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Summary

A limited-scope vegetation community mapping effort was initiated in 2011 for the riparian corridor of Cache Creek within the Cache Creek Regional Management Plan (CCRMP) area from Interstate-5 near the town of Yolo, upstream to the Capay dam near Capay. The 2006 Yolo Natural Heritage Program (NHP) vegetation dataset identifies ten general vegetation communities and fourteen vegetation cover types that occur within the CCRMP study area. In this study, habitat types on selected Andregg (Andregg, 2002) transects were classified using the National Vegetation Classification System (USNVC, 2008) [USNVC] and were matched with equivalent NHP vegetation communities. The ground truthing of these transects in 2011 and analytical assessment provides validation of the 2010 aerial photo and the NHP datasets for these selected transects, as well as describing habitat types based on the USNVC standard. This validates the ongoing efforts and provides information for the planning and development of future ecological studies. These analyses are intended to lay the analytical foundation for standard methods for reviewing the full length of lower Cache Creek within the CCRMP area, as well as to initiate the actual assessment of vegetation change, and by inference habitat change, within the plan area. This study and results of the analysis show that high resolution aerial photos of the study area provided a technically sound basis for monitoring vegetation dynamics over time and will become the basis for classifying the vegetation of the CCRMP study area.

Objectives

The following objectives provided guidance for this effort:

- To gain a better understanding of the riparian and upper terrace vegetation conditions from field survey results in 2011 and compare those conditions to aerial photo data from 2010.
- To gain a better understanding of the NHP-mapped riparian and upper terrace vegetation classes (polygons) and match those with the nationally accepted USVC.
- To compare the 2006 NHP program mapped polygons to the 2010 BSK mapped polygons (from aerial photos) using the NHP classification.
- To provide an analytical assessment of the 2011 riparian vegetation and landscape conditions along and between selected Andregg-established transects using the USNVC classification.
- To ascertain the degree of effort of sampling individual transects by quantifying the time and effort necessary for various sampling methods used.

Survey Methods

During the summer of 2011, BSK Associates' Biologists Erik Ringelberg, Kelly J. Fritsch and Yolo County Natural Resource Program Manager Victor Randolf, surveyed vegetation within the CCRMP boundary riparian corridor of lower Cache Creek (Figure 1). 2 of the 14 Transect locations were pre-selected, using Andregg's 2002 data from the 2010 aerial photographs to sample the range of vegetation types found along the river in a given reach. Transects perpendicular to the course of the river channel were established between the confining levee or river terrace slope and the water's edge by Andregg in 2002.

Vegetation surveys for this study on Andregg transects 11-12 and 15-16 was conducted on August 23, 2011. Transect end-points were located to +/- 5 –meters using a Garmin 12 GPS unit. Two transects out of the 14 transects established were selected for this study based on various criteria. These test transects were selected because of the potential limitations of vegetation information provided from the 2010 aerial photos. Specifically, these transects contain a larger percentage of overstory cover and a high incidence of forbs which made distinguishing vegetation from aerial photos difficult. Also, the two transects selected are in close proximity but provide varying habitats and conditions. The effect of a levee in the middle of transect 15-16 was an additional concern for the effects on complex flows on vegetation cover based on aerial photos alone, therefore this transect was considered a suitable selection.

A variation of the line-intercept method (Elzinga *et al.* 1998) combined with random stratified sampling was used to measure vegetative density, cover, and richness, and the extent of interstitial space and disturbance. Percent cover was measured and recorded for vegetation encountered along the transect using a 100 foot tape measure. Inaccessible areas (such as dense blackberry and arundo thickets) were visually estimated using a laser rangefinder.

Sampling Methods Considerations

The line intercept method is best suited to relatively large homogenous areas where vegetation and topography allow the establishment of one or more straight, obstacle free transect lines. The major advantage of stratified random sampling is an increase in the efficiency of population estimation over simple random sampling when the attribute of interest responds very differently to some clearly defined habitat features that can be treated as strata. For example in the narrow riparian and upland belts that traverse the transects. If the target population covers a very large geographic area, constraints of time and money, coupled with the tremendous variability usually encountered when sampling a very large population, often lead us to define some smaller geographic area(s) to sample.

Vegetation Analysis

Vegetation maps were created as ArcView polygon themes based on georeferenced aerial photos, delineated at a scale of 1:2,400. The map boundary is the Cache Creek Regional Management Plan (CCRMP) boundary. Vegetation types were distinguished by means of their signature on the aerial photographs and by field surveys. Cover types in the Study Area were labeled and described to be consistent USNVCS vegetation classes, as well as the historic NHP vegetation classes.

The National Vegetation Classification (USNVC) is a central organizing framework for how all vegetation in the United States is inventoried and studied, from broad scale formations (biomes) to fine-scale plant communities. The purpose of the USNVC is to produce uniform statistics about vegetation resources across the nation, based on vegetation data gathered at local, regional, or national levels. The latest classification standard was published in 2008 by the Federal Geographic Data Committee (FGDC, 2008).

The 8-level natural vegetation hierarchy emphasizes physiognomy in an ecological context at three upper levels and increasingly integrates biogeography and floristics at three middle levels The upper levels of the USNVC hierarchy are based on dominant and diagnostic growth forms that reflect environment at global to continental scales. The mid-levels are based on dominant and diagnostic growth forms and compositional similarity reflecting biogeography and continental to regional environmental factors. The lower levels (alliance and association) are based on diagnostic and/or dominant species and compositional similarity reflecting local to regional environmental factors. (FGDC, 2008; See Appendix A.)

The 2006 Yolo Natural Heritage Program (NHP) vegetation dataset was imported into the GIS and clipped to meet the CCRMP boundary. The NHP dataset came from a variety of sources, such as the Chico State University and the Department of Water Resources Tributaries Study, and included 21 different land classes ranging from water to upland oak. For the purposes of this analysis these classes were aggregated to a subset of nine classes by combining similar vegetation and use classes. For example, the class 'barren anthropogenic' was added to the class 'urban/built up', and all agricultural classes were combined. The National Heritage Table 1 Program Codes and Classifications are shown with the Classification system of the National Vegetation Classification (USNVC) for comparison purposes. USNVC classes that were observed in this study are described in detail in the Results section of this report. This cross-walk between the two classification systems provided in Table 1. allows for comparison between the two systems, although the two systems are not intended to be completely parallel or equally descriptive.

Table 1- Comparison of Classification Systems for likely Habitats with the CCRMP

National Heritage Program Code	National Heritage Program Classification	National Vegetation Classification Code	National Vegetation Classification Association Scientific Name	National Vegetation Classification Association Common Name
Riparian Wetland Forest and Woodland				
8	Fremont Cottonwood, valley oak, willow, ash sycamore, riparian forest not formally defined association	CEGL005308	*Populus fremontii/Salix laevigata* woodland	Fremont Cottonwood, red willow woodland
7120	Upland Annual Grassland Association	CEGL002871	*Quercus lobata*/Annual Grassland Herb Woodland	Valley oak/annual grassland herbaceous woodland
3123	Valley Oak Alliance	CEGL003096	*Quercus Lobata* Woodland	Valley oak woodland
Forest Woodland				
Unclassified	Unclassified	CEGL005314	*Quercus Douglasii* Mixed Herbaceous Woodland	Blue Oak Mixed Herbaceous Woodland
Riparian Wetland Shrubland				
3221	Mixed Willow Super Alliance	CEGL002875	*Salix lasiolepis Baccharis salicifolia* Shrubland	*Red willow, mulefat shrubland*
3221	Mixed Willow Super Alliance	CEGL001197	*Salix exigua* Temporarily Flooded Shrubland Herbaceous Vegetation	Sandbar willow Temporarily Flooded Shrubland
4531	Tamarisk Alliance	CEGL003114	*Tamarix spp.* Temporarily Flooded Semi-natural Shrubland	Tamarisk Temporarily Flooded Semi-natural Shrubland
9100	Urban	Unclassified/ Developed	Unclassified	Unclassified

		Vegetation		
9400	Open Water	Unclassified	Unclassified	Unclassified
13	Barren- Gravel Bars	Unclassified	Unclassified	Unclassified

Results

For this study, habitat types (or their equivalent land classifications) were compared between years and between classification systems on selected Andregg transects (Andregg, 2002) Andregg YC_11-TC_12 (Madison Reach, Transect 5) and Andregg YC_15-TC_16 (Guesisosi Reach, Transect 6), within the CCRMP study area (See Field Notes Appendix B). The first set of analyses visually compared the 2006 NHP classifications to the manually classified NHP vegetation communities from 2010 (using the classes described in Table 1). The 2010 manually classified NHP vegetation communities were then visually compared to the 2010 National Vegetation Classification System (USNVC, 2008) polygon classes.

Transect 11-12

Habitat types observed classified under USNVC System include: *Quercus lobata* Herbaceous Grassland Woodland, *Populus Fremontii*/*Salix Lasiolepsis*) Woodland, *Salix Exigua* Temporarily Flooded Shrubland, and *Salix Lasiolepsis* Mulefat Shrubland. The overstory is dominated by scattered valley oak (*Quercus lobata*)(1-5%). Species in the understory include northern California black walnut (*Junglans californica var. hindsii*)(1-5%), and elderberry (*Sambucus* sp.) (1-5%), as well as the invasive giant reed (*Arundo donax)*(1-5%). The shrub layer on this transect was dominated by red willow (Salix lasiolepsis) (15-25%) and sandbar willow (Salix exigua) (5-15%) other adjacent shrubs are Tamarisk (Tamarisk spp.) (1-5%). Ground cover vegetation documented includes vegetation growing adjacent to the transect line. Species observed include: yellow starthistle (*Centaurea solstitialis)*, mulefat (*Bacharis salicifolia),* italian thistle *(Carduus pycnocephalus)*, mugwort (*Artemisia douglasii*), sedge (*Cyperus* sp.), ripgut brome (*Bromus diandrus*), wild oat (*Avena fatua*), Italian ryegrass (*Lolium multiflorum*), zorro fescue (*Vulpia myuros*), and rough cockle-bur (*Xanthium strumarium).* The dominant vine species is California wild grape (*Vitis californica*).

Transect 15-16

Habitat types observed classified under USNVC System include: *Salix Exigua* Temporarily Flooded Shrubland/Herbaceous Vegetation, and *Tamarix spp.* Temporarily Flooded Semi-natural Shrubland. Virtually no overstory was observed along this transect. Tamarisk, arundo, immature cottonwood and black walnut are scattered a short distance away from the transect.

The shrub layer is dominated by red willow *(Salix laevigata) (5-15%)* and sandbar willow *(Salix exigua) (5-15%)*. Ground cover vegetation included yellow star thistle (*Centaurea solstitialis)*, swamp picklegrass (*Crypsis schoenoides,* rabbitsfoot grass *(Polypogon monspeliensis),* soft chess *(Bromus* hordeaceous), among others. Yellow star-thistle is the dominant invasive apparent in the dry season.

Comparison of 2006 and 2010 National Heritage Program Polygons

Results from vegetation mapping from NHP 2006 polygons were compared with NHP 2010 polygons (Figure 2). The 2006 mapped polygons were different in delineation of the habitat types but had little variance in content for open water/barren classes. The Fremont cottonwood willow NFD class shrank between years, and the tamarisk also reduced almost exactly to the conversion of the class to urban/built up, likely as an initial mapping issue (Figures 2 and 3).

National Heritage Program (NHP) Classification compared with National Vegetation Classification System (USNVC)

The NHP 2010 polygons were mapped and compared with the 2010 USNVC system habitat types. The USNVC system provides finer-scale classification and uniform statistics about vegetation resources across the nation. The USNVC system was matched with the NHP polygon classes with the exception of the NHP polygon class-Tamarisk Alliance. An equivalent class in the USNVC system was not found, but may be useful for the CCRMP in future vegetation analyses (Figures 4 and 5).

Description of Habitat Types

Quercus lobata Annual Grassland Herbaceous Woodland

This association is known from northern, central and southern coastal California. This woodland association occurs on flat to steep slopes with variable aspect at low elevations between 230 and 418 m. It is dominated by *Quercus lobata* in the tree layer and various herbs and grasses such as *Brassica nigra*, *Bromus diandrus*, and *Lactuca serriola* in the herbaceous layer. It was not clear if this association occurred on the transects described, as it is considered an upland, rather than a riparian class. It is added here because its final status is still undetermined by the USNVC.

Quercus lobata Woodland

These woodlands are found in California's Coast Ranges, the Great Central Valley, the foothills of the Sierra Nevada, the Cascades and the Klamath Range. Elevation ranges from sea level to 775 m. Stands occur on valley bottoms and gentle slopes and requires intermittently flooded or seasonally saturated soils. The soils are deep and alluvial or residual, and the water must be

fresh. Periodic, low intensity floods help maintain this vegetation. Stands are usually found outside the immediate zone of high energy flood waters, in the lower-energy margins of the floodplain. The vegetation is a sclerophyllous evergreen woodland that forms a sparse to dense tree canopy less than 30 m in height. The tree canopy is dominated by *Quercus lobata*. Other trees in the canopy may include *Quercus kelloggii, Quercus douglasii, Quercus agrifolia, Platanus racemosa*, and *Fraxinus latifolia*. A sparse shrub layer (10-25% cover) is present and may include *Frangula californica ssp. californica*, and *Toxicodendron diversilobum*. Lianas like *Vitis californica* and *Clematis ligusticifolia* are common. The moderately dense herbaceous layer of undisturbed stands is typically dominated by perennial graminoids, such as the rhizomatous *Leymus triticoides*. Introduced annual grasses dominate the ground layer of disturbed stands. This type/association was found occurring on Transect 11-12, and it is common throughout the CCRMP.

Salix exigua Temporarily Flooded Shrubland

This willow shrubland is found throughout the western United States and Great Plains north into the Boreal Plains. This is a highly flood-tolerant community that occurs along rivers and streams at lower elevations, on recently flooded riparian areas, and in moist swales and ditches that are frequently disturbed. Stands occur most commonly on alluvial sand, but silt, clay or gravel may also be present. *Salix exigua* is the dominant canopy species (*Salix interior* or intermediates of the two willow species may be present in the eastern part of the range). It can form dense stands up to 4 m tall, but there are often patches where the shrub layer is absent. Seedlings and small saplings of *Populus deltoides, Populus balsamifera*, and *Salix amygdaloides* may be present. The herbaceous cover is sparse to moderate but rarely exceeds 30%. Species present may include *Cenchrus longispinus, Polygonum lapathifolium, Schoenoplectus americanus (= Scirpus americanus), Triglochin maritima*, and *Xanthium strumarium*.

In California, the overstory shrub canopy is open to continuous and dominated by *Salix exigua*, with *Rubus discolor* often present. Trees such as *Ailanthus altissima, Fraxinus latifolia*, and *Salix laevigata* sometimes occur as scattered emergents. Other shrubs that may be present include *Rhus trilobata var. trilobata (= Rhus aromatica var. trilobata), Quercus gambelii, Rosa woodsii, Rosa nutkana, Ericameria nauseosa, Arctostaphylos patula*, and *Dasiphora fruticosa ssp. floribunda* The herbaceous layer is typically open and often includes *Artemisia douglasiana*. The composition of this community, especially the herbaceous layer, varies from year to year with succession or renewed disturbance. This type was used to classify the habitats on both Transects 11-12 and 15-16, and was observed to be the dominant vegetation habitat type.

Populus Fremontii/Salix Laevigata Woodland

This riparian woodland is know from northern, central, and southern California, from the Sierra Nevada foothills, central interior Coast Ranges, and San Diego and Riverside counties. It occurs on low-gradient, relatively wide or narrow streams and rivers at elevations from 57 to 1275 m (187-4182 feet). Stream gradients range from 0 to 4 degrees. Valley width is usually moderately wide to wide, with a few occurrences on narrow reaches. *Populus fremontii* and *Salix laevigata* are typically codominant, although some stands lack red willow. Tree cover typically exceeds 50% (4-90%), but some stands have much less cover. Conversely, understory layers are usually open. Shrub species that may be present include *Baccharis salicifolia, Baccharis pilularis, Salix lasiolepis, Rubus discolor (= Rubus procerus), Rubus ursinus*, and *Rosa californica*. The herbaceous cover is also highly variable. No understory species is designated in the name of this association to reflect the high variation and lack of consistency of the understory layers. This habitat type was found along Transect 11-12.

Quercus Douglasii Mixed Herbaceous Woodland

This open to shaded woodland occurs across a wide range of elevations, between 30 and 1676 m (100-5500 feet), on moderate to steep slopes of all aspects, from bottom to upper slopes and ridgetops. The surface topography is variable, and soils are mostly sandy loam, but can be a wide variety of textures, including clay, clay loam, silt, silt loam, and sand. The vegetation is an overstory tree layer dominated by *Quercus douglasii*. A shrub layer is absent, although a few scattered individuals and even clumps of shrubs may occur. The herbaceous cover is typically the predominant undergrowth cover in this type and typically comprised of a high cover of grasses (average 90%). However, no one species or suite of species are present in all stands. Commonly encountered native grass species include *Elymus glaucus, Leymus triticoides, Melica californica, Nassella pulchra, Poa secunda*, and *Vulpia microstachys*. Introduced grasses commonly include *Avena barbata, Bromus diandrus, Bromus hordeaceus, Bromus rubens, Brachypodium distachyon*, and *Cynosurus echinatus*. Forb species vary depending on yearly rainfall and are highly diverse. This type class was not observed on the two study transects, but may be found in the Capay Reach.

Open water

In some cases, open water habitat grades into emergent marsh; boundaries between the two were set at the edge of the vegetation as it appears in the photos or as noted in the field. This habitat type/class was found along Transects 11-12 and 15-16.

Urban/Built up

This designation was used for areas that were graded or otherwise mechanically disturbed. It also includes urban areas, homes and active mining sites. This habitat type/class was found along Transects 11-12 and 15-16.

Barren/Sandbars

This community is almost strictly herbaceous, a very dry formation in the summer, on well-drained cobbles and gravels of the river bottom or high (and dry) sandbars. These are the first areas colonized by willows, and also the first to be scoured by high flows. The frequent disturbance and poor substrate quality allow very little vegetation establishment, resulting in a mostly bare substrate. This habitat type/class was found along Transects 11-12 and 15-16, and covers much of the CCRMP.

Conclusions and Recommendations

Conclusions

- The USNVC System is a preferred classification system because it is based on a habitat typing system, which shows shade tolerance/species trajectory over time, and can provide uniform statistics about vegetation resources across the nation.
- Vegetation surveys conducted in late summer provides the opportunity to investigate late season species dominance and compare weed pressure over time.
- This study gave us an estimated time and effort assessment per transect for future planning. An average of 3 hours of time should be allocated for each transect using the methods in this study.
- Qualitative and quantitative measures are both appropriate in combination for the study goals and for long-term vegetation monitoring.
- For rare plant surveys or accurate assessment of forbs, vegetation surveys should coincide with flowering period of much of the native vegetation, during the spring.
- Line and area plots surveys should be conducted a minimum of every 5 years during the dry season and every 3 years during the wet season to provide a time-series of plant area density and species are coverage.

Recommendations

- Dry Season and wet season surveys to capture rare spring plants as well as late blooming weeds.

- Analysis of late season annual weed pressure for comparison of subsequent years' studies to determine effectiveness of any weed management program and restoration effort.

- Recording of the bearing of the Transect line in every case as a measure to insure replication of transects.

- A combination of line intercept transect sampling along with stratified random sampling will increase the accuracy of the results.

Important Questions for Future Analysis/Surveys

- How are habitat types changing over time?

- How is vegetation habitat and structure quantitatively and qualitatively changing in the system over time?

References

Elzinga,C. L.,D.W. Salzer ,and J.W.Willoughby. 1998. Measuring and monitoring plant populations. Bureau of Land Management, Technical Reference 1730–1, Denver, Colorado, USA.

Yolo County, 2002. Cache Creek Resources Management Plan for Lower Cache Creek

TAC, 2011 Cache Creek Annual Report 2010

FGDC, 2008. Federal Geographic Data Committee- National Vegetation Classification Hierarchy

NHP, 2007. Yolo County National Heritage Program

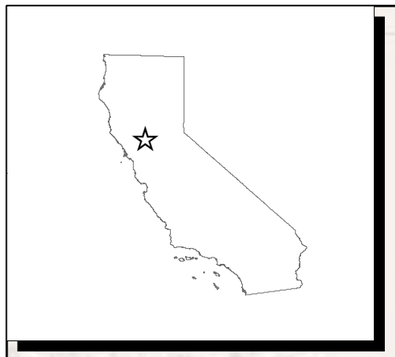
Appendices

Table 2.

National Vegetation Classification Hierarchy (FGDC 2008).

Hierarchy Level	Criteria	Example
Upper: *Physiognomy plays a predominant role.*		
L1 – Class	Broad combinations of general dominant growth forms adapted to basic temperature (energy budget), moisture, and/or substrate or aquatic conditions.	1.Forest and Woodland
L2 - Subclass	Combinations of general dominant and diagnostic growth forms that reflect global macroclimatic factors driven primarily by latitude and continental position, or that reflect overriding substrate or aquatic conditions.	1.C .Temperate Forest
L3 – Formation	Combinations of dominant and diagnostic growth forms that reflect global macroclimatic factors as modified by altitude, seasonality of precipitation, substrates and hydrologic conditions.	1.C.1. Warm Temperate Forest
Middle: *Both floristics and physiognomy play a significant role.*		
L4 – Division	Combinations of dominant and diagnostic growth forms and a broad set of diagnostic plant taxa that reflect biogeographic differences in composition and continental differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes.	1.C.1.c. Madrean Forest
L5 – Macrogroup	Combinations of moderate sets of diagnostic plant species and diagnostic growth forms that reflect biogeographic differences in composition and subcontinental to regional differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes.	California Forest and Woodland **MacroGroup**
L6 – Group	Combinations of relatively narrow sets of diagnostic plant species (including dominants and co-dominants), broadly similar composition, and diagnostic growth forms that reflect biogeographic differences in composition and sub-continental to regional differences in mesoclimate, geology, substrates,	California Coastal Closed-Cone Conifer Forest and Woodland **Group**

	hydrology, and disturbance regimes	
Lower: *Floristics plays a predominant role**.***		
L7 – Alliance	Diagnostic species, including some from the dominant growth form or layer, and moderately similar composition that reflect regional to subregional climate substrates, hydrology, moisture/nutrient factors and disturbance regimes.	Foothills Pine Woodland **Alliance**
L8 – Association	Diagnostic species, usually from multiple growth forms or layers, and more narrowly similar composition that reflect topo-edaphic climate, substrates, hydrology and disturbance regimes.	*Pinus sabiniana / Eriogonum fasciculatum* Alluvial Woodland



CCRMP Area Boundary

Capay
Esparto
Madison
Yolo
Cache Creek Nature Preserve
Winters Canal
State Highway 16

N
W E
S

0 1 2
Scale in Miles

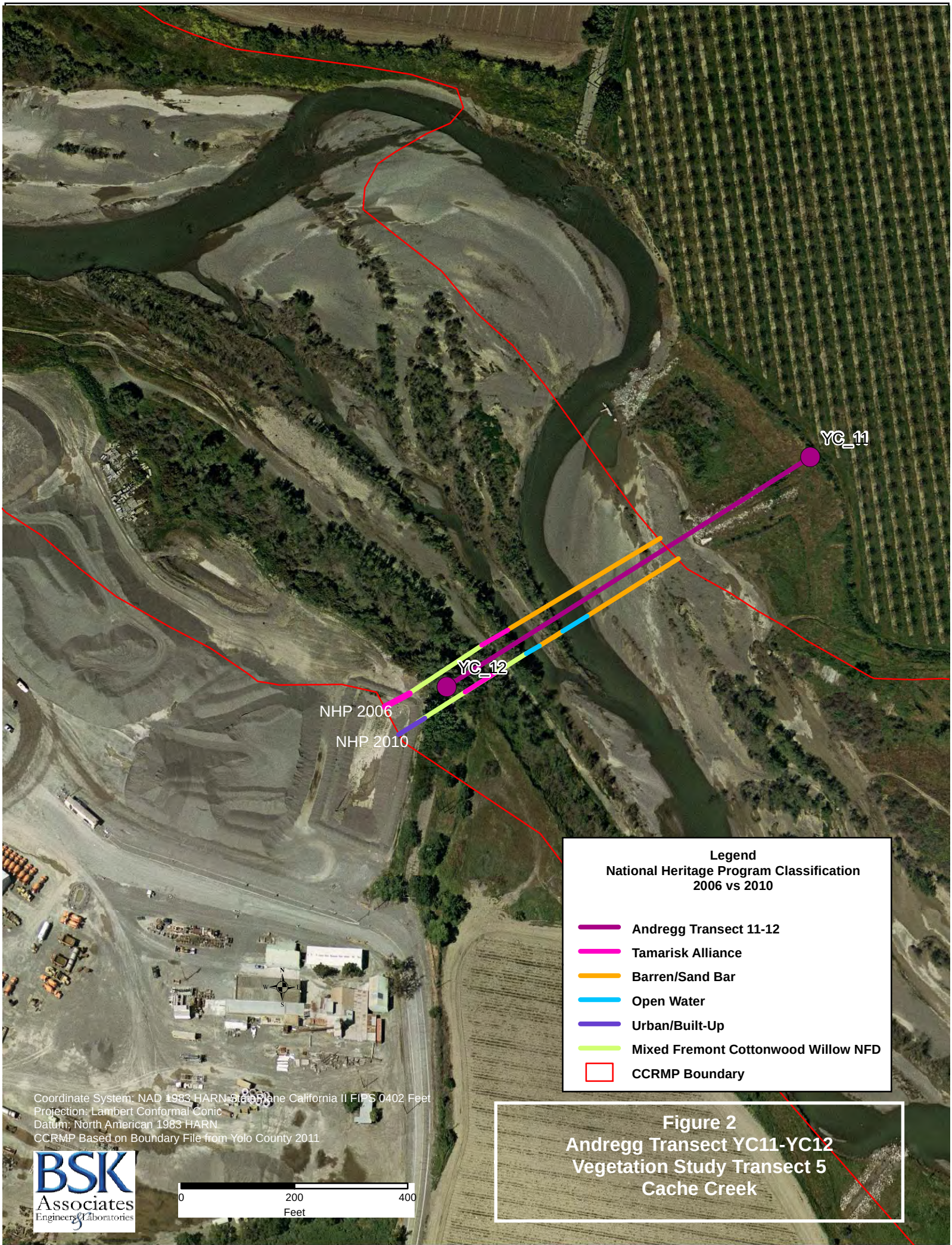
Legend

CCRMP Area Boundary

Coordinate System: NAD 1983 HARN StatePlane California II FIPS 0402 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983 HARN
CCRMP Boundary File Supplied by Yolo County 2011
Base Map from Bing Road Maps Web Service

BSK Associates
Engineers & Laboratories

Figure 1
Vicinity Map
Cache Creek
Yolo County, California


YC_11
YC_12
NHP 2006
NHP 2010
Legend
National Heritage Program Classification
2006 vs 2010
Andregg Transect 11-12
Tamarisk Alliance
Barren/Sand Bar
Open Water
Urban/Built-Up
Mixed Fremont Cottonwood Willow NFD
CCRMP Boundary
Coordinate System: NAD 1983 HARN StatePlane California II FIPS 0402 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983 HARN
CCRMP Based on Boundary File from Yolo County 2011
0
200
400
Feet
BSK Associates
Engineers & Laboratories
Figure 2
Andregg Transect YC11-YC12
Vegetation Study Transect 5
Cache Creek

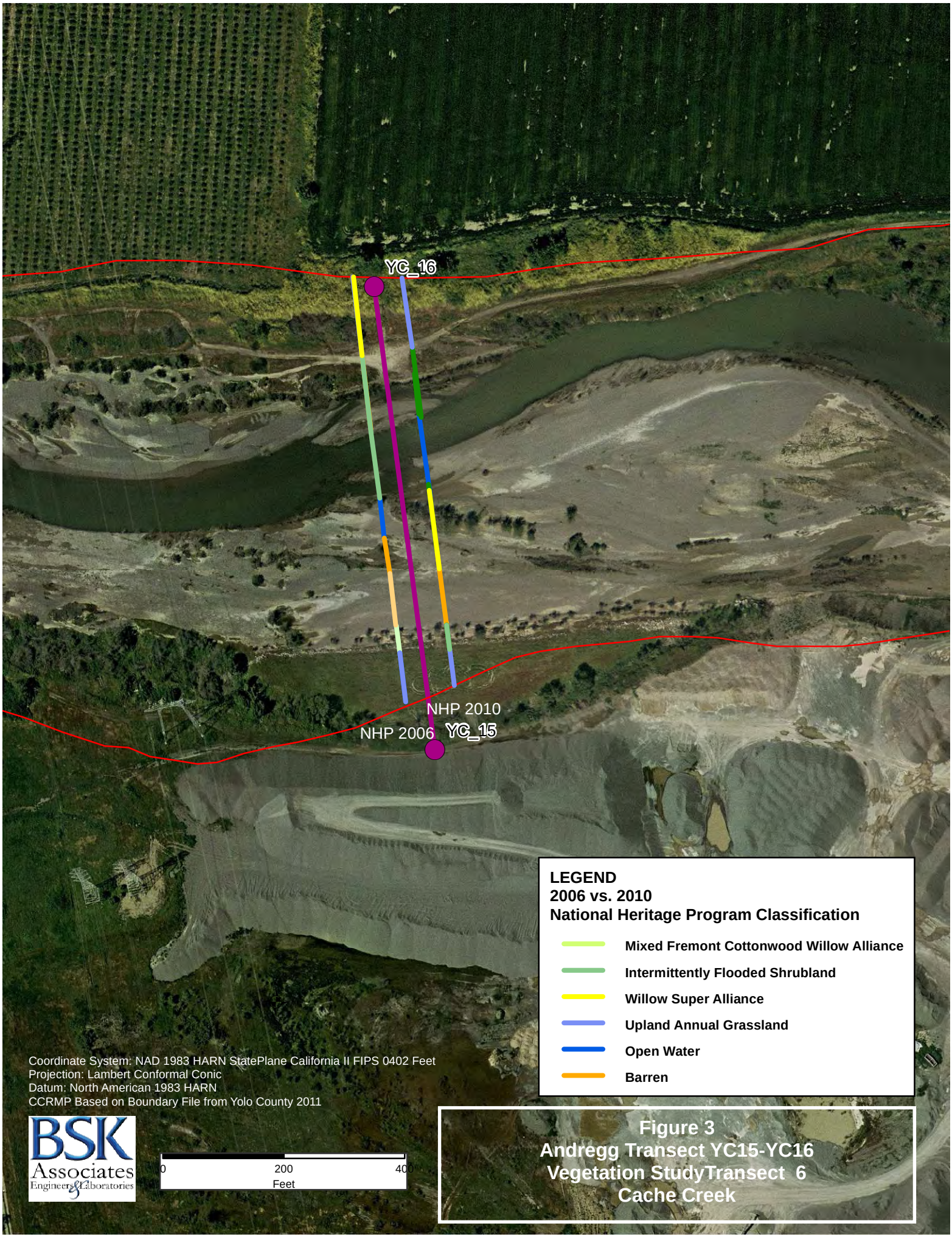
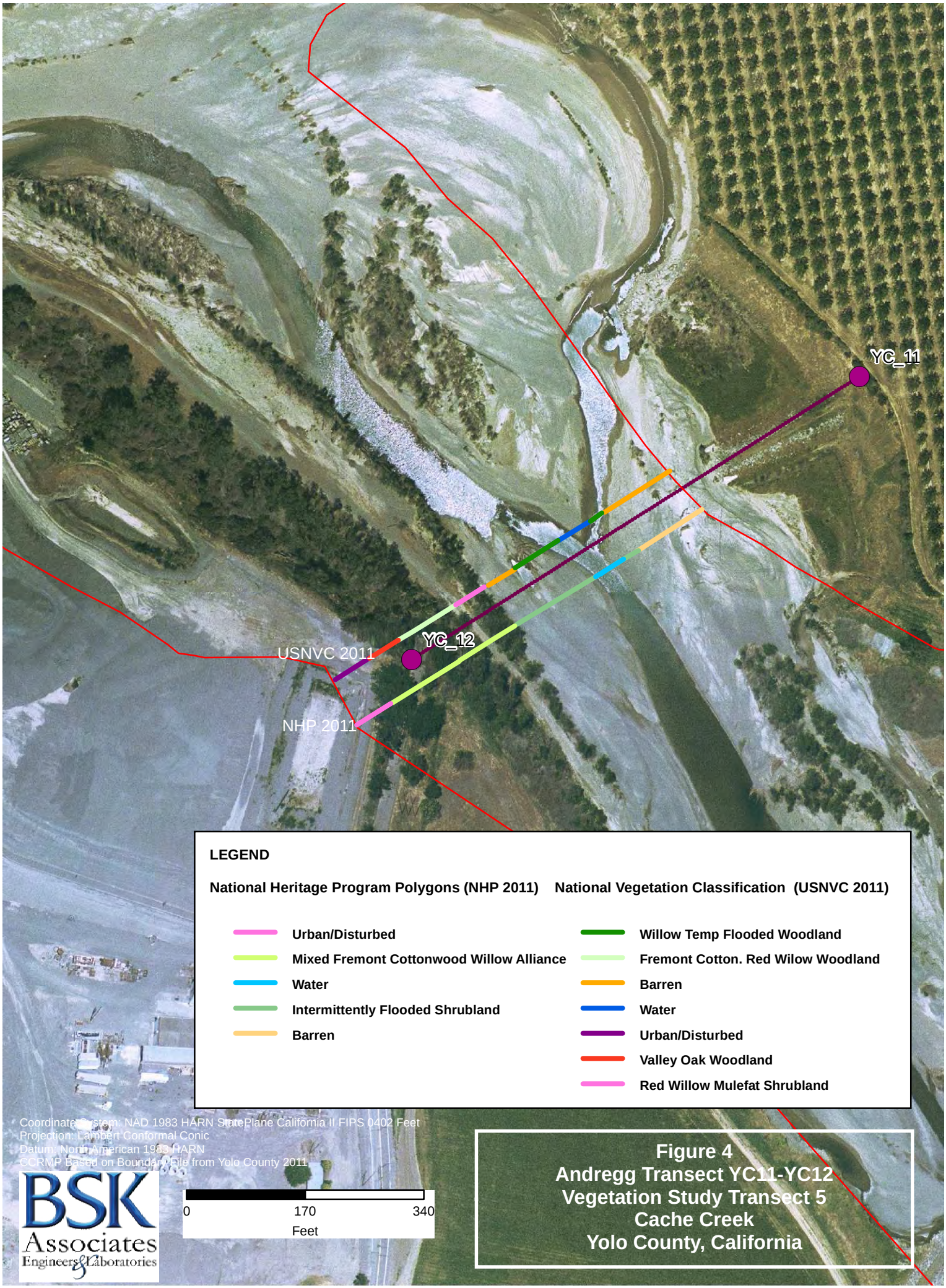


Figure 3
Andregg Transect YC15-YC16
Vegetation StudyTransect 6
Cache Creek


YC_11
YC_12
USNVC 2011
NHP 2011
LEGEND
National Heritage Program Polygons (NHP 2011)
Urban/Disturbed
Mixed Fremont Cottonwood Willow Alliance
Water
Intermittently Flooded Shrubland
Barren
National Vegetation Classification (USNVC 2011)
Willow Temp Flooded Woodland
Fremont Cotton. Red Wilow Woodland
Barren
Water
Urban/Disturbed
Valley Oak Woodland
Red Willow Mulefat Shrubland
Coordinate System: NAD 1983 HARN StatePlane California II FIPS 0402 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983 HARN
CCRMP Based on Boundary File from Yolo County 2011
0
170
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Feet
BSK Associates Engineers & Laboratories
Figure 4
Andregg Transect YC11-YC12
Vegetation Study Transect 5
Cache Creek
Yolo County, California

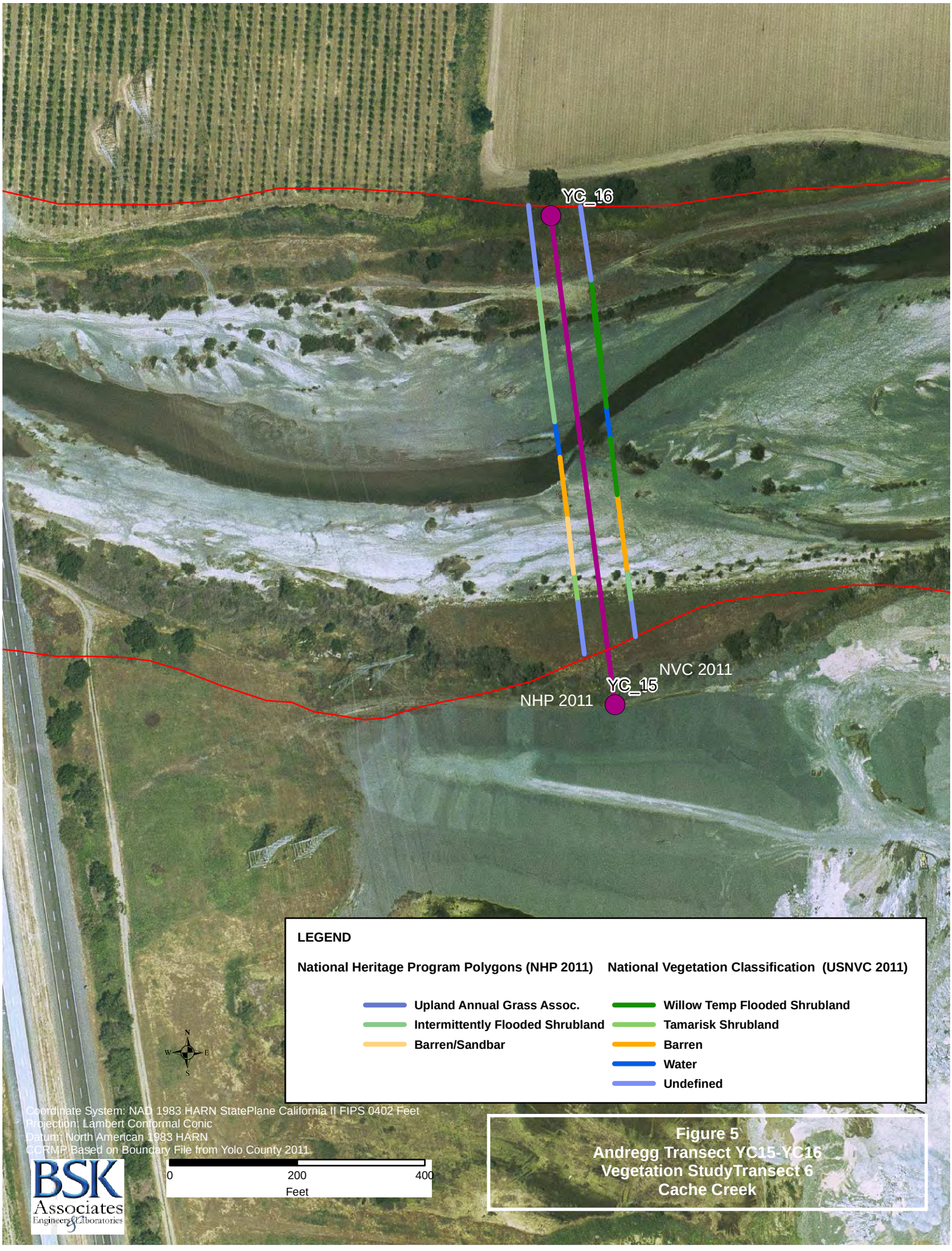

Figure 5
Andregg Transect YC15-YC16
Vegetation StudyTransect 6
Cache Creek

W 121°57'3.07"W E 121.57'3.882"W
38°41'39.212"N 38°41'43.882.N

CNPS and CDFG Combined Vegetation Rapid Assessment and Relevé Field Form

Relevé or Rapid Assessment (circle one) (Revised May 13, 2011)

For Office Use:	Final database #:	Final vegetation type name:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION

Polygon/Stand #:	Air photo:	Date:	Name(s) of surveyors (circle recorder):
15-16		8-23-2011	E. Kingsbury, K. Fritsch, V. Rentdl

GPS wypt #: _____ GPS name: _____ Datum: _____ or NAD83. Bearing, left axis at SW pt_____ (degrees) of Long / Short side

UTME ___ ___ ___ ___ ___ ___ UTMN ___ ___ ___ ___ ___ ___ ___ Zone: 10 / 11 (circle one) Error: ±_____ ft / m / pdop

GPS within stand? Yes / No If No, cite from waypoint to stand, distance _____(meters) & bearing _____(degrees)

Elevation: ft / m Camera Name/Photograph #'s:

Stand Size (acres): <1, 1-5, >5 | Plot Size (m^2): 10 / 100 / 400 / 1000 | Plot Shape ___ x___ ft / m or Circle Radius____ft / m

Exposure, Actual °: _____ NE NW SE SW Flat Variable All | Steepness, Actual °: _____ 0° 1-5° 5-25° > 25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ Soil Texture code: _____ | Upland *or* Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H20:____ BA Stems:____ Litter: ____ Bedrock:____ Boulder:____ Stone:____ Cobble:____ Gravel:____ Fines:____ =100%

% Current year bioturbation _____ Past bioturbation present? Yes / No | % Hoof punch _____

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Disturbance code / Intensity (L,M,H): ____/___ ____/___ ____/___ ____/___ ____/___ "Other" _____/___

II. HABITAT AND VEGETATION DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.) Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.) % NonVasc cover:____ % Vasc Veg cover:____

% Cover - Conifer tree / Hardwood tree: ____/____ Regenerating Tree: _____ Shrub: _____ Herbaceous: _____

Height Class - Conifer tree / Hardwood tree: ____/____ Regenerating Tree: _____ Shrub: _____ Herbaceous: _____

Height classes: 01=<1/2m 02=1/2-1m 03=1-2m 04=2-5m 05=5-10m 06=10-15m 07=15-20m 08=20-35m 09=35-50m 10=>50m

Species, Stratum, and % cover. Stratum categories: T=Tree, S = Shrub, H= Herb, E = SEedling, A = SApling, N= Non-vascular.
% cover intervals for reference: <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, 75%.

Strata	Species	% cover	C	Strata	Species	% cover	C
H	Swamp pickleweed	1-5		H	Avena fatua	1-5	
S	Salix lasiolepis	5-15		H	cynara	1-5	
H	Polygonum marginatum	1-5		S	Salix exigua	5-15	
H	VST	5-15					
H	Heliotropium europaeum	1-5					
H	Bassia salicifolia	1-5					
H	Peppergrass	1-5					
H	soft brome (hordeaceus)	1-5					

Unusual species: _____

III. INTERPRETATION OF STAND

Field-assessed vegetation alliance name: _____

Field-assessed association name (optional): _____

Adjacent alliances/direction: _____/_____, _____/_____

Confidence in alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb____ Shrub____ Tree____ Other identification or mapping information:

Is poly >1 type: Yes / No If yes, explain:

South 121°57'48.266"W
38°41'59.85"N

North 121°57'40.308"W
38°42'.3805"N

CNPS and CDFG Combined Vegetation Rapid Assessment and Relevé Field Form

Relevé or Rapid Assessment (circle one) (Revised May 13, 2011)

For Office Use:	Final database #:	Final vegetation type name:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION

Polygon/Stand #:	Air photo:	Date:	Name(s) of surveyors (circle recorder):
Transect 11-12		8-23-2011	E. Kingleberg, K. Fritsch, V Randell

GPS wypt #: _____ GPS name: _____ Datum: _____ or NAD83. Bearing, left axis at SW pt_____ (degrees) of Long / Short side

UTME _____ UTMN _____ Zone: 10 / 11 (circle one) Error: ± 5 ft / m / pdop

GPS within stand? Yes / No If No, cite from waypoint to stand, distance _____(meters) & bearing _____(degrees)

Elevation: 20-75 ft / m Camera Name/Photograph #'s:

Stand Size (acres): <1, 1-5, >5 | Plot Size (m^2): 10 / 100 / 400 / 1000 | Plot Shape ___ x ___ ft / m or Circle Radius ___ ft / m

Exposure, Actual °: _____ NE NW SE SW Flat Variable All | Steepness, Actual °: _____ 0° 1-5° 5-25° > 25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ Soil Texture code: _____ | Upland *or* Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H20: 10% BA Stems: 25 Litter: 1 Bedrock: ___ Boulder: ~ Stone: ~ Cobble: 50 Gravel: ___ Fines: 14 =100%

% Current year bioturbation _____ Past bioturbation present? Yes / No | % Hoof punch _____

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Mining Camps Comes

Transect 11-12 (5)

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT AND VEGETATION DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.) Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.) % NonVasc cover: ___ % Vasc Veg cover: ___

% Cover - Conifer tree / Hardwood tree: 0 / 5% Regenerating Tree: 10 Shrub: 10% Herbaceous: 10%

Height Class - Conifer tree / Hardwood tree: ___ / 3 Regenerating Tree: 01 Shrub: 02 Herbaceous: 01

Height classes: 01=<1/2m 02=1/2-1m 03=1-2m 04=2-5m 05=5-10m 06=10-15m 07=15-20m 08=20-35m 09=35-50m 10=>50m

Species, Stratum, and % cover. Stratum categories: T=Tree, S = Shrub, H= Herb, E = SEedling, A = SApling, N= Non-vascular.
% cover intervals for reference: <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, 75%.

Strata	Species	% cover	C	Strata	Species	% cover	C
Dominant				H	Verbena sp.	1-5	
T2	Populus fremontii	1-5	2	H2	Xanthium strumarium	5-15	3
A	Populus fremontii	5-15	3	H2	Rumex hymenosepalus	5-15	3
T3	Juglans californica hindsii	1-5	2	H2	Bahia glandulosa	5-15	3
T1	Sambucus mexicana	1-5	2	T1	Quercus lobata	1-5	2
S3	Salix lasiolepis	15-25	4	H	Cadwus pyncanthelus	1-5	2
S3	Salix exigua	5-15	3	H2	Lolium phalliformis	1-5	2
H2	Avena fatua	1-5	2	H2	Vitis californica	1-5	2
H2	Centaurea solstitis	1-5	2	S1	Tamarix spp.	1-5	2

Unusual species: Salix lasiolepis 10-15% S3 arundo 1-5 2

III. INTERPRETATION OF STAND

Field-assessed vegetation alliance name: Fremont Cottonwood, valley oak willow NFS

Field-assessed association name (optional): _____

Adjacent alliances/direction: _____/_____, _____/_____

Confidence in alliance identification: L (M) H Explain: _____

Phenology (E,P,L): Herb___ Shrub___ Tree___ Other identification or mapping information:

Is poly >1 type: Yes / No If yes, explain:

Table 3 2011 Animal and Plant Species Observed	
Common Name	**Scientific Name**
American Crow	*Corvus brachyrhynchos*
American Goldfinch	*Spinus tristis*
American Kestrel	*Falco sparverius*
American Pipit	*Anthus rubescens*
American Robin	*Turdus migratorius*
Anna's Hummingbird	*Calypte anna (Presumption)*
Bank Swallow	*Riparia riparia*
Beaver	*Castor canadensis*
Belted Kingfisher	*Megaceryle alcyon*
Black-Tailed Deer	*Odocoileus hemionus columbianus*
Black-tailed Jackrabbit	*Lepus californicus*
Barn Swallow	*Hirundo rustica*
Bobcat	*Lynx rufus*
Brewer's Blackbird	*Euphagus cyanocephalus*
California Jay	*Aphelocoma californica*
California Quail	*Callipepla californica*
Cliff Swallow	*Petrochelidon pyrrhonota*
Common Grackle	*Quiscalus quiscula*
Double-crested Cormorant	*Phalacrocorax auritus*
Downy Woodpecker	*Picoides pubescens*
Great Egret	*Ardea alba*
European Starling	*Sturnus vulgaris*
Great Blue Heron	*Ardea herodias*
Great Horned Owl	*Bubo virginianus*
Green Heron	*Butorides virescens*
House Finch	*Carpodacus mexicanus*
House Sparrow	*Passer domesticus*
Killdeer	*Charadrius vociferus*
Lesser Nighthawk	*Chordeiles acutipennis*
Mallard	*Anas platyrhyncos*
Marsh Wren	*Cistothorus palustris*
Morning Dove	*Zenaida macroura*
Northern Flicker	*Colaptes auratus*
Northern Harrier	*Circus cyaneus*
Northern Mockingbird	*Mimus polyglottos*
Osprey	*Pandion haliaetus*
Rock Pigeon	*Columba livia*
Raccoon	*Procyon lotor*
Rattlesnake	*Crotalus oreganus oreganus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Rock Dove	*Columba livia*
Song Sparrow	*Melospiza melodia*
Striped Skunk	*Mephitis mephitis*
Swainson's Hawk	*Buteo swainsoni*
Western Meadowlark	*Sturnella neglecta*
Western Sandpiper	*Calidris mauri*
White Crowned Sparrow	*Zonotrichia leucophrys*
Yellow-billed magpie	*Pica nuttalli*

Table 2 **Common Plant Species Observed**	
Common Name	**Scientific Name**
Alder	*Alnus rubra*
Arroyo Willow	*Salix laseiolepis*
Arundo	*Arundo donax*
Bearded Rye	*Lolium muliifldrum*
Bearded Sprangletop	*Leptochloa fascicularis*
Blackberry	*Rubus discolor*
Blazing Star	*Mentzelia laevicaulis*
Buckeye	*Aesculus californica*
Canadian horseweed	*Conyza canadensis*
Cattail	*Typha latifolia*
Cocklebur	*Xanthium strumarium*
Cottonwood	*Populus fremontii*
Coyote Willow	*Salix exigua*
Cuman ragweed	*Ambrosia psilostachya*
Beggars deviltick	*Bidens frondosa*
Elderberry	*Sambucus mexicanus*
English Ivy	*Hedera helix*
Fig	*Ficus sp.*
Heliotrope	*Heliotropium europeam*
Horehound	*Marrubium vulgare*
Italian ryegrass	*Lolium multiflorum*
Italian thistle	*Carduus pycnocephalus*
Milk thistle	*Sillybum marinarum*
Mugwort	*Artemesia douglasiana*
Mulefat	*Baccharis salicifolia*
Mustard	*Brassica spp.*
Narrow-leafed cattail	*Typha angustifolia*
Pacific Willow	*Salix lucida ssp. lasiandra*
Pepperweed	*Lepidium latifolium*
Poison Oak	*Toxicodendron diversilobum*
Prickly lettuce	*Lactuca serriola*
Prostate pigweed	*Amaranthus blitoides*
Purple cudweed	*Gnaphalium purpureum*
Pussyfoot	*Dalea obovata*
Rabbitsfoot grass	*Polypogon monspeliensis*
Red Willow	*Salix laevigata*
Ripgut brome	*Bromus diandrus*
Sandbar Willow	*Salix interior*
Slender Oats	*Avena fatua*
Smilo Grass	*Pipatherum milaceum*
Soft brome	*Bromus hordeaceous*
Southern California Black Walnut	*Jugans californica var. californica*
Swamp picklegrass	*Crypsis schoenoides*
Sweet white clover	*Melilotus alba*
Tamarisk	*Tamarix sp.*
Tobacco plant	*Nicotania sp.*
Tule	*Schoenoplectus acutus var.*

	occidentalis
Wild Grape	*Vitis Californica*
Wild Oats	*Avena fatua*
White Alder	*Alnus rhombifolia*
Whorehound	*Marrubium vulgare*
Yellow Star Thistle	*Centaurea solstitialis*
Yerba Sante	*Eriodictyon californicum*