to the west. The “splinter” polygon has an area of approximately ¼ acre.

The establishment of an MMU requires the need for making rules for aggregating stands below MMU. In general, similar life forms are aggregated together: tree-dominated types are aggregated with other tree-dominated types, shrub types with other shrub types, and herbaceous types with other herbaceous vegetation types. However, if possible, wetland vegetation types are not aggregated with upland types, even if they are in the same life form. Another guideline is used when a vegetation unit below MMU is aggregated with the vegetation type that surrounds it. This is known as a mapping or vegetation inclusion. Finally, if a vegetation unit that is below MMU is the same life form as two adjacent larger stands, and the adjacent stand types are very dissimilar in environment, the unit may be aggregated with the more

environmentally similar adjacent type.

In addition to establishing MMU size, guidelines were established for the minimum width (MW) of a map polygon. The rule of thumb was to make the MW roughly half the width of an MMU square. For the 1-acre MMU, the MW is approximately 90 feet and for the 2-acre MMU, the MW is approximately 135 feet. The appropriate MMUs were still observed. This guideline did not preclude the creation of polygons where a small section fell below the minimum width, as long as the greater portion of the polygon met the stated criteria. This is most common when a narrow stream or riparian polygon was mapped and below MMU or MW portions were included in order to keep the continuity of the stream or riparian vegetation. As mentioned above regarding overall MMU, AIS opted to map below these limitations where structural, floristic and or ecological characteristics were significantly different from the adjacent vegetation.

Another type of mapping consideration pertains to sparsely vegetated or nonvegetated areas. Polygons assigned to a floristic type in the NVCS often contain small areas of unvegetated surface that is too small to delineate. These sparsely vegetated to nonvegetated areas were not coded in the database unless they met the minimum mapping resolution and could be mapped as separate polygons. The most common examples are small rock outcroppings in shrub dominated communities, small riverine flats or wash channels in riparian stands of vegetation.

Percent Cover Attributes

The percent cover attributes include the following:

- ConDensity (2012 only)
- HWDensity (2012 only)
- ShrubDensity (2012 only)
- HerbDensity (2012 only)
- Density2005 (Density for assigned stature of floristic only – tree, shrub or herbaceous. This is the value assigned in the 2005 database using the EMERGE imagery.

Percent cover, also referred to as density, is a quantitative estimate of the aerial extent of the living plants for each vegetation layer mapped within a stand. Percent cover, based on a birds-eye (what a photo interpreter can see from the sky looking down) view, is the primary metric used to quantify the importance or abundance of a life form and/or species.

It should be noted that the cover of a stand could be considered a more significant attribute than the floristic assignment depending on the end use of the map. A mapped line dividing a break between a shrub cover density of 60% to a cover density of 10% can be more important than a polygon separating close floristic types (such as between an *Artemisia californica* alliance and an *Artemisia californica – Eriogonum fasciculatum* Alliance). More often than not, the cover of a stand will change following one or more severe burn events. Therefore, in studying a change that has occurred between vegetation maps completed at different times, it is, in most cases, more likely that the vegetative cover will drop rather than the actual vegetation type change.

Note in Figure 11 that a fire in 2010 burned most of this portion of the imagery. The polygon denoted by the red dot has been converted from a shrub type to a California

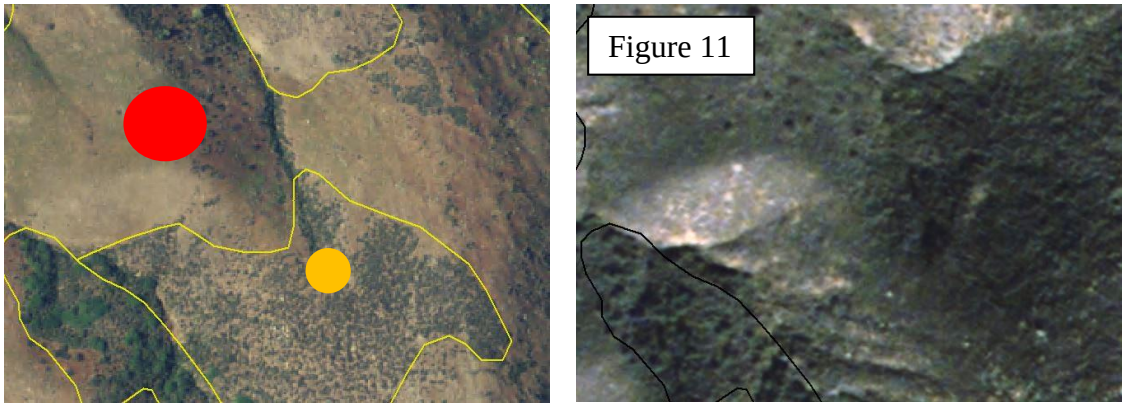


Figure 11

annual grassland. The polygon denoted by the smaller orange dot still has a shrub cover of 25-40% (Reduced from >60% on the 2000 imagery to the right). This is an example of a stand that did not change to a differing floristic type (both areas are assigned to an *Artemisia californica – Eriogonum fasciculatum* Alliance) but where the shrub cover has dropped two categories.

The percent cover was estimated separately for conifer, hardwood, shrub and herbaceous cover in the 2012 updating effort. Density was evaluated, and then correlated to a range of percent cover used for each of these categories. These percent cover attributes were assigned for all of the above four stature categories in the database only on the 2012 update. The original 2005 map contains one field that estimates cover into the stature category of the defined alliance only. For example, a Coast Live Oak Alliance will have only the tree cover estimated in the 2005 original mapping effort.

In order to determine the vegetative density, photo interpreters assigned percentages to the different life forms visible on the imagery, including nonvegetated areas. The cover percentages were then converted into the appropriate cover category for each of the life forms being mapped. For example, if a hardwood density was 5%, then it was assigned the range of 2-9%. These values are listed in Appendix B.

Photo interpreters formed separate polygons when there were changes from one cover class to another within a vegetation mapping type. A given vegetation polygon would have

been subdivided due to cover differences regardless of which strata the cover difference occurred in. For example, two adjacent polygons in the geodatabase may have had the same shrub vegetation type assigned but different cover categories for conifers (for example, 2-9% versus <2%).

Most standardized vegetation mapping efforts have a set of criteria regarding percent cover. The Western Riverside County Update mapping effort follows the same criteria as the CA Statewide criteria, where a life form generally needs to account for at least 8 to 10 percent cover in order for an alliance of that life form to be mapped. There are several exceptions to this rule in that cover can occur in slightly lower amounts, most notably in several riparian types and desert-edge shrub types such as *Encelia farinosa.* Refer to the CNPS Vegetation Descriptions for specific exceptions.

Percent Cover Mapping Considerations

It is important to note that the photo interpreters could only accurately quantify the vegetation that is visible on the aerial imagery. Therefore, in this project, only "bird's eye" total cover was mapped. Thus, the cover of understory layers, which were obscured by overstory layers were not included in this analysis. For this reason, total cover of understory vegetation may be underestimated, especially if their extent was hidden under the crowns of trees. In addition, cover estimates may differ from assessments done on the ground because of the aforementioned reasons.

Stands of riparian vegetation, along with adjacent unburned chaparral and coastal scrub, often occur in dense cover over 60%. Where the overstory cover exceeded 40%, it was considered too dense to give a reliable estimate of lower tier canopy or understory percent cover. In these situations, the code assigned for percent cover for the understory life forms would be given a value of "Not applicable/Not assigned". This same criterion has been used in numerous statewide mapping efforts. For example, if a conifer tier cover exceeded 40%, then the other tiers below (hardwood and shrub) were not evaluated for cover. If the conifer tier cover was <40% but together with the hardwood tier the combined cover was >40%, then the shrub cover was not estimated. Appendix B includes tables that present the ranges of percent cover used for each of these categories, along with any relevant notes.

The date that the aerial photography mission is flown influences the percent cover assigned to vegetation types. Subsequent field reconnaissance and field verification efforts must take into consideration the following factors that can cause apparent discrepancies between the percent cover evident on the imagery and percent cover seen in the field:

- Seasonality - The percent cover of most plants is variable due to their annual growth cycle. Depending on whether the aerial imagery was taken during the wet season or the dry season, a mapped unit could show a different percent cover on the aerial imagery than is observed

during an on-site visit at a different time of the year. Differences in leaf phenology (cold-season deciduous, drought deciduous, facultatively deciduous) can affect plant cover determination. Leaf-on conditions obscure the understory. Imagery of leaf-off conditions would allow photo interpretation of the understory, but make it difficult to identify the overstory species since there is no foliage present.

- Annual variability - The environmental conditions at the time of the imagery (wet vs. drought years, flooding, etc.) may affect the percent cover seen during the on-site field visits.

Comment Attribute

This field is considered a catchall for significant information regarding a polygon and generally contains "value added" information that cannot be statistically quantified by the photo interpreter. An example of this "value added" information is the photo interpreter noting predominant species present in the stand other than the vegetation type being mapped.

Examples of important information that can be derived from this field are noted below:

- Stands which have been burned since 2012 that were noted on more recent image datasets
- Shrub stands that are extremely low noting why they have been mapped to a more generalized group level.
- Built up areas on the original database where structures have been removed and vegetation has since colonized the area in 2012.
- Species of emergent conifer in higher elevation chaparral that are not coded to the conifer alliance type.

F. Quality Control and Delivery of the Final Product

Quality control steps were used throughout the duration of the project in order to make sure the map followed set guidelines and consistency among the photo interpreters. Once the initial update phase was completed, a comprehensive quality control was performed by a different photo interpreter. Checks were then run for invalid vegetation codes, codes that may have been updated in only one field, invalid densities for each life form, and topology-related problems.

Quality control checks were performed for small "remnant polygons" where land use split an existing vegetation polygon into several units.

Quality control checks for illogical coding combinations were also run on polygons. An example of an illogical coding combination is "a dense coast live oak woodland with a high conifer component in the conifer density field.

IV. References

Federal Geographic Data Committee (FGDC). 2008. National Vegetation Classification Standard, Version 2 FGDC-STD-005-2008 (version 2). Vegetation Subcommittee, Federal Geographic Data Committee, FGDC Secretariat, U.S. Geological Survey. Reston, VA. 55 pp. + Appendices.

Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. Maps used as backdrops in this report.

Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. A Manual of California Vegetation. California Native Plant Society, Sacramento, CA.

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CNPS, Anne Klein & Julie Evens. Vegetation Alliances of Western Riverside County, California. California Native Plant Society

AIS – State of New Jersey, New Jersey Department of Environmental Protection – 2012 Land Use / Land Cover Update and Impervious Surface Mapping Project.

APPENDIX A: Western Riverside County Update Vegetation Classification Crosswalk Tables

Table 1: Map Unit - NVCS Name

PI Code	MapUnit	NVCS Name
121	Quercus agrifolia-Platanus racemosa Riparian	Platanus racemosa
123	Quercus agrifolia-Juglans californica/Malosma laurina-Coastal Sage Scrub	Quercus agrifolia
200	Juniperus californica-Riparian	Juniperus californica
201	Juniperus californica-Savannah	Juniperus californica
202	Juniperus californica-Chaparral	Juniperus californica
203	Juniperus californica-Coastal Sage Scrub	Juniperus californica
204	Juniperus californica Desert Transition	Juniperus californica
310	(Quercus engelmannii-Quercus agrifolia)-Chaparral-Coastal Sage Scrub	Quercus engelmaii
311	Quercus engelmannii/Chaparral	Quercus engelmannii
312	Quercus engelmannii-Quercus agrifolia/Toxicodendron diversilobum/Grass	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass
313	Quercus engelmannii/Annual Grass-Herb	Quercus engelmannii / annual grass - herb
314	Quercus engelmannii-Quercus agrifolia	Quercus engelmannii
315	Quercus engelmannii-Quercus agrifolia-Platanus racemosa	Quercus engelmannii
320	Salix gooddingii-Salix lucida	Salix gooddingii
321	Populus fremontii	Populus fremontii
322	Populus fremontii-Platanus racemosa-(Salix spp.)	Populus fremontii
323	Populus fremontii-Salix spp.	Populus fremontii - Salix (laevigata, lasiolepis, lucida ssp. lasiandra)
324	Salix lucida var. lasiandra	Salix lucida ssp. lasiandra
325	Salix spp.	Salix laevigata
431	Adenostoma fasciculatum-Coastal Sage Scrub	Adenostoma fasciculatum
432	Adenostoma fasciculatum-Arctostaphylos glandulosa-(Ceanothus leucodermis-Quercus wislizeni var. frutescens-Ceanothus crassifolius)	Arctostaphylos glandulosa
433	Adenostoma fasciculatum-Arctostaphylos glauca-(Quercus berberidifolia-Rhus ovata)	Arctostaphylos glauca
434	Adenostoma fasciculatum-Ceanothus crassifolius-(Rhus ovata-Quercus berberidifolia-Salvia mellifera)	Ceanothus crassifolius
441	Quercus berberidifolia-(Cercocarpus betuloides-Fraxinus dipetala-Heteromeles arbutifolia)	Quercus berberidifolia
442	Quercus berberidifolia-(Cercocarpus betuloides-Quercus wislizeni-Fraxinus dipetala-Heteromeles arbutifolia)	Quercus berberidifolia
445	Malosma laurina-(Eriogonum fasciculatum-Salvia mellifera-Salvia apiana-Artemisia californica)	Malosma laurina

PI Code	MapUnit	NVCS Name
447	Arctostaphylos glauca	Arctostaphylos glauca
450	Adenostoma fasciculatum-Ceanothus leucodermis-Rhus ovata	Adenostoma fasciculatum
451	Rhus ovata-Eriogonum fasciculatum	Eriogonum fasciculatum - Rhus ovata
452	Adenostoma fasciculatum-Ceanothus tomentosus-(Ceanothus oliganthus-Quercus berberidifolia)	Adenostoma fasciculatum
453	Adenostoma fasciculatum-(Quercus berberidifolia-Quercus engelmannii-Ceanothus tomentosus-Ceanothus crassifolius-Coastal Sage Scrub)	Adenostoma fasciculatum
492	Baccharis emoryi	Baccharis emoryi
511	Toxicodendron diversilobum	Toxicodendron diversilobum
512	Sambucus mexicana-(Baccharis salicifolia)	Sambucus nigra
513	Acacia greggii	Acacia greggii
540	Artemisia californica-(Eriogonum fasciculatum)-Annual Grass-Herb	Artemisia californica - Eriogonum fasciculatum
541	Artemisia californica-Eriogonum fasciculatum-(Salvia mellifera-Keckiella antirrhinoides)	Artemisia californica - Eriogonum fasciculatum
542	Encelia farinosa-Eriogonum fasciculatum	Encelia farinosa
543	Eriogonum fasciculatum-(Encelia farinosa-Opuntia parryi-Gutierrezia sarothrae-Desert Agave)	Eriogonum fasciculatum
544	Eriogonum fasciculatum-Salvia apiana-(Artemisia californica)	Eriogonum fasciculatum - Salvia apiana
546	(Eriogonum fasciculatum, Salvia mellifera, Isocoma menziesii, Lotus scoparius, Artemisia californica, Centaurea melitensis, Brassica sp., Bromus spp., etc.)	California Coastal Scrub
550	Lepidospartum squamatum-(Eriogonum fasciculatum-Sambucus mexicana-Baccharis salicifolia)	Lepidospartum squamatum
551	Chilopsis linearis	Chilopsis linearis
620	Santa Rosa Plateau Vernal Pool	Californian mixed annual/perennial freshwater vernal pool/swale/plain bottomland
621	Alkaline Ephemeral Wetland	Southwestern North American salt basin and high marsh
622	Scirpus spp.-Typha spp.	Arid West freshwater emergent marsh
623	Mountain Meadows	Western North America Wet Meadow and Low Shrub Carr
712	Hirschfeldia incana	Brassica nigra and other mustards
800	(Bromus, Avena, Nassella, Aristida, Erodium spp.)	California Annual and Perennial Grassland
801	Annual Grassland with Native Perennials	California Annual and Perennial Grassland
905	Exotic Trees	Urban
1000	Evergreen Broadleaf Forests & Woodlands	Californian broadleaf forest and woodland
1122	Quercus chrysolepis	Quercus chrysolepis
1130	Eucalyptus spp.	Eucalyptus (globulus, camaldulensis)
1131	Quercus chrysolepis-Pseudotsuga macrocarpa	Quercus chrysolepis
1201	Quercus agrifolia	Quercus agrifolia
1202	Quercus wislizeni (tree)	Quercus wislizeni tree
1203	Quercus wislizeni-Quercus chrysolepis	Quercus wislizeni - Quercus chrysolepis shrub
1235	Quercus wislizeni-Quercus berberidifolia	Quercus wislizeni - Quercus berberidifolia
1236	Quercus agrifolia-Platanus racemosa-Salix laevigata	Quercus agrifolia - Platanus racemosa - Salix laevigata

PI Code	MapUnit	NVCS Name
1237	Quercus agrifolia-Platanus racemosa/Toxicodendron diversilobum	Quercus agrifolia - Platanus racemosa / Toxicodendron diversilobum
1238	Quercus agrifolia/Toxicodendron diversilobum Riparian	Quercus agrifolia / Toxicodendron diversilobum riparian
1239	Quercus agrifolia/Chaparral	Quercus agrifolia / chaparral
1242	Quercus agrifolia/Toxicodendron diversilobum/Grass	Quercus agrifolia / Toxicodendron diversilobum / grass
1243	Quercus agrifolia/Annual Grass-Herb	Quercus agrifolia / grass
2000	Evergreen Needle-leaf Forests & Woodlands	Californian evergreen coniferous forest and woodland
2106	Juniperus californica	Juniperus californica
2121	Pinus coulteri	Pinus coulteri
2127	Pinus quadrifolia	Pinus quadrifolia
2132	Pinus coulteri-Quercus chrysolepis	Pinus coulteri - Quercus chrysolepis
2135	Juniperus californicus-Adenostoma fasciculatum-Eriogonum fasciculatum	Juniperus californica - Adenostoma fasciculatum - Eriogonum fasciculatum
2137	Juniperus californica/Annual Grass-Herb	Juniperus californica / annual herbaceous
2138	Juniperus californica-Eriogonum fasciculatum-Artemisia californica	Juniperus californica - Eriogonum fasciculatum - Artemisia californica
2148	Pinus quadrifolia/Quercus cornelius-mulleri	Pinus quadrifolia / Quercus cornelius-mulleri
2240	Pseudotsuga macrocarpa-Quercus chrysolepis	Pseudotsuga macrocarpa
3000	Deciduous Forests & Woodlands	Southwestern North American riparian evergreen and deciduous woodland
3102	Quercus kelloggii	Quercus kelloggii
3132	Quercus engelmannii/ Quercus berberidifolia	Quercus engelmannii / Quercus berberidifolia
3138	Quercus engelmannii-Quercus agrifolia/Artemisia californica	Quercus engelmannii - Quercus agrifolia / Artemisia californica
3143	Quercus engelmannii-Quercus agrifolia/Toxicodendron diversilobum/Annual Grass-Herb	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass
3144	Quercus engelmannii/Toxicodendron diversilobum/Grass	Quercus engelmannii / Toxicodendron diversilobum / grass
3201	Salix spp.	Temperate Flooded and Swamp Forest
3202	Salix laevigata	Salix laevigata
3203	Salix gooddingii	Salix gooddingii
3204	Salix lasiolepis	Salix lasiolepis
3220	Alnus rhombifolia	Alnus rhombifolia
3221	Platanus racemosa	Platanus racemosa
3222	Populus fremontii	Populus fremontii
3232	Platanus racemosa-Populus fremontii	Platanus racemosa - Populus fremontii
3236	Populus fremontii-Salix laevigata	Populus fremontii - Salix laevigata
3237	Salix gooddingii/Baccharis salicifolia	Salix gooddingii / Baccharis salicifolia
3239	Salix laevigata/Salix lasiolepis/Artemisia douglasiana	Salix laevigata / Salix lasiolepis / Artemisia douglasiana
3241	Populus fremontii/Baccharis salicifolia	Populus fremontii / Baccharis salicifolia
3246	Salix gooddingii/Lepidium latifolium	Salix gooddingii / Lepidium latifolium
3247	Salix gooddingii-Salix lucida-Populus fremontii	Salix gooddingii - Salix lucida - Populus fremontii
3248	Platanus racemosa-Salix laevigata/Salix lasiolepis-Baccharis salicifolia	Platanus racemosa - Salix laevigata / Salix lasiolepis - Baccharis salicifolia

PI Code	MapUnit	NVCS Name
3249	Platanus racemosa-Populus fremontii/Salix lasiolepis	Platanus racemosa - Populus fremontii / Salix lasiolepis
3250	Populus fremontii-Salix laevigata/Salix lasiolepis/Vitis girdiana	Populus fremontii - Salix laevigata / Salix lasiolepis / Vitis girdiana
3251	Populus fremontii-Salix laevigata/Salix lasiolepis/Baccharis salicifolia	Populus fremontii - Salix laevigata / Salix lasiolepis - Baccharis salicifolia
3252	Platanus racemosa-Salix gooddingii/Baccharis salicifolia	Platanus racemosa
4000	Evergreen Shrubland	California Chaparral
4301	Adenostoma fasciculatum	Adenostoma fasciculatum
4302	Adenostoma fasciculatum-Arctostaphylos glandulosa	Arctostaphylos glandulosa - Adenostoma fasciculatum
4303	Adenostoma fasciculatum-Salvia mellifera	Adenostoma fasciculatum - Salvia mellifera
4304	Adenostoma fasciculatum-Salvia apiana	Adenostoma fasciculatum - Salvia apiana
4305	Arctostaphylos glandulosa	Arctostaphylos glandulosa
4307	Adenostoma fasciculatum-Ceanothus cuneatus	Ceanothus cuneatus - Adenostoma fasciculatum
4308	Eriodictyon crassifolium	Eriodictyon crassifolium
4309	Adenostoma fasciculatum Disturbance	Adenostoma fasciculatum disturbance
4310	Ceanothus crassifolius	Ceanothus crassifolius
4311	Ceanothus oliganthus	Ceanothus oliganthus
4313	Ceanothus leucodermis	Ceanothus leucodermis
4314	Adenostoma fasciculatum-Ceanothus greggii	Ceanothus greggii - Adenostoma fasciculatum
4315	Cercocarpus betuloides	Cercocarpus montanus
4316	Prunus ilicifolia	Prunus ilicifolia
4317	Malosma laurina	Malosma laurina
4320	Rhus ovata	Rhus ovata
4321	Quercus berberidifolia	Quercus berberidifolia
4322	Quercus berberidifolia-Adenostoma fasciculatum	Quercus berberidifolia - Adenostoma fasciculatum
4323	Quercus spp. (e.g. Quercus wislizeni-Quercus berberidifolia)	Quercus (agrifolia, douglasii, garryana, kelloggii, lobata, wislizeni)
4324	Quercus wislizeni (shrub)	Quercus wislizeni shrub
4325	Rhamnus tomentella	Frangula californica
4327	Cercocarpus betuloides-Eriogonum fasciculatum	Cercocarpus montanus - Eriogonum fasciculatum
4328	Adenostoma fasciculatum-Arctostaphylos glauca	Arctostaphylos glauca - Adenostoma fasciculatum
4330	Adenostoma fasciculatum Pure	Adenostoma fasciculatum
4333	Adenostoma fasciculatum-Ceanothus crassifolius	Ceanothus crassifolius - Adenostoma fasciculatum
4348	Cercocarpus betuloides-Prunus ilicifolia-Adenostoma sparsifolium	Cercocarpus montanus - Prunus ilicifolia - Adenostoma sparsifolium
4351	Malosma laurina-Eriogonum fasciculatum-Salvia mellifera	Malosma laurina - Eriogonum fasciculatum - Salvia mellifera
4365	Cercocarpus betuloides-Eriogonum fasciculatum-Eriogonum wrightii	Cercocarpus montanus - Eriogonum fasciculatum - Eriogonum wrightii
4366	Quercus berberidifolia-Adenostoma fasciculatum	Quercus berberidifolia - Adenostoma fasciculatum
4367	Adenostoma fasciculatum-Arctostaphylos glauca-Rhus ovata	Arctostaphylos glauca - Adenostoma fasciculatum - Rhus ovata
4370	Adenostoma fasciculatum-Salvia apiana-Artemisia californica	Adenostoma fasciculatum - Salvia apiana - Artemisia californica
4372	Adenostoma fasciculatum-Eriogonum fasciculatum	Adenostoma fasciculatum - Eriogonum fasciculatum

PI Code	MapUnit	NVCS Name
4379	Adenostoma fasciculatum-Eriogonum fasciculatum-Salvia apiana	Adenostoma fasciculatum - Eriogonum fasciculatum - Salvia apiana
4384	Malosma laurina-Eriogonum fasciculatum	Malosma laurina - Eriogonum fasciculatum
4385	Adenostoma fasciculatum-Arctostaphylos glandulosa-Ceanothus leucodermis	Arctostaphylos glandulosa - Adenostoma fasciculatum - Ceanothus leucodermis
4387	Adenostoma fasciculatum-Malosma laurina	Adenostoma fasciculatum - Malosma laurina
4388	Adenostoma fasciculatum-Salvia mellifera-Artemisia californica	Adenostoma fasciculatum - Salvia mellifera - Artemisia californica
4391	Adenostoma fasciculatum-Arctostaphylos glandulosa-Ceanothus crassifolius	Arctostaphylos glandulosa - Adenostoma fasciculatum - Ceanothus crassifolius
4392	Adenostoma fasciculatum-Ceanothus crassifolius-Salvia mellifera	Ceanothus crassifolius - Adenostoma fasciculatum - Salvia mellifera
4401	Adenostoma sparsifolium	Adenostoma sparsifolium
4402	Adenostoma sparsifolium-Adenostoma fasciculatum	Adenostoma sparsifolium
4403	Adenostoma sparsifolium-Adenostoma fasciculatum-Arctostaphylos glauca	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos glauca
4404	Quercus cornelius-mulleri	Quercus cornelius-mulleri
4405	Quercus palmeri	Quercus palmeri
4431	Adenostoma fasciculatum-Xylococcus bicolor-Ceanothus crassifolius	Adenostoma fasciculatum - Xylococcus bicolor - Ceanothus crassifolius
4434	Adenostoma sparsifolium-Cercocarpus betuloides	Adenostoma sparsifolium - Cercocarpus montanus
4435	Adenostoma sparsifolium-Artemisia tridentata	Adenostoma sparsifolium - Artemisia tridentata
4436	Adenostoma sparsifolium-Ceanothus cuneatus	Adenostoma sparsifolium - Ceanothus cuneatus
4442	Adenostoma fasciculatum-Ceanothus crassifolius-Rhus ovata	Ceanothus crassifolius - Adenostoma fasciculatum - Rhus ovata
4443	Adenostoma fasciculatum-Xylococcus bicolor-Salvia mellifera-Malosma laurina	Adenostoma fasciculatum - Xylococcus bicolor - Salvia mellifera - Malosma laurina
4445	Heteromeles arbutifolia	Heteromeles arbutifolia
4459	Ceanothus oliganthus-Adenostoma fasciculatum	Ceanothus oliganthus - Adenostoma fasciculatum
4461	Ceanothus crassifolius-Cercocarpus betuloides	Ceanothus crassifolius - Cercocarpus montanus
4462	Ceanothus crassifolius-Malosma laurina	Ceanothus crassifolius - Malosma laurina
4465	Prunus ilicifolia-Heteromeles arbutifolia	Prunus ilicifolia ssp. ilicifolia - Heteromeles arbutifolia
4466	Quercus wislizeni-Cercocarpus betuloides	Quercus wislizeni - Cercocarpus montanus
4467	Quercus wislizeni-Ceanothus leucodermis	Quercus wislizeni - Ceanothus leucodermis
4469	Quercus wislizeni-Adenostoma sparsifolium-Cercocarpus betuloides	Quercus wislizeni - Cercocarpus montanus - Adenostoma sparsifolium
4472	Malosma laurina-Eriogonum fasciculatum-Salvia apiana	Malosma laurina - Eriogonum fasciculatum - Salvia apiana
4473	Malosma laurina-Tetracoccus dioicus	Malosma laurina - Tetracoccus dioicus
4474	Quercus cornelius-mulleri-Adenostoma sparsifolium-Cercocarpus betuloides	Quercus cornelius-mulleri - Adenostoma sparsifolium - Cercocarpus montanus
4475	Quercus cornelius-mulleri - Adenostoma sparsifolium-Ceanothus greggii	Quercus cornelius-mulleri - Adenostoma sparsifolium - Ceanothus greggii
4476	Quercus palmeri-Eriogonum fasciculatum	Quercus palmeri - Eriogonum fasciculatum
4478	Adenostoma sparsifolium - Cercocarpus betuloides-Adenostoma fasciculatum	Adenostoma sparsifolium - Adenostoma fasciculatum - Cercocarpus montanus

PI Code	MapUnit	NVCS Name
4479	Adenostoma sparsifolium - Eriogonum fasciculatum-Lotus scoparius	Adenostoma sparsifolium - Eriogonum fasciculatum - Lotus scoparius
4481	Adenostoma sparsifolium - Adenostoma fasciculatum-Ceanothus greggii	Adenostoma sparsifolium - Adenostoma fasciculatum - Ceanothus greggii
4482	Adenostoma sparsifolium - Adenostoma fasciculatum-Arctostaphylos pungens	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos pungens
4483	Adenostoma sparsifolium - Ceanothus crassifolius	Adenostoma sparsifolium - Ceanothus crassifolius
4484	Adenostoma sparsifolium - Ericameria linearifolia-Eriogonum fasciculatum-Opuntia basilaris	Adenostoma sparsifolium - Ericameria linearifolia - Eriogonum fasciculatum - Opuntia basilaris
4485	Adenostoma sparsifolium - Adenostoma fasciculatum-Opuntia parryi	Adenostoma sparsifolium - Adenostoma fasciculatum - Opuntia parryi
4486	Quercus berberidifolia-Cercocarpus betuloides-Arctostaphylos glauca	Quercus berberidifolia
4487	Quercus berberidifolia-Adenostoma fasciculatum-Ceanothus crassifolius	Quercus berberidifolia - Adenostoma fasciculatum - Ceanothus crassifolius
4488	Adenostoma fasciculatum-Xylococcus bicolor-Quercus berberidifolia	Adenostoma fasciculatum - Xylococcus bicolor - Quercus berberidifolia
4490	Quercus berberidifolia-Southern Mixed Chaparral	Quercus berberidifolia - southern mixed chaparral
4491	Quercus berberidifolia	Quercus berberidifolia
4493	Heteromeles arbutifolia-Artemisia californica	Heteromeles arbutifolia - Artemisia californica
4494	Heteromeles arbutifolia-Quercus berberidifolia-Cercocarpus betuloides-Fraxinus dipetala	Heteromeles arbutifolia - Quercus berberidifolia - Cercocarpus montanus - Fraxinus dipetala
4496	Ceanothus cuneatus	Ceanothus cuneatus
4510	Artemisia tridentata	Artemisia tridentata
4531	Artemisia tridentata-Eriogonum fasciculatum	Artemisia tridentata - Eriogonum fasciculatum
4532	Artemisia tridentata-Eriogonum wrightii	Artemisia tridentata - Eriogonum wrightii
4603	Simmondsia chinensis	Simmondsia chinensis
4630	Simmondsia chinensis-Eriogonum fasciculatum-Opuntia parryi	Simmondsia chinensis - Eriogonum fasciculatum - Opuntia parryi
4702	Opuntia littoralis	Opuntia littoralis
4806	Quercus wislizeni-Quercus berberidifolia-Fraxinus dipetala	Quercus wislizeni - Quercus berberidifolia - Fraxinus dipetala
4901	Baccharis salicifolia	Baccharis salicifolia
4930	Tamarix spp.	Tamarix spp.
4931	Baccharis salicifolia-Sambucus mexicana	Baccharis salicifolia - Sambucus mexicana
5000	Deciduous Shrubland	Western Cordilleran montane deciduous scrub
5101	Ceanothus integerrimus	Ceanothus integerrimus
5103	Rhus trilobata	Rhus trilobata
5104	Ribes quercetorum	Ribes quercetorum
5203	Lycium andersonii	Lycium andersonii
5230	Forestiera pubescens	Forestiera pubescens
5231	Forestiera pubescens-Salix spp.	Forestiera pubescens
5400	Coastal Sage Scrub	Central & South Coastal Californian Coastal Sage Scrub
5401	Artemisia californica	Artemisia californica
5402	Artemisia californica-Eriogonum fasciculatum	Artemisia californica - Eriogonum fasciculatum
5403	Artemisia californica-Salvia mellifera	Artemisia californica - Salvia mellifera
5404	Eriogonum fasciculatum	Eriogonum fasciculatum

PI Code	MapUnit	NVCS Name
5407	Eriogonum fasciculatum-Salvia apiana	Eriogonum fasciculatum - Salvia apiana
5408	Salvia apiana	Salvia apiana
5409	Salvia mellifera	Salvia mellifera
5410	Encelia farinosa	Encelia farinosa
5413	Malacothamnus fasciculatus	Malacothamnus fasciculatus
5416	Lotus scoparius	Lotus scoparius
5430	Keckiella antirrhinoides	Keckiella antirrhinoides
5431	Keckiella antirrhinoides-Artemisia californica	Keckiella antirrhinoides - Artemisia californica
5432	Artemisia californica- Salvia apiana	Salvia apiana - Artemisia californica
5434	Eriogonum fasciculatum-Opuntia parryi	Eriogonum fasciculatum - Cylindropuntia californica
5437	Encelia farinosa-Artemisia californica	Encelia farinosa - Artemisia californica
5438	Encelia californica-Artemisia californica	Encelia californica - Artemisia californica
5439	Encelia farinosa	Encelia farinosa
5441	Salvia mellifera	Salvia mellifera
5442	Artemisia californica-Salvia mellifera	Artemisia californica - Salvia mellifera
5444	Salvia mellifera-Lotus scoparius	Salvia mellifera - Lotus scoparius
5447	Eriogonum fasciculatum-Encelia farinosa	Eriogonum fasciculatum - Encelia farinosa
5448	Eriogonum fasciculatum-Encelia farinosa	Eriogonum fasciculatum - Encelia farinosa
5449	Eriogonum fasciculatum-Simmondsia chinensis-Opuntia parryi	Eriogonum fasciculatum - Simmondsia chinensis - Cylindropuntia californica
5450	Eriogonum fasciculatum-Rhus ovata	Eriogonum fasciculatum - Rhus ovata
5451	Eriogonum fasciculatum	Eriogonum fasciculatum
5454	Artemisia californica-Eriogonum fasciculatum-Malosma laurina	Artemisia californica - Eriogonum fasciculatum - Malosma laurina
5455	Artemisia californica-Eriogonum fasciculatum-Salvia apiana	Artemisia californica - Eriogonum fasciculatum - Salvia apiana
5456	Artemisia californica-Malosma laurina	Artemisia californica - Malosma laurina
5457	Artemisia californica-Eriogonum fasciculatum	Artemisia californica - Eriogonum fasciculatum
5458	Artemisia californica/Amsinckia menziesii	Artemisia californica / Amsinckia menziesii
5460	Salvia apiana-Encelia farinosa	Salvia apiana - Encelia farinosa
5461	Keckiella antirrhinoides-Eriogonum fasciculatum	Keckiella antirrhinoides - Eriogonum fasciculatum
5464	Keckiella antirrhinoides-Mixed Chaparral	Keckiella antirrhinoides - Mixed Chaparral
5465	Keckiella antirrhinoides	Keckiella antirrhinoides
5466	Eriogonum fasciculatum-Gutierrezia sarothrae	Eriogonum fasciculatum - Gutierrezia sarothrae
5505	Atriplex spp.	Shadscale-saltbush cool semi-desert scrub
5508	Lepidospartum squamatum	Lepidospartum squamatum
5537	Lepidospartum squamatum-Eriogonum fasciculatum	Lepidospartum squamatum - Eriogonum fasciculatum
5538	Lepidospartum squamatum/Amsinckia menziesii	Lepidospartum squamatum / Amsinckia menziesii
5539	Lepidospartum squamatum-Baccharis salicifolia	Lepidospartum squamatum - Baccharis salicifolia
5603	Prosopis glandulosa	Prosopis glandulosa
5701	Eriogonum wrightii	Eriogonum wrightii
5705	Ericameria palmeri	Ericameria palmeri
6202	Juncus spp.	Californian warm temperate marsh/seep

PI Code	MapUnit	NVCS Name
6208	Lasthenia californica	Lasthenia californica
6214	Sporobolus airoides	Sporobolus airoides
6232	Lasthenia californica-Atriplex coronata var. notatior	Lasthenia californica - Atriplex coronata var. notatior
6236	Hordeum depressum-Hemizonia fasciculata-Atriplex coronata var. notatior	Deinandra fasciculata - Hordeum depressum - Atriplex coronata var. notatior
6301	Arundo donax	Arundo donax
6303	Lepidium latifolium	Lepidium latifolium
6402	Scirpus spp.- Typha spp.	Arid West freshwater emergent marsh
7000	Annual Herbaceous Grasslands and Forbs	California Annual and Perennial Grassland
7100	California Annual Grassland	California Annual and Perennial Grassland
7107	Brassica spp., Hirschfeldia incana	Brassica nigra and other mustards
7109	Amsinckia menziesii	Amsinckia (menziesii, tessellata)
7131	Amsinckia menziesii - Erodium spp.	Amsinckia menziesii - Erodium spp.
9001	Rock Outcrop	Barren
9002	Riverine, Lacustrine, Mudflats, and Sandflats along Rivers	Riverine, Lacustrine
9100	Urban or development	Urban
9101	Golf-course and urban park	Urban
9102	Urban Interface	Urban
9103	Duck Ponds	Lacustrine
9200	Agriculture	Cropland, Orchard - Vineyard
9300	Vacant (disturbed bare ground, <8% vegetative cover)	Urban
9400	Water	Undifferentiated Water

Table 2: Common Name - NVCS Name

PI Code	Common Name	NVCS Name
121	Coast Live Oak - Sycamore Riparian Mapping Unit	Platanus racemosa
123	Coast Live Oak - California Walnut / Laurel Sumac - Coastal Sage Scrub Mapping Unit	Quercus agrifolia
200	California Juniper Riparian Mapping Unit	Juniperus californica
201	California Juniper Savannah Mapping Unit	Juniperus californica
202	California Juniper - Chaparral Mapping Unit	Juniperus californica
203	California Juniper - Coastal Sage Scrub Mapping Unit	Juniperus californica
204	California Juniper Desert Transition Mapping Unit	Juniperus californica
310	(Engelmann Oak - Coast Live Oak) / Chaparral - Coastal Sage Scrub Mapping Unit	Quercus engelmaii
311	Engelmann Oak / Chaparral Mapping Unit	Quercus engelmannii
312	Engelmann Oak - Coast Live Oak / Poison Oak / Grass Mapping Unit	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass
313	Engelmann Oak / Annual Grass-Herb Mapping Unit	Quercus engelmannii / annual grass - herb
314	Engelmann Oak - Coast Live Oak Mapping Unit	Quercus engelmannii

PI Code	Common Name	NVCS Name
315	Engelmann Oak - Coast Live Oak - Sycamore Riparian Mapping Unit	Quercus engelmannii
320	Black Willow - Shining Willow Mapping Unit	Salix gooddingii
321	Fremont Cottonwood Dry Mapping Unit	Populus fremontii
322	Fremont Cottonwood - Sycamore - (Willow) Mapping Unit	Populus fremontii
323	Fremont Cottonwood - Willow Mapping Unit	Populus fremontii - Salix (laevigata, lasiolepis, lucida ssp. lasiandra)
324	Shining Willow Mapping Unit	Salix lucida ssp. lasiandra
325	Willow Mapping Unit	Salix laevigata
431	Chamise - Coastal Sage Scrub Disturbance Mapping Unit	Adenostoma fasciculatum
432	Chamise - Eastwood Manzanita - (Whitethorn - Interior Scrub Oak - Hoaryleaf Ceanothus) Mapping Unit	Arctostaphylos glandulosa
433	Chamise - Bigberry Manzanita (Scrub Oak - Sugar Bush) Mapping Unit	Arctostaphylos glauca
434	Chamise - Hoaryleaf Ceanothus - (Sugarbush - Scrub oak - Black Sage) Mapping Unit	Ceanothus crassifolius
441	Scrub Oak - (Birchleaf Mtn. Mahogany - Ash - Toyon) Mapping Unit	Quercus berberidifolia
442	Scrub Oak - (Birchleaf Mtn. Mahogany - Interior Live Oak - Ash - Toyon) Mapping Unit	Quercus berberidifolia
445	Laurel Sumac - (California Buckwheat - Black Sage - White Sage - California Sagebrush) Mapping Unit	Malosma laurina
447	Bigberry Manzanita Mapping Unit	Arctostaphylos glauca
450	Chamise - Chaparral Whitethorn - Sugarbush Mapping Unit	Adenostoma fasciculatum
451	Sugarbush - California Buckwheat Mapping Unit	Eriogonum fasciculatum - Rhus ovata
452	Chamise-Woolyleaf Ceanothus - (Hairyleaf Ceanothus - Scrub Oak) Mapping Unit	Adenostoma fasciculatum
453	Chamise - (Scrub Oak - Engelmann Oak - Woolyleaf Ceanothus - Hoaryleaf Ceanothus - Coastal Sage Scrub) Mapping Unit	Adenostoma fasciculatum
492	Emoryi's Baccharis Mapping Unit	Baccharis emoryi
511	Poison Oak Mapping Unit	Toxicodendron diversilobum
512	Blue Elderberry - (Mulefat) Mapping Unit	Sambucus nigra
513	Catclaw Mapping Unit	Acacia greggii
540	California Sagebrush - (California Buckwheat) - Annual Grass-Herb Mapping Unit	Artemisia californica - Eriogonum fasciculatum
541	California Sagebrush - California Buckwheat - (Black Sage - Yellow Bush Penstemon) Mapping Unit	Artemisia californica - Eriogonum fasciculatum
542	Brittlebush - California Buckwheat Mapping Unit	Encelia farinosa
543	California Buckwheat - (Brittlebush - Cane Cholla - Matchweed - Desert Agave) Mapping Unit	Eriogonum fasciculatum
544	California Buckwheat - White Sage - (California Sagebrush) Mapping Unit	Eriogonum fasciculatum - Salvia apiana
546	Disturbed Shrub and Herb Coastal Sage Scrub Mapping Unit	California Coastal Scrub
550	Scalebroom - (California Buckwheat - Mexican Elderberry - Mulefat) Mapping Unit	Lepidospartum squamatum
551	Desert Willow Mapping Unit	Chilopsis linearis

PI Code	Common Name	NVCS Name
620	Santa Rosa Plateau Vernal Pool Mapping Unit	Californian mixed annual/perennial freshwater vernal pool/swale/plain bottomland
621	Alkaline Ephemeral Wetland Mapping Unit	Southwestern North American salt basin and high marsh
622	Bulrush - Cattail Mapping Unit	Arid West freshwater emergent marsh
623	Mountain Meadows Mapping Unit	Western North America Wet Meadow and Low Shrub Carr
712	Shortpod Mustard Mapping Unit	Brassica nigra and other mustards
800	Xeric Annual / Perennial Grassland Mapping Unit	California Annual and Perennial Grassland
801	Annual Grassland with Native Perennials Mapping Unit	California Annual and Perennial Grassland
905	Exotic Trees Mapping Unit	Urban
1000	Evergreen Broadleaf Forests & Woodlands Mapping Unit	Californian broadleaf forest and woodland
1122	Canyon Live Oak Alliance	Quercus chrysolepis
1130	Eucalyptus Alliance	Eucalyptus (globulus, camaldulensis)
1131	Canyon Live Oak - Big Cone Douglas-Fir Association	Quercus chrysolepis
1201	Coast Live Oak Alliance	Quercus agrifolia
1202	Interior Live Oak Alliance	Quercus wislizeni tree
1203	Interior Live Oak - Canyon Live Oak Alliance	Quercus wislizeni - Quercus chrysolepis shrub
1235	Interior Live Oak - Scrub Oak Alliance	Quercus wislizeni - Quercus berberidifolia
1236	Coast Live Oak - California Sycamore - Red Willow Association	Quercus agrifolia - Platanus racemosa - Salix laevigata
1237	Coast Live Oak - California Sycamore / Poison Oak Association	Quercus agrifolia - Platanus racemosa / Toxicodendron diversilobum
1238	Coast Live Oak / Poison Oak Riparian Association	Quercus agrifolia / Toxicodendron diversilobum riparian
1239	Coast Live Oak / Chaparral Association	Quercus agrifolia / chaparral
1242	Coast Live Oak / Poison Oak / Grass Association	Quercus agrifolia / Toxicodendron diversilobum / grass
1243	Coast Live Oak / Annual Grass-Herb Association	Quercus agrifolia / grass
2000	Evergreen Needle-leaf Forests & Woodlands Mapping Unit	Californian evergreen coniferous forest and woodland
2106	California Juniper Alliance	Juniperus californica
2121	Coulter Pine Alliance	Pinus coulteri
2127	Parry Pine Alliance	Pinus quadrifolia
2132	Coulter Pine - Canyon Live Oak Alliance	Pinus coulteri - Quercus chrysolepis
2135	California Juniper - Chamise - California Buckwheat Association	Juniperus californica - Adenostoma fasciculatum - Eriogonum fasciculatum
2137	California Juniper / Annual Grass-Herb Association	Juniperus californica / annual herbaceous
2138	California Juniper - California Buckwheat - California Sagebrush Association	Juniperus californica - Eriogonum fasciculatum - Artemisia californica
2148	Parry Pine / Muller's Oak Association	Pinus quadrifolia / Quercus cornelius-mulleri
2240	Big-cone Douglas-fir	Pseudotsuga macrocarpa
3000	Deciduous Forests & Woodlands (Southern Mixed Riparian) Mapping Unit	Southwestern North American riparian evergreen and deciduous woodland
3102	Black Oak Alliance	Quercus kelloggii
3132	Engelmann Oak / Scrub Oak Association	Quercus engelmannii / Quercus berberidifolia
3138	Engelmann Oak - Coast Live Oak / California Sagebrush Association	Quercus engelmannii - Quercus agrifolia / Artemisia californica

PI Code	Common Name	NVCS Name
3143	Engelmann Oak - Coast Live Oak / Poison Oak / Annual Grass-herb Association	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass
3144	Engelmann Oak / Poison Oak / Grass Association	Quercus engelmannii / Toxicodendron diversilobum / grass
3201	Mixed Tree and Shrub Willow Super Alliance (More than 2 species of Salix spp. with varying heights)	Temperate Flooded and Swamp Forest
3202	Red Willow Alliance	Salix laevigata
3203	Black Willow Alliance	Salix gooddingii
3204	Arroyo Willow Alliance	Salix lasiolepis
3220	White Alder Alliance	Alnus rhombifolia
3221	California Sycamore Alliance	Platanus racemosa
3222	Fremont Cottonwood Alliance	Populus fremontii
3232	California Sycamore - Fremont Cottonwood Alliance	Platanus racemosa - Populus fremontii
3236	Fremont Cottonwood - Red Willow Association	Populus fremontii - Salix laevigata
3237	Black Willow / Mulefat Association	Salix gooddingii / Baccharis salicifolia
3239	Red Willow / Arroyo Willow / Mugwort Association	Salix laevigata / Salix lasiolepis / Artemisia douglasiana
3241	Fremont Cottonwood / Mulefat Association	Populus fremontii / Baccharis salicifolia
3246	Black Willow / Perennial Pepperweed Association	Salix gooddingii / Lepidium latifolium
3247	Black Willow - Shining Willow - Fremont Cottonwood Association	Salix gooddingii - Salix lucida - Populus fremontii
3248	California Sycamore - Red Willow / Arroyo Willow - Mulefat Association	Platanus racemosa - Salix laevigata / Salix lasiolepis - Baccharis salicifolia
3249	California Sycamore - Fremont Cottonwood / Arroyo Willow Association	Platanus racemosa - Populus fremontii / Salix lasiolepis
3250	Fremont Cottonwood - Red Willow / Arroyo Willow / Desert Wild Grape Association	Populus fremontii - Salix laevigata / Salix lasiolepis / Vitis girdiana
3251	Fremont Cottonwood - Red Willow / Arroyo Willow / Mulefat Association	Populus fremontii - Salix laevigata / Salix lasiolepis - Baccharis salicifolia
3252	Fremont Cottonwood - Black Willow / Mulefat Association	Platanus racemosa
4000	California Chaparral Mapping Unit	California Chaparral
4301	Chamise Alliance	Adenostoma fasciculatum
4302	Chamise - Eastwood Manzanita Alliance	Arctostaphylos glandulosa - Adenostoma fasciculatum
4303	Chamise - Black Sage Alliance	Adenostoma fasciculatum - Salvia mellifera
4304	Chamise - White Sage Alliance	Adenostoma fasciculatum - Salvia apiana
4305	Eastwood Manzanita Alliance	Arctostaphylos glandulosa
4307	Chamise - Wedgeleaf Ceanothus Alliance	Ceanothus cuneatus - Adenostoma fasciculatum
4308	Yerba Santa Alliance	Eriodictyon crassifolium
4309	Chamise Disturbance Association	Adenostoma fasciculatum disturbance
4310	Hoaryleaf Ceanothus Alliance	Ceanothus crassifolius
4311	Hairyleaf Ceanothus Alliance	Ceanothus oliganthus
4313	Chaparral Whitethorn Alliance	Ceanothus leucodermis
4314	Chamise - Cupleaf Ceanothus Alliance	Ceanothus greggii - Adenostoma fasciculatum
4315	Birchleaf Mountain-mahogany Alliance	Cercocarpus montanus
4316	Hollyleaf Cherry Alliance	Prunus ilicifolia
4317	Laurel Sumac Alliance	Malosma laurina

PI Code	Common Name	NVCS Name
4320	Sugar Bush Alliance	Rhus ovata
4321	Scrub Oak Alliance	Quercus berberidifolia
4322	Scrub Oak - Chamise Alliance	Quercus berberidifolia - Adenostoma fasciculatum
4323	Mixed Scrub Oak Alliance	Quercus (agrifolia, douglasii, garryana, kelloggii, lobata, wislizeni)
4324	Interior Live Oak Shrub Alliance	Quercus wislizeni shrub
4325	Chaparral Coffeeberry Alliance	Frangula californica
4327	Birchleaf Mountain-mahogany - California Buckwheat Alliance	Cercocarpus montanus - Eriogonum fasciculatum
4328	Chamise - Bigberry Manzanita Alliance	Arctostaphylos glauca - Adenostoma fasciculatum
4330	Chamise Pure Association	Adenostoma fasciculatum
4333	Chamise - Hoaryleaf Ceanothus Alliance	Ceanothus crassifolius - Adenostoma fasciculatum
4348	Birchleaf Mountain-mahogany - Hollyleaf Cherry - Redshank Association	Cercocarpus montanus - Prunus ilicifolia - Adenostoma sparsifolium
4351	Laurel Sumac - California Buckwheat - Black Sage Association	Malosma laurina - Eriogonum fasciculatum - Salvia mellifera
4365	Birchleaf Mountain-mahogany - California Buckwheat - Wright's Buckwheat Association	Cercocarpus montanus - Eriogonum fasciculatum - Eriogonum wrightii
4366	Scrub Oak - Chamise - Association	Quercus berberidifolia - Adenostoma fasciculatum
4367	Chamise - Bigberry Manzanita - Sugar Bush Association	Arctostaphylos glauca - Adenostoma fasciculatum - Rhus ovata
4370	Chamise - White Sage - California Sagebrush Association	Adenostoma fasciculatum - Salvia apiana - Artemisia californica
4372	Chamise - California Buckwheat Association	Adenostoma fasciculatum - Eriogonum fasciculatum
4379	Chamise - California Buckwheat - White Sage Association	Adenostoma fasciculatum - Eriogonum fasciculatum - Salvia apiana
4384	Laurel Sumac - California Buckwheat Association	Malosma laurina - Eriogonum fasciculatum
4385	Chamise - Eastwood Manzanita - Chaparral Whitethorn Association	Arctostaphylos glandulosa - Adenostoma fasciculatum - Ceanothus leucodermis
4387	Chamise - Laurel Sumac Association	Adenostoma fasciculatum - Malosma laurina
4388	Chamise - Black Sage - California Sagebrush Association	Adenostoma fasciculatum - Salvia mellifera - Artemisia californica
4391	Chamise - Eastwood Manzanita - Hoaryleaf Ceanothus Association	Arctostaphylos glandulosa - Adenostoma fasciculatum - Ceanothus crassifolius
4392	Chamise - Hoaryleaf Ceanothus - Black Sage Association	Ceanothus crassifolius - Adenostoma fasciculatum - Salvia mellifera
4401	Redshank Alliance	Adenostoma sparsifolium
4402	Redshank - Chamise Alliance	Adenostoma sparsifolium
4403	Redshank - Chamise - Bigberry Manzanita Association	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos glauca
4404	Muller Oak Alliance	Quercus cornelius-mulleri
4405	Palmer's Oak Alliance	Quercus palmeri
4431	Chamise - Mission Manzanita - Hoaryleaf Ceanothus Association	Adenostoma fasciculatum - Xylococcus bicolor - Ceanothus crassifolius
4434	Redshank - Birchleaf Mountain-mahogany Alliance	Adenostoma sparsifolium - Cercocarpus montanus
4435	Redshank - Big Sagebrush Association	Adenostoma sparsifolium - Artemisia tridentata
4436	Redshank - Wedgeleaf Ceanothus Association	Adenostoma sparsifolium - Ceanothus cuneatus

PI Code	Common Name	NVCS Name
4442	Chamise - Hoaryleaf Ceanothus - Sugar Bush Association	Ceanothus crassifolius - Adenostoma fasciculatum - Rhus ovata
4443	Chamise - Mission Manzanita - Black Sage - Laurel Sumac Association	Adenostoma fasciculatum - Xylococcus bicolor - Salvia mellifera - Malosma laurina
4445	Toyon Alliance	Heteromeles arbutifolia
4459	Hairyleaf Ceanothus - Chamise Association	Ceanothus oliganthus - Adenostoma fasciculatum
4461	Hoaryleaf Ceanothus - Birchleaf Mountain-mahogany Association	Ceanothus crassifolius - Cercocarpus montanus
4462	Hoaryleaf Ceanothus - Laurel Sumac Association	Ceanothus crassifolius - Malosma laurina
4465	Hollyleaf Cherry - Toyon Association	Prunus ilicifolia ssp. ilicifolia - Heteromeles arbutifolia
4466	Interior Live Oak - Birchleaf Mountain-mahogany Association	Quercus wislizeni - Cercocarpus montanus
4467	Interior Live Oak - Chaparral Whitethorn Alliance	Quercus wislizeni - Ceanothus leucodermis
4469	Interior Live Oak - Redshank - Birchleaf Mountain-mahogany Association	Quercus wislizeni - Cercocarpus montanus - Adenostoma sparsifolium
4472	Laurel Sumac - California Buckwheat - White Sage Association	Malosma laurina - Eriogonum fasciculatum - Salvia apiana
4473	Laurel Sumac - Parry's Tetracoccus Association	Malosma laurina - Tetracoccus dioicus
4474	Muller Oak - Redshank - Birchleaf Mountain-mahogany Association	Quercus cornelius-mulleri - Adenostoma sparsifolium - Cercocarpus montanus
4475	Muller Oak - Redshank - Cupleaf Ceanothus Association	Quercus cornelius-mulleri - Adenostoma sparsifolium - Ceanothus greggii
4476	Palmer's Oak - California Buckwheat Association	Quercus palmeri - Eriogonum fasciculatum
4478	Redshank - Birchleaf Mountain-mahogany - Chamise Association	Adenostoma sparsifolium - Adenostoma fasciculatum - Cercocarpus montanus
4479	Redshank - California Buckwheat - Deerweed Association	Adenostoma sparsifolium - Eriogonum fasciculatum - Lotus scoparius
4481	Redshank - Chamise - Cupleaf Ceanothus Association	Adenostoma sparsifolium - Adenostoma fasciculatum - Ceanothus greggii
4482	Redshank - Chamise - Mixed Pointleaf Manzanita Association	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos pungens
4483	Redshank - Hoaryleaf Ceanothus Association	Adenostoma sparsifolium - Ceanothus crassifolius
4484	Redshank - Interior Goldenbush - California Buckwheat - Beavertail Cactus Association	Adenostoma sparsifolium - Ericameria linearifolia - Eriogonum fasciculatum - Opuntia basilaris
4485	Redshank - Chamise - Cane Cholla Association	Adenostoma sparsifolium - Adenostoma fasciculatum - Opuntia parryi
4486	Scrub Oak - Birchleaf Mountain-mahogany - Bigberry Manzanita Association	Quercus berberidifolia
4487	Scrub Oak - Chamise - Hoaryleaf Ceanothus Association	Quercus berberidifolia - Adenostoma fasciculatum - Ceanothus crassifolius
4488	Chamise - Mission Manzanita - Scrub Oak Association	Adenostoma fasciculatum - Xylococcus bicolor - Quercus berberidifolia
4490	Scrub Oak - Southern Mixed Chaparral Association	Quercus berberidifolia - southern mixed chaparral
4491	Scrub Oak Association	Quercus berberidifolia
4493	Toyon - California Sagebrush Association	Heteromeles arbutifolia - Artemisia californica
4494	Toyon - Scrub Oak - Birchleaf Mountain-mahogany - California Ash Association	Heteromeles arbutifolia - Quercus berberidifolia - Cercocarpus montanus - Fraxinus dipetala
4496	Wedgeleaf Ceanothus Alliance	Ceanothus cuneatus
4510	Big Sagebrush Alliance	Artemisia tridentata
4531	Big Sagebrush - California Buckwheat Association	Artemisia tridentata - Eriogonum fasciculatum

PI Code	Common Name	NVCS Name
4532	Big Sagebrush - Wright's Buckwheat Association	Artemisia tridentata - Eriogonum wrightii
4603	Jojoba Alliance	Simmondsia chinensis
4630	Jojoba - Cane Cholla - California Buckwheat Association	Simmondsia chinensis - Eriogonum fasciculatum - Opuntia parryi
4702	Coast Prickly-pear Alliance	Opuntia littoralis
4806	Interior Live Oak - Scrub Oak - California Ash Association	Quercus wislizeni - Quercus berberidifolia - Fraxinus dipetala
4901	Mulefat Alliance	Baccharis salicifolia
4930	Tamarisk Alliance	Tamarix spp.
4931	Mulefat - Mexican Elderberry Association	Baccharis salicifolia - Sambucus mexicana
5000	Deciduous Shrubland Mapping Unit	Western Cordilleran montane deciduous scrub
5101	Deerbrush Alliance	Ceanothus integerrimus
5103	Basket Bush Alliance	Rhus trilobata
5104	Oak Gooseberry Alliance	Ribes quercetorum
5203	Anderson boxthorn Alliance	Lycium andersonii
5230	Desert Olive Alliance	Forestiera pubescens
5231	Desert Olive - Willow Association	Forestiera pubescens
5400	Coastal Sage Scrub Generic	Central & South Coastal Californian Coastal Sage Scrub
5401	California Sagebrush Alliance	Artemisia californica
5402	California Sagebrush - California Buckwheat Alliance	Artemisia californica - Eriogonum fasciculatum
5403	California Sagebrush - Black Sage Alliance	Artemisia californica - Salvia mellifera
5404	California Buckwheat Alliance	Eriogonum fasciculatum
5407	California Buckwheat - White Sage Alliance	Eriogonum fasciculatum - Salvia apiana
5408	White Sage Alliance	Salvia apiana
5409	Black Sage Alliance	Salvia mellifera
5410	Brittlebush Alliance	Encelia farinosa
5413	Chaparral Mallow Alliance	Malacothamnus fasciculatus
5416	Deerweed Alliance	Lotus scoparius
5430	Yellow Bush Penstemon Alliance	Keckiella antirrhinoides
5431	Yellow Bush Penstemon - California Sagebrush Association	Keckiella antirrhinoides - Artemisia californica
5432	California Sagebrush - White Sage Alliance	Salvia apiana - Artemisia californica
5434	California Buckwheat - Cane Cholla Association	Eriogonum fasciculatum - Cylindropuntia californica
5437	Brittlebush - California Sagebrush Association	Encelia farinosa - Artemisia californica
5438	California Encelia - California Sagebrush Association	Encelia californica - Artemisia californica
5439	Brittlebush Association	Encelia farinosa
5441	Black Sage Association	Salvia mellifera
5442	California Sagebrush - Black Sage Association	Artemisia californica - Salvia mellifera
5444	Black Sage - Deerweed Association	Salvia mellifera - Lotus scoparius
5447	California Buckwheat - Brittlebush Association	Eriogonum fasciculatum - Encelia farinosa
5448	California Buckwheat - Brittlebush Alliance	Eriogonum fasciculatum - Encelia farinosa
5449	California Buckwheat - Jojoba - Cane Cholla Association	Eriogonum fasciculatum - Simmondsia chinensis - Cylindropuntia californica

PI Code	Common Name	NVCS Name
5450	California Buckwheat - Sugar Bush Association	Eriogonum fasciculatum - Rhus ovata
5451	California Buckwheat Association	Eriogonum fasciculatum
5454	California Sagebrush - California Buckwheat - Laurel Sumac Association	Artemisia californica - Eriogonum fasciculatum - Malosma laurina
5455	California Sagebrush - California Buckwheat - White Sage Association	Artemisia californica - Eriogonum fasciculatum - Salvia apiana
5456	California Sagebrush - Laurel Sumac Association	Artemisia californica - Malosma laurina
5457	California Sagebrush - California Buckwheat Association	Artemisia californica - Eriogonum fasciculatum
5458	California Sagebrush / Menzies' Fiddleneck Association	Artemisia californica / Amsinckia menziesii
5460	White Sage - Brittlebush Association	Salvia apiana - Encelia farinosa
5461	Yellow Bush Penstemon - California Buckwheat Association	Keckiella antirrhinoides - Eriogonum fasciculatum
5464	Yellow Bush Penstemon - Mixed Chaparral Association	Keckiella antirrhinoides - Mixed Chaparral
5465	Yellow Bush Penstemon Association	Keckiella antirrhinoides
5466	California Buckwheat - Matchweed Association	Eriogonum fasciculatum - Gutierrezia sarothrae
5505	Mixed Saltbush Alliance	Shadscale-saltbush cool semi-desert scrub
5508	Scalebroom Alliance	Lepidospartum squamatum
5537	Scalebroom - California Buckwheat Association	Lepidospartum squamatum - Eriogonum fasciculatum
5538	Scalebroom / Menzies' Fiddleneck Association	Lepidospartum squamatum / Amsinckia menziesii
5539	Scalebroom - Mulefat Association	Lepidospartum squamatum - Baccharis salicifolia
5603	Honey Mesquite Alliance	Prosopis glandulosa
5701	Wright's Buckwheat Alliance	Eriogonum wrightii
5705	Palmer's Goldenbush Alliance	Ericameria palmeri
6202	Rush Super Alliance	Californian warm temperate marsh/seep
6208	California Goldfields Alliance	Lasthenia californica
6214	Alkali Sacaton Alliance	Sporobolus airoides
6232	California Goldfields - San Jacinto Valley Crownscale Association	Lasthenia californica - Atriplex coronata var. notatior
6236	Low Barley - Clustered Tarweed - San Jacinto Valley Crownscale Association	Deinandra fasciculata - Hordeum depressum - Atriplex coronata var. notatior
6301	Giant Reed Alliance	Arundo donax
6303	Perennial Pepperweed Alliance	Lepidium latifolium
6402	Bulrush - Cattail Alliance	Arid West freshwater emergent marsh
7000	Annual Herbaceous Grasslands and Forbs Mapping Unit	California Annual and Perennial Grassland
7100	California Annual Grassland Alliance	California Annual and Perennial Grassland
7107	Mustard Alliance	Brassica nigra and other mustards
7109	Menzies' Fiddleneck Alliance	Amsinckia (menziesii, tessellata)
7131	Menzies' Fiddleneck - Filaree Association	Amsinckia menziesii - Erodium spp.
9001	Rock Outcrop Mapping Unit	Barren
9002	Riverine or Lacustrine flats, channels, streambeds, Mapping Unit	Riverine, Lacustrine
9100	Urban or development Mapping Unit	Urban
9101	Golf-course and urban park Mapping Unit	Urban
9102	Urban Interface Mapping Unit	Urban

PI Code	Common Name	NVCS Name
9103	Duck Ponds Mapping Unit	Lacustrine
9200	Agriculture Mapping Unit	Cropland, Orchard - Vineyard
9300	Vacant (disturbed bare ground, <8% vegetative cover) Mapping Unit	Urban
9400	Water Mapping Unit	Undifferentiated Water

Table 3: Map Unit - MSHCP

PI Code	Map Unit	MSHCP
121	Quercus agrifolia-Platanus racemosa Riparian	Woodland and Forests
123	Quercus agrifolia-Juglans californica/Malosma laurina-Coastal Sage Scrub	Woodland and Forests
200	Juniperus californica-Riparian	Woodland and Forests
201	Juniperus californica-Savannah	Woodland and Forests
202	Juniperus californica-Chaparral	Woodland and Forests
203	Juniperus californica-Coastal Sage Scrub	Woodland and Forests
204	Juniperus californica Desert Transition	Woodland and Forests
310	(Quercus engelmannii-Quercus agrifolia)-Chaparral-Coastal Sage Scrub	Woodland and Forests
311	Quercus engelmannii/Chaparral	Woodland and Forests
312	Quercus engelmannii-Quercus agrifolia/Toxicodendron diversilobum/Grass	Woodland and Forests
313	Quercus engelmannii/Annual Grass-Herb	Woodland and Forests
314	Quercus engelmannii-Quercus agrifolia	Woodland and Forests
315	Quercus engelmannii-Quercus agrifolia-Platanus racemosa	Woodland and Forests
320	Salix gooddingii-Salix lucida	Riparian Scrub, Woodland, Forest
321	Populus fremontii	Riparian Scrub, Woodland, Forest
322	Populus fremontii-Platanus racemosa-(Salix spp.)	Riparian Scrub, Woodland, Forest
323	Populus fremontii-Salix spp.	Riparian Scrub, Woodland, Forest
324	Salix lucida var. lasiandra	Riparian Scrub, Woodland, Forest
325	Salix spp.	Riparian Scrub, Woodland, Forest
431	Adenostoma fasciculatum-Coastal Sage Scrub	Coastal Sage Scrub
432	Adenostoma fasciculatum-Arctostaphylos glandulosa-(Ceanothus leucodermis-Quercus wislizeni var. frutescens-Ceanothus crassifolius)	Chaparral
433	Adenostoma fasciculatum-Arctostaphylos glauca-(Quercus berberidifolia-Rhus ovata)	Chaparral
434	Adenostoma fasciculatum-Ceanothus crassifolius-(Rhus ovata-Quercus berberidifolia-Salvia mellifera)	Chaparral
441	Quercus berberidifolia-(Cercocarpus betuloides-Fraxinus dipetala-Heteromeles arbutifolia)	Chaparral

PI Code	Map Unit	MSHCP
442	Quercus berberidifolia-(Cercocarpus betuloides-Quercus wislizeni-Fraxinus dipetala-Heteromeles arbutifolia)	Chaparral
445	Malosma laurina-(Eriogonum fasciculatum-Salvia mellifera-Salvia apiana-Artemisia californica)	Coastal Sage Scrub
447	Arctostaphylos glauca	Chaparral
450	Adenostoma fasciculatum-Ceanothus leucodermis-Rhus ovata	Chaparral
451	Rhus ovata-Eriogonum fasciculatum	Coastal Sage Scrub
452	Adenostoma fasciculatum-Ceanothus tomentosus-(Ceanothus oliganthus-Quercus berberidifolia)	Chaparral
453	Adenostoma fasciculatum-(Quercus berberidifolia-Quercus engelmannii-Ceanothus tomentosus-Ceanothus crassifolius-Coastal Sage Scrub)	Chaparral
492	Baccharis emoryi	Riparian Scrub, Woodland, Forest
511	Toxicodendron diversilobum	Chaparral
512	Sambucus mexicana-(Baccharis salicifolia)	Riparian Scrub, Woodland, Forest
513	Acacia greggii	Desert Scrub
540	Artemisia californica-(Eriogonum fasciculatum)-Annual Grass-Herb	Coastal Sage Scrub
541	Artemisia californica-Eriogonum fasciculatum-(Salvia mellifera-Keckiella antirrhinoides)	Coastal Sage Scrub
542	Encelia farinosa-Eriogonum fasciculatum	Coastal Sage Scrub
543	Eriogonum fasciculatum-(Encelia farinosa-Opuntia parryi-Gutierrezia sarothrae-Desert Agave)	Coastal Sage Scrub
544	Eriogonum fasciculatum-Salvia apiana-(Artemisia californica)	Coastal Sage Scrub
546	(Eriogonum fasciculatum, Salvia mellifera, Isocoma menziesii, Lotus scoparius, Artemisia californica, Centaurea melitensis, Brassica sp., Bromus spp., etc.)	Coastal Sage Scrub
550	Lepidospartum squamatum-(Eriogonum fasciculatum-Sambucus mexicana-Baccharis salicifolia)	Riversidean Alluvial Fan Sage Scrub
551	Chilopsis linearis	Desert Scrub
620	Santa Rosa Plateau Vernal Pool	Playas and Vernal Pools
621	Alkaline Ephemeral Wetland	Playas and Vernal Pools
622	Scirpus spp.-Typha spp.	Meadows and Marshes
623	Mountain Meadows	Meadows and Marshes
712	Hirschfeldia incana	Grassland
800	(Bromus, Avena, Nassella, Aristida, Erodium spp.)	Grassland
801	Annual Grassland with Native Perennials	Grassland
905	Exotic Trees	Developed/Disturbed Land
1000	Evergreen Broadleaf Forests & Woodlands	Woodland and Forests
1122	Quercus chrysolepis	Woodland and Forests
1130	Eucalyptus spp.	Agricultural Land
1131	Quercus chrysolepis-Pseudotsuga macrocarpa	Woodland and Forests
1201	Quercus agrifolia	Woodland and Forests
1202	Quercus wislizeni (tree)	Woodland and Forests

PI Code	Map Unit	MSHCP
1203	Quercus wislizeni-Quercus chrysolepis	Chaparral
1235	Quercus wislizeni-Quercus berberidifolia	Chaparral
1236	Quercus agrifolia-Platanus racemosa-Salix laevigata	Woodland and Forests
1237	Quercus agrifolia-Platanus racemosa/Toxicodendron diversilobum	Woodland and Forests
1238	Quercus agrifolia/Toxicodendron diversilobum Riparian	Woodland and Forests
1239	Quercus agrifolia/Chaparral	Woodland and Forests
1242	Quercus agrifolia/Toxicodendron diversilobum/Grass	Woodland and Forests
1243	Quercus agrifolia/Annual Grass-Herb	Woodland and Forests
2000	Evergreen Needle-leaf Forests & Woodlands	Montane Coniferous Forest
2106	Juniperus californica	Woodland and Forests
2121	Pinus coulteri	Montane Coniferous Forest
2127	Pinus quadrifolia	Woodland and Forests
2132	Pinus coulteri-Quercus chrysolepis	Montane Coniferous Forest
2135	Juniperus californicus-Adenostoma fasciculatum-Eriogonum fasciculatum	Woodland and Forests
2137	Juniperus californica/Annual Grass-Herb	Woodland and Forests
2138	Juniperus californica-Eriogonum fasciculatum-Artemisia californica	Woodland and Forests
2148	Pinus quadrifolia/Quercus cornelius-mulleri	Woodland and Forests
2240	Pseudotsuga macrocarpa-Quercus chrysolepis	Montane Coniferous Forest
3000	Deciduous Forests & Woodlands	Riparian Scrub, Woodland, Forest
3102	Quercus kelloggii	Montane Coniferous Forest
3132	Quercus engelmannii/ Quercus berberidifolia	Woodland and Forests
3138	Quercus engelmannii-Quercus agrifolia/Artemisia californica	Woodland and Forests
3143	Quercus engelmannii-Quercus agrifolia/Toxicodendron diversilobum/Annual Grass-Herb	Woodland and Forests
3144	Quercus engelmannii/Toxicodendron diversilobum/Grass	Woodland and Forests
3201	Salix spp.	Riparian Scrub, Woodland, Forest
3202	Salix laevigata	Riparian Scrub, Woodland, Forest
3203	Salix gooddingii	Riparian Scrub, Woodland, Forest
3204	Salix lasiolepis	Riparian Scrub, Woodland, Forest
3220	Alnus rhombifolia	Riparian Scrub, Woodland, Forest
3221	Platanus racemosa	Riparian Scrub, Woodland, Forest
3222	Populus fremontii	Riparian Scrub, Woodland, Forest
3232	Platanus racemosa-Populus fremontii	Riparian Scrub, Woodland, Forest
3236	Populus fremontii-Salix laevigata	Riparian Scrub, Woodland, Forest
3237	Salix gooddingii/Baccharis salicifolia	Riparian Scrub, Woodland, Forest
3239	Salix laevigata/Salix lasiolepis/Artemisia douglasiana	Riparian Scrub, Woodland, Forest
3241	Populus fremontii/Baccharis salicifolia	Riparian Scrub, Woodland, Forest
3246	Salix gooddingii/Lepidium latifolium	Riparian Scrub, Woodland, Forest
3247	Salix gooddingii-Salix lucida-Populus fremontii	Riparian Scrub, Woodland, Forest

PI Code	Map Unit	MSHCP
3248	Platanus racemosa-Salix laevigata/Salix lasiolepis-Baccharis salicifolia	Riparian Scrub, Woodland, Forest
3249	Platanus racemosa-Populus fremontii/Salix lasiolepis	Riparian Scrub, Woodland, Forest
3250	Populus fremontii-Salix laevigata/Salix lasiolepis/Vitis girdiana	Riparian Scrub, Woodland, Forest
3251	Populus fremontii-Salix laevigata/Salix lasiolepis/Baccharis salicifolia	Riparian Scrub, Woodland, Forest
3252	Platanus racemosa-Salix gooddingii/Baccharis salicifolia	Riparian Scrub, Woodland, Forest
4000	Evergreen Shrubland	Chaparral
4301	Adenostoma fasciculatum	Chaparral
4302	Adenostoma fasciculatum-Arctostaphylos glandulosa	Chaparral
4303	Adenostoma fasciculatum-Salvia mellifera	Chaparral
4304	Adenostoma fasciculatum-Salvia apiana	Chaparral
4305	Arctostaphylos glandulosa	Chaparral
4307	Adenostoma fasciculatum-Ceanothus cuneatus	Chaparral
4308	Eriodictyon crassifolium	Coastal Sage Scrub
4309	Adenostoma fasciculatum Disturbance	Chaparral
4310	Ceanothus crassifolius	Chaparral
4311	Ceanothus oliganthus	Chaparral
4313	Ceanothus leucodermis	Chaparral
4314	Adenostoma fasciculatum-Ceanothus greggii	Chaparral
4315	Cercocarpus betuloides	Chaparral
4316	Prunus ilicifolia	Chaparral
4317	Malosma laurina	Coastal Sage Scrub
4320	Rhus ovata	Chaparral
4321	Quercus berberidifolia	Chaparral
4322	Quercus berberidifolia-Adenostoma fasciculatum	Chaparral
4323	Quercus spp. (e.g. Quercus wislizeni-Quercus berberidifolia)	Chaparral
4324	Quercus wislizeni (shrub)	Chaparral
4325	Rhamnus tomentella	Chaparral
4327	Cercocarpus betuloides-Eriogonum fasciculatum	Chaparral
4328	Adenostoma fasciculatum-Arctostaphylos glauca	Chaparral
4330	Adenostoma fasciculatum Pure	Chaparral
4333	Adenostoma fasciculatum-Ceanothus crassifolius	Chaparral
4348	Cercocarpus betuloides-Prunus ilicifolia-Adenostoma sparsifolium	Chaparral
4351	Malosma laurina-Eriogonum fasciculatum-Salvia mellifera	Coastal Sage Scrub
4365	Cercocarpus betuloides-Eriogonum fasciculatum-Eriogonum wrightii	Chaparral
4366	Quercus berberidifolia-Adenostoma fasciculatum	Chaparral
4367	Adenostoma fasciculatum-Arctostaphylos glauca-Rhus ovata	Chaparral
4370	Adenostoma fasciculatum-Salvia apiana-Artemisia californica	Chaparral

PI Code	Map Unit	MSHCP
4372	Adenostoma fasciculatum-Eriogonum fasciculatum	Chaparral
4379	Adenostoma fasciculatum-Eriogonum fasciculatum-Salvia apiana	Chaparral
4384	Malosma laurina-Eriogonum fasciculatum	Coastal Sage Scrub
4385	Adenostoma fasciculatum-Arctostaphylos glandulosa-Ceanothus leucodermis	Chaparral
4387	Adenostoma fasciculatum-Malosma laurina	Chaparral
4388	Adenostoma fasciculatum-Salvia mellifera-Artemisia californica	Chaparral
4391	Adenostoma fasciculatum-Arctostaphylos glandulosa-Ceanothus crassifolius	Chaparral
4392	Adenostoma fasciculatum-Ceanothus crassifolius-Salvia mellifera	Chaparral
4401	Adenostoma sparsifolium	Chaparral
4402	Adenostoma sparsifolium-Adenostoma fasciculatum	Chaparral
4403	Adenostoma sparsifolium-Adenostoma fasciculatum-Arctostaphylos glauca	Chaparral
4404	Quercus cornelius-mulleri	Chaparral
4405	Quercus palmeri	Chaparral
4431	Adenostoma fasciculatum-Xylococcus bicolor-Ceanothus crassifolius	Chaparral
4434	Adenostoma sparsifolium-Cercocarpus betuloides	Chaparral
4435	Adenostoma sparsifolium-Artemisia tridentata	Chaparral
4436	Adenostoma sparsifolium-Ceanothus cuneatus	Chaparral
4442	Adenostoma fasciculatum-Ceanothus crassifolius-Rhus ovata	Chaparral
4443	Adenostoma fasciculatum-Xylococcus bicolor-Salvia mellifera-Malosma laurina	Chaparral
4445	Heteromeles arbutifolia	Chaparral
4459	Ceanothus oliganthus-Adenostoma fasciculatum	Chaparral
4461	Ceanothus crassifolius-Cercocarpus betuloides	Chaparral
4462	Ceanothus crassifolius-Malosma laurina	Chaparral
4465	Prunus ilicifolia-Heteromeles arbutifolia	Chaparral
4466	Quercus wislizeni-Cercocarpus betuloides	Chaparral
4467	Quercus wislizeni-Ceanothus leucodermis	Chaparral
4469	Quercus wislizeni-Adenostoma sparsifolium-Cercocarpus betuloides	Chaparral
4472	Malosma laurina-Eriogonum fasciculatum-Salvia apiana	Coastal Sage Scrub
4473	Malosma laurina-Tetracoccus dioicus	Coastal Sage Scrub
4474	Quercus cornelius-mulleri-Adenostoma sparsifolium-Cercocarpus betuloides	Chaparral
4475	Quercus cornelius-mulleri - Adenostoma sparsifolium-Ceanothus greggii	Chaparral
4476	Quercus palmeri-Eriogonum fasciculatum	Chaparral
4478	Adenostoma sparsifolium - Cercocarpus betuloides-Adenostoma fasciculatum	Chaparral
4479	Adenostoma sparsifolium - Eriogonum fasciculatum-Lotus scoparius	Chaparral

PI Code	Map Unit	MSHCP
4481	Adenostoma sparsifolium - Adenostoma fasciculatum-Ceanothus greggii	Chaparral
4482	Adenostoma sparsifolium - Adenostoma fasciculatum-Arctostaphylos pungens	Chaparral
4483	Adenostoma sparsifolium - Ceanothus crassifolius	Chaparral
4484	Adenostoma sparsifolium - Ericameria linearifolia-Eriogonum fasciculatum-Opuntia basilaris	Chaparral
4485	Adenostoma sparsifolium - Adenostoma fasciculatum-Opuntia parryi	Chaparral
4486	Quercus berberidifolia-Cercocarpus betuloides-Arctostaphylos glauca	Chaparral
4487	Quercus berberidifolia-Adenostoma fasciculatum-Ceanothus crassifolius	Chaparral
4488	Adenostoma fasciculatum-Xylococcus bicolor-Quercus berberidifolia	Chaparral
4490	Quercus berberidifolia-Southern Mixed Chaparral	Chaparral
4491	Quercus berberidifolia	Chaparral
4493	Heteromeles arbutifolia-Artemisia californica	Chaparral
4494	Heteromeles arbutifolia-Quercus berberidifolia-Cercocarpus betuloides-Fraxinus dipetala	Chaparral
4496	Ceanothus cuneatus	Chaparral
4510	Artemisia tridentata	Desert Scrub
4531	Artemisia tridentata-Eriogonum fasciculatum	Desert Scrub
4532	Artemisia tridentata-Eriogonum wrightii	Desert Scrub
4603	Simmondsia chinensis	Coastal Sage Scrub
4630	Simmondsia chinensis-Eriogonum fasciculatum-Opuntia parryi	Coastal Sage Scrub
4702	Opuntia littoralis	Coastal Sage Scrub
4806	Quercus wislizeni-Quercus berberidifolia-Fraxinus dipetala	Chaparral
4901	Baccharis salicifolia	Riparian Scrub, Woodland, Forest
4930	Tamarix spp.	Riparian Scrub, Woodland, Forest
4931	Baccharis salicifolia-Sambucus mexicana	Riparian Scrub, Woodland, Forest
5000	Deciduous Shrubland	Coastal Sage Scrub
5101	Ceanothus integerrimus	Chaparral
5103	Rhus trilobata	Chaparral
5104	Ribes quercetorum	Chaparral
5203	Lycium andersonii	Coastal Sage Scrub
5230	Forestiera pubescens	Riparian Scrub, Woodland, Forest
5231	Forestiera pubescens-Salix spp.	Riparian Scrub, Woodland, Forest
5400	Coastal Sage Scrub	Coastal Sage Scrub
5401	Artemisia californica	Coastal Sage Scrub
5402	Artemisia californica-Eriogonum fasciculatum	Coastal Sage Scrub
5403	Artemisia californica-Salvia mellifera	Coastal Sage Scrub
5404	Eriogonum fasciculatum	Coastal Sage Scrub
5407	Eriogonum fasciculatum-Salvia apiana	Coastal Sage Scrub

PI Code	Map Unit	MSHCP
5408	Salvia apiana	Coastal Sage Scrub
5409	Salvia mellifera	Coastal Sage Scrub
5410	Encelia farinosa	Coastal Sage Scrub
5413	Malacothamnus fasciculatus	Coastal Sage Scrub
5416	Lotus scoparius	Coastal Sage Scrub
5430	Keckiella antirrhinoides	Coastal Sage Scrub
5431	Keckiella antirrhinoides-Artemisia californica	Coastal Sage Scrub
5432	Artemisia californica- Salvia apiana	Coastal Sage Scrub
5434	Eriogonum fasciculatum-Opuntia parryi	Coastal Sage Scrub
5437	Encelia farinosa-Artemisia californica	Coastal Sage Scrub
5438	Encelia californica-Artemisia californica	Coastal Sage Scrub
5439	Encelia farinosa	Coastal Sage Scrub
5441	Salvia mellifera	Coastal Sage Scrub
5442	Artemisia californica-Salvia mellifera	Coastal Sage Scrub
5444	Salvia mellifera-Lotus scoparius	Coastal Sage Scrub
5447	Eriogonum fasciculatum-Encelia farinosa	Coastal Sage Scrub
5448	Eriogonum fasciculatum-Encelia farinosa	Coastal Sage Scrub
5449	Eriogonum fasciculatum-Simmondsia chinensis-Opuntia parryi	Coastal Sage Scrub
5450	Eriogonum fasciculatum-Rhus ovata	Coastal Sage Scrub
5451	Eriogonum fasciculatum	Coastal Sage Scrub
5454	Artemisia californica-Eriogonum fasciculatum-Malosma laurina	Coastal Sage Scrub
5455	Artemisia californica-Eriogonum fasciculatum-Salvia apiana	Coastal Sage Scrub
5456	Artemisia californica-Malosma laurina	Coastal Sage Scrub
5457	Artemisia californica-Eriogonum fasciculatum	Coastal Sage Scrub
5458	Artemisia californica/Amsinckia menziesii	Coastal Sage Scrub
5460	Salvia apiana-Encelia farinosa	Coastal Sage Scrub
5461	Keckiella antirrhinoides-Eriogonum fasciculatum	Coastal Sage Scrub
5464	Keckiella antirrhinoides-Mixed Chaparral	Coastal Sage Scrub
5465	Keckiella antirrhinoides	Coastal Sage Scrub
5466	Eriogonum fasciculatum-Gutierrezia sarothrae	Coastal Sage Scrub
5505	Atriplex spp.	Desert Scrub
5508	Lepidospartum squamatum	Riversidean Alluvial Fan Sage Scrub
5537	Lepidospartum squamatum-Eriogonum fasciculatum	Riversidean Alluvial Fan Sage Scrub
5538	Lepidospartum squamatum/Amsinckia menziesii	Riversidean Alluvial Fan Sage Scrub
5539	Lepidospartum squamatum-Baccharis salicifolia	Riversidean Alluvial Fan Sage Scrub
5603	Prosopis glandulosa	Desert Scrub
5701	Eriogonum wrightii	Coastal Sage Scrub
5705	Ericameria palmeri	Coastal Sage Scrub
6202	Juncus spp.	Meadows and Marshes
6208	Lasthenia californica	Playas and Vernal Pools

PI Code	Map Unit	MSHCP
6214	Sporobolus airoides	Playas and Vernal Pools
6232	Lasthenia californica-Atriplex coronata var. notatior	Playas and Vernal Pools
6236	Hordeum depressum-Hemizonia fasciculata-Atriplex coronata var. notatior	Playas and Vernal Pools
6301	Arundo donax	Meadows and Marshes
6303	Lepidium latifolium	Meadows and Marshes
6402	Scirpus spp.- Typha spp.	Meadows and Marshes
7000	Annual Herbaceous Grasslands and Forbs	Grassland
7100	California Annual Grassland	Grassland
7107	Brassica spp., Hirschfeldia incana	Grassland
7109	Amsinckia menziesii	Grassland
7131	Amsinckia menziesii - Erodium spp.	Grassland
9001	Rock Outcrop	No equivalent
9002	Riverine, Lacustrine, Mudflats, and Sandflats along Rivers	Water
9100	Urban or development	Developed/Disturbed Land
9101	Golf-course and urban park	Developed/Disturbed Land
9102	Urban Interface	Developed/Disturbed Land
9103	Duck Ponds	Water
9200	Agriculture	Agricultural Land
9300	Vacant (disturbed bare ground, <8% vegetative cover)	Developed/Disturbed Land
9400	Water	Water

Table 4: NVCS Name - WHR Name – WHR Code

PI Code	NVCS Name	WHR Name	WHR Code
121	Platanus racemosa	Coastal Oak Woodland	COW
123	Quercus agrifolia	Coastal Oak Woodland	COW
200	Juniperus californica	Juniper	JUN
201	Juniperus californica	Juniper	JUN
202	Juniperus californica	Juniper	JUN
203	Juniperus californica	Juniper	JUN
204	Juniperus californica	Juniper	JUN
310	Quercus engelmaii	Coastal Oak Woodland	COW
311	Quercus engelmannii	Coastal Oak Woodland	COW
312	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass	Coastal Oak Woodland	COW
313	Quercus engelmannii / annual grass - herb	Coastal Oak Woodland	COW
314	Quercus engelmannii	Coastal Oak Woodland	COW
315	Quercus engelmannii	Coastal Oak Woodland	COW
320	Salix gooddingii	Valley Foothill Riparian	VRI
321	Populus fremontii	Valley Foothill Riparian	VRI

PI Code	NVCS Name	WHR Name	WHR Code
322	Populus fremontii	Valley Foothill Riparian	VRI
323	Populus fremontii - Salix (laevigata, lasiolepis, lucida ssp. lasiandra)	Valley Foothill Riparian	VRI
324	Salix lucida ssp. lasiandra	Valley Foothill Riparian	VRI
325	Salix laevigata	Valley Foothill Riparian	VRI
431	Adenostoma fasciculatum	Coastal Scrub	CSC
432	Arctostaphylos glandulosa	Mixed Chaparral	MCH
433	Arctostaphylos glauca	Mixed Chaparral	MCH
434	Ceanothus crassifolius	Mixed Chaparral	MCH
441	Quercus berberidifolia	Mixed Chaparral	MCH
442	Quercus berberidifolia	Mixed Chaparral	MCH
445	Malosma laurina	Coastal Scrub	CSC
447	Arctostaphylos glauca	Mixed Chaparral	MCH
450	Adenostoma fasciculatum	Mixed Chaparral	MCH
451	Eriogonum fasciculatum - Rhus ovata	Coastal Scrub	CSC
452	Adenostoma fasciculatum	Mixed Chaparral	MCH
453	Adenostoma fasciculatum	Mixed Chaparral	MCH
492	Baccharis emoryi	Valley Foothill Riparian	VRI
511	Toxicodendron diversilobum	Mixed Chaparral	MCH
512	Sambucus nigra	Valley Foothill Riparian	VRI
513	Acacia greggii	Desert Wash	DSW
540	Artemisia californica - Eriogonum fasciculatum	Coastal Scrub	CSC
541	Artemisia californica - Eriogonum fasciculatum	Coastal Scrub	CSC
542	Encelia farinosa	Coastal Scrub	CSC
543	Eriogonum fasciculatum	Coastal Scrub	CSC
544	Eriogonum fasciculatum - Salvia apiana	Coastal Scrub	CSC
546	California Coastal Scrub	Coastal Scrub	CSC
550	Lepidospartum squamatum	Coastal Scrub	CSC
551	Chilopsis linearis	Desert Riparian, Desert Wash	DRI, DSW
620	Californian mixed annual/perennial freshwater vernal pool/swale/plain bottomland	Wet Meadow	WTM
621	Southwestern North American salt basin and high marsh	Wet Meadow	WTM
622	Arid West freshwater emergent marsh	Fresh Emergent Wetland	FEW
623	Western North America Wet Meadow and Low Shrub Carr	Wet Meadow	WTM
712	Brassica nigra and other mustards	Annual Grassland	AGS
800	California Annual and Perennial Grassland	Annual Grassland	AGS
801	California Annual and Perennial Grassland	Annual Grassland	AGS
905	Urban	Urban	URB
1000	Californian broadleaf forest and woodland	Coastal Oak Woodland, Montane Hardwood	COW, MHW
1122	Quercus chrysolepis	Montane Hardwood	MHW
1130	Eucalyptus (globulus, camaldulensis)	Eucalyptus	EUC

PI Code	NVCS Name	WHR Name	WHR Code
1131	Quercus chrysolepis	Montane Hardwood - Conifer	MHC
1201	Quercus agrifolia	Coastal Oak Woodland	COW
1202	Quercus wislizeni tree	Montane Hardwood	MHW
1203	Quercus wislizeni - Quercus chrysolepis shrub	Mixed Chaparral	MCH
1235	Quercus wislizeni - Quercus berberidifolia	Mixed Chaparral	MCH
1236	Quercus agrifolia - Platanus racemosa - Salix laevigata	Coastal Oak Woodland	COW
1237	Quercus agrifolia - Platanus racemosa / Toxicodendron diversilobum	Coastal Oak Woodland	COW
1238	Quercus agrifolia / Toxicodendron diversilobum riparian	Coastal Oak Woodland	COW
1239	Quercus agrifolia / chaparral	Coastal Oak Woodland	COW
1242	Quercus agrifolia / Toxicodendron diversilobum / grass	Coastal Oak Woodland	COW
1243	Quercus agrifolia / grass	Coastal Oak Woodland	COW
2000	Californian evergreen coniferous forest and woodland	Sierran Mixed Conifer	SMC
2106	Juniperus californica	Juniper	JUN
2121	Pinus coulteri	Montane Hardwood - Conifer	MHC
2127	Pinus quadrifolia	Pinyon - Juniper	PJN
2132	Pinus coulteri - Quercus chrysolepis	Montane Hardwood - Conifer	MHC
2135	Juniperus californica - Adenostoma fasciculatum - Eriogonum fasciculatum	Juniper	JUN
2137	Juniperus californica / annual herbaceous	Juniper	JUN
2138	Juniperus californica - Eriogonum fasciculatum - Artemisia californica	Juniper	JUN
2148	Pinus quadrifolia / Quercus cornelius-mulleri	Pinyon - Juniper	PJN
2240	Pseudotsuga macrocarpa	Montane Hardwood - Conifer	MHC
3000	Southwestern North American riparian evergreen and deciduous woodland	Montane Riparian, Valley Foothill Riparian	MRI, VRI
3102	Quercus kelloggii	Montane Hardwood, Montane Hardwood - Conifer	MHW, MHC
3132	Quercus engelmannii / Quercus berberidifolia	Coastal Oak Woodland	COW
3138	Quercus engelmannii - Quercus agrifolia / Artemisia californica	Coastal Oak Woodland	COW
3143	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass	Coastal Oak Woodland	COW
3144	Quercus engelmannii / Toxicodendron diversilobum / grass	Coastal Oak Woodland	COW
3201	Temperate Flooded and Swamp Forest	Valley Foothill Riparian	VRI
3202	Salix laevigata	Valley Foothill Riparian	VRI
3203	Salix gooddingii	Valley Foothill Riparian	VRI
3204	Salix lasiolepis	Valley Foothill Riparian	VRI
3220	Alnus rhombifolia	Montane Riparian	MRI
3221	Platanus racemosa	Valley Foothill Riparian	VRI
3222	Populus fremontii	Valley Foothill Riparian	VRI
3232	Platanus racemosa - Populus fremontii	Valley Foothill Riparian	VRI
3236	Populus fremontii - Salix laevigata	Valley Foothill Riparian	VRI
3237	Salix gooddingii / Baccharis salicifolia	Valley Foothill Riparian	VRI

PI Code	NVCS Name	WHR Name	WHR Code
3239	Salix laevigata / Salix lasiolepis / Artemisia douglasiana	Valley Foothill Riparian	VRI
3241	Populus fremontii / Baccharis salicifolia	Valley Foothill Riparian	VRI
3246	Salix gooddingii / Lepidium latifolium	Valley Foothill Riparian	VRI
3247	Salix gooddingii - Salix lucida - Populus fremontii	Valley Foothill Riparian	VRI
3248	Platanus racemosa - Salix laevigata / Salix lasiolepis - Baccharis salicifolia	Valley Foothill Riparian	VRI
3249	Platanus racemosa - Populus fremontii / Salix lasiolepis	Valley Foothill Riparian	VRI
3250	Populus fremontii - Salix laevigata / Salix lasiolepis / Vitis girdiana	Valley Foothill Riparian	VRI
3251	Populus fremontii - Salix laevigata / Salix lasiolepis - Baccharis salicifolia	Valley Foothill Riparian	VRI
3252	Platanus racemosa	Valley Foothill Riparian	VRI
4000	California Chaparral	Mixed Chaparral	MCH
4301	Adenostoma fasciculatum	Mixed Chaparral	MCH
4302	Arctostaphylos glandulosa - Adenostoma fasciculatum	Mixed Chaparral	MCH
4303	Adenostoma fasciculatum - Salvia mellifera	Mixed Chaparral	MCH
4304	Adenostoma fasciculatum - Salvia apiana	Mixed Chaparral	MCH
4305	Arctostaphylos glandulosa	Mixed Chaparral	MCH
4307	Ceanothus cuneatus - Adenostoma fasciculatum	Mixed Chaparral	MCH
4308	Eriodictyon crassifolium	Mixed Chaparral	MCH
4309	Adenostoma fasciculatum disturbance	Mixed Chaparral	MCH
4310	Ceanothus crassifolius	Mixed Chaparral	MCH
4311	Ceanothus oliganthus	Mixed Chaparral	MCH
4313	Ceanothus leucodermis	Mixed Chaparral	MCH
4314	Ceanothus greggii - Adenostoma fasciculatum	Mixed Chaparral	MCH
4315	Cercocarpus montanus	Mixed Chaparral	MCH
4316	Prunus ilicifolia	Mixed Chaparral	MCH
4317	Malosma laurina	Coastal Scrub	CSC
4320	Rhus ovata	Mixed Chaparral	MCH
4321	Quercus berberidifolia	Mixed Chaparral	MCH
4322	Quercus berberidifolia - Adenostoma fasciculatum	Mixed Chaparral	MCH
4323	Quercus (agrifolia, douglasii, garryana, kelloggii, lobata, wislizeni)	Mixed Chaparral	MCH
4324	Quercus wislizeni shrub	Mixed Chaparral	MCH
4325	Frangula californica	Mixed Chaparral	MCH
4327	Cercocarpus montanus - Eriogonum fasciculatum	Mixed Chaparral	MCH
4328	Arctostaphylos glauca - Adenostoma fasciculatum	Mixed Chaparral	MCH
4330	Adenostoma fasciculatum	Mixed Chaparral	MCH
4333	Ceanothus crassifolius - Adenostoma fasciculatum	Mixed Chaparral	MCH
4348	Cercocarpus montanus - Prunus ilicifolia - Adenostoma sparsifolium	Mixed Chaparral	MCH
4351	Malosma laurina - Eriogonum fasciculatum - Salvia mellifera	Coastal Scrub	CSC
4365	Cercocarpus montanus - Eriogonum fasciculatum - Eriogonum wrightii	Mixed Chaparral	MCH

PI Code	NVCS Name	WHR Name	WHR Code
4366	Quercus berberidifolia - Adenostoma fasciculatum	Mixed Chaparral	MCH
4367	Arctostaphylos glauca - Adenostoma fasciculatum - Rhus ovata	Mixed Chaparral	MCH
4370	Adenostoma fasciculatum - Salvia apiana - Artemisia californica	Mixed Chaparral	MCH
4372	Adenostoma fasciculatum - Eriogonum fasciculatum	Mixed Chaparral	MCH
4379	Adenostoma fasciculatum - Eriogonum fasciculatum - Salvia apiana	Mixed Chaparral	MCH
4384	Malosma laurina - Eriogonum fasciculatum	Coastal Scrub	CSC
4385	Arctostaphylos glandulosa - Adenostoma fasciculatum - Ceanothus leucodermis	Mixed Chaparral	MCH
4387	Adenostoma fasciculatum - Malosma laurina	Mixed Chaparral	MCH
4388	Adenostoma fasciculatum - Salvia mellifera - Artemisia californica	Mixed Chaparral	MCH
4391	Arctostaphylos glandulosa - Adenostoma fasciculatum - Ceanothus crassifolius	Mixed Chaparral	MCH
4392	Ceanothus crassifolius - Adenostoma fasciculatum - Salvia mellifera	Mixed Chaparral	MCH
4401	Adenostoma sparsifolium	Chamise-Red Shank Chaparral	CRC
4402	Adenostoma sparsifolium	Chamise-Red Shank Chaparral	CRC
4403	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos glauca	Chamise-Red Shank Chaparral	CRC
4404	Quercus cornelius-mulleri	Mixed Chaparral	MCH
4405	Quercus palmeri	Mixed Chaparral	MCH
4431	Adenostoma fasciculatum - Xylococcus bicolor - Ceanothus crassifolius	Mixed Chaparral	MCH
4434	Adenostoma sparsifolium - Cercocarpus montanus	Chamise-Red Shank Chaparral	CRC
4435	Adenostoma sparsifolium - Artemisia tridentata	Chamise-Red Shank Chaparral	CRC
4436	Adenostoma sparsifolium - Ceanothus cuneatus	Chamise-Red Shank Chaparral	CRC
4442	Ceanothus crassifolius - Adenostoma fasciculatum - Rhus ovata	Mixed Chaparral	MCH
4443	Adenostoma fasciculatum - Xylococcus bicolor - Salvia mellifera - Malosma laurina	Mixed Chaparral	MCH
4445	Heteromeles arbutifolia	Mixed Chaparral	MCH
4459	Ceanothus oliganthus - Adenostoma fasciculatum	Mixed Chaparral	MCH
4461	Ceanothus crassifolius - Cercocarpus montanus	Mixed Chaparral	MCH
4462	Ceanothus crassifolius - Malosma laurina	Mixed Chaparral	MCH
4465	Prunus ilicifolia ssp. ilicifolia - Heteromeles arbutifolia	Mixed Chaparral	MCH
4466	Quercus wislizeni - Cercocarpus montanus	Mixed Chaparral	MCH
4467	Quercus wislizeni - Ceanothus leucodermis	Mixed Chaparral	MCH
4469	Quercus wislizeni - Cercocarpus montanus - Adenostoma sparsifolium	Mixed Chaparral	MCH
4472	Malosma laurina - Eriogonum fasciculatum - Salvia apiana	Coastal Scrub	CSC
4473	Malosma laurina - Tetracoccus dioicus	Coastal Scrub	CSC
4474	Quercus cornelius-mulleri - Adenostoma sparsifolium - Cercocarpus montanus	Mixed Chaparral	MCH

PI Code	NVCS Name	WHR Name	WHR Code
4475	Quercus cornelius-mulleri - Adenostoma sparsifolium - Ceanothus greggii	Mixed Chaparral	MCH
4476	Quercus palmeri - Eriogonum fasciculatum	Mixed Chaparral	MCH
4478	Adenostoma sparsifolium - Adenostoma fasciculatum - Cercocarpus montanus	Chamise-Red Shank Chaparral	CRC
4479	Adenostoma sparsifolium - Eriogonum fasciculatum - Lotus scoparius	Chamise-Red Shank Chaparral	CRC
4481	Adenostoma sparsifolium - Adenostoma fasciculatum - Ceanothus greggii	Chamise-Red Shank Chaparral	CRC
4482	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos pungens	Chamise-Red Shank Chaparral	CRC
4483	Adenostoma sparsifolium - Ceanothus crassifolius	Chamise-Red Shank Chaparral	CRC
4484	Adenostoma sparsifolium - Ericameria linearifolia - Eriogonum fasciculatum - Opuntia basilaris	Chamise-Red Shank Chaparral	CRC
4485	Adenostoma sparsifolium - Adenostoma fasciculatum - Opuntia parryi	Chamise-Red Shank Chaparral	CRC
4486	Quercus berberidifolia	Mixed Chaparral	MCH
4487	Quercus berberidifolia - Adenostoma fasciculatum - Ceanothus crassifolius	Mixed Chaparral	MCH
4488	Adenostoma fasciculatum - Xylococcus bicolor - Quercus berberidifolia	Mixed Chaparral	MCH
4490	Quercus berberidifolia - southern mixed chaparral	Mixed Chaparral	MCH
4491	Quercus berberidifolia	Mixed Chaparral	MCH
4493	Heteromeles arbutifolia - Artemisia californica	Mixed Chaparral	MCH
4494	Heteromeles arbutifolia - Quercus berberidifolia - Cercocarpus montanus - Fraxinus dipetala	Mixed Chaparral	MCH
4496	Ceanothus cuneatus	Mixed Chaparral	MCH
4510	Artemisia tridentata	Sagebrush	SGB
4531	Artemisia tridentata - Eriogonum fasciculatum	Sagebrush	SGB
4532	Artemisia tridentata - Eriogonum wrightii	Sagebrush	SGB
4603	Simmondsia chinensis	Coastal Scrub	CSC
4630	Simmondsia chinensis - Eriogonum fasciculatum - Opuntia parryi	Coastal Scrub	CSC
4702	Opuntia littoralis	Coastal Scrub	CSC
4806	Quercus wislizeni - Quercus berberidifolia - Fraxinus dipetala	Mixed Chaparral	MCH
4901	Baccharis salicifolia	Fresh Emergent Wetland	FEW
4930	Tamarix spp.	Valley Foothill Riparian	VRI
4931	Baccharis salicifolia - Sambucus mexicana	Fresh Emergent Wetland	FEW
5000	Western Cordilleran montane deciduous scrub	Coastal Scrub	CSC
5101	Ceanothus integerrimus	Mixed Chaparral	MCH
5103	Rhus trilobata	Mixed Chaparral	MCH
5104	Ribes quercetorum	Mixed Chaparral	MCH
5203	Lycium andersonii	Coastal Scrub	CSC
5230	Forestiera pubescens	Valley Foothill Riparian	VRI
5231	Forestiera pubescens	Valley Foothill Riparian	VRI
5400	Central & South Coastal Californian Coastal Sage Scrub	Coastal Scrub	CSC

PI Code	NVCS Name	WHR Name	WHR Code
5401	Artemisia californica	Coastal Scrub	CSC
5402	Artemisia californica - Eriogonum fasciculatum	Coastal Scrub	CSC
5403	Artemisia californica - Salvia mellifera	Coastal Scrub	CSC
5404	Eriogonum fasciculatum	Coastal Scrub	CSC
5407	Eriogonum fasciculatum - Salvia apiana	Coastal Scrub	CSC
5408	Salvia apiana	Coastal Scrub	CSC
5409	Salvia mellifera	Coastal Scrub	CSC
5410	Encelia farinosa	Coastal Scrub	CSC
5413	Malacothamnus fasciculatus	Coastal Scrub	CSC
5416	Lotus scoparius	Coastal Scrub	CSC
5430	Keckiella antirrhinoides	Coastal Scrub	CSC
5431	Keckiella antirrhinoides - Artemisia californica	Coastal Scrub	CSC
5432	Salvia apiana - Artemisia californica	Coastal Scrub	CSC
5434	Eriogonum fasciculatum - Cylindropuntia californica	Coastal Scrub	CSC
5437	Encelia farinosa - Artemisia californica	Coastal Scrub	CSC
5438	Encelia californica - Artemisia californica	Coastal Scrub	CSC
5439	Encelia farinosa	Coastal Scrub	CSC
5441	Salvia mellifera	Coastal Scrub	CSC
5442	Artemisia californica - Salvia mellifera	Coastal Scrub	CSC
5444	Salvia mellifera - Lotus scoparius	Coastal Scrub	CSC
5447	Eriogonum fasciculatum - Encelia farinosa	Coastal Scrub	CSC
5448	Eriogonum fasciculatum - Encelia farinosa	Coastal Scrub	CSC
5449	Eriogonum fasciculatum - Simmondsia chinensis - Cylindropuntia californica	Coastal Scrub	CSC
5450	Eriogonum fasciculatum - Rhus ovata	Coastal Scrub	CSC
5451	Eriogonum fasciculatum	Coastal Scrub	CSC
5454	Artemisia californica - Eriogonum fasciculatum - Malosma laurina	Coastal Scrub	CSC
5455	Artemisia californica - Eriogonum fasciculatum - Salvia apiana	Coastal Scrub	CSC
5456	Artemisia californica - Malosma laurina	Coastal Scrub	CSC
5457	Artemisia californica - Eriogonum fasciculatum	Coastal Scrub	CSC
5458	Artemisia californica / Amsinckia menziesii	Coastal Scrub	CSC
5460	Salvia apiana - Encelia farinosa	Coastal Scrub	CSC
5461	Keckiella antirrhinoides - Eriogonum fasciculatum	Coastal Scrub	CSC
5464	Keckiella antirrhinoides - Mixed Chaparral	Coastal Scrub	CSC
5465	Keckiella antirrhinoides	Coastal Scrub	CSC
5466	Eriogonum fasciculatum - Gutierrezia sarothrae	Coastal Scrub	CSC
5505	Shadscale-saltbush cool semi-desert scrub	Alkali Desert Scrub	ASC
5508	Lepidospartum squamatum	Coastal Scrub	CSC
5537	Lepidospartum squamatum - Eriogonum fasciculatum	Coastal Scrub	CSC
5538	Lepidospartum squamatum / Amsinckia menziesii	Coastal Scrub	CSC
5539	Lepidospartum squamatum - Baccharis salicifolia	Coastal Scrub	CSC

PI Code	NVCS Name	WHR Name	WHR Code
5603	Prosopis glandulosa	Desert Riparian, Desert Wash	DRI, DSW
5701	Eriogonum wrightii	Coastal Scrub	CSC
5705	Ericameria palmeri	Coastal Scrub	CSC
6202	Californian warm temperate marsh/seep	Fresh Emergent Wetland	FEW
6208	Lasthenia californica	Wet Meadow	WTM
6214	Sporobolus airoides	Wet Meadow	WTM
6232	Lasthenia californica - Atriplex coronata var. notatior	Wet Meadow	WTM
6236	Deinandra fasciculata - Hordeum depressum - Atriplex coronata var. notatior	Wet Meadow	WTM
6301	Arundo donax	Fresh Emergent Wetland	FEW
6303	Lepidium latifolium	Fresh Emergent Wetland	FEW
6402	Arid West freshwater emergent marsh	Fresh Emergent Wetland	FEW
7000	California Annual and Perennial Grassland	Annual Grassland	AGS
7100	California Annual and Perennial Grassland	Annual Grassland	AGS
7107	Brassica nigra and other mustards	Annual Grassland	AGS
7109	Amsinckia (menziesii, tessellata)	Annual Grassland	AGS
7131	Amsinckia menziesii - Erodium spp.	Annual Grassland	AGS
9001	Barren	Barren	BAR
9002	Riverine, Lacustrine	Riverine, Lacustrine	RIV, LAC
9100	Urban	Urban	URB
9101	Urban	Urban	URB
9102	Urban	Urban	URB
9103	Lacustrine	Lacustrine	LAC
9200	Cropland, Orchard - Vineyard	Cropland, Orchard - Vineyard	CRP, OVN
9300	Urban	Urban	URB
9400	Undifferentiated Water	Riverine, Lacustrine	RIV, LAC

Table 5: Complete Crosswalk Table

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
121	*Quercus agrifolia-Platanus racemosa Riparian*	Platanus racemosa	Coast Live Oak - Sycamore Riparian Mapping Unit	Woodland and Forests	Coastal Oak Woodland	COW
123	*Quercus agrifolia-Juglans californica/Malosma laurina-Coastal Sage Scrub*	Quercus agrifolia	Coast Live Oak - California Walnut / Laurel Sumac - Coastal Sage Scrub Mapping Unit	Woodland and Forests	Coastal Oak Woodland	COW
200	*Juniperus californica-Riparian*	Juniperus californica	California Juniper Riparian Mapping Unit	Woodland and Forests	Juniper	JUN
201	*Juniperus californica-Savannah*	Juniperus californica	California Juniper Savannah Mapping Unit	Woodland and Forests	Juniper	JUN
202	*Juniperus californica-Chaparral*	Juniperus californica	California Juniper - Chaparral Mapping Unit	Woodland and Forests	Juniper	JUN
203	*Juniperus californica-Coastal Sage Scrub*	Juniperus californica	California Juniper - Coastal Sage Scrub Mapping Unit	Woodland and Forests	Juniper	JUN
204	*Juniperus californica Desert Transition*	Juniperus californica	California Juniper Desert Transition Mapping Unit	Woodland and Forests	Juniper	JUN
310	*(Quercus engelmannii-Quercus agrifolia)-Chaparral-Coastal Sage Scrub*	Quercus engelmaii	(Engelmann Oak - Coast Live Oak) / Chaparral - Coastal Sage Scrub Mapping Unit	Woodland and Forests	Coastal Oak Woodland	COW
311	*Quercus engelmannii/Chaparral*	Quercus engelmannii	Engelmann Oak / Chaparral Mapping Unit	Woodland and Forests	Coastal Oak Woodland	COW
312	*Quercus engelmannii-Quercus agrifolia/Toxicodendron diversilobum/Grass*	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass	Engelmann Oak - Coast Live Oak / Poison Oak / Grass Mapping Unit	Woodland and Forests	Coastal Oak Woodland	COW
313	*Quercus engelmannii/Annual Grass-Herb*	Quercus engelmannii / annual grass - herb	Engelmann Oak / Annual Grass-Herb Mapping Unit	Woodland and Forests	Coastal Oak Woodland	COW
314	*Quercus engelmannii-Quercus agrifolia*	Quercus engelmannii	Engelmann Oak - Coast Live Oak Mapping Unit	Woodland and Forests	Coastal Oak Woodland	COW
315	*Quercus engelmannii-Quercus agrifolia-Platanus racemosa*	Quercus engelmannii	Engelmann Oak - Coast Live Oak - Sycamore Riparian Mapping Unit	Woodland and Forests	Coastal Oak Woodland	COW
320	*Salix gooddingii-Salix lucida*	Salix gooddingii	Black Willow - Shining Willow Mapping Unit	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
321	*Populus fremontii*	Populus fremontii	Fremont Cottonwood Dry Mapping Unit	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
322	*Populus fremontii-Platanus racemosa-(Salix spp.)*	Populus fremontii	Fremont Cottonwood - Sycamore - (Willow) Mapping Unit	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
323	*Populus fremontii-Salix spp.*	Populus fremontii - Salix (laevigata, lasiolepis, lucida ssp. lasiandra)	Fremont Cottonwood - Willow Mapping Unit	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
324	*Salix lucida var. lasiandra*	Salix lucida ssp. lasiandra	Shining Willow Mapping Unit	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
325	*Salix spp.*	Salix laevigata	Willow Mapping Unit	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
431	*Adenostoma fasciculatum-Coastal Sage Scrub*	Adenostoma fasciculatum	Chamise - Coastal Sage Scrub Disturbance Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
432	*Adenostoma fasciculatum-Arctostaphylos glandulosa-(Ceanothus leucodermis-Quercus wislizeni var. frutescens-Ceanothus crassifolius)*	Arctostaphylos glandulosa	Chamise - Eastwood Manzanita - (Whitethorn - Interior Scrub Oak - Hoaryleaf Ceanothus) Mapping Unit	Chaparral	Mixed Chaparral	MCH
433	*Adenostoma fasciculatum-Arctostaphylos glauca-(Quercus berberidifolia-Rhus ovata)*	Arctostaphylos glauca	Chamise - Bigberry Manzanita (Scrub Oak - Sugar Bush) Mapping Unit	Chaparral	Mixed Chaparral	MCH
434	*Adenostoma fasciculatum-Ceanothus crassifolius-(Rhus ovata-Quercus berberidifolia-Salvia mellifera)*	Ceanothus crassifolius	Chamise - Hoaryleaf Ceanothus - (Sugarbush - Scrub oak - Black Sage) Mapping Unit	Chaparral	Mixed Chaparral	MCH
441	*Quercus berberidifolia-(Cercocarpus betuloides-Fraxinus dipetala-Heteromeles arbutifolia)*	Quercus berberidifolia	Scrub Oak - (Birchleaf Mtn. Mahogany - Ash - Toyon) Mapping Unit	Chaparral	Mixed Chaparral	MCH
442	*Quercus berberidifolia-(Cercocarpus betuloides-Quercus wislizeni-Fraxinus dipetala-Heteromeles arbutifolia)*	Quercus berberidifolia	Scrub Oak - (Birchleaf Mtn. Mahogany - Interior Live Oak - Ash - Toyon) Mapping Unit	Chaparral	Mixed Chaparral	MCH
445	*Malosma laurina-(Eriogonum fasciculatum-Salvia mellifera-Salvia apiana-Artemisia californica)*	Malosma laurina	Laurel Sumac - (California Buckwheat - Black Sage - White Sage - California Sagebrush) Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
447	*Arctostaphylos glauca*	Arctostaphylos glauca	Bigberry Manzanita Mapping Unit	Chaparral	Mixed Chaparral	MCH
450	*Adenostoma fasciculatum-Ceanothus leucodermis-Rhus ovata*	Adenostoma fasciculatum	Chamise - Chaparral Whitethorn - Sugarbush Mapping Unit	Chaparral	Mixed Chaparral	MCH
451	*Rhus ovata-Eriogonum fasciculatum*	Eriogonum fasciculatum - Rhus ovata	Sugarbush - California Buckwheat Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
452	*Adenostoma fasciculatum-Ceanothus tomentosus-(Ceanothus oliganthus-Quercus berberidifolia)*	Adenostoma fasciculatum	Chamise-Woolyleaf Ceanothus - (Hairyleaf Ceanothus - Scrub Oak) Mapping Unit	Chaparral	Mixed Chaparral	MCH
453	*Adenostoma fasciculatum-(Quercus berberidifolia-Quercus engelmannii-Ceanothus tomentosus-Ceanothus crassifolius-Coastal Sage Scrub)*	Adenostoma fasciculatum	Chamise - (Scrub Oak - Engelmann Oak - Woolyleaf Ceanothus - Hoaryleaf Ceanothus - Coastal Sage Scrub) Mapping Unit	Chaparral	Mixed Chaparral	MCH

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
492	*Baccharis emoryi*	Baccharis emoryi	Emoryi's Baccharis Mapping Unit	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
511	*Toxicodendron diversilobum*	Toxicodendron diversilobum	Poison Oak Mapping Unit	Chaparral	Mixed Chaparral	MCH
512	*Sambucus mexicana-(Baccharis salicifolia)*	Sambucus nigra	Blue Elderberry - (Mulefat) Mapping Unit	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
513	*Acacia greggii*	Acacia greggii	Catclaw Mapping Unit	Desert Scrub	Desert Wash	DSW
540	*Artemisia californica-(Eriogonum fasciculatum)-Annual Grass-Herb*	Artemisia californica - Eriogonum fasciculatum	California Sagebrush - (California Buckwheat) - Annual Grass-Herb Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
541	*Artemisia californica-Eriogonum fasciculatum-(Salvia mellifera-Keckiella antirrhinoides)*	Artemisia californica - Eriogonum fasciculatum	California Sagebrush - California Buckwheat - (Black Sage - Yellow Bush Penstemon) Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
542	*Encelia farinosa-Eriogonum fasciculatum*	Encelia farinosa	Brittlebush - California Buckwheat Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
543	*Eriogonum fasciculatum-(Encelia farinosa-Opuntia parryi-Gutierrezia sarothrae-Desert Agave)*	Eriogonum fasciculatum	California Buckwheat - (Brittlebush - Cane Cholla - Matchweed - Desert Agave) Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
544	*Eriogonum fasciculatum-Salvia apiana-(Artemisia californica)*	Eriogonum fasciculatum - Salvia apiana	California Buckwheat - White Sage - (California Sagebrush) Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
546	*(Eriogonum fasciculatum, Salvia mellifera, Isocoma menziesii, Lotus scoparius, Artemisia californica, Centaurea melitensis, Brassica sp., Bromus spp., etc.)*	California Coastal Scrub	Disturbed Shrub and Herb Coastal Sage Scrub Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
550	*Lepidospartum squamatum-(Eriogonum fasciculatum-Sambucus mexicana-Baccharis salicifolia)*	Lepidospartum squamatum	Scalebroom - (California Buckwheat - Mexican Elderberry - Mulefat) Mapping Unit	Riversidean Alluvial Fan Sage Scrub	Coastal Scrub	CSC
551	*Chilopsis linearis*	Chilopsis linearis	Desert Willow Mapping Unit	Desert Scrub	Desert Riparian, Desert Wash	DRI, DSW
620	*Santa Rosa Plateau Vernal Pool*	Californian mixed annual/perennial freshwater vernal pool/swale/plain bottomland	Santa Rosa Plateau Vernal Pool Mapping Unit	Playas and Vernal Pools	Wet Meadow	WTM
621	*Alkaline Ephemeral Wetland*	Southwestern North American salt basin and high marsh	Alkaline Ephemeral Wetland Mapping Unit	Playas and Vernal Pools	Wet Meadow	WTM
622	*Scirpus spp.-Typha spp.*	Arid West freshwater emergent marsh	Bulrush - Cattail Mapping Unit	Meadows and Marshes	Fresh Emergent Wetland	FEW
623	*Mountain Meadows*	Western North America Wet Meadow and Low Shrub Carr	Mountain Meadows Mapping Unit	Meadows and Marshes	Wet Meadow	WTM

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
712	*Hirschfeldia incana*	Brassica nigra and other mustards	Shortpod Mustard Mapping Unit	Grassland	Annual Grassland	AGS
800	*(Bromus, Avena, Nassella, Aristida, Erodium spp.)*	California Annual and Perennial Grassland	Xeric Annual / Perennial Grassland Mapping Unit	Grassland	Annual Grassland	AGS
801	*Annual Grassland with Native Perennials*	California Annual and Perennial Grassland	Annual Grassland with Native Perennials Mapping Unit	Grassland	Annual Grassland	AGS
905	*Exotic Trees*	Urban	Exotic Trees Mapping Unit	Developed/Disturbed Land	Urban	URB
1000	*Evergreen Broadleaf Forests & Woodlands*	Californian broadleaf forest and woodland	Evergreen Broadleaf Forests & Woodlands Mapping Unit	Woodland and Forests	Coastal Oak Woodland, Montane Hardwood	COW, MHW
1122	*Quercus chrysolepis*	Quercus chrysolepis	Canyon Live Oak Alliance	Woodland and Forests	Montane Hardwood	MHW
1130	*Eucalyptus spp.*	Eucalyptus (globulus, camaldulensis)	Eucalyptus Alliance	Agricultural Land	Eucalyptus	EUC
1131	*Quercus chrysolepis-Pseudotsuga macrocarpa*	Quercus chrysolepis	Canyon Live Oak - Big Cone Douglas-Fir Association	Woodland and Forests	Montane Hardwood - Conifer	MHC
1201	*Quercus agrifolia*	Quercus agrifolia	Coast Live Oak Alliance	Woodland and Forests	Coastal Oak Woodland	COW
1202	*Quercus wislizeni (tree)*	Quercus wislizeni tree	Interior Live Oak Alliance	Woodland and Forests	Montane Hardwood	MHW
1203	*Quercus wislizeni-Quercus chrysolepis*	Quercus wislizeni - Quercus chrysolepis shrub	Interior Live Oak - Canyon Live Oak Alliance	Chaparral	Mixed Chaparral	MCH
1235	*Quercus wislizeni-Quercus berberidifolia*	Quercus wislizeni - Quercus berberidifolia	Interior Live Oak - Scrub Oak Alliance	Chaparral	Mixed Chaparral	MCH
1236	*Quercus agrifolia-Platanus racemosa-Salix laevigata*	Quercus agrifolia - Platanus racemosa - Salix laevigata	Coast Live Oak - California Sycamore - Red Willow Association	Woodland and Forests	Coastal Oak Woodland	COW
1237	*Quercus agrifolia-Platanus racemosa/Toxicodendron diversilobum*	Quercus agrifolia - Platanus racemosa / Toxicodendron diversilobum	Coast Live Oak - California Sycamore / Poison Oak Association	Woodland and Forests	Coastal Oak Woodland	COW
1238	*Quercus agrifolia/Toxicodendron diversilobum Riparian*	Quercus agrifolia / Toxicodendron diversilobum riparian	Coast Live Oak / Poison Oak Riparian Association	Woodland and Forests	Coastal Oak Woodland	COW
1239	*Quercus agrifolia/Chaparral*	Quercus agrifolia / chaparral	Coast Live Oak / Chaparral Association	Woodland and Forests	Coastal Oak Woodland	COW

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
1242	*Quercus agrifolia/Toxicodendron diversilobum/Grass*	Quercus agrifolia / Toxicodendron diversilobum / grass	Coast Live Oak / Poison Oak / Grass Association	Woodland and Forests	Coastal Oak Woodland	COW
1243	*Quercus agrifolia/Annual Grass-Herb*	Quercus agrifolia / grass	Coast Live Oak / Annual Grass-Herb Association	Woodland and Forests	Coastal Oak Woodland	COW
2000	*Evergreen Needle-leaf Forests & Woodlands*	Californian evergreen coniferous forest and woodland	Evergreen Needle-leaf Forests & Woodlands Mapping Unit	Montane Coniferous Forest	Sierran Mixed Conifer	SMC
2106	*Juniperus californica*	Juniperus californica	California Juniper Alliance	Woodland and Forests	Juniper	JUN
2121	*Pinus coulteri*	Pinus coulteri	Coulter Pine Alliance	Montane Coniferous Forest	Montane Hardwood - Conifer	MHC
2127	*Pinus quadrifolia*	Pinus quadrifolia	Parry Pine Alliance	Woodland and Forests	Pinyon - Juniper	PJN
2132	*Pinus coulteri-Quercus chrysolepis*	Pinus coulteri - Quercus chrysolepis	Coulter Pine - Canyon Live Oak Alliance	Montane Coniferous Forest	Montane Hardwood - Conifer	MHC
2135	*Juniperus californicus-Adenostoma fasciculatum-Eriogonum fasciculatum*	Juniperus californica - Adenostoma fasciculatum - Eriogonum fasciculatum	California Juniper - Chamise - California Buckwheat Association	Woodland and Forests	Juniper	JUN
2137	*Juniperus californica/Annual Grass-Herb*	Juniperus californica / annual herbaceous	California Juniper / Annual Grass-Herb Association	Woodland and Forests	Juniper	JUN
2138	*Juniperus californica-Eriogonum fasciculatum-Artemisia californica*	Juniperus californica - Eriogonum fasciculatum - Artemisia californica	California Juniper - California Buckwheat - California Sagebrush Association	Woodland and Forests	Juniper	JUN
2148	*Pinus quadrifolia/Quercus cornelius-mulleri*	Pinus quadrifolia / Quercus cornelius-mulleri	Parry Pine / Muller's Oak Association	Woodland and Forests	Pinyon - Juniper	PJN
2240	*Pseudotsuga macrocarpa-Quercus chrysolepis*	Pseudotsuga macrocarpa	Big-cone Douglas-fir	Montane Coniferous Forest	Montane Hardwood - Conifer	MHC
3000	*Deciduous Forests & Woodlands*	Southwestern North American riparian evergreen and deciduous woodland	Deciduous Forests & Woodlands (Southern Mixed Riparian) Mapping Unit	Riparian Scrub, Woodland, Forest	Montane Riparian, Valley Foothill Riparian	MRI, VRI
3102	*Quercus kelloggii*	Quercus kelloggii	Black Oak Alliance	Montane Coniferous Forest	Montane Hardwood, Montane	MHW, MHC

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
					Hardwood - Conifer	
3132	*Quercus engelmannii/ Quercus berberidifolia*	Quercus engelmannii / Quercus berberidifolia	Engelmann Oak / Scrub Oak Association	Woodland and Forests	Coastal Oak Woodland	COW
3138	*Quercus engelmannii-Quercus agrifolia/Artemisia californica*	Quercus engelmannii - Quercus agrifolia / Artemisia californica	Engelmann Oak - Coast Live Oak / California Sagebrush Association	Woodland and Forests	Coastal Oak Woodland	COW
3143	*Quercus engelmannii-Quercus agrifolia/Toxicodendron diversilobum/Annual Grass-Herb*	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass	Engelmann Oak - Coast Live Oak / Poison Oak / Annual Grass-herb Association	Woodland and Forests	Coastal Oak Woodland	COW
3144	*Quercus engelmannii/Toxicodendron diversilobum/Grass*	Quercus engelmannii / Toxicodendron diversilobum / grass	Engelmann Oak / Poison Oak / Grass Association	Woodland and Forests	Coastal Oak Woodland	COW
3201	*Salix spp.*	Temperate Flooded and Swamp Forest	Mixed Tree and Shrub Willow Super Alliance (More than 2 species of Salix spp. with varying heights)	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3202	*Salix laevigata*	Salix laevigata	Red Willow Alliance	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3203	*Salix gooddingii*	Salix gooddingii	Black Willow Alliance	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3204	*Salix lasiolepis*	Salix lasiolepis	Arroyo Willow Alliance	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3220	*Alnus rhombifolia*	Alnus rhombifolia	White Alder Alliance	Riparian Scrub, Woodland, Forest	Montane Riparian	MRI
3221	*Platanus racemosa*	Platanus racemosa	California Sycamore Alliance	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3222	*Populus fremontii*	Populus fremontii	Fremont Cottonwood Alliance	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3232	*Platanus racemosa-Populus fremontii*	Platanus racemosa - Populus fremontii	California Sycamore - Fremont Cottonwood Alliance	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3236	*Populus fremontii-Salix laevigata*	Populus fremontii - Salix laevigata	Fremont Cottonwood - Red Willow Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3237	*Salix gooddingii/Baccharis salicifolia*	Salix gooddingii / Baccharis salicifolia	Black Willow / Mulefat Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3239	*Salix laevigata/Salix lasiolepis/Artemisia douglasiana*	Salix laevigata / Salix lasiolepis / Artemisia douglasiana	Red Willow / Arroyo Willow / Mugwort Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3241	*Populus fremontii/Baccharis salicifolia*	Populus fremontii / Baccharis salicifolia	Fremont Cottonwood / Mulefat Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3246	*Salix gooddingii/Lepidium latifolium*	Salix gooddingii / Lepidium latifolium	Black Willow / Perennial Pepperweed Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
3247	*Salix gooddingii-Salix lucida-Populus fremontii*	Salix gooddingii - Salix lucida - Populus fremontii	Black Willow - Shining Willow - Fremont Cottonwood Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3248	*Platanus racemosa-Salix laevigata/Salix lasiolepis-Baccharis salicifolia*	Platanus racemosa - Salix laevigata / Salix lasiolepis - Baccharis salicifolia	California Sycamore - Red Willow / Arroyo Willow - Mulefat Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3249	*Platanus racemosa-Populus fremontii/Salix lasiolepis*	Platanus racemosa - Populus fremontii / Salix lasiolepis	California Sycamore - Fremont Cottonwood / Arroyo Willow Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3250	*Populus fremontii-Salix laevigata/Salix lasiolepis/Vitis girdiana*	Populus fremontii - Salix laevigata / Salix lasiolepis / Vitis girdiana	Fremont Cottonwood - Red Willow / Arroyo Willow / Desert Wild Grape Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3251	*Populus fremontii-Salix laevigata/Salix lasiolepis/Baccharis salicifolia*	Populus fremontii - Salix laevigata / Salix lasiolepis - Baccharis salicifolia	Fremont Cottonwood - Red Willow / Arroyo Willow / Mulefat Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
3252	*Platanus racemosa-Salix gooddingii/Baccharis salicifolia*	Platanus racemosa	Fremont Cottonwood - Black Willow / Mulefat Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
4000	*Evergreen Shrubland*	California Chaparral	California Chaparral Mapping Unit	Chaparral	Mixed Chaparral	MCH
4301	*Adenostoma fasciculatum*	Adenostoma fasciculatum	Chamise Alliance	Chaparral	Mixed Chaparral	MCH
4302	*Adenostoma fasciculatum-Arctostaphylos glandulosa*	Arctostaphylos glandulosa - Adenostoma fasciculatum	Chamise - Eastwood Manzanita Alliance	Chaparral	Mixed Chaparral	MCH
4303	*Adenostoma fasciculatum-Salvia mellifera*	Adenostoma fasciculatum - Salvia mellifera	Chamise - Black Sage Alliance	Chaparral	Mixed Chaparral	MCH
4304	*Adenostoma fasciculatum-Salvia apiana*	Adenostoma fasciculatum - Salvia apiana	Chamise - White Sage Alliance	Chaparral	Mixed Chaparral	MCH
4305	*Arctostaphylos glandulosa*	Arctostaphylos glandulosa	Eastwood Manzanita Alliance	Chaparral	Mixed Chaparral	MCH
4307	*Adenostoma fasciculatum-Ceanothus cuneatus*	Ceanothus cuneatus - Adenostoma fasciculatum	Chamise - Wedgeleaf Ceanothus Alliance	Chaparral	Mixed Chaparral	MCH
4308	*Eriodictyon crassifolium*	Eriodictyon crassifolium	Yerba Santa Alliance	Coastal Sage Scrub	Mixed Chaparral	MCH
4309	*Adenostoma fasciculatum Disturbance*	Adenostoma fasciculatum disturbance	Chamise Disturbance Association	Chaparral	Mixed Chaparral	MCH
4310	*Ceanothus crassifolius*	Ceanothus crassifolius	Hoaryleaf Ceanothus Alliance	Chaparral	Mixed Chaparral	MCH
4311	*Ceanothus oliganthus*	Ceanothus oliganthus	Hairyleaf Ceanothus Alliance	Chaparral	Mixed Chaparral	MCH
4313	*Ceanothus leucodermis*	Ceanothus leucodermis	Chaparral Whitethorn Alliance	Chaparral	Mixed Chaparral	MCH
4314	*Adenostoma fasciculatum-Ceanothus greggii*	Ceanothus greggii - Adenostoma fasciculatum	Chamise - Cupleaf Ceanothus Alliance	Chaparral	Mixed Chaparral	MCH
4315	*Cercocarpus betuloides*	Cercocarpus montanus	Birchleaf Mountain-mahogany Alliance	Chaparral	Mixed Chaparral	MCH
4316	*Prunus ilicifolia*	Prunus ilicifolia	Hollyleaf Cherry Alliance	Chaparral	Mixed Chaparral	MCH
4317	*Malosma laurina*	Malosma laurina	Laurel Sumac Alliance	Coastal Sage Scrub	Coastal Scrub	CSC

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
4320	*Rhus ovata*	Rhus ovata	Sugar Bush Alliance	Chaparral	Mixed Chaparral	MCH
4321	*Quercus berberidifolia*	Quercus berberidifolia	Scrub Oak Alliance	Chaparral	Mixed Chaparral	MCH
4322	*Quercus berberidifolia-Adenostoma fasciculatum*	Quercus berberidifolia - Adenostoma fasciculatum	Scrub Oak - Chamise Alliance	Chaparral	Mixed Chaparral	MCH
4323	*Quercus spp. (e.g. Quercus wislizeni-Quercus berberidifolia)*	Quercus (agrifolia, douglasii, garryana, kelloggii, lobata, wislizeni)	Mixed Scrub Oak Alliance	Chaparral	Mixed Chaparral	MCH
4324	*Quercus wislizeni (shrub)*	Quercus wislizeni shrub	Interior Live Oak Shrub Alliance	Chaparral	Mixed Chaparral	MCH
4325	*Rhamnus tomentella*	Frangula californica	Chaparral Coffeeberry Alliance	Chaparral	Mixed Chaparral	MCH
4327	*Cercocarpus betuloides-Eriogonum fasciculatum*	Cercocarpus montanus - Eriogonum fasciculatum	Birchleaf Mountain-mahogany - California Buckwheat Alliance	Chaparral	Mixed Chaparral	MCH
4328	*Adenostoma fasciculatum-Arctostaphylos glauca*	Arctostaphylos glauca - Adenostoma fasciculatum	Chamise - Bigberry Manzanita Alliance	Chaparral	Mixed Chaparral	MCH
4330	*Adenostoma fasciculatum Pure*	Adenostoma fasciculatum	Chamise Pure Association	Chaparral	Mixed Chaparral	MCH
4333	*Adenostoma fasciculatum-Ceanothus crassifolius*	Ceanothus crassifolius - Adenostoma fasciculatum	Chamise - Hoaryleaf Ceanothus Alliance	Chaparral	Mixed Chaparral	MCH
4348	*Cercocarpus betuloides-Prunus ilicifolia-Adenostoma sparsifolium*	Cercocarpus montanus - Prunus ilicifolia - Adenostoma sparsifolium	Birchleaf Mountain-mahogany - Hollyleaf Cherry - Redshank Association	Chaparral	Mixed Chaparral	MCH
4351	*Malosma laurina-Eriogonum fasciculatum-Salvia mellifera*	Malosma laurina - Eriogonum fasciculatum - Salvia mellifera	Laurel Sumac - California Buckwheat - Black Sage Association	Coastal Sage Scrub	Coastal Scrub	CSC
4365	*Cercocarpus betuloides-Eriogonum fasciculatum-Eriogonum wrightii*	Cercocarpus montanus - Eriogonum fasciculatum - Eriogonum wrightii	Birchleaf Mountain-mahogany - California Buckwheat - Wright's Buckwheat Association	Chaparral	Mixed Chaparral	MCH
4366	*Quercus berberidifolia-Adenostoma fasciculatum*	Quercus berberidifolia - Adenostoma fasciculatum	Scrub Oak - Chamise - Association	Chaparral	Mixed Chaparral	MCH
4367	*Adenostoma fasciculatum-Arctostaphylos glauca-Rhus ovata*	Arctostaphylos glauca - Adenostoma fasciculatum - Rhus ovata	Chamise - Bigberry Manzanita - Sugar Bush Association	Chaparral	Mixed Chaparral	MCH
4370	*Adenostoma fasciculatum-Salvia apiana-Artemisia californica*	Adenostoma fasciculatum - Salvia apiana - Artemisia californica	Chamise - White Sage - California Sagebrush Association	Chaparral	Mixed Chaparral	MCH
4372	*Adenostoma fasciculatum-Eriogonum fasciculatum*	Adenostoma fasciculatum - Eriogonum fasciculatum	Chamise - California Buckwheat Association	Chaparral	Mixed Chaparral	MCH
4379	*Adenostoma fasciculatum-Eriogonum fasciculatum-Salvia apiana*	Adenostoma fasciculatum - Eriogonum fasciculatum - Salvia apiana	Chamise - California Buckwheat - White Sage Association	Chaparral	Mixed Chaparral	MCH

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
4384	*Malosma laurina-Eriogonum fasciculatum*	Malosma laurina - Eriogonum fasciculatum	Laurel Sumac - California Buckwheat Association	Coastal Sage Scrub	Coastal Scrub	CSC
4385	*Adenostoma fasciculatum-Arctostaphylos glandulosa-Ceanothus leucodermis*	Arctostaphylos glandulosa - Adenostoma fasciculatum - Ceanothus leucodermis	Chamise - Eastwood Manzanita - Chaparral Whitethorn Association	Chaparral	Mixed Chaparral	MCH
4387	*Adenostoma fasciculatum-Malosma laurina*	Adenostoma fasciculatum - Malosma laurina	Chamise - Laurel Sumac Association	Chaparral	Mixed Chaparral	MCH
4388	*Adenostoma fasciculatum-Salvia mellifera-Artemisia californica*	Adenostoma fasciculatum - Salvia mellifera - Artemisia californica	Chamise - Black Sage - California Sagebrush Association	Chaparral	Mixed Chaparral	MCH
4391	*Adenostoma fasciculatum-Arctostaphylos glandulosa-Ceanothus crassifolius*	Arctostaphylos glandulosa - Adenostoma fasciculatum - Ceanothus crassifolius	Chamise - Eastwood Manzanita - Hoaryleaf Ceanothus Association	Chaparral	Mixed Chaparral	MCH
4392	*Adenostoma fasciculatum-Ceanothus crassifolius-Salvia mellifera*	Ceanothus crassifolius - Adenostoma fasciculatum - Salvia mellifera	Chamise - Hoaryleaf Ceanothus - Black Sage Association	Chaparral	Mixed Chaparral	MCH
4401	*Adenostoma sparsifolium*	Adenostoma sparsifolium	Redshank Alliance	Chaparral	Chamise-Red Shank Chaparral	CRC
4402	*Adenostoma sparsifolium-Adenostoma fasciculatum*	Adenostoma sparsifolium	Redshank - Chamise Alliance	Chaparral	Chamise-Red Shank Chaparral	CRC
4403	*Adenostoma sparsifolium-Adenostoma fasciculatum-Arctostaphylos glauca*	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos glauca	Redshank - Chamise - Bigberry Manzanita Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4404	*Quercus cornelius-mulleri*	Quercus cornelius-mulleri	Muller Oak Alliance	Chaparral	Mixed Chaparral	MCH
4405	*Quercus palmeri*	Quercus palmeri	Palmer's Oak Alliance	Chaparral	Mixed Chaparral	MCH
4431	*Adenostoma fasciculatum-Xylococcus bicolor-Ceanothus crassifolius*	Adenostoma fasciculatum - Xylococcus bicolor - Ceanothus crassifolius	Chamise - Mission Manzanita - Hoaryleaf Ceanothus Association	Chaparral	Mixed Chaparral	MCH
4434	*Adenostoma sparsifolium-Cercocarpus betuloides*	Adenostoma sparsifolium - Cercocarpus montanus	Redshank - Birchleaf Mountain-mahogany Alliance	Chaparral	Chamise-Red Shank Chaparral	CRC
4435	*Adenostoma sparsifolium-Artemisia tridentata*	Adenostoma sparsifolium - Artemisia tridentata	Redshank - Big Sagebrush Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4436	*Adenostoma sparsifolium-Ceanothus cuneatus*	Adenostoma sparsifolium - Ceanothus cuneatus	Redshank - Wedgeleaf Ceanothus Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4442	*Adenostoma fasciculatum-Ceanothus crassifolius-Rhus ovata*	Ceanothus crassifolius - Adenostoma fasciculatum - Rhus ovata	Chamise - Hoaryleaf Ceanothus - Sugar Bush Association	Chaparral	Mixed Chaparral	MCH

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4443	*Adenostoma fasciculatum-Xylococcus bicolor-Salvia mellifera-Malosma laurina*	Adenostoma fasciculatum - Xylococcus bicolor - Salvia mellifera - Malosma laurina	Chamise - Mission Manzanita - Black Sage - Laurel Sumac Association	Chaparral	Mixed Chaparral	MCH
4445	*Heteromeles arbutifolia*	Heteromeles arbutifolia	Toyon Alliance	Chaparral	Mixed Chaparral	MCH
4459	*Ceanothus oliganthus-Adenostoma fasciculatum*	Ceanothus oliganthus - Adenostoma fasciculatum	Hairyleaf Ceanothus - Chamise Association	Chaparral	Mixed Chaparral	MCH
4461	*Ceanothus crassifolius-Cercocarpus betuloides*	Ceanothus crassifolius - Cercocarpus montanus	Hoaryleaf Ceanothus - Birchleaf Mountain-mahogany Association	Chaparral	Mixed Chaparral	MCH
4462	*Ceanothus crassifolius-Malosma laurina*	Ceanothus crassifolius - Malosma laurina	Hoaryleaf Ceanothus - Laurel Sumac Association	Chaparral	Mixed Chaparral	MCH
4465	*Prunus ilicifolia-Heteromeles arbutifolia*	Prunus ilicifolia ssp. ilicifolia - Heteromeles arbutifolia	Hollyleaf Cherry - Toyon Association	Chaparral	Mixed Chaparral	MCH
4466	*Quercus wislizeni-Cercocarpus betuloides*	Quercus wislizeni - Cercocarpus montanus	Interior Live Oak - Birchleaf Mountain-mahogany Association	Chaparral	Mixed Chaparral	MCH
4467	*Quercus wislizeni-Ceanothus leucodermis*	Quercus wislizeni - Ceanothus leucodermis	Interior Live Oak - Chaparral Whitethorn Alliance	Chaparral	Mixed Chaparral	MCH
4469	*Quercus wislizeni-Adenostoma sparsifolium-Cercocarpus betuloides*	Quercus wislizeni - Cercocarpus montanus - Adenostoma sparsifolium	Interior Live Oak - Redshank - Birchleaf Mountain-mahogany Association	Chaparral	Mixed Chaparral	MCH
4472	*Malosma laurina-Eriogonum fasciculatum-Salvia apiana*	Malosma laurina - Eriogonum fasciculatum - Salvia apiana	Laurel Sumac - California Buckwheat - White Sage Association	Coastal Sage Scrub	Coastal Scrub	CSC
4473	*Malosma laurina-Tetracoccus dioicus*	Malosma laurina - Tetracoccus dioicus	Laurel Sumac - Parry's Tetracoccus Association	Coastal Sage Scrub	Coastal Scrub	CSC
4474	*Quercus cornelius-mulleri-Adenostoma sparsifolium-Cercocarpus betuloides*	Quercus cornelius-mulleri - Adenostoma sparsifolium - Cercocarpus montanus	Muller Oak - Redshank - Birchleaf Mountain-mahogany Association	Chaparral	Mixed Chaparral	MCH
4475	*Quercus cornelius-mulleri - Adenostoma sparsifolium-Ceanothus greggii*	Quercus cornelius-mulleri - Adenostoma sparsifolium - Ceanothus greggii	Muller Oak - Redshank - Cupleaf Ceanothus Association	Chaparral	Mixed Chaparral	MCH
4476	*Quercus palmeri-Eriogonum fasciculatum*	Quercus palmeri - Eriogonum fasciculatum	Palmer's Oak - California Buckwheat Association	Chaparral	Mixed Chaparral	MCH
4478	*Adenostoma sparsifolium - Cercocarpus betuloides-Adenostoma fasciculatum*	Adenostoma sparsifolium - Adenostoma fasciculatum - Cercocarpus montanus	Redshank - Birchleaf Mountain-mahogany - Chamise Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4479	*Adenostoma sparsifolium - Eriogonum fasciculatum-Lotus scoparius*	Adenostoma sparsifolium - Eriogonum fasciculatum - Lotus scoparius	Redshank - California Buckwheat - Deerweed Association	Chaparral	Chamise-Red Shank Chaparral	CRC

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4481	*Adenostoma sparsifolium - Adenostoma fasciculatum-Ceanothus greggii*	Adenostoma sparsifolium - Adenostoma fasciculatum - Ceanothus greggii	Redshank - Chamise - Cupleaf Ceanothus Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4482	*Adenostoma sparsifolium - Adenostoma fasciculatum-Arctostaphylos pungens*	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos pungens	Redshank - Chamise - Mixed Pointleaf Manzanita Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4483	*Adenostoma sparsifolium - Ceanothus crassifolius*	Adenostoma sparsifolium - Ceanothus crassifolius	Redshank - Hoaryleaf Ceanothus Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4484	*Adenostoma sparsifolium - Ericameria linearifolia-Eriogonum fasciculatum-Opuntia basilaris*	Adenostoma sparsifolium - Ericameria linearifolia - Eriogonum fasciculatum - Opuntia basilaris	Redshank - Interior Goldenbush - California Buckwheat - Beavertail Cactus Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4485	*Adenostoma sparsifolium - Adenostoma fasciculatum-Opuntia parryi*	Adenostoma sparsifolium - Adenostoma fasciculatum - Opuntia parryi	Redshank - Chamise - Cane Cholla Association	Chaparral	Chamise-Red Shank Chaparral	CRC
4486	*Quercus berberidifolia-Cercocarpus betuloides-Arctostaphylos glauca*	Quercus berberidifolia	Scrub Oak - Birchleaf Mountain-mahogany - Bigberry Manzanita Association	Chaparral	Mixed Chaparral	MCH
4487	*Quercus berberidifolia-Adenostoma fasciculatum-Ceanothus crassifolius*	Quercus berberidifolia - Adenostoma fasciculatum - Ceanothus crassifolius	Scrub Oak - Chamise - Hoaryleaf Ceanothus Association	Chaparral	Mixed Chaparral	MCH
4488	*Adenostoma fasciculatum-Xylococcus bicolor-Quercus berberidifolia*	Adenostoma fasciculatum - Xylococcus bicolor - Quercus berberidifolia	Chamise - Mission Manzanita - Scrub Oak Association	Chaparral	Mixed Chaparral	MCH
4490	*Quercus berberidifolia-Southern Mixed Chaparral*	Quercus berberidifolia - southern mixed chaparral	Scrub Oak - Southern Mixed Chaparral Association	Chaparral	Mixed Chaparral	MCH
4491	*Quercus berberidifolia*	Quercus berberidifolia	Scrub Oak Association	Chaparral	Mixed Chaparral	MCH
4493	*Heteromeles arbutifolia-Artemisia californica*	Heteromeles arbutifolia - Artemisia californica	Toyon - California Sagebrush Association	Chaparral	Mixed Chaparral	MCH
4494	*Heteromeles arbutifolia-Quercus berberidifolia-Cercocarpus betuloides-Fraxinus dipetala*	Heteromeles arbutifolia - Quercus berberidifolia - Cercocarpus montanus - Fraxinus dipetala	Toyon - Scrub Oak - Birchleaf Mountain-mahogany - California Ash Association	Chaparral	Mixed Chaparral	MCH
4496	*Ceanothus cuneatus*	Ceanothus cuneatus	Wedgeleaf Ceanothus Alliance	Chaparral	Mixed Chaparral	MCH
4510	*Artemisia tridentata*	Artemisia tridentata	Big Sagebrush Alliance	Desert Scrub	Sagebrush	SGB
4531	*Artemisia tridentata-Eriogonum fasciculatum*	Artemisia tridentata - Eriogonum fasciculatum	Big Sagebrush - California Buckwheat Association	Desert Scrub	Sagebrush	SGB
4532	*Artemisia tridentata-Eriogonum wrightii*	Artemisia tridentata - Eriogonum wrightii	Big Sagebrush - Wright's Buckwheat Association	Desert Scrub	Sagebrush	SGB

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4603	*Simmondsia chinensis*	Simmondsia chinensis	Jojoba Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
4630	*Simmondsia chinensis-Eriogonum fasciculatum-Opuntia parryi*	Simmondsia chinensis - Eriogonum fasciculatum - Opuntia parryi	Jojoba - Cane Cholla - California Buckwheat Association	Coastal Sage Scrub	Coastal Scrub	CSC
4702	*Opuntia littoralis*	Opuntia littoralis	Coast Prickly-pear Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
4806	*Quercus wislizeni-Quercus berberidifolia-Fraxinus dipetala*	Quercus wislizeni - Quercus berberidifolia - Fraxinus dipetala	Interior Live Oak - Scrub Oak - California Ash Association	Chaparral	Mixed Chaparral	MCH
4901	*Baccharis salicifolia*	Baccharis salicifolia	Mulefat Alliance	Riparian Scrub, Woodland, Forest	Fresh Emergent Wetland	FEW
4930	*Tamarix spp.*	Tamarix spp.	Tamarisk Alliance	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
4931	*Baccharis salicifolia-Sambucus mexicana*	Baccharis salicifolia - Sambucus mexicana	Mulefat - Mexican Elderberry Association	Riparian Scrub, Woodland, Forest	Fresh Emergent Wetland	FEW
5000	*Deciduous Shrubland*	Western Cordilleran montane deciduous scrub	Deciduous Shrubland Mapping Unit	Coastal Sage Scrub	Coastal Scrub	CSC
5101	*Ceanothus integerrimus*	Ceanothus integerrimus	Deerbrush Alliance	Chaparral	Mixed Chaparral	MCH
5103	*Rhus trilobata*	Rhus trilobata	Basket Bush Alliance	Chaparral	Mixed Chaparral	MCH
5104	*Ribes quercetorum*	Ribes quercetorum	Oak Gooseberry Alliance	Chaparral	Mixed Chaparral	MCH
5203	*Lycium andersonii*	Lycium andersonii	Anderson boxthorn Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5230	*Forestiera pubescens*	Forestiera pubescens	Desert Olive Alliance	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
5231	*Forestiera pubescens-Salix spp.*	Forestiera pubescens	Desert Olive - Willow Association	Riparian Scrub, Woodland, Forest	Valley Foothill Riparian	VRI
5400	*Coastal Sage Scrub*	Central & South Coastal Californian Coastal Sage Scrub	Coastal Sage Scrub Generic	Coastal Sage Scrub	Coastal Scrub	CSC
5401	*Artemisia californica*	Artemisia californica	California Sagebrush Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5402	*Artemisia californica-Eriogonum fasciculatum*	Artemisia californica - Eriogonum fasciculatum	California Sagebrush - California Buckwheat Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5403	*Artemisia californica-Salvia mellifera*	Artemisia californica - Salvia mellifera	California Sagebrush - Black Sage Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5404	*Eriogonum fasciculatum*	Eriogonum fasciculatum	California Buckwheat Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5407	*Eriogonum fasciculatum-Salvia apiana*	Eriogonum fasciculatum - Salvia apiana	California Buckwheat - White Sage Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5408	*Salvia apiana*	Salvia apiana	White Sage Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5409	*Salvia mellifera*	Salvia mellifera	Black Sage Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5410	*Encelia farinosa*	Encelia farinosa	Brittlebush Alliance	Coastal Sage Scrub	Coastal Scrub	CSC

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5413	*Malacothamnus fasciculatus*	Malacothamnus fasciculatus	Chaparral Mallow Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5416	*Lotus scoparius*	Lotus scoparius	Deerweed Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5430	*Keckiella antirrhinoides*	Keckiella antirrhinoides	Yellow Bush Penstemon Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5431	*Keckiella antirrhinoides-Artemisia californica*	Keckiella antirrhinoides - Artemisia californica	Yellow Bush Penstemon - California Sagebrush Association	Coastal Sage Scrub	Coastal Scrub	CSC
5432	*Artemisia californica- Salvia apiana*	Salvia apiana - Artemisia californica	California Sagebrush - White Sage Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5434	*Eriogonum fasciculatum-Opuntia parryi*	Eriogonum fasciculatum - Cylindropuntia californica	California Buckwheat - Cane Cholla Association	Coastal Sage Scrub	Coastal Scrub	CSC
5437	*Encelia farinosa-Artemisia californica*	Encelia farinosa - Artemisia californica	Brittlebush - California Sagebrush Association	Coastal Sage Scrub	Coastal Scrub	CSC
5438	*Encelia californica-Artemisia californica*	Encelia californica - Artemisia californica	California Encelia - California Sagebrush Association	Coastal Sage Scrub	Coastal Scrub	CSC
5439	*Encelia farinosa*	Encelia farinosa	Brittlebush Association	Coastal Sage Scrub	Coastal Scrub	CSC
5441	*Salvia mellifera*	Salvia mellifera	Black Sage Association	Coastal Sage Scrub	Coastal Scrub	CSC
5442	*Artemisia californica-Salvia mellifera*	Artemisia californica - Salvia mellifera	California Sagebrush - Black Sage Association	Coastal Sage Scrub	Coastal Scrub	CSC
5444	*Salvia mellifera-Lotus scoparius*	Salvia mellifera - Lotus scoparius	Black Sage - Deerweed Association	Coastal Sage Scrub	Coastal Scrub	CSC
5447	*Eriogonum fasciculatum-Encelia farinosa*	Eriogonum fasciculatum - Encelia farinosa	California Buckwheat - Brittlebush Association	Coastal Sage Scrub	Coastal Scrub	CSC
5448	*Eriogonum fasciculatum-Encelia farinosa*	Eriogonum fasciculatum - Encelia farinosa	California Buckwheat - Brittlebush Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5449	*Eriogonum fasciculatum-Simmondsia chinensis-Opuntia parryi*	Eriogonum fasciculatum - Simmondsia chinensis - Cylindropuntia californica	California Buckwheat - Jojoba - Cane Cholla Association	Coastal Sage Scrub	Coastal Scrub	CSC
5450	*Eriogonum fasciculatum-Rhus ovata*	Eriogonum fasciculatum - Rhus ovata	California Buckwheat - Sugar Bush Association	Coastal Sage Scrub	Coastal Scrub	CSC
5451	*Eriogonum fasciculatum*	Eriogonum fasciculatum	California Buckwheat Association	Coastal Sage Scrub	Coastal Scrub	CSC
5454	*Artemisia californica-Eriogonum fasciculatum-Malosma laurina*	Artemisia californica - Eriogonum fasciculatum - Malosma laurina	California Sagebrush - California Buckwheat - Laurel Sumac Association	Coastal Sage Scrub	Coastal Scrub	CSC
5455	*Artemisia californica-Eriogonum fasciculatum-Salvia apiana*	Artemisia californica - Eriogonum fasciculatum - Salvia apiana	California Sagebrush - California Buckwheat - White Sage Association	Coastal Sage Scrub	Coastal Scrub	CSC
5456	*Artemisia californica-Malosma laurina*	Artemisia californica - Malosma laurina	California Sagebrush - Laurel Sumac Association	Coastal Sage Scrub	Coastal Scrub	CSC

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5457	*Artemisia californica-Eriogonum fasciculatum*	Artemisia californica - Eriogonum fasciculatum	California Sagebrush - California Buckwheat Association	Coastal Sage Scrub	Coastal Scrub	CSC
5458	*Artemisia californica/Amsinckia menziesii*	Artemisia californica / Amsinckia menziesii	California Sagebrush / Menzies' Fiddleneck Association	Coastal Sage Scrub	Coastal Scrub	CSC
5460	*Salvia apiana-Encelia farinosa*	Salvia apiana - Encelia farinosa	White Sage - Brittlebush Association	Coastal Sage Scrub	Coastal Scrub	CSC
5461	*Keckiella antirrhinoides-Eriogonum fasciculatum*	Keckiella antirrhinoides - Eriogonum fasciculatum	Yellow Bush Penstemon - California Buckwheat Association	Coastal Sage Scrub	Coastal Scrub	CSC
5464	*Keckiella antirrhinoides-Mixed Chaparral*	Keckiella antirrhinoides - Mixed Chaparral	Yellow Bush Penstemon - Mixed Chaparral Association	Coastal Sage Scrub	Coastal Scrub	CSC
5465	*Keckiella antirrhinoides*	Keckiella antirrhinoides	Yellow Bush Penstemon Association	Coastal Sage Scrub	Coastal Scrub	CSC
5466	*Eriogonum fasciculatum-Gutierrezia sarothrae*	Eriogonum fasciculatum - Gutierrezia sarothrae	California Buckwheat - Matchweed Association	Coastal Sage Scrub	Coastal Scrub	CSC
5505	*Atriplex spp.*	Shadscale-saltbush cool semi-desert scrub	Mixed Saltbush Alliance	Desert Scrub	Alkali Desert Scrub	ASC
5508	*Lepidospartum squamatum*	Lepidospartum squamatum	Scalebroom Alliance	Riversidean Alluvial Fan Sage Scrub	Coastal Scrub	CSC
5537	*Lepidospartum squamatum-Eriogonum fasciculatum*	Lepidospartum squamatum - Eriogonum fasciculatum	Scalebroom - California Buckwheat Association	Riversidean Alluvial Fan Sage Scrub	Coastal Scrub	CSC
5538	*Lepidospartum squamatum/Amsinckia menziesii*	Lepidospartum squamatum / Amsinckia menziesii	Scalebroom / Menzies' Fiddleneck Association	Riversidean Alluvial Fan Sage Scrub	Coastal Scrub	CSC
5539	*Lepidospartum squamatum-Baccharis salicifolia*	Lepidospartum squamatum - Baccharis salicifolia	Scalebroom - Mulefat Association	Riversidean Alluvial Fan Sage Scrub	Coastal Scrub	CSC
5603	*Prosopis glandulosa*	Prosopis glandulosa	Honey Mesquite Alliance	Desert Scrub	Desert Riparian, Desert Wash	DRI, DSW
5701	*Eriogonum wrightii*	Eriogonum wrightii	Wright's Buckwheat Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
5705	*Ericameria palmeri*	Ericameria palmeri	Palmer's Goldenbush Alliance	Coastal Sage Scrub	Coastal Scrub	CSC
6202	*Juncus spp.*	Californian warm temperate marsh/seep	Rush Super Alliance	Meadows and Marshes	Fresh Emergent Wetland	FEW
6208	*Lasthenia californica*	Lasthenia californica	California Goldfields Alliance	Playas and Vernal Pools	Wet Meadow	WTM
6214	*Sporobolus airoides*	Sporobolus airoides	Alkali Sacaton Alliance	Playas and Vernal Pools	Wet Meadow	WTM
6232	*Lasthenia californica-Atriplex coronata var. notatior*	Lasthenia californica - Atriplex coronata var. notatior	California Goldfields - San Jacinto Valley Crownscale Association	Playas and Vernal Pools	Wet Meadow	WTM
6236	*Hordeum depressum-Hemizonia fasciculata-Atriplex coronata var. notatior*	Deinandra fasciculata - Hordeum depressum - Atriplex coronata var. notatior	Low Barley - Clustered Tarweed - San Jacinto Valley Crownscale Association	Playas and Vernal Pools	Wet Meadow	WTM

PI Code	*Map Unit*	NVCS Name	Common Name	MSHCP	WHR Name	WHR Code
6301	*Arundo donax*	Arundo donax	Giant Reed Alliance	Meadows and Marshes	Fresh Emergent Wetland	FEW
6303	*Lepidium latifolium*	Lepidium latifolium	Perennial Pepperweed Alliance	Meadows and Marshes	Fresh Emergent Wetland	FEW
6402	*Scirpus spp.- Typha spp.*	Arid West freshwater emergent marsh	Bulrush - Cattail Alliance	Meadows and Marshes	Fresh Emergent Wetland	FEW
7000	*Annual Herbaceous Grasslands and Forbs*	California Annual and Perennial Grassland	Annual Herbaceous Grasslands and Forbs Mapping Unit	Grassland	Annual Grassland	AGS
7100	*California Annual Grassland*	California Annual and Perennial Grassland	California Annual Grassland Alliance	Grassland	Annual Grassland	AGS
7107	*Brassica spp., Hirschfeldia incana*	Brassica nigra and other mustards	Mustard Alliance	Grassland	Annual Grassland	AGS
7109	*Amsinckia menziesii*	Amsinckia (menziesii, tessellata)	Menzies' Fiddleneck Alliance	Grassland	Annual Grassland	AGS
7131	*Amsinckia menziesii - Erodium spp.*	Amsinckia menziesii - Erodium spp.	Menzies' Fiddleneck - Filaree Association	Grassland	Annual Grassland	AGS
9001	*Rock Outcrop*	Barren	Rock Outcrop Mapping Unit	No equivalent	Barren	BAR
9002	*Riverine, Lacustrine, Mudflats, and Sandflats along Rivers*	Riverine, Lacustrine	Riverine or Lacustrine flats, channels, streambeds, Mapping Unit	Water	Riverine, Lacustrine	RIV, LAC
9100	*Urban or development*	Urban	Urban or development Mapping Unit	Developed/Disturbed Land	Urban	URB
9101	*Golf-course and urban park*	Urban	Golf-course and urban park Mapping Unit	Developed/Disturbed Land	Urban	URB
9102	*Urban Interface*	Urban	Urban Interface Mapping Unit	Developed/Disturbed Land	Urban	URB
9103	*Duck Ponds*	Lacustrine	Duck Ponds Mapping Unit	Water	Lacustrine	LAC
9200	*Agriculture*	Cropland, Orchard - Vineyard	Agriculture Mapping Unit	Agricultural Land	Cropland, Orchard - Vineyard	CRP, OVN
9300	*Vacant (disturbed bare ground, <8% vegetative cover)*	Urban	Vacant (disturbed bare ground, <8% vegetative cover) Mapping Unit	Developed/Disturbed Land	Urban	URB
9400	*Water*	Undifferentiated Water	Water Mapping Unit	Water	Riverine, Lacustrine	RIV, LAC

APPENDIX B: Attributes in the Western Riverside County Update Vegetation Map

PI_2012, PI_2005
See Appendix A: Western Riverside County Update Vegetation Classification Crosswalk Tables

ConDensity2012
0 =<2%
1 =2-9%
2 =10-24%
3 =25-39%
4 =40-59%
5 =>60%
9 =Not applicable/Not assigned

HWDensity2012
0 =<2%
1 =2-9%
2 =10-24%
3 =25-39%
4 =40-59%
5 =>60%
9 =Not applicable/Not assigned

ShrubDensity2012
0 =<2%
1 =2-9%
2 =10-24%
3 =25-39%
4 =40-59%
5 =>60%
9 =Not applicable/Not assigned

HerbDensity2012
0 =<2%
1 =<20%
2 =20-40%
3 =40-60%
9 = Not applicable/Not assigned

Density2005
0 =<2%
1 =2-9%
2 =10-24%
3 =25-39%

4 =40-59%
5 =>60%
9 =None/ Not Applicable

Comment
Contains text added at discretion of photo interpreter to add extra information about the vegetation polygon as well as the results of the field checks.

Exotics2012, Exotics 2005
0 = None
1 = Low / Minor
2 = Moderate
3 = High (Non-native floristic assignment)

Disturbance2012, Disturbance 2005
0 = <5% of the polygon affected
1 = Low = 5-25% polygon affected
2 = Moderate = 25-50% polygon affected
3 = High = >50% polygon affected
9 = None/Not Applicable

SizeClass2012, SizeClass2005
0 =Not Applicable/Not Assigned
1= Seedlings < 1”
2 = Saplings 1-6”
3 = Pole 6-11”
4 = Small 11-24”
5 = Mid-Large >24”
6 = Multi-layered

HeightClass2012, HeightClass2005
0 =Not Applicable/Not Assigned
1= < 0.5 m
2 = 0.5 – 1 m
3 = 1-2 m
4 = 2-5 m
5 = 5-10 m
6 = 10-15 m
7 = 15-20 m

MapUnit2012, MapUnit2005
See Appendix A: Western Riverside County Update Vegetation Classification Crosswalk Tables

NVCS_Name2012, NVCS_Name2005
See Appendix A: Western Riverside County Update Vegetation Classification Crosswalk Tables

ComName2012, ComName2005
See Appendix A: Western Riverside County Update Vegetation Classification Crosswalk Tables

NVCS_Level2012, NVCS_Level2005
Alliance
Association
Formation
Group
Macrogroup
Provisional Alliance
Provisional Association
Semi-natural Stands
n/a (not applicable)

MSHCP_Coll2012, MSHCP_Coll2005
See Appendix A: Western Riverside County Update Vegetation Classification Crosswalk Tables

WHR_Name2012, WHR_Name2005
See Appendix A: Western Riverside County Update Vegetation Classification Crosswalk Tables

WHR_Code2012, WHR_Code2005
See Appendix A: Western Riverside County Update Vegetation Classification Crosswalk Tables

WRIVVEG2012_UID
Unique identifier to each polygon in the database

APPENDIX C: Area Reports by Floristic Type

NVCS
Change from 2005 to 2012

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
121	121	Platanus racemosa	2,117.5	2,176.0	*-58.5*
123	123	Quercus agrifolia	22.8	22.8	*0.0*
200	200	Juniperus californica	38.9	39.3	*-0.4*
201	201	Juniperus californica	5.9	5.9	*0.0*
202	202	Juniperus californica	2.7	8.9	*-6.2*
203	203	Juniperus californica	345.2	406.9	*-61.7*
204	204	Juniperus californica	25.1	25.1	*0.0*
310	310	Quercus engelmaii	353.7	374.0	*-20.3*
311	311	Quercus engelmannii	600.8	625.5	*-24.7*
312	312	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass	987.9	1,023.9	*-36.0*
313	313	Quercus engelmannii / annual grass - herb	895.8	913.2	*-17.3*
314	314	Quercus engelmannii	500.9	534.1	*-33.2*
315	315	Quercus engelmannii	34.1	34.1	*0.0*
320	320	Salix gooddingii	350.1	533.4	*-183.3*
321	321	Populus fremontii	446.9	434.9	*12.0*
322	322	Populus fremontii	6.8	9.1	*-2.3*
323	323	Populus fremontii - Salix (laevigata, lasiolepis, lucida ssp. lasiandra)	1,428.6	1,429.6	*-0.9*
324	324	Salix lucida ssp. lasiandra	17.3	18.7	*-1.4*
325	325	Salix laevigata	6,310.9	6,288.7	*22.2*
431	431	Adenostoma fasciculatum	42,812.4	42,180.2	*632.1*
432	432	Arctostaphylos glandulosa	156.8	156.8	*0.0*
433		Adenostoma fasciculatum-Arctostaphylos glauca-(Quercus berberidifolia-Rhus ovata)		4.4	*-4.4*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
434	434	Ceanothus crassifolius	701.6	749.4	*-47.7*
441	441	Quercus berberidifolia	1,038.7	1,051.8	*-13.0*
442	442	Quercus berberidifolia	300.4	300.8	*-0.4*
445		Malosma laurina-(Eriogonum fasciculatum-Salvia mellifera-Salvia apiana-Artemisia californica)		71.8	*-71.8*
447	447	Arctostaphylos glauca	28.7	32.8	*-4.1*
451	451	Eriogonum fasciculatum - Rhus ovata	2,874.9	2,522.2	*352.7*
452	452	Adenostoma fasciculatum	748.1	756.4	*-8.3*
492	492	Baccharis emoryi	61.8	61.8	*-0.1*
511	511	Toxicodendron diversilobum	3.1	3.1	*0.0*
512	512	Sambucus nigra	1,317.3	1,071.3	*246.0*
513	513	Acacia greggii	1,513.0	1,658.6	*-145.5*
540	540	Artemisia californica - Eriogonum fasciculatum	13,945.3	18,349.5	*-4,404.3*
541	541	Artemisia californica - Eriogonum fasciculatum	6,759.2	8,701.5	*-1,942.3*
542	542	Encelia farinosa	43,177.5	48,128.5	*-4,951.0*
543	543	Eriogonum fasciculatum	2,575.7	2,657.6	*-82.0*
544	544	Eriogonum fasciculatum - Salvia apiana	1,596.8	2,750.5	*-1,153.8*
550	550	Lepidospartum squamatum	353.5	505.9	*-152.4*
551	551	Chilopsis linearis	202.3	206.8	*-4.6*
620	620	Californian mixed annual/perennial freshwater vernal pool/swale/plain bottomland	195.2	190.6	*4.7*
621	621	Southwestern North American salt basin and high marsh	1,596.8	1,588.4	*8.5*
622	622	Arid West freshwater emergent marsh	256.6	472.1	*-215.5*
623	623	Western North America Wet Meadow and Low Shrub Carr	1,106.2	1,066.8	*39.4*
712	712	Brassica nigra and other mustards	171.3	115.8	*55.5*
801	801	California Annual and Perennial Grassland	5,694.3	7,078.4	*-1,384.2*
905	905	Exotic Trees	1,638.0	1,521.6	*116.4*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
1122	1122	Quercus chrysolepis	131.6	131.6	*0.0*
1130	1130	Eucalyptus (globulus, camaldulensis)	1,438.9	1,817.9	*-379.0*
1131	1131	Quercus chrysolepis	10.5	10.5	*0.0*
1201	1201	Quercus agrifolia	3,189.4	3,246.6	*-57.2*
1202	1202	Quercus wislizeni tree	2.2	2.2	*0.0*
1203	1203	Quercus wislizeni - Quercus chrysolepis shrub	388.8	389.2	*-0.5*
1235	1235	Quercus wislizeni - Quercus berberidifolia	439.1	442.0	*-3.0*
1236	1236	Quercus agrifolia - Platanus racemosa - Salix laevigata	47.1	47.1	*0.0*
1237	1237	Quercus agrifolia - Platanus racemosa / Toxicodendron diversilobum	10.9	10.9	*0.0*
1238	1238	Quercus agrifolia / Toxicodendron diversilobum riparian	1,643.1	1,691.9	*-48.7*
1239	1239	Quercus agrifolia / chaparral	2,829.1	2,913.1	*-84.0*
1242	1242	Quercus agrifolia / Toxicodendron diversilobum / grass	7.2	7.2	*0.0*
1243	1243	Quercus agrifolia / grass	1,503.8	1,541.6	*-37.8*
2106	2106	Juniperus californica	79.6	53.8	*25.8*
2121	2121	Pinus coulteri	19.3	19.3	*0.0*
2127	2127	Pinus quadrifolia	174.5	174.5	*0.0*
2132	2132	Pinus coulteri - Quercus chrysolepis	38.0	38.0	*0.0*
2135	2135	Juniperus californica - Adenostoma fasciculatum - Eriogonum fasciculatum	185.0	185.0	*0.0*
2137	2137	Juniperus californica / annual herbaceous	625.2	655.4	*-30.2*
2138	2138	Juniperus californica - Eriogonum fasciculatum - Artemisia californica	104.0	185.7	*-81.7*
2148	2148	Pinus quadrifolia / Quercus cornelius-mulleri	318.6	318.6	*0.0*
2240	2240	Pseudotsuga macrocarpa	0.1	0.1	*0.0*
3102	3102	Quercus kelloggii	6.0	35.8	*-29.7*
3132	3132	Quercus engelmannii / Quercus berberidifolia	119.8	123.5	*-3.6*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
3138	3138	Quercus engelmannii - Quercus agrifolia / Artemisia californica	114.4	113.9	*0.5*
3143	3143	Quercus engelmannii - Quercus agrifolia / Toxicodendron diversilobum / annual grass	20.1	20.1	*0.0*
3144	3144	Quercus engelmannii / Toxicodendron diversilobum / grass	40.9	46.0	*-5.1*
3202	3202	Salix laevigata	553.6	520.2	*33.4*
3203	3203	Salix gooddingii	297.2	271.9	*25.3*
3204	3204	Salix lasiolepis	74.5	70.4	*4.1*
3220	3220	Alnus rhombifolia	8.3	8.3	*0.0*
3221	3221	Platanus racemosa	1,558.3	1,571.4	*-13.2*
3222	3222	Populus fremontii	146.4	146.1	*0.3*
3232	3232	Platanus racemosa - Populus fremontii	25.8	25.8	*0.0*
3236	3236	Populus fremontii - Salix laevigata	601.1	524.7	*76.4*
3237	3237	Salix gooddingii / Baccharis salicifolia	672.0	609.4	*62.6*
3239	3239	Salix laevigata / Salix lasiolepis / Artemisia douglasiana	187.7	189.5	*-1.8*
3241	3241	Populus fremontii / Baccharis salicifolia	435.3	400.8	*34.5*
3247	3247	Salix gooddingii - Salix lucida - Populus fremontii	870.2	1,223.3	*-353.1*
3248	3248	Platanus racemosa - Salix laevigata / Salix lasiolepis - Baccharis salicifolia	68.1	68.1	*0.0*
3249	3249	Platanus racemosa - Populus fremontii / Salix lasiolepis	158.1	171.4	*-13.2*
3251	3251	Populus fremontii - Salix laevigata / Salix lasiolepis - Baccharis salicifolia	204.9	188.0	*17.0*
3252	3252	Platanus racemosa	1,390.8	893.5	*497.3*
4000	4000	California Chaparral	271.1	276.0	*-4.9*
4301	4301	Adenostoma fasciculatum	13,500.2	15,274.0	*-1,773.7*
4302	4302	Arctostaphylos glandulosa - Adenostoma fasciculatum	518.3	572.1	*-53.8*
4303	4303	Adenostoma fasciculatum - Salvia mellifera	2,192.2	2,090.5	*101.7*
4304	4304	Adenostoma fasciculatum - Salvia apiana	5.4	8.4	*-3.0*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
4305	4305	Arctostaphylos glandulosa	258.6	258.6	*0.0*
4307	4307	Ceanothus cuneatus - Adenostoma fasciculatum	106.5	124.3	*-17.8*
4308	4308	Eriodictyon crassifolium	118.6	11.1	*107.5*
4309	4309	Adenostoma fasciculatum disturbance	267.0	141.6	*125.5*
4310	4310	Ceanothus crassifolius	45.1	43.4	*1.8*
4311	4311	Ceanothus oliganthus	102.7	106.5	*-3.8*
4313	4313	Ceanothus leucodermis	142.4	143.6	*-1.2*
4314	4314	Ceanothus greggii - Adenostoma fasciculatum	5,162.7	7,083.6	*-1,920.9*
4315	4315	Cercocarpus montanus	405.0	388.7	*16.3*
4316	4316	Prunus ilicifolia	129.7	171.4	*-41.7*
4317	4317	Malosma laurina	1,050.2	975.7	*74.5*
4320	4320	Rhus ovata	2,474.1	4,684.1	*-2,210.0*
4321	4321	Quercus berberidifolia	1,162.6	1,172.3	*-9.7*
4322	4322	Quercus berberidifolia - Adenostoma fasciculatum	8,581.2	8,767.4	*-186.2*
4324	4324	Quercus wislizeni shrub	553.7	557.4	*-3.8*
4325	4325	Frangula californica	113.0	130.6	*-17.6*
4327	4327	Cercocarpus montanus - Eriogonum fasciculatum	2,653.2	2,722.9	*-69.7*
4328	4328	Arctostaphylos glauca - Adenostoma fasciculatum	10,920.6	11,639.4	*-718.9*
4330	4330	Adenostoma fasciculatum	3,306.1	5,479.6	*-2,173.5*
4333	4333	Ceanothus crassifolius - Adenostoma fasciculatum	20,366.7	22,911.5	*-2,544.8*
4348	4348	Cercocarpus montanus - Prunus ilicifolia - Adenostoma sparsifolium	184.7	186.2	*-1.5*
4365	4365	Cercocapus montanus - Eriogonum fasciculatum - Eriogonum wrightii	409.5	409.5	*0.0*
4367	4367	Arctostaphylos glauca - Adenostoma fasciculatum - Rhus ovata	171.4	173.8	*-2.4*
4370	4370	Adenostoma fasciculatum - Salvia apiana - Artemisia californica	63.8	63.8	*0.0*
4372	4372	Adenostoma fasciculatum - Eriogonum fasciculatum	15,855.2	15,848.7	*6.5*
4379	4379	Adenostoma fasciculatum - Eriogonum fasciculatum - Salvia apiana	143.0	317.3	*-174.3*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
4384	4384	Malosma laurina - Eriogonum fasciculatum	1,106.3	978.3	*128.0*
4387	4387	Adenostoma fasciculatum - Malosma laurina	3,973.8	4,073.0	*-99.2*
4388	4388	Adenostoma fasciculatum - Salvia mellifera - Artemisia californica	933.6	1,076.4	*-142.8*
4392	4392	Ceanothus crassifolius - Adenostoma fasciculatum - Salvia mellifera	5,880.9	8,326.3	*-2,445.4*
4401	4401	Adenostoma sparsifolium	2,492.2	2,599.7	*-107.5*
4402	4402	Adenostoma sparsifolium	40,467.4	41,685.0	*-1,217.6*
4403	4403	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos glauca	6,303.0	6,387.2	*-84.2*
4404	4404	Quercus cornelius-mulleri	957.4	1,023.8	*-66.4*
4405	4405	Quercus palmeri	205.5	205.5	*0.0*
4431	4431	Adenostoma fasciculatum - Xylococcus bicolor - Ceanothus crassifolius	2,223.4	2,277.9	*-54.5*
4434	4434	Adenostoma sparsifolium - Cercocarpus montanus	3,005.5	3,057.8	*-52.3*
4435	4435	Adenostoma sparsifolium - Artemisia tridentata	2,811.9	3,283.9	*-472.0*
4436	4436	Adenostoma sparsifolium - Ceanothus cuneatus	77.5	77.5	*0.0*
4442	4442	Ceanothus crassifolius - Adenostoma fasciculatum - Rhus ovata	5,714.1	6,165.1	*-451.0*
4443	4443	Adenostoma fasciculatum - Xylococcus bicolor - Salvia mellifera - Malosma laurina	76.7	101.4	*-24.7*
4445	4445	Heteromeles arbutifolia	56.4	42.2	*14.2*
4459	4459	Ceanothus oliganthus - Adenostoma fasciculatum	527.1	527.1	*0.0*
4462	4462	Ceanothus crassifolius - Malosma laurina	1,206.4	1,432.7	*-226.3*
4465	4465	Prunus ilicifolia ssp. ilicifolia - Heteromeles arbutifolia	6.1	6.1	*0.0*
4466	4466	Quercus wislizeni - Cercocarpus montanus	503.5	503.6	*0.0*
4467	4467	Quercus wislizeni - Ceanothus leucodermis	479.9	470.0	*9.9*
4469	4469	Quercus wislizeni - Cercocarpus montanus - Adenostoma sparsifolium	654.9	654.9	*0.0*
4472	4472	Malosma laurina - Eriogonum fasciculatum - Salvia apiana	1,102.5	1,246.5	*-144.0*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
4473	4473	Malosma laurina - Tetracoccus dioicus	3.7	3.7	*0.0*
4474	4474	Quercus cornelius-mulleri - Adenostoma sparsifolium - Cercocapus montanus	901.5	907.6	*-6.0*
4475	4475	Quercus cornelius-mulleri - Adenostoma sparsifolium - Ceanothus greggii	445.0	452.3	*-7.4*
4476	4476	Quercus palmeri - Eriogonum fasciculatum	90.4	90.4	*0.0*
4478	4478	Adenostoma sparsifolium - Adenostoma fasciculatum - Cercocarpus montanus	2,432.8	2,444.8	*-12.0*
4479	4479	Adenostoma sparsifolium - Eriogonum fasciculatum - Lotus scoparius	413.2	991.8	*-578.6*
4481	4481	Adenostoma sparsifolium - Adenostoma fasciculatum - Ceanothus greggii	2,260.0	2,300.6	*-40.6*
4482	4482	Adenostoma sparsifolium - Adenostoma fasciculatum - Arctostaphylos pungens	69.9	69.9	*0.0*
4483	4483	Adenostoma sparsifolium - Ceanothus crassifolius	55.7	60.3	*-4.6*
4484	4484	Adenostoma sparsifolium - Ericameria linearifolia - Eriogonum fasciculatum - Opuntia basilaris	225.5	231.2	*-5.7*
4485	4485	Adenostoma sparsifolium - Adenostoma fasciculatum - Opuntia parryi	290.0	289.8	*0.1*
4486	4486	Quercus berberidifolia	52.8	52.8	*0.0*
4488	4488	Adenostoma fasciculatum - Xylococcus bicolor - Quercus berberidifolia	442.8	443.5	*-0.6*
4490	4490	Quercus berberidifolia - southern mixed chaparral	2,468.3	2,560.4	*-92.1*
4493	4493	Heteromeles arbutifolia - Artemisia californica	208.0	244.9	*-36.9*
4494	4494	Heteromeles arbutifolia - Quercus berberidifolia - Cercocarpus montanus - Fraxinus dipetala	228.1	228.9	*-0.8*
4496	4496	Ceanothus cuneatus	196.4	197.3	*-0.9*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
4510	4510	Artemisia tridentata	3,161.3	3,322.8	*-161.5*
4531	4531	Artemisia tridentata - Eriogonum fasciculatum	1,016.6	1,059.1	*-42.5*
4532	4532	Artemisia tridentata - Eriogonum wrightii	1,630.4	1,642.5	*-12.0*
4603	4603	Simmondsia chinensis	161.1	162.4	*-1.3*
4630	4630	Simmondsia chinensis - Eriogonum fasciculatum - Opuntia parryi	1,523.1	1,657.7	*-134.6*
4702	4702	Opuntia littoralis	32.8	33.5	*-0.7*
4806	4806	Quercus wislizeni - Quercus berberidifolia - Fraxinus dipetala	153.5	153.5	*0.0*
4901	4901	Baccharis salicifolia	2,198.0	2,105.1	*92.8*
4930	4930	Tamarix spp.	70.6	116.3	*-45.7*
4931	4931	Baccharis salicifolia - Sambucus mexicana	45.6	40.6	*5.0*
5103	5103	Rhus trilobata	5.1	5.1	*0.0*
5104	5104	Ribes quercetorum	8.6	8.6	*0.0*
5203	5203	Lycium andersonii	7.2	7.2	*0.0*
5230	5230	Forestiera pubescens	9.3	9.8	*-0.6*
5231	5231	Forestiera pubescens	14.2	14.2	*0.0*
5400	5400	Central & South Coastal Californian Coastal Sage Scrub	1,236.8	222.6	*1,014.3*
5401	5401	Artemisia californica	274.7	274.0	*0.7*
5402	5402	Artemisia californica - Eriogonum fasciculatum	2,214.9	2,592.4	*-377.5*
5403	5403	Artemisia californica - Salvia mellifera	455.2	431.5	*23.7*
5404	5404	Eriogonum fasciculatum	35,345.3	39,309.2	*-3,963.9*
5407	5407	Eriogonum fasciculatum - Salvia apiana	731.3	779.0	*-47.6*
5408	5408	Salvia apiana	31.0	31.0	*0.0*
5409	5409	Salvia mellifera	304.3	255.7	*48.6*
5410	5410	Encelia farinosa	407.0	421.6	*-14.6*
5416	5416	Lotus scoparius	1,841.2	741.1	*1,100.1*
5430	5430	Keckiella antirrhinoides	29.9	30.3	*-0.4*
5431	5431	Keckellia antirrhinoides - Artemisia californica	494.3	536.5	*-42.2*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
5432	5432	Salvia apiana - Artemisia californica	469.3	620.2	*-150.9*
5434	5434	Eriogonum fasciculatum - Cylindropuntia californica	2,145.2	2,181.3	*-36.1*
5437	5437	Encelia farinosa - Artemisia californica	4,753.1	5,981.0	*-1,227.8*
5438	5438	Encelia californica - Artemisia californica	98.1	93.5	*4.6*
5439	5439	Encelia farinosa	1,857.7	1,646.6	*211.1*
5441	5441	Salvia mellifera	48.9	54.9	*-6.0*
5442	5442	Artemisia californica - Salvia mellifera	7.1	17.6	*-10.5*
5444		Salvia mellifera-Lotus scoparius		67.3	*-67.3*
5448	5448	Eriogonum fasciculatum - Encelia farinosa	3,739.9	3,790.9	*-51.1*
5449	5449	Eriogonum fasciculatum - Simmondsia chinensis - Cylindropuntia californica	14.0	12.3	*1.7*
5450	5450	Eriogonum fasciculatum - Rhus ovata	9,538.1	7,353.8	*2,184.2*
5451	5451	Eriogonum fasciculatum	399.8	510.8	*-110.9*
5454	5454	Artemisia californica - Eriogonum fasciculatum - Malosma laurina	1,670.2	1,607.4	*62.8*
5455	5455	Artemisia californica - Eriogonum fasciculatum - Salvia apiana	278.7	316.7	*-38.0*
5456	5456	Artemisia californica - Malosma laurina	2,380.4	3,060.9	*-680.5*
5457	5457	Artemisia californica - Eriogonum fasciculatum	222.3	237.9	*-15.6*
5458	5458	Artemisia californica / Amsinckia menziesii	195.6	195.6	*0.0*
5460	5460	Salvia apiana - Encelia farinosa	119.7	139.1	*-19.4*
5461	5461	Keckellia antirhinoides - Eriogonum fasciculatum	430.5	440.0	*-9.5*
5464	5464	Keckiella antirrhinoides - Mixed Chaparral	422.4	434.7	*-12.4*
5465	5465	Keckiella antirrhinoides	117.2	83.6	*33.6*
5466	5466	Eriogonum fasciculatum - Gutierrezia sarothrae	106.2	106.2	*0.0*
5505	5505	Shadscale-saltbush cool semi-desert scrub	242.8	248.1	*-5.3*
5508	5508	Lepidospartum squamatum	93.3	89.8	*3.4*
5537	5537	Lepidospartum squamatum - Eriogonum fasciculatum	1,725.0	1,721.5	*3.5*
5538	5538	Lepidospartum squamatum / Amsinckia menziesii	117.5	121.5	*-4.1*

2005 Code	2012 Code	NVCS Name	2012 Acres	2005 Acres	Change from 2005 to 2012
5539	5539	Lepidospartum squamatum - Baccharis salicifolia	722.4	639.6	*82.8*
5603	5603	Prosopis glandulosa	98.1	101.5	*-3.4*
5701	5701	Eriogonum wrightii	450.7	430.3	*20.4*
5705	5705	Ericameria palmeri	49.2	77.3	*-28.1*
6202		Juncus spp.		8.1	*-8.1*
6208		Lasthenia californica		7.0	*-7.0*
6214	6214	Sporobolus airoides	3.8	3.8	*0.0*
6232	6232	Lasthenia californica - Atriplex coronata var. notatior	25.3	25.3	*0.0*
6236	6236	Deinandra fasciculata - Hordeum depressum - Atriplex coronata var. notatior	4.7	4.7	*0.0*
6301	6301	Arundo donax	488.6	998.6	*-510.1*
6303	6303	Lepidium latifolium	39.9	97.7	*-57.8*
6402	6402	Arid West freshwater emergent marsh	66.0	59.0	*7.0*
7000	7000	California Annual and Perennial Grassland	1,351.9	781.6	*570.3*
7100	7100	California Annual and Perennial Grassland	102,980.6	92,923.9	*10,056.7*
7107	7107	Brassica nigra and other mustards	2.1	7.6	*-5.5*
7109	7109	Amsinckia (menziesii, tessellata)	17.0	17.0	*0.0*
7131	7131	Amsinckia menziesii - Erodium spp.	1.5	1.5	*0.0*
9001	9001	Barren	222.8	224.0	*-1.2*
9002	9002	Riverine, Lacustrine	1,288.6	1,382.5	*-93.9*
9200	9200	Agriculture	94,500.9	144,047.6	*-49,546.7*
> 9100 (excluding 9200 - Ag)		All Urban Designations (9100, 9101, 9102, 9103, 9300, & 9400)	381,612.4	307,959.6	*73,652.8*
Total			1,017,364.4	1,017,364.4	*0.0*

MSCHP Classes
Change from 2005 to 2012

MSHCP Classes	2012 Acres	2005 Acres	Change from 2005 to 2012
Chaparral	183,376.1	201,344.7	-17,968.6
Coastal Sage Scrub	191,727.3	205,522.6	-13,795.3
Desert Scrub	7,864.6	8,239.4	-374.8
Grassland	110,218.8	100,925.9	9,292.9
Meadows and Marshes	1,957.2	2,702.3	-745.0
Montane Coniferous Forest	63.4	93.2	-29.7
Playas and Vernal Pools	1,825.9	1,819.8	6.1
Riparian Scrub, Woodland, Forest	19,529.7	19,016.3	513.4
Riversidean Alluvial Fan Sage Scrub	3,011.6	3,078.4	-66.7
Woodland and Forests	17,088.3	17,668.8	-580.5
Agricultural Land	95,939.8	145,865.5	-49,925.7
Developed/Disturbed Land	363,112.0	290,148.3	72,963.7
Water	21,427.0	20,715.4	711.5
No equivalent	222.8	224.0	-1.2
Totals	1,017,364.4	1,017,364.4	

Shrub Density Change
2005 to 2012
Coastal Sage Scrub and Chaparral Types

MSHCP Categories	Shrub Densities														2005 Total	2012 Total
	< 2%		2 - 9%		10 - 24%		25 - 39%		40 - 59%		>= 60%		Not Applicable/ Not Assigned			
	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012		
Chaparral			4,841.4	734.4	11,212.5	9,856.5	31,340.7	57,961.8	54,678.4	56,262.5	99,271.7	58,556.0		5.0	201,344.7	183,376.1
Coastal Sage Scrub			33,520.6	23,939.6	73,057.3	75,938.3	60,561.3	72,373.4	28,533.6	15,253.6	9,849.7	4,222.3			205,522.6	191,727.3
Riversidean Alluvial Fan Sage Scrub			776.1	375.3	1,140.2	1,403.4	950.8	1,167.3	194.1	65.6	17.4				3,078.4	3,011.6
Grand Total			**39,138.1**	**25,049.3**	**85,410.0**	**87,198.2**	**92,852.8**	**131,502.5**	**83,406.0**	**71,581.8**	**109,138.8**	**62,778.3**	**0.0**	**5.0**	**409,945.7**	**378,115.1**

APPENDIX D: Miscellaneous Class Descriptions

9001 – Rock Outcrop
Sparsely vegetated to naturally barren rocky areas whose total vegetative cover generally falls below 8-10%. Includes cliffs, bluffs, scree, and rock outcroppings.

9002 – Riverine, Lacustrine, Mudflats, and Sand Flats along rivers
Includes intermittently to seasonally flooded stream channels that contain less than 10% vegetative cover. Also included sand flats and mud flats adjacent to or related to a riverine or lacustrine system, and contain less than 10% vegetative cover.

9100 – Urban or Development
Large urban regions, smaller urban areas, and individual lots that are built up, as well as their adjacent surfaced areas directly associated with the built up portions of the parcel. Generally included in this category are the unsurfaced landscaped areas associated with the mapped urban polygon. Areas of exotic vegetation within the large urban window are not separated out from the urban polygon unless they form an extensive fringe within the adjacent open space. No other non-vegetative classes are mapped within the urban window.

9101 – Golf Courses and Urban Parks
Golf courses and urban parks located at the fringe of the urban area adjacent to the wildland open space. Included are the golf course fairways, driving ranges, and vegetated as well as unvegetated “roughs”. Residential areas within a golf course are mapped as Urban.

9102 – Urban Interface
Areas of vacant land typically adjacent to urban development that are periodically manipulated through clearing, mowing, and disking resulting in a mosaic or patchwork of exotic grasses and herbs, bare ground, and seral/ruderal shrubs and herbs. Vegetative cover may vary within an area, and may change from season to season or from year to year through constant manipulation. May include disturbed greenspace and planted vegetation at the edge of developments.

9103 – Duck Ponds
Seasonally to permanently flooded man made water features designed to attract waterfowl (primarily dabbling ducks (*Anas*) for purposes of hunting, winter visiting, migratory stop offs and permanently residing. Created for overall expansion of emergent, scrub and forested wetlands as habitat for other birds as well. Mapped with the aid of USGS topographical maps and in association with administrative boundaries (wildlife refuges, game refuges).

9200 – Agriculture
Areas of land planted with row crops, field crops, horticulture, nursery greenhouses, orchards, and vineyards. Also included are poultry, horse or other animal ranch operations, and dairy farms.

Land considered fallow on the base imagery but cultivated within the previous 5 years are included as Agriculture. Agriculture totally within the urban window is mapped as part of the urban window.

9300 – Vacant (disturbed bare ground, <8% vegetative cover)
Area of land where surface has been cleared or scraped, resulting in removal or denuding of most of the natural vegetation. Vegetation generally falls below 10% overall cover.

9400 – Water
Open perennial water bodies, whether natural or man-made.

905 – Exotic Trees
Open space non-urban areas where introduced or exotic trees dominate. Typically adjacent to or near urban areas.