Oak Woodland Restoration and Enhancement Plan

APN# 216-135-015
1200 Harris Road
Garberville, CA

Prepared by:

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August 2019

For:

MAD RIVER PROPERTIES, INC.
MCKINLEYVILLE, CA.

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1.0 INTRODUCTION AND PURPOSE

This report is intended to guide oak woodland restoration and enhancement activities to be conducted on an approximately 250-acre parcel located on Harris Road, east of the City of Garberville, CA. (APN# 216-135-015). This parcel is partially developed for agricultural uses and is accessed by a lightly rocked road which leaves Harris Road near where Harris Road crosses an unnamed tributary to Perrington Creek.

The subject parcel is largely composed of open grassland which contains a mixture of native and non-native grasses and forbs. The remainder of the area is lightly wooded. Using the Manual of California Vegetation the woodland portions may be described as; ***Quercus garryana* (Oregon white oak woodland) Woodland Alliance** and ***Quercus kelloggii* (California black oak forest) Woodland Alliance** (Sawyer 2009), with a sometimes-strong component of *Pseudotsuga mensiesii* (Douglas' fir), which occur in patches and small stands throughout the parcel. *Umbellularia californica* (California bay) and potentially two live oak species; *Quercus chrysolepis* (canyon live oak) and *Quercus wisliznii* (interior live oak) also occur in small stands or are intermixed with the other oak and fir species. The subject parcel contains several perennial watercourses and several seasonal tributaries.

Site visits for orientation and assessment of onsite conditions and habitat characteristics were conducted on 15 June and 17 August 2019.

Within the subject parcel an approximately .7-acre area of Oregon White Oak was removed and converted to agricultural space. At this time the landowner seeks to replace the oak stand and provide additional compensatory mitigation for the spatial and temporal loss of this habitat type which is considered sensitive in the state of California.

This report is the result of surveys conducted on the dates above, reviews of relevant scientific literature, and professional knowledge. Mr. Regan holds a bachelor's degree in botany and has worked as a professional botanist in Northern California (Humboldt, Trinity, and Mendocino Counties) for the past 15 years and as a wetland delineator for the past 10 years.

2.0 METHODS

2.1 Restoration Site Selection

The proposed restoration activities are limited to the .7-acre area cleared of oaks indicated on the attached Restoration Planting Map. The site formerly held a stand of Oregon white oak as evidenced by historic aerial imagery and the fact that the pile of logs left from the land clearing action are still present on site. Surrounding land is composed of a white oak and mixed oak woodland and the restoration area is suitable for the re-establishment of Oregon white oak.

2.2 Restoration Activities Considered/Chosen

Within the restoration area the only restoration activity considered or planned is the planting of Oregon white oak trees and the re-establishment of an Oregon white oak stand. The site will necessarily be prepared and planted following the implementation guidelines provided in this report. Planting guidelines and methods were primarily obtained from two publications; Regenerating Rangeland Oaks in California (McCreary 2009) and A Planner's Guide for Oak Woodlands (Giusti 2005). Both publications are included in the reference section below. These manuals provide excellent information for oak woodland management in California.

2.3 Enhancement Site Selection

To provide for additional mitigation the landowner is proposing to enhance an at least 2.8-acre area of Oregon white oak woodland. Potential sites were viewed during the two site visits and final selection was completed by interpretation of aerial imagery to locate an area of the correct size with suitable access and stand composition for enhancement activities. The selected site is shown on the Oak Woodland Enhancement Area Map, provided at the end of this report.

2.4 Enhancement Activities Considered/Chosen

Oak woodland enhancement can be achieved in several ways. Oak woodlands in California can be affected and degraded by removal of individual oak trees, introduction of invasive plants and non-native annual grasses, animal and insect pests, damage to roots and soil compaction from grading, road building, tilling, cattle movement and grazing, as well as competition from evergreen conifer species. Loss or reduction of a suitable fire regime has appeared to allow the increase of conifer recruitment and may lead to higher levels of insect and fungal pest and pathogens as well as lowering the ability of oaks to naturally regenerate. Several measures may be taken to combat these potential threats to healthy oak woodlands. **Within the selected enhancement area associated with this project the landowner will remove encroaching conifer trees as well as locate and protect naturally occurring oak seedlings.** This will serve to reduce competition for the oaks and aid natural regeneration and sustainability of the oak woodland. Oak woodland enhancement activities will be conducted under an approved Timber Harvest Plan utilizing the exemption for oak woodland restoration and enhancement, under these rules the proposed area must be evaluated by a Registered Professional Forester (RPF) and the final enhancement area boundary may change due to the results of that evaluation.

3.0 IMPLEMENTATION

3.1 Oak Woodland Restoration - .7 acres

I. Restoration Site Preparation

1. This site was terraced and fenced after the removal of oaks, prior to planting the site shall be remediated by removing fences, waterlines, and any items that will impede site preparation activities.

2. The site shall be graded, and soils and topography shall be returned to near natural conditions resembling the site character of surrounding natural areas. There is a small seasonal watercourse and a larger perennial watercourse adjacent to the site. Measures to ensure that soils or spoils do not enter the waterway must be taken during and after site preparation activities. A small berm should be placed adjacent to the seasonal watercourse to the east of the planting area to keep sediment from entering the stream. This stream crosses the access road just south of the planting site, a rocked ford or other approved crossing structure should be installed, or the stream crossing pulled in order to reduce the potential for project related sediment entering the waterway. In stream activities will require a Lake and Streambed Alteration (LSA) permit from California Department of Fish and Wildlife (CDFG). After grading and shaping the soils shall be "ripped" to relieve compaction and allow easier digging and planting of oak trees. The soil will likely need to be broken down further by hand or small equipment (such as a rototiller) as "ripping" may leave the site too rough and coarse for planting.

3. A small water tank, filled by diversion of the perennial watercourse to the west, is present on site. If allowed, this tank should be maintained for irrigation purposes and removed (if necessary) after the successful establishment of Oregon white oaks.

II. Planting Stock

1. Oregon white oak (*Quercus garryana* var. *garryana*) will be the only species planted at this location.

2. Planting stock may be acquired in several ways;

    a. On site acorn collection for sprouting and directly planting on site. This method is easy, but success rates can be down to below 60% even with proper handling and care of planted trees. Acorns are generally ripe for

collection in the early fall and should be harvested directly off the trees as fallen acorns are often damaged by desiccation or insects. The publication "Regenerating Rangeland Oaks in California" cited at the end of this report contains detailed instructions for acorn collection, processing, and sprouting.

b. On site acorn collection for sprouting and planting in containers for seedling growth prior to planting in the next season. This method requires more time, space, and effort but afford a higher success rate and allows for quality control and selection of stronger sprouts prior to out planting. Both methods above assure that the planted stock is genetically appropriate for the site and the will most likely be able to tolerate the existing site conditions and be reproductively compatible with adjacent trees.

c. Purchase of established seedlings or small trees from native plant nursery or other source for out planting on site. Care must be taken to find trees that are sourced from the appropriate area and will be compatible with the restoration site conditions.

III. Planting Methods

1. Trees or acorns shall be planted in groups of 3-5 individuals separated by 5-8 feet, these groups shall be separated from other groups by 12-20 feet in order to mimic the distribution of adjacent white oaks occurring on site. The .7-acre planting area will accommodate up to 75 groups with approximately 225-375 individual trees.

2. Seedlings or acorns should be planted in the fall, after the beginning of the wet season.

3. Planting sites will be "scalped" in a circle (2-foot radius from planting) around the planted tree. All vegetation shall be removed by shovel or hoe down to bare soils.

4. Planting holes shall be prepped prior to placing stock, holes should be wide enough to accommodate the roots, or with several inches on each side of sprouted acorns. Hole depth should be at least deep enough to hold roots on rooted stock and soils should be dug and loosened a few inches deeper to allow root growth. When planting sprouted acorns, the soil below should be dug and loosened to a depth of at least 10 inches to allow easy root growth.

5. Both sprouted acorns and seedling stock should be caged to deter herbivory by deer as well as small rodents. Cages may be made of metal hardware cloth folded into a circle, triangle, or square approximately 6" in diameter or large enough to allow insertion of seedling stems without damage and leaving some room to expand. Cages should extend above the top of the stem and should be dug into

the soil several inches to protect against burrowing animals such as gophers. Cages may be held in place by bamboo or wooden stakes. Cages will need to be removed or replaced as trees grow. Alternative cage designs may be used if appropriate, some commercially manufactured cages are available.

6. "Scalped" area around the planted seedlings or acorns shall be mulched with organic, weed and seed free mulch.

IV. Maintenance

1. The planted stock will be visited several times each year to access the condition of the restoration effort.

2. "Scalped" area around each planting will be assessed during maintenance visits. Competitive vegetation will be removed, and the mulch layer refreshed when needed. Cages shall be checked and replaced or repaired as necessary.

3. The remainder of the restoration area should be periodically weed whacked to reduce competitive grasses and forbs which compete for water and space as well as provide shelter and habitat for small mammals and insects that may predate on planted oaks.

4. Irrigation of planted stock may not be necessary. Stock planted in early fall may have developed enough root mass to have reached a sufficient water supply and survive the dry months on its own. If irrigation is necessary, it should be limited to several deep waterings done early in the summer to extend the spring moisture into the dry season. After two to three years the seedling should no longer need supplemental water. Excessive summer watering, or too frequent watering (i.e. drip irrigation) should be avoided. Over watering and keeping soils moist for too long may allow soil borne pathogens to thrive and potentially infect and damage roots of planted stock. The site shall be checked near the end of the spring and into the dry summer months to access the need for irrigation.

5. Additional saplings or sprouted acorns may be installed to replace lost or damaged trees.

6. Any fir saplings that may colonize the site shall be cut and removed from the site

7. Natural regeneration of Oregon white oak, California black oak, or live oak trees within the planted area will be allowed and may be counted toward restoration goals.

8. Any areas needing treatment for erosion control shall be seeded with native grass seed (perennial bunch grasses such as *Festuca californica* would be ideal) and mulched with a weed and seed free mulch.

3.2 Oak Woodland Enhancement – 2.8 acres

I. Enhancement Site Activities

1. Potential enhancement area will be assessed by an RPF and an approved Timber Harvest Plan utilizing the Oak Woodland Management Exemption shall be in place prior to oak woodland management and enhancement activities.

2. Within the Enhancement Area, following the appropriate Forest Practice Rules (FPRs), all Douglas' fir (*Pseudotsuga menziesii*) trees under 26 inches dbh shall be removed. Cut trees and limbs shall be lopped and scattered within the treatment area or shall be yarded to an appropriate site for piling and burning. Fir trees suitable for sale as saw logs or wood products may be transported off site for sale or manufacture.

3. If roads or skid trails are necessary for completion of the enhancement activities the roads or trails shall be planned and constructed to avoid (as feasible) all Oregon white oak root zones (an area 1.5 times the dripline of the tree) to avoid compaction and root damage of existing oak trees.

4. Operators shall be advised to avoid cutting or removing oak species during any enhancement activities unless the tree or portion of the tree poses a significant hazard.

5. Immediately following removal of fir trees and treatment of woody debris and slash the area shall be surveyed for the presence of young oak saplings and seedling trees. These trees shall be tallied, marked in the field, and the location placed on a map for yearly monitoring, if present.

II. Enhancement Site Maintenance

1. No irrigation is proposed for this area

2. Any fir saplings that may colonize the site and noted during monitoring or maintenance visits shall be cut and removed from the site or lopped and scattered as per FPRs

3. Any areas needing treatment for erosion control shall be seeded with native grass seed (perennial bunch grasses such as *Festuca californica* would be ideal) and mulched with a weed and seed free mulch.

4. After the first year, additional oak seedlings or saplings that arise or are located during monitoring or maintenance visits shall be noted and included in yearly monitoring reports.

4.0 MONITORING

4.1 Restoration Area Monitoring

I. Responsible Parties

Monitoring visits and subsequent reporting shall be done by a qualified biologist, Registered Professional Forester (RPF), or a qualified designee of such.

II. Timing

Two monitoring visits shall be conducted in the first season of restoration activities. One visit during or immediately after site prep activities while equipment is still on site, this will allow small corrections to be done while equipment is present. The second visit will be done after the initial planting and installation of protective cages. At this time a final count of planted trees shall be recorded and used as a baseline for monitoring success criteria for restoration activities. Site preparation and planting shall be evaluated and recorded by photograph and details included in yearly monitoring reports.

The monitoring period shall commence at the start of restoration activities and shall extend for at least five (5) years pending the successful completion of restoration activities and the achievement of restoration goals.

Yearly monitoring visits shall occur each year and after the first year shall be conducted at the end of spring and the beginning of the summer season (May-early June) or once adjacent trees have begun putting out leaves and new shoots for the season.

III. Restoration Goals

Success criteria for this project is the successful establishment of Oregon white oaks within the .7-acre treatment area. Success will be reached when at least 75% of planted oak trees have survived and become established on site.

IV. Monitoring Data

During each monitoring visit each planted tree will be evaluated for health and vigor, live trees showing growth will be counted as live, while trees that are obviously dead will be counted as failed. Photo monitoring will be conducted by taking representative pictures from several permanent photo points and comparing year to year. Trees damaged or dead due to herbivory, damage, or disease will be noted and replaced.

Invasive plant species found in the treatment area will be noted and evaluated for removal.

After each monitoring visit the landowner shall be contacted and maintenance issues will be discussed and a plan for maintenance prior to the next monitoring visit will be created. It is the responsibility of the landowner or designee to maintain all sites and structures noted in this report. Maintenance may include the removal of invasive plant species.

V. Monitoring Report

A monitoring report summarizing the efforts for the year, potential problems or changes needed, project compliance with implementation plan, and success of restoration goals shall be prepared and delivered each year by September 15. This report shall be completed by a qualified biologist, RPF, or their qualified designee.

4.2 Enhancement Area Monitoring

I. Responsible Parties

Monitoring visits and subsequent reporting shall be done by a qualified biologist, Registered Professional Forester (RPF), or a qualified designee of such. An RPF or their designee is necessary to evaluate the enhancement area both prior to and post timber harvest for compliance with the California Forest Practice Rules while a qualified biologist may conduct monitoring for oak regeneration and oak woodland enhancement.

II. Timing

The monitoring period shall commence at the start of enhancement activities and shall extend for at least five (5) years pending the successful completion of enhancement activities and the achievement of enhancement goals.

Yearly monitoring visits shall occur each year and after the first year shall be conducted at the end of spring and the beginning of the summer season (May-early June) or once adjacent oak trees have begun putting out leaves and new shoots for the season.

III. Enhancement Goals

Enhancement goals are the removal of competing fir trees and the evaluation of natural regeneration within the treatment area.

IV. Monitoring Data

Monitoring data will include an evaluation of the removal of Douglas' fir trees and an evaluation of naturally regenerating oaks. The treatment area will be walked/surveyed by

qualified personal. Remaining fir trees (over 26' dbh) will be counted and mapped, any remaining fir trees or saplings under 26' dbh shall also be counted and mapped. Oak seedlings or saplings, regardless of species, shall be counted and mapped. Yearly counts of fir and oak saplings will be compared. Oak sapling/seedling health and vigor will be evaluated. Oak and fir sapling/seedlings shall be marked in the field.

Invasive plant species found in the treatment area will be noted and evaluated for removal.

After each monitoring visit the landowner shall be contacted and maintenance issues will be discussed and a plan for maintenance prior to the next monitoring visit will be created. It is the responsibility of the landowner or designee to maintain all sites and structures noted in this report. Maintenance within the enhancement area may include the removal of Douglas' fir seedlings and saplings, removal of invasive plant species, or the maintenance of oak seedlings if deemed necessary.

V. Monitoring Report

A monitoring report summarizing the efforts for the year, potential problems or changes needed, project compliance with implementation plan, and success of restoration goals shall be prepared and delivered each year by September 15. This report shall be completed by a qualified biologist, RPF, or their qualified designee.

5.0 INVASIVE PLANT MANAGEMENT

Invasive plants are defined as plants that are not native to an environment, and once introduced, they establish, quickly reproduce and spread, and cause harm to the environment, economy, or human health (CAL-IPC 2019).

The California Invasive Plant Council (CAL-IPC) has produced a ranked list of invasive species in California, all listed plants should be considered when planning for invasive plant control but those rated as "High" have been found to be the most aggressive and potentially the most difficult to control. These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically (CAL-IPC 2019). A list of CAL-IPC "High" rated plants that are a concern for Humboldt County is included as Appendix B.

If any of the CAL-IPC "High" ranked invasive plants are noted within either the restoration area or the enhancement area they will be mapped and evaluated for removal.

5.1 Restoration Area

Invasive plant removal within the restoration area may only be accomplished by manual methods (hand tools only), no herbicide application or mechanical removal (heavy equipment) shall be done within the restoration area. If invasive plants with the potential to colonize the site are noted outside the restoration area, other removal methodologies (as feasible and applicable) shall be evaluated.

5.2 Enhancement Area

Invasive plant removal within the enhancement area may be accomplished by hand removal or herbicide application (as feasible) and shall only be done within 25 feet of any oak seedlings or saplings located during monitoring or maintenance visits performed for this project. If herbicide application is used, seedling/sapling oaks shall be shielded, and no herbicide shall be applied within three (3) feet of the seedling or sapling oak. Removal of weeds within the three (3) foot area surrounding the seedling or sapling oaks will be accomplished by hand tools.

6.0 TERMS AND CONDITIONS

This report and accompanying maps and data should be transmitted to the reviewing agents for review and included in any application for permits necessary for completion of any proposed development projects on the subject property.

This report is based on conditions observed and recorded in June and August 2019. This report has not been reviewed nor has concurrence with the conclusion been obtained. Verification by agencies may be necessary in the future. Land use practices and regulations can change thereby affecting current conditions and results described herein.

This report was prepared for exclusive use; consultants are not liable for any actions arising out of the reliance of any third party on the information contained in this report.

Please call with any questions or comments.

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7.0 REFERENCES

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepson Manual: Vascular Plants of California, second edition. University of California Press, Berkeley.

California Department of Fish and Wildlife, Natural Diversity Database. April 2018. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication. 127 pp.

California Invasive Plant Council Website Accessed July 2019.

Cal-IPC. 2006. California Invasive Plant Inventory. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. Available: www.cal-ipc.org

[CDFG] California Department of Fish and Game. 2018. "Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" State of California.

Circuit Rider Productions, Inc. (CRP). October 2003. *CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL, PART XI RIPARIAN HABITAT RESTORATION*, under a grant agreement with the California Department of Fish and Game

CNPS (California Native Plants Society). 2018. *Inventory of Rare and Endangered Plants*. (on-line edition, v8-01a). California Native Plant Society. Sacramento, CA.

Giusti, G.A., D.D. McCreary, R. B. Staniford. 2005. A Planner's Guide for Oak Woodlands Second Edition. University of California Agriculture and Natural Resources. Oakland, CA.

Hickman, J.C. (ed.) 1993. *The Jepson Manual: Higher Plants of California.* University of California Press. Berkeley and Los Angeles, CA.

Holland, V. L., and D. J. Keil. 1995. California vegetation. Kendall/Hunt Publishing Co., Dubuque, IA.

Humboldt County Weed Management Area. 2010. Invasive Weeds of Humboldt County: A Guide for Concerned Citizens (2nd Edition). Arcata, California.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

McCreary, D.D. 2009. Regenerating Rangeland Oaks in California. University of California Agriculture and Natural Resources. Oakland, CA.

Mercel, M.K. and R.W. Lichvar. 2014. *Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States*. US Army Corps of Engineers (ACOE), August 2014.

Sawyer, J.O. ,T.Keeler-Wolf, and, J.M. Evens. 2009. *A Manual of California Vegetation, 2nd edition*. California Native Plant Society, Sacramento,CA.

US Army Corps of Engineers (ACOE). 1987. Corps of Engineers Wetland Delineation Manual. Wetlands Research Program Technical Report Y-87-1.

US Army Corps of Engineers (ACOE). Draft Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region. Revised. 4-9-2007.

U.S. Fish and Wildlife Service and California Invasive Plant Council. 2018. Land Manager's Guide to Developing an Invasive Plant Management Plan. Cal-IPC Publication 2018-01. National Wildlife Refuge System, Pacific Southwest Region, Inventory and Monitoring Initiative, Sacramento, CA. California Invasive Plant Council, Berkeley, CA. Available at www.cal-ipc.org and data.gov.

U. S. Fish and Wildlife Service. August 2019. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/

USFWS. 2010. *Integrated Pest Management Policy*. No. U.S Fish and Wildlife Service Policy 569 FW1.

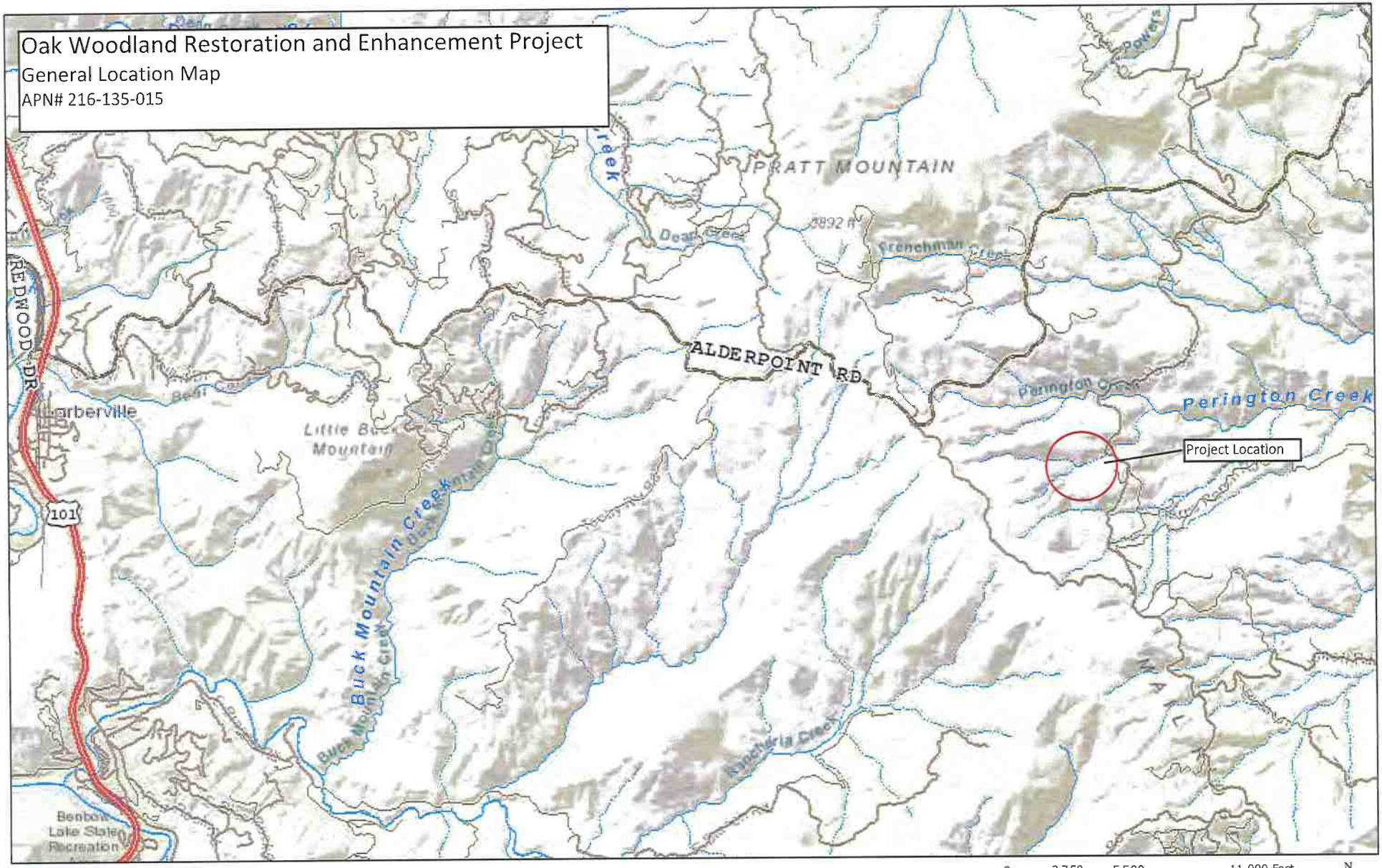
Appendix A

General Location Map
USFWS Wetland Location Map
Humboldt County Parcel Map (Topo)
Humboldt County Parcel Map (Ortho w/SMA)
Restoration Area Map
Oak Woodland Enhancement Area Map

Oak Woodland Restoration and Enhancement Project

General Location Map

APN# 216-135-015



Humboldt County Planning and Building Department

Printed: August 25, 2019

Web AppBuilder 2.0 for ArcGIS

Map Disclaimer:
While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Highways and Roads

- Principal Arterials
- Minor Arterials
- Major Collectors
- Minor Collectors
- Local Roads

- Private or Unclassified
- Major River or Stream

Blue Line Streams

- Perennial 1-3
- Perennial >4

- Intermittent
- Subsurface

- City Boundary
- City Boundary (750K)
- Counties

0 2,750 5,500 11,000 Feet

0 0.5 1 2 Miles

RF= 1:72,224 1 in = 6,019 ft

N W E S

Sources: Humboldt County GIS

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

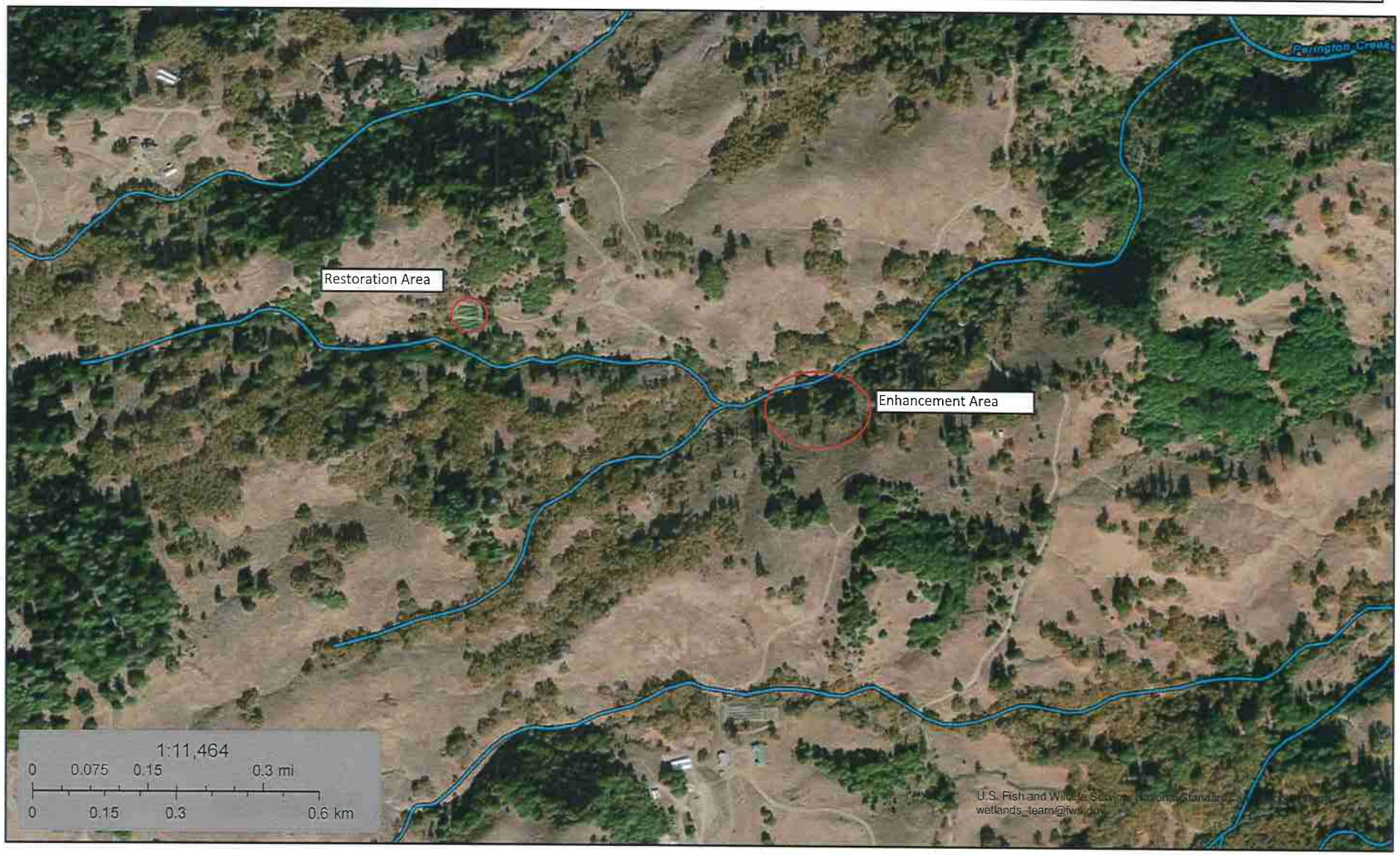
U.S. Fish and Wildlife Service

National Wetlands Inventory

Oak Woodland Restoration and Enhancement Project

USFWS Wetland Map

APN# 216-135-015



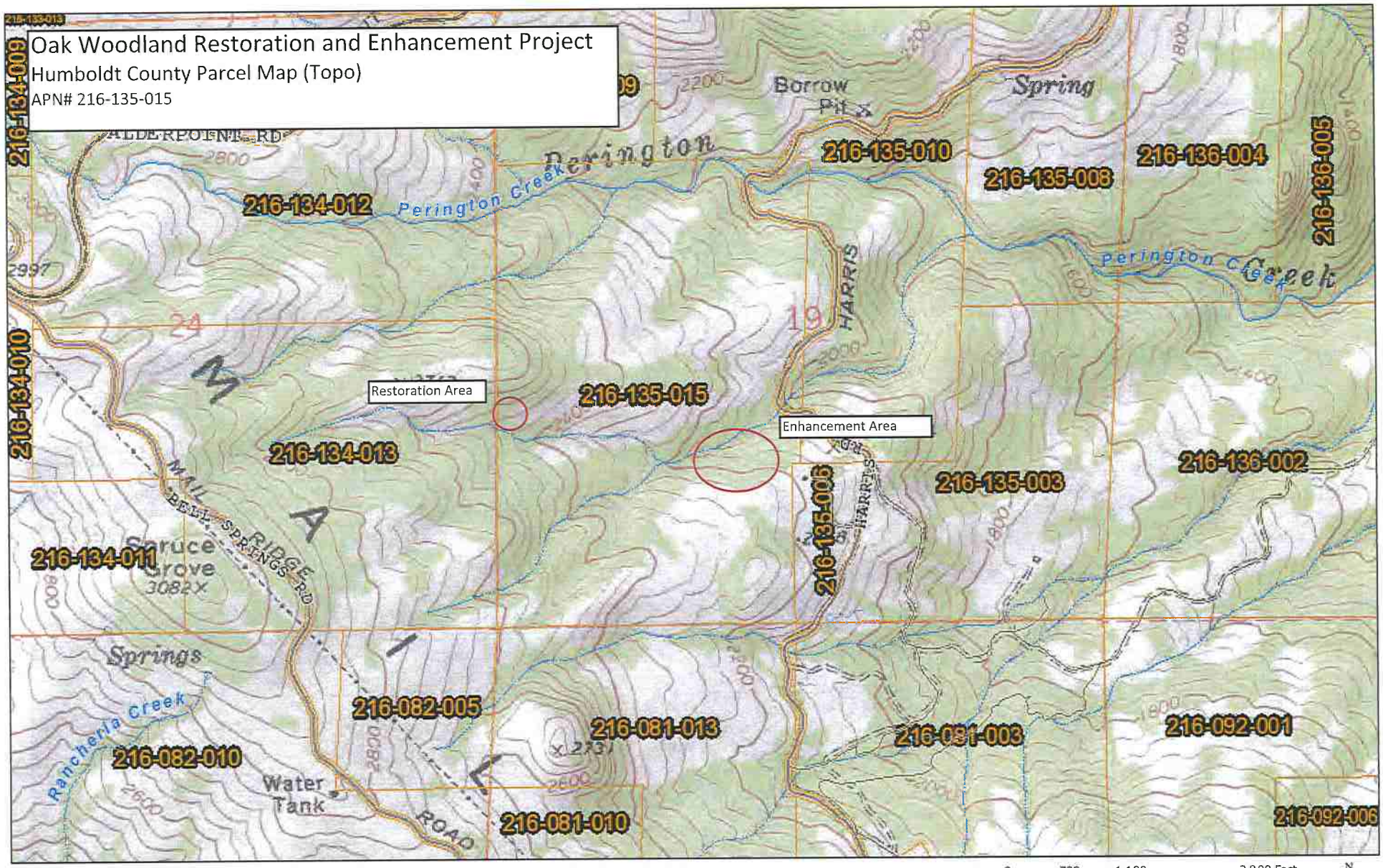
August 25, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper



JA TopoMap - Oaks

Humboldt County Planning and Building Department

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Highways and Roads
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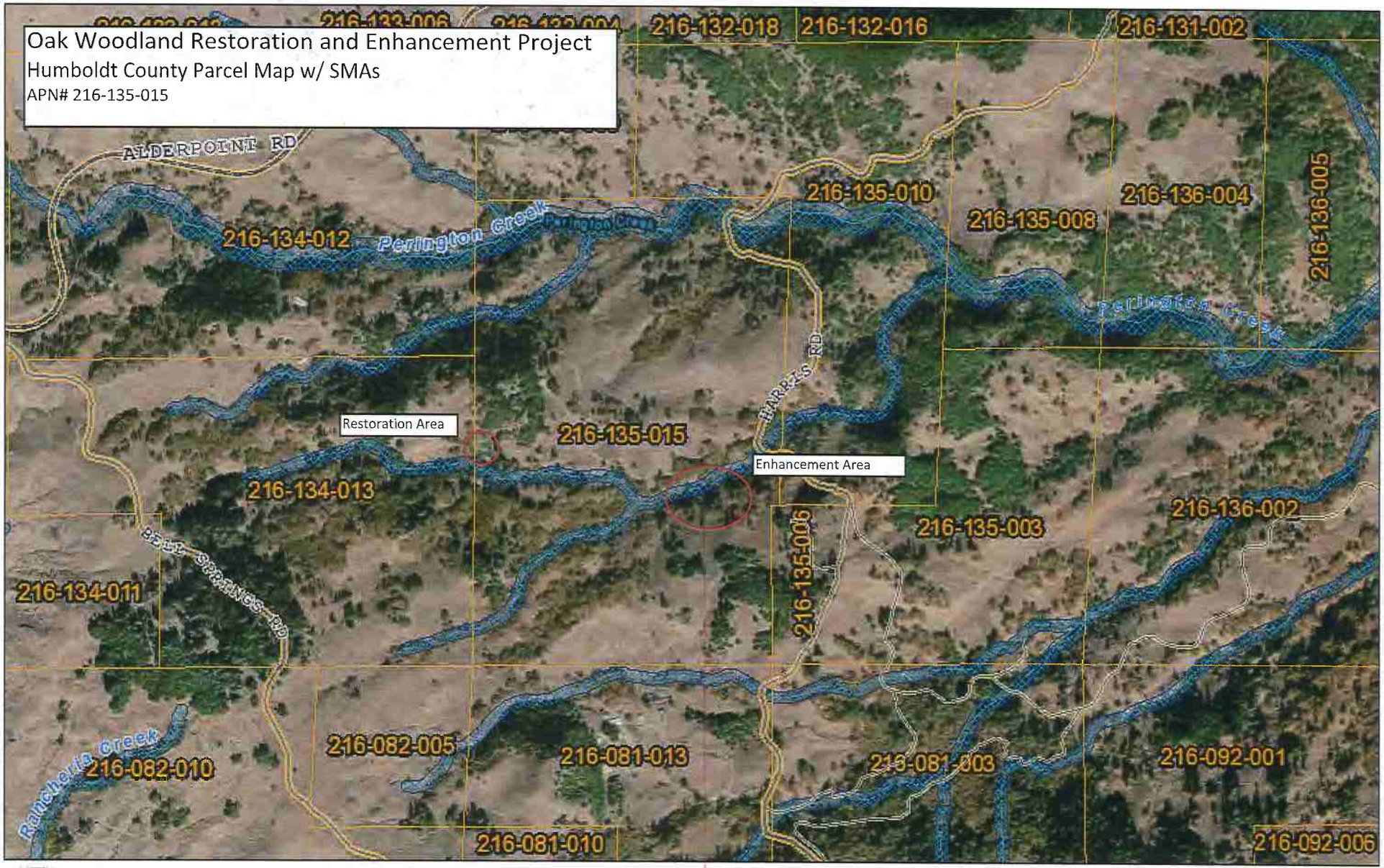
- Perennial >4
- Intermittent
- Subsurface

- City Boundary
- City Boundary (750K)
- Counties
- Parcels

0 700 1,400 2,800 Feet
0 0.125 0.25 0.5 Miles
RF= 1:18,056 1 in = 1,505 ft

N W E S

Sources: NRCS
Humboldt County GIS
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS. NRCAN. GeoBase, IGN. Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



JA Ortho-SMA - Oaks

Humboldt County Planning and Building Department

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Highways and Roads
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0 0.125 0.25 0.5 Miles
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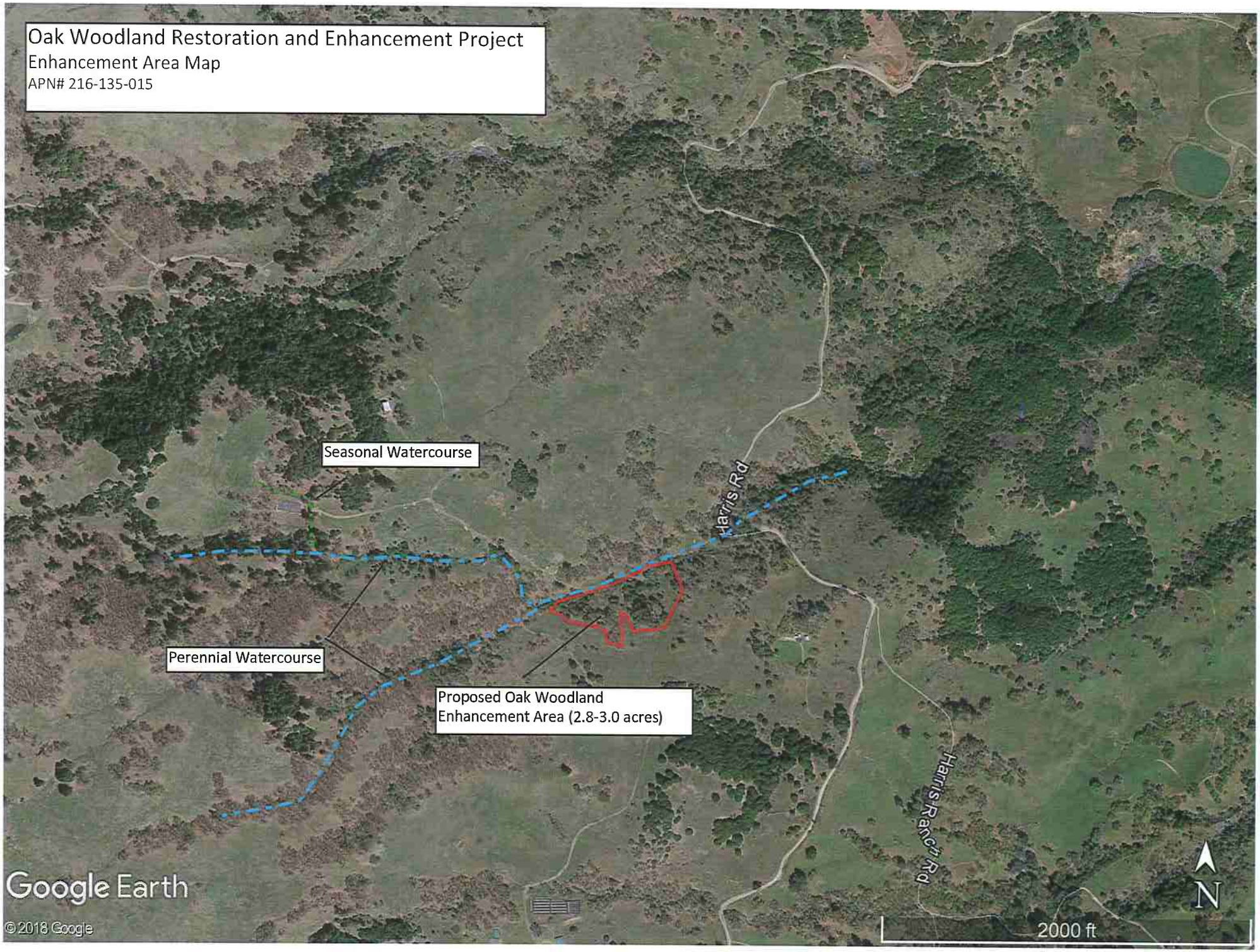
N W E S

Sources: NRCS
Humboldt County GIS
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Oak Woodland Restoration and Enhancement Project
Restoration Area Map
APN# 216-135-015
Potential berm to prevent sediment from entering the watercourse
Install approved crossing or decomission after site preparation.
Seasonal Watercourse
Restoration Area (.7-acre)
Area inside the red polygon shall be ripped and shaped prior to planting.
Google Earth
N
100 ft


Oak Woodland Restoration and Enhancement Project
Enhancement Area Map
APN# 216-135-015
Seasonal Watercourse
Harris Rd
Perennial Watercourse
Proposed Oak Woodland
Enhancement Area (2.8-3.0 acres)
Harris Ranch Rd
Google Earth
© 2018 Google
N
2000 ft

Appendix B

Invasive Plant List

Scientific Name	Common Name	Rating
Aegilops triuncialis	barb goatgrass	High
Alternanthera philoxeroides	alligatorweed	High
Ammophila arenaria	European beachgrass	High
Arundo donax	giant reed	High
Brassica tournefortii	Sahara mustard, Morrocan mustard	High
Bromus madritensis ssp. rubens	red brome, foxtail chess	High
Bromus tectorum	cheatgrass, downy brome	High
Carpobrotus edulis	highway iceplant	High
Centaurea maculosa, Centaurea stoebe ssp. micranthos	spotted knapweed	High
Centaurea solstitialis	yellow starthistle	High
Cortaderia jubata	jubatagrass, pampasgrass	High
Cortaderia selloana	pampasgrass, white pampasgrass	High
Cytisus scoparius	Scotch broom, English broom	High
Delairea odorata	Cape-ivy, German ivy	High
Egeria densa	Brazilian egeria, egeria	High
Ehrharta calycina	purple veldtgrass, African veldtgrass	High
Eichhornia crassipes	water hyacinth,	High
Foeniculum vulgare	Fennel, sweet Fennel	High
Genista monspessulana	French broom, soft broom	High

Scientific Name	Common Name	Rating
Hedera helix, H. canariensis	English ivy and Algerian ivy	High
Hydrilla verticillata	hydrilla, water thyme	High
Lepidium latifolium	perennial pepperweed, tall whitetop	High
Limnobium laevigatum	South American spongeplant, West Indian spongeplant	High
Ludwigia hexapetala	creeping waterprimrose, Uruguay waterprimrose	High
Ludwigia peploides	creeping waterprimrose, California waterprimrose	High
Lythrum salicaria	purple loosestrife	High
Myriophyllum aquaticum	parrotfeather, Brazilian watermilfoil	High
Myriophyllum spicatum	spike watermilfoil	High
Onopordum acanthium	scotch thistle, cotton thistle	High
Rubus armeniacus	Himalayan blackberry	High
Salvinia molesta	giant salvinia, karibaweed	High
Sesbania punicea	scarlet wisteria, red sesbania	High
Spartina alterniflora x foliosa, S. alterniflora	smooth cordgrass and hybrids	High
Spartina densiflora	dense-flowered cordgrass, Chilean cordgrass.	High
Spartium junceum	Spanish broom	High
Taeniatherum caput-medusae, Elymus caput-medusae	medusahead	High
Tamarix parviflora	smallflower tamarisk	High
Tamarix ramosissima, T. gallica, T. chinensis	saltcedar, tamarisk	High

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Ulex europaeus	gorse, common gorse	High