ENVIRONMENTAL CHECKLIST FORM

NOTE: The following is a sample form that may be tailored to satisfy individual agencies' needs and project circumstances. It may be used to meet the requirements for an initial study when the criteria set forth in CEQA Guidelines have been met. Substantial evidence of potential impacts that are not listed on this form must also be considered. The sample questions in this form are intended to encourage thoughtful assessment of impacts, and do not necessarily represent thresholds of significance.

1. Project title: Beale WAPA Interconnection Project

2. Lead agency name and address:

None. The checklist was completed by third-party CEQA Preparer; it has not been reviewed by a CEQA agency and was prepared to support future CEQA compliance activities.

3. Contact person and phone number: None. See above.

4. Project location: The project is located partially within Beale Air Force Base (AFB) and private lands west of Beale AFB in Yuba County, California. Specifically, it is located within Section 13 of Township 15 North, Range 4 East, and Section 18 of Township 15 North and Range 5 East.

5. Project sponsor's name and address:

Western Area Power Administration (WAPA) and Beale AFB are joint agencies sponsoring the project. Beale AFB requested interconnection from WAPA. Both agencies will construct, own, and operate portions of the Proposed Action.

6. General plan designation: Natural Resources

7. Zoning: Agricultural Exclusive (AE-80)

8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)

The U.S. Air Force (USAF), through Beale Air Force Base (AFB), herein Beale AFB, requests that the Western Area Power Administration (WAPA) provide interconnection to WAPA's Cottonwood-Roseville transmission line in Yuba County, California. The Project, referred to as the Beale WAPA Interconnection Project (Project), would include a new 230-kilovolt (kV)/60-kV transmission line that would extend approximately 5 miles from its connection point at the existing WAPA Cottonwood-Roseville transmission line located east of Yuba City and would terminate on Beale AFB at an existing substation.

Project facilities would include a new 230-kV overhead transmission line, a new substation located on Beale AFB, and an underground 60-kV line. WAPA would construct, own, operate, and maintain the 230-kV overhead portion of the Project up to and including the new substation; Beale AFB would construct, own, operate, and maintain the 60-kV portion up to and including the existing substation where the Project terminates. Three alternative alignments are being considered, including the Preferred Alternative (also referred to as the Northern B Alternative), the Northern A Alternative, and the Southern Alternative.

The Preferred Alternative, for the purposes of CEQA shall be considered the Proposed Action, totals approximately 4.3 miles of transmission line (approximately 0.9 mile located off Beale AFB and 3.4 miles on Beale AFB). It would consist of approximately 1.8 miles of overhead installation (0.9 mile off Beale AFB and 0.9 mile on Beale AFB) and 2.5 miles of underground installation (all on Beale AFB boundaries).

An Environmental Assessment was prepared for the Project (Transcon 2020); see Chapter 2 for additional information about the Proposed Action, including the alignment, facility specifications, and construction methods.

9. Surrounding land uses and setting: (Briefly describe project's surroundings)

The Proposed Action occurs on Beale AFB land and private agricultural lands. Within Beale AFB, the alignment is surrounded by somewhat urban development and Beale AFB infrastructure, except on the western extent, which crosses an undeveloped area of land occupied by water features and grasslands. The alignment extends west from Beale AFB across private land, which consists of agricultural areas, primarily rice and alfalfa fields.

10. Other public agencies whose approval is required: (e.g., permits, financial approval, or participation agreement.)

Yuba County must approve an encroachment permit for work within County roadways and a Conditional Use Permit for development of the project on lands zoned AE-80. The USAF Air Force Civil Engineering Center must approve funding. The U.S Fish and Wildlife Service would complete Section 7 consultation with Beale AFB, and the State Historic Preservation Officer would complete Section 106 consultation with WAPA (WAPA and Beale AFB shared consultation efforts on the project as part of their joint-lead responsibilities). The State Water Quality Control Board will be engaged as necessary, after final engineering is complete, regarding waterway impacts.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Native American tribes were contacted under Section 106 of the National Historic Preservation Act. WAPA lead consultation efforts, and no tribes requested consultation.

NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture / Forestry Resources	☒ Air Quality
☒ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities / Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the Proposed Action COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the Proposed Action could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLATION will be prepared.

☐ I find that the Proposed Action MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the Proposed Action MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the Proposed Action could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLATATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLATATION, including revisions or mitigation measures that are imposed upon the Proposed Action, nothing further is required.

_______________________________ _______________________________

Signature *Date*

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impacted simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors, as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.

4. “Negative Declaration: Less Than Significant with Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.

5. Earlier analyses may be sued where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analyses Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extend to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS. Expect as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

a) Have a substantial adverse effect on a scenic vista?

No impact: There are no scenic viewpoints or vistas within 10 miles of the Project area, nor are there scenic highways within 20 miles of the project area. None of the Project facilities are tall enough to have an impact on the viewshed at a distance of 10 miles or greater.

b) Substantially damage scenic resources, including, but not limited to: trees, rock outcroppings, and historic buildings within a state scenic highway?

No impact: There are no state scenic highways within 20 miles of the Project area nor any other known scenic resources, including trees, rock outcroppings, or historic buildings.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less than significant impact: The visual characteristics of the private lands within the western portion of the Proposed Action area and the surrounding visual resources study area can be described as open, flat, agricultural, and lightly developed with a rural residential character. There are some existing electrical transmission and distribution lines in the context of the existing visual environment. No designated scenic viewpoints are located within a 10-mile radius of the Proposed Action area and thus no impacts to an established scenic vista or scenic viewpoint would occur. The nearest recreation area to the Proposed Action is the Spenceville Wildlife Area, which borders Beale AFB on the east and is located about 10 miles from the Proposed Action area.

Short term impacts (construction)
During the construction phase, the visual character of the project site would be disrupted. Construction activities, graded surfaces, construction equipment, and truck traffic would be visible.

Long term impacts
The Proposed Action would alter the appearance of the project site through the construction of utility poles. However, because power lines are already present in the project area, the Proposed Action is not expected to substantially degrade the visual quality of the project area. Impacts from short term and long term activities on the visual character of the site and its surroundings would be less than significant.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less than significant impact: The Proposed Action would not create any new source of substantial light or glare. Day and nighttime views would be similar to their pre-construction state. Impacts would be less than significant.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agriculture resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

<u>Less than significant impact:</u> On the private lands that would be impacted by the Proposed Action, all of the land that is not within the developed footprint of existing roads, houses, or agricultural buildings is classified as either Unique Farmland or Farmland of Statewide Importance, and is thus recognized as Important Farmland by the California DOC (DOC 2019). The project does not intersect any areas designated as Prime farmland (DOC 2019). All areas affected by construction activities would be restored and returned to agricultural production subsequent to construction by agreements with private landowners.

Short term impacts
For the construction period, WAPA would negotiate compensated non-planting agreements with affected farmers for their lands, so that construction could proceed without creating safety risks. The project would include the temporary non-use of approximately 260 acres of Important Farmland for a period of 16 months.

Long term impacts
The Proposed Action's long-term impacts to Important Farmland would result from the permanent conversion of 0.061 acre of Important Farmland that would be dedicated to the footings for either the monopoles or the H-frame structures. This amounts to an insignificant loss of important farmland (0.000071 percent of the important farmland in Yuba County).

None of the federal lands of Beale AFB within the study area are classified as Important Farmland (DOC 2019).

With consideration of the mitigated short term impacts and the small amount of land that would be converted to non-agricultural use in the long term, impacts would be considered less than significant with mitigation incorporated.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

<u>No impact:</u> No Williamson Act contracts exist within the Project area, as Yuba County does not offer Williamson Act contracts.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

<u>No impact:</u> There is no forest land, timberland, or timberland-zoned area within the Project area.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

<u>No impact:</u> There is no forest land, timberland, or timberland-zoned area within the Project area that could be lost due to Project development.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

<u>No impact:</u> There are no Project activities that would result in conversion of farmland to non-agricultural use.

III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

a) Conflict with or obstruct implementation of the applicable air quality plan?

<u>Less than significant impact with mitigation incorporated:</u> The Proposed Action would not conflict with or obstruct with the implementation of any applicable air quality plan if all required measures from the Feather River Air Quality Management District (FRAQMD) Indirect Source Review (ISR) guidelines. The guidelines provide Standard Minimization Measures for “Type 1 Projects” (i.e. projects with a construction phase followed by an operational phase), plus additional mitigation measures for projects that result in more than 80 lbs./day of PM_{10}. The Proposed Action will exceed this PM_{10} threshold, so these additional measures are applicable. The following Standard Minimization Measures will be applied to the project:

- Implement the Fugitive Dust Control Plan.
- Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40 percent opacity or Ringelmann 2.0). On-road and off-road equipment shall meet the mobile source strategy requirements of the California State Implementation Plan.

- The contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of onsite operation.
- Limiting idling time to 5 minutes—saves fuel and reduces emissions (state idling rule: commercial diesel vehicles—13 CCR Chapter 10, Section 2485, effective 02/01/2005; off road diesel vehicles—13 CCR Chapter 9, Article 4.8, Section 2449, effective 05/01/2008).
- Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
- Portable engines and portable engine-driven equipment units used at the Project work site, with the exception of on-road and off-road motor vehicles, may require CARB Portable Equipment Registration with the state or a local district permit. The owner/operator shall be responsible for arranging appropriate consultations with the CARB or the district to determine registrations and permitting requirements prior to equipment operation at the site.
- All grading operations on a project should be suspended when winds exceed 20 miles per hour or when winds carry dust beyond the property line despite implementation of all feasible dust control measures.
- Construction sites shall be watered as directed by the Department of Public Works or Air Quality Management District and as necessary to prevent fugitive dust violations.
- An operational water truck should be available at all times. Apply water to control dust as needed to prevent visible emissions violations and offsite dust impacts.
- Onsite dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce windblown dust emissions. Incorporate the use of approved non-toxic soil stabilizers according to manufacturer's specifications to all inactive construction areas.
- All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions.
- Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all-inactive construction areas (previously graded areas that remain inactive for 96 hours) including unpaved roads and employee/equipment parking areas.
- To prevent track-out, wheel washers should be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out.
- Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the project site.
- Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, onsite enforcement, and signage.
- Reestablish ground cover on the construction site as soon as possible and prior to final occupancy, through seeding and watering.
- Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et. al.) may be conducted at the project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials offsite for disposal by open burning.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less than significant impact: Modeling the Proposed Action air quality impacts using the ACAM, emissions from construction activities would be less than the de minimis limits contained in 40 CFR 93.153. Construction impacts would result in approximately 32 tons of O_3 (as VOC and NO_x) and 128 tons of PM_{10} over the entire construction period. Maintenance and operational air quality impacts are considered negligible.

These impacts are not considerable enough that they would result in a violation or contribute substantially to a violation of any air quality standard. Project emissions would be dispersed in small, localized areas during project construction and would be spread throughout the construction period. Therefore, the project will have a less than significant impact on the violation of any air quality standard and would not contribute substantially to an existing or projected air quality violation.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less than significant Impact with mitigation incorporated: The CARB has designated Yuba County as a nonattainment-transitional area for 8-hour O_3 and in nonattainment for PM_{10}. Yuba County is also in federal maintenance for $PM_{2.5}$. The County is designated as unclassified/attainment for all other state and federal criteria pollutants (FRAQMD 2010).

Modeling the Proposed Action air quality impacts using the ACAM, emissions from construction activities would be less than the de minimis limits contained in 40 CFR 93.153. Construction impacts would result in approximately 32 tons of O_3 (as VOC and NO_x) and 128 tons of PM_{10} over the entire construction period. Maintenance and operational air quality impacts are considered negligible.

The general mitigation measures outlined in section (a) would adequately mitigate the effects of the PM_{10} emissions resulting for the project, which is the only type of emissions that are considered potentially significant. With mitigation incorporated, the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

No impact: The Project area is located more than 0.25 mile from any concentrated residential housing with only a few scattered homes in the vicinity. Project activities are not anticipated to generate emissions leading to odors or that are otherwise undesirable, nor would a substantial number of people be potentially affected.

IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations	☐	☐	☒	☐

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filing, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less Than Significant Impact with Mitigation Incorporated:

Vernal pool species
Portions of the project area on Beale Air Force Base contain sensitive vernal pool habitat. Two aspects of project construction have the potential to cause impacts to vernal pool crustaceans. (1) To support access to poles and a new substation, six culverts will be installed and eight culverts will be replaced at drainage ditches or vernal swales. (2) To facilitate construction of the underground portion of the project along Patrol Road, up to 1.27 miles of temporary access may be necessary on the side of Patrol Road for vehicle and equipment passing. This access will be designed to avoid vernal pool and wetland features to the extent feasible. For those areas where avoidance of vernal pool or wetland features is not possible, weight dispersion mats will be placed over the feature and removed upon completion or work in that area.

The activities described in (1) and (2) above have the potential to affect ditches and vernal swales, which are suboptimal habitat for vernal pool tadpole shrimp (a federally endangered species) and vernal pool fairy shrimp (a federally threatened species). Although individual shrimp or cysts could be affected by project activities, impacts to the viability of the local population and species will be negligible. To minimize impacts to vernal pool species, construction in these areas will occur during the dry season when the ditches and vernal swales are dry; a USFWS-approved biologist will identify the extent of vernal pools and will monitor work. Additional measures such as construction fencing, dust control, and herbicide measures are detailed in Section 4.5 of the EA.

Giant garter snake
Portions of the project area are on private land parcels currently cultivated for rice production. The rice fields and adjacent upland areas may provide suitable habitat for giant garter snake (a federal and state threatened species). Specific measures for minimizing impacts to giant garter snakes include dewatering aquatic habitat prior to ground disturbance, surveys and flagging of suitable habitat by a USFWS-approved biologist, and silt exclusion fencing during construction. A complete list of giant garter snake avoidance and minimization measures can be found in Section 4.5 of the EA.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Less Than Significant Impact: As mentioned in (a) above, culvert installation and temporary weight dispersion mat use will occur in roadside ditches and vernal swales that may support sensitive vernal pool species. Although individual organisms may be affected, the vernal habitat will be carefully preserved and adverse effects to vernal pool habitats are not expected. Effects to riparian habitat are not expected because the project has been designed specifically to avoid riparian areas.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less Than Significant Impact: On Beale AFB lands, vernal pools and other aquatic resources were delineated by Beale AFB in 2006 and field verified by Transcon Environmental in 2018 for the purposes of this review. On private lands, aquatic resources were delineated or estimated using aerial imagery, National Wetlands Inventory and National Hydrology Dataset when access to the property was not possible.

Placement of project facilities was informed by aquatic resource mapping and every effort was made to site project infrastructure outside of environmentally sensitive areas. Based on the current understanding of the planned construction activities and the conclusions of the Aquatic Resources Report (Appendix G), significant impacts to jurisdictional waters are not expected. After engineering design is complete, WAPA and Beale will coordinate with the appropriate regulatory agencies to determine which, if any, permits are required.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant Impact: The project area is surrounded by a patchwork of agricultural lands (irrigated cropland for rice, alfalfa, safflower, and corn) and lightly developed residential areas that do not provide connectivity for terrestrial wildlife migration. In addition, the fenced perimeter of Beale Air Force Base precludes the movement of terrestrial wildlife through the eastern portion of the project area. However, irrigated agricultural fields such as those in the western portion of the project area provide important habitat for waterfowl along the Pacific flyway.

In the project area, existing distribution and transmission lines pose risks to avian species due to the potential for collision and/or electrocution from high-voltage powerlines and poles. Once constructed, this project will add to those risks. However, collision and electrocution risks will be minimized through transmission line design and measures outlined in WAPA's Avian Protection Plan (WAPA 2016). The Beale airfield, which is adjacent to the project area, employs a permitted management program which seeks to minimize threats to aviation safety by deterring avian species from the area.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No impact: There are no local policies or ordinances that apply to biological resources within the Project area.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No impact: There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that apply to the Project area.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☐	☒	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

No impact: There are no historical properties or resources present under the NHPA within the area of potential effect, as determined by the cultural resources inventory. There will be no impact.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less than significant Impact: The Cultural Background and Field Strategy Report created by Transcon Environmental determined that the open grasslands of the Northern Alternatives were unlikely to contain much of an archaeological signature from prehistoric activities. No previously recorded archeological sites were found to be within the project area.

As a result of this inventory effort, seven cultural resources within or adjacent to the project area of direct impacts and four cultural resources within the project area of indirect impacts were evaluated. No other cultural resources are known to be within the project areas.

Two newly recorded archaeological sites were found to be present within the project area; Neither has been recommended as eligible for listing in the NRHP. Implementation of the Proposed Action is not likely cause a substantial adverse change in the significance of any archaeological resource.

Impacts to archaeological resources are expected to be less than significant.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less than significant impact: *No known human remains are located within the project area of the Proposed Action.* Beale AFB has made the determination that a qualified cultural resources monitor will be present during all construction trenching and tower pad preparation and excavation activities.

No barricading, monitoring, or other mitigation measures are required for the identified resources. If any previously undetected or unreported cultural features, deposits, or human remains are encountered during Project-related activities, these activities must be discontinued in the immediate area of the feature(s), and the WAPA or Beale AFB archaeologist, as appropriate, must be consulted to evaluate their nature and significance.

Impacts to human remains, including those interred outside of dedicated cemeteries are expected to be less than significant.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

a) Result in potentially significant environmental impact due to wasteful, inefficient or unnecessary consumption of energy resources?

No impact: Construction and operation of the proposed Project does not present a wasteful, inefficient, or unnecessary consumption of energy resources. It will provide greater energy security to Beale AFB as mandated by the Department of Defense Electric Power Resilience memorandum.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No impact: The proposed Project does not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Beale AFB has the ability to purchase renewable energy through WAPA to meet any mandated renewable energy requirement.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to the Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in a substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☐	☒

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.ii) Strong seismic ground shaking? iii) Seismic-related ground failure, including liquefaction? iv) Landslides?

Less than significant impact: The completed Geotechnical Report and Study for a portion of the Proposed Action found that the site is not within existing Alquist-Priolo earthquake fault zone maps as covered under the Alquist-Priolo Earthquake Fault Zoning Act. No active (Holocene time [rupture in about the last 11,000 years]) faults are mapped as crossing or running adjacent to the site. Two potentially active (Quaternary and Late Quaternary time) faults are mapped east of the site (California Geological Survey 2007). The Spenceville fault (Foothills Fault system) and Swain Ravine fault (Foothills Fault system) are mapped north-south, located approximately 5.5 miles east of the Project site. The design PGA in the vicinity of the site, in accordance with Section 1803.5.11 of the 2016 CBC, is 0.186 g (California Geological Survey 2007).

Seismic hazard zone maps indicating liquefaction potential have not been published by the California Geological Survey in the study area of the Proposed Action. Review of the data obtained during the geotechnical investigation indicates that the subsurface materials in which groundwater was encountered varied from stiff to very stiff silt with gravel and sand to dense to very dense silty gravel with sand. Groundwater was observed as shallow as 13 feet bgs in three borings. These characteristics indicate that the on-site soils are likely not susceptible to liquefaction (Beale 2018b).

The topography of the study area and surrounding region is flat (0 to 3 percent slopes), and the study area would thus not be subject to landslides. If the Proposed Action were constructed, it would not expose people to adverse effects related to the above discussion. Impacts would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less than significant impact: Clearing of vegetation associated with the Proposed Action would generally increase erosion and sedimentation potential. Implementation of BMPs such as stabilizing fill slopes from erosion and the use of erosion-control measures to filter sediment from stormwater run-off would be followed to reduce the potential for soil erosion. Standard erosion-control measures (e.g., silt fencing, sediment traps, application of water sprays, revegetation) would reduce adverse soil-related impacts associated with those activities. All temporarily disturbed area would be re-graded so that surfaces drain naturally, blend with the natural terrain, and are left in a condition that would facilitate revegetation or reseeding, provide for proper drainage, and prevent erosion. In areas on Beale AFB, Installation-specific policies require that areas requiring re-vegetation for soil stabilization be seeded using the base-approved seed mix (Beale 2018a). Private agricultural lands would be rehabilitated subsequent to construction per the conditions of agreements developed with private landowners.

Proposed grading activities would temporarily expose underlying soils at the project site, which may increase erosion susceptibility during grading and construction activities. Exposed soils along with any fill materials being stockpiled on the site for use in construction and grading operations may be subject to erosion during rainfall or high winds. Beale AFB has developed a Soils Management Plan to address management and disposal of soil from construction projects (Beale 2018d), and standard best management practices (BMPs) for managing these soils (e.g., covering to prevent potential run-off, appropriate slopes of storage piles, schedule and appropriate location for disposal) would be enforced for this Project through contract with Contractor. Impacts are expected to be less than significant with the implementation of the described BMPs.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less than significant impact: Based on the findings of the completed Geotechnical Report and Study and the provision that an additional Geotechnical Report and Study that addresses potential hazards in the other Project areas and for the additional Project features would be completed prior to initiating the Proposed Action, it is anticipated that there would be no impact as a result of geologic hazards. As a result of implementing the Proposed Action, neither people nor structures would be exposed to any adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, liquefaction, landslides, expansive soils, lateral spreading, subsidence, or collapse. Impacts are expected to be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Less than significant impact: Potentially expansive, high-plasticity clays were not encountered near the surface at the site. Based on the plasticity index test results, the upper 5 feet of soil underlying the site generally has a low to moderate potential for shrink-swell behavior (Beale 2018b). Impacts are expected to be less than significant.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No impact: The Project does not propose any wastewater infrastructure or requires the use of underground septic systems that would have an impact on soil resources.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?

No impact: No paleontological resources have been identified in the Cultural Resources Inventory Report (Bassett 2019) within the Project area of potential effect.

VIII. GREEHOUSE GAS EMISIONS. Would the project:				
a) Generate greenhouse gas emissions, directly or indirectly, that may have significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than significant Impact: The project will result in the emission of approximately 8,115 tons of CO_2 equivalent (CO_{2e}) over the course of its multi-year construction, based on ACAM modeling. This is below the reporting threshold of 25,000 metric tons of CO_{2e} per year required by the EPA. The modeling considers both direct construction impacts, as well as haul and work trips associated with transporting construction materials to the project site. While the project will result in the emission of greenhouse gas emissions, these are not cumulatively considerable enough to have a significant impact on the environmental. Therefore, the Proposed Action will have a less than significant impact regarding greenhouse gases.

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

<u>No impact:</u> The project will result in the emission of approximately 8,115 tons of CO_2 equivalent (CO_{2e}) over the course of its multi-year construction, based on ACAM modeling. This is below the reporting threshold of 25,000 metric tons of CO_{2e} per year required by the EPA. Sulfur hexafluoride, a greenhouse gas, reporting is already required for and performed by WAPA. The project will not be in conflict with any plan, policy, or regulation adopted for the purposes of reducing the emissions of greenhouse gases.

IX. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create significant hazard to the public/environment through routine transport/use/disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk, loss, injury, or death involving wildland fires?	☐	☐	☒	☐

a) Create significant hazard to the public/environment through routine transport/use/disposal of hazardous materials?

<u>No impact:</u> The Project does not involve the routine transportation, use, or disposal of hazardous materials.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

<u>Less than significant impact:</u> Hazardous materials would primarily be present during the construction phase of the project. Construction vehicles and equipment contain potentially hazardous materials such as oil, gasoline, brake fluid, transmission fluid, diesel fuel, and chain lubricant. Spill prevention control measure, the BMPs listed in Appendix D, and adherence to the Beale HMMP would reduce the potential of hazardous waste from a foreseeable upset (e.g., fire, flood, earthquake, etc.). Impacts are expected to be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

<u>No impact:</u> There are no schools within 0.25 mile of the proposed Project area.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No impact: The proposed Project is not located on a list of hazardous materials sites.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No impact: The project is located within two miles of Beale AFB. However, project construction and operations would not result in appreciable noise impacts that would affect the noise environment present without the Project. The Project would not result in a safety hazard or excessive noise for people residing or working in the project area.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than significant impact: Lane closures may be required during the construction of the Proposed Action. To reduce the impact of any closures, the BMPs listed in Appendix Dwould be implemented. The project would not impair implementation of an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

g) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less than significant impact: The Proposed Action is not located in an urbanized area. Portions of the project intersect with areas that the Yuba County Multi-Hazard mitigation plan identifies as having a fire hazard severity of moderate to very high fire threat. Fire threats would be reduced with adherence to the BMPs provided in Appendix D, project design, and the actionable items provided in the following discussion.

To prevent the risk of fire during construction activities, the Contractor for the Proposed Action would be required to implement a comprehensive fire prevention and safety program for the job site, which would include spark arrestors for equipment and proper cigarette disposal for employees, among other fire suppression tools and equipment. This would reduce the risk of fire from construction activities to a negligible level. The Contractor for the Proposed Action would also be required to develop, as part of this fire safety program, an evacuation plan in the event of fire from other sources. Impacts from the Proposed Action would be less than significant.

X. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade the surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐
i) result in a substantial erosion or situation on- or off-site;	☐	☐	☒	☐

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation or a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

a) Violate any water quality standards or waste discharge requirements?

Less than significant impact: Construction of the Proposed Action would involve clearing, grading, excavation, vegetation removal, drilling, the construction of roads and facilities, and trenching. These activities would result in the generation of potential water quality pollutants such as silt, debris, chemicals, and others that have the potential to negatively affect water quality.

The project would be required to comply with the Regional Water Quality Control Board's (RWQCB) regulations. All applicable CWA Section 404 permits and Section 401 water quality certifications and would be acquired prior to commencement of construction activities. The project would also be in compliance with regulations established in EO 11988, Floodplain Management, and EO 11990, Protection of wetlands.

Potential impacts from short term construction activities would also be mitigated through adherence to the Beale Storm water Pollution Prevention Plan and implementation of the BMPs listed in section 4.8. No water quality standards or wastewater discharge requirements would be violated. Impacts would be less than significant.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Less than significant impact: The Proposed Action would not remove groundwater and would not require long term use of water. A total of 8.116 Acres of impervious surfaces would be created in the construction of the Proposed Action. Groundwater recharge may be slightly impacted due to the construction of impervious surfaces. However, the surfaces would not be continuous, resulting in negligible effects throughout the project area.

Short term construction activities would require contractors to obtain water for dust control and equipment washing from an existing water supply with an adequate entitlement to serve these relatively low volume and short-term water needs.

Operation of the Proposed Action and facilities would not require the use of water. The proposed new substation would be unmanned and would not require the construction of plumbing or sewage facilities. With the implementation of the BMPs listed in Appendix D, impacts to groundwater recharge or water table levels from the Proposed Action would be less than significant.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or offsite?

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Less than significant impact: Approximately 252 to 480 square feet of Project impacts to ditches in the Project area are anticipated from the installation of 5 to 6 new culverts for new access roads and replacement of 2 existing culverts. The culverts would be designed so that predevelopment hydrology would be maintained as much as possible and no net loss in drainage would occur.

A total of 8.116 acres of impervious surfaces would be created with the construction of the Proposed Action. These surfaces would increase the amount of surface runoff.

With adherence to the SWPPP and the implementation of the BMPs listed in section 4.8 the alteration of the existing drainage pattern of the project site would be less than significant and would not result in substantial erosion or siltation on or off site. Impacts would be less than significant.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No impact: None of the proposed Project facilities are located within the 100-year flood zone.

e) Conflict with or obstruct implementation or a water quality control plan or sustainable groundwater management plan?

No impact: With the implementation of BMPs and the Beale AFB SWPPP during project construction, the Project would not conflict with the implementation of a water quality control plan. Groundwater resources will not be affected by the project.

XI. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

a) Physically divide an established community?

No impact: The project is located in a rural agricultural area and will not divide an established community.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No impact: Upon approval of a Conditional Use Permit by Yuba County, the project would not conflict with any land use plan, policy, or regulation.

XII. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

No impact: The project will have no effect on mineral resources.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

<u>No impact:</u> The project will have no effect on mineral resources.

XIII. NOISE. Would the project result in:				
a) Generation of substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

<u>Less than significant impact:</u> Permanent noise impacts would be considered significant if implementation of the Proposed Action results in temporary noise in excess of the 60 dBA Ldn based on the Yuba County General Plan. This is equivalent to a 63 dBA Leq, assuming an ambient background noise level of 50 dBA between 7:00 p.m. and 7:00 a.m. Construction noise impacts would be considered significant if they result in noise greater than 70 dBA Ldn at any receptors (equivalent to 73 dBA Leq during construction hours), using the “conditionally acceptable” noise range from the Yuba County General plan, as the standard is intended for permanent noise impacts and construction activities are temporary in nature and restricted to daytime hours. This is in excess of the HUD standard; however, the HUD standard is intended for permanent noise impacts. Temporary construction lasting a matter of weeks at each pole location is not considered a permanent impact.

The Road Construction Noise Model was used to predict construction for the Proposed Action proposed pole and substation locations. The model used typical usage factors for the equipment, which should be reflective of both intermittent use and sequential use for portions of construction.

Table 4-4 shows the predicted construction noise impacts in Leq.

TABLE **4-1**
ESTIMATED CONSTRUCTION NOISE IMPACTS

Activity Description	**Modeled Noise Impact (L_{eq})—Proposed Action**	**Modeled Noise Impact (L_{eq})—Northern A Alternative**	**Modeled Noise Impact (L_{eq})—Southern Alternative**	**Threshold of Significance (L_{eq})**
Vegetation clearing and roads	66.8	57.1	64.9	73
Foundation excavation	65.5	55.1	63.2	73
Foundation installation	66.1	56.4	64.2	73
Structure assembly and erection	65.6	56.0	63.7	73

Conductor stringing	68.5	59.7	67.7	73
Disturbance area restoration	66.5	54.9	62.7	73
Substation construction	54.3	54.3	54.3	73
Source: Roadway Construction Noise Model				

The results of the modeling show that none of the construction activities would result in noise levels that exceed the thresholds of significance. Impacts would be less than significant.

b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

Less than significant impact: Construction of the Proposed Action would also not require any blasting, rock hammering, drilling, or pile driving, which would be major sources of vibration. The distance of the Project from any sensitive receptors would be sufficient to allow any small amount of vibration generated to attenuate. The Project would not expose persons to the generation of excessive ground-borne vibration or ground-borne noise levels.

Noise impacts due to implementation of the Proposed Action are less than significant.

c) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Less than significant impact: The Proposed Action is partially within the Beale Air Installation Compatible Land Use Zone and within 2 miles of an airstrip. Utilities are deemed to be incompatible in areas with that the Beale AICUZ identifies as having a Community Noise Equivalent Level (CNEL) of 80+ DB. The Proposed Action would not intersect with the area identified as having and 80+ DB potential. The Proposed Action does not have a direct effect on operations of Beale AFB and would not directly contribute to aircraft- or airfield-related noise impacts. The project would not expose people residing or working in the project area to noise beyond what has been addressed in the previous questions. Impacts would be less than significant.

XIV. POPULATION AND HOUSING. Would the project:				
a) Induce substantial unplanned population growth in a rea either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Induce substantial unplanned population growth in a rea either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less than significant impact: The Proposed Action would not directly affect economic growth or population growth on Beale AFB because the infrastructure proposed would provide a redundant power supply to the existing power supply, rather than an additive capacity. In addition, work associated with the proposed construction (i.e., any increase in employment) would be contracted with an off-Beale AFB source and be temporary in nature.

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

As of the 2010 U.S. Census, the population of Yuba County was 72,155, and more recent U.S. Census data estimates the population of Yuba County to be 77,031 (U.S. Census Bureau 2019). Implementation of the Proposed Action would employ full time construction staff for a period of approximately 16 months. While this increase in employment represents some level of short-term economic benefit to Yuba County, there is not a high enough level of staffing associated with the Proposed Action to induce substantial population growth or reduce regional or local housing supply. The impact of the Proposed Action in terms of inducing growth is anticipated to be less than significant.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No impact: The project will have no effect on housing and does not have the potential to displace anyone.

XV. PUBLIC SERVICES. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:	☐	☐	☐	☒
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services?

No impact: The Project does not necessitate any additional public services nor does it affect or alter response times or service ratios.

XVI. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Issues	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Less than significant impact: No identified recreational facilities or activities are present in the private lands of the study area. The primary recreational activity on Beale AFB that overlaps with the study area is permitted hunting. The Project area, with a suitable safety buffer, would be off-limits to hunting and to those seeking to walk roads recreationally in the construction areas of the Proposed Action. Hunters would be informed of closures through the existing mandatory permit system for the Beale AFB hunting program, and the access roads would be posted closed to those who walk roads recreationally on Beale AFB. In years since 2010, between 80 and 165 hunting permits were sold annually for the entirety of Beale AFB, but there is no way to track the numbers of those who walk recreationally (Beale 2018a). Hunting would continue in other authorized areas of Beale AFB, subject to existing permit restrictions, during the construction period. Walking would likewise be available in other areas of Beale AFB during the construction period. Hunting and walking would both resume, as currently permitted, in all areas subsequent to the completion of construction. Based on current levels of use and the availability of alternative sites for recreational activities, it is anticipated that there would be short-term, negligible to minor adverse impacts to existing recreational opportunities on Beale AFB resulting from the construction activities of the Proposed Action and no impacts to existing recreational opportunities on other private or public land in Yuba County.

The Proposed Action would not increase the use of or create direct or indirect damage to any existing recreational facilities. No long-term impacts to recreation are therefore anticipated. Impacts from the Proposed Action would be less than significant.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less than significant impact: The Proposed Action would create a redundant power supply to Beale AFB and does not include recreational facilities. The construction of the Proposed Action would have short term effects on hunting and walking, as described in question a, above. The construction of the Proposed Action would not require the expansion of any existing recreational facilities or the construction of any new recreational facilities. Impacts would be less than significant.

XVII. TRANSPORTATION. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less than significant impact: Caltrans does not allow bicycle access on SR 65 between SR 70 and South Beale Road (Yuba County 2011), and thus bicycle circulation would not be impacted by the Proposed Action. Due to the somewhat rural location of the Proposed Action pedestrian and bicycle transit are not expected to be affected. No public transportation options serve the Beale AFB area.

Upon construction, the Proposed Action would not have any effect on public transit and alternative transportation. Impacts would be less than significant.

b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

Less than significant impact: The routine inspection and maintenance of electrical transmission facilities during the operational phase of the project does not represent a significant increase in the number of vehicle miles traveled for a land use project. Construction impacts will be short-term and minor in nature. The Project does not conflict with CEQA Guidelines § 15064.3, subdivision (b).

c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less than significant impact: The Proposed Action does not include design features that would result in hazards or hazardous conditions. The project would be aligned to run adjacent to the roadway and would not cause any changes in road conditions. Once constructed, the Proposed Action would not interfere with circulation and local traffic. It would not impede the use of farming equipment or other localized uses of the project area. Impacts would be less than significant.

d) Result in inadequate emergency access?

Less than significant impact: The project's proposed site and surrounding roadway network do not have any conditions that would restrict emergency vehicle access to the project site such as insufficient road width or inadequate roadway surfaces unable to support the weight of emergency vehicles. The project would not reduce the allowed circulation to a level that could potentially impede emergency services. Impacts would be less than significant.

XVIII. CULTURAL AND TRIBAL RESOURCES. Would the project				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☐	☒	☐
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section5020.1(k), or	☐	☐	☒	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less than significant impact: No villages or settlements have been identified near to the Project area or within Beale AFB boundaries, with the nearest village being *Chiemwie,* situated approximately 1.2 miles northwest.

No barricading, monitoring, or other mitigation measures are required for the identified resources. If any previously undetected or unreported cultural features, deposits, or human remains are encountered during Project-related activities, these activities must be discontinued in the immediate area of the feature(s), and the WAPA or Beale AFB archaeologist, as appropriate, must be consulted to evaluate their nature and significance.

Impacts to tribal cultural resources are expected to be less than significant.

XIX. UTLITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

No impact: No changes to water, wastewater treatment, storm water drainage, natural gas, or telecommunications facilities will be required by the proposed Project. The Project proposes the construction of electrical power infrastructure to meet the mandated DoD electric resiliency requirements. Development of the electrical infrastructure does not require additional infrastructure beyond what is proposed.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less than significant impact: Water required for the Proposed Action would be for dust control associated with construction. Water would also be used to wash O&M equipment. The Contractor would be required to obtain water for dust control and equipment washing from an existing water supply with an adequate entitlement to serve these relatively low-volume and short-term water needs. The proposed new substation would be unmanned and would not require the construction of plumbing or sewage facilities. Impacts would be less than significant.

c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No impact: The project does not propose any additional wastewater treatment facilities or facilities that will require additional wastewater treatment capacity.

d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less than significant impact: The Ostrom Road Landfill is the anticipated site for the disposal of all solid waste generated during construction activities of the Proposed Action. The Ostrom Road Landfill's current plans indicate that the landfill is not at capacity and would not reach capacity until the year 2102 (California Regional Water Quality Control Board 2016). Ostrom Road Landfill's site life calculations are based on a remaining refuse capacity as of 2016 of approximately 24,395,000 tons, which assumes a compacted effective refuse density of 1,395 pounds per cubic yard and accounts for settlement (California Regional Water Quality Control Board 2016). The solid waste generated by the Proposed Action is anticipated to contribute a negligible amount of waste in the context of the capacity of this landfill and not appreciably hasten the Ostrom Road Landfill toward capacity. Impacts would be less than significant.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less than significant impact: Construction waste generated by the Proposed Action would be subject to all federal, state, and local statues and managed according to the Beale ISWMP, including regular off-site disposal by the Contractor. Beale AFB manages solid waste in compliance with all federal, state, and local statutes relating to solid waste; the USAF has developed an installation-specific ISWMP for Beale AFB that addresses compliance with all applicable statutes (Beale 2018d). For construction activities, the ISWMP states that construction debris and other waste shall be sorted into recyclable and non-recyclable waste streams and that Contractors shall transport all solid waste off Beale AFB to an approved landfill or recycling facility (Beale 2018d). Impacts would be less than significant.

XX.WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

No impact: Construction and operation of Project facilities will not impair an emergency response plan or emergency evacuation plan.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less than significant impact: Yuba County describes fire as one of the most significant natural hazards affecting Yuba County residents. The Project area outside of Beale AFB has been identified by the California Department of Forestry and Fire as having a moderate fire risk (Yuba County 2011).

Wildfires are a regular occurrence on Beale AFB, with most occurring between May and September. Records show that there were 131 wildfires on Beale AFB between 1998 and 2017. Nearly half (59) of the wildfires had an unknown cause. Of those with known causes, wildfires started by power lines (34) were most common (Beale AFB 2018a). Calfire identifies that there have been several instances of fires spreading out from Beale AFB to the Yuba County area. The cause of these fires is listed as birds flying into power lines, hazard reduction burns, and munitions work (Calfire 2018).

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No impact: The Project proposes the installation of a 230-kV and a 60-kV electrical transmission infrastructure and an associated substation. However, there is no additional associated infrastructure proposed that would exacerbate fire risk.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No impact: The project is located in a relatively flat area that will not be at risk of post-fire instability or drainage changes.

XXI.MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than significant impact: All impacts to the environment, including impacts to fish, wildlife species, plant species, special status species, and rare and endangered plants and animals, historical resources, and prehistorical resources were evaluated as part of the Environmental Assessment for the Beale WAPA Interconnection Project and this initial study checklist. Impacts to Biological, historical, and prehistorical resources were found to be less than significant. The project would not substantially degrade the quality of the environment with regards to the topics discussed in this CEQA checklist. Impacts from the Proposed Action would be less than significant.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less than significant impact: As discussed in chapter 5 of the Environmental Assessment for the Beale WAPA Interconnection Project, implementation of the Proposed Action has the potential to result in effects to the environment that are individually insignificant, but are cumulatively considerable.

The project has the potential to contribute to cumulatively considerable effects to air quality, biological resources, soils, hydrology, water quality, noise, public safety, hazardous materials, transportation, and traffic.

In all instances where a cumulatively considerable project impact has been identified, best management practices or mitigation measures have been required to reduce potential effects to less than significant levels or ensure that the project results in the least impact possible. The project would not contribute to environmental effects that are individually limited, but cumulatively considerable. Impacts from the Proposed Action would be less than significant.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than significant impact: The project's potential to result in environmental effects that could directly or indirectly cause substantial adverse effects to human beings has been discussed throughout the Environmental Assessment for the Beale WAPA Interconnection Project.

The project has the potential to result in environmental effects related agriculture, air quality, greenhouse gases, soils, water quality, noise, hazardous materials, and traffic that could cause substantial adverse effects to human beings.

Where direct or indirect impacts to human beings were identified, best management practices and mitigation measures have been required that would reduce impacts to a less than significant levels or ensure that the project results in the least impact possible. With the required BMPs and Mitigation measures, the project would not result in any direct or indirect substantial adverse effects to human beings. Impacts from the Proposed Action would be less than significant.

SCOPING SUMMARY REPORT

Beale Air Force Base-Western Area Power Administration Interconnection Project

Prepared for:

U.S. Department of Energy
Western Area Power Administration
Sierra Nevada Region

Prepared by:

Transcon Environmental, Inc.

May 2019

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INTRODUCTION AND BACKGROUND

The United States Air Force (USAF) through Beale Air Force Base (AFB) requested Western Area Power Administration (WAPA) provide a new interconnection to WAPA's Cottonwood-Roseville transmission line in Yuba County, California. The project, known as the Beale-WAPA Interconnection Project (Project), includes a new overhead 230-kilovolt (kV)/60-kV transmission line that extends about 5 miles from its connection point at the existing WAPA Cottonwood-Roseville transmission line, located just east of Yuba City, and terminates on Beale AFB. On Beale AFB, the Project includes the construction of a new substation to step 230 kV down to 60 kV, after which the 60-kV transmission line routes below ground for about 1-2.5 miles, depending on the alternative, before terminating at an existing substation (**Appendix A**). It is anticipated that WAPA would construct, operate, and maintain the new transmission line, substation, and associated facilities.

The Project went through two rounds of scoping. The initial round of scoping occurred December 2017/January 2018 and included two Project route alternatives. As a result of feedback from scoping, and more information obtained regarding natural resources in the area, a third alternative was added to the Project, and scoping was reinitiated in July 2018/August 2018. This report summarizes efforts to notify and obtain input from interested agencies, Native American Tribes, organizations, and members of the public about the proposed Project during each round of scoping.

Purpose of Scoping Process

Scoping is an integral part of the National Environmental Policy Act (NEPA) process; it provides an early opportunity to determine the scope and significance of issues to be addressed in the proposed action (40 CFR 1501.7). The objectives of scoping include:

- Identify significant issues related to the proposed Project;
- Identify social, environmental, and economic review and consultation requirements;
- Define the environmental analysis process and technical studies necessary to adequately address the impacts of the proposed Project;
- Identify and notify interested and affected parties; and
- Provide information to agencies, Tribes, and the public regarding the proposed Project.

Organizational Involvement

WAPA (Lead NEPA Agency), Beale AFB (Project Proponent and Cooperating Agency), and Transcon Environmental (Third-Party Consultant) represented the Project throughout the scoping process.

SCOPING ACTIVITIES

Public Scoping

The public was notified of the project through multiple channels, including: Project newsletters sent to potentially interested members of the public within 1/4 mile of the proposed Project (1/8 of a mile to either side of the centerline); a notification published in the local newspaper; an open-house style public meeting; and a Project webpage containing Project information and updates. Each of these are described in detail below. The same channels were used (e.g., same newspaper, same public meeting venue, etc.) for each round of scoping.

The first round of public scoping lasted 44 days, beginning on with the mailing of Newsletter #1 on December 6, 2017 and ending on January 19, 2018. This duration was chosen to allow members of the public time to submit comments after the public meeting held January 11, 2018.

The second round of public scoping also lasted 44 days, and began with the mailing of Newsletter #2 on July 23, 2018 and ended on September 7, 2018. The public meeting for this round was held August 6, 2018.

Mailing List and Newsletter

The public mailing list was assembled collaboratively from the following sources:

- WAPA Lands Department
- Beale AFB databases of landowner information from adjacent parcels
- County websites

New interested parties will be added to the mailing list as the Project progresses.

Newsletter #1 was mailed to 11 individuals on December 6, 2017, notifying them about the Project and the date, location, and time of the public meeting. It also included instructions for submitting comments about the proposed Project. Newsletter #2 was mailed to 43 individuals on July 23, 2018; the increase in recipients was a result of the added alternative and requests to be added to the mailing list received during the first round of scoping. Newsletter #2 contained much of the same information as Newsletter #1, as well as an update on the Project and addition of the third route alternative. It included the date, location, and time of the second public meeting and instruction for submitting comments. It should be noted that between the two scoping periods, WAPA Project management changed. The first newsletter included Don Lash's contact information; the second newsletter was updated with contact information for the new Project Manager, Tish Saare.

Both newsletters can be found in **Appendix B**.

Newspaper Notification

For each round of scoping, a 1/8-page (approximately 5-inch by 5-inch) advertisement was published in the Appeal Democrat newspaper the Wednesday and Sunday before the scheduled public meetings. The notification included the date, time, and location of the public meetings, as well as instructions for submitting comments.

For the first round of scoping, the notification was published on Wednesday, January 3, 2018, and Sunday, January 7, 2018 and appeared on the Appeal Democrat website until the public meeting on January 11, 2018. For the second round of scoping, the notification was published on Wednesday, August 1, 2018 and Sunday, August 5, 2018, and appeared on the Appeal Democrat website until the public meeting on August 6, 2018.

Both newspaper notifications can be found in **Appendix C**.

Public Meeting

One public meeting was held during each round of scoping, both at the University of California Cooperative Extension facility in Yuba City, California. The first meeting was held on January 11, 2018, and 11 members of the public attended. The second meeting was held on August 6, 2018, and four members of the public attended.

Several handouts were available at the meetings, including: copies of the newsletters, maps depicting the Project area, alternatives being considered, and comment cards. Participants were encouraged to provide written comments regarding the Project and leave them in the comment box at the meeting or mail them in later.

At the meetings, Project leadership from WAPA, including resource and lands/realty specialists, attended to discuss the Project with the public. Poster boards were on display depicting the Project area and alternative corridors, diagrams of typical pole types, a NEPA-process flow diagram, biological resources, and cultural resources. Display boards remained largely the same for both meetings during both scoping periods; the only changes were made to the Project maps to include the new third alternative and the change in contact information for the WAPA Project Manager. Public meeting display boards can be found in **Appendix D**. Additionally, computers staffed by geographic information system technicians helped members of the public identify their property in relation to the Project area.

Website

WAPA maintains a public Project webpage that includes basic Project information, a copy of the July 23, 2018 newsletter, and instructions for submitting comments. The website can be accessed at: https://www.wapa.gov/regions/SN/environment/Pages/Beale-WAPA-Interconnection-Project-BWIP.aspx. To save space on public scoping material, the full URL was shortened to https://go.usa.gov/xU9zz. Both links direct users to the same webpage.

The webpage remains active and will be updated as new Project material is prepared for public viewing.

Public Comments Received

All written and oral comments received—whether from agencies, Tribes, or the public—were considered and will be responded to in the Draft Environmental Assessment.

During the first round of scoping, two letters were received, both from landowners along the southern corridor and expressed opposition and concern about the southern corridor and its impacts to farming practices. Summarized, the letters shared the following concerns:

- Obstacles to aerial seeding and fertilizing practices from the new poles and transmission lines;
- Reduced land and home values;
- Additional necessity for ground maintenance due to noxious weeds at the base of poles;
- Preference for the proposed northern alignment because it crosses fewer public parcels; and
- Preference for the lines to be run underground.

During the second round of scoping a total of three comments were received from private landowners. The nature of the comments was regarding potential impacts from the Project to agricultural and farming activities, and one comment provided feedback on possible facility siting locations.

All comments received can be found in **Appendix E**.

Agency Scoping

The same group of agencies were sent letters during both rounds of scoping. A total of 95 letters were sent to individuals at federal, state, and local agencies, as well as elected officials. Federal and state agencies contacted for scoping included:

- U.S. Air Force, Beale AFB (Wing Historian)
- U.S. Army Corps of Engineers
- U.S. Department of the Interior
- U.S. Fish and Wildlife Service, Sacramento Realty Office
- California Department of Fish and Wildlife
- California Department of Water Resources
- California Native American Heritage Commission (NAHC)
- California Native Plant Society
- California State Historic Preservation Office
- California State Water Resources Control Board
- California Waterfowl Association
- Central Valley Regional Water Quality Control Board
- California Environmental Quality Act Clearinghouse

Local governments and elected officials contacted for scoping included:

- City of Marysville
- City of Wheatland
- City of Yuba City
- Feather River Air Quality Management District
- Nevada County Supervisors
- Office of Assemblyman Gallagher
- State Representatives
- State Senators
- Sutter County Resource Conservation District
- Sutter County Supervisors
- Sutter County Water Resources Division
- Yuba City District Office
- Yuba County Planning Department
- Yuba County Public Works
- Yuba County Supervisors
- Yuba Sutter Chamber of Commerce

Other organizations contacted for scoping included:

- KUBA Radio Station—Bob Harlan
- Marysville Appeal
- Marysville Historical Society
- Nevada County Historical Society
- Pacific Gas and Electric Company
- The Sutter County Taxpayers Association
- Wheatland Historical Society
- Yuba County Historical Society
- Yuba Sutter Economic Development Corporation
- Yuba Sutter Farm Bureau

For the first round of scoping, letters were mailed on December 6, 2017 (**Appendix F**). If the letter was returned to sender due to an inaccurate address, those letters were re-sent December 22, 2017, to updated addresses. The agency scoping period lasted 58 days, ending on February 2, 2018. One letter of support for the Project was received from Representative John Garamendi (**Appendix G**). No other comments were received from federal, state, or local agencies or elected officials.

Agencies were sent letters notifying them of the Project update and addition of the third alternative. Project update letters were mailed on July 23, 2018 to the same individuals who received scoping letters in December 2017. Using the updated addresses from the first round, no letters were returned to sender. No agency comments were received during the second round of scoping.

Tribal Contact

Initial Tribal Notification of Public Meetings

At the project onset, the California NAHC was contacted to solicit a list of Tribes for consultation. While waiting for a response from the NAHC to commence Tribal consultation, the Project team deemed it prudent to informally notify the Tribes identified by Beale AFB of the public meeting. A total of 13 emails were sent to Tribes on January 8, 2018, informing them of the public meeting and providing the Project newsletter and Project area map. For Tribes with no email address on file (two Tribes), Newsletter #1 was mailed overnight on January 9, 2018. In total, 15 Tribes were notified of the Project.

Consultation Letters

The list of Tribes to consult was compiled by the NAHC and Beale AFB. On January 30, 2018 and February 8, 2018, a total of 19 consultation letters were sent to individuals at 13 Tribes. The consultation letters can be found in **Appendix H**. Two Tribal comments have been received, one from the United Auburn Indian Community and the other from the Konkow Valley Band of Maidu. Both comments are included in **Appendix I**. Tribal consultation will be ongoing for the duration of the Project.

Native American Tribes contacted for consultation included:

- Berry Creek Rancheria of Maidu Indians
- Butte Tribal Council
- Colfax-Todds Valley Consolidated Tribe
- Estom Yumeka Maidu Tribe of the Enterprise Rancheria
- Konkow Valley Band of Maidu

- Maidu Nation
- Mechoopda Indian Tribe of Chico Rancheria
- Mooretown Rancheria of Maidu Indians
- Shingle Springs Rancheria
- Strawberry Valley Rancheria
- Tsi Akim Maidu
- United Auburn Indian Community
- United Auburn Indian Community of the Auburn Rancheria

Project Update Notification

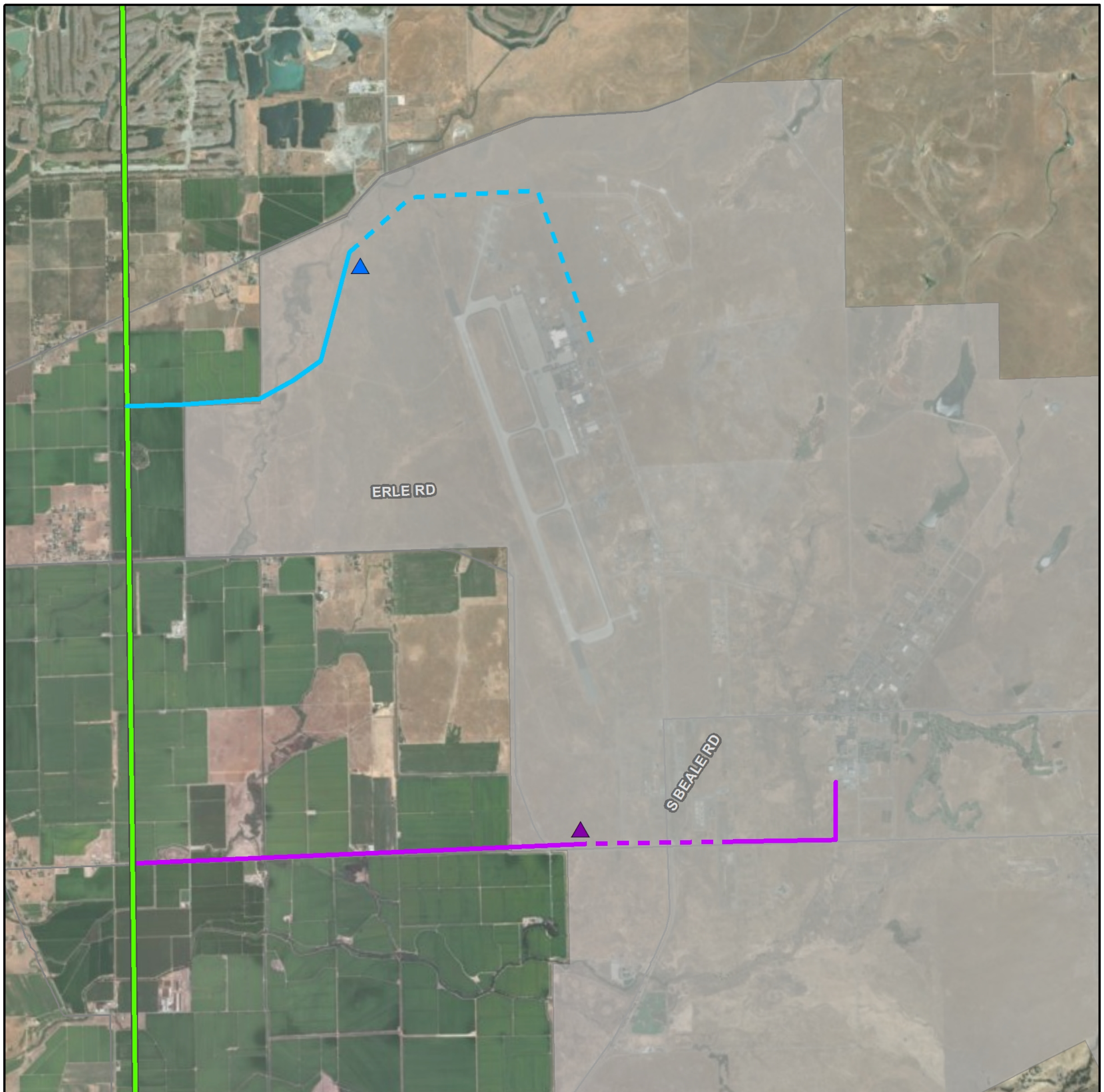
When it was determined that a third alternative would be added to the Project, Tribes were notified of the change and provided information about the public meeting via mail. The Project update letter, including Newsletter #2, was sent on July 23, 2018 to the same Tribes as were sent consultation letters. Project update letters can be found in **Appendix H**.

APPENDIX A

PROJECT AREA MAP

Project area map shared during the first round of scoping

February 8, 2018 G:\Projects\Wapa\Beale WAPA Interconnection EA\Beale_WAPA_Interconnection_Overview_Map_8x11_P.mxd



0 1 Miles

Legend

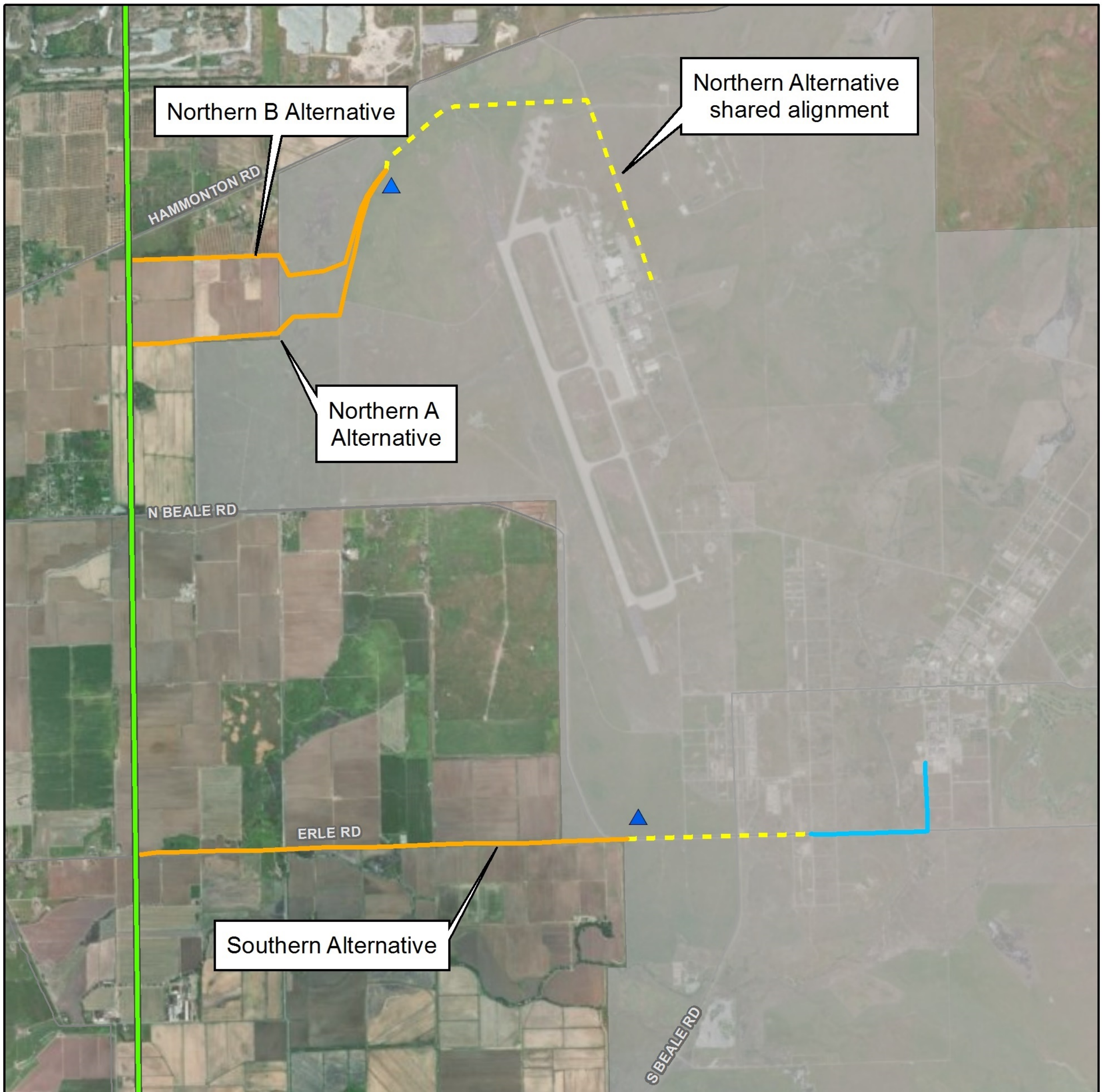
- Beale Air Force Base
- WAPA Existing Cottonwood- Roseville Transmission Line
- North Alternative Overhead 230 kV
- North Alternative Underground 60 kV
- North 230/60 kV Proposed Substation
- South Alternative Overhead 230 kV
- South Alternative Overhead 60 kV
- South Alternative Underground 60 kV
- South 230/60 kV Proposed Substation

Overview Map

Beale WAPA Interconnection Project

TRANSCON environmental

Project area map shared during the second round of scoping



July 18, 2018 G:\Projects\Wapa\Beale WAPA Interconnection EA\Beale_WAPA_Interconnection_Overview_Map_8x11_P_em_0718.mxd

Overview Map

Beale WAPA
Interconnection Project

Legend

- Beale Air Force Base
- WAPA Existing Cottonwood-Roseville Transmission Line
- Overhead 230 kV
- Overhead 60 kV
- Underground 60 kV
- 230/60 kV Alternative Substation

0 1
Miles

TRANSCON environmental

APPENDIX B
PROJECT NEWSLETTER

Newsletter #1

Beale AFB Proposed Interconnection Line

Project Information
Western Area Power Administration (WAPA) is one of four federal power marketing agencies within the U.S. Department of Energy. WAPA markets power through its Sierra Nevada Region (SN) office from the Central Valley Project and the Washoe Project to preference customers in central and northern California and northwest Nevada. SN maintains and operates numerous substations and more than 1,500 miles of transmission lines.

WAPA received an interconnection request from Beale Air Force Base (AFB) to connect to WAPA's Cottonwood-Roseville 230-kilovolt (kV) line located in Yuba County, California. As part of the proposed project, a new 230-kV/60-kV interconnection line would directly connect from WAPA's Cottonwood-Roseville transmission line, approximately 6 miles, to a proposed substation on the base. Of the 6 total miles, approximately 1 to 2 miles—depending on the final alignment—would be located off-base, with the remaining 4 miles located on-base. Currently, two alternative corridors are being considered and will be evaluated for this proposed interconnection.

Need For The Project
The purpose of the proposed project is to ensure that the Beale AFB electrical infrastructure will supply and effectively support the missions assigned to the installation by Congress and the President. Beale AFB needs a reliable and resilient electrical transmission system that is upgraded to satisfy current electrical standards. This need includes a redundant electrical interconnection to supply critical missions and prevent electrical failure during maintenance and/or electrical faults. In response to Beale's request, WAPA will provide an electrical interconnection.

Environmental Analysis
Because this project requires a federal action (i.e., WAPA responding to a request for an interconnection line), it must be in compliance with the National Environmental Policy Act (NEPA) and other relevant regulations. WAPA contracted Transcon Environmental, Inc., an environmental consulting firm, to prepare an Environmental Assessment (EA) and perform other NEPA compliance activities. This EA will consider potential effects of the 6-mile proposed interconnection line project to the environment, including physical, biological, social, economic, and natural resources.

Project Timeline
WAPA will hold an initial 30-day public comment period to address the EA's scope, and will conduct environmental studies through summer 2018.

*** WHEN TO COMMENT & LEARN MORE**

One public open house to present the proposed project, answer questions, and accept public comments is scheduled for Thursday, January 11, 2018 from 4:00 p.m. to 7:00 p.m. The open house will be held at the **University of California Cooperative Extension, 142 Garden Highway #A, Yuba City, California 95991.**

Your comments are welcome and important to establish the level and scope of analysis. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment––including your personal identifying information––may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. Written comments are due by January 19, 2018. You can submit comments in writing or verbally at the open house, or send them to:

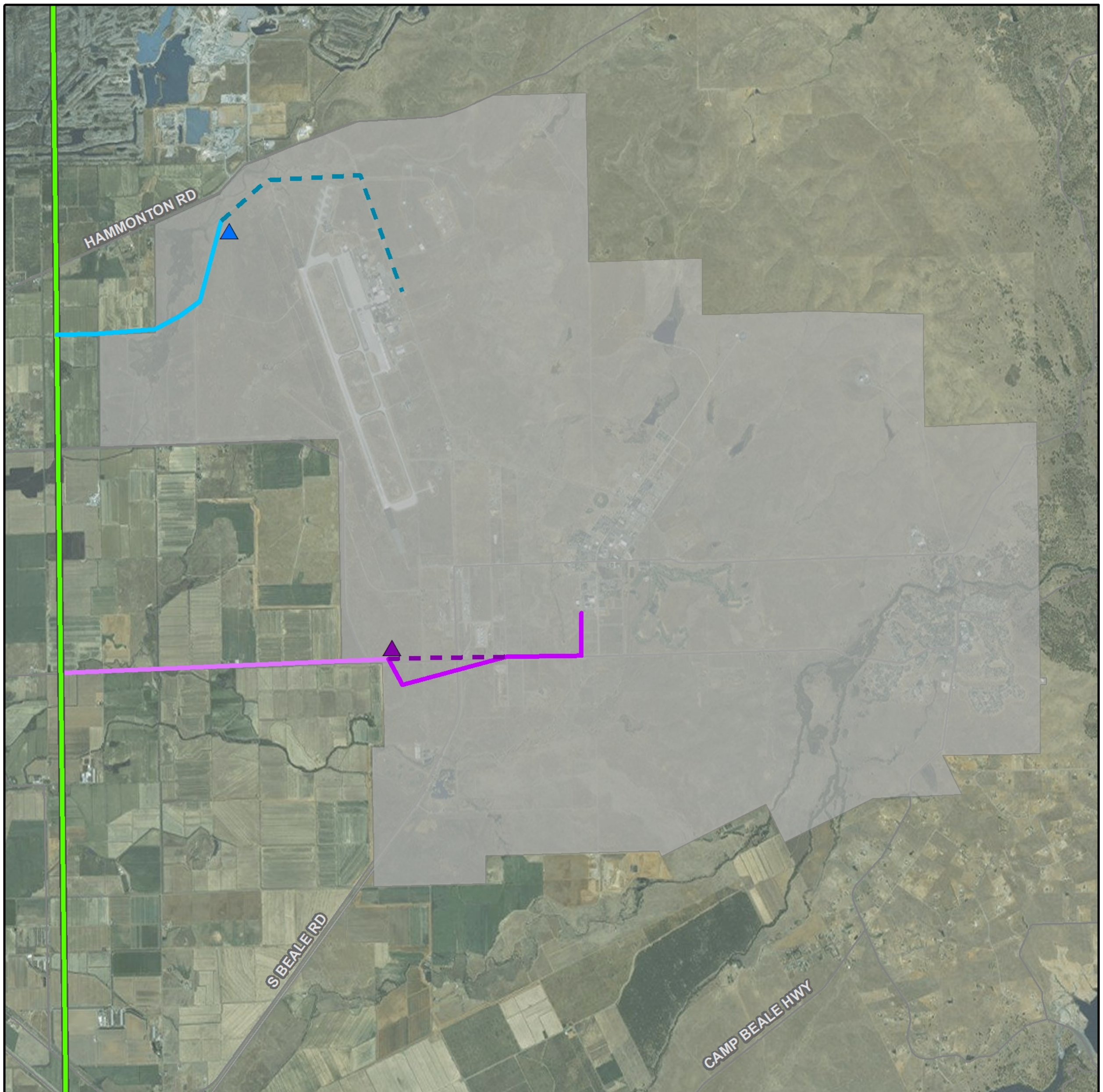
Don Lash, Environmental Protection Specialist
Western Area Power Administration
114 Parkshore Drive
Folsom, California 95630
Email: Lash@WAPA.gov
Phone: (916) 353-4048

If you have questions regarding this project, please contact Don Lash.

For project information and updates, please visit the project webpage at:
http://www.wapa.gov/regions/SN/environment/Pages/Beale-WAPA-Interconnection-Project-BWIP.aspx

Western Area Power Administration

December 5, 2017 G:\Projects\Wapa\Beale WAPA Interconnection EA\Beale_WAPA_Interconnection_Overview_Map_8x11_P.mxd



Legend

- Beale Air Force Base
- Existing WAPA 230kV
- North Alternative Overhead 230kV
- North Alternative Underground 60kV
- North 230/60kV Proposed Substation
- South Alternative Overhead 230kV
- South Alternative Overhead 60kV
- South Alternative Underground 60kV
- South 230/60kV Proposed Substation

0 1 2 Miles

Overview Map

Beale WAPA Interconnection Project

TRANSCON environmental

Newsletter #2

Beale AFB Proposed Interconnection Line

Project Information
Western Area Power Administration (WAPA) is one of four federal power marketing agencies within the U.S. Department of Energy. WAPA markets power through its Sierra Nevada Region (SN) office from the Central Valley Project and the Washoe Project to preference customers in central and northern California and northwest Nevada. SN maintains and operates numerous substations and more than 1,500 miles of transmission lines.

WAPA received an interconnection request from Beale Air Force Base (AFB) to connect to WAPA's Cottonwood-Roseville 230-kilovolt (kV) line located in Yuba County, California. As part of the proposed project, a new 230-kV/60-kV interconnection line would directly connect from WAPA's Cottonwood-Roseville transmission line to a proposed substation on the base. The total length of the line, depending on the final route, equals approximately 6 miles. Currently, three alternative transmission line corridors are being considered and will be evaluated for this proposed interconnection (see attached map).

Need For The Project
Beale AFB has a need to improve the reliability and redundancy of electricity supply to the base. Currently, electricity is transmitted to Beale AFB via one existing 60-kV line. In response to the need for reliability and redundancy, an additional new line with a different alignment is proposed. The existing 60-kV line will remain.

Environmental Analysis
Because this project requires a federal action, it must be in compliance with the National Environmental Policy Act (NEPA) and other relevant regulations. WAPA contracted Transcon Environmental, Inc., an environmental consulting firm, to prepare an Environmental Assessment (EA) and perform other NEPA compliance activities. This EA will consider potential effects of the proposed 6-mile transmission line project to the environment, including physical, biological, social, economic, and natural resources.

Project Update
WAPA performed initial public scoping for this project in December 2017 / January 2018. As a result of feedback from scoping, and more information obtained regarding natural resources in the area, WAPA and Beale identified an additional alternative to consider for the project. There is still not a preferred alternative. All alternatives under consideration are as follows (see attached map):

- Southern Alternative (included in January 2018 scoping)
- Northern A Alternative (included in January 2018 scoping)
- Northern B Alternative (added to the project in June 2018; included in July 2018 scoping)

Because of these changes, and the newly affected landowners near the Northern B Alternative, WAPA is opening a second 45-day public comment period and holding another open-house style public meeting to answer questions and collect comments.

*** GETTING INVOLVED OR MAKING COMMENTS**

The open house will be held Monday, August 6, 2018 from 4:00 p.m. to 7:00 p.m. at:

University of California Cooperative Extension
142 Garden Highway #A
Yuba City, CA 95991

Your comments are welcome and important to establish the level and scope of analysis. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment––including your personal identifying information––may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. Written comments are due by September 7, 2018. You can submit comments in writing or verbally at the open house, or send them to:

Tish Saare, Environmental Protection Specialist
Western Area Power Administration
114 Parkshore Drive
Folsom, California 95630
Email: Saare@wapa.gov
Phone: (916) 353-4526

If you have questions regarding this project, please contact Tish Saare. For project information and updates, please visit the project webpage at: https://go.usa.gov/xU9zz

Western Area Power Administration
Powering the energy frontier

APPENDIX C
NEWSPAPER NOTIFICATION

Newspaper notification published during the first round of scoping

Beale Air Force Base Proposed Interconnection Line Project

Public Scoping Meeting Jan. 11, 2018 4–7 p.m.

Western Area Power Administration (WAPA), a power marketing administration in the U.S. Department of Energy, is seeking public input on the location of a new transmission line that will interconnect Beale Air Force Base (AFB) to WAPA's existing Cottonwood-Roseville 230-kilovolt (kV) line in Yuba County, CA.

The new 230/60-kV interconnection line meets Beale's requirement for a more reliable and redundant electrical transmission system that effectively supports missions assigned to the installation by Congress and the President.

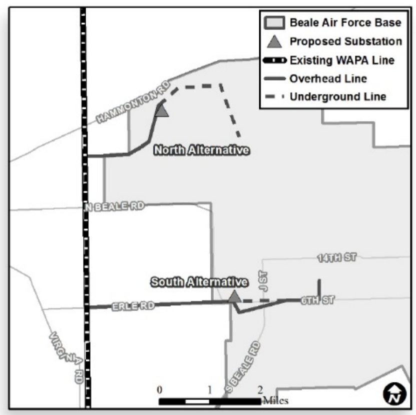
The line will run about 6 miles, with 1 to 2 miles off base, depending on the final route decision. Currently, 2 alternative corridors (see map to the right) will be evaluated for potential impacts to the environment in an environmental assessment (EA). The EA will review impacts to physical, natural, social, biological, economic, and cultural resources.

WAPA contracted Transcon Environmental, Inc. to assist with meeting National Environmental Policy Act requirements.

For more information, visit:
http://www.wapa.gov/regions/SN/environment/Pages/Beale-WAPA-Interconnection-Project-BWIP.aspx

COME TO THE PUBLIC SCOPING MEETING:
Thursday, Jan. 11, 2018, 4–7 p.m.
University of California Cooperative Extension
142 Garden Highway #A
Yuba City, CA 95991

SEND US YOUR COMMENTS:
Provide your comments at
the public meeting, by mail, or by email.
Send comments by Jan. 19, 2018 to:
Don Lash, Environmental Protection Specialist
Western Area Power Administration
114 Parkshore Drive
Folsom, California 95630
Email: Lash@WAPA.gov



Newspaper notification published during the second round of scoping

Beale Air Force Base Proposed Interconnection Line Project

Public Scoping Meeting August 6, 2018 4–7 p.m.

Western Area Power Administration (WAPA), a power marketing administration in the U.S. Department of Energy, is seeking public input on the location of a new transmission line that will interconnect Beale Air Force Base (AFB) to WAPA's existing Cottonwood-Roseville 230-kilovolt (kV) line in Yuba County, CA.

The new 230/60-kV interconnection line meets Beale's requirement for a more reliable and redundant electrical transmission system that effectively supports missions assigned to the installation by Congress and the President.

WAPA and Beale have identified three alternatives for the project, which will be evaluated in an Environmental Assessment (EA). The EA will review impacts to physical, natural, social, biological, economic, and cultural resources. All alternatives are open to public comment. There is still not a preferred alternative.

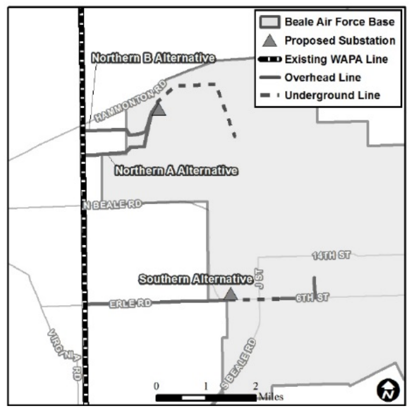
WAPA contracted Transcon Environmental, Inc. to assist with meeting National Environmental Policy Act requirements.

For more information, visit: ***https://go.usa.gov/xU9zz***

COME TO THE PUBLIC SCOPING MEETING:
Monday, August 6, 2018, 4–7 p.m.
University of California Cooperative Extension
142 Garden Highway #A
Yuba City, CA 95991

SEND US YOUR COMMENTS:
Provide your comments at
the public meeting, by mail, or by email.
Send comments by September 7, 2018 to:

Tish Saare, Environmental Protection Specialist
Western Area Power Administration
114 Parkshore Drive
Folsom, California 95630
Email: Saare@WAPA.gov



APPENDIX D

PUBLIC MEETING DISPLAY BOARDS

Note: The same display boards were used for both rounds of scoping with the exception of an updated Project area map and contact information for the WAPA Project Manager (i.e., changes to three boards, all of which are included here).

Beale AFB Proposed Interconnection Line Project

Public Meeting
This Way

Beale AFB Proposed Interconnection Line Project

Public Meeting
This Way


Welcome.
Beale AFB Proposed Interconnection Line Project

Project Information

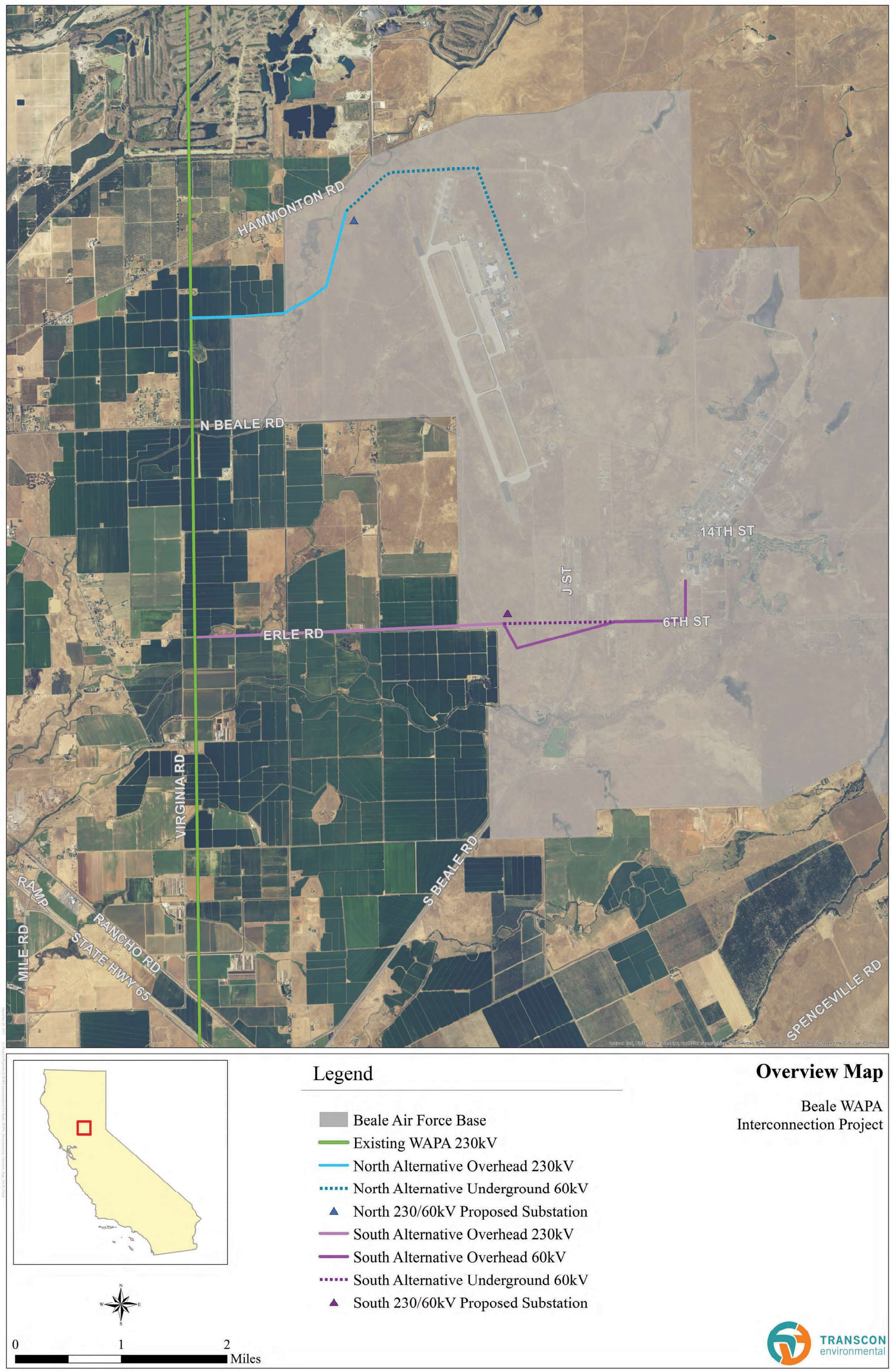
PROJECT: To connect Beale Air Force Base with Western Area Power Administration's existing Roseville-Cottonwood transmission line. The proposed interconnection transmission line would total approximately 6 miles, with approximately 1 to 2 miles — depending on the final alignment — located off-base.

PURPOSE AND NEED: Beale AFB needs a redundant and resilient electrical transmission system to support its missions in defense of the U.S.

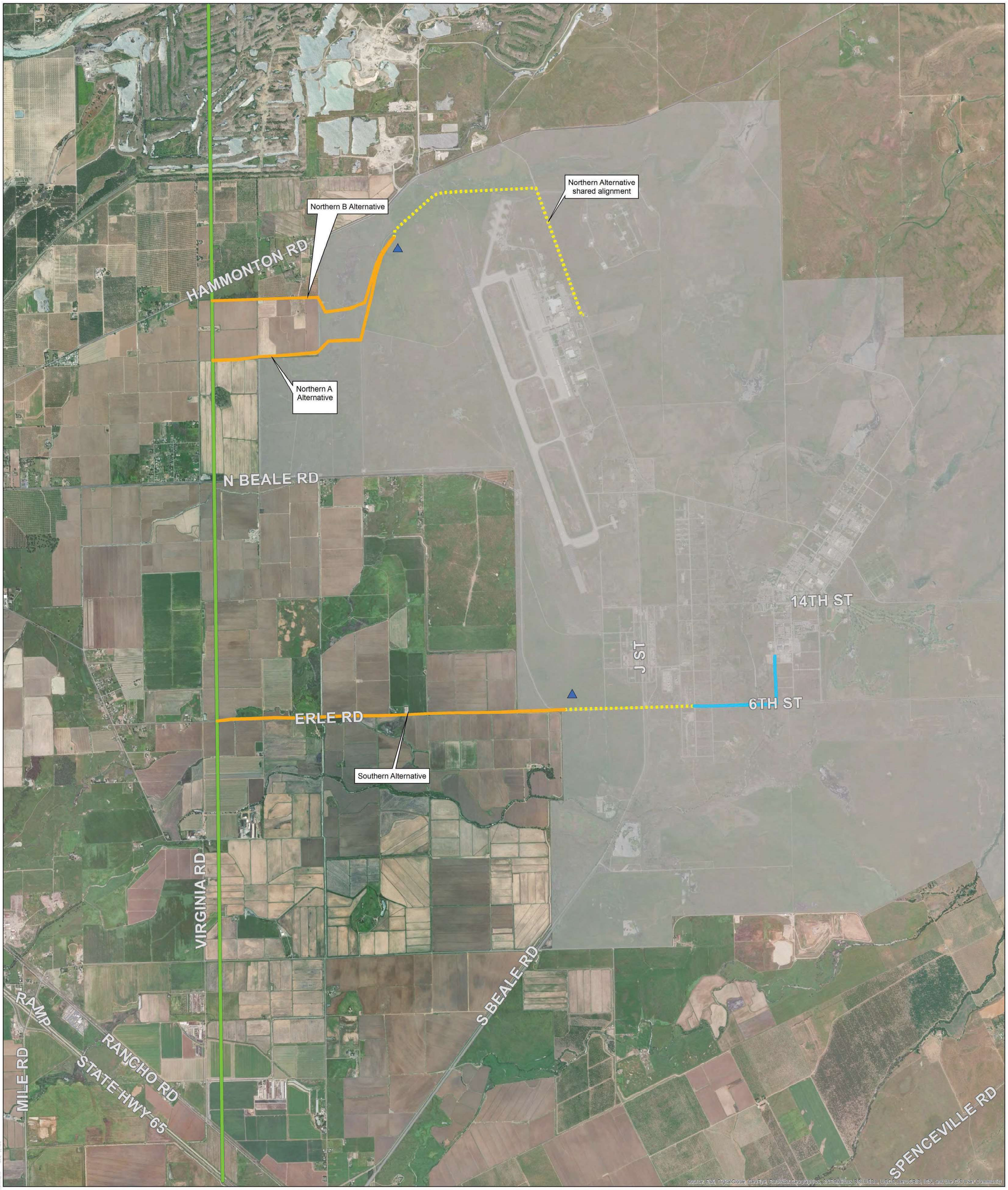
WHO IS PROPOSING THIS PROJECT? Beale AFB is the project proponent and a cooperating agency for the Environmental Assessment.

WHO IS THE DECISION MAKER? This is a joint project. The decision will be made by both agencies.

Where does WAPA propose to construct the interconnection line?



Updated Project map for the second round of scoping



0 1 2
Miles

Legend

- Beale Air Force Base
- WAPA Existing 230kV Cottonwood-Roseville Transmission Line
- Overhead 230 kV Transmission Line
- Overhead 60 kV Transmission Line
- Underground 60 kV Transmission Line
- Proposed 230/60kV Substation

Overview Map

Beale WAPA
Interconnection Project

TRANSCON environmental

National Environmental Policy Act (NEPA) Process

PROJECT IDENTIFIED

1 PROJECT IDENTIFIED/PROPOSED

2 SCOPING & ISSUES IDENTIFICATION

* PUBLIC COMMENTS & AGENCY COMMENTS

3 RESOURCE ANALYSIS & ALTERNATIVE COMPARISON

4 IMPACT ANALYSIS & WRITING OF EA

INCORPORATION OF COMMENTS

5 DRAFT EA

* PUBLIC COMMENTS & AGENCY COMMENTS

6 FINAL EA

7 WAPA ROUTE SELECTION

INCORPORATION OF COMMENTS

BEGIN CONSTRUCTION

We want to hear from you.

PURPOSE OF SCOPING

- Introduce the proposed project
- Obtain public and interested parties' input
- Help determine the range and significance of issues to be addressed in the environmental assessment

* OPPORTUNITIES TO COMMENT

- **Written comments**
  Written comments at scoping meeting
- **Email**
  Don Lash
  Lash@WAPA.gov
- **Mail**
  Don Lash - Environmental Protection Specialist
  114 Parkshore Drive
  Folsom, California 95630

Updated contact information for the second round of scoping

National Environmental Policy Act (NEPA) Process

We want to hear from you.

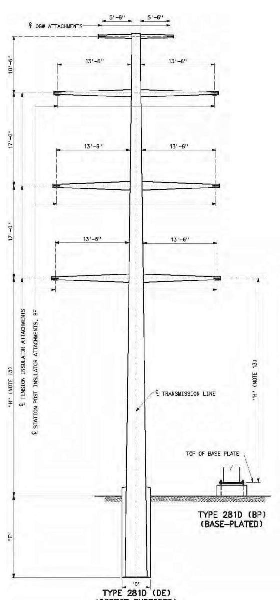
PURPOSE OF SCOPING

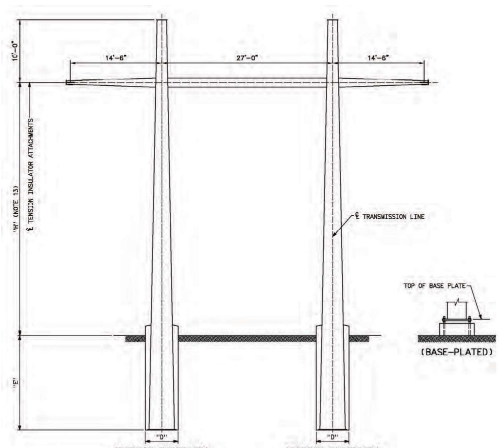
- Introduce the proposed project
- Obtain public and interested parties' input
- Help determine the range and significance of issues to be addressed in the environmental assessment

* OPPORTUNITIES TO COMMENT

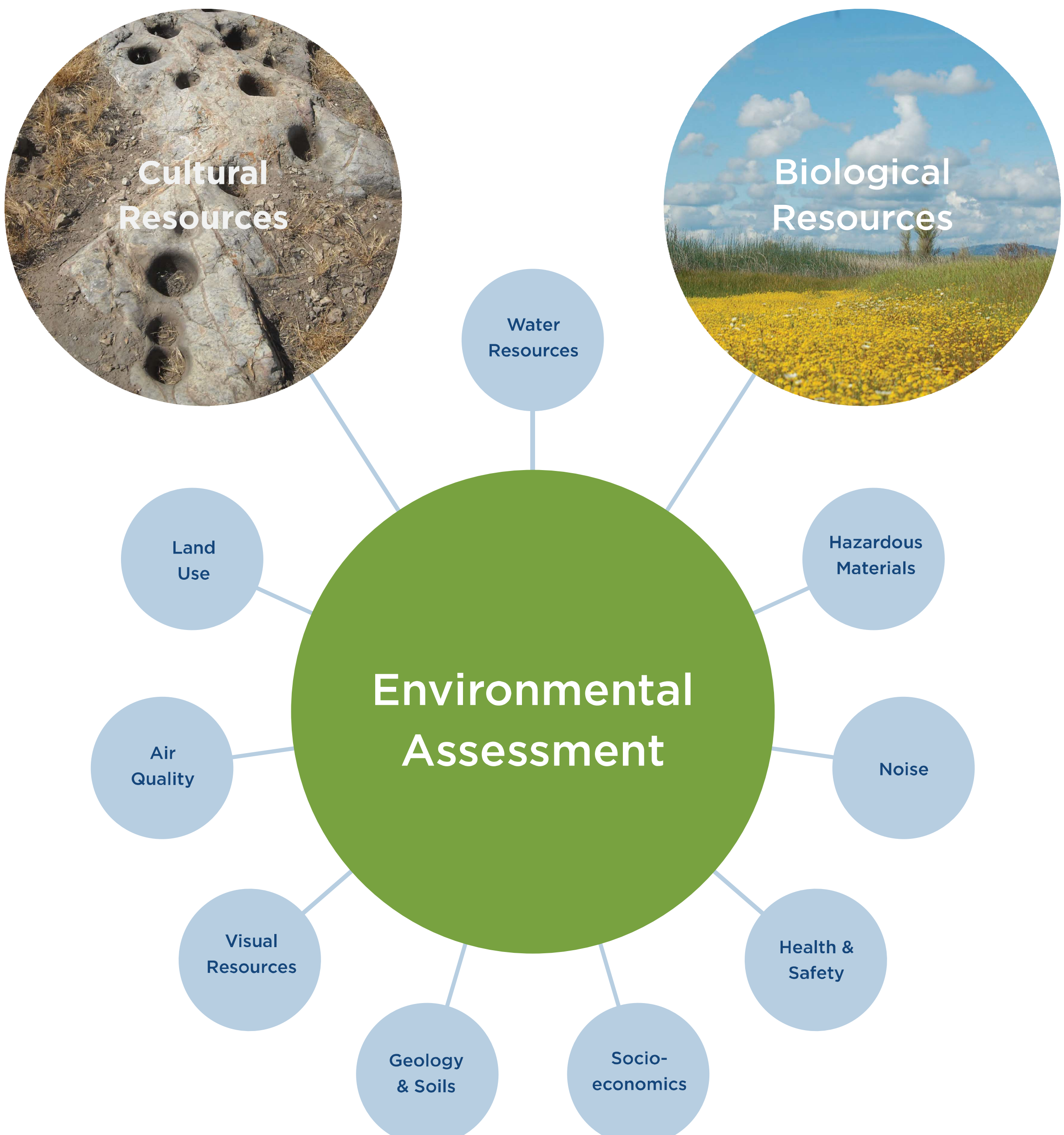
- **Written comments**
  Written comments at scoping meeting
- **Email**
  Tish Saare
  Saare@WAPA.gov
- **Mail**
  Tish Saare - Environmental Protection Specialist
  114 Parkshore Drive
  Folsom, California 95630

Typical Pole Types

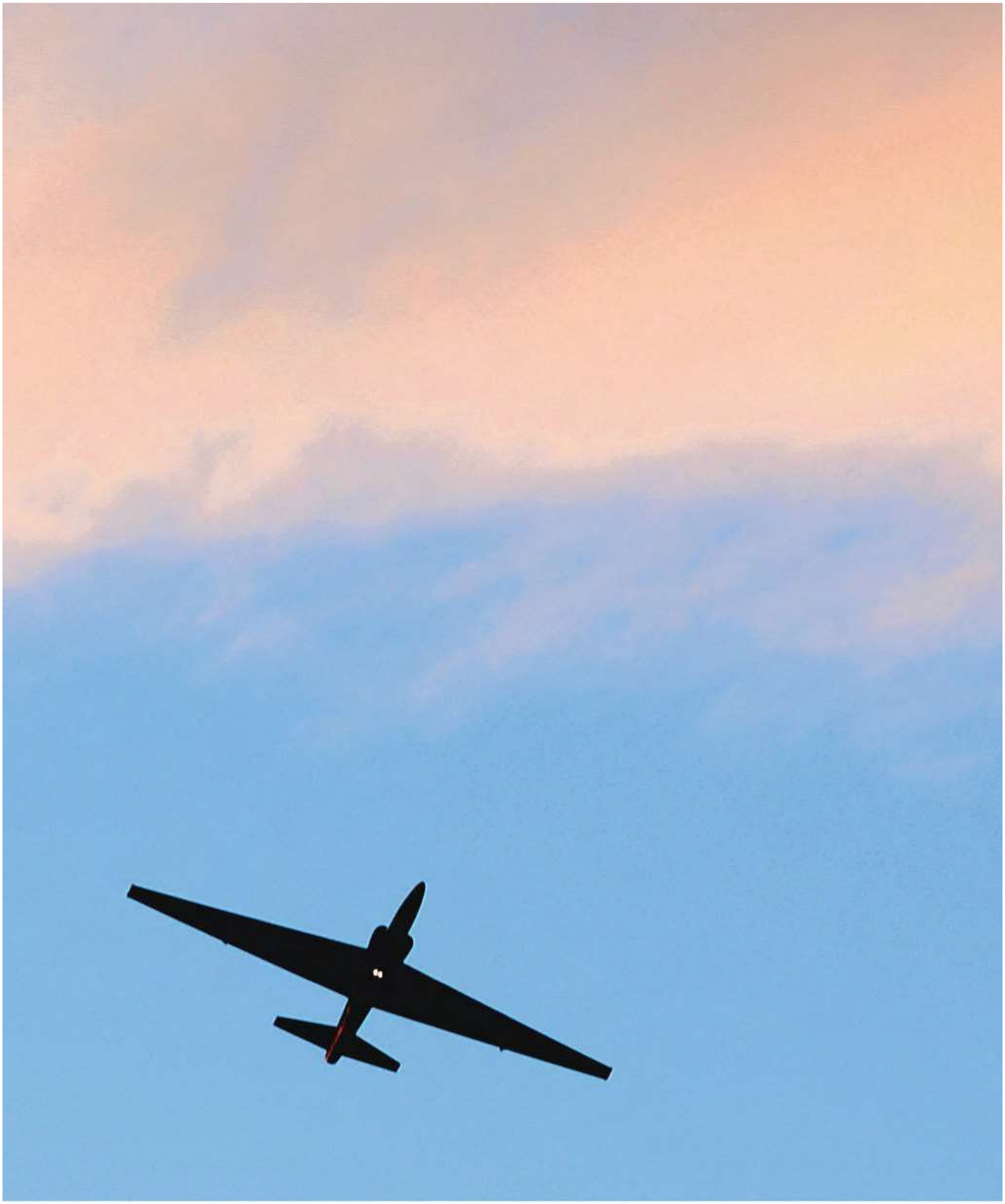




Resources to be Considered in the Environmental Assessment (EA)



Beale Air Force Base



Contact Us.

Don Lash
Environmental Protection Specialist
Western Area Power Administration

114 Parkshore Drive
Folsom, California 95630
Email: Lash@WAPA.gov
Phone: (916) 353-4048

https://go.usa.gov/xnU8c

Updated contact information for the second round of scoping

Contact Us.

Tish Saare
Environmental Protection Specialist
Western Area Power Administration

114 Parkshore Drive
Folsom, California 95630
Email: Saare@WAPA.gov
Phone: (916) 353-4526

https://go.usa.gov/xU9zz

APPENDIX E
PUBLIC COMMENTS RECEIVED

Public comments received during the first round of scoping

CARLTON FAMILY TRUST
c/o Dennis E. Carlton, Esq.
7304 San Carlos Road
Jacksonville, Florida 32217

January 17, 2018

Mr. Don Lash
Environmental Protection Specialist
Western Area Power Administration
114 Parkshore Drive
Folsom, CA 95630

Via lash@wapa.gov

Dear Mr. Lash:

I am writing to you in response to the notice relayed by you to the Carlton Family Trust with respect to the proposed Beale Air Force Base Interconnection Line. I copy Susan Nielson, as well, on this correspondence because she has further communicated with us about the matter in a letter dated January 12, 2018

My family and I have concern about the proposed routing of the power line along Erle Road (South Alternative) because of our perception that it will seriously affect the use of our property for farming. At the same time, it appears from a review of the map that was included in the Project Newsletter dated December 6, 2017, that the "North Alternative" would affect a significantly smaller amount of private property.

It is our hope that WAPA and Beale Air Force Base recognize that a routing of this overhead 230kv power line along Erle Road would have a serious negative impact on the family's use of its property (particularly affecting aerial seeding, fertilizing, and satisfaction of other crop-related requirements), and income related thereto, in the contemplated corridor.

Note, moreover, our opinion that the North Alternative will have much less impact on private properties due to the Beale Air Force Base boundary being further West and closer to the Cottonwood-Roseville power line.

Sincerely,

Dennis E. Carlton
Attorney-in-Fact for Carlton Family Trust

cc: Gary M. Carlton
Matthew Carlton
Susan Nielson, Realty Specialist, nielson@wapa.gov

Not for public review.

[redacted]

January 16, 2018

To Whom It May Concern,

I am drafting this letter in response to your invitation for public comment and on behalf of the farming community and residents of Erle Road. I would like to express our immediate and strong opposition to this project.

We live on a road that is barely maintained by the county at all and are largely left to fend for ourselves along this dead end, forgotten road, even though we all pay our fair share of taxes for maintenance. Many of us are farmers trying to make a living in a downturned economy. Now . . . because the base requires power, we must endure more interference and higher costs in the way of overhead lines causing:

- Dangerous obstacles for our agricultural pilots
- Additional ground maintenance in controlling noxious weed at the base of towers
- Loss of productive acreage
- Reduced land and home values

Since it appears we have no choice in the matter (as usual) we request you spend the time and effort in researching a viable option to put the lines underground on privately owned land and let the base deal with overhead lines, per their need for power.

Furthermore, if the project must advance at all we strongly suggest you select the Northern option as this option affects less privately owned land.

Thank you,

Gabrielle Pettit Michelle Fales Sherri Staas

Ronda Applegarth Wayne Staas

Public comments received during the second round of scoping

Phone Record:

7/25/18 – approximately 10:30 am

Reggie Singh call Tish Saare with concerns about the Beale-WAPA Intertie Project. Northern Alternative B crosses the northern portion of his property and Northern Alternative A crosses the southern portion of his property. He prefers that we choose the Southern Alternative and avoid his property. Mr. Singh is a rice farmer and is concerned about the line boxing in his property (PG&E lines are also on his property) and is concerned about the impact to his farming practices. He is specifically concerned about the challenges associated with aerial application and transmission lines.

Mr. Singh also inquired about WAPA's policies regarding planting orchards (specifically amond trees) under transmission lines. I indicated that WAPA's typical policy is that we do not allow new orchards under our transmission lines. Mr. Singh inquired as to how WAPA can dictate what he does on his property. I indicated that if the project were to move forward with one of the Alternatives that cross his property that our Lands Department would work with him on acquiring an easement through his property and that terms of the easement and compensation would be worked out at that time.

Mr. Singh indicated that he would try to attend the August 6th scoping meeting.

Western Area Power Administration
Sierra Nevada Customer
114 Park Shore Dr
Folsom, CA 95630

Attn: Susan Nielson

I already have two Central Valley power lines running through me north east of my house and I have one Western Area Power Administration line running through property on west side of my house. I do not want Beale Air Force Base's Western Area Power Administration metal power line going through my property again. Please find another route. I have rice fields on the west side of the present WAPA line. I do not want to interfere with the airplanes flying over the rice fields. I do not want another line here. My uncle, Pete Ahart died from leukemia; electric magnetic poisoning and I do not want any more high powered electric power lines running through my property.

Louise Ahart 8-3-18

Louise Ahart

Louise Ahart
3014 Fruitland Rd.
Marysville, CA 95901

received 8.6.18

From: jerry white
To: McAfee, Natalie (CONTR)
Subject: [EXTERNAL] Power line, into Beale AFB...
Date: Monday, August 06, 2018 6:35:18 PM

Hi

Mrs. Mcafee, Very nice to have met you..
Enjoyed meeting everyone; & discussion
of Power Line to Base...
I, stopped by North Beale Rd. & Your
Power Transmission Lines...
At an “”Eye Ball Glance””.
You would only need 1 maybe 2 Towers
to get onto Beale - - going East on
North Beale Rd...
There is a wide burn along the North Side
of North Beal Rd. Maybe Helpful...
About 66.5 ft. (3 1/2) Trucks Long
Or 22 yards.
Sending you 3 pictures...
Looking East to Base...
Tall Tree is Corner of Base...
Looking West to Brophy...
Tall Tree is Brophy Rd...
Safety - - No Homes ,
No People around...
At this meeting, I Said the Rice Croper
Flyers, Fly, East & West...
My mistake - - which ever
the wind is going so they
can make 100 % drop in Field...
Will send 3 pictures next...
Thank you
Jerry White

Sent from my iPhone

APPENDIX F

AGENCY SCOPING LETTER

Agency scoping letter sent during the first round of scoping

Department of Energy
Western Area Power Administration
Sierra Nevada Region
114 Parkshore Drive
Folsom, CA 95630-4710

December 6, 2017

Name
Agency
Address
City, State ZIP

Re: WAPA, Beale Interconnection Project

To Whom it May Concern,

Western Area Power Administration (WAPA) has received an interconnection request from the Beale Air Force Base (AFB) to connect with WAPA's Cottonwood-Roseville 230-kilovolt (kV) line located in Yuba County, California. The purpose of the proposed project is to ensure that the Beale AFB electrical infrastructure will supply and effectively support the missions assigned to the installation by Congress and the President. Beale AFB needs a reliable and resilient electrical transmission system that is upgraded to satisfy current electrical standards. This need includes a redundant electrical interconnection to supply critical missions and prevent electrical failure during maintenance and/or electrical faults. In response to the request by Beale AFB, WAPA will provide an electrical interconnection.

As part of the proposed project, a 6-mile, 230-kV/60-kV interconnection would be built between WAPA's Cottonwood-Roseville transmission line and an existing substation on Beale AFB. Of the 6 total miles, approximately 1 to 2 miles—depending on the final alignment—would be located off-base, with the remaining 4 miles located on-base. The proposed project also includes a substation to be located on Beale AFB to accommodate both the 230-kV and 60-kV lines. Currently, two alternative routes are being considered for the interconnection line (enclosure 1) and there is not a preferred route. WAPA contracted Transcon Environmental, Inc. to prepare an Environment Assessment (EA) in compliance with the National Environmental Policy Act (NEPA).

WAPA will hold an open house-style public meeting to provide information about the proposed project and to collect comments. Details about the meeting, including the date, location, and time is included in the enclosed newsletter. Technical studies are scheduled to take place during winter 2017, with a Draft EA circulated to the public and agencies for review in summer 2018.

At this time, WAPA is requesting comments on the project to identify issues and resource sensitivities; additionally, please let us know of any approved or planned projects in the vicinity that we should consider cumulatively in the EA. Written comments are due within 30 days, post-marked by January 19, 2018. Please send or email comments to:

Don Lash, Environmental Protection Specialist
Western Area Power Administration
114 Parkshore Drive
Folsom, California 95630
Email: Lash@WAPA.gov
Phone: (916) 353-4048

Comments may also be submitted during the public meeting. For additional information, or to discuss this project further, please contact Mr. Lash at 916.353.4048.

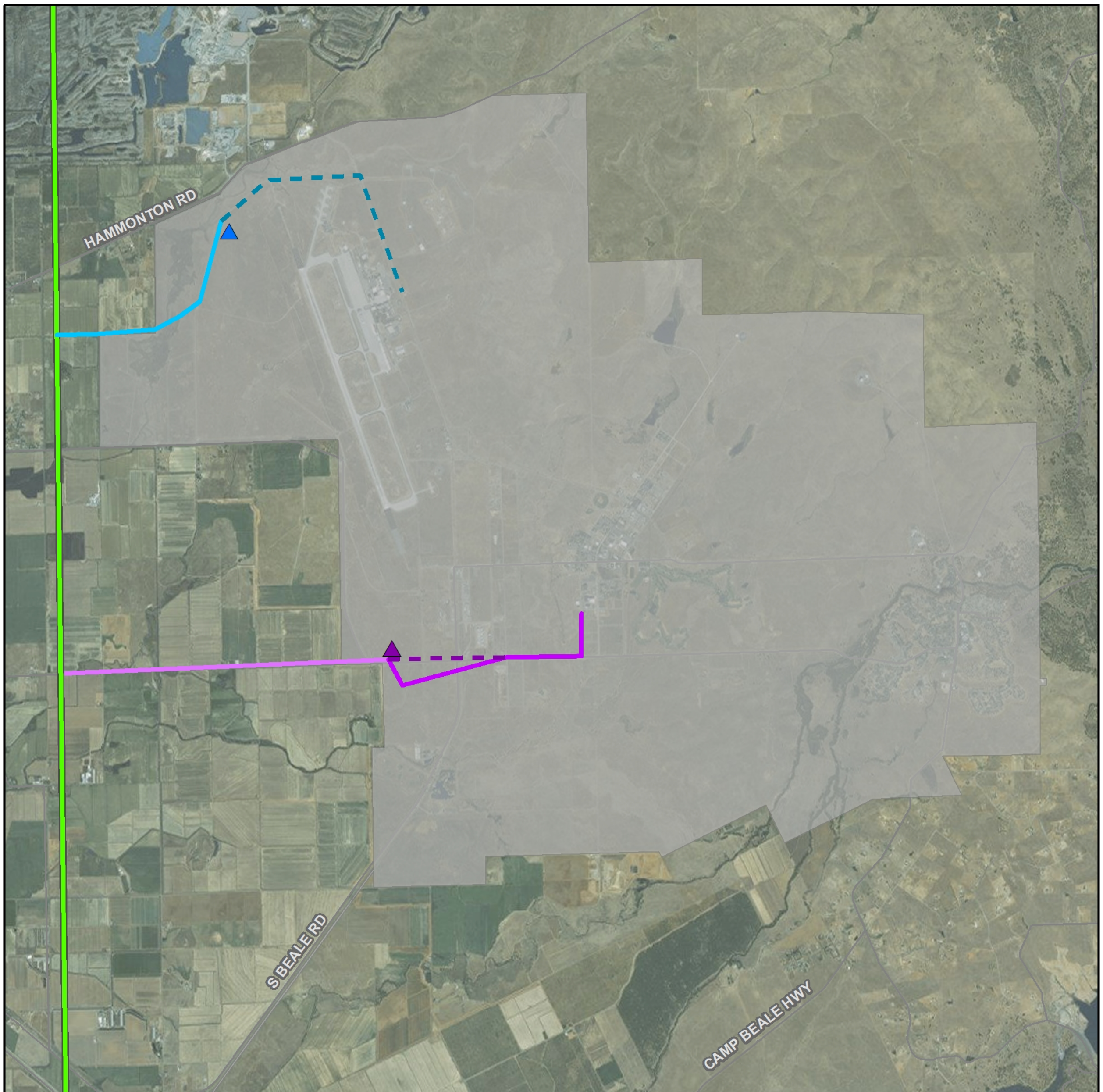
Sincerely,

Donald Lash

Don Lash, Environmental Protection Specialist
Western Area Power Administration

Enclosure 1

December 5, 2017 G:\Projects\Wapa\Beale WAPA Interconnection EA\Beale_WAPA_Interconnection_Overview_Map_8x11_P.mxd



Legend

- Beale Air Force Base
- Existing WAPA 230kV
- North Alternative Overhead 230kV
- North Alternative Underground 60kV
- North 230/60kV Proposed Substation
- South Alternative Overhead 230kV
- South Alternative Overhead 60kV
- South Alternative Underground 60kV
- South 230/60kV Proposed Substation

0 1 2 Miles

Overview Map

Beale WAPA Interconnection Project

TRANSCON environmental

Project update letter sent during the second round of scoping

Department of Energy
Western Area Power Administration
Sierra Nevada Region
114 Parkshore Drive
Folsom, CA 95630-4710

July 23, 2018

Name
Organization
Address
City, State Zip

Re: WAPA, Beale Interconnection Project – Update

To Whom It May Concern:

A new alternative route is being considered for Western Area Power Administration's (WAPA) Beale Air Force Base (AFB) Interconnection Project.

WAPA received an interconnection request from the Beale AFB to connect with WAPA's Cottonwood-Roseville 230-kilovolt (kV) transmission line (line) located in Yuba County, California. Beale AFB has a need to improve the reliability and redundancy of electricity supply to the base. Currently, electricity is transmitted to Beale AFB via one existing 60-kV line. In response to the need for reliability and redundancy, an additional new line with a different alignment is proposed. As part of the proposed project, a new 230-kV/60-kV interconnection line would be built between WAPA's Cottonwood-Roseville transmission line to a proposed substation on Beale AFB. The total length of the line, depending on the final route, equals approximately 6 miles. WAPA contracted Transcon Environmental, Incorporated to prepare an Environment Assessment (EA) in compliance with the National Environmental Policy Act (NEPA).

Initial project scoping in December 2017 and January 2018 included two routing alternatives for the proposed transmission line. As a result of feedback during scoping, and more information obtained regarding natural resources in the area, WAPA and Beale AFB have identified a third alternative to consider (see enclosed map). There is still not a preferred alternative.

Because of these changes, and the newly-affected landowners near the Northern B Alternative, WAPA will hold a second open house-style public meeting to provide information about the proposed project and to collect comments. Details about the meeting, including the date, location, and time, are included in the enclosed newsletter. You are invited to attend the meeting to ask questions or provide comments.

For additional information, or to discuss this project further, please contact me at (916) 353-4526 or Saare@WAPA.gov.

Sincerely,
Tish Saare

Tish Saare, Environmental Protection Specialist

2 Enclosures:
Project Newsletter
Project Overview Map

Beale AFB Proposed Interconnection Line

Project Information

Western Area Power Administration (WAPA) is one of four federal power marketing agencies within the U.S. Department of Energy. WAPA markets power through its Sierra Nevada Region (SN) office from the Central Valley Project and the Washoe Project to preference customers in central and northern California and northwest Nevada. SN maintains and operates numerous substations and more than 1,500 miles of transmission lines.

WAPA received an interconnection request from Beale Air Force Base (AFB) to connect to WAPA's Cottonwood-Roseville 230-kilovolt (kV) line located in Yuba County, California. As part of the proposed project, a new 230-kV/60-kV interconnection line would directly connect from WAPA's Cottonwood-Roseville transmission line to a proposed substation on the base. The total length of the line, depending on the final route, equals approximately 6 miles. Currently, three alternative transmission line corridors are being considered and will be evaluated for this proposed interconnection (see attached map).

Need For The Project

Beale AFB has a need to improve the reliability and redundancy of electricity supply to the base. Currently, electricity is transmitted to Beale AFB via one existing 60-kV line. In response to the need for reliability and redundancy, an additional new line with a different alignment is proposed. The existing 60-kV line will remain.

Environmental Analysis

Because this project requires a federal action, it must be in compliance with the National Environmental Policy Act (NEPA) and other relevant regulations. WAPA contracted Transcon Environmental, Inc., an environmental consulting firm, to prepare an Environmental Assessment (EA) and perform other NEPA compliance activities. This EA will consider potential effects of the proposed 6-mile transmission line project to the environment, including physical, biological, social, economic, and natural resources.

Project Update

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- Southern Alternative (included in January 2018 scoping)
- Northern A Alternative (included in January 2018 scoping)
- Northern B Alternative (added to the project in June 2018; included in July 2018 scoping)

Because of these changes, and the newly affected landowners near the Northern B Alternative, WAPA is opening a second 45-day public comment period and holding another open-house style public meeting to answer questions and collect comments.

*** GETTING INVOLVED OR MAKING COMMENTS**

The open house will be held Monday, August 6, 2018 from 4:00 p.m. to 7:00 p.m. at:

University of California Cooperative Extension
142 Garden Highway #A
Yuba City, CA 95991

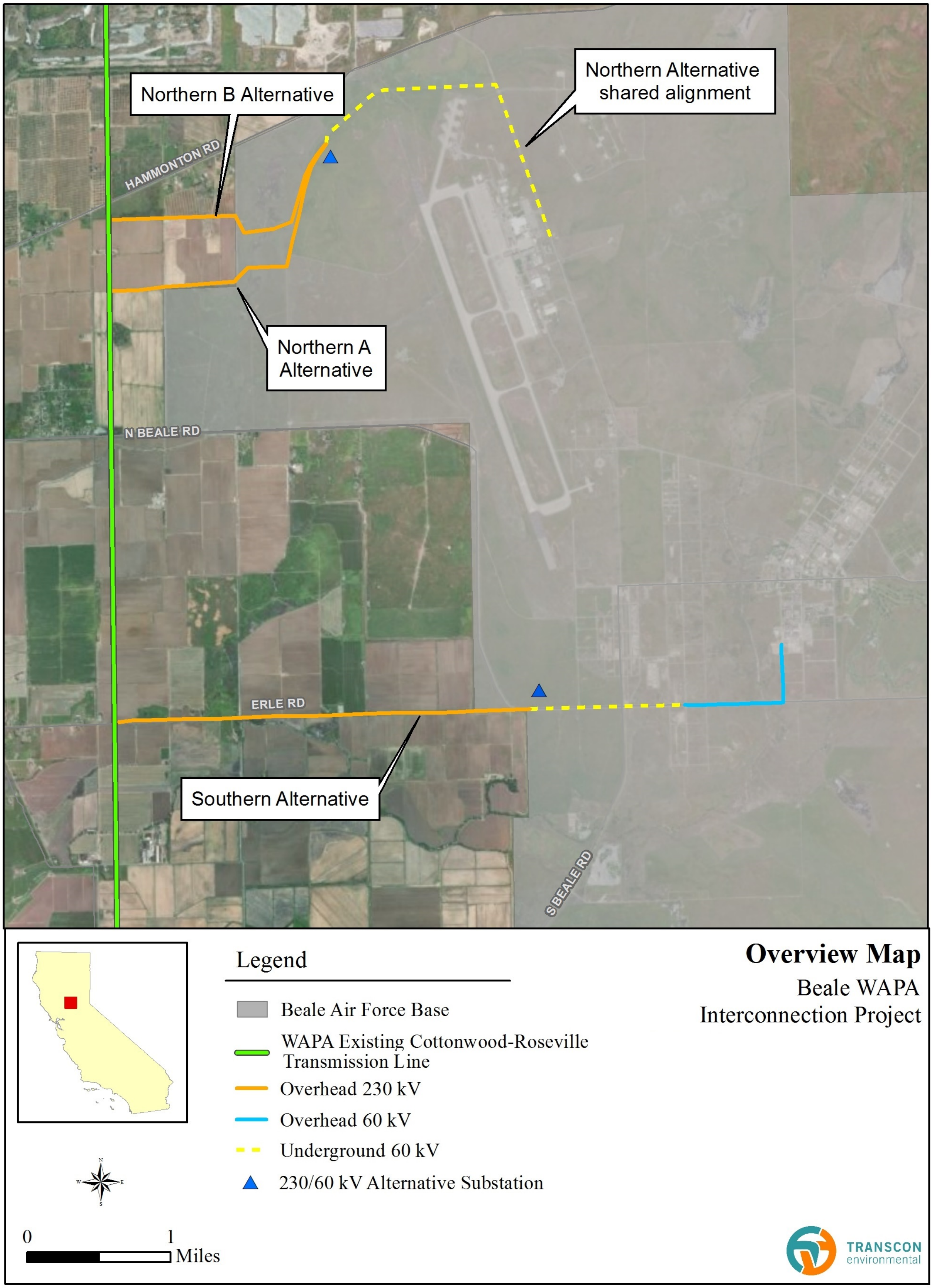
Your comments are welcome and important to establish the level and scope of analysis. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment––including your personal identifying information––may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. Written comments are due by September 7, 2018. You can submit comments in writing or verbally at the open house, or send them to:

Tish Saare, Environmental Protection Specialist
Western Area Power Administration
114 Parkshore Drive
Folsom, California 95630
Email: Saare@wapa.gov
Phone: (916) 353-4526

If you have questions regarding this project, please contact Tish Saare. For project information and updates, please visit the project webpage at: https://go.usa.gov/xU9zz

Western Area Power Administration

Powering the energy frontier



Overview Map

Beale WAPA Interconnection Project

July 18, 2018 G:\Projects\Wapa\Beale WAPA Interconnection EA\Beale_WAPA_Interconnection_Overview_Map_8x11_P_em_0718.mxd

APPENDIX G

AGENCY COMMENTS RECEIVED

JOHN GARAMENDI
3RD DISTRICT, CALIFORNIA

ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE
EMERGING THREATS AND CAPABILITIES SUBCOMMITTEE

TRANSPORTATION AND INFRASTRUCTURE COMMITTEE
RANKING MEMBER
COAST GUARD AND MARITIME TRANSPORTATION SUBCOMMITTEE
WATER RESOURCES AND ENVIRONMENT SUBCOMMITTEE
AVIATION SUBCOMMITTEE

UNITED STATES CONGRESS

2438 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
PHONE: (202) 225-1880
FAX: (202) 225-5914

DISTRICT OFFICES:

412 G STREET
DAVIS, CA 95616
PHONE: (530) 753-5301
FAX: (530) 753-5614

1261 TRAVIS BOULEVARD, SUITE 130
FAIRFIELD, CA 94533
PHONE: (707) 438-1822
FAX: (707) 438-0523

795 PLUMAS STREET
YUBA CITY, CA 95991
PHONE: (530) 329-8865
FAX: (530) 763-4248

January 9, 2018

Donald Lash
Environmental Protection Specialist
Western Area Power Administration
114 Parkshore Drive
Folsom, CA 95630

Dear Mr. Lash,

Since 2011, I have had the honor of representing Beale Air Force Base and the surrounding communities in Yuba and Sutter counties. During my first visit to Beale in 2011, I learned that the on-base electrical grid was due for an upgrade and overhaul, in addition to the need for a more robust source of external power. Over the years, various infrastructure improvements have been made on the base, however, the critical need for a new source of external power has gone unresolved. My office and I have worked with Western Area Power Administration and Beale for three years to find a solution to the power problem. A solution is now at hand.

The proposed new electric power interconnection project for Beale is essential for current and future operations. Beale houses five critical national defense missions, and the intelligence, surveillance, and reconnaissance that is done as a part of those missions utilizes significant electrical power. The existing power supply infrastructure is already at maximum capacity and will not meet the needs of expanded operations that will soon be coming to the base. Furthermore, the current source of electrical power creates a security risk as it is from a single, undersized source and lacks much needed redundancy. The vulnerability created by this lack of redundancy was clearly illustrated when a passenger vehicle hit one of the power poles, putting the base without power for twelve hours.

The Western Area Power Administration and Beale Air Force Base have proposed a solution which I strongly support. The proposal will meet the future power requirements of the base, provide a redundant source of electrical power, and will do so with a minimal impact on the adjacent landowners and the environment.

Sincerely,

John Garamendi

JOHN GARAMENDI
Member of Congress

APPENDIX H

TRIBAL CONSULTATION LETTER & NAHC RESPONSE

Section 106 Tribal Consultation Letter

Department of Energy
Western Area Power Administration
Sierra Nevada Customer Service Region
114 Parkshore Drive
Folsom, California 95630-4710

FEB 8 2018

Hermo Olanio
Vice Chairperson, Maidu Miwok
P.O. Box 1340
Shingle Springs, CA 95682

Dear Mr. Olanio:

The Western Area Power Administration (WAPA), Sierra Nevada Region (SNR), is an energy power marketing administration with the U.S. Department of Energy. Pursuant to Section 106 of the National Historic Preservation Act (NHPA), we write to you at this time regarding a proposed new interconnection transmission line construction project in Yuba County, California. In cooperation with the U.S. Department of Defense, Beale Air Force Base (AFB), WAPA is in the very early planning stages of preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to consider and analyze the potential impacts of the proposed action. For the purposes of compliance with NEPA and Section 106 of the National Historic Preservation Act (NHPA), WAPA is the designated lead agency. The following provides you with further details of the proposed project which is referred to as the Beale/WAPA Interconnection Line Project (BWIP). The proposed transmission line corridor (including proposed alternatives) is completely within Yuba County (enclosure 1).

WAPA received an interconnection request from Beale AFB to connect with WAPA's existing Cottonwood-Roseville 230-kilovolt (kV) line located in Yuba County, California. The purpose of the proposed project is to ensure that the Beale AFB electrical infrastructure will supply and effectively support the missions assigned to the installation by Congress and the President. Beale AFB needs a reliable and resilient electrical transmission system that is upgraded to satisfy current electrical standards. This need includes a redundant electrical interconnection to supply critical missions and prevent electrical failure during maintenance and/or electrical faults. In response to the request by Beale AFB, WAPA will be developing an EA to evaluate environmental impacts for the proposed interconnection.

As part of the proposed project, a 6-mile, 230-kV/60-kV interconnection would be built between WAPA's Cottonwood-Roseville transmission line and an existing substation on Beale AFB. Portions of the proposed transmission line would be located on Beale AFB itself. The proposed project also includes a new substation to be located on Beale AFB to accommodate both the 230-kV and 60-kV lines. Currently, two alternative routes are being considered for the interconnection line (enclosure 1).

At our request, the California Native American Heritage Commission conducted a search of their Sacred Lands Database and provided a list of Native American contacts for the entire proposed project area (enclosure 2). The results of the search were negative. Beale AFB also provided a list of additional tribal contacts who should be consulted.

Compliance with Section 106 of the NHPA requires that WAPA identify historic properties in the proposed area of potential effects (APE). As part of our analysis of potential impacts that could result from the proposed action, and per consultation and compliance requirements, we welcome any information you would like to share with us regarding historic properties or places of traditional religious and cultural importance near the proposed project area that we should consider as part of our analysis. We look forward to hearing from and working with you on this important project. We welcome your call if you have questions on the proposed BWIP project or if you wish to arrange a meeting regarding this project. Please respond to our request within 30 days of receipt of this letter.

Please feel free to contact me at our SNR office in Folsom, California at (916) 353-4035 or email at waldear@wapa.gov. For more information regarding the proposed project you can visit: https://go.usa.gov/xnU8c.

Sincerely,

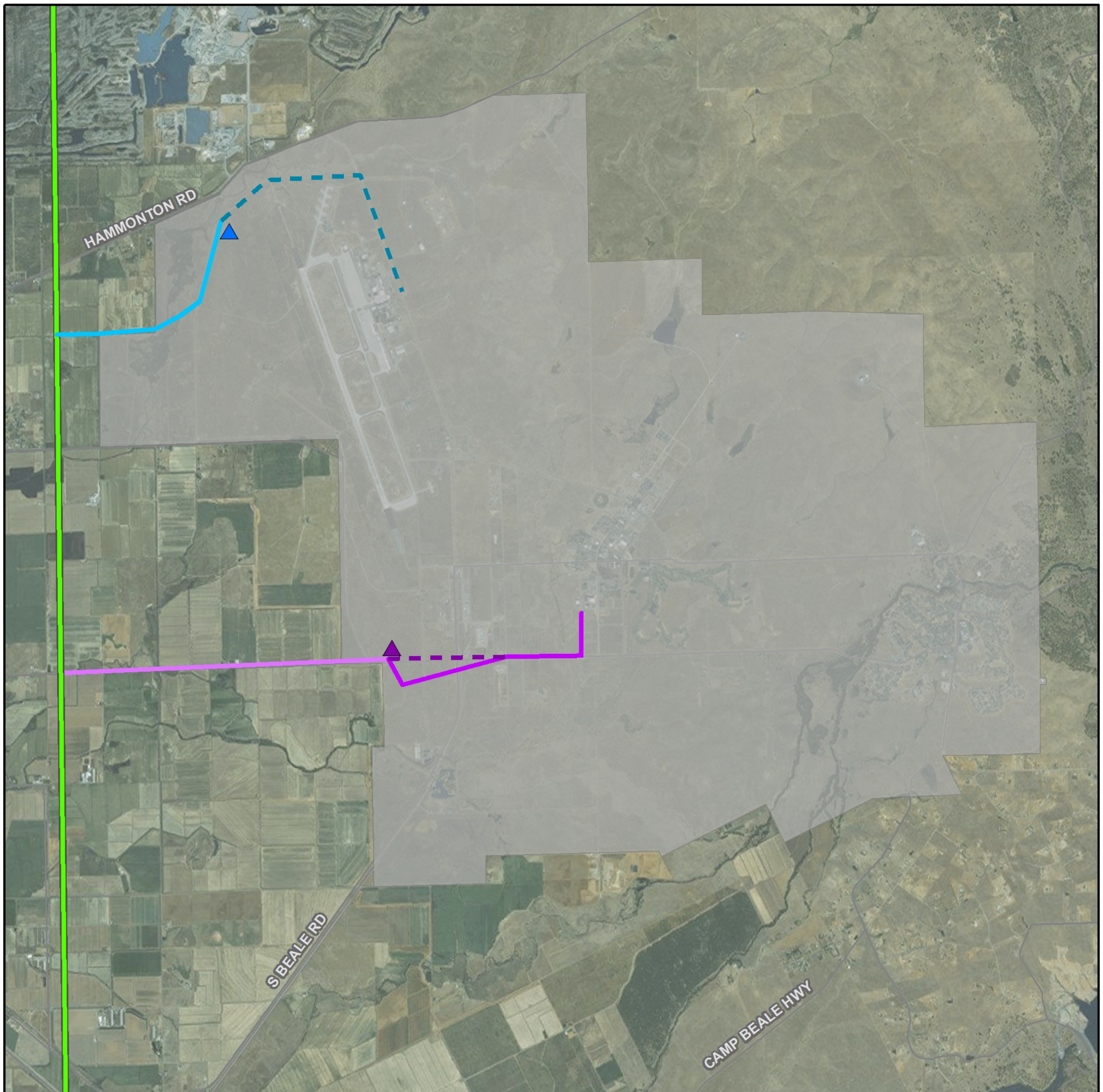
Cherie Johnston-Waldear

Cherie Johnston-Waldear
Regional Preservation Official
Sierra Nevada Region

2 Enclosures

cc:
Tamara Gallentine
Beale AFB Natural and Cultural Resources Program Manager
9 CES/CEIE
6425 B Street
Beale AFB, CA 95903

December 5, 2017 G:\Projects\Wapa\Beale WAPA Interconnection EA\Beale_WAPA_Interconnection_Overview_Map_8x11_P.mxd



Legend

- Beale Air Force Base
- Existing WAPA 230kV
- North Alternative Overhead 230kV
- North Alternative Underground 60kV
- North 230/60kV Proposed Substation
- South Alternative Overhead 230kV
- South Alternative Overhead 60kV
- South Alternative Underground 60kV
- South 230/60kV Proposed Substation

0 1 2 Miles

Overview Map

Beale WAPA
Interconnection Project

TRANSCON environmental

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

December 19, 2017

Cherie Johnston-Waldear
Western Area Power Administration

Email to: waldear@wapa.gov

RE: Beale AFB 230 kv Transmission Line Project, Yuba County

Dear Ms. Waldear,

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not preclude the presence of cultural resources in any project area. Other sources for cultural resources should also be contacted for information regarding known and/or recorded sites.

Enclosed is a list of Native Americans tribes who may have knowledge of cultural resources in the project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these tribes, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at 916-573-1033 or frank.lienert@nahc.ca.gov.

Sincerely,

Frank Lienert
Associate Governmental Program Analyst

Native American Heritage Commission
Native American Contacts
12/19/2017

Mooretown Rancheria of Maidu Indians
Gary Archuleta, Chairperson
#1 Alverda Drive — Maidu
Oroville, CA 95966 — KonKow / Concow
frontdesk@mooretown.org
(530) 533-3625

(530) 533-3680 Fax

Colfax-Todds Valley Consolidated Tribe
Pamela Cubbler, Treasurer
P.O. Box 4884 — Miwok
Auburn, CA 95604 — Maidu
PCubbler@colfaxrancheria.com
(530) 320-3943

United Auburn Indian Community of the Auburn Rancheria
Gene Whitehouse, Chairperson
10720 Indian Hill Road — Maidu
Auburn, CA 95603 — Miwok
(530) 883-2390 Office

(530) 883-2380 Fax

Tsi Akim Maidu
Don Ryberg, Chairperson
P.O. Box 510 — Maidu
Browns Valley, CA 95918
tsi-akim-maidu@att.net
(530) 274-7497

(530) 559-8595

Strawberry Valley Rancheria
Cathy Bishop, Chairperson
P.O. Box 667 — Maidu
Marysville, CA 95901 — Miwok
catfrmsac2@yahoo.com
(916) 501-2482

Estom Yumeka Maidu Tribe of the Enterprise Rancheria
Glenda Nelson, Chairperson
2133 Monte Vista Avenue — Maidu
Oroville, CA 95966
info@enterpriserancheria.org
(530) 532-9214

(530) 532-1768 Fax

Tsi Akim Maidu
Grayson Coney, Cultural Director
P.O. Box 510 — Maidu
Browns Valley, CA 95918
tsi-akim-maidu@att.net
(530) 274-7497

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessments for the proposed
Beale AFB 230 kv Transmission Line Project, Yuba County

Project update letter sent to Tribes

Department of Energy
Western Area Power Administration
Sierra Nevada Region
114 Parkshore Drive
Folsom, CA 95630-4710

July 23, 2018

Name
Tribe
Address
City, State Zip

Re: WAPA, Beale Interconnection Project –Update

To Whom It May Concern:

A new alternative route is being considered for Western Area Power Administration's (WAPA) Beale Air Force Base (AFB) Interconnection Project. Tribal consultation under Section 106 of the National Historic Preservation Act was initiated for this project in January 2018. Consultation remains open and WAPA's Regional Preservation Official will again be contacting Tribes pursuant to Section 106 in the coming weeks. The update provided below is meant to update Tribes in the interim.

WAPA received an interconnection request from Beale AFB to connect with WAPA's Cottonwood-Roseville 230-kilovolt (kV) transmission line (line) located in Yuba County, California. Beale AFB has a need to improve the reliability and redundancy of electricity supply to the base. Currently, electricity is transmitted to Beale AFB via one existing 60-kV line. In response to the need for reliability and redundancy, an additional new line with a different alignment is proposed. As part of the proposed project, a new 230-kV/60-kV interconnection line would be built between WAPA's Cottonwood-Roseville transmission line to a proposed substation on Beale AFB. The total length of the line, depending on the final route, equals approximately 6 miles. WAPA contracted Transcon Environmental, Incorporated to prepare an Environment Assessment (EA) in compliance with the National Environmental Policy Act (NEPA).

Initial project scoping included two routing alternatives for the proposed transmission line. As a result of feedback during scoping, and more information obtained regarding natural resources in the area, WAPA and Beale AFB have identified a third alternative to consider (see enclosed map). There is still not a preferred alternative.

Because of these changes, and the newly-affected landowners near the Northern B Alternative, WAPA will hold a second open house-style public meeting to provide information about the proposed project and to collect comments. Details about the meeting, including the date, location, and time are included in the enclosed newsletter. You are invited to attend the meeting to ask questions or provide comments.

For additional information, or to discuss this project further, please contact me at (916) 353-4526 or Saare@WAPA.gov.

Sincerely,

Tish Saare

Tish Saare, Environmental Protection Specialist

2 Enclosures:
Project Newsletter
Project Overview Map

APPENDIX I
TRIBAL COMMENTS RECEIVED

MIWOK United Auburn Indian Community
MAIDU of the Auburn Rancheria

Gene Whitehouse, Chairman | John L. Williams, Vice Chairman | Calvin Moman, Secretary | Jason Camp, Treasurer | Gabe Cayton, Council Member

July 26, 2018

Tish Saare
Western Area Power Administration - California
114 Parkshore Drive
Folsom, CA 95630-4710

Subject: WAPA, Beale Interconnection Project - Update

Dear Tish Saare,

Thank you for requesting information regarding the above referenced project. The United Auburn Indian Community (UAIC) of the Auburn Rancheria is comprised of Miwok and Southern Maidu (Nisenan) people whose tribal lands are within Placer County and whose service area includes El Dorado, Nevada, Placer, Sacramento, Sutter, and Yuba counties. The UAIC is concerned about development within its aboriginal territory that has potential to impact the lifeways, cultural sites, and landscapes that may be of sacred or ceremonial significance. We appreciate the opportunity to comment on this and other projects. The UAIC would like to consult on this project.

In order to ascertain whether the project could affect cultural resources that may be of importance to the UAIC, we would like to receive copies of any archaeological reports that are completed for the project. We also request copies of environmental documents for the proposed project so that we have the opportunity to comment on appropriate identification, assessment and mitigation related to cultural resources. Finally, we request and recommend that UAIC tribal representatives observe and participate in all cultural resource surveys. To assist in locating and identifying cultural resources, UAIC's Preservation Department offers a mapping, records and literature search services program. This program has been shown to assist project proponents in complying with applicable environmental protection laws and choosing the appropriate mitigation measures or form of environmental documentation during the planning process. If you are interested in the program, please let us know.

The UAIC's Preservation Committee would like to set up a meeting or site visit, and begin consulting on the proposed project. Based on the Preservation Committee's identification of cultural resources in and around your project area, the UAIC recommends that a tribal monitor be present during any ground disturbing activities. Thank you again for taking these matters into consideration, and for involving the UAIC early in the planning process. We look forward to reviewing the documents requested above and consulting on your project. Please contact Marcos Guerrero, Cultural Resources Manager, at (530) 883-2364 or by email at mguerrero@auburnrancheria.com if you have any questions.

Sincerely,

Gene Whitehouse,
Chairman

CC: Marcos Guerrero, CRM

BWIP Phone Record:

7/24/18 approx 12:45 pm.

Tish Saare received a call from Eric Josephson from the Konkow Valley Band of Maidu inquiring about the Beale Intertie Project. Tish indicated that our cultural resources specialist, Cherie Johnston-Waldear would get back to him. Cherie called him right back (approx.. 12:55 pm). Mr. Josephson indicated that he did not want to be involved with the project if the United Auburn Indian Community or the Paskenta Band of Nomlaki were involved.

TABLE 2-1[a]
PERMANENT AND TEMPORARY GROUND DISTURBANCE—PROPOSED ACTION

Facility	Disturbance Type		Preferred Alternative			Northern A Alternative			Southern Alternative		
	Perm.	*Temp.*	*Qnty*	*Perm.*	*Temp.* [b]	*Qnty*	*Perm.*	*Temp.* [b]	*Qnty*	*Perm.*	*Temp.* [b]
230-kV overhead single circuit H-frame [c]	Four 7-foot diameter foundations per pair of structures	0.7 acre per pair of structures	Up to 17 pairs of structures	0.061 acre (2,617 square feet)	10.78 acres	Up to 18 pairs of structures	0.065 acre (2,771 square feet)	11.19 acres	Up to 17 pairs of structures	0.061 acre (2,617 square feet)	8.24 acres
60-kV overhead monopole	5-foot diameter foundation	0.7 acre per structure	3	0.001 acre (59 square feet)	1.57 acres	3	0.001 acre (59 square feet)	1.57 acres	Up to 13	0.006 acre (261 sq. ft.)	3.24 acres
60-kV underground duct	None	3-foot-wide by 8-foot-deep trench	2.5 miles	N/A	0.88 acre	2.5 miles	N/A	0.88 acre	1 mile	N/A	0.37 acre
Underground vaults	None	15-foot-wide by 8-foot-deep by 40-foot-long trench	13	N/A	0.08 acre	13	N/A	0.08 acres	13	N/A	0.14
New substation	704- by 290-foot footprint	4.8 acres	1	7 acres	4.8 acres	1	7 acres	4.8 acres	1	7 acres	4.8 acres
New access roads	12-foot-wide roadway	30 feet wide (including 12-foot road)	0.65 mile	0.95 acre	2.36 acres	0.91 mile	1.32 acres	3.31 acres	0.4 mile	0.57 acre	1.41 acres
Improved existing access roads	12-foot-wide roadway	30 feet wide (including 12-foot road)	1.41 miles	2.05 acres	0.52 acre	1.51 miles	2.20 acres	2.73 acres	0	N/A	N/A
Temporary access roads	None	12 feet wide	1.27 miles	N/A	1.85 acres	1.27 miles	N/A	1.85 acres	N/A	N/A	N/A
Construction pulling and tensioning sites [d]	None	Up to 600 feet by 150 feet	Up to 9 sites	N/A	16.3 acres	Up to 9 sites	N/A	18.11 acres	Up to 9 sites	N/A	15.27 acres
Construction staging/laydown areas [e]	None	5 acres	1	N/A	5 acres	1	N/A	5 acres	1	N/A	5 acres
		TOTAL	--	10.07 acres	44.27 acres	--	10.59 acres	49.65 acres	--	7.64 acres	38.47 acres

[a] These disturbance calculations represent best estimates of temporary and permanent ground disturbance based on available information. These estimates are subject to change pending final engineering of the proposed Project and alternative corridors. We anticipate that final disturbance acreages will reasonably match these calculated estimates.
[b] Temporary impacts may overlap, so the total temporary impacts for each action alternative may not equal the sum of the ground disturbance acreage indicated for each infrastructure type.
[c] Where environmental/air field constraints permit, TSPs will be used instead of H frame structure pairs
[d] Acreages were calculated using GIS, not all areas in each pull site area can be used due to the presence of sensitive resources
[e] The Project includes one 5-acre area off Beale AFB for staging, laydown, and as a helicopter landing zone in the vicinity of agricultural fields that is considered in this table as temporary construction; additional staging/laydown areas will be located on Beale AFB that are paved/graveled, and so are not considered as disturbance in this table.
Source: Calculations in this table were provided by WAPA Geographic Information Systems team.

Resource Protection Measures

The following resource protection measures have been developed to lessen or minimize potential effects to resources. These are inclusive of Applicant Proposed Measure, Project Conservation Measures (PCMs), Standard Operating Procedures (SOPs), Best Management Practices (BMPs), and Avoidance and Minimization Measures (AMMs), collectively referred to as resource protection measures. These measures intend to achieve a common goal of minimizing effects from the Project and the terms are generally used synonymously (PCMs and SOPs are WAPA-specific terms commonly referenced in the biological analysis and when referring to WAPA programs). Resource protection measures are listed at the end of every Chapter 4 section in the Environmental Assessment.

AESTHETICS / VISUAL RESOURCES	
VR-1	Material storage and staging areas will be selected to minimize views from public roads, trails, and nearby residences to the extent feasible. During O&M, the work site will be kept clean of debris and construction waste. For areas where excavated materials will be visible from sensitive viewing locations, excavated materials will be disposed of in a manner that is not visually evident in coordination with the landowner (as appropriate) and in compliance with applicable regulations.
VR-2	Replacement structures and hardware (e.g., conductors and insulators) will be replaced in kind, to the extent feasible, while ensuring that structures and hardware that are visible from sensitive viewing locations will have appropriate colors, finishes, and textures to most effectively blend into the visible landscape. If structures are visible from more than one sensitive viewing location and backdrops are substantially different from different vantage points, the darker color, which tends to blend better into landscape backdrops, will be selected.
VR-3	Maintenance operations will be conducted in a manner that limits unnecessary scarring or defacing of the natural surroundings to preserve the natural landscape to the extent possible.
AGRICULTURE AND FORESTRY RESOURCES	
AG-1	WAPA will negotiate compensated non-planting agreements with farmers for parcels affected by Project construction.
AG-2	With the exception of permanent infrastructure locations, all areas affected by construction activities will be rehabilitated and returned to agricultural production subsequent to construction.
AG-3	WAPA will consider and compensate farmers for impacts to farming operations (e.g., aerial seeding) during negotiations with the landowners for the purpose for the ROW easement.
AIR QUALITY, GHG EMISSIONS, AND CLIMATE CHANGE	
AQ-1	Implement the Fugitive Dust Control Plan from the FRAQMD ISR Guidelines.

AQ-2	Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40 percent opacity or Ringelmann 2.0). On-road and off-road equipment shall meet the mobile source strategy requirements of the California State Implementation Plan.
AQ-3	The contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of on-site operation.
AQ-4	Limit idling time to 5 minutes—saves fuel and reduces emissions (state idling rule: commercial diesel vehicles—13 CCR Chapter 10, Section 2485, effective 02/01/2005; off-road diesel vehicles—13 CCR Chapter 9, Article 4.8, Section 2449, effective 05/01/2008).
AQ-5	Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
AQ-6	Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
AQ-7	Portable engines and portable engine-driven equipment units used at the Project work site, with the exception of on-road and off-road motor vehicles, may require CARB Portable Equipment Registration with the state or a local district permit. The owner/operator shall be responsible for arranging appropriate consultations with the CARB or the district to determine registrations and permitting requirements prior to equipment operation at the site.
AQ-8	WAPA will adhere to all requirements of those agencies having jurisdiction over air quality matters, and any necessary permits for O&M will be obtained.
AQ-9	Machinery and vehicles will be kept in good operating condition, and older equipment will be replaced with equipment meeting more stringent California emission standards; appropriate emissions-control equipment will be maintained for vehicles and equipment, per California, EPA, and WAPA air-emission requirements.
AQ-10	Idle equipment will be shut down when not in active use; visible emissions from stationary generators will be controlled.
AQ-11	Dust-control measures will be implemented in road construction and maintenance as needed. Lose material will be covered when being transported in trucks, or the trucks will maintain at least 2 feet of freeboard and will not create any visible dust emissions.
AQ-12	There will be no open burning of construction trash.
AQ-13	Grading activities will cease during periods of high winds (as determined by local AQMDs).
AQ-14	Major operations will be avoided on days when the local Air Quality Index is expected to exceed 150.
AQ-15	The mitigation measures that apply to PM_{10}, as the threshold of 80 pounds per day is exceeded, shall be implemented: • All grading operations on a Project should be suspended when winds exceed 20 miles per hour or when winds carry dust beyond the property line despite implementation of all feasible dust control measures

	• Construction sites shall be watered as directed by the Department of Public Works or AQMD and as necessary to prevent fugitive dust violations • An operational water truck should be available at all times. Apply water to control dust as needed to prevent visible emissions violations and off-site dust impacts • On-site dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce windblown dust emissions. Incorporate the use of approved non-toxic soil stabilizers according to manufacturer's specifications to all inactive construction areas • All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions • Apply approved chemical soil stabilizers according to the manufacturers' specifications to all-inactive construction areas (previously graded areas that remain inactive for 96 hours), including unpaved roads and employee/ equipment parking areas • To prevent track-out, wheel washers should be installed where Project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out • Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved public thoroughfares from the Project site • Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, on-site enforcement, and signage • Reestablish ground cover on the construction site as soon as possible and prior to final occupancy through seeding and watering • Disposal by burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the Project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, etc.) may be conducted at the Project site. Vegetative wastes should be chipped or delivered to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials off-site for disposal by open burning
BIOLOGICAL RESOURCES	
BIO-1	**<u>Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands</u>** Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction and after annual plants have set seed (generally May 1 to October

	31, or as determined by qualified personnel based on personal observation of the soils). For patrolling the ROW off of established roads in a pickup truck or for inspecting hardware on structures with a bucket truck, vernal pools, vernal pool grasslands, and seasonal wetlands will be avoided by 50 feet during the wet season. No avoidance will be necessary if soils are completely dry (generally May 1 to October 31). All equipment will be stored, fueled, and maintained in a designated vehicle staging area with appropriate spill containment. These designated areas will be established on previously developed areas whenever possible. Undeveloped staging areas, if any, will be the maximum distance possible from any vernal pool, vernal pool grassland, or seasonal wetland. Prior to the onset of work, workers will ensure a plan to allow a prompt and effective response to any accidental spills is in place. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur. When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas. A 50-foot buffer zone from the edge of the vernal pool or wetland will be maintained and the vernal pool or wetland will be protected from siltation and contaminant runoff by use of erosion control. Erosion control measures (straw wattles, silt fencing) will be installed where hydrological continuity exists between the construction activities and the wetland or when work is within 25 feet of a wetland/drainage/vernal pool. A USFWS-approved biologist or natural resources monitor will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species. Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources. If vegetation-management activities are proposed within 250 feet of a vernal pool, vernal pool grassland, or seasonal wetland, a qualified biologist will be present at all times to ensure the protection of the work-area limits in the below bullets OR qualified personnel will clearly fence the limits of the work area according to the following work-area limis prior to the maintenance activity (the herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different.): • Mixing or application of pesticides, herbicides, or other potentially toxic chemicals will be prohibited • Herbicide application to target vegetation by direct application methods (e.g., injection or cut-stump treatment) will be prohibited within 50 feet in the wet season (generally October 1 to May 31) and allowed up to the edge of the pool or seasonal wetland in the dry season (generally June 1 to September 30)

	• Herbicide application by basal spray and foliage spray methods will be prohibited within 100 feet in any season • Herbicide use will conform to Beale AFB's Weed Management Plan and allowed weed treatment methods • Manual clearing of vegetation (chainsaw, axe, clippers) will be allowed up to the edge of the pool or seasonal wetland in the wet season (generally October 1 to May 31); a buffer will not be necessary in the dry season (generally June 1 to September 30) • Mechanical clearing of vegetation (heavy-duty mowers, crawler tractors, or chippers) will be prohibited within 100 feet in the wet season (generally October 1 to May 31); a buffer will not necessary in the dry season (generally June 1 to September 30)
BIO-2	**<u>Seep, Spring, Pond, Lake, River, Stream, and Marsh</u>** The following activities will be prohibited at all times within 100 feet of a seep, spring, pond, lake, river, stream, marsh, or their associated habitats: • Vehicle access, except on existing access and maintenance roads • Dumping, stockpiling, or burying of any material • Mixing of pesticides, herbicides, or other potentially toxic chemicals • Open petroleum products All equipment will be stored, fueled, and maintained in a designated vehicle staging area with appropriate spill containment. These designated areas will be previously developed areas whenever possible. Undeveloped staging areas, if any, will be the maximum distance possible from any seep, spring, pond, lake, river, stream, marsh, or their associated habitats. When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas. For vegetation management or maintenance within 100 feet of any seep, spring, pond, lake, river, stream, marsh, or any of their associated habitats, the following work-area limits will be provided (the herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different): • Only manual clearing of vegetation will be permitted • Basal and foliar application of herbicides will be prohibited. Only direct application treatments (e.g., injection and cut-stump) of target vegetation will be allowed using herbicide approved for aquatic use by the EPA and in coordination with the appropriate federal land manager All instream work, such as culvert replacement or installation, bank recontouring, or placement of bank protection below the high-water line, will be conducted during no-flow or low-flow conditions and in a manner to avoid impacts to water flow and will be restricted to the minimum area necessary for completion of the work.

	All equipment used below the ordinary high water mark will be free of exterior contamination. Erosion control measures (straw wattles, silt fencing) will be installed where work is within 25 feet of a drainage. A USFWS-approved biologist or natural resources monitor will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species. Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources. Seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed and will be composed of native species or sterile non-native species. Seed mixtures used on Beale AFB will be approved by Beale AFB 9 CES/CEIEC and in accord with the Integrated Natural Resources Management Plan. WAPA will obtain appropriate 404 discharge and 401 water-quality permits prior to any maintenance activities that must take place within jurisdictional wetlands or other WOTUS. These will be coordinated with USACE and RWQCB as needed. Dewatering work for maintenance operations adjacent to or encroaching on seeps, springs, ponds, lakes, rivers, streams, or marshes will be conducted to prevent muddy water and eroded materials from entering the water or marsh. All stream crossings will be constructed such that they permit fish to pass and reduce the potential for stream flows to result in increased scour, washout, or disruption of water flow. Wherever possible, stream crossings will be located in stream segments without riparian vegetation, and structure footings will be installed outside of stream banks. Should WAPA need to modify existing access roads or install new access roads, they will be built at right angles to streams and washes to the extent practicable. Trees providing shade to water bodies will be trimmed only to the extent necessary and will not be removed unless they present a specific safety concern. Trees that must be removed will be felled out of and away from the stream maintenance zone and riparian habitat, including springs, seeps, bogs, and any other wet or saturated areas, to avoid damaging riparian habitat. Trees will not be felled into streams in a way that will obstruct or impair the flow of water, unless instructed otherwise. Tree removal that could cause stream-bank erosion or result in increased water temperatures will not be conducted in and around streams. Tree removal in riparian or wetland areas will be done only by manual methods.
BIO-3	All contract crews will complete biological pre-maintenance awareness training to ensure they are familiar with sensitive biological resources and associated BMPs and AMMs. All supervisors and field personnel will have on-file a signed agreement that they have completed the training and understood and agreed to the terms. BMPs and applicable AMMs will be written into the contract for O&M work, and contractors will be held responsible for compliance.

BIO-4	WAPA crews will complete annual awareness training to ensure they are familiar with sensitive biological resources and associated AMMs and BMPs. All supervisors and field personnel will have on-file a signed agreement that they have completed the training and understood and agreed to the terms. Further, WAPA crews will have access to the O&M GIS database in the field to be able to identify sensitive resources and associated AMMs.
BIO-5	O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day or have escape ramps provided to prevent the entrapment of wildlife. Trenches and holes will be inspected for entrapped wildlife before being filled. Any entrapped animals will be allowed to escape voluntarily before O&M activities resume, or they may be removed by qualified personnel with an appropriate handling permit if necessary.
BIO-6	Vehicle traffic will be restricted to designated access routes and the immediate vicinity of construction/O&M sites. Vehicle speeds will not exceed 15 miles per hour on access and maintenance roads and 10 miles per hour on unimproved access routes. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the maximum extent feasible. Off-road travel outside of the demarcated construction boundaries will be prohibited. Per the Fugitive Dust Emissions Rule, a person shall take every reasonable precaution to not cause or allow the emissions of fugitive dust from being airborne past the action area, especially near threatened or endangered species or their habitats.
BIO-7	No pets or firearms will be permitted at Project sites.
BIO-8	During construction activities, all trash that may attract animals will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and Project construction-related materials in construction areas will be removed immediately following Project completion. At the end of each work day, O&M workers will leave work areas and adjacent habitats to minimize disturbance to actively foraging animals and remove food-related trash from the work site in closed containers for disposal. Workers will not deliberately or inadvertently feed wildlife.
BIO-9	Nighttime O&M activities will be minimized to emergency situations. If nighttime O&M work is required, lights will be directed to the minimum area needed to illuminate Project work areas.
BIO-10	Where feasible and appropriate, tall dead trees will be topped and left in place as snags or as downed logs to support wildlife dependent on these important features. This BMP will be performed in coordination with the landowner.
BIO-11	Mortalities or injuries to any wildlife that occur as a result of Project- or maintenance-related actions will be reported immediately to the WAPA Natural Resources Department or other designated point of contact, who will instruct O&M personnel on the appropriate action and who will contact the appropriate agency if the species is listed. The phone number for the Western Natural Resources Department or designated point of contact will be provided to maintenance supervisors and the appropriate agencies.
BIO-12	Caves, mine tunnels, and rock outcrops will never be entered, climbed upon, or otherwise disturbed.

BIO-13	If a pesticide label stipulates a buffer zone width for protection of natural resources that differs from that specified in an AMM, the buffer zone width that offers the greatest protection will be applied.
BIO-14	To protect nesting birds (birds not specifically protected by AMMs but protected by the Migratory Bird Treaty Act) whose nests could occur within the ROW, WAPA and its subcontractors will perform construction activities outside the nesting season, which runs from March 1 through August 15. Alternatively, a qualified biologist will conduct nesting bird surveys prior to Project activities. For special-status birds, see specific AMMs: • An additional survey may be required if gaps between the survey and the Project activity exceed three weeks • Should an active nest be discovered, the qualified biologist will establish an appropriate buffer zone (in which O&M activity is not allowed) to avoid disturbance in the vicinity of the nest. Maintenance activities will not take place until the biologist has determined that the nestlings have fledged or that maintenance activities will not adversely affect adults or newly fledged young • Alternatively, the qualified biologist will develop a monitoring/mitigation plan that permits the maintenance activity to continue in the vicinity of the nest while monitoring nesting activities to ensure that the nesting birds are not disturbed The Project will adhere to the guidance in the Avian Protection Plan for Beale Air Force Base (2017) and WAPA's Avian Protection Plan (2016).
BIO-15	Measures described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Mitigation Bird Collisions with Power Lines: The State the Art in 1994* will be implemented during O&M activities to minimize bird mortality and injury. The Project will adhere to the guidance in the Avian Protection Plan for Beale Air Force Base (2017) and WAPA's Avian Protection Plan (2016).
BIO-16	At completion of work or according to erosion control plans and at the request of the landowner/manager, all work areas except permanent access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion. All areas of upland ground disturbance or exposed soil from construction will be reseeded with a native "weed-free" seed mix. Seed mixtures used on Beale AFB will be approved by Beale AFB 9 CES/CEIEC and in accordance with the Integrated Natural Resources Management Plan.
BIO-17	Prior to any application of herbicide, WAPA will query the California Department of Pesticide Regulation PRESCRIBE database, entering location information by county, township, range, and section and entering both the commercial name and the formulation of the desired pesticide, and WAPA will follow all use limitations provided to ensure compliance with applicable pesticide standards. This database is currently located at http://www.cdpr.ca.gov/docs/endspec/prescint.htm. The measures generated by the PRESCRIBE database will supersede those in the AMMs where they are different.

	On Beale AFB, the application of any pesticide, including herbicides, will be conducted in accordance with approved Integrated Pest Management Plan, Invasive Plant Species Management Guidelines, and Integrated Natural Resources Management Plan.
BIO-18	The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the Project goal. Routes and boundaries will be clearly demarcated, and these areas will avoid wetlands/drainage areas whenever feasible.
BIO-19	A USFWS-approved biologist will conduct preconstruction surveys of all ground disturbance areas within sensitive habitats to determine if any federally-listed species may be present during the start of construction. These surveys will be conducted prior to the start of construction activities in and around any sensitive habitat.
BIO-20	A natural resources monitor will monitor construction activities in or adjacent to sensitive habitats. The natural resources monitor will ensure compliance with all applicable AMMs required to protect federally-listed species and their habitats.
BIO-21	If federally-listed species are found that are likely to be affected by work activities, the USFWS-approved biologist will have the authority to stop any aspect of the Project that could result in take of a federally-listed species in coordination from Beale AFB and/or the contracting officer. If the USFWS-approved biologist exercises this authority, they must coordinate with the Environmental Office of Beale AFB and/or WAPA.
BIO-22	Any worker that inadvertently kills or injures a federally-listed species or finds one injured or trapped will immediately report the incident to the on-site biologist. The biologist will inform the appropriate Natural Resources Office (WAPA off Beale AFB or Beale AFB natural resources manager [NRM] on Beale AFB) immediately. The Natural Resources Office will verbally notify the Sacramento USFWS Office within one day and will provide written notification of the incident within five days.
BIO-23	Unless otherwise designated as part of a habitat restoration plan, all excess soil excavated during construction in the vicinity of vernal pools and other wetlands will be removed and disposed of outside the Project area. Coordination with the Beale AFB Environmental Office and appropriate regulatory agencies is required prior to disposal of the excavated soil.
BIO-24	A USFWS-approved biologist or natural resources monitor will inspect equipment for cleanliness to minimize spread of invasive and noxious weeds onto and around Beale AFB. The designated biologist or monitor may reject equipment that has visible clumps of mud when arriving on-site. The biologist or monitor will also identify any listed noxious weed found on the Project site and will hand-pull noxious weeds where practical.
BIO-25	Prior to initiation of construction activities, sensitive areas such as vernal pools, wetlands, riparian areas, and potential habitat for federally-listed species (i.e., vernal pool fairy shrimp/vernal pool tadpole shrimp or giant garter snake) will be staked and flagged as exclusion zones where construction activities cannot take place. Orange construction barrier fencing (or an appropriate alternative method) will designate exclusion zones where construction activities cannot occur. The flagging and fencing will be clearly marked as an environmentally

	sensitive area. The contractor will remove all fencing, stakes, and flagging within 60 days of construction completion.
BIO-26	For areas on Beale AFB, ground disturbance within vernal pools will require a restoration plan and two years of follow-up monitoring by a USFWS-approved biologist. Direct impacts to wetlands (in all areas) may require a CWA Section 404 permit issued by the USACE and a Section 401 Water Quality Certification from the State RWQCB.
BIO-27	**<u>Vernal Pool Species</u>** On Beale AFB, the following measures will apply within 250 feet of potential vernal pool habitat to avoid or minimize disturbances and adverse effects to the species: • No work will be conducted in the vicinity of vernal pool species' habitat between November 1st and May 1st unless specifically approved by the Beale AFB NRM, who will field-verify soil saturation, visual ponding, and expected surface disturbance. The USFWS will be notified of any off-pavement work within 250 feet approved between November 1st and May 1st in the Project Effects Analysis Report • Mowing in and around vernal pool habitat after seed set during the dry season (May 1st to October 15th) may help reduce thatch in the vernal pool. Mowing conducted earlier in the season may be desirable to maintain appropriate conditions for vernal pool species. If mowing occurs in or near vernal pools, it will occur only when the soil is no longer saturated to ensure tracks are not left in or near wetlands. The mower height must be set to avoid the flowering heads of sensitive vernal pool plant species • Projects that occur on road surfaces and along road shoulders will avoid direct impacts to wetland habitats, including roadside ditches that act as seasonal wetlands • If access routes crossing vernal pool habitats cannot be avoided, ground protection mats will be used to disperse the weight of vehicles and equipment so as to not harm any existing cysts. These will be utilized in the dry season only • A USFWS-approved biologist will flag vernal pool species' habitat and a reasonable buffer to be avoided. The area will be protected by placing construction fencing or other appropriate protective fencing, including a buffer, around the pools. Fencing will be used in locations where Project equipment and/or personnel will be situated adjacent to or in the near vicinity of suitable vernal pool species' habitat • Dust control measures will be utilized during Project construction to prevent excessive dust from silting nearby vernal pools. Types of dust control measure will take into account the potential to impact the proximal vernal pool landscape and thus, will not impact nearby pools • If herbicide spraying is required within and near vernal pool species' habitat, only herbicide without toxic surfactants that is approved for use in aquatic environments will be used • All equipment used in Projects requiring access to sites within vernal pool species' habitat will be staged outside of vernal pool habitat and will be on

	paved or gravel surfaces wherever possible. If paved or gravel surfaces are not available, construction mats and/or drip pans will be placed under vehicles to minimize impacts. To further minimize adverse effects, the following measures will be implemented at these Project sites near vernal pools: a. No work shall occur within vernal pool habitat when water is present b. Ground disturbances, such as trenching, and permanent disturbances, such as pole installation, will avoid hydrologically connected areas c. A USFWS-approved biologist will be present as necessary during access and Project work within vernal pool habitat to monitor activities d. For Projects adjacent to (within 10 meters) vernal pool species' habitat or hydrologically connected to the habitat, silt fencing or other appropriate BMPs to prevent siltation shall be implemented prior to work within that area. A USFWS-approved biologist will flag areas where silt fencing or BMPs shall be implemented. BMPs may include sand bags and weed-free straw bales or straw wattles e. Spill containment kits will be present at all sites where petroleum-fueled equipment is used • If Project activities encroach within the perimeter of a pool, the following measures will be implemented: a. Protective mats should be used as first resort; if not possible, equipment with pneumatic tires should be used rather than tracked equipment b. Non-wetlands present within adjacent habitat will be used as an equipment parking platform. Alternately, ground protection mats, boards, or plates will be used to distribute the weight of construction equipment for access. Drip pans will also be placed under vehicles parked on non-wetland vegetation c. The Project will be implemented during the dry season only, when the pool is dry • Pre- and post-Project surveys will be conducted to record habitat condition before the start of a Project and after completion of the Project for tracking purposes. This may include photos and/or species surveys and will be used to better manage for the species
BIO-28	O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day or have escape ramps provided to prevent the entrapment of wildlife. Trenches and holes will be inspected for entrapped wildlife before being filled. Any entrapped animals will be allowed to escape voluntarily before O&M activities resume, or they may be removed by qualified personnel, with an appropriate handling permit if necessary.
BIO-29	During construction activities, all trash that may attract animals will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and Project construction-related materials in construction areas will be removed immediately following Project completion.

	At the end of each work day, O&M workers will leave work areas and adjacent habitats to minimize disturbance to actively foraging animals and remove food-related trash from the work site in closed containers for disposal. Workers will not deliberately or inadvertently feed wildlife.
BIO-30	Where feasible and appropriate, tall dead trees will be topped and left in place as snags or as downed logs to support wildlife dependent on these important features, in coordination with the landowner.
BIO-31	Mortalities or injuries to any wildlife that occur as a result of Project- or maintenance-related actions will be reported immediately to the WAPA Environmental Department or other designated point of contact, who will instruct O&M personnel on the appropriate action and who will contact the appropriate agency if the species is listed. The phone number for the WAPA Environmental Department or designated point of contact will be provided to maintenance supervisors and to the appropriate agencies.
BIO-32	**Vernal Pool Species** See Section 4.5.1.4, Vegetation Communities Protection Measures for full text
BIO-33	**Bald Eagle (Nesting and Wintering)** From February 1 to August 15 herbicide application or noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be prohibited anywhere that bald eagles are known to nest OR a qualified biologist will conduct nesting surveys using methods described in Jackman and Jenkins (2004). If a nest is detected, all herbicide application and O&M activities will be prohibited at a distance determined by the qualified biologist based on topography and/or other environmental considerations.
BIO-34	**Western Burrowing Owl (Burrow Sites Winter and Summer)** From February 1 to August 31 herbicide application (with the exception of direct application) and other O&M activity will be prohibited within 250 feet of potential burrowing owl nesting dens (ground squirrel burrows, culverts, concrete slabs, debris piles that could support nesting burrowing owls). From September 1 through January 31, disturbance will be prohibited within 160 feet of potential burrowing owl dens. OR A qualified biologist will conduct nesting and wintering surveys using methods described in California Burrowing Owl Consortium 1993. If nesting or wintering activity is detected, a qualified biologist will mark and monitor an appropriate non-disturbance buffer in the vicinity of burrows that have been active within the last three years. Within the buffer zone, all O&M activities and herbicide applications will be prohibited from February 1 to August 31.
BIO-35	**California Black Rail** From February 15 to July 31 surface disturbances, including noise or changes to the hydrological regime, will be prohibited in potential black rail habitat (shallowly flooded wetlands or irrigated pasture) OR a qualified biologist will conduct nesting surveys to verify absence. If nesting activity is detected or likely, a qualified biologist will mark and monitor an appropriate buffer zone

	around the nest within which all O&M activities will be prohibited from February 15 to July 31.
BIO-36	**Swainson's Hawk (Nesting)** From April 1 to July 31 herbicide application and tree removal will be prohibited within 0.25 mile of Swainson's hawk nest trees. A 0.25-mile buffer zone will be established and maintained around potential Swainson's hawk nest trees, within which there will be no intensive disturbance (e.g., use of heavy equipment, power saws, chippers, cranes, or draglines). This buffer may be adjusted as assessed by a qualified biologist based on changes in sensitivity exhibited by birds over the course of the nesting season and the type of O&M activity performed (e.g., high noise or human activity such as mechanical vegetation maintenance versus low noise or human activity such as semi-annual patrols). Within 0.25 mile of an active nest (as confirmed by a qualified biologist), routine O&M activities will be deferred until after the young have fledged or until it was determined by a qualified biologist that the activities will not adversely affect adults or young. OR A qualified biologist will conduct nest surveys using methods described in SHTAC 2000 (or the most recent survey protocol) to determine absence.
BIO-37	**Tricolored Blackbird (Nesting Colony)** From March 15 to August 15 herbicide application (with the exception of direct application) and vegetation clearing/disturbance will be prohibited in marshes, willows, and blackberry thickets OR a qualified biologist will conduct a nesting survey prior to O&M activities. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nesting colony within which all O&M activities and herbicide applications will be prohibited from March 15 to August 15.
BIO-38	**Valley Elderberry Longhorn Beetle** Prior to initiating Project-related construction activities, qualified personnel will clearly flag or fence each elderberry plant that has a stem measuring 1 inch or greater in diameter at ground level. If an elderberry plant meeting this criterion is present, a minimum buffer zone of 20 feet outside of the dripline of each elderberry plant will be provided during all Project-related construction activities**.**
BIO-39	**Pallid Bat** Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of tunnels and rock outcrops. Snags and live trees will be left standing to the maximum extent possible.
BIO-40	**Townsend's Big-Eared Bat** Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of tunnels.
BIO-41	**Western Red Bat** Live broadleaf trees will be left standing to the maximum extent possible.
BIO-42	**Giant Garter Snake** Follow BMPs and PCM-W002 in aquatic giant garter snake habitat. PCM-W002

	will supersede those below where they are different. Movement of heavy equipment will be confined to existing roadways to minimize habitat disturbance. Vegetation management will be confined to the minimum area necessary to facilitate O&M activities. Giant garter snake aquatic and upland habitats will be flagged as environmentally sensitive areas by a USFWS-approved biologist within or adjacent to the disturbance footprint. Only manual vegetation removal will be allowed within the flagged area. A USFWS-approved monitor will be present for construction and O&M activities within the flagged area. All potentially affected aquatic habitats will be dewatered prior to any ground disturbance. Dewatered areas will remain dry with no puddled water remaining for at least 15 consecutive days prior to excavation or filling of that habitat. If a site cannot be completely dewatered, prey items will be netted or otherwise salvaged if present. To the extent possible, disturbance to hibernacula and aestivation areas (i.e., rocks, burrows, logs, brush piles, etc.), will be avoided during cold and cool-weather periods when the giant garter snake would be using these areas. Ground disturbance will be confined to the minimum area necessary to facilitate construction and O&M activities. All construction-related holes will be covered to prevent entrapment of individual giant garter snakes. Within the construction area, silt fencing can be used to keep snakes from entering the Project site and being harmed. All construction equipment shall be checked daily for the presence of snakes prior to starting work. Pre- and post-Project surveys will be conducted to record habitat condition before the start of a Project and after completion of the Project for tracking purposes. This may include photos and/or species surveys. Any temporary fill and debris will be removed. Restoration work could include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel. If herbicide spraying is required within and near giant garter snake habitat, only herbicide without toxic surfactants that is approved for use in aquatic environments will be used.
BIO-43	**Western Pond Turtle** *Follow BMPs and PCM-W002.* From April 15 to July 15 any ground disturbing activity within 400 feet of a permanent pond, lake, creek, river, or slough that could affect the bed, bank, or water quality of any of these features will be prohibited OR a qualified biologist will inspect the Project area.

	If adult or juvenile pond turtles are present, a qualified biologist will monitor Project activities to ensure that no turtles are harmed. If a qualified biologist determined that nests could be adversely affected, potential nesting areas will be avoided between June 1 and October 31.
CULTURAL RESOURCES	
CR-1	All contract crews will complete cultural resources pre-maintenance awareness training to ensure they are aware of the locations of cultural resource sites and paleontological resources; maintenance methods to be used in areas with sensitive cultural resources; and restrictions required in cultural resources areas (i.e., SOPs and PCMs). Crews will be educated on the Archaeological Resources Protection Act, which makes it a federal offense to willfully damage or remove any artifacts or materials from an archaeological site. All supervisors and field personnel will have on-file a signed agreement that they have completed the training and understood and agreed to the terms. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance.
CR-2	WAPA crews will complete annual awareness training to ensure they are familiar with sensitive cultural and paleontological resources and associated SOPs and PCMs. All supervisors and field personnel will have on-file a signed agreement that they have completed the training and understood and agreed to the terms. Further, WAPA crews will have access to the O&M GIS database in the field to be able to identify sensitive resources and associated PCMs.
CR-3	A cultural resource monitor will be present during all initial ground disturbance activities (grading, trenching, excavation) that occur on Beale AFB.
CR-4	Operation of vehicles or heavy construction equipment will be avoided in areas that are not designated transmission line and legal access road ROWs or other established transportation routes. This measure will minimize the possibility of disturbing unmapped cultural resources.
CR-5	Upon discovery of potential buried cultural or paleontological resources, work within 50 feet of the find will be halted and the discovery will be reported immediately to the WAPA Natural Resources Department or other designated point of contact or else to Beale AFB, depending on land jurisdiction. WAPA and/or Beale AFB will comply with provisions in the NHPA and consult with the California SHPO and appropriate tribes to determine measures to avoid the resource or mitigate during maintenance activities.
GEOLOGY/SOILS	
GEO-1	Should WAPA need to modify or relocate a structure, WAPA will have a certified professional geotechnical engineer evaluate the potential for geotechnical hazards and unstable slopes.
GEO-2	Upon completing ground disturbing work, all work areas will be left in a condition that facilitates natural and appropriate vegetation regrowth, provides for proper drainage, and prevents erosion.
GEO-3	Wet areas will be avoided to the extent practicable and all activity will be minimized during winter and other wet periods to prevent damage (e.g., rutting,

	erosion, soil compaction). If wet areas cannot be avoided, WAPA will use wide-track or balloon tire vehicles and equipment or timber mats.
GEO-4	All excavated soil will be backfilled and tamped at the location of excavation and used to provide positive drainage, or it will be hauled off-site to an area appropriate for disposal of excavated material in accordance with federal, state, and local regulations and in cooperation with the land owner.
GEO-5	Use of ground disturbing mechanical equipment to remove vegetation will be avoided on continuous slopes over 35 percent, unless the threat of erosion is minimal because of bedrock or reseeding will be performed.
GEO-6	Where soil has been severely disturbed and the establishment of vegetation will be needed to minimize erosion, appropriate measures, as approved by the federal land manager, will be implemented to establish an adequate cover of native grass or other native vegetation as needed. Perennial vegetation is preferred to annual vegetation. All mulch and seed will be of high purity to prevent the spread of noxious weeds. Soil preparation, seeding, mulching, and fertilizing will be repeated as necessary to insure soil stabilization and revegetation acceptable to the federal land manager.
GEO-7	Disturbance and removal of soils and vegetation will be limited to the minimum area necessary for access and O&M activities. Grading will be minimized to the extent possible. When required, grading will be conducted such that runoff waters flow predominantly away from watercourses/washes to reduce the potential for material to enter the watercourse/wash
GEO-8	Within Beale AFB, all vegetated areas disturbed by construction shall be revegetated with a Beale AFB Environmental Office-approved seed and “certified weed-free” straw mulch upon completion. Exposed soil must be hydroseeded or covered with a geotextile to prevent sediments from entering waterways.
HYDROLOGY/ WATER QUALITY	
WR-1	Non-biodegradable debris will not be deposited in the ROW.
WR-2	Runoff from the maintenance site will be controlled and will meet the State Water Resources Control Board stormwater requirements in the SWPPP.
WR-3	Runoff control structures, roadside diversion ditches, erosion-control structures, and energy dissipaters will be cleaned, maintained, repaired, and replaced to meet the standards set by applicable permits and the SWPPP or, where such a plan is inapplicable, similar standards set by WAPA or Beale AFB.
WR-4	All contaminated discharge water created by O&M activities (e.g., concrete washout, pumping for work-area isolation, vehicle wash water, drilling fluids) will be contained and disposed of in accordance with applicable federal, state, and local regulations.
WR-5	Vehicles will be inspected daily for fluid leaks before leaving the staging area.
WR-6	Impacts to areas under the jurisdiction of the USACE and RWQCB will be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible and the action is not covered under nationwide or other permits, WAPA will obtain 404/401 permits applicable to the action, as necessary. WAPA will perform an impact assessment for each O&M activity, which will identify and

	quantify the acreage of each jurisdictional area (wetland, riparian, etc.) that may be affected.
LANE USE, AICUZ COMPATIBILITY, POPULATION GROWTH, RECREATION	
LU-1	WAPA will direct members of the public to alternate pedestrian routes if access is blocked by machinery or for safety purposes.
LU-2	WAPA would negotiate with landowners during easement purchase to compensate for the loss of duck blinds.
NOISE	
NS-1	All vehicles and equipment will be equipped with required exhaust-noise-abatement devices.
NS-2	For long-term O&M activities confined to a specific area, WAPA's Environmental Department will be contacted to evaluate local thresholds and all requirements of those agencies having jurisdiction over noise matters.
NS-3	Construction activities within 400 feet of a residence must be limited to the hours between 7:00 AM and 7:00 PM.
PUBLIC HEALTH AND SAFETY AND HAZAROUD MATERIALS	
PH-1	Signs and/or flags will be erected in areas of public access to indicate maintenance activities are taking place; workers will be conspicuous by wearing high-visibility vests and hardhats.
PH-2	O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day, or have escape ramps provided to prevent injury of the public and workers.
PH-3	With regard to herbicide use: • All herbicide applicators will have received training and be licensed in appropriate application categories • Herbicide-free buffer zones will be maintained per label instructions • All herbicide label and material safety data sheet instructions will be followed regarding mixing and application standards and equipment-cleaning standards to reduce potential exposure to the public through drift and misapplication • WAPA will ensure that areas treated with herbicides will be posted and re-entry intervals specified and enforced in accordance with label instructions. Herbicides and equipment will never be left unattended in areas with unrestricted access • Climate, geology, and soil types will be considered (including rainfall, wind, depth of aquifer, and soil permeability) in selecting the herbicide with lowest relative risk of migrating to water resources • There will be no aerial application of herbicides • All herbicide spill requirements will be followed in the rare case of an herbicide spill, including containment, cleanup, and notification procedures

PH-4	With regard to hazardous materials: • Hazardous materials will not be drained onto the ground, into streams, or into drainage areas • Any release, threat of release, or discharge of hazardous materials within the Project area in connection with Project activities will be cleaned up and/or remediated in accordance with applicable federal, state, and local regulations • All construction waste, including trash and litter, other solid waste, petroleum products, and other potentially hazardous material will be removed in accordance with applicable federal, state, and local regulations • Discovery of, or the accidental discharge of, a significant amount of hazardous materials will be immediately reported to WAPA's dispatch and Environmental Department • There will be no storage of hazardous materials in the Project area without approval from the authorized officer • Upon termination of the permit, a report will be submitted to determine whether there had been site contamination and if so, that the remediation met compliance with applicable laws
PH-5	All contract crews will complete hazardous materials pre-maintenance awareness training to ensure they are aware of BMPs and AMMs as wells as pertinent regulations and the consequences for non-compliance. All supervisors and field personnel will have on-file a signed agreement that they have completed the training and understood and agreed to the terms. BMPs and applicable AMMs will be written into the contract for O&M work, and contractors will be held responsible for compliance.
PH-6	Contractors must submit a spill response plan that is approved by WAPA. Clean-up actions and costs resulting from contractor misconduct will be the responsibility of the contractor and approved by WAPA's Environmental Department.
PH-7	WAPA crews will complete annual awareness training to ensure they are familiar with BMPs and AMMs related to hazardous materials. All supervisors and field personnel will have on-file proof that they have completed the training.
PH-8	All incompatible/non-desirable vegetation will be removed a minimum of 30 feet from tower center and conductors or as required by federal requirements and to ensure access to towers.
PH-9	WAPA and its contractors will comply with all applicable federal and state regulations regarding fire suppression, including but not limited to having all equipment be equipped with a shovel, water pump, and fire extinguisher; the use of spark arrestors on all internal and external combustion engines; verification of daily fire levels during fire season; and a minimum of a 300-gallon water tank with a minimum of 250 feet of hose.
PH-10	Hazardous material BMPs: • Ensure all hazardous substances are properly labeled • Store, dispense, and/or use hazardous substances in a way that prevents releases

	• Provide secondary containment when storing hazardous substances in bulk quantities (greater than 55 gallons) • Maintain good housekeeping practices for all chemical materials at the work site • Conduct routine/daily checks in the hazardous substance storage area to check for leaks and spills • Maintain adequate spill response supplies and equipment on trucks and equipment at the jobsite to manage and clean up leaks and spills as required • Clean up small spills according to the Spill Prevention Plan required in the submittals portion of the contract • Report spills exceeding 10 gallons of material or if any has been released to surface water or storm drains to WAPA Environmental and the on-site inspector Refueling of construction equipment would be allowed on-site during construction in each of the alternatives, for which the following measures would be implemented consistent with the Beale AFB ICP: • The contractor must monitor fuel transfer operations closely until they are complete. This means that a trained employee must keep watch over fuel transfers and must be within 10 feet of the fuel hose during refueling operations • The contractor must provide secondary containment when storing hazardous substances in bulk quantities Disposal of any hazardous waste generated by the proposed Project or its alternatives would be subject to the following conditions: • Disposal of hazardous wastes generated as a result of spills or other activities on the jobsite would be the financial responsibility of the contractor. The contractor would provide a licensed hazardous waste hauler and licensed transfer, storage, and disposal facility for the disposal of hazardous wastes • In the event that such hazardous waste is generated, the contractor would coordinate disposals with the WAPA representative and WAPA Environmental staff to acquire appropriate EPA identification numbers and to coordinate signing of the manifest in those cases
TRANSPORTATION/TRAFFIC	
TR-1	All lane closures or obstructions on major roadways associated with maintenance activities will be restricted to off-peak periods to minimize traffic congestion and delays and will be coordinated with appropriate authorities.

BIOLOGICAL RESOURCES REPORT

Beale Western Area Power Administration Interconnection Project
Yuba County, California

Prepared for:

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Sierra Nevada Region
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Folsom, California 95630

Prepared by:

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San Francisco, California 94133

November 2019

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ABBREVIATIONS

AFB	Air Force Base
BCC	Bird of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
BRR	Biological Resources Report
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Ranking
DPS	Distinct Population Segment
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
F	Fahrenheit
FE	Federally endangered
FP	Fully protected
FT	Federally threatened
GGS	Giant garter snake
HUC	Hydrological Unit Code
LIDAR	Light Detection and Ranging
MBTA	Migratory Bird Treaty Act
O&M	Operation and Maintenance
PCM	Project Conservation Measure
kV	Kilovolt
NMSC	National Oceanic and Atmospheric Administration Species of Concern
ROW	Right-of-way
SE	State endangered
SHTAC	Swainson's Hawk Technical Advisory Committee
SOP	Standard Operating Procedure
SSC	Species of Special Concern
ST	State threatened
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	Valley elderberry longhorn beetle
VP fairy shrimp	Vernal pool fairy shrimp
VP tadpole shrimp	Vernal pool tadpole shrimp
WAPA	Western Area Power Administration

SECTION 1 INTRODUCTION

1.1 Purpose of Assessment

The Western Area Power Administration (WAPA), in response to an interconnection request from Beale Air Force Base (AFB), proposes to construct a 230-kilovolt (kV)/60-kV transmission line on Beale AFB and adjacent properties. WAPA has contracted Transcon Environmental, Inc. (Transcon) to prepare this Biological Resources Report (BRR) to review the proposed Project, referred to as the Beale WAPA Interconnection Project (Project), in sufficient detail to determine to what extent the proposed action may affect threatened, endangered, proposed, or sensitive species (referred to as "special-status") and designated or proposed critical habitats of species protected by the Endangered Species Act (ESA) and California Endangered Species Act (CESA); wildlife species listed as species of concern or Fully Protected (FP) by California Department of Fish & Wildlife; plants listed as California Rare Plant Rank 1B.1 and 2B.2; and avian species protected under the Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA).

In this report, the term "Project area" refers specifically to the proposed Project footprint where the Project-related structures may be located; "survey area" refers to the Project footprint plus a 650 to 800-foot corridor that includes all areas that may potentially be impacted by construction of the proposed Project (described in detail in Section 2.1). The analysis presented in this report is based on currently available data and site conditions at the time of the site visits which occurred in March 2018 and October 2018.

1.2 Project Location

The Project area is approximately 8 miles east of Marysville, California. The Project area consists of three proposed alternative alignments currently under review that occur on the western portion of Beale AFB and extend west into neighboring private parcels (**Appendix A**; **Figures 1, 2 and 3**).

1.3 Project Description

In response to an interconnection request from Beale AFB for a redundant electrical transmission system, WAPA is proposing a new transmission line to connect to WAPA's Cottonwood to Roseville 230-kV transmission line in Yuba County, California. The Project consists of a new 230-kV/60-kV transmission line, including a new substation, that extends approximately 6 miles from its connection point at the existing Cottonwood Roseville 230-kV transmission line and terminates on-Base at an existing substation. There are no additional interrelated or interdependent actions being planned within the Project area.

Alternatives

All alternative alignments begin perpendicular to the existing Cottonwood-Roseville line and continue in a nearly straight east-to-west line, following existing roadways up to the westernmost edge of Beale AFB. Off-Base portions of the line are bordered by agricultural fields to the north and south. Once on-Base, the two northern alternative alignments curve to avoid Beale AFB infrastructure and runway clearances, while the southern alternative alignment stays straight until turning 90 degrees north near its eastern terminus (**Appendix A**; **Figure 1**). The Project, along all alternatives, will be constructed as 230-kV overhead aerial lines feeding into a proposed new substation on-Base. The substation will step from 230-kV down to 60-kV and deliver electricity to Beale AFB via 60-kV lines. All off-Base portions of the Project will be overhead aerial 230-kV lines; once on-Base, the Project will consist of overhead 230-kV lines, underground 60-kV lines, and overhead 60-kv lines (southern alternative alignment only).

Ground Disturbance

Ground disturbance for all alternatives would occur from grading construction staging areas and landing zones, grading and drilling holes for new structure foundations, constructing and improving roads for vehicle and equipment access, establishing pull sites for conductor installation, and construction of the new substation.

Permanent disturbance for this Project is defined as those areas where Project facilities will be built and remain (i.e., pole foundations, new access roads, and the new substation). Temporary disturbance for this Project is defined as those areas needed to construct Project facilities and any areas needed to conduct future maintenance activities (e.g., equipment staging and laydown areas, pulling and tensioning sites, etc.); these areas are expected to be disturbed in the short term and restored to original conditions if feasible.

Construction Activities

Construction would commence after securing all required permits and land rights. Multiple crews may work simultaneously on different Project components. Construction generally would take place between 7:00 am and 7:00 pm, 6 days per week, except for those areas where local ordinances, traffic considerations, or permit conditions dictate otherwise, in which case working hours would be consistent with local requirements. All work will follow WAPA's Environmental Quality Protection Construction Standard and Project Conservation Measures (**Appendix D**).

Construction Staging

Temporary construction staging areas would be needed to store and stage materials, construction equipment, and vehicles. There are three existing previously disturbed locations on-Base that have been identified as candidate areas to store and stage material; additional locations will be needed and, although their exact locations have not been determined, locations would be selected that minimize ground disturbance and impacts to sensitive resources.

Access for Construction

Construction of a new transmission line requires access to each tower site for construction crews, materials, and equipment. Access to each site would be on an existing road where feasible or on new roads. Existing roads may need to be improved.

Improving existing access roads would involve grading, erosion control, and the installation or replacement of approximately 14 culverts or rip-rap to maintain stormwater flows within ephemeral wash areas. Lost surface material would be replaced, and the road would be graded and shaped. A motor grader is the primary equipment type used to conduct this work, but bulldozers may be used in some areas. Watering may be required to control dust and to retain fine surface rock. In determining the final location of new roads, impacts to large trees or other natural features will be minimized. New access roads would be constructed using a bulldozer or grader, followed by a roller to compact and smooth the ground. Front-end loaders would be used to move the soil locally or off-site.

During the trenching on Patrol Road, temporary access may be necessary on either side of the road for vehicle and equipment passing. This temporary access will not be more than 12 feet wide and will be designed to avoid vernal pool and wetland features to the extent feasible. For those areas where avoidance of vernal pool or wetland features is not possible, weight dispersion mats will be placed over the feature and removed upon completion or work in that area. Dispersion mats will only be used during the dry season, as these areas would be completely avoided during the wet season.

After Project construction, existing and new permanent access roads would be used by maintenance crews and vehicles for inspection and maintenance activities.

Overhead Transmission Line Construction

Excavation and Foundation Installation for Transmission Line Structures

Installation of structure foundations may require grading and vegetation removal. Where grading is needed, topsoil would be removed and stockpiled for use in site restoration. Temporary topsoil stockpiles would be protected from erosion during construction. Excavating transmission structure foundations is typically done with a backhoe, front-end loader, or pressure auger.

Reinforced concrete foundations would be used for most structures. After the foundation concrete is placed, a mechanical tamp would be used to re-compact soil around the foundation. The disturbed area would be re-graded so that surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation or re-seeding, provide for proper drainage, and prevent erosion.

Structure Assembly and Erection

Structure components would typically be transported to installation sites by truck or helicopter. Structures would be erected with cranes. Structure assembly equipment may include cranes (ground or helicopter), augers, bulldozers, bucket trucks, backhoes, air compressors, electric generators, pickup trucks and other vehicles, machinery, and equipment. Structures would be assembled, erected, and attached to the foundations.

Conductor Stringing

Conductor stringing would occur at designated pull and tensioning sites. Generally, the pull sites would be located within the easement. Angle-structure pull sites would require temporary easement rights if located outside the easement to pull the conductor on a straight line. The locations of pull sites depend on environmental constraints, conductor length, and equipment access. Pull sites would be located within the study area.

Large reels of conductor would be transported to the staging areas or pulling sites on flatbed trucks. Other equipment would include stringing trailers, tensioning machines, pullers, bulldozers, and several trucks, including a bucket truck.

Temporary stringing sheaves or travelers (pulleys) would be attached on the cross-arms of each structure at the bottom of the insulator strings. A sock line (rope or lightweight wire) would then be strung from structure to structure through the stringing sheaves. This may be completed using a helicopter. A pulling line would then be attached to the end of the sock line and pulled back through the sheaves between pull site locations. Conductor would then be strung using the pulling line.

Powered pulling equipment would be used at one end and tensioning equipment would be used at the other end to establish the proper tension and sag for crews to permanently "clip" conductors onto structure hardware and to maintain the proper ground clearance for the conductors. After conductors are clipped in, the stringing sheaves would be removed, and the new conductor would be connected to the insulators hanging from the cross-arms. Ground wire would be installed last and would be attached to the top of the structures using a pulling technique similar to that used for the conductors.

New Substation Construction

Generally, substation construction would include site grading, property and substation fencing, and installation of electrical facilities. The site would be excavated and graded to accommodate the required construction and permanent facility buildings, equipment, and electrical structures. A fence would be erected around the substation perimeter. Up to 7 acres would be graded for the new substation. Area lighting would be provided by multiple 300-watt, tungsten-quartz lamps mounted near major electrical equipment inside the substation. Additionally, downward-oriented 100-watt, yellow flood lamps would be placed near entrances and the substation gate for night entry and would remain on throughout the night.

Construction Equipment and Workforce

Typical quantities of personnel and equipment needed for proposed construction activities are shown in **Table 1**. The tasks would be conducted in stages; therefore, personnel and equipment would not be working on all tasks simultaneously at a given location, but there would be some overlap in tasks.

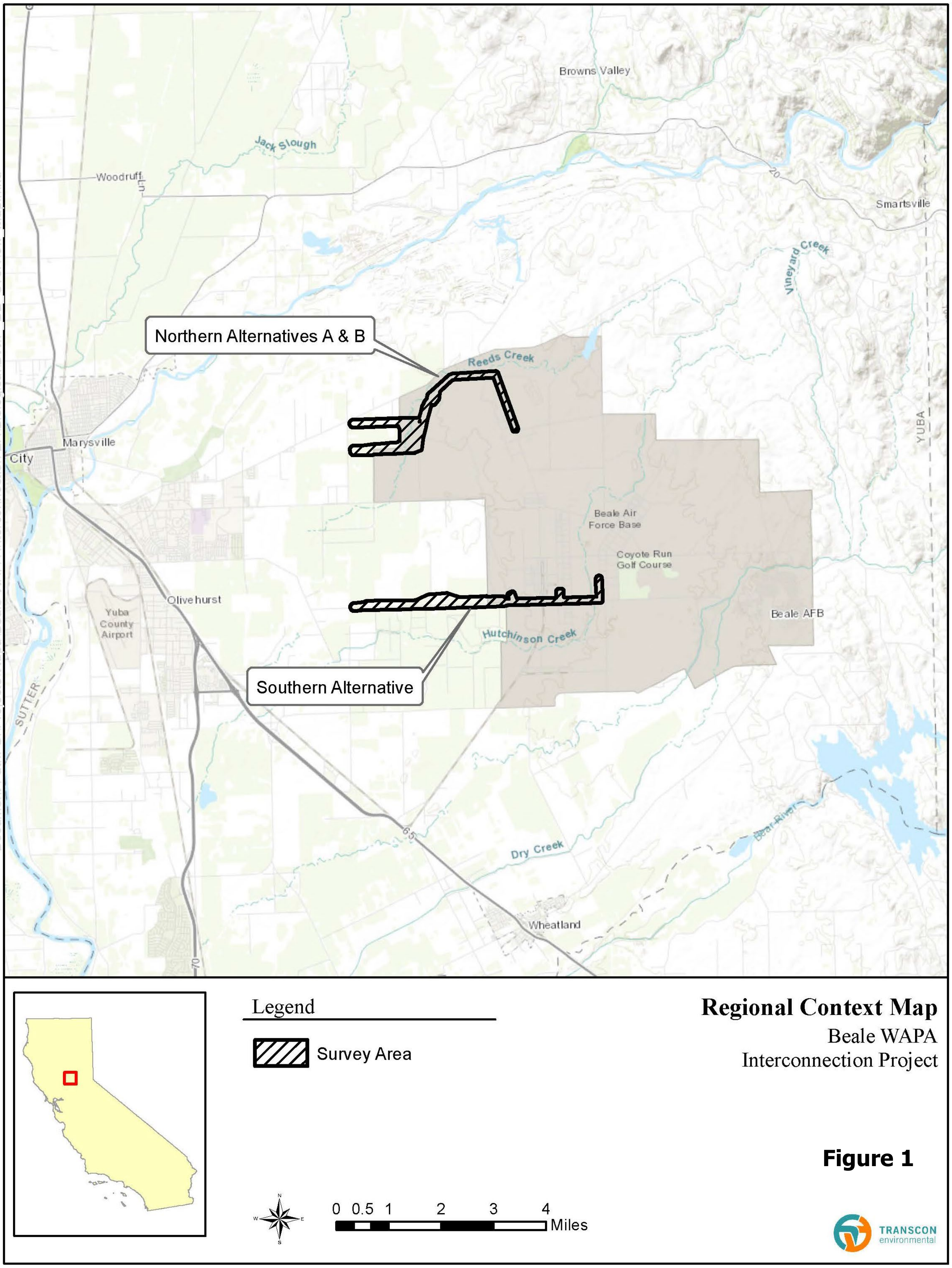
TABLE 1
PERSONNEL AND EQUIPMENT FOR CONSTRUCTION ACTIVITIES

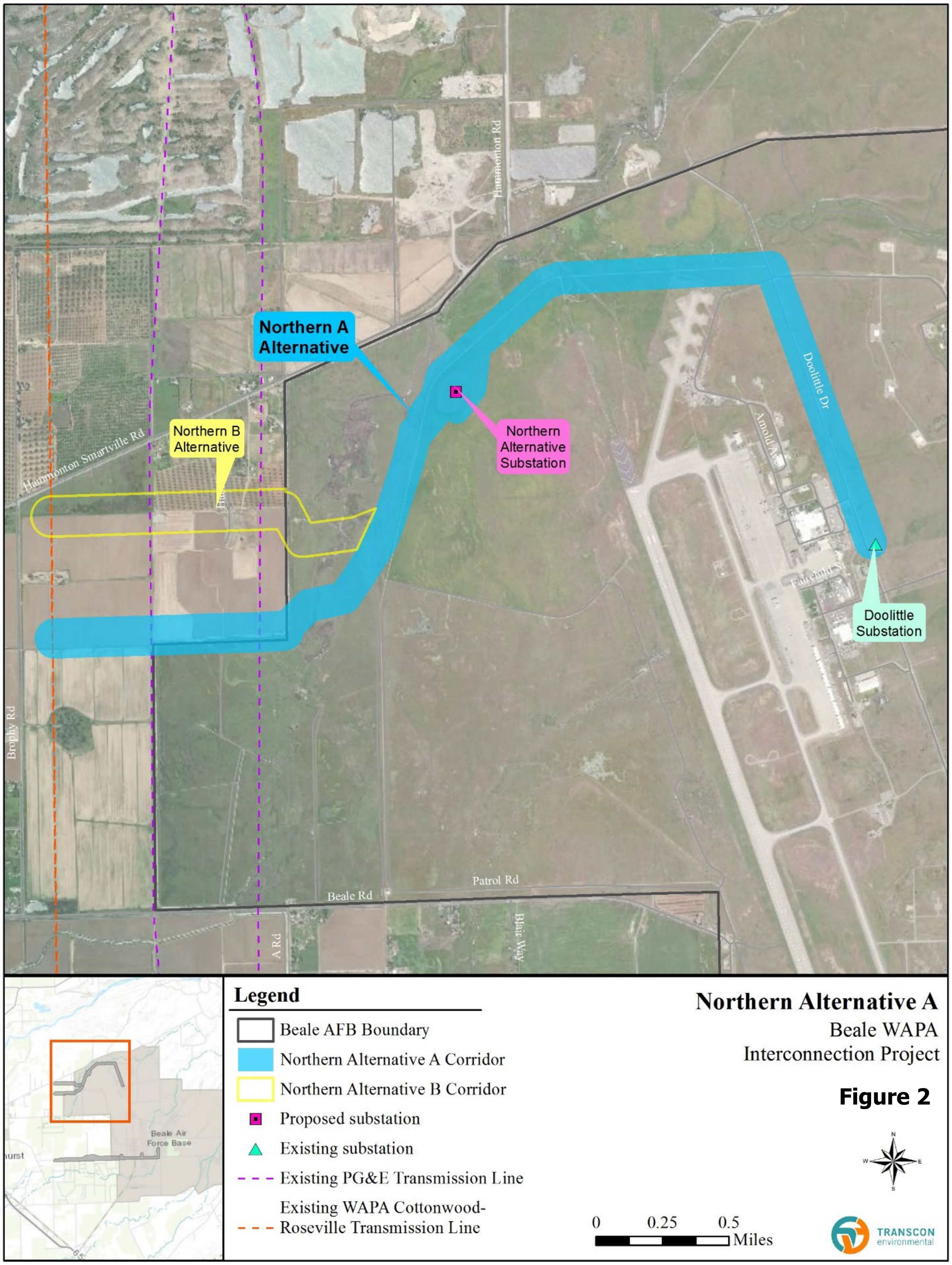
Activity	Personnel	Equipment	
Right-of-way (ROW; access roads and vegetation clearing)	2 to 4 equipment operators	1 motor grader excavator 2 pickup trucks 1 roller	2 bulldozers 1 backhoe/excavator 2 dump trucks
Excavation for foundations	4 to 8 laborers/equipment operators	2 augers 2 backhoes	2 pickup trucks 2 compressors
Foundation installation (anchor bolt/rebar cages)	4 to 6 laborers/equipment operators 3 to 5 ironworkers	2 flat-bed trucks 2 pickup trucks 2 air compressors 2 hydro-lifts 2 welders	2 to 3 mixer trucks per structure for direct-embedded foundations 10 to 12 mixer trucks per structure anchor bolt foundations
Structure assembly and erection	4 to 6 linemen/laborers and crane operators	2 hydro-cranes 2 tractors	2 manlifts 2 pickup trucks
Helicopter use	1 pilot 1 ground person (fueler)	Helicopter Hughes 500 Fuel truck	
Conductor stringing	20 to 25 linemen/ groundmen	2 pullers 2 tensioners 2 bulldozers 4 reel trailers	1 materials truck 2 manlifts 5 to 6 pickup trucks 1 light truck
Disturbance area restoration (cleanup and revegetation)	3 to 6 laborers	1 bulldozer with ripper 1 blader 1 front-end loader	1 tractor/harrow/disc 1 light truck
Substation construction	20 to 40 electricians, linemen, laborers, equipment operators, and ironworkers	2 flat-bed trucks 2 bulldozers 2 cranes 2 excavators 5 pickup trucks 1 fuel truck 1 puller	1 tensioner 2 reel trailers 1 tractor 2 materials trucks 1 blader 2 mixer trucks 1 front end loader
Underground concrete bank installation	8 to 12 laborers/ equipment operators 3 to 5 ironworkers	2 flatbed trucks 1 cranes 1 excavators 2 pickup trucks 1 fuel truck	1 tractor 2 materials trucks 1 blader 2 mixer trucks 1 front end loader
Underground vault installation	8 to 12 laborers/ equipment operators 3 to 5 ironworkers	1 cranes 1 excavators 2 pickup trucks	1 tractor 2 materials trucks 1 blader

TABLE 1 PERSONNEL AND EQUIPMENT FOR CONSTRUCTION ACTIVITIES			
Activity	**Personnel**	**Equipment**	
		1 fuel truck	2 mixer trucks 1 front end loader

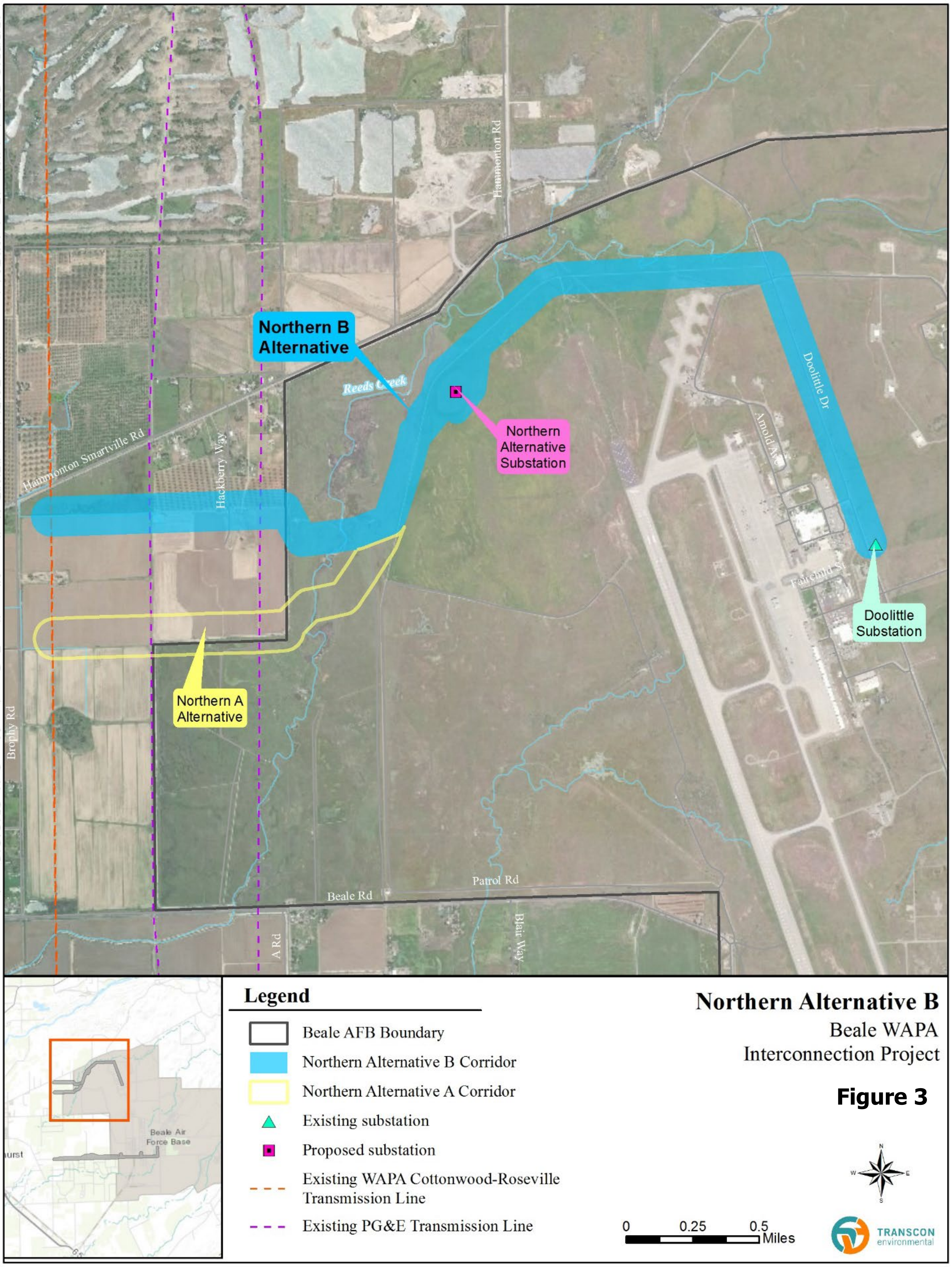
Operation and Maintenance (O&M)

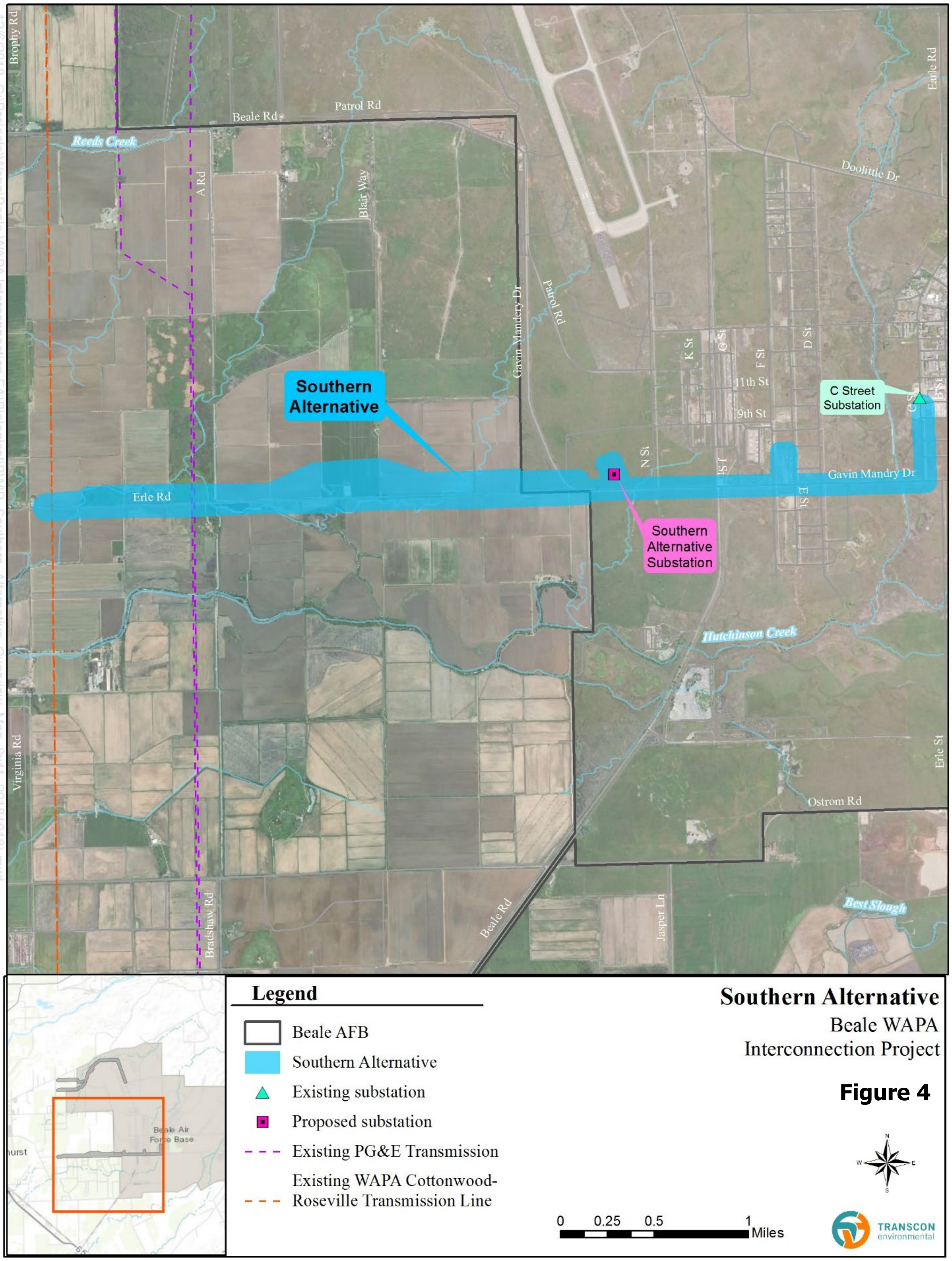
WAPA must comply with North American Electric Reliability Corporation and Western Electricity Coordinating Council standards and requirements for transmission system reliability, including maintenance and vegetation management. In order to comply with these requirements, WAPA has a comprehensive O&M program for all of its property and facilities, including transmission lines, substations, communication facilities, and legal access roads. This O&M program ensures reliability of the transmission systems and safe, all-weather access to the transmission line structures and other WAPA facilities. The O&M activities proposed for this Project would be consistent with WAPA O&M program and Beale AFB management plans for on-Base portions of the Project.


Browns Valley
Jack Slough
Woodruff Ln
Smartsville
Vineyard Creek
20
Northern Alternatives A & B
Reeds Creek
Marysville
City
YUBA
Beale Air Force Base
Coyote Run Golf Course
Olivehurst
Yuba County Airport
Beale AFB
Hutchinson Creek
Southern Alternative
SUTTER
65
Dry Creek
Bear River
Wheatland
70
Legend
Survey Area
Regional Context Map
Beale WAPA
Interconnection Project
Figure 1
0 0.5 1 2 3 4
Miles
TRANSCON environmental



Hammonton Rd
Northern A Alternative
Doolittle Dr
Arnold Ave
Northern B Alternative
Hammonton Smartville Rd
Northern Alternative Substation
Doolittle Substation
Brophy Rd
Beale Rd
Patrol Rd
Blair Way
A Rd
Legend
Beale AFB Boundary
Northern Alternative A Corridor
Northern Alternative B Corridor
Proposed substation
Existing substation
Existing PG&E Transmission Line
Existing WAPA Cottonwood-Roseville Transmission Line
Northern Alternative A
Beale WAPA Interconnection Project
Figure 2
0 0.25 0.5 Miles
Beale Air Force Base
TRANSCON environmental


Northern B Alternative
Reeds Creek
Northern Alternative Substation
Doolittle Substation
Northern A Alternative
Hammonton Rd
Hammonton Smartville Rd
Hackberry Way
Doolittle Dr
Arnold Ave
Brophy Rd
Beale Rd
Patrol Rd
Blair Way
A Rd
Legend
Beale AFB Boundary
Northern Alternative B Corridor
Northern Alternative A Corridor
Existing substation
Proposed substation
Existing WAPA Cottonwood-Roseville Transmission Line
Existing PG&E Transmission Line
Beale Air Force Base
Northern Alternative B
Beale WAPA Interconnection Project
Figure 3
0 0.25 0.5 Miles
TRANSCON environmental



Brophy Rd
Beale Rd
Patrol Rd
Reeds Creek
A Rd
Blair Way
Doolittle Dr
Earle Rd
Gavin Mandery Dr
Patrol Rd
K St
G St
F St
D St
11th St
9th St
C Street Substation
Southern Alternative
N St
J St
E St
Erle Rd
Gavin Mandry Dr
Southern Alternative Substation
Hutchinson Creek
Virginia Rd
Erle St
Ostrom Rd
Best Slough
Bradshaw Rd
Beale Rd
Jasper Ln
Beale Air Force Base
Legend
Beale AFB
Southern Alternative
Existing substation
Proposed substation
Existing PG&E Transmission
Existing WAPA Cottonwood-Roseville Transmission Line
Southern Alternative
Beale WAPA Interconnection Project
Figure 4
0 0.25 0.5 1 Miles
TRANSCON environmental

SECTION 2 STUDY METHODOLOGY

2.1 Survey Area

A survey area, which extends between 325 and 400 feet from each proposed alternative alignment (inclusive of poles/pole foundations, underground facilities, substations, and access roads) was established to capture any special-status species habitat occurring within or adjacent to the Project footprint. Portions of the proposed alternatives on Beale AFB were buffered 325 feet, while those located off-Base on private parcels were buffered 400 feet. In addition, on-Base areas between the divergent areas of Northern Alternatives A and B were also surveyed to account for any potential adjustments to either northern alternative.

The survey area is further divided between a "northern survey area" that was established around the proposed Northern Alternatives A and B and a "southern survey area" that was established around the proposed Southern Alternative (**Appendix A**; **Figure 2**), collectively referred to as the "survey areas."

2.2 Regulatory Requirements

The proposed Project has a clear federal nexus and is required to comply with the necessary federal environmental laws and regulations, and Beale AFB management plans and agreements, intended to protect special-status species and their habitats. Portions of the Project may also need to comply with the required environmental laws and regulations of the state of California. For these reasons, the analysis provided in this BRR addresses these requirements as they pertain to special-status species, which are summarized below.

Endangered Species Act

The federal ESA and its subsequent amendments protect plants and wildlife (and their habitats) listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service. Section 9 of the ESA specifically prohibits the taking of ESA-protected wildlife and lists prohibited actions. The ESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). The ESA also governs the removal, possession, malicious damage, or destruction of endangered plants on federal land. Pursuant to the requirements of the ESA, an agency proposing a project or reviewing a proposed project within its jurisdiction (action agency) must determine whether any federally-listed species may be present in the study area and determine whether the proposed Project will have a significant effect upon such species or its habitat. The action agency is also encouraged to determine whether the project is likely to jeopardize any proposed or candidate species in an effort to avert any potential future conflict.

Migratory Bird Treaty Act

The MBTA implements international treaties between the United States and other nations to protect migratory birds and their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized by regulation or permit. Regulations governing migratory bird permits are found in 50 CFR 13–General Permit Procedures and 50 CFR 21–Migratory Bird Permits.

Bald and Golden Eagle Protection Act

Bald and golden eagles are protected under the BGEPA, originally passed in 1940 (amended in 1962). The BGEPA prohibits the take, possession, sale, purchase, barter, offer to sell, transport, export, or import of any bald or golden eagle, alive or dead, including any part, nest, and/or egg, unless allowed by permit (16 U.S.C. 668[a]; 50 CFR 22).

California Endangered Species Act

The CESA provides that certain species of fish, wildlife, and plants that are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of California are of statewide concern and should be conserved, protected, and enhanced along with their habitats. The CESA establishes that it is the policy of the state that state agencies should not approve projects that would jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat that would prevent jeopardy. While CESA does not bind WAPA's actions, for the purpose of this analysis WAPA has considered and afforded protection to state-listed species as they pertain to this Project.

California Environmental Quality Act (CEQA)

The CEQA (California Public Resources Code §§ 21000-21177) requires state agencies, local governments, and special districts to evaluate and disclose impacts from "projects" in the state. Section 15380 of the CEQA Guidelines clearly indicate that wildlife and plant species designated by the California Department of Fish and Wildlife (CDFW) as FP or Species of Special Concern (SSC) should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein. While WAPA is not bound to these guidelines, for the purpose of this analysis WAPA has considered and afforded protection to these species, as well as those plants designated as California Rare Plant Ranks 1B and 2B, as they pertain to this Project.

2.3 Biological Studies

Desktop Review

Prior to conducting the field surveys, Transcon biologists completed background research and compiled a comprehensive list of special-status species and sensitive natural communities that may have the potential to occur in the Project area. Information on potential special-status species was obtained from online databases and existing reports including the California Natural Diversity Database (CNDDB), the USFWS Information for Planning and Consultation Database (USFWS 2018), the Integrated Natural Resources Management Plan for Beale AFB (Beale 2018), and previous special-status species studies conducted on Beale AFB (AECOM 2011; Ayuda 2016, 2017a, 2017b; Bhate 2016; Engstrom 2016; Hansen 2016; Harvey & Associates 2013, 2017a, 2017b).

In addition, the following spatial data and literature was reviewed to determine potential special-status species habitat within and adjacent to the Project area:

- Current and historical aerial imagery (Google Earth 2018; ESRI 2018)
- U.S. Geological Survey (USGS) topographic maps (USGS 1973)
- National Wetland Inventory data from the USFWS (USFWS 2017)
- LIDAR (Light Detection and Ranging) wetland data for Beale AFB only (USACE 2006)

The habitat requirements of the regionally occurring special-status species were used to determine whether suitable habitat for these species exists within the Project area and/or survey area. A summary of this review is included in **Appendix B**, which includes a list of each special-status species considered in this analysis, their federal and/or state statuses, specific habitat requirements, and a discussion of presence/absence of suitable habitat for these species within the Project area and/or survey area.

Habitat Field Assessment

Transcon biologists conducted two separate field surveys of the survey area from March 12 to March 15, 2018 and October 4, 2018 to evaluate potential habitat for special-status species and to search for any signs and/or presence of special-status species. Protocol-level surveys, however, were not conducted for any special-status species. All accessible areas within the survey area were investigated on-foot with the exception of several off-Base private parcels with access restrictions. Restricted areas were surveyed from the public ROW or from adjacent parcels where access was granted. Most of these inaccessible parcels are currently being farmed or grazed and have limited habitat suitable for any of the special-status species analyzed in this report.

SECTION 3 ENVIRONMENTAL SETTING

3.1 Climate

The survey areas experience a Mediterranean climate, which consists of cool, wet winters and hot, dry summers. The region experiences an average high temperature of 73 degrees Fahrenheit (F) and average low of 49 degrees F, with an average yearly precipitation of approximately 24 inches (USCD 2018). Weather during the March field surveys was partly cloudy with scattered rain showers, with an average temperature of 55 degrees F. Weather during the October field surveys was partly cloudy, with an average temperature of 75 degrees F.

3.2 Land Use

The northern survey area begins on private parcels that consist mostly of agricultural lands (irrigated cropland for rice, alfalfa, safflower, and corn) and lightly developed residential areas. The portions of the northern survey area within Beale AFB are adjacent to but outside of the airfield area and are primarily located along sparsely developed, open grasslands interspersed with vernal pools and adjacent to preexisting roads and infrastructure.

The southern survey area also begins on private parcels adjacent to Erle Road that consist of agricultural lands and lightly developed residential areas. The portions of the southern survey area within Beale AFB occur mostly on lightly developed grasslands interspersed with vernal pools that parallel Gavin Mandry Drive.

3.3 Landscape Setting

The survey areas are located within the southeast extent of the Sacramento Valley, a northern region of California's Central Valley that lies north of the Sacramento–San Joaquin River Delta (Landscope 2017). Located less than 10 miles west of the foothills of the Sierra Nevada, the northern and southern survey areas are located approximately 3 and 6 miles south of the Yuba River, respectively. Both survey areas consist of relatively flat grasslands that range in elevation from 70 to 150 feet above sea level.

Geology/Soils

The survey areas are within the Great Valley Geomorphic Province near the western boundary of the Sierra Nevada Geologic Province. The Great Valley Province, a basin formed between the Coast Range Province to the west and Sierra Nevada Province to the east, is characterized by alluvial deposit fill from the Sierra Nevada and Coast Ranges. Specifically, the survey areas are on generally flat to gently rolling topography indicative of historic river floodplains and low alluvial fans that have originated from the Sierra Nevada.

Habitats and Vegetation

A variety of habitat and vegetation types occur within the survey area, which is located within the Sacramento Valley Subregion of the California Floristic province. The dominant ecological systems, as mapped by the USGS National Gap Analysis Program, include California Central Valley and Southern Coastal Grassland, California Central Valley Riparian Woodland and Shrubland, and Cultivated Cropland (USGS 2017).

Habitat and vegetation types were categorized during biological resource surveys using WAPA's data dictionary and are based on habitat types described in Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) and vegetation communities described in A Manual of California Vegetation (Sawyer-Keeler Wolf 2009). Habitat types that are not vegetation types (i.e., lakes, rivers, and urban and agricultural areas) are categorized based on A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988).

The following is a description of habitat and vegetation types encountered throughout the project area. Habitat and vegetation types are represented in maps in **Appendix B**.

Upland Habitats

Agricultural cropland – Agricultural cropland within the survey area is typically a monoculture of rice fields, row crops, or orchards. Most agricultural croplands in the project area are rice fields, which are seasonally flooded and provide habitat for wildlife such as waterfowl and giant garter snakes. Croplands in the project area are often bisected by man-made agricultural ditches and irrigation canals, some of which contain wetland vegetation and provide habitat for wildlife.

Agricultural pasture – Pasture vegetation is a mix of annual and perennial grasses, forbs, and legumes that normally provide 100 percent ground cover. The mix of grasses and legumes varies according to management practices such as seed mixture, fertilization, soil type, irrigation methods, weed control, and livestock type. Unless they are small in size (on average less than 10 acres), pastures or rangelands were usually classified as natural lands (usually non-native grasslands).

Barren – This habitat type is devoid of vegetation.

Grassland, non-native – This is the most commonly occurring vegetation community within the survey area and is primarily located in the portions of the Project area within Beale AFB and on a small off-Base portion of the Southern Alternative along Erle Road. Within the surveyt area, this community is dominated by non-native grasses and forbs including wild oat (*Avena* spp.), ripgut brome (*Bromus diandrus*), Italian ryegrass (*Lolium perenne*), soft chess (*Bromus hordaceous*), medusahead (*Elymus caput-medusae*), foxtail barley (*Hordeum jubatum*), filaree (Erodium spp.), black mustard (Brassica nigra), and common vetch (*Vicia sativa*). Interspersed with these non-native species are native grasses and forbs that include purple needlegrass (*Nassella pulchra*), California melic (*Melica californica*), fiddleneck (*Amsinckia* spp.), doveweed (*Eremocarpus setigerus*), various lupine (*Lupinus* spp.), mariposa lily species (*Calochortus* spp.) and brodiaea species (*Brodiaea* spp.).

Urban – Urban habitat includes areas such as parking lots, city parks, schools, landscaped areas, and residential developments, lawns and backyards. Vegetation is highly variable in these areas, including a broad array of trees and shrubs planted and maintained as landscaping.

Wetland Habitats

Wetlands, freshwater marsh – These wetlands are characterized by perennial, emergent hydrophytic vegetation occurring in sites that lack significant current and are permanently or nearly permanently flooded with fresh water. Within the Project area, these wetlands occur primarily adjacent to the intermittent waterways (i.e., Reeds Creek, Hutchinson Creek), agricultural ditches and canals, and man-made stock ponds. In the project area, freshwater marshes are usually dominated by cattails (*Typha latifolia* or *T. angustifolia*), bulrushes (*Schoenoplectu*s spp.), nutsedges (*Cyperus* spp.), and rushes (*Juncus* spp.).

Wetlands, seasonal – Seasonal wetlands are isolated depressions or swales characterized by seasonal ponding that provide habitat for wetland plant species such as Pacific rush (*Juncus effusus*), curly dock (*Rumex crispus*), rushes (*Juncus* spp.), and spikerushes (*Eleocharis* spp.). Seasonal wetlands may also include nonnatives such as Himalayan blackberry (*Rubus discolor*), wild radish (*Raphanus sativus*), poison hemlock (*Conium maculatum*), and fennel (*Foeniculum vulgare*).

Wetlands, vernal pool and vernal swales – Numerous vernal pools are interspersed throughout the grassland communities of the survey area on Beale AFB. These small, shallow depressions are temporary seasonal wetlands that fill with water during the rainy season and dry during the spring and summer months.

Vernal pools within the study areas are characterized as Northern Hardpan vernal pools, which have formed on alluvial terraces above impermeable soil surfaces created by an accumulation of clay particles. Many of the vernal pools within the Project area are hydrologically connected via swales that have similar characteristics as vernal pools, though they typically experience less extensive inundation. The majority of vernal pools and swales within the Project area were mapped previously using Lidar (USACE 2006) while several were also identified during the biological resource surveys (Transcon 2019).

Within the Project area, dominant plants within vernal pools (and to a lesser extent swales) include coyote thistle (*Eryngium vaseyi*), white head navarretia (Navarretia leucocephala), Fremont's goldfields (*Lasthenia fremontii*), downingia (*Downingia* spp.), smooth goldfields (*Lasthenia glaberrima*), Carter's buttercup (*Ranunuculus bonariensis*), field owl's-clover (*Castilleja campestris*), pale spike rush (*Eleocharis macrostachya*), and dwarf wooly marbles (*Psilocarphus brevissimus*).

A number of sensitive plant and animal species rely on vernal pool habitats resulting in special management consideration. Characteristic special-status plant species that may occur within the Project area include dwarf downingia (*Downingia pusilla*) and legenere (*Legenere limosa*). Federally threatened or endangered vernal pool species with habitat in the project area include vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*).

Waters, man-made – Man-made water features such as stock ponds, ditches and agricultural drainages, and irrigation (or water supply) canals often support wetland vegetation and flowing water that provide habitat for wildlife. Ditches, drainages, and irrigation canals associated with agricultural irrigation operations occur on those portions of the survey area not located on Beale AFB.

Waters, creeks – Riverine habitats, such as streams, have intermittent running water. Within the survey area, riverine habitats include intermittent streams and ephemeral drainages, which hold water seasonally.

Hydrology

The survey areas are within the Reeds Creek (Hydrological Unit Code [HUC] 180201590302) and Hutchinson Creek (HUC 180201590301) subwatersheds, both within the larger Honcut Headwaters-Lower Feather (HUC 18020159) watershed (EPA 2018).

Five intermittent streams intersect the survey areas at several locations. Reeds Creek, an intermittent stream that originates just north of Beale AFB, intersects the northern survey area, generally flows southwest along the northern border of the Base, and terminates at the Bear River, approximately 10 miles southwest of Beale AFB. Hutchinson Creek, another intermittent stream originating north of Beale AFB, flows south until it converges with Reeds Creek before also terminating at the Bear River. Two unnamed intermittent streams intersect the southern survey area at off-Base locations, both flowing in a southeasterly direction and eventually converging with Reeds Creek. A fifth intermittent stream on Beale AFB intersects the southern alignment, converging with Hutchinson further south.

There are numerous wetland and water conveyance features within the survey area that include emergent wetlands, swales, vernal pools, and roadside/agricultural ditches. The locations and extent of these features, including vernal pools, and Waters of the U.S. identified on, or in the vicinity of, the survey areas on Beale AFB are based on LIDAR data (USACE 2006).

Wildlife

A variety of wildlife species inhabit the grasslands, vernal pool, and wetland habitats within the survey areas. Grasslands within and adjacent to the Project area provide nesting and foraging habitat for a variety of bird species, including the rough-legged hawk (*Buteo lagopus*), western king bird (*Tyrannus verticalis*), western meadowlark (*Sturnella neglecta*), lark sparrow (*Chondestes grammacus*), savannah sparrow

(*Passerculus sandwichensis*), horned lark (*Eremophila alpestris*), and Brewer's blackbird (*Euphagus cyanocephalus*). Grasslands are also an important habitat for common rodents and large and small predators, including the gray fox (*Urocyon cinereoargenteus*) and coyote (*Canis latrans*). Reptiles also inhabit these grasslands, including gopher snake (*Pituophis catenifer*), western rattlesnake (*Crotalus oreganus*), western yellow-bellied racer (*Coluber constrictor*), common king snake (*Lampropeltis getula*), alligator lizard (*Elgaria coerulea*), and western fence lizard (*Sceloporus occidentalis*).

Vernal pools (during the wet season) and wetland habitats are unique habitats that can support an increased diversity of wildlife species during certain times of the year. Ducks and other wading birds can be abundant in these habitats during the wet season and during the migratory bird season. In the vernal pool habitats on Beale AFB, Pacific treefrogs (*Hyla regilla*), western toads (*Anaxyrus boreas*), and other amphibians can become particularly active during the wet season. Many predators including garter snakes (*Thamnophis* sp.) and raccoons (*Procyon lotor*) are also drawn to these areas during this time of prey abundance (USFWS 2005).

SECTION 4 RESULTS

The desktop review determined 33 special-status plant and wildlife species had the potential to occur within the general area (**Appendix C**; **Tables 2 and 3**). Each of these species were assessed for their potential to occur within each of the proposed alternative corridors (i.e., presence of suitable habitat). After further analysis, it was determined that a total of 4 federally-listed species and 17 state-listed and other special-status species may be present in one or all of the Project alternatives and are analyzed for potential direct, indirect, and cumulative impacts due to proposed Project-related activities (**Tables 2 and 3**). In addition, designated critical habitat for vernal pool fairy shrimp (VP fairy shrimp) and vernal pool tadpole shrimp (VP tadpole shrimp) occurs along the off-Base portion of the Southern Alternative Alignment and is analyzed for potential impacts.

4.1 Federally-Listed Species

4.1.1 Federally-Listed Species Considered

TABLE 2
FEDERALLY-LISTED SPECIES WITH THE POTENTIAL TO OCCUR

Common Name	Scientific Name	Federal Status*	Species Retained for Analysis?	Reason for Exclusion
REPTILES				
Giant garter snake	*Thamnophis gigas*	FT	Yes	Not applicable; analyzed in Section 4.1.2
INSECTS				
Valley elderberry long-horned beetle	*Desmocerus californicus dimorphus*	FT	Yes	Not applicable; analyzed in Section 4.1.2
CRUSTACEANS				
Conservancy fairy shrimp	*Branchinecta conservation*	FE	No	Project area is not within currently accepted range of the species
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	Yes	Not applicable; analyzed in Section 4.1.2
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	Yes	Not applicable; analyzed in Section 4.1.2
FISH				
Steelhead—Central Valley Distinct Population Segment (DPS)	*Oncorhynchus mykiss irideus*	FT	No	Stream habitats will be avoided and buffered
Delta smelt	*Hypomesus transpacificus*	FT	No	Stream habitats will be avoided and buffered
BIRDS				
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT	No	No suitable habitat in survey areas

TABLE 2 FEDERALLY-LISTED SPECIES WITH THE POTENTIAL TO OCCUR				
Common Name	**Scientific Name**	**Federal Status***	**Species Retained for Analysis?**	**Reason for Exclusion**
PLANTS				
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	FE	No	No suitable habitat in survey areas; presumed extirpated from the region
***Note:** FE=Federally endangered, FT=Federally threatened				

4.1.2 Federally-Listed Species Accounts

The following federally-listed species evaluations include a description of their natural history, overall and regional distribution, current threats, and environmental baseline (current habitat conditions within the survey areas). The effect determinations that may result from each alternative of the proposed Project are addressed in Section 4.3.1 (Northern Alternative A), Section 4.3.2 (Northern Alternative B), and Section 4.3.3 (Southern Alternative).

Giant Garter Snake (Thamnophis gigas)

Natural History: The giant garter snake (GGS) is an FT and California state threatened (ST) species of snake endemic to the Central Valley of California. GGS are highly aquatic, occupying a similar habitat niche to that of watersnakes. They inhabit a variety of aquatic and wetland habitats (and adjacent upland areas), such as agricultural wetlands (e.g., rice fields), irrigation and drainage canals, marshes, sloughs, ponds, lakes, and streams. GGS typically feed on small fishes, tadpoles, and frogs. Breeding occurs in March and April, with females giving birth to live young from late July though early September. GGS are typically inactive, or greatly reduce their activities, during the late fall and winter months (Halstead et al. 2015).

Studies have found that GGS have a strong association to aquatic agricultural habitats in the Sacramento Valley, such as rice fields and their associated water conveyance structures (i.e., canals and ditches). Although densities of snakes tend to be lower in rice fields when compared to natural wetland habitats, the overall number of occurrences in these agricultural habitats tend to be high due to the sheer extent of rice fields in the region (Shuford 2017).

GGS are threatened by the continued loss and fragmentation of their habitat from both urban and agricultural development, and the potential loss of habitat associated with changes in rice production (Shuford 2017). Water management and water transfers are also of particular concern because they exacerbate the losses from development and from loss of rice production. Secondary threats include introduced predators, road mortality, and flood control and maintenance actions (Halstead et al. 2015).

Distribution: Historically, the species ranged throughout the Sacramento and San Joaquin valleys from Butte to Kern counties, coinciding with the river floodplains of both regions. Extirpated from much of the San Joaquin Valley by the late 1980s, GGS no longer occurs south of northern Fresno County. The nearest GGS record lies over 10 miles north of Beale AFB just north of the Yuba River and between the towns of Browns Valley and Live Oak (Beale 2018).

Environmental Baseline: Within the boundaries of the survey area on Beale AFB, the channels of Reeds Creek, Hutchinson Creek, and the unnamed intermittent drainages intersecting the west end of the Southern Alternative each possess the minimum habitat requirements necessary to support GGS (Beale 2017).

However, multiple protocol-level surveys from 2005 to 2018 have not detected any individuals, and it is assumed the species is not present within Beale AFB (AECOM 2011; Bhate 2016; Hansen 2016; Harvey & Associates 2013, Beale 2017).

Portions of the survey area on private lands include agricultural parcels where rice is being cultivated. Although there are no known occurrences of GGS within 3 miles of the Project area, these rice fields may provide suitable habitat for the species (USFWS 2012). As protocol-level surveys have not been conducted on these private lands, it is assumed that GGS may be present within these areas.

Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)

Natural History: The valley elderberry longhorn beetle (VELB) is an FT species of insect. It is dependent on its host plant, blue elderberry (*Sambucus nigra*), which is a common component of riparian corridors and adjacent upland areas in the Central Valley. There are four stages of the VELB's life cycle: egg, larva, pupa, and adult. Females deposit eggs on or adjacent to the host elderberry. Egg production varies between 16 and 180 eggs. Eggs hatch within a few days of being deposited and larvae emerge. The larvae bore into the wood of the host plant and create a long feeding gallery in the pith of the elderberry stem. The larvae feed on the pith of the plant for one to two years. When a larva is ready to pupate, it chews an exit hole to the outside of the stem and then plugs it with grass. The larva then retreats into the feeding gallery and constructs a pupal chamber from wood and grass. The larvae metamorphose between December and April; the pupal stage lasts about a month. The adult remains in the chamber for several weeks after metamorphosis and then emerges from the chamber through the exit hole. Adults are active from March to June, feeding and mating. Adults feed on elderberry leaves and mate within the elderberry canopy (USFWS 2009).

VELB occur most frequently and abundantly in significant riparian zones that are well-developed. Within significant riparian zones, VELB primarily occur within the riparian corridor but can occur infrequently in non-riparian scrub habitats adjacent to the riparian corridor. VELB exit holes are usually found on stems or branches of 1 inch in diameter or greater and are found infrequently in smaller stems (1.3 to 2 centimeters). In the northern portion of the VELB's range, exit holes are most frequently observed in stems and branches 5 to 10 centimeters in diameter (USFWS 2017).

The decline in VELB distribution is primarily attributed to the removal and conversion of California's Central Valley riparian forests into agricultural and urban land uses. Secondary threats include poorly managed grazing practices and the introduction of non-native animals that predate early phases of VELB (USFWS 2017).

Distribution: Historically, the range of VELB was restricted to the Central Valley of California and associated foothills up to 3,000 feet in elevation. Currently, the range extends from approximately Shasta County in the north to Fresno County in the south, including the valley floor and lower foothills (USFWS 2017).

Environmental Baseline: Seven CNDDB occurrences have been documented within 3 miles of the Project area, primarily along the Lower Yuba River to the north of the northern alternatives. Past surveys on Beale AFB have also documented exit holes on elderberry shrubs along Best Slough (approximately 2 miles south of the Southern Alternative) (AECOM 2011; Ayuda 2016 Bhate 2016; Harvey & Associates 2012, 2017; Beale 2017). During field surveys, only one elderberry shrub was located within the survey areas (northern survey area) and no VELB exit holes were visible on the plant. In addition, no elderberry shrubs were identified within the private, off-Base portions of the survey area.

Vernal Pool Fairy Shrimp (Branchinecta lynchi)

Natural History: The VP fairy shrimp is an FT species of branchiopod that inhabits seasonally inundated vernal pools. This species is highly adapted to the ephemeral nature of the aquatic habitats in which it occurs. This includes the ability of VP fairy shrimp eggs (or cysts) to remain dormant in the soil when vernal pools are dry, only emerging when the pools are sufficiently inundated and environmental conditions (e.g., temperature) are suitable. The VP fairy shrimp cysts are capable of withstanding heat, cold, and prolonged desiccation, often for several years. The cyst bank in the soil often contains cysts from several years of breeding (USFWS 2005).

VP fairy shrimp occur only in vernal pools or vernal pool-like habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. These habitats are typically part of an undulating landscape interspersed with soil mounds, basins, swales, and drainages. Due to water movement within these complexes of vernal pools and swales, VP fairy shrimp can move between individual pools, and distinct populations are often defined by vernal pool complexes rather than individual pools (USFWS 2005). This particular species of fairy shrimp tends to occur in smaller grass or mud bottomed vernal pools (most frequently less than 0.05 acre in size), swales, or basalt flow depression pools in unplowed grasslands (USFWS 2007a). Although their tolerable temperature range is very narrow, VP fairy shrimp have been observed in vernal pools from December to early May. This species can mature quickly and therefore is able to persist in short-lived, shallow pools (USFWS 2005).

The primary threat to VP fairy shrimp and other vernal pool species is habitat loss and fragmentation, which is primarily attributed to the conversion of vernal pools to agriculture, urban development, and water conveyance and storage projects. Secondary threats include direct habitat loss due to altered hydrology attributed to the damming of vernal swales by physical barriers (i.e., roads, canals, etc.) (USFWS 2005).

Distribution: The historical range of VP fairy shrimp is not well-documented, as it was not taxonomically identified until 1990. However, it is currently known to occur in a wide range of vernal pool habitats in the Central Valley and southern regions of California, and a disjunct population exists in Jackson County, Oregon. In California, VP fairy shrimp can be found in scattered locations in the Central Valley from Shasta County to Tulare County, along the Coast Ranges from Solano County to San Luis Obispo and Santa Barbara counties, and in southern California in Riverside and San Diego counties. The vernal pool habitats in which this species occurs are highly fragmented and isolated from one another, and it is estimated that only 25 percent of these habitats currently exist from their historical extent. Although the species has a larger distribution than other fairy shrimp species, it is generally uncommon throughout its range and rarely abundant in the locations that it does occur (USFWS 2005).

Environmental Baseline: Nine CNDDB occurrences of VP fairy shrimp have been documented within 3 miles of the Project area, and multiple occurrences of VP fairy shrimp have been identified in several pools on Beale AFB during annual Base surveys in 2008, 2010, 2012, 2014, and 2015 to 2018 (AECOM 2011; Bhate 2016; Hansen 2005; Harvey & Associates 2012, 2017; Beale 2018). In addition, USFWS-designated critical habitat (Unit 11) occurs off-Base, immediately north of the Southern Alternative with a portion overlapping the southern survey area.

Extensive vernal pool complexes and other seasonal wetlands (i.e., swales) exist within the Project area on Beale AFB, and suitable VP fairy shrimp habitat is present within both the northern and southern survey areas. Freshwater wetlands also occur within the portion of the off-Base southern survey area within VP fairy shrimp designated critical habitat (Transcon 2018).

Vernal Pool Tadpole Shrimp (Lepidurus packardi)

Natural History: VP tadpole shrimp is an FE species that inhabits seasonally inundated vernal pools. The VP tadpole shrimp is a small crustacean in the family Triopsidae, with adults typically reaching a length of 2 inches. Like VP fairy shrimp, they inhabit vernal pools containing clear to highly turbid water that range in size, some having been found in pools up to 89 acres in size (USFWS 2007b). As with fairy shrimp described above, VP tadpole shrimp populations are reestablished from cysts that lie dormant in the dry pool sediments when pools refill. However, VP tadpole shrimp have a relatively longer lifespan than most other vernal pool crustaceans, often molting their shells several times. Studies have described mature adults observed in vernal pools three to four weeks after the pools had been filled (USFWS 2005).

Threats to VP tadpole shrimp are similar to those of other vernal pool species and are addressed under the preceding VP fairy shrimp analysis.

Distribution: Historically, it is believed that VP tadpole shrimp were distributed over most of the vernal pool habitats in the Central Valley and Central Coast regions of California. Believed to be greatly reduced from their historical range, they are currently restricted to fragmented vernal pool habitats in the Central Valley and San Francisco Bay Area. Even then, VP tadpole shrimp are often uncommon occurrences in the vernal pool habitats in which they occur (USFWS 2005).

Environmental Baseline: Ten CNDDB occurrences of VP tadpole shrimp have been documented within 3 miles of the Project area and multiple occurrences have been identified in several pools on Beale AFB during surveys in 2008, 2010, 2012, 2014, and 2015 to 2018 (AECOM 2011; Bhate 2016; Hansen 2005; Harvey & Associates 2012, 2017; Beale 2018). In addition, USFWS-designated critical habitat (Unit 7) occurs off-Base, immediately north of the Southern Alternative with a portion overlapping the southern survey area.

Extensive vernal pool complexes and other seasonal wetlands (i.e., swales) exist within the Project area on Beale AFB, and suitable VP tadpole shrimp habitat is present within each Project alternative. Freshwater wetlands also occur within the portion of the off-Base southern survey area within VP tadpole shrimp critical habitat, though vernal pools are not present.

4.2 State-Listed and Other Special-Status Species

4.2.1 State and Other Special-Status Species Considered

TABLE 3
STATE-LISTED SPECIES AND OTHER SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR

Common Name	Scientific Name	Status*	Species Retained for Analysis?	Reason for Exclusion
BIRDS				
Bald eagle	*Haliaeetus leucocephalus*	BGEPA/SE/ BCC	Yes	Not applicable; analyzed in Section 4.2.2
Bank swallow	*Riparia riparia*	ST	No	No suitable habitat
Western burrowing owl	*Athene cunicularia*	SSC/BCC	Yes	Not applicable; analyzed in Section 4.2.2

TABLE 3 STATE-LISTED SPECIES AND OTHER SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR				
Common Name	**Scientific Name**	**Status***	**Species Retained for Analysis?**	**Reason for Exclusion**
California black rail	*Laterallus jamaicensis*	ST/FP/BCC	Yes	Not applicable; analyzed in Section 4.2.2
Golden eagle	*Aquila chrysaetos*	BGEPA/FP/ BCC	Yes	Not applicable; analyzed in Section 4.2.2
Grasshopper sparrow	*Ammondramus savannarum*	SSC	Yes	Not applicable; analyzed in Section 4.2.2
Loggerhead shrike	*Lanius ludovicianus*	SSC/BCC	Yes	Not applicable; analyzed in Section 4.2.2
Long-eared owl	*Asio otus*	SSC	No	No suitable habitat
Northern harrier	*Circus cyaneus*	SSC	Yes	Not applicable; analyzed in Section 4.2.2
Purple martin	*Progne subis*	SSC	No	No suitable habitat
Short-eared owl	*Asio flammeus*	SSC	Yes	Not applicable; analyzed in Section 4.2.2
Swainson's hawk	*Buteo swainsoni*	ST/BCC	Yes	Not applicable; analyzed in Section 4.2.2
Tricolored blackbird	*Agelaius tricolor*	ST/BCC	Yes	Not applicable; analyzed in Section 4.2.2
Yellow-breasted chat	*Icteria virens*	SSC	No	No suitable habitat
Yellow warbler	*Setophaga petechia*	SSC/BCC	No	No suitable habitat
FISH				
Chinook salmon—Central Valley Fall and Late Fall-run Evolutionary Significant Unit (ESU)	*Oncorhynchus tshawytshca*	NMSC/SSC	No	Stream habitats will be avoided and buffered
MAMMALS				
Pallid bat	*Antrozous pallidus*	SSC	Yes	Not applicable; analyzed in Section 4.2.2
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC	Yes	Not applicable; analyzed in Section 4.2.2
Western red bat	*Lasiurus blossevillii*	SSC	Yes	Not applicable; analyzed in Section 4.2.2
PLANTS				
Dwarf downingia	*Downingia pusilla*	CRPR 2B.2	Yes	Not applicable; analyzed in Section 4.2.2

TABLE 3 STATE-LISTED SPECIES AND OTHER SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR				
Common Name	**Scientific Name**	**Status***	**Species Retained for Analysis?**	**Reason for Exclusion**
Legenere	*Legenere limosa*	CRPR 1B.1	Yes	Not applicable; analyzed in Section 4.2.2
Veiny monardella	*Monardella venosa*	CRPR 1B.1	No	Historic occurrence; likely extirpated
REPTILES & AMPHIBIANS				
Western pond turtle	*Emys marmorata*	SSC	Yes	Not applicable; analyzed in Section 4.2.2
Western spadefoot	*Spea hammondi*	SSC	Yes	Not applicable; analyzed in Section 4.2.2

*__California:__ SE=State endangered. **California Rare Plant Ranking (CRPR):** 1B.1= Plant rare, threatened, or endangered in California and elsewhere, 2B.2= Plant rare, threatened, or endangered in California but more common elsewhere. **Other:** BCC= USFWS Bird of Conservation Concern, NMSC= National Oceanic and Atmospheric Administration Species of Concern.

4.2.2 State-Listed and Other Special-Status Species Accounts

The following state-listed and other special-status species evaluations include a description of their natural history, overall and regional distribution, current threats, and environmental baseline (current habitat conditions within the survey areas). The effect determinations that may result from each alternative of the proposed Project are addressed in Section 4.3.1 (Northern Alternative A), Section 4.3.2 (Northern Alternative B), and Section 4.3.3 (Southern Alternative).

Bald Eagle (Haliaeetus leucocephalus)

Natural History: The bald eagle is a large bird of prey protected under the BGEPA, a California endangered species under the CESA, and a USFWS BCC. Adult bald eagles are dark brown with a pure white head and tail, while juvenile birds are mostly brown with white mottling. Typically, found near large bodies of open water, bald eagles build large stick nests in the upper canopies of nearby large trees. Although bald eagles mainly subsist on fish, they are often opportunistic and will feed on a variety of prey, including small mammals, other birds, and carrion. In California, most of the breeding bald eagles occur in the northern part of the state, the breeding season lasting from mid-January through mid-August (CDFW 1990).

Due in most part to adverse effects from the pesticide DDT, bald eagle populations plummeted in the late 1960s and 1970s (Detrich 1985). Following its listing as an FE species (and subsequent delisting in 1995), bald eagle populations have recovered throughout much of its range. Current threats to the species include loss of habitat (i.e., residential, agriculture and timber developments) and mortality from environmental contaminants (i.e., pesticides, lead).

Distribution: Restricted to North America, bald eagles occur throughout Alaska, Canada, the lower 48 states, and northwest Mexico. California is home to both breeding and wintering populations, with most breeding pairs found in the mountain and foothill forests near reservoirs, lakes, and rivers.

Environmental Baseline: There are no CNDDB records and no nests have been identified within 3 miles of the Project area. Bald eagles have been observed at Beale AFB during the winter months and are known to winter north and east of Beale AFB along the Yuba River. Bald eagles have also been observed in the winter foraging in flooded rice fields just off-Base, as well as at several of the lakes in the eastern portion of the Base (Beale 2018). Suitable foraging habitat is present within or adjacent to the northern and southern alternative survey areas.

Western Burrowing Owl (Athene cunicularia hypugaea)

Natural History: The western burrowing owl is a CDFW SSC and USFWS BCC. A small, ground-dwelling owl that is frequently active during the day, burrowing owls often utilize the burrows of burrowing mammals (i.e., ground-squirrels) for protection and nesting. Opportunistic feeders, burrowing owls typically prey on arthropods, small mammals, amphibians, and reptiles. Western burrowing owls nest in open landscapes that are flat to gently sloping, with sparse vegetation, patches of bare ground, and mammal burrows. In the Central Valley, burrowing owls often nest along roadsides adjacent to agricultural fields, along field borders, in annual grasslands and dryland pastures, and along levee embankments that are open to adjacent fields. Breeding season is generally mid-March through September (Klute et al. 2003).

The California population of western burrowing owls has declined primarily due to habitat loss and fragmentation as their habitats are converted for agricultural uses and urban development. Secondary threats include the elimination of burrowing rodents through control programs and unmanaged grazing (Klute et al. 2003).

Distribution: In North America, western burrowing owls are found from southwestern Canada south to central Mexico, from the Pacific coast east to the Great Plains. An isolated population in Florida is resident year-round. Populations in the northern and eastern parts of their range are migratory, while they are found year-round in the southwestern areas of their range (Klute et al. 2003). In California, this species is broadly distributed but most commonly found coastally, in the San Francisco Bay Area, and the Central and Imperial valleys.

Environmental Baseline: One historic (1901) CNDDB western burrowing owl observation has been documented within 3 miles of the Project area, and several occurrences, nests, and wintering burrows have been reported on Beale AFB during annual Base surveys (Auxiliall JV 2017, Bhate 2016, Harvey & Associates 2017, Beale 2017). Suitable foraging, nesting, and wintering habitat is present within the northern and southern survey areas.

California Black Rail (Laterallus jamaicensis)

Natural History: The California black rail is a California threatened species under the CESA, a CDFW FP species, and a USFWS BCC. A small, highly secretive black bird with rufous back and white spots, the California black rail is a permanent California resident that occurs in fresh and saltwater marsh habitats.

Basic breeding site requirements include emergent vegetation for nesting and water of less than 3 centimeters deep (but perennial) for foraging. More or less water may prevent nesting or cause nest abandonment. This species is usually found in dense concealing vegetation dominated by pickleweed (*Salicornia virginica*), bulrushes, cattails, and saltgrass (*Distichlis spicata*) (CDFG 1999).

Threats to California black rail include habitat loss, alteration, and fragmentation due to urbanization, water and flood-control projects, agricultural practices, salt production, and livestock grazing.

Distribution: Historically, California black rails ranged from the San Francisco Bay Area and the Sacramento and San Joaquin river deltas south along the coast to northern Baja California, in the San Bernardino–Riverside area of California, the Salton Sea, and along the lower Colorado River in California and Arizona (CDFG 1999). However, since the mid-1800s, much of the marshland habitats that black rails depend on have been modified or destroyed.

Currently, California black rails are known to occur within the remaining tidal marshlands of the northern San Francisco Bay estuary, Bodega Bay, Tomales Bay, Bolinas Lagoon, Sacramento–San Joaquin Delta, coastal southern California at Morro Bay, the Salton Sea, and lower Colorado River area. Within the remaining distribution of the species, only isolated populations have been documented in southeastern California and western Arizona (Evens et al. 1991). The California black rails documented within Yuba County are a disjunct population from those in the San Francisco Bay-Delta Area (Richmond et al. 2008)

Environmental Baseline: Twenty-seven CNDDB California black rail observations have been documented during the breeding season within 3 miles of the Project area, most just east of Beale AFB. Occurrences have also been documented on the eastern portion of Beale AFB in marsh and lake habitats east of the air field in 1997 and during surveys between 2002 to 2018 (Beale 2018). However, no confirmed observations have been recorded on Beale AFB since 2009, despite periodic protocol-level surveys.

Marshland habitats marginally suitable as nesting and foraging habitats for California black rails are present within the northern and southern alternative survey areas both on- and off-Base. However, direct impacts to these habitats are not anticipated.

Golden Eagle (Aquila chrysaetos)

Natural History: Golden eagles are protected under the federal BGEPA, listed as a CDFW FP species, and listed as a USFWS BCC. One of the largest birds in North America, golden eagles are dark brown with a golden sheen on the nape and a wingspan of up to 7 feet. Typical prey includes a wide variety of mammals, other birds, and carrion (Zeiner et al. 1990).

Sparsely distributed throughout most of California from sea level to 11,500 feet in elevation, golden eagles can be found in a variety of open habitat types, including grasslands, agricultural areas, shrublands, oak woodland-savanna, and desert habitats, occasionally occurring in other habitats in the winter and during migration. Golden eagles most frequently nest on cliff ledges, on high rocky outcrops, and in large trees. In California, their breeding season typically occurs between February and July (Zeiner et al. 1990).

Golden eagle populations declined in the early 1900s due to eradication campaigns and habitat loss to agriculture and suburban development; this species is highly susceptible to human disturbance at nest sites Due to their large wingspan, they are susceptible to power line electrocution, as wings can span phase-to-phase or phase-to-ground wires (Biosystems Analysis 1989). However, recent transmission line design modifications have significantly reduced electrocution risk to raptors.

Distribution: In North America, golden eagles occur in western and northern Alaska east through Canada and south to northern Mexico. In the United States, golden eagles are considerably less common east of the Great Plains and are absent as breeders from much of the eastern half of the country. The majority of golden eagles in California are year-round residents, though some migrate into the state in the winter months. They are widely distributed in California where suitable habitat remains.

Environmental Baseline: There are no CNDDB records within 3 miles of the Project area, although several golden eagle observations have been recorded on Beale AFB (Beale 2018). However, no nests have been identified. Suitable foraging habitat is present within the northern alternative survey area and suitable foraging and nesting habitat is within the southern alternative survey area.

Grasshopper Sparrow (Ammondramus savannarum)

Natural History: Grasshopper sparrow is listed as a CDFW SSC. Grasshopper sparrows are small, brown or buff-colored sparrows with dark crown stripes, often found by their insect-like song. Grasshopper sparrows are a spring and summer resident of several types of grasslands in California and use other habitat types only in migration. The breeding season extends from mid-March to August. Like many sparrow species, grasshopper sparrows feed on seeds for much of the year, though chicks in the nest are typically fed small arthropods (Ruth 2015).

The primary threat to grasshopper sparrows is the loss and fragmentation of grassland habitats. Like many species dependent on grasslands, this species has declined in much of its range (Ruth 2015).

Distribution: Grasshopper sparrows have a widespread distribution in North America, found in southwest Canada, and all U.S. states south through Mexico. Found year-round in some southern states, much of the population winters in Mexico. Grasshopper sparrows are patchily distributed in California, primarily as migratory breeders from March to September; they are absent from desert areas, the Great Basin and the Sierra Nevada (Ruth 2015).

Environmental Baseline: One CNDDB grasshopper sparrow observation has been documented within 3 miles of the Project area to the east of Beale AFB. No occurrences of grasshopper sparrow have been documented within Beale AFB. Suitable foraging and nesting habitat are present within the northern and southern alternative survey areas.

Loggerhead Shrike (Lanius ludovicianus)

Natural History: The loggerhead shrike is a species of bird listed as a CDFW SSC and USFWS BCC. A medium-sized black and gray songbird with white wing patches and a hooked bill, loggerhead shrikes can be found in a variety of habitats that include open riparian areas, agricultural areas, grasslands, shrublands, semi-desert shrublands, and sometimes open pinyon-juniper woodlands. Shrikes prey on insects, reptiles, small mammals, and small birds and are known for impaling prey items on thorns, barbed wire fences, and cactus spines (Pruitt 2000).

Loggerhead shrikes breed in open, grassy areas that are interspersed with tree and shrub species, with nests generally 1.5 to 3 meters above ground in a crotch or on top of old nests. Research has shown that shrike nests are somewhat less adversely impacted by proximity to human activity than other nesting passerines. Breeding season in California is generally from February to July (Shuford and Gardali 2008).

This species is declining in much of its range, particularly in the eastern U.S. The decline of loggerhead shrike is primarily attributed to habitat loss and degradation (Pruitt 2000).

Distribution: The loggerhead shrike is found in southwest Canada and much of the western and southern U.S. south to southern Mexico, and in low numbers in other parts of the eastern U.S. They are found year-round in many areas but are not found in winter in the northern Great Plains states. Shrikes occur throughout California in low to mid-elevations in suitable habitat, though they are absent from the heavily forested northwestern part of the state (Shuford and Gardali 2008).

Environmental Baseline: There are no CNDDB records within 3 miles of the Project area, though loggerhead shrike has been observed on Beale AFB (Beale 2018). Suitable foraging and nesting habitat are present within the northern and southern alternative survey areas.

Northern Harrier (Circus cyaneus)

Natural History: The northern harrier is a raptor listed as a CDFW SSC. A medium-sized raptor, northern harriers can be found in a variety of open, treeless habitats such as marshlands, meadows, prairies, annual and perennial grasslands, and pastures. The northern harrier primarily preys on small mammals (Shuford and Gardali 2008).

Northern harriers nest on the ground in grassland, marshland, and some agricultural habitats. Optimal habitats are undisturbed marshlands with tall grasses to conceal nest sites and nearby open foraging areas. However, disturbed habitats, such as levee banks and the weedy margins of farm fields and irrigation ditches, can also provide adequate nesting sites. Northern harriers are year-round residents throughout their breeding range in California (Shuford and Gardali 2008).

The decline of northern harrier populations in California is primarily attributed to loss of marshland and grasslands (Shuford and Gardali 2008).

Distribution: Northern harriers occur throughout much of North America, breeding locally from northern Alaska and Canada south to mid- and lower latitudes of the United States and parts of northern Baja California. In California, northern harriers breed throughout much of the state from sea level to 9,000 feet in elevation (Shuford and Gardali 2008).

Environmental Baseline: Five CNDDB northern harrier nesting observations have been documented within 3 miles of the Project area. Northern harrier individuals and several nest sites have also been documented on Beale AFB (Beale 2018). Suitable foraging and nesting habitat are present within the northern and southern alternative survey areas.

Short-eared Owl (Asio flammeus)

Natural History: The short-eared owl is a species of bird listed as a CDFW SSC. A medium-sized owl, it prefers open grasslands, marshes, and fields that can support small mammals, the owl's primary food source. Breeding in California typically occurs in March through June.

Population declines are generally attributed to the loss, degradation, and fragmentation of wetland and grassland communities from agriculture, industrial and urban development, and grazing (Shuford and Gardali 2008).

Distribution: The short-eared owl breeds in appropriate habitats throughout much of North America. Its current breeding range in California includes the Great Basin region of northeastern California, the central and north coasts, the Colorado River basin, and portions of the northern Sacramento–San Joaquin River Delta. Wintering birds also live in suitable habitats throughout the Central Valley and the inner central portion of the Coast Ranges (Shuford and Gardali 2008).

Environmental Baseline: There are no CNDDB records within 3 miles of the Project area, though short-eared owls have been observed on Beale AFB during the winter months (Beale 2018). Although no breeding birds have been detected, suitable nesting habitat occurs within both the northern and southern survey areas, particularly in the marsh habitats associated with Reeds Creek and other waterways (Beale 2018). Suitable foraging habitat also exists within both the northern and southern alternative survey areas.

Swainson's Hawk (Buteo swainsoni)

Natural History: Swainson's hawk is a species of bird listed as threatened under the CESA and a USFWS BCC. A medium-sized raptor, it inhabits a wide variety of open habitats, including grasslands, prairies, shrub steppe, desert, and agricultural fields. Swainson's hawks often nest in riparian areas or lone trees adjacent to foraging habitat.

The primary threat to the Swainson's hawk population in California continues to be habitat loss, especially the loss of suitable foraging habitat, but also nesting habitat in some portions of the species' breeding range due to urban development and incompatible agriculture.

Distribution: Swainson's hawks occur throughout much of North America, breeding as far north as southern Canada, as far west as California, and as far east as Minnesota in the U.S. In California, the majority of known territories are located in the Central Valley and Great Basin bioregions, with the largest concentration located between Sacramento and Modesto (Woodbridge 1998).

Environmental Baseline: Twelve CNDDB Swainson's hawk observations have been documented within 3 miles of the Project area. Swainson's hawks have also been observed foraging at Beale AFB and were confirmed to nest on-Base during surveys in 1996, 2004, and 2018 (Beale 2018). Suitable nesting and foraging habitat is present within both the northern and southern alternative survey areas.

Tricolored Blackbird (Agelaius tricolor)

Natural History: Tricolored blackbird is a California threatened species under the CESA and a USFWS BCC. Closely related to red-winged blackbirds, tricolored blackbirds are also a primarily marsh species, often nesting in bulrush and cattail marsh habitats and foraging in adjacent habitats. In the Central Valley of California, foraging habitat also consists of pastures and certain types of agricultural fields. Due to the reduction of wetland habitats in California, increasing numbers of tricolored blackbirds have recently been found nesting in non-marsh habitats, such as blackberry brambles, thistle stands, and nettle stands (Beedy et al. 1991).

The tricolored blackbird population has declined primarily as a result of the conversion of wetland breeding habitats and grassland foraging habitats to agricultural uses. Habitat loss, reduction of food resources, incidental poisoning of nesting colonies adjacent to agricultural fields, nest disturbance by predators and humans, and competition with red-winged blackbirds threaten remaining populations (Beedy et al. 1991).

Distribution: During the breeding season, tricolored blackbirds are found in the Central Valley, in the low foothills of the Sierra Nevada and Coast Ranges from Shasta County south to Kern County, along the coast from Sonoma County south to the Mexican border, and on the Modoc Plateau (Beedy et al. 1991).

Environmental Baseline: Eight CNDDB occurrences have been documented within 3 miles of the Project area. Large flocks of tricolored blackbirds have also been observed in various locations at Beale AFB during winter/spring, likely utilizing Base habitats for forage during winter months. During the breeding season, tricolored blackbirds have been observed near Upper and Lower Blackwelder Lakes, Miller Lake, and most recently at A-Street pond and lower Reeds Creek in 2015 to 2016 (Beale 2018). Suitable nesting and foraging habitat is present within both the northern and southern alternative survey areas.

Pallid Bat (Antrozous pallidus)

Natural History: Pallid bat is a CDFW SSC. This species can be found in a wide variety of open, dry habitats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. Pallid bats typically roost in crevices in rocky outcrops, trees, mines, caves, and manmade structures. It roosts in small maternity colonies in April to mid-August and in winter from mid-October through March.

Distribution: Pallid bats occur in arid and semi-arid regions throughout much of the western U.S., northern Mexico, and Baja Mexico. It occurs throughout much of California, except for the high Sierra Nevada and the northwestern portion of the state.

Environmental Baseline: There are no CNDDB records within 3 miles of the Project area. However, the pallid bat has been observed at one location and acoustically detected at 9 survey sites during surveys in spring 2004 (Beale 2018). Foraging habitat and marginal roosting habitat (i.e., trees and man-made structures) is present within both the northern and southern alternative survey areas.

Townsend's Big-eared Bat (Corynorhinus townsendii)

Natural History: Townsend's big-eared bat is a CDFW SSC. A medium-sized bat with very long ears, they occur in a variety of mesic habitats, typically near caves or other roosting structures like mines, man-made structures, and basal hollows in large trees. It roosts in small maternity colonies in April to mid-August and in winter from mid-October through March.

Distribution: Townsend's big-eared bats occur throughout most of western North America from British Columbia to central Mexico, east to the Black Hills of South Dakota, and across Texas to the Edwards Plateau. In California, its specific distribution is not well known, but it can be found throughout the state in all but subalpine and alpine habitats and may be found at any season throughout its range. Once considered common, Townsend's big-eared bat now is considered uncommon in California.

Environmental Baseline: There are no CNDDB records within 3 miles of the Project area. On Beale AFB, Townsend's big-eared bat has not been detected on-Base, but it is common in the region and likely occurs on-site. This species is very difficult to detect acoustically and is not often caught in mist nets. Foraging habitat and marginal roosting habitat (i.e., trees and man-made structures) is present within both the northern and southern alternative survey areas.

Western Red Bat (Lasiurus blossevillii)

Natural History: The Western red bat is a CDFW SSC. A medium-sized, solitary bat, they occur primarily in riparian habitats, roosting in trees on the edges of steams, fields, or urban areas.

Distribution: Western red bats occur throughout much of western Canada, the western U.S., western Mexico, and parts of Central America. They are locally common in some areas of California, occurring from Shasta County to the Mexican border, and west of the Sierra Nevada/Cascade crest and deserts.

Environmental Baseline: There are no CNDDB records within 3 miles of the Project area. However, western red bat has been detected at multiple sites on Beale AFB during focused surveys (Beale 2018). Foraging habitat and marginal roosting habitat (i.e., trees) is present within both the northern and southern alternative survey areas.

Legenere (Legenere limosa)

Natural History: Legenere is designated a 1B.1 List species (rare, threatened, or endangered in California and elsewhere) by the California Native Plant Society (CNPS) (CNPS 2018). A small, inconspicuous annual herb in the bellflower family, it is typically 4 to 6 inches tall with minute white flowers that emerge from April to June. It is generally found in vernal pools, vernal marshes, artificial ponds, floodplains of intermittent streams, and other seasonally inundated habitats. The seeds germinate during the rainy season between late February and April, and the plants subsequently emerge through the standing water (USFWS 2005).

Distribution: Historically, legenere had been reported in eight California counties in the Central Coast, Lake-Napa, Santa Rosa, Solano-Colusa, Southeastern Sacramento Valley, and Southern Sierra Foothills vernal pool regions. Since 1984, additional occurrences have been recorded in Northeastern and Northwestern Sacramento Valley while it is believed extirpated from the Southern Sierra Foothills region (USFWS 2005).

The primary threat to legenere and other vernal pool species is habitat loss and fragmentation, which is primarily attributed to the conversion of vernal pools to agriculture, urban development, and water conveyance and storage projects. Secondary threats include direct habitat loss due to altered hydrology attributed to the damning of vernal swales by physical barriers (i.e., roads, canals, etc.) (USFWS 2005).

Environmental Baseline: Three CNDDB legenere observations have been documented within 3 miles of the Project area, and populations were identified in 4 vernal pools at Beale AFB during the 1996 surveys (Beale 2018). Extensive vernal pool complexes and other seasonal wetlands (i.e., swales) exist within the Project area on Beale AFB, and suitable habitat for legenere is present within both the northern and southern survey areas.

Dwarf Downingia (Downingia pusilla)

Natural History: Dwarf downingia is considered a 2B.2 List species (rare, threatened, or endangered in California but common elsewhere) by the CNPS (CNPS 2018). A diminutive annual herb (1 to 2 inches tall) in the bellflower family, it typically flowers from March to May with small white flowers. Dwarf downingia requires shallow, freshwater conditions and typically occurs in vernal pool habitats.

The primary threat to dwarf downingia and other vernal pool species is habitat loss and fragmentation, which is primarily attributed to the conversion of vernal pools to agriculture, urban development, and water conveyance and storage projects. Secondary threats include direct habitat loss due to altered hydrology attributed to the damming of vernal swales by physical barriers (i.e., roads, canals, etc.) (USFWS 2005).

Distribution: Dwarf downingia is predominantly found in northern claypan vernal pool habitats in the Central Valley from Tehama County to Merced County and from Sonoma County to Placer County (USFWS 2005).

Environmental Baseline: Two CNDDB dwarf downingia observations have been documented within 3 miles of the Project area, and populations were identified in 4 vernal pools at Beale AFB during 1996 surveys (Beale 2018). Extensive vernal pool complexes and other seasonal wetlands (i.e., swales) exist within the Project area on Beale AFB, and suitable habitat for legenere is present within both the northern and southern survey areas.

Western Spadefoot (Spea hammondii)

Natural History: The western spadefoot is a species of toad that is designated as a California CDFW SSC. In the Scaphiopodae family, western spadefoot is distinguished from true toads (genus *Bufo*) by their cat-like eyes, sharp-edged "spades" on their hind feet, teeth in their upper jaws, and relatively smooth skin. Western spadefoot range from 1.5 to 2.5 inches in length and are dusky green to grey above with four light-colored stripes along their backs. As their name implies, western spadefoot have a wedge-shaped black "spade" on each of their hind feet that they use for digging (USFWS 2005).

Western spadefoot is nocturnal and almost entirely terrestrial, entering water only to breed. Individuals spend most of their lives buried in underground earthen burrows, active only for a short period each year depending on rainfall (typically October to May) (Nafis 2018a). This species prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Suitable breeding habitat must be inundated for a minimum of 4 weeks and must not have established predators (bullfrogs, fish, or crayfish).

The primary threat to western spadefoot is habitat loss and fragmentation, which is primarily attributed to the conversion of its natural habitats to agriculture, urban development, and water conveyance and storage projects. Secondary threats include predation by introduced non-native predators (i.e., bullfrogs) and road construction, which can result in direct mortality in addition to habitat fragmentation (USFWS 2005).

Distribution: Nearly endemic to California, western spadefoot ranges from the area of Redding in Shasta County to northwestern Baja California in Mexico (Stebbins 1985, recovery plan).

Environmental Baseline: There are no CNDDB records within 3 miles of the Project area or within Yuba County, and the species has not been definitively documented on Beale AFB despite protocol-level surveys. However, suitable habitat is present within both the northern and southern survey areas.

Western Pond Turtle (Emys marmorata)

Natural History: The western pond turtle is a CDFW SSC known to occur in a variety of natural aquatic habitats, including small mountain creeks, rivers, ponds, lakes, and marshes. It can also be found in artificially modified habitats, such as wastewater treatment ponds, irrigation ditches, urban parks, and created lakes. Aquatic refugia consist of rocks, logs, mud, submerged vegetation, and undercut areas along banks. Western pond turtles overwinter in both aquatic and terrestrial habitats, travelling up to 650 feet from its aquatic habitats during breeding and estivation, often burying themselves in leaf litter at wintering sites (Nafis 2018b).

Distribution: Historically, western pond turtles ranged from northern Baja California, Mexico north to Washington. Currently, they can be found from San Francisco Bay north to the Columbia River drainage in Oregon and Washington (Nafis 2018b).

Environmental Baseline: Five CNDDB western pond turtle observations have been documented within 3 miles of the Project area. Western pond turtles have also been recorded at several locations at Beale AFB (Engstrom 2016). There are several intermittent streams, associated emergent wetlands, treatment ponds, and drainage canals and ditches that may provide suitable habitat for western pond turtle within both the northern and southern survey areas.

Migratory Birds

Numerous migratory birds have been observed on and adjacent to Beale AFB (Beale 2018), and suitable habitat exists in and adjacent to each Project alternative. In order to minimize and mitigate impacts to migratory birds during Project construction, WAPA will conduct pre-construction nesting surveys if construction occurs during the avian breeding season (species dependent but roughly March 1 to August 15). Surveys would be conducted no earlier than 3 weeks prior to any ground-disturbing activities. In addition, if construction occurs in the spring and summer months, raptor surveys would be conducted, and appropriate activity buffers established (as determined by a biologist) to ensure the Project does not result in impacts to nesting raptors. The Project would be constructed to the extent feasible outside of the avian breeding season. The Project would also adhere to WAPA's Avian Protection Plan (WAPA 2016) to minimize impact and electrocution impacts to migratory birds.

4.3 Species Effects by Project Alternative

4.3.1 Northern Alternative A

Giant Garter Snake

Effects Analysis: GGS may occur within the Northern Alternative A corridor. However, as GGS is not expected to occur on Beale AFB (as determined by multiple protocol-level surveys), any Project-related effects to the species would be limited to the off-Base portions of this alternative. In particular, private land parcels currently being cultivated for rice production may provide suitable habitat for GGS. Potential Project-related effects to GGS for Northern Alternative A include:

- *Direct impacts from construction activities:* Direct impacts to individuals may occur if snakes are present on the ground surface during construction activities, specifically in any of the temporary staging and laydown areas and where pole foundations are being installed

- *Direct impacts from installation of pole foundations:* Direct impacts to individuals may occur if snakes are present in burrows within the footprint of the holes that are made for the pole foundations
- *Direct impacts from loss of habitat:* Direct impacts due to the loss of potential GGS habitat (i.e., rice fields) may occur as a result of the installation of permanent infrastructure (i.e., pole foundations and access roads). It is estimated that approximately 0.22 acre of potential GGS habitat will be permanently impacted, and 4.33 acres will be temporarily impacted with the implementation of the Northern Alternative A
- *Indirect impacts from dewatering of the rice fields*: The installation of poles, their foundations, and subsequent stringing of wire will require the dewatering of any rice fields where they occur for the duration of construction activities. This may have the indirect effect of eliminating potential garter snake habitat for at least one growing season
- *Cumulative impacts*: Cumulative effects, as they relate to the Sacramento Valley population of giant garter snake, have the overall potential to negatively impact the species within the region. The ongoing conversion of rice fields to more permanent crops (i.e. tree nuts, wine grapes), flood control projects, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable giant garter snake habitat in the region. However, on its own, this Project will not significantly impact the Sacramento Valley giant garter snake population or jeopardize the continued existence of the species. This particularly holds true on Beale AFB, where federal protections and proactive conservation efforts afforded to the species ensure impacts to it are minimized.

Northern Alternative A—Species Effect Determination: ***May affect, not likely to adversely affect***

Avoidance and Minimization Measures: Direct potential effects to GGS would be minimized to an insignificant level (where take should not occur) through the implementation of WAPA's and Beale's Standard Operating Procedures (SOPs), WAPA's standard O&M measures (**Appendix D**), as well as the following Project Conservation Measures (PCMs):

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B001	Giant garter snake Follow SOPs and PCM-W002 in aquatic GGS habitat. PCM-W002 will supersede those below where they are different. − Movement of heavy equipment will be confined to existing roadways to minimize habitat disturbance. Vegetation management will be confined to the minimum area necessary to facilitate O&M activities. − GGS aquatic and upland habitats will be flagged as environmentally sensitive areas by a USFWS-approved biologist within or adjacent to the disturbance footprint. Only manual vegetation removal will be allowed within the flagged area. − A USFWS-approved monitor will be present for construction and O&M activities within the flagged area. − All potentially affected aquatic habitats will be dewatered prior to any ground disturbance. Dewatered areas will remain dry with no puddled water remaining for at least 15 consecutive days prior to excavation or filling of that habitat. If a site cannot be completely dewatered, prey items will be netted or otherwise salvaged if present.

	– To the extent possible, disturbance to hibernacula and aestivation areas (i.e., rocks, burrows, logs, brush piles, etc.), will be avoided during cold and cool-weather periods when GGS would be using these areas. Ground disturbance will be confined to the minimum area necessary to facilitate construction and O&M activities. – All construction-related holes will be covered to prevent entrapment of individual GGS. – Within the construction area, silt fencing can be used to keep snakes from entering the Project site and being harmed. – All construction equipment shall be checked daily prior to starting work for the presence of snakes. – Pre- and post-Project surveys will be conducted to record habitat condition before the start of the Project and after completion of the Project for tracking purposes. This may include photos and/or species surveys. – Any temporary fill and debris will be removed. Restoration work could include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel. – If herbicide spraying is required within and near GGS habitat, only herbicide without toxic surfactants, approved for use in aquatic environments, will be used.

Valley Elderberry Longhorn Beetle

Effects Analysis: VELB is unlikely to occur within the Northern Alternative A corridor. The sole elderberry shrub, located within the northern survey area, will not be impacted by Project-related activities, and direct effects to VELB are not expected. In addition, impacts to riparian habitat that may provide future habitat for elderberry shrubs is not expected. Since impacts to valley elderberry longhorn beetle are not anticipated, this Project would not contribute to any cumulative effects to this species in the region.

Northern Alternative A—Species Effect Determination: ***No effect***

Avoidance and Minimization Measures: Any potential effects to VELB would be further minimized through the implementation of WAPA's and Beale's standard construction practices, WAPA's standard O&M measures (Appendix D), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B002	**Valley elderberry longhorn beetle** Follow SOPs at all times and PCM-W002 in riparian habitat. – Prior to initiating Project-related construction activities, qualified personnel will clearly flag or fence each elderberry plant that has a stem measuring 1 inch or greater in diameter at ground level. If an elderberry plant meeting this criterion is present, a minimum buffer zone of 20 feet outside of the dripline of each elderberry plant will be provided during all Project-related construction activities.

Vernal Pool Fairy Shrimp

Effects Analysis: VP fairy shrimp are likely to occur within the Northern Alternative A corridor. As this species is dependent on the hydrology and soils associated with vernal pools, any effects to vernal pool habitats in the Project area could directly or indirectly affect this species. Potential impacts due to Project-related activities for Northern Alternative A may include:

- Incidental take of individuals/cysts: Construction of access roads will require the installation of several culverts where the roads will intersect drainage ditches or swales where fairy shrimp or cysts may be present. The installation of these culverts may result in the take of individual VP fairy shrimp or cysts but will not permanently alter the function of the swales or ditches within the survey area. However, these ditches provide sub-optimal habitat for the species and impacts to the viability of the local population and species as a whole will be negligible.

  Temporary roads, necessary during installation of ducts under Patrol Road, may intersect wetland features; although these roads will be routed to avoid wetlands wherever feasible, it is possible that these temporary roads will intersect wetland features and result in the take of individual VPFS or cysts. These impacts will be partially offset by using weight dispersion mats.

- Direct impacts to habitat: The construction of open bottom culverts will result in an estimated 0.016 acre (700 square feet) of permanent impacts and an estimated 0.046 (2,016 square feet) of temporary impacts to this marginally suitable VP fairy shrimp habitat. These ditches provide sub-optimal habitat for the species and impacts to the viability of the local population and species as a whole will be negligible.
  Temporary roads may be necessary for vehicle access during the installation of ducts under Patrol Road. Although these roads will be routed to avoid wetlands wherever feasible, it is possible that these temporary roads will intersect wetland features. The most conservative estimate of area affected by these temporary roads would be approximately 1.85 acres. This figure represents the possible area of temporary access if the entire width of every mile of road fell within wetlands, which is a worst case scenario and a gross overstatement. In practice, these roads would mostly avoid wetlands, and impacts will be partially offset by using weight dispersion mats. Furthermore, work would take place during the dry season to avoid impacts to habitat.
- Changes to hydrology: Indirect effects to VP fairy shrimp habitat may occur as a result of Project-related changes to surficial and subsurface hydrology of adjacent upland areas. The installation of pole foundations and compaction related to access road construction and laydown areas may cause changes in the rate, extent, and duration of inundation of adjacent fairy shrimp habitat. Access road compaction will be reduced by the use of weight dispersion mats where wetland features cannot be avoided, and these areas will be avoided entirely during the wet season. As the VP fairy shrimp life cycle is directly linked to the water regime of their habitat, indirect effects to the species may occur. However, it should be noted that within the northern survey area, the subsurface geology is fairly consistent with a clayey confining zone approximately 3 to 4 feet below ground. Since the confining zone is consistent throughout this area, impacts to the hydrology of adjacent vernal pools should be limited for both northern alternatives (URS 2018).
- *Water contamination:* Indirect effects may also occur as a result of water contamination due to construction activities. This may include sediment run-off or unintended fuel and lubricant spills from construction equipment. The reduced water quality may have adverse effects to any fairy shrimp or cysts present in adjacent habitat. However, with the implementation of standard construction practices and PCMs, these potential effects would be mitigated.
- Introduction of invasive plants: Indirect effects may also occur as a result of the introduction of invasive plants during construction activities and vehicles traveling on and off site. Vernal pools are susceptible to invasion by non-native plants that have the potential to alter the ecology of vernal pools to such an extent that the quality of habitat is reduced. As a result, suitable fairy shrimp habitat has the potential of being negatively affected if invasive plants are introduced due to Project activities.
- Cumulative impacts: Cumulative effects, as they relate to the Beale Core Area (a subset of the Southeastern Sacramento Valley vernal pool region), have an overall low potential to negatively impact

the species within the region. Although there are similar utility infrastructure development projects planned on Beale AFB, there are several federal protections and proactive conservation efforts afforded to this species and its habitat that will ensure impacts are minimized for the foreseeable future.

Critical Habitat: VP fairy shrimp critical habitat does not occur within Northern Alternative A and any impacts to critical habitat will not occur.

Northern Alternative A—Species Effect Determination: ***May affect, likely to adversely affect***

Northern Alternative A—Critical Habitat Effect Determination: ***No effect***

Avoidance and Minimization Measures: Direct potential effects to VP fairy shrimp would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following Project-specific conservation measures:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** Follow SOPs and PCM-W001. On Beale AFB, the following measures will apply within 250 feet of potential vernal pool habitat to avoid or minimize disturbances and adverse effects to the species: – No work will be conducted in the vicinity of vernal pool species' habitat between 1 Nov and 1 May unless specifically approved by the Beale AFB NRM who will field-verify soil saturation, visual ponding, and expected surface disturbance. The USFWS will be notified of any off-pavement work within 250 feet approved between 1 Nov and 1 May in the Project Effects Analysis Report. – Mowing in and around vernal pool habitat after seed set during the dry season (1 May to 15 Oct) may help reduce thatch in the vernal pool. Mowing conducted earlier in the season may be desirable to maintain appropriate conditions for vernal pool species. If mowing occurs in or near vernal pools, it will occur only when the soil is no longer saturated to ensure tracks are not left in or near wetlands. The mower height must be set to avoid the flowering heads of sensitive vernal pool plant species. – Projects that occur on road surfaces and along road shoulders will avoid direct impacts to wetland habitats, including roadside ditches that act as seasonal wetlands. – If access routes crossing vernal pool habitats cannot be avoided, ground protection mats will be used to disperse the weight of vehicles and equipment so as to not harm any existing cysts. – A USFWS-approved biologist will flag vernal pool species' habitat and a reasonable buffer to be avoided. The area will be protected by placing construction fencing or other appropriate protective fencing around the pools, including a buffer. Fencing will be used in locations where Project equipment and/or personnel will be situated adjacent to or in the near vicinity of suitable vernal pool species' habitat. – Dust control measures will be utilized during Project construction to prevent excessive dust from silting nearby vernal pools. Type of dust control measure will

	take into account potential to impact proximal vernal pool landscape and thus will not impact nearby pools. – If herbicide spraying is required within and near vernal pool species' habitat, only herbicide without toxic surfactants, approved for use in aquatic environments, will be used. – All equipment used in projects requiring access to sites within vernal pool species' habitat will be staged outside of vernal pool habitat and will be on paved or gravel surfaces wherever possible. If paved or gravel surfaces are not available, construction mats and or drip pans will be placed under vehicles to minimize impacts. To further minimize adverse effects, the following measures will be implemented at these project sites near vernal pools: o No work shall occur within vernal pool habitat when water is present. o Ground disturbances, such as trenching, and permanent disturbances, such as pole installation, will avoid hydrologically connected areas. o As necessary, a USFWS-approved biologist will be present during access and Project work within vernal pool habitat to monitor activities. o For projects adjacent to (within 10 meters) vernal pool species' habitat or hydrologically connected to the habitat, silt fencing or other appropriate best management practices (BMPs) to prevent siltation shall be implemented prior to work within that area. A USFWS-approved biologist will flag areas where silt fencing or BMPs shall be implemented. BMPs may include sand bags and weed-free straw bales or straw wattles. o Spill containment kits will be present at all sites where petroleum-fueled equipment is used. – If Project activities encroach within the perimeter of a pool, the following measures will be implemented: o Protective mats should be used as first resort, if not possible, equipment with pneumatic tires should be used over tracked equipment. o Non-wetlands present within adjacent habitat will be used as an equipment-parking platform. Alternately, ground protection mats, boards, or plates will be used to distribute the weight of construction equipment for access. Drip pans will also be placed under vehicles parked on non-wetland vegetation. o Project will be implemented during the dry season only, when the pool is dry. – Pre- and post-Project surveys will be conducted to record habitat condition before the start of the Project and after completion of the Project for tracking purposes. This may include photos and/or species surveys and will be used to better manage for the species.

Vernal Pool Tadpole Shrimp

Effects Analysis: VP tadpole shrimp are likely to occur within the Northern Alternative A corridor. This species is dependent on the hydrology and soils associated with the vernal pools and any effects to vernal pool habitats in the Project area could affect this species. These potential effects (including potential cumulative impacts) are equivalent to those of VP fairy shrimp addressed in the preceding species account.

The installation of culverts for new access roads will result in approximately 0.016 acre (700 square feet) of permanent impacts and an estimated 0.046 (2,016 square feet) of temporary impacts to VP fairy shrimp habitat. However, these ditches provide sub-optimal habitat for the species and impacts to the viability of the local population and species as a whole will be negligible.

Critical Habitat: VP tadpole shrimp critical habitat does not occur within Northern Alternative A and any impacts to critical habitat will not occur.

Northern Alternative A—Species Effect Determination: ***May affect, likely to adversely affect***

Northern Alternative A—Critical Habitat Effect Determination: ***No effect***

Avoidance and Minimization Measures: Direct potential effects to VP tadpole shrimp would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following Project-specific conservation measures:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species—** (see **Appendix D** for full text)

Bald Eagle

Effects Analysis: Bald eagles may occur within the Northern Alternative A corridor. Direct impacts to individuals transiting the corridor may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor. Permanent or temporary impacts to foraging and nesting habitat are not expected. Once constructed, there is also a risk of collision and/or electrocution from high-voltage powerlines and towers. Collision and electrocution risks would be minimized through transmission line design and measures outlined in WAPA's Avian Protection Plan (WAPA 2016).

Cumulative effects, as they relate to the population of bald eagle within the Sacramento Valley, have a moderate potential to negatively impact the species within the region. Transmission lines and towers can lead to direct mortality of bald eagles from electrocutions and collisions and can indirectly fragment bald eagle habitat, and the proposed Project may contribute to these impacts. However, bald eagles are only infrequent migrants through the project area and impacts would be negligible. Any impacts would also be minimized through transmission line design and measures outlined in WAPA's aforementioned Avian Protection Plan.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, temporary impacts to bald eagle may occur (though no take of nests or potential nest structures), but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to bald eagles would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B004	**Bald eagle** Follow SOPs.

	− From February 1 to August 15 herbicide application or noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be prohibited anywhere that bald eagles are known to nest OR a qualified biologist will conduct nesting surveys using methods described in Jackman and Jenkins 2004. If a nest is detected, all herbicide application and O&M activities will be prohibited at a distance determined by the qualified biologist, based on topography and/or other environmental considerations.

Western Burrowing Owl

Effects Analysis: Western burrowing owls may occur within the Northern Alternative A corridor. Potential Project-related effects to western burrowing owls include:

- Direct impacts to individuals: Direct impacts to individuals via harm or harassment may occur if western burrowing owls are present within or adjacent to the Project area during construction activities, specifically where pole foundations and substations are being installed, during grading of access roads, and near temporary staging and laydown areas. Western burrowing owls that may seek shelter in burrow-like structures such as culverts, pipes, pallets, and other construction equipment staged within the Project footprint will be susceptible to impacts if materials or equipment are moved or buried while still occupied
- Direct impacts to habitat due to permanent infrastructure: Direct impacts due to the loss of potential nesting and foraging habitat may occur as a result of the installation of permanent infrastructure (i.e., pole foundations, substation, and access roads) and temporary construction impacts (i.e., laydown areas, temporary construction areas)It is expected that approximately 6.18 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 7.75 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Northern Alternative A
- Indirect impacts from increased predation: Predation of western burrowing owls by raptors may increase due to the increase in raptor perching sites (i.e., powerlines and poles), though impacts should be negligible
- Beneficial effects: The installation of culverts for new access roads may provide future wintering and breeding habitat for western burrowing owls on-Base
- Cumulative impacts: Cumulative effects, as they relate to the population of western burrowing owls within the Sacramento Valley, have a low potential to negatively impact the species within the region. Habitat loss and fragmentation due to land development is a primary threat to western burrowing owls in the Sacramento Valley, and although there are similar utility infrastructure development projects planned on Beale AFB, there are several federal protections and proactive conservation efforts afforded to this species and its habitat that will ensure impacts are minimized for the foreseeable future.

Determination—Northern Alternative A: The proposed Project may temporarily impact western burrowing owls, but it is not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western burrowing owls would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B005	**Western burrowing owl** Follow SOPs. − From February 1 to August 31 herbicide application (with the exception of direct application) and other O&M activity will be prohibited within 250 feet of potential

	burrowing owl nesting dens (ground squirrel burrows, culverts, concrete slabs, debris piles that could support nesting burrowing owls). − From September 1 through January 31, disturbance will be prohibited within 160 feet of potential burrowing owl dens. OR − A qualified biologist will conduct nesting and wintering surveys using methods described in California Burrowing Owl Consortium 1993. If nesting or wintering activity is detected, a qualified biologist will mark and monitor an appropriate non-disturbance buffer in the vicinity of burrows that have been active within the last three years. Within the buffer zone, all O&M activities and herbicide applications will be prohibited from February 1 to August 31.

California Black Rail

Effects Analysis: California black rails may occur within the Northern Alternative A corridor, primarily around freshwater wetland habitats adjacent to existing waterways (i.e., Reeds Creek). Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor. Direct impacts to California black rail nesting and foraging habitats are not expected.

Cumulative effects, as they relate to the Sierra Nevada foothills population of California black rail (concentrated in Yuba and Nevada counties), have a low potential to negatively impact the species within the region. Ongoing urbanization, water and flood control projects, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable California black rail habitat in the region. However, on its own, this Project will not significantly impact the Sierra Nevada foothills population of California black rail or jeopardize the continued existence of the species. Wetland habitats will not be directly impacted by the Project and federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, temporary impacts to California black rail may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to California black rails would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B006	**California black rail** Follow SOPs and PCM-W002. − From February 15 to July 31, surface disturbances including noise or changes to the hydrological regime will be prohibited in potential black rail habitat (shallowly flooded wetlands or irrigated pasture) OR a qualified biologist will conduct nesting surveys to verify absence. If nesting activity is detected or likely, a qualified

	biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities will be prohibited from February 15 to July 31.

Golden Eagle

Effects Analysis: Golden eagles may occur within the Northern Alternative A corridor. Although suitable nesting habitat does not occur within the Northern Alternative A corridor, suitable foraging habitat is present and golden eagles may occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor. Once constructed, there is also a risk of golden eagle collision and/or electrocution from high-voltage powerlines and towers. Collision and electrocution risks would be minimized through transmission line design and measures outlined in WAPA's Avian Protection Plan (WAPA 2016).

Permanent impacts to foraging habitat will occur from the installation of permanent infrastructure and temporary impacts to foraging habitat will occur during construction. It is expected that approximately 6.18 acres of suitable golden eagle foraging habitat will be permanently impacted, and 7.75 acres temporarily impacted with the implementation of Northern Alternative A. Impacts to golden eagle nesting habitat is not expected. Cumulative impacts resulting from potential Project impacts, in combination with past, present, and reasonably foreseeable future actions in the region, will not jeopardize the continued existence of this species.

Cumulative effects, as they relate to the population of golden eagles within the Sacramento Valley, have a moderate potential to negatively impact the species within the region. Transmission lines and towers can lead to direct mortality of golden eagles from electrocutions and collisions and can indirectly fragment bald eagle habitat, and the proposed Project may contribute to these impacts. However, golden eagles are only infrequent migrants through the project area and impacts would be negligible. Any impacts would also be minimized through transmission line design and measures outlined in WAPA's aforementioned Avian Protection Plan.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, temporary impacts to golden eagle may occur (though no take of nests or potential nest structures), but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to golden eagles would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Grasshopper Sparrow

Effects Analysis: Grasshopper sparrows may occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to nesting and foraging habitat will occur from the installation of permanent infrastructure and temporary impacts to nesting and foraging habitat will occur during construction. It is expected that approximately 6.18 acres of suitable grasshopper sparrow nesting/foraging habitat will be permanently impacted and approximately 7.75 acres temporarily impacted with the implementation of the Northern Alternative A.

Cumulative effects will have a negligible impact on the species within the region. Although the loss and fragmentation of its grassland habitat is a primary threat to the species, grasshopper sparrows are infrequent migratory breeders in California and the species has not been definitively documented within the Project area. Additionally, there are several federal protections and proactive conservation efforts afforded to this species and its habitat on Beale AFB that will ensure impacts are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, impacts to grasshopper sparrow may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to grasshopper sparrows would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Loggerhead Shrike

Effects Analysis: Loggerhead shrikes may occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to foraging habitat will occur from the installation of permanent infrastructure and temporary impacts to foraging habitat during construction. It is expected that approximately 6.18 acres of suitable foraging habitat will be permanently impacted and 7.75 acres temporarily impacted with the implementation of Northern Alternative A. The addition of powerlines and fences around substations may benefit loggerhead shrikes by providing additional perching sites in which to hunt and possibly cache prey (Pruitt 2000). Impacts to loggerhead shrike nesting habitat is not expected.

Cumulative effects, as they relate to the population of loggerhead shrikes within the Sacramento Valley, have a low potential to negatively impact the species within the region. Ongoing urbanization, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable loggerhead shrike habitat. However, on its own, this Project will not significantly impact the Sacramento Valley population of shrikes or jeopardize the continued existence of the species. Additionally, federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, temporary impacts to loggerhead shrike may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to loggerhead shrike would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Northern Harrier

Effects Analysis: Northern harriers may occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to nesting and foraging habitat will occur from the installation of permanent infrastructure and temporary impacts to nesting and foraging habitat will occur during construction. It is expected that approximately 6.18 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 7.75 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Northern Alternative A.

Cumulative effects, as they relate to the populations of northern harriers in the Sacramento Valley, have a low potential to negatively impact the species within the region. Ongoing urbanization, water and flood control projects, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable northern harrier habitat in the region. However, on its own, this Project will not significantly impact these populations of northern harriers or jeopardize the continued existence of the species. Wetland habitats will not be directly impacted by the Project and federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, temporary impacts to northern harrier may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to northern harrier would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Short-eared Owl

Effects Analysis: Short-eared owls may occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to nesting and foraging habitat will occur from the installation of permanent infrastructure and temporary impacts to nesting and foraging habitat will occur during construction. It is expected that approximately 6.18 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 7.75 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Northern Alternative A.

Cumulative effects, as they relate to the populations of short-eared owls in the Sacramento Valley and Sierra foothills, have a low potential to negatively impact the species within the region. Ongoing urbanization, water and flood control projects, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable short-eared owl habitat in the region. However, on its own, this Project will not significantly impact these populations of northern harriers or jeopardize the continued existence of the species. Wetland habitats will not be directly impacted by the Project and federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, temporary impacts to short-eared owls may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to short-eared owls would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Swainson's Hawk

Effects Analysis: Swainson's hawks may occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to foraging habitat will occur from the installation of permanent infrastructure and temporary impacts during construction. It is expected that approximately 6.18 acres of suitable foraging habitat will be permanently impacted and that 7.75 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative A. Impacts to Swainson's hawk nesting habitat are not expected.

Cumulative effects, as they relate to the populations of Swainson's hawks in the Sacramento Valley, have a low potential to negatively impact the species within the region. Ongoing urbanization, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable Swainson's hawk habitat in the region. However, on its own, this Project will not significantly impact these populations of Swainson's hawk or jeopardize the continued existence of the species. Additionally, federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, temporary impacts to Swainson's hawks may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to Swainson's hawks would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B007	**Swainson's hawk** – From April 1 to July 31 herbicide application and tree removal will be prohibited within 0.25 mile of Swainson's hawk nest trees. – A 0.25-mile buffer zone will be established and maintained around potential Swainson's hawk nest trees, within which there will be no intensive disturbance (e.g., use of heavy equipment, power saws, chippers, cranes, or draglines). This buffer may be adjusted, as assessed by a qualified biologist, based on changes in sensitivity exhibited by birds over the course of the nesting season and the type of O&M activity performed (e.g., high noise or human activity such as mechanical vegetation maintenance versus low noise or human activity such as semi-annual patrols). Within 0.25 mile of an active nest (as confirmed by a qualified biologist), routine O&M activities will be deferred until after the young have fledged or until it was determined by a qualified biologist that the activities will not adversely affect adults or young. OR

	− A qualified biologist will conduct nest surveys using methods described in Swainson's Hawk Technical Advisory Committee (SHTAC) 2000 (or the most recent survey protocol) to determine absence.

Tricolored Blackbird

Effects Analysis: Tricolored blackbirds may occur within the Northern Alternative A corridor, primarily around freshwater wetland habitats adjacent to existing waterways, canals, and treatment ponds. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to foraging habitat will occur from the installation of permanent infrastructure, and temporary impacts during construction. It is expected that approximately 6.18 acres of suitable foraging habitat will be permanently impacted and that 7.75 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative A. Impacts to tricolored blackbird nesting habitat are not expected.

Cumulative effects, as they relate to the Sacramento Valley population of tricolored blackbirds, have a low potential to negatively impact the species within the region. Ongoing urbanization, water and flood control projects, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable tricolored blackbird habitat in the region. However, on its own, this Project will not significantly impact the Sierra Nevada foothills population of tricolored blackbird or jeopardize the continued existence of the species. Wetland habitats will not be directly impacted by the Project and federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, impacts to tricolored blackbird may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to tricolored blackbird would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B008	**Tricolored blackbird** Follow SOPs and PCM-W002. − From March 15 to August 15 herbicide application (with the exception of direct application) and vegetation clearing/disturbance will be prohibited in marshes, willows, and blackberry thickets OR a qualified biologist will conduct a nesting survey prior to O&M activities. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nesting colony within which all O&M activities and herbicide applications will be prohibited from March 15 to August 15.

Pallid Bat

Effects Analysis: Pallid bats may forage within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to foraging habitat will occur from the installation of permanent infrastructure, and temporary impacts during construction. It is expected that approximately 6.18 acres of suitable foraging habitat will be permanently impacted and that 7.75 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative A. Direct impacts to pallid bat roosting habitat are not expected.

Cumulative effects, as they relate to the Sierra Nevada foothills populations of pallid bat, have a low potential to negatively impact the species within the region. Ongoing development has the potential to reduce the overall extent and quality of suitable pallid bat habitat in the region. However, on its own, this Project will not significantly impact these populations of pallid bat or jeopardize the continued existence of the species. Only marginally suitable roosting habitat is present within the Project area and federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, impacts to pallid bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to pallid bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B010	**Pallid bat** Follow SOPs. − Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of tunnels and rock outcrops. − Snags and live trees will be left standing to the maximum extent possible.

Townsend's Big-eared Bat

Effects Analysis: Townsend's big-eared bat may occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to foraging habitat will occur from the installation of permanent infrastructure, and temporary impacts during construction. It is expected that approximately 6.18 acres of suitable foraging habitat will be permanently impacted and that 7.75 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative A. Direct impacts to Townsend's big-eared bat roosting habitat are not expected.

Cumulative effects, as they relate to the Sierra Nevada foothills populations of Townsend's big-eared bat, have a low potential to negatively impact the species within the region. Ongoing development has the potential to reduce the overall extent and quality of suitable Townsend's big-eared bat habitat in the region. However, on its own, this Project will not significantly impact these populations of Townsend's big-eared bat or jeopardize the continued existence of the species. Only marginally suitable roosting habitat is present within the Project area and federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, impacts to Townsend's big-eared bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to Townsend's big-eared bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B011	**Townsend's big-eared bat** Follow SOPs. − Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of tunnels.

Western Red Bat

Effects Analysis: Western red bat may occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to foraging habitat will occur from the installation of permanent infrastructure, and temporary impacts during construction. It is expected that approximately 6.18 acres of suitable foraging habitat will be permanently impacted and that 7.75 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative A. Direct impacts to Western red bat roosting habitat are not expected.

Cumulative effects, as they relate to the Sacramento Valley populations of western red bat, have a low potential to negatively impact the species within the region. Ongoing development has the potential to reduce the overall extent and quality of suitable western red bat habitat in the region. However, on its own, this Project will not significantly impact these populations of western red bat or jeopardize the continued existence of the species. Only marginally suitable roosting habitat is present within the Project area and federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, impacts to Western red bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to Western red bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B012	**Western red bat**

	Follow SOPs. – Live broadleaf trees will be left standing to the maximum extent possible.

Legenere

Effects Analysis: Legenere may occur within the Northern Alternative A corridor. As this species is adapted to the hydrology and soils associated with vernal pools, any effects to vernal pool habitats in the Project area could directly affect this species. Direct impacts to legenere habitat are not expected for Northern Alternative A. Potential indirect impacts due to Project-related activities may include:

- *Changes to hydrology*: Indirect effects to legenere habitat may occur in the form of changes to surficial and subsurface hydrology of adjacent upland areas. The installation of pole foundations and compaction related to access road construction and laydown areas may cause changes in the rate, extent, and duration of inundation of adjacent fairy shrimp habitat. As legenere is directly linked to the water regime of their habitat, indirect effects to the species may occur. However, along the northern survey area, the subsurface geology is fairly consistent with a clayey confining zone approximately seven feet below ground. Since the confining zone is consistent throughout this area, impacts to the hydrology of adjacent vernal pools should be limited for both northern alternatives (URS 2018).
- *Water contamination:* Indirect effects may also occur in the form of water contamination due to construction activities. This may include sediment run-off or unintended fuel and lubricant spills from construction equipment. The reduced water quality may have adverse effects to legenere individuals present in adjacent habitat. However, with the implementation of standard construction practices and PCMs, these potential effects would be mitigated.
- *Introduction of invasive plants*: Indirect effects may also occur as a result of the introduction of invasive plants during construction activities and vehicles traveling on and off site. Vernal pools are susceptible to invasion by non-native plants that have the potential to alter the ecology of vernal pools to such an extent that the quality of habitat is reduced. As a result, suitable legenere habitat has the potential of being negatively affected if invasive plants are introduced due to Project activities.
- *Cumulative impacts*: Cumulative effects, as they relate to the Beale Core Area (a subset of the Southeastern Sacramento Valley vernal pool region), have an overall low potential to negatively impact the species within the region. Although there are similar utility infrastructure development projects planned on Beale AFB, there are several federal protections and proactive conservation efforts afforded to this species and its habitat that will ensure impacts are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, impacts to legenere may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to legenere would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Dwarf Downingia

Effects Analysis: Dwarf downingia may occur within the Northern Alternative A corridor. As this species is adapted to the hydrology and soils associated with the vernal pools, any effects to vernal pool habitats in the Project area could affect this species. Direct impacts to dwarf downingia habitat are not expected for Northern Alternative A. Potential indirect and cumulative impacts due to Project-related activities are equivalent to those of legenere and are described in the preceding species account.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, impacts to dwarf downingia may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to dwarf downingia would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Western Spadefoot

Effects Analysis: Western spadefoot may occur within the Northern Alternative A corridor. Any western spadefoot individuals would be dependent on the hydrology and soils associated with vernal pools for breeding. Therefore, any effects to vernal pool habitats in the Project area could affect this species. These potential effects are similar to those of VP fairy shrimp previously addressed in that species' account. Direct impacts to western spadefoot breeding habitat (vernal pools) are not expected. Other potential impacts due to Project-related activities may include:

- *Direct impacts from construction activities:* Direct impacts to individuals in the form of harm or harassment may occur if they are present within or adjacent to the Project area during construction activities, specifically where pole foundations and substations are being installed, during grading of access roads, and near temporary staging and laydown areas. Western spadefoot individuals may also shelter in construction-related infrastructure such as culverts, pipes, pallets, and other equipment staged within the Project footprint, making them potentially susceptible to impacts if materials or equipment are moved or buried while still occupied.

  Since western spadefoot are primarily nocturnal, any temporary lighting during construction and permanent lighting for the new substation may also have direct impacts on individuals. When exposed to artificial light, spadefoot toads will immediately move away or begin burrowing underground (Nafis 2018a).

- *Direct impacts to non-breeding, upland habitat:* Permanent impacts to non-breeding, upland habitat will occur from the installation of permanent infrastructure, and temporary impacts during construction. It is expected that approximately 6.18 acres of suitable upland (estivation) habitat will be permanently impacted and 7.75 acres of suitable upland (estivation) habitat temporarily impacted with the implementation of Northern Alternative A.
- *Cumulative impacts*: Cumulative effects, as they relate to the populations of western spadefoot in the Sacramento valley, have a low potential to negatively impact the species within the region. Ongoing urbanization, water and flood control projects, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable western spadefoot habitat in the region. However, on its own, this Project will not significantly impact these populations of western spadefoot or jeopardize the continued existence of the species. Additionally, federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of Northern Alternative A, impacts to western spadefoot may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western spadefoot would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Western Pond Turtle

Effects Analysis: Western pond turtles may occur within the Northern Alternative A corridor, primarily in and around existing waterways, canals, ditches, and treatment ponds. However, the impacts would be limited to those activities occurring within 650 feet of suitable turtle habitat. Direct impacts to individuals may occur if western pond turtles are present on the ground surface during construction activities, specifically in any of the areas where pole foundations and substations are being installed and at temporary staging and laydown areas.

Permanent and temporary impacts to potential upland aestivation/overwintering habitat may occur from the installation of permanent infrastructure (i.e., pole foundations, substation, and access roads). It is expected that approximately 6.18 acres of suitable upland (aestivation) habitat will be permanently impacted, and 7.75 acres of suitable upland (aestivation) habitat temporarily impacted with the implementation of Northern Alternative A. Direct impacts to western pond turtle aquatic habitat are not expected.

Cumulative effects, as they relate to the Sacramento Valley populations of western pond turtles, have a low potential to negatively impact the species within the region. Ongoing urbanization, water and flood control projects, residential development, and similar utility infrastructure development have the potential to reduce the overall extent and quality of suitable western pond turtle habitat in the region. However, on its own, this Project will not significantly impact the Sacramento Valley populations of western pond turtle or jeopardize the continued existence of the species. Aquatic and riparian habitats will not be directly impacted by the Project and federal protections and proactive conservation efforts afforded to the species on Beale AFB will ensure impacts to it are minimized for the foreseeable future.

Determination—Northern Alternative A: With the implementation of the Northern Alternative A, impacts to western pond turtle may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western pond turtle would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B013	**Western pond turtle** Follow SOPs and PCM-W002.

	− From April 15 to July 15, any ground-disturbing activity within 400 feet of a permanent pond, lake, creek, river, or slough that could affect the bed, bank, or water quality of any of these features will be prohibited OR a qualified biologist will inspect the Project area. − If adult or juvenile pond turtles are present, a qualified biologist will monitor Project activities to ensure that no turtles are harmed. If a qualified biologist determined that nests could be adversely affected, potential nesting areas will be avoided between June 1 and October 31.

Migratory Birds

Effects Analysis: Migratory birds are likely to occur within the Northern Alternative A corridor. Direct impacts to individuals may occur if they are displaced in the short-term during Project construction activities and in the long-term during future maintenance activities. However, the impacts would be limited to periodic, infrequent disturbance and would be negligible to minor.

Permanent impacts to nesting (ground nesting birds) and foraging habitat will occur from the installation of permanent infrastructure and temporary impacts to nesting and foraging habitat will occur during construction. It is expected that approximately 6.41 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 12.07 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Northern Alternative A.

Determination—Northern Alternative A: The proposed Project may temporarily impact migratory birds, but it is not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to migratory birds would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

4.3.2 Northern Alternative B

Giant Garter Snake

Effects Analysis: GGS may occur within the Northern Alternative B corridor. However, as GGS is not expected to occur on Beale AFB (as determined by multiple protocol-level surveys), any Project-related effects to the species would be limited to the off-Base portions of this alternative. In particular, private land parcels currently being cultivated for rice production may provide suitable habitat for GGS. Potential Project-related effects to GGS are the same as those addressed for Northern Alternative A (Section 4.3.1, Giant Garter Snake). It is estimated that approximately 0.01 acre of potential GGS habitat will be permanently impacted and that 4.33 acres of potential GGS habitat will be temporarily impacted with the implementation of the Northern Alternative B. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Northern Alternative B—Species Effect Determination: ***May affect, not likely to adversely affect***

Avoidance and Minimization Measures: Direct potential effects to GGS would be minimized to an insignificant level (where take should not occur) through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)

PCM-B001	**Giant Garter Snake** (see **Appendix D** for full text)

Valley Elderberry Longhorn Beetle

Effects Analysis: VELB is unlikely to occur within the Northern Alternative B corridor. The sole elderberry shrub, located within the northern survey area, will not be impacted by project-related activities and direct effects to VELB are not expected. In addition, impacts to riparian habitat that may provide future habitat for elderberry shrubs is not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Northern Alternative B—Species Effect Determination: ***No effect***

Avoidance and Minimization Measures: Any potential effects to VELB would be further minimized through the implementation of WAPA's and Beale's standard construction practices, WAPA's standard O&M measures (Appendix D), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B002	**Valley Elderberry Longhorn Beetle** (see **Appendix D** for full text)

Vernal Pool Fairy Shrimp

Effects Analysis: VP fairy shrimp are likely to occur within the Northern Alternative B corridor. As this species is dependent on the hydrology and soils associated with vernal pools, any effects to vernal pool habitats in the Project area could directly affect this species. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Vernal pool fairy shrimp).

Critical Habitat: VP fairy shrimp critical habitat does not occur within Northern Alternative B and any impacts to critical habitat will not occur.

Northern Alternative B—Species Effect Determination: ***May affect, likely to adversely affect***

Northern Alternative B—Critical Habitat Effect Determination: ***No effect***

Avoidance and Minimization Measures: Direct potential effects to VP fairy shrimp would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Vernal Pool Tadpole Shrimp

Effects Analysis: VP tadpole shrimp are likely to occur within the Northern Alternative B corridor. As this species is also dependent on the hydrology and soils associated with the vernal pools, any effects to vernal pool habitats in the Project area could affect this species. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Vernal pool fairy shrimp).

Critical Habitat: VP tadpole shrimp critical habitat does not occur within Northern Alternative B and any impacts to critical habitat will not occur.

Northern Alternative B— Species Effect Determination: ***May affect, likely to adversely affect***

Northern Alternative B—Critical Habitat Effect Determination: ***No effect***

Avoidance and Minimization Measures: Direct potential effects to VP tadpole shrimp would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following Project-specific conservation measures:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Bald Eagle

Effects Analysis: Bald eagle may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Bald Eagle). Permanent or temporary impacts to foraging and nesting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to bald eagle may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to bald eagles would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B004	**Bald eagle** (see **Appendix D** for full text)

Western Burrowing Owl

Effects Analysis: Western burrowing owls may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Western burrowing owl). It is expected that approximately 6.19 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 7.24 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Northern Alternative A. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: The proposed Project may temporarily impact western burrowing owls, but it is not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western burrowing owls would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B005	**Western burrowing owl** (see **Appendix D** for full text)

California Black Rail

Effects Analysis: California black rails may occur within the Northern Alternative B corridor, primarily around freshwater wetland habitats adjacent to existing waterways (i.e., Reeds Creek). Potential impacts to California black rail individuals are the same as those addressed for Northern Alternative A (Section 4.3.1, California Black Rail). However, direct impacts to California black rail nesting and foraging habitats are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, temporary impacts to California black rail may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to California black rails would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B006	**California black rail** (see **Appendix D** for full text)

Golden Eagle

Effects Analysis: Golden eagles may occur within the Northern Alternative B corridor. Although suitable nesting habitat does not occur within the Northern Alternative B corridor, suitable foraging habitat is present and golden eagles may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Golden Eagle). Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

It is expected that approximately 6.19 acres of suitable golden eagle foraging habitat will be permanently impacted and 7.24 acres temporarily impacted with the implementation of Northern Alternative B. Impacts to golden eagle nesting habitat is not expected.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to golden eagle may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to golden eagles would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Grasshopper Sparrow

Effects Analysis: Grasshopper sparrows may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Grasshopper Sparrow). It is expected that approximately 6.19 acres of suitable grasshopper sparrow nesting/foraging habitat will be permanently impacted and approximately 7.24 acres temporarily impacted with the implementation of the Northern Alternative B. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to grasshopper sparrow may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to grasshopper sparrows would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Loggerhead Shrike

Effects Analysis: Loggerhead shrikes may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Loggerhead Shrike). It is expected that approximately 6.19 acres of suitable foraging habitat will be permanently impacted and 7.24 acres temporarily impacted with the implementation of Northern Alternative B. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

The addition of powerlines and fences around substations may actually provide a slight benefit to loggerhead shrikes by providing additional perching sites in which to hunt and possibly cache prey (Pruitt 2000). Impacts to loggerhead shrike nesting habitat is not expected.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to loggerhead shrike may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to loggerhead shrike would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Northern Harrier

Effects Analysis: Northern harriers may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Northern Harrier). It is expected that approximately 6.19 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 7.24 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Northern Alternative A. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to northern harrier may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to northern harrier would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Short-eared Owl

Effects Analysis: Short-eared owls may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Short-eared owl). It is expected that approximately 6.19 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 7.24 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Northern Alternative B. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to short-eared owls may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.
Avoidance and Minimization Measures: Potential impacts to short-eared owls would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Swainson's Hawk

Effects Analysis: Swainson's hawks may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Swainson's Hawk). It is expected that approximately 6.19 acres of suitable foraging habitat will be permanently impacted and that 7.24 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative B. Impacts to Swainson's hawk nesting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to Swainson's hawks may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to Swainson's hawks would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B007	**Swainson's hawk** (see **Appendix D** for full text)

Tricolored Blackbird

Effects Analysis: Tricolored blackbirds may occur within the Northern Alternative B corridor, primarily around freshwater wetland habitats adjacent to existing waterways, canals, and treatment ponds. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Tricolored blackbird). It is expected that approximately 6.19 acres of suitable foraging habitat will be permanently impacted and that 7.24 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative B. Impacts to tricolored blackbird nesting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to tricolored blackbird may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to tricolored blackbird would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B008	**Tricolored blackbird** (see **Appendix D** for full text)

Pallid Bat

Effects Analysis: Pallid bats may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Pallid Bat). It is expected that approximately 6.19 acres of suitable foraging habitat will be permanently impacted and that 7.24 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative B. Direct impacts to pallid bat roosting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to pallid bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to pallid bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B011	**Townsend's big-eared bat** (see **Appendix D** for full text)

Townsend's Big-eared Bat

Effects Analysis: Townsend's big-eared bat may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Townsend's big-eared bat). It is expected that approximately 6.19 acres of suitable foraging habitat will be permanently impacted and that 7.24 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative B. Direct impacts to Townsend's big-eared bat roosting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to Townsend's big-eared bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to Townsend's big-eared bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

Townsend's Big-eared Bat PCMs	
PCM-B011	(see **Appendix D** for full text)

Western Red Bat

Effects Analysis: Western red bat may occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Western Red Bat). It is expected that approximately 6.19 acres of suitable foraging habitat will be permanently impacted and that 7.24 acres of suitable foraging habitat will be temporarily impacted with the implementation of Northern Alternative B. Direct impacts to Western red bat roosting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to Western red bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to Western red bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B012	**Western red bat** (see **Appendix D** for full text)

Legenere

Effects Analysis: Legenere may occur within the Northern Alternative B corridor. As this species is adapted to the hydrology and soils associated with vernal pools, any effects to vernal pool habitats in the Project area could directly affect this species. Direct impacts to legenere habitat are not expected for Northern Alternative B. Potential indirect impacts due to Project-related activities are equivalent to those of legenere and are described in the preceding species account. (Section 4.3.1, Legenere). Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to legenere may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to legenere would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)

Dwarf Downingia

Effects Analysis: Dwarf downingia may occur within the Northern Alternative B corridor. As this species is adapted to the hydrology and soils associated with the vernal pools, any effects to vernal pool habitats in the Project area could affect this species. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Dwarf Downingia). Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to dwarf downingia may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to dwarf downingia would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)

Western Spadefoot

Effects Analysis: Western spadefoot may occur within the Northern Alternative B corridor. Any western spadefoot individuals would be dependent on the hydrology and soils associated with vernal pools for breeding. Therefore, any effects to vernal pool habitats in the Project area could affect this species. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Western Spadefoot). It is expected that approximately 6.19 acres of suitable upland (estivation) habitat will be permanently impacted and 7.27 acres of suitable upland (estivation) habitat temporarily impacted with the implementation of Northern Alternative B. Direct impacts to western spadefoot breeding habitat (vernal pools) are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to western spadefoot may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western spadefoot would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Western Pond Turtle

Effects Analysis: Western pond turtles may occur within the Northern Alternative B corridor, primarily in and around existing waterways, canals, ditches, and treatment ponds. However, the impacts would be limited to those activities occurring within 650 feet of suitable turtle habitat. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Western Pond Turtle). It is expected that approximately 6.19 acres of suitable upland (estivation) habitat will be permanently impacted, and 7.24 acres of suitable upland (estivation) habitat temporarily impacted with the implementation of Northern Alternative B. Direct impacts to western pond turtle aquatic habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: With the implementation of Northern Alternative B, impacts to western pond turtle may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western pond turtle would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B013	**Western pond turtle** (see **Appendix D** for full text)

Migratory Birds

Effects Analysis: Migratory birds are likely to occur within the Northern Alternative B corridor. Potential impacts are the same as those addressed for Northern Alternative A (Section 4.3.1, Migratory Birds). It is expected that approximately 6.21 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 11.44 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Northern Alternative A. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Northern Alternative B: The proposed Project may temporarily impact migratory birds, but it is not likely to result in a trend toward federal or state listing or a loss of viability of any of the species.

Avoidance and Minimization Measures: Potential impacts to migratory birds would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

4.3.3 Southern Alternative

Giant Garter Snake

Effects Analysis: GGS may occur within the Southern Alternative corridor. However, as GGS is not expected to occur on Beale AFB (as determined by multiple protocol-level surveys), any Project-related effects to the species would be limited to the off-Base portions of this alternative. In particular, private land parcels currently being cultivated for rice production may provide suitable habitat for GGS. Potential Project-related effects to GGS are the same as those addressed for Northern Alternative A (Section 4.3.1, Giant garter snake). It is estimated that approximately 0.02 acre of potential GGS habitat will be permanently impacted and that 9.10 acres of potential GGS habitat will be temporarily impacted with the implementation of the Southern Alternative. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Southern Alternative—Species Effect Determination: ***May affect, not likely to adversely affect***

Avoidance and Minimization Measures: Direct potential effects to GGS would be minimized to an insignificant level (where take should not occur) through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B001	**Giant Garter Snake** (see **Appendix D** for full text)

Valley Elderberry Longhorn Beetle

Effects Analysis: VELB is unlikely to occur within the Southern Alternative corridor. The sole elderberry shrub, located within the northern survey area, will not be impacted by Project-related activities and direct effects to VELB are not expected. In addition, impacts to riparian habitat that may provide future habitat for elderberry shrubs is not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Southern Alternative—Species Effect Determination: ***No effect***

Avoidance and Minimization Measures: Any potential effects to VELB would be further minimized through the implementation of WAPA's and Beale's standard construction practices, WAPA's standard O&M measures (Appendix D), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B002	**Valley Elderberry Longhorn Beetle** (see **Appendix D** for full text)

Vernal Pool Fairy Shrimp

Direct and Indirect Effects: VP fairy shrimp may occur within the Southern Alternative corridor. As this species is dependent on the hydrology and soils associated with vernal pools, any effects to vernal pool habitats in the Project area could directly affect this species.

Impacts to VP fairy shrimp resulting from implementation of the Southern Alternative are similar to those addressed for Northern Alternatives A and B (Section 4.3.1, Vernal pool fairy shrimp), with the exception of the temporary access roads, which will not be required on the Southern Alternative. Additional impacts to the VP fairy shrimp are possible due to the presence of two small vernal pools that would be directly impacted during implementation of the Southern Alternative. The proposed location of the substation would result in the direct loss of these two pools. Although VP fairy shrimp has not been positively identified within these two pools during the frequent Base-wide surveys, both pools are suitable habitat for the species. Additionally, five culverts will also be necessary to bridge new access roads over existing ditches that provide marginal habitat for VP fairy shrimp.

The direct impacts to the two vernal pools will result in permanent impacts to 0.03 acre (1,306 square feet) of suitable VP fairy shrimp habitat while the direct impacts from the proposed culverts will result in permanent impacts to 0.01 acre (480 square feet) of marginally suitable VP fairy shrimp habitat. However, the removal of the two small pools and the impacts to ditches (sub-optimal habitat for VP fairy shrimp) will not significantly impact the viability of the local population and species as a whole. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

VP Fairy Shrimp Critical Habitat: VP fairy shrimp critical habitat does occur within the proposed Southern Alternative corridor. However, permanent infrastructure (e.g., towers and access roads) and temporary impacts from construction would occur only on the southern side of Erle Road (outside of critical habitat). Direct impacts to VP fairy shrimp critical habitat are not expected.

Southern Alternative—Species Effect Determination: ***May affect, likely to adversely affect***

Southern Alternative—Critical Habitat Effect Determination: ***No effect***

Avoidance and Minimization Measures: Direct potential effects to VP fairy shrimp would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Vernal Pool Tadpole Shrimp

Effects Analysis: VP tadpole shrimp may occur within the Southern Alternative corridor. As this species is also dependent on the hydrology and soils associated with the vernal pools, any effects to vernal pool habitats in the Project area could affect this species. Potential impacts are the same as those addressed for the preceding VP fairy shrimp section (Section 4.3.1, Vernal pool fairy shrimp).

VP Tadpole Shrimp Critical Habitat: VP tadpole shrimp critical habitat occurs concurrently with VP fairy shrimp critical habitat within the proposed Southern Alternative corridor. Permanent infrastructure (e.g., towers and access roads) and temporary impacts from construction would occur only on the southern side of Erle Road (outside of critical habitat). Direct impacts to VP fairy shrimp critical habitat are not expected.

Southern Alternative—Species Effect Determination: ***May affect, likely to adversely affect***

Southern Alternative—Critical Habitat Effect Determination: ***No effect***

Avoidance and Minimization Measures: Direct potential effects to VP tadpole shrimp would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following Project-specific conservation measures:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Bald Eagle

Effects Analysis: Bald eagle may occur within the Southern Alternative corridor. Potential impacts are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Bald Eagle). Permanent or temporary impacts to foraging and nesting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to bald eagle may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to bald eagles would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B004	**Bald eagle** (see **Appendix D** for full text)

Western Burrowing Owl

Effects Analysis: Western burrowing owls may occur within the Southern Alternative corridor. Potential impacts are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Western burrowing owl). It is expected that approximately 5.30 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 8.76 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: The proposed Project may temporarily impact western burrowing owls, but it is not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western burrowing owls would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B005	**Western burrowing owl** (see **Appendix D** for full text)

California Black Rail

Effects Analysis: California black rails may occur within the Southern Alternative corridor, primarily around freshwater wetland habitats adjacent to existing waterways. Potential impacts to California black rail individuals are the same as those addressed for Northern Alternative A (Section 4.3.1, California Black Rail). However, direct impacts to California black rail nesting and foraging habitats are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of Southern Alternative, temporary impacts to California black rail may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to California black rails would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B006	**California black rail** (see **Appendix D** for full text)

Golden Eagle

Effects Analysis: Golden eagles may occur within the Southern Alternative corridor. Although suitable nesting habitat does not occur within the Southern Alternative corridor, suitable foraging habitat is present and golden eagles may occur within the Southern Alternative corridor. Potential impacts are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Golden Eagle). It is expected that approximately 5.30 acres of suitable golden eagle foraging habitat will be permanently impacted, and 8.76 acres temporarily impacted with the implementation of the Southern Alternative. Impacts to golden eagle nesting habitat is not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of Southern Alternative, impacts to golden eagle may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to golden eagles would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Grasshopper Sparrow

Effects Analysis: Grasshopper sparrows may occur within the Southern Alternative corridor. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Grasshopper Sparrow). It is expected that approximately 5.30 acres of suitable grasshopper sparrow nesting/foraging habitat will be permanently impacted and approximately 8.76 acres temporarily impacted with the implementation of the Southern Alternative. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of Southern Alternative, impacts to grasshopper sparrow may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.
Avoidance and Minimization Measures: Potential impacts to grasshopper sparrows would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Loggerhead Shrike

Effects Analysis: Loggerhead shrikes may occur within the Southern Alternative corridor. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Loggerhead Shrike).

It is expected that approximately 5.30 acres of suitable foraging habitat will be permanently impacted and 8.76 acres temporarily impacted with the implementation of the Southern Alternative. The addition of powerlines and fences around substations may actually provide a slight benefit to loggerhead shrikes by providing additional perching sites in which to hunt and possibly cache prey (Pruitt 2000). Impacts to loggerhead shrike nesting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to loggerhead shrike may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to loggerhead shrike would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Northern Harrier

Effects Analysis: Northern harriers may occur within the Southern Alternative corridor. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Loggerhead Shrike). It is expected that approximately 5.30 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 8.76 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to northern harrier may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to northern harrier would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Short-eared Owl

Effects Analysis: Short-eared owls may occur within the Southern Alternative corridor. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Short-eared owl). It is expected that approximately 5.30 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 8.76 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to short-eared owls may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to short-eared owls would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

Swainson's Hawk

Effects Analysis: Swainson's hawks may occur within the Southern Alternative corridor. Potential impacts are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Swainson's Hawk). It is expected that approximately 5.30 acres of suitable foraging habitat will be permanently impacted and that 8.76 acres of suitable foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Impacts to Swainson's hawk nesting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to Swainson's hawks may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to Swainson's hawks would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B007	**Swainson's hawk** (see **Appendix D** for full text)

Tricolored Blackbird

Effects Analysis: Tricolored blackbirds may occur within the Southern Alternative corridor, primarily around freshwater wetland habitats adjacent to existing waterways, canals, and treatment ponds. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Tricolored blackbird). It is expected that approximately 5.30 acres of suitable foraging habitat will be permanently impacted and that 8.76 acres of suitable foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Impacts to tricolored blackbird nesting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of Southern Alternative, impacts to tricolored blackbird may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to tricolored blackbird would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)

PCM-B008	**Tricolored blackbird** (see **Appendix D** for full text)

Pallid Bat

Effects Analysis: Pallid bats may occur within the Southern Alternative corridor. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Pallid Bat). It is expected that approximately 5.30 acres of suitable foraging habitat will be permanently impacted and that 8.76 acres of suitable foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Direct impacts to pallid bat roosting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to pallid bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to pallid bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B010	**Pallid bat** (see **Appendix D** for full text)

Townsend's Big-eared Bat

Effects Analysis: Townsend's big-eared bat may occur within the Southern Alternative corridor. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Townsend's big-eared bat). It is expected that approximately 5.30 acres of suitable foraging habitat will be permanently impacted and that 8.76 acres of suitable foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Direct impacts to Townsend's big-eared bat roosting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to Townsend's big-eared bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to Townsend's big-eared bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B011	**Townsend's big-eared bat** (see **Appendix D** for full text)

Western Red Bat

Effects Analysis: Western red bat may occur within the Southern Alternative corridor. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Western Red Bat). It is expected that approximately 5.30 acres of suitable foraging habitat will be permanently impacted and that 8.76 acres of suitable foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Direct impacts to Western red bat roosting habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to Western red bat may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.
Avoidance and Minimization Measures: Potential impacts to Western red bat would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-B012	**Western red bat** (see **Appendix D** for full text)

Legenere

Effects Analysis: Legenere may occur within the Southern Alternative corridor. As this species is adapted to the hydrology and soils associated with vernal pools, any effects to vernal pool habitats in the Project area could directly affect this species.

In addition to those impacts addressed for Northern Alternatives A and B (Section 4.3.1, Legenere), two small vernal pools will be directly impacted with the implementation of the Southern Alternative. The proposed location of the substation would result in the direct loss of these two pools. Although legenere has not been identified within these two pools during frequent Base-wide surveys, both pools are suitable habitat for the species. The direct impacts to the two vernal pools will result in permanent impacts to 0.03 acre (1,306 square feet) of suitable legenere habitat. However, the removal of the two small pools will not significantly impact the viability of the local population and species as a whole. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to legenere may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to legenere would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Dwarf Downingia

Effects Analysis: Dwarf downingia may occur within the Southern Alternative corridor. As this species is adapted to the hydrology and soils associated with the vernal pools, any effects to vernal pool habitats in the Project area could affect this species.

In addition to those impacts addressed for Northern Alternatives A and B (Section 4.3.1, Dwarf downingia), two small vernal pools will be directly impacted with the implementation of the Southern Alternative. The proposed location of the substation would result in the direct loss of these two pools. Although dwarf downingia has not been identified within these two pools during frequent Base-wide surveys, both pools are suitable habitat for the species. The direct impacts to the 2 vernal pools will result in permanent impacts to 0.03 acre (1,306 square feet) of suitable dwarf downingia habitat. However, the removal of the two small pools will not significantly impact the viability of the local population and species as a whole. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to dwarf downingia may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to legenere would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Western Spadefoot

Effects Analysis: Western spadefoot may occur within the Southern Alternative corridor. Any western spadefoot individuals would be dependent on the hydrology and soils associated with vernal pools for breeding; therefore, any effects to vernal pool habitats in the Project area could affect this species.

In addition to those impacts addressed for Northern Alternatives A and B (Section 4.3.1, Western Spadefoot), two small vernal pools will be directly impacted with the implementation of the Southern Alternative. The proposed location of the substation would result in the direct loss of these two pools. Although western spadefoot has not been identified within these two pools during frequent Base-wide surveys, both pools are suitable breeding habitat for the species. The direct impacts to the 2 vernal pools will result in permanent impacts to 0.03 acre (1,306 square feet) of suitable western spadefoot breeding habitat.

Permanent impacts to non-breeding, upland (estivation) habitat will also occur with the implementation of the Southern Alternative. It is expected that approximately 5.30 acres of suitable upland (estivation) habitat will be permanently impacted and that 8.76 acres of suitable upland (estivation) habitat will be temporarily impacted with the implementation of the Southern Alternative. However, the impacts to suitable breeding and upland habitat will not significantly impact the viability of the local population and species as a whole. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: With the implementation of the Southern Alternative, impacts to western spadefoot may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western spadefoot would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W001	**Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands** (see **Appendix D** for full text)
PCM-B003	**Vernal pool species** (see **Appendix D** for full text)

Western Pond Turtle

Effects Analysis: Western pond turtles may occur within the Southern Alternative corridor, primarily in and around existing waterways, canals, ditches, and treatment ponds. However, the impacts would be limited to those activities occurring within 650 feet of suitable turtle habitat. Potential impacts to individuals are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Western Pond Turtle). Permanent and temporary impacts to potential upland (estivation) habitat may occur from the installation of permanent infrastructure. It is expected that approximately 5.30 acres of suitable overwintering habitat will be permanently impacted and that 8.76 acres will be temporarily impacted with the implementation of the Southern Alternative. Direct impacts to western pond turtle aquatic habitat are not expected. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination -Southern Alternative: With the implementation of the Southern Alternative, impacts to western pond turtle may occur, but they are not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to western pond turtle would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs, WAPA's standard O&M measures (**Appendix D**), as well as the following PCMs:

PCM-W002	**Seeps, Springs, Ponds, Lakes, Rivers, Streams, and Marshes** (see **Appendix D** for full text)
PCM-B013	**Western pond turtle** (see **Appendix D** for full text)

Migratory Birds

Effects Analysis: Migratory birds are likely to occur within the Southern Alternative corridor. Potential impacts are the same as those addressed for Northern Alternatives A and B (Section 4.3.1, Migratory Birds). It is expected that approximately 5.37 acres of suitable nesting/foraging habitat will be permanently impacted and that approximately 17.86 acres of suitable nesting/foraging habitat will be temporarily impacted with the implementation of the Southern Alternative. Potential cumulative impacts are the same as those addressed for the Northern Alternative A.

Determination—Southern Alternative: The proposed Project may temporarily impact migratory birds, but it is not likely to result in a trend toward federal or state listing or a loss of viability of the species.

Avoidance and Minimization Measures: Potential impacts to migratory birds would be minimized to an insignificant level through the implementation of WAPA's and Beale's SOPs and WAPA's standard O&M measures (**Appendix D**).

SECTION 5 CONCLUSIONS AND DETERMINATION

5.1 Determination—Federally-Listed Species

5.1.1 Northern Alternative A

The implementation of Northern Alternative A will result in a ***may affect, likely to adversely affect*** determination for the following analyzed federally-listed species:

- **Vernal pool fairy shrimp**
- **Vernal pool tadpole shrimp**

A ***may affect, but is not likely to adversely affect*** determination for the following analyzed federally-listed species:

- **Giant garter snake**

And a ***no effect*** determination for the following federally-listed species and/or critical habitat:

- **Valley elderberry longhorn beetle**
- **Vernal pool fairy shrimp—Critical Habitat**
- **Vernal pool tadpole shrimp—Critical Habitat**

5.1.2 Northern Alternative B

The implementation of Northern Alternative A will result in a ***may affect, likely to adversely affect*** determination for the following analyzed federally-listed species:

- **Vernal pool fairy shrimp**
- **Vernal pool tadpole shrimp**

A ***may affect, but is not likely to adversely affect*** determination for the following analyzed federally-listed species:

- **Giant garter snake**

And a ***no effect*** determination for the following analyzed federally-listed species and/or critical habitat:

- **Valley elderberry longhorn beetle**
- **Vernal pool fairy shrimp—Critical Habitat**
- **Vernal pool tadpole shrimp—Critical Habitat**

5.1.3 Southern Alternative

The implementation of the Southern Alternative will result in a ***may affect, likely to adversely affect*** determination for the following federally-listed species:

- **Vernal pool fairy shrimp**
- **Vernal pool tadpole shrimp**

A ***may affect, not likely to adversely affect*** determination for the following federally-listed species:

- **Giant garter snake**

And a ***no effect*** determination for the following federally-listed species and/or critical habitat:

- **Valley elderberry longhorn beetle**
- **Vernal pool fairy shrimp—Critical Habitat**
- **Vernal pool tadpole shrimp—Critical Habitat**

With the implementation of the proposed avoidance and minimization measures, potential impacts to federally-listed species will be minimized.

5.2 Determination—Other Species of Concern

For all Project alternatives, the proposed Project may temporarily impact the following species, but it is not likely to result in a trend toward federal or state listing or a loss of viability of any of these species.

- Bald eagle
- Western burrowing owl
- California black rail
- Golden eagle
- Grasshopper sparrow
- Loggerhead shrike
- Northern harrier
- Short-eared owl
- Swainson's hawk
- Tricolored blackbird
- Pallid bat
- Townsend's big-eared bat
- Western red bat
- Western pond turtle
- Western spadefoot
- Dwarf downingia
- Legenere
- Migratory birds

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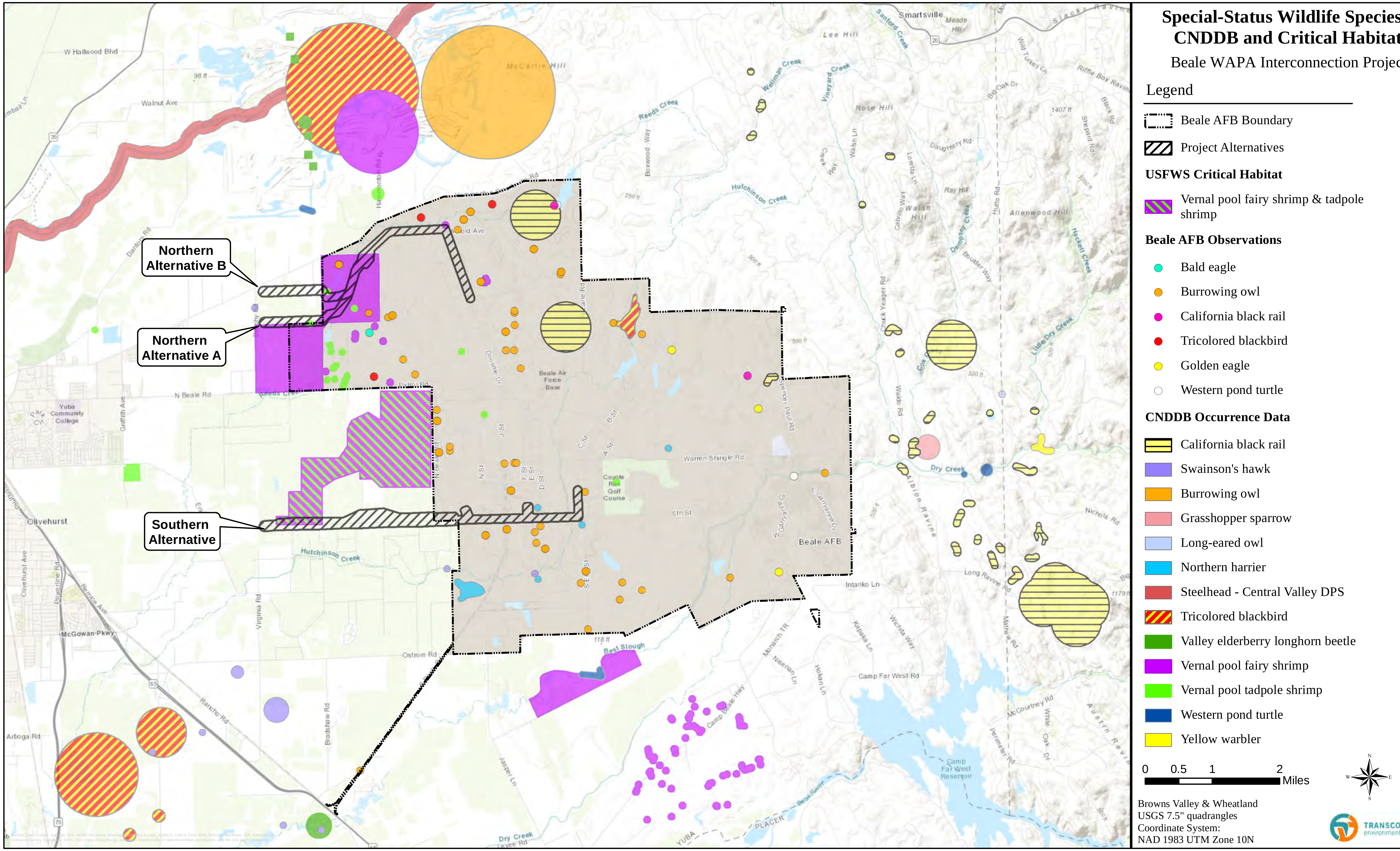
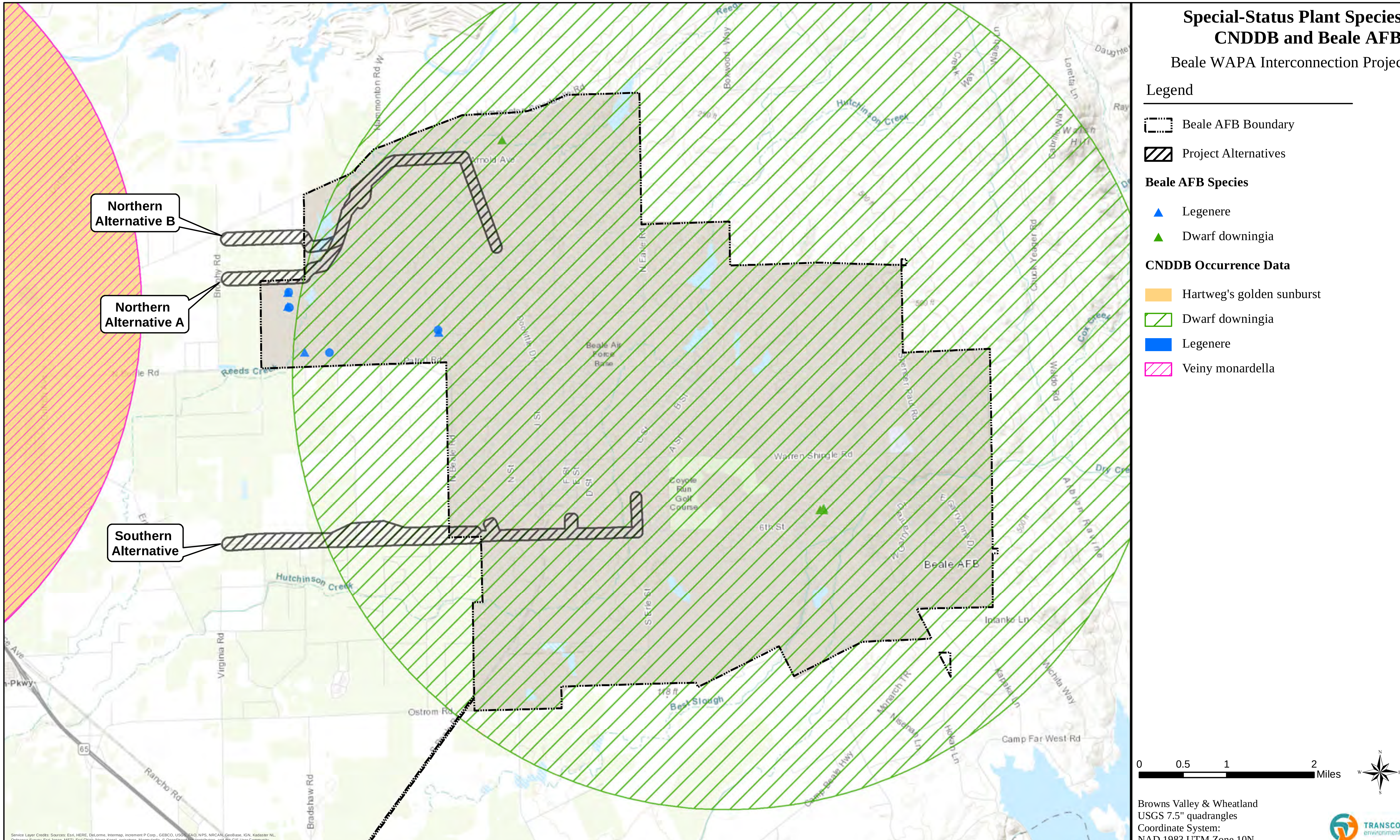
APPENDIX A

KNOWN OCCURRENCE MAPS


Special-Status Wildlife Species
CNDDB and Critical Habitat
Beale WAPA Interconnection Project
Legend
Beale AFB Boundary
Project Alternatives
USFWS Critical Habitat
Vernal pool fairy shrimp & tadpole shrimp
Beale AFB Observations
Bald eagle
Burrowing owl
California black rail
Tricolored blackbird
Golden eagle
Western pond turtle
CNDDB Occurrence Data
California black rail
Swainson's hawk
Burrowing owl
Grasshopper sparrow
Long-eared owl
Northern harrier
Steelhead - Central Valley DPS
Tricolored blackbird
Valley elderberry longhorn beetle
Vernal pool fairy shrimp
Vernal pool tadpole shrimp
Western pond turtle
Yellow warbler
0 0.5 1 2 Miles
Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
Northern Alternative B
Northern Alternative A
Southern Alternative
Beale Air Force Base
Beale AFB
Olivehurst
Smartsville
Yuba Community College
Coyote Run Golf Course
Camp Far West Reservoir
Warren Shingle Rd
N Beale Rd
Ostrom Rd
McGowan Pkwy
Hutchinson Creek
Reeds Creek
Dry Creek
Best Slough
TRANSCON environmental


Special-Status Plant Species
CNDDB and Beale AFB
Beale WAPA Interconnection Project
Legend
Beale AFB Boundary
Project Alternatives
Beale AFB Species
Legenere
Dwarf downingia
CNDDB Occurrence Data
Hartweg's golden sunburst
Dwarf downingia
Legenere
Veiny monardella
Northern Alternative B
Northern Alternative A
Southern Alternative
Beale Air Force Base
Beale AFB
Coyote Run Golf Course
Warren Shingle Rd
6th St
Arnold Ave
Dairy Rd
Reeds Creek
Hutchinson Creek
Best Slough
Ostrom Rd
Virginia Rd
Bradshaw Rd
Rancho Rd
Camp Far West Rd
Camp Beale Hwy
Ipanko Ln
0 0.5 1 2 Miles
Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
TRANSCON environmental

APPENDIX B
VEGETATION COMMUNITY MAPS

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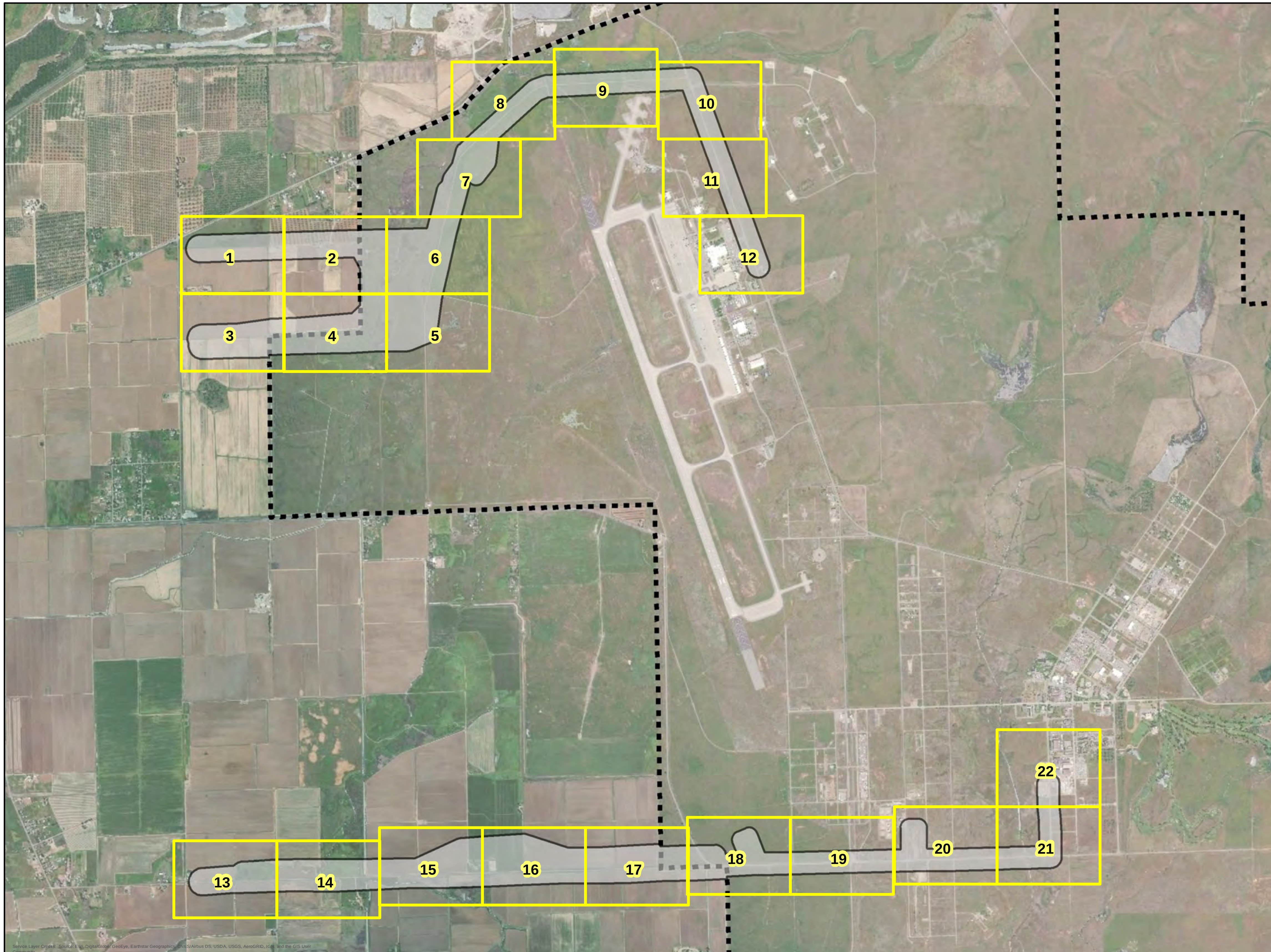
Vegeatation Community Map

Beale WAPA Interconnection Project



Legend

- Beale AFB Boundary
- Survey Area
- Map Index

0 0.25 0.5 1 Miles

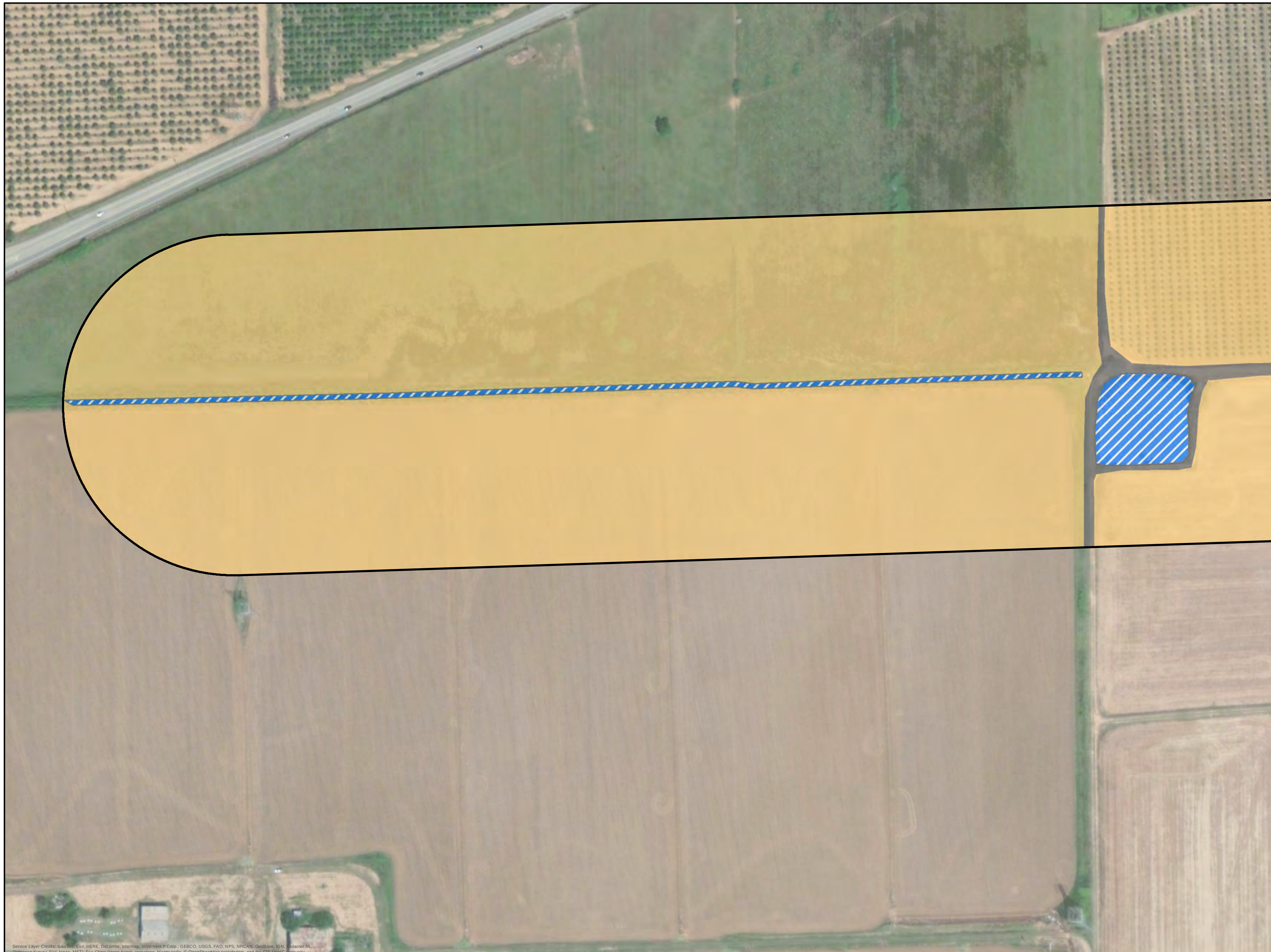
Index Map

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

Vegeatation Community Map

Beale WAPA Interconnection Project



Legend

Survey Area

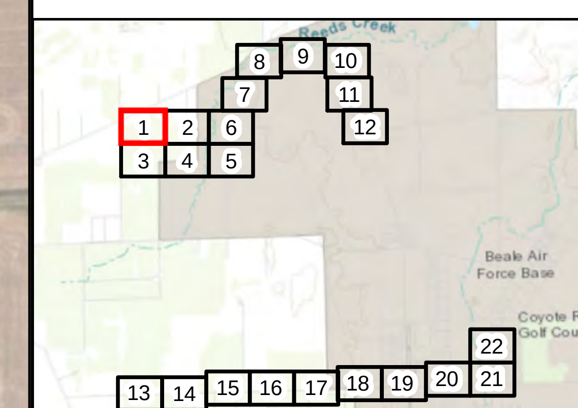
Upland Habitats

Agriculture

Barren

Wetland Habitats

Waters, man-made



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Map 1

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

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Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

Survey Area

Beale AFB Boundary

Upland Habitats

Agriculture

Annual grassland, non-native

Barren

Urban

Wetland Habitats

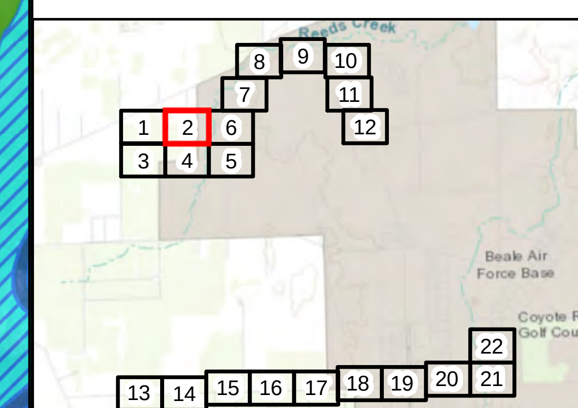
Waters, man-made

Waters, rivers and creeks

Wetland, seasonal

Vernal Pool

Vernal Swale



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Map 2

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

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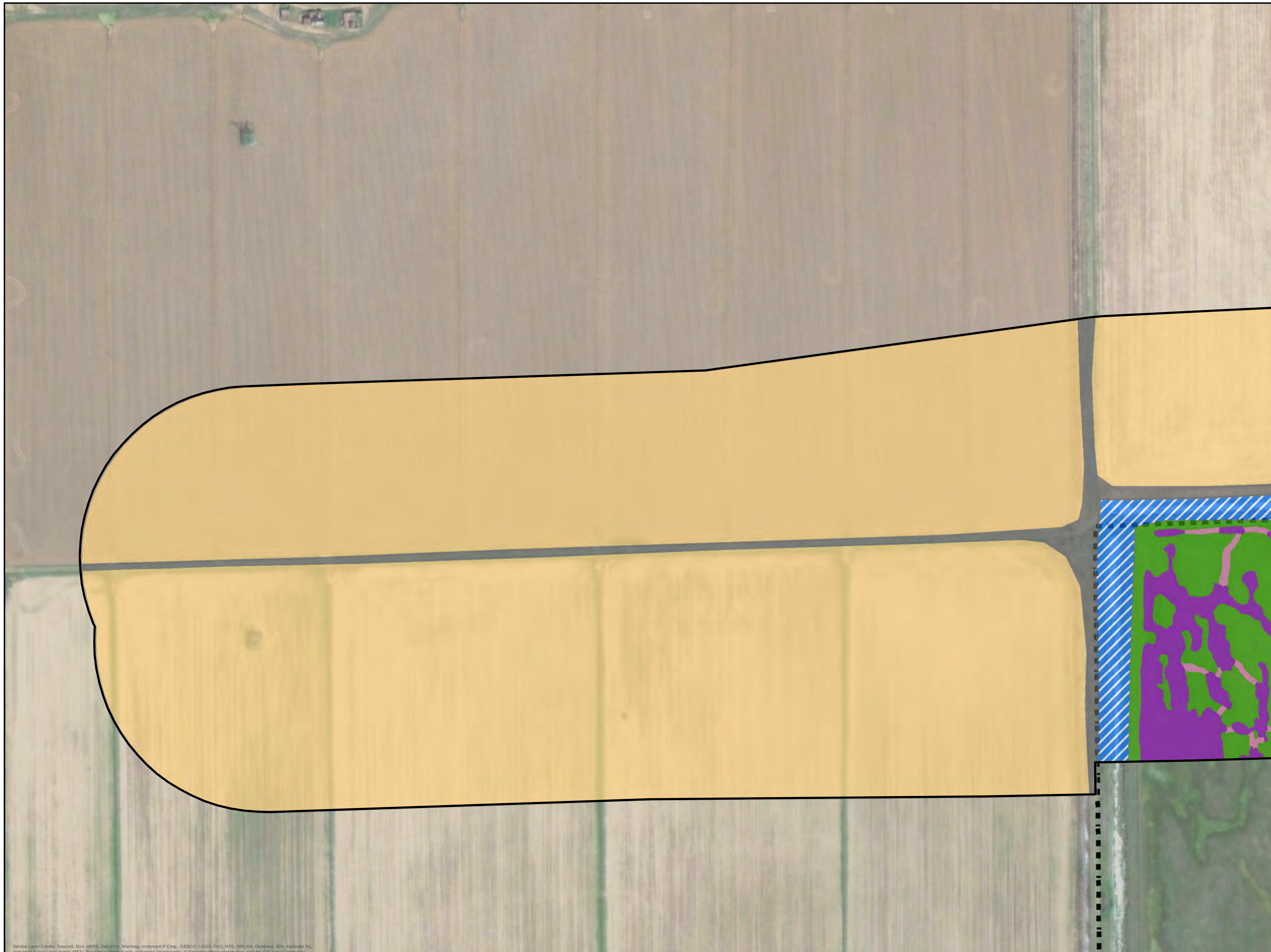


Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

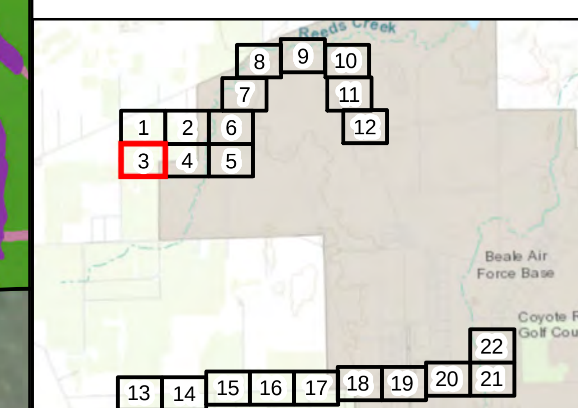
- Survey Area
- Beale AFB Boundary

Upland Habitats

- Agriculture
- Annual grassland, non-native
- Barren

Wetland Habitats

- Waters, man-made
- Vernal Pool
- Vernal Swale



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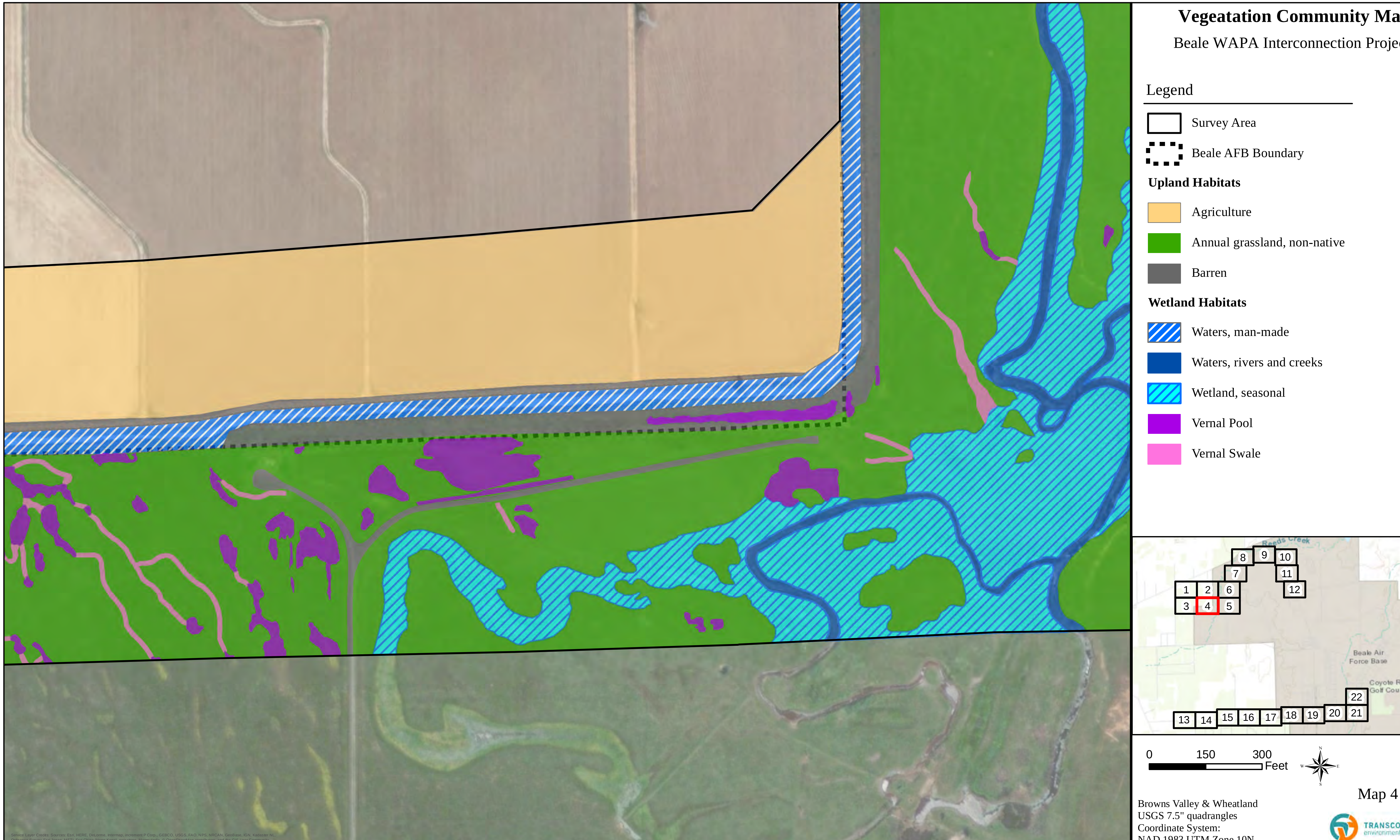
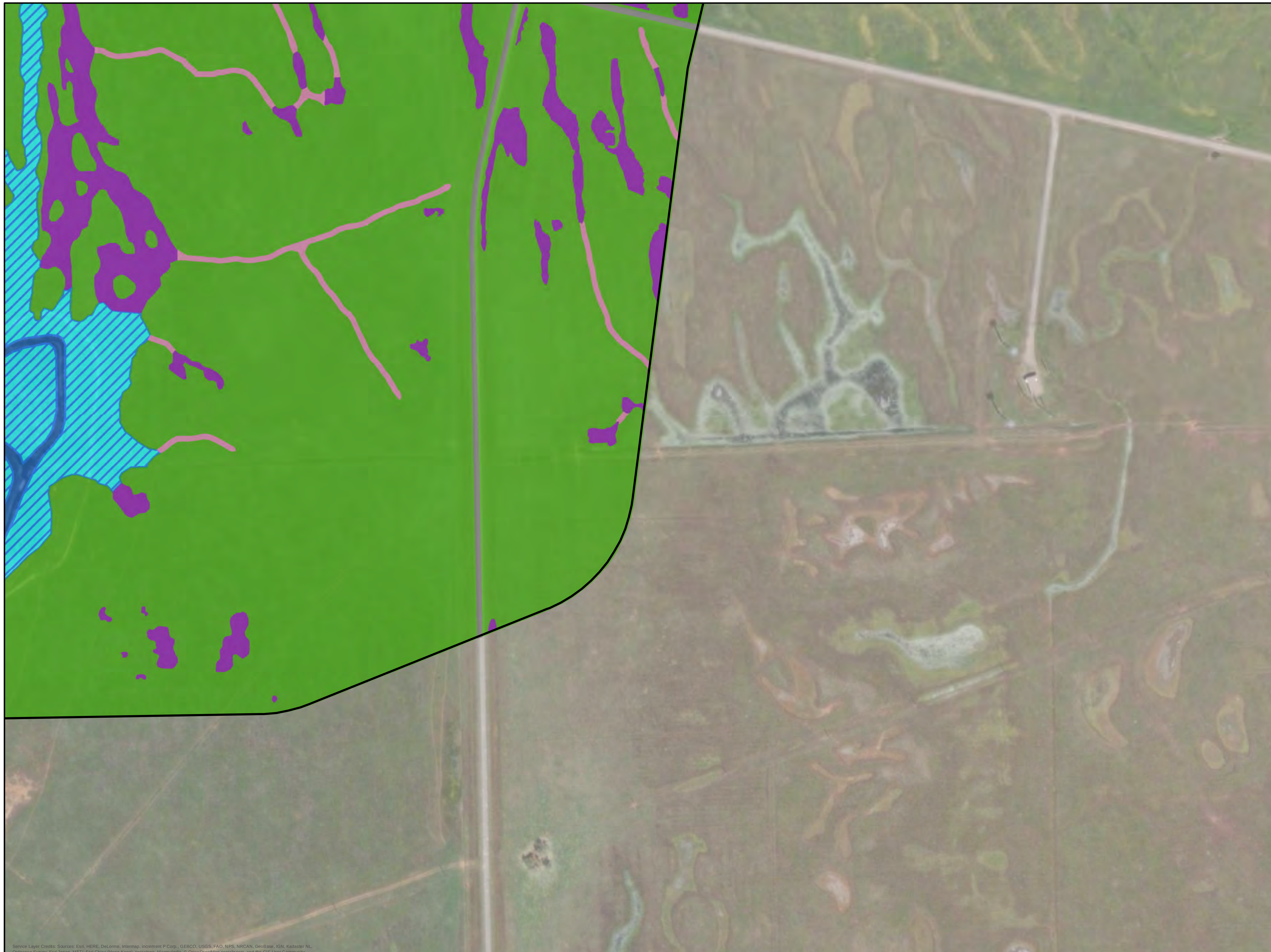
Map 3

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental


Vegeatation Community Map
Beale WAPA Interconnection Project
Legend
Survey Area
Beale AFB Boundary
Upland Habitats
Agriculture
Annual grassland, non-native
Barren
Wetland Habitats
Waters, man-made
Waters, rivers and creeks
Wetland, seasonal
Vernal Pool
Vernal Swale
1 2 6 3 4 5 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Beale Air Force Base
Coyote Run Golf Course
0 150 300 Feet
Map 4
Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
TRANSCON environmental
February 22, 2019



Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

Survey Area

Beale AFB Boundary

Upland Habitats

Annual grassland, non-native

Barren

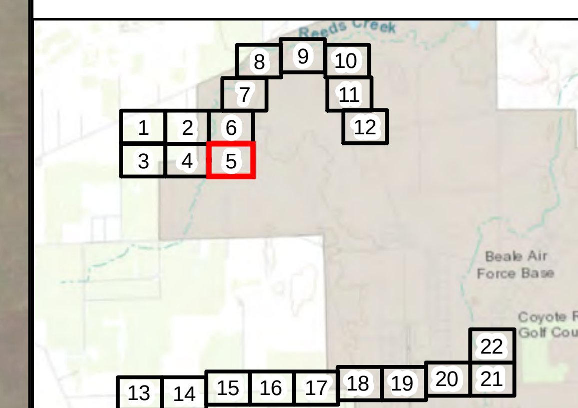
Wetland Habitats

Waters, rivers and creeks

Wetland, seasonal

Vernal Pool

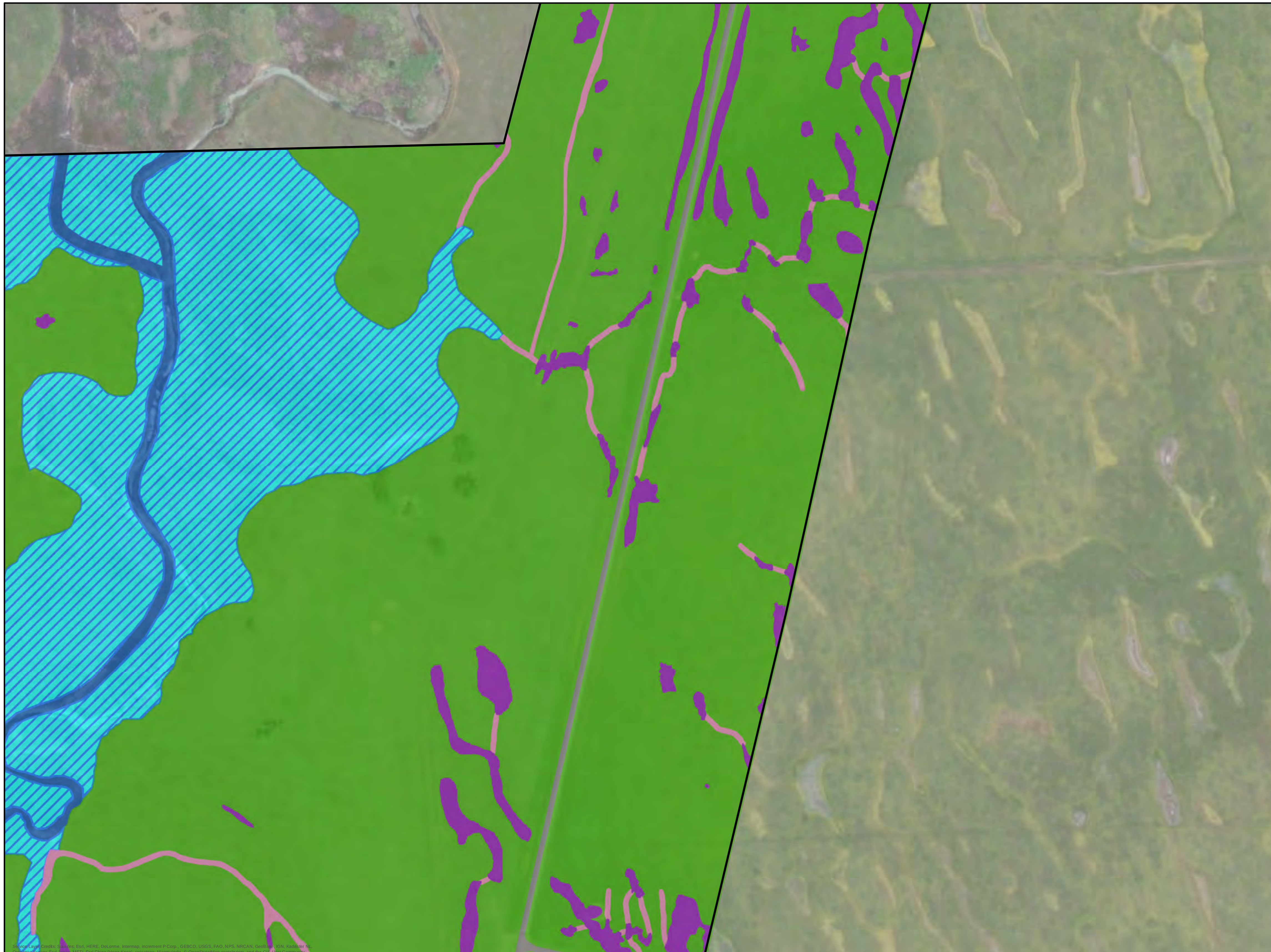
Vernal Swale



0 150 300 Feet

Map 5

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N



Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

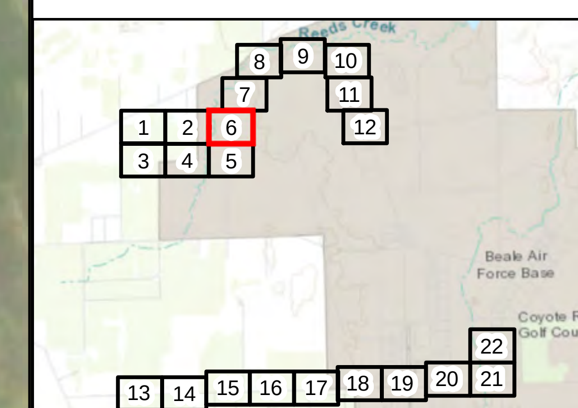
- Survey Area
- Beale AFB Boundary

Upland Habitats

- Annual grassland, non-native
- Barren

Wetland Habitats

- Waters, rivers and creeks
- Wetland, seasonal
- Vernal Pool
- Vernal Swale



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Map 6

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

Vegeatation Community Map
Beale WAPA Interconnection Project
Legend
Survey Area
Beale AFB Boundary
Upland Habitats
Annual grassland, non-native
Barren
Vernal Pool
Vernal Swale
Reeds Creek
8
9
10
7
11
1
2
6
12
3
4
5
Beale Air Force Base
Coyote Run Golf Course
22
13
14
15
16
17
18
19
20
21
0
150
300
Feet
Map 7
Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
TRANSCON environmental

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Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

Survey Area

Beale AFB Boundary

Upland Habitats

Annual grassland, non-native

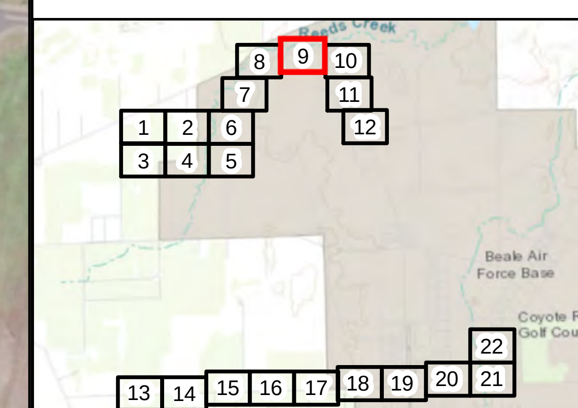
Barren

Wetland Habitats

Waters, rivers and creeks

Vernal Pool

Vernal Swale



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Map 9

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

Survey Area

Beale AFB Boundary

Upland Habitats

Annual grassland, non-native

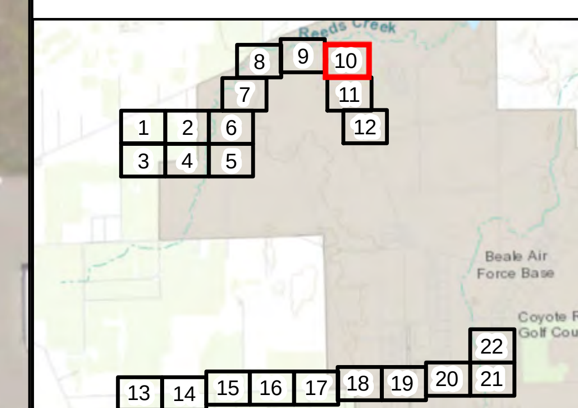
Barren

Wetland Habitats

Waters, rivers and creeks

Vernal Pool

Vernal Swale



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Map 10

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

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Vegeatation Community Map

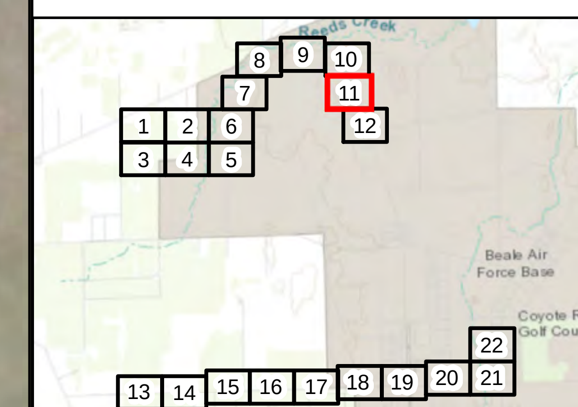
Beale WAPA Interconnection Project

Legend

- Survey Area
- Beale AFB Boundary

Upland Habitats

- Annual grassland, non-native
- Barren
- Vernal Pool
- Vernal Swale



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Map 11

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

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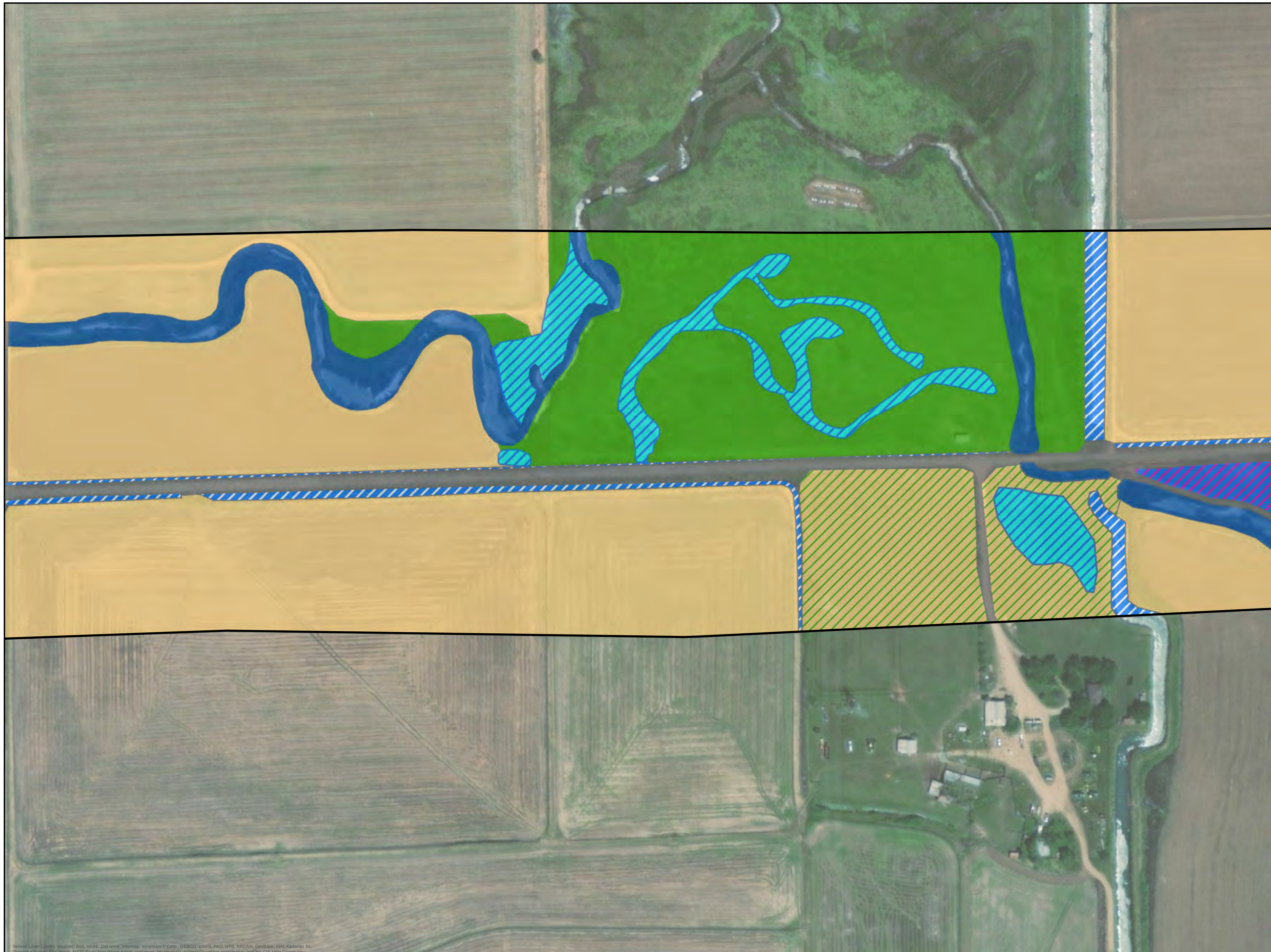
Vegeatation Community Map

Beale WAPA Interconnection Project



Legend

Survey Area

Upland Habitats

Agriculture

Agriculture, pasture

Annual grassland, non-native

Barren

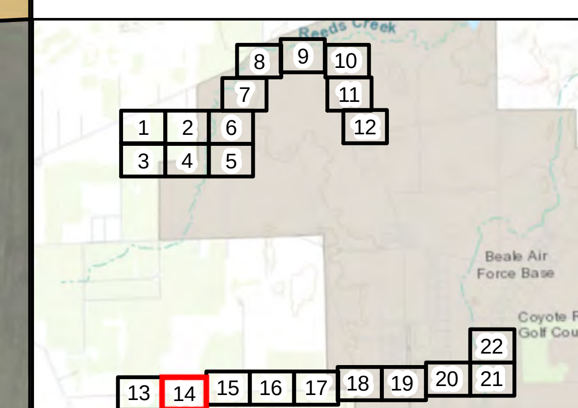
Wetland Habitats

Waters, man-made

Waters, rivers and creeks

Wetland, seasonal

Wetlands, freshwater marsh



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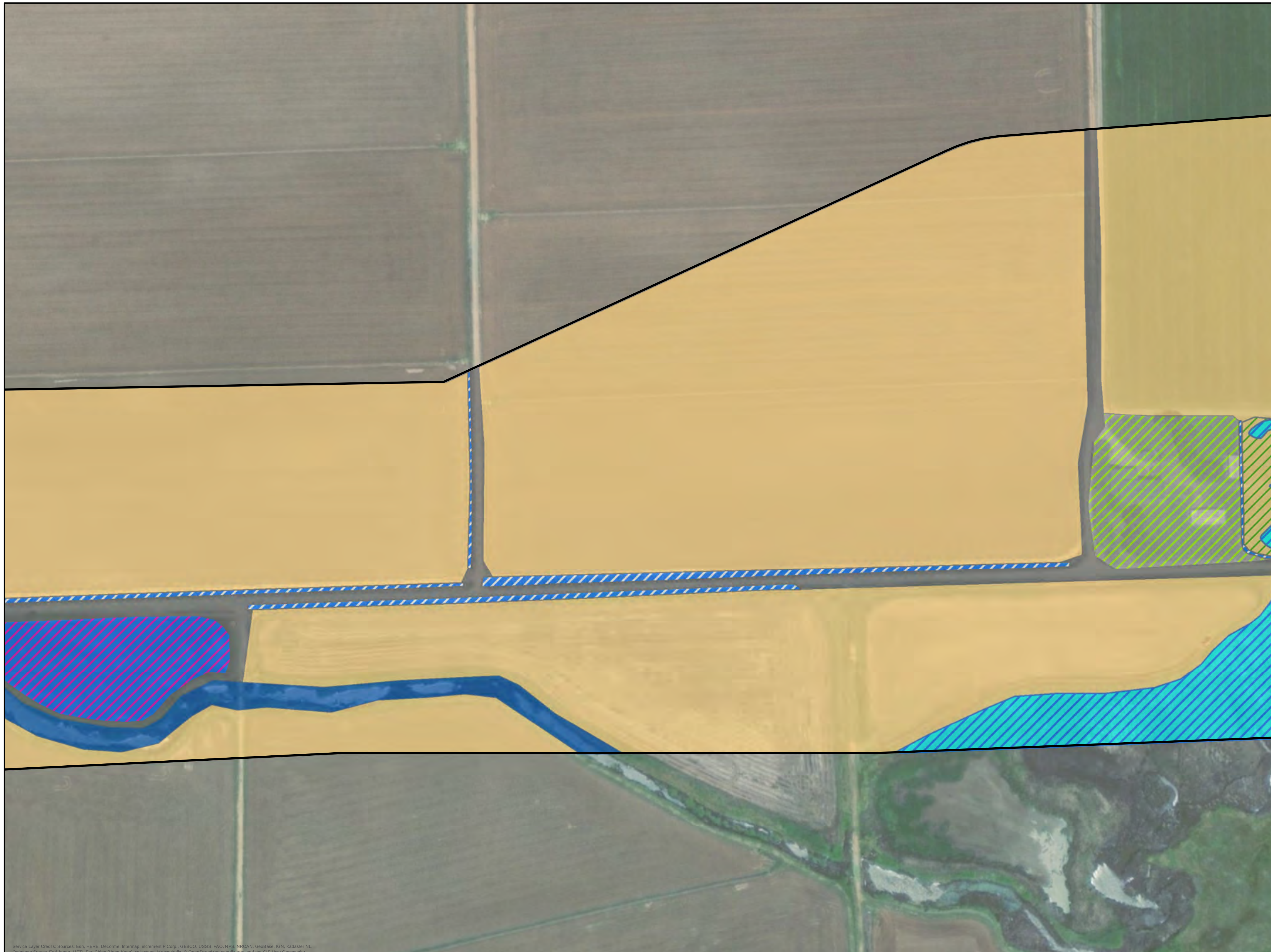
Map 14

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

Vegeatation Community Map

Beale WAPA Interconnection Project



Legend

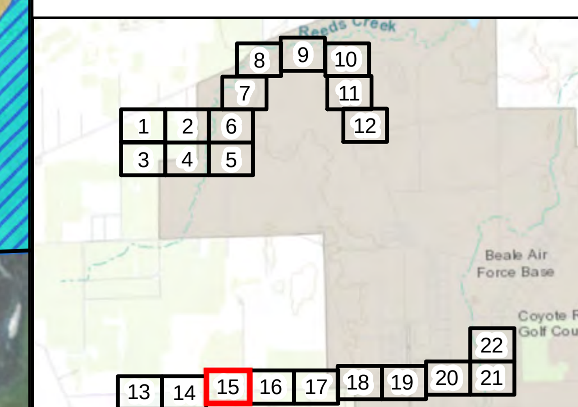
- Survey Area

Upland Habitats

- Agriculture
- Agriculture, pasture
- Barren
- Urban

Wetland Habitats

- Waters, man-made
- Waters, rivers and creeks
- Wetland, seasonal
- Wetlands, freshwater marsh



0 150 300 Feet

Map 15

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

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Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

Survey Area

Upland Habitats

Agriculture

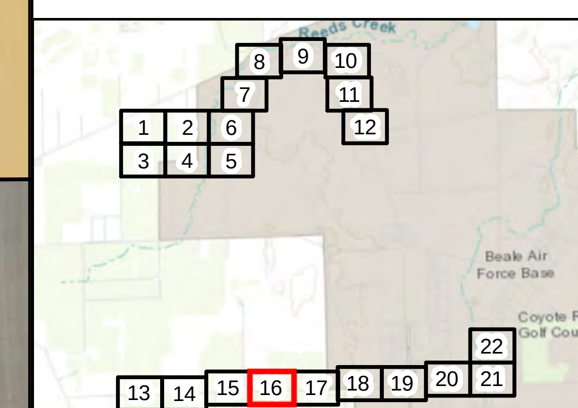
Agriculture, pasture

Barren

Wetland Habitats

Waters, man-made

Wetland, seasonal



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Map 16

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

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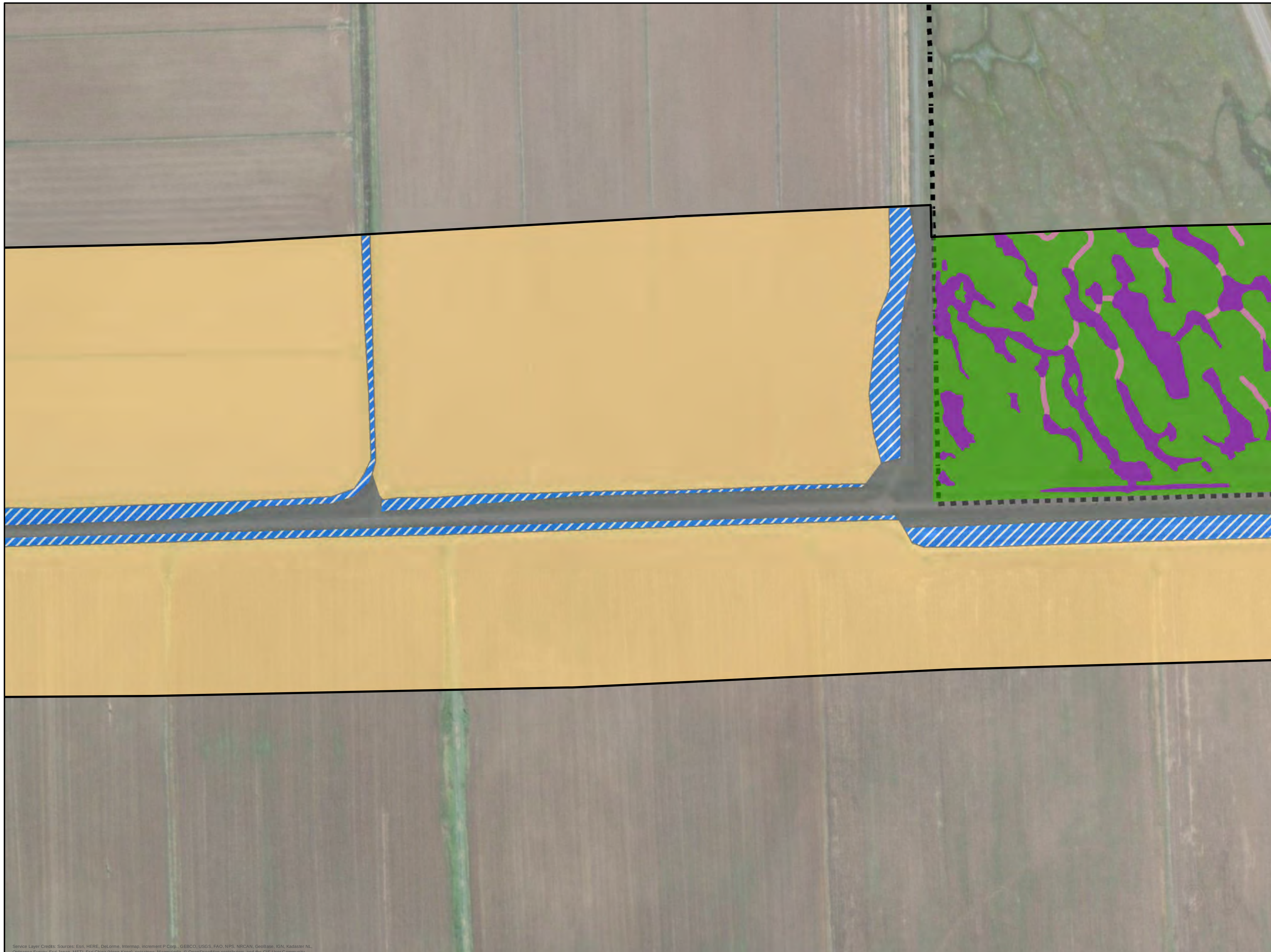


Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

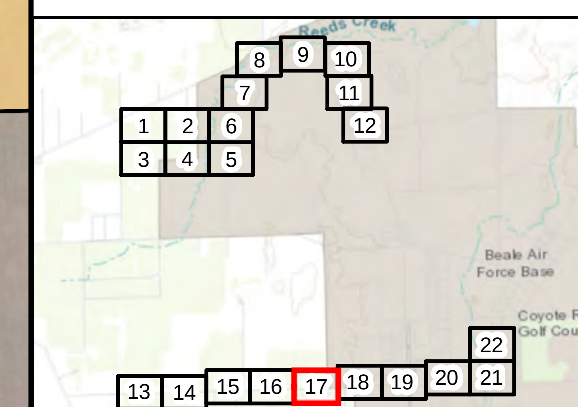
- Survey Area
- Beale AFB Boundary

Upland Habitats

- Agriculture
- Annual grassland, non-native
- Barren

Wetland Habitats

- Waters, man-made
- Vernal Pool
- Vernal Swale



0 150 300 Feet

Map 17

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

Survey Area

Beale AFB Boundary

Upland Habitats

Agriculture

Annual grassland, non-native

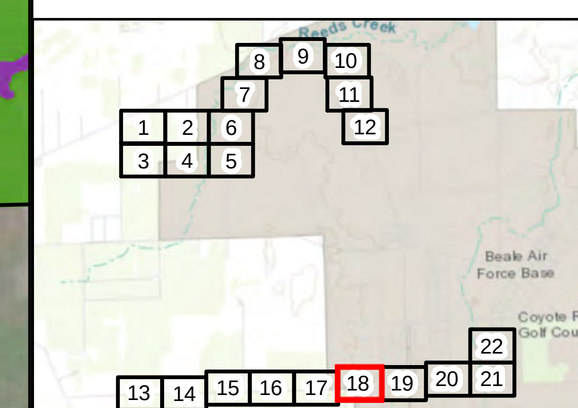
Barren

Wetland Habitats

Waters, man-made

Vernal Pool

Vernal Swale



0 150 300 Feet

Map 18

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

February 22, 2019 G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_BE_Report_veg_communities.mxd

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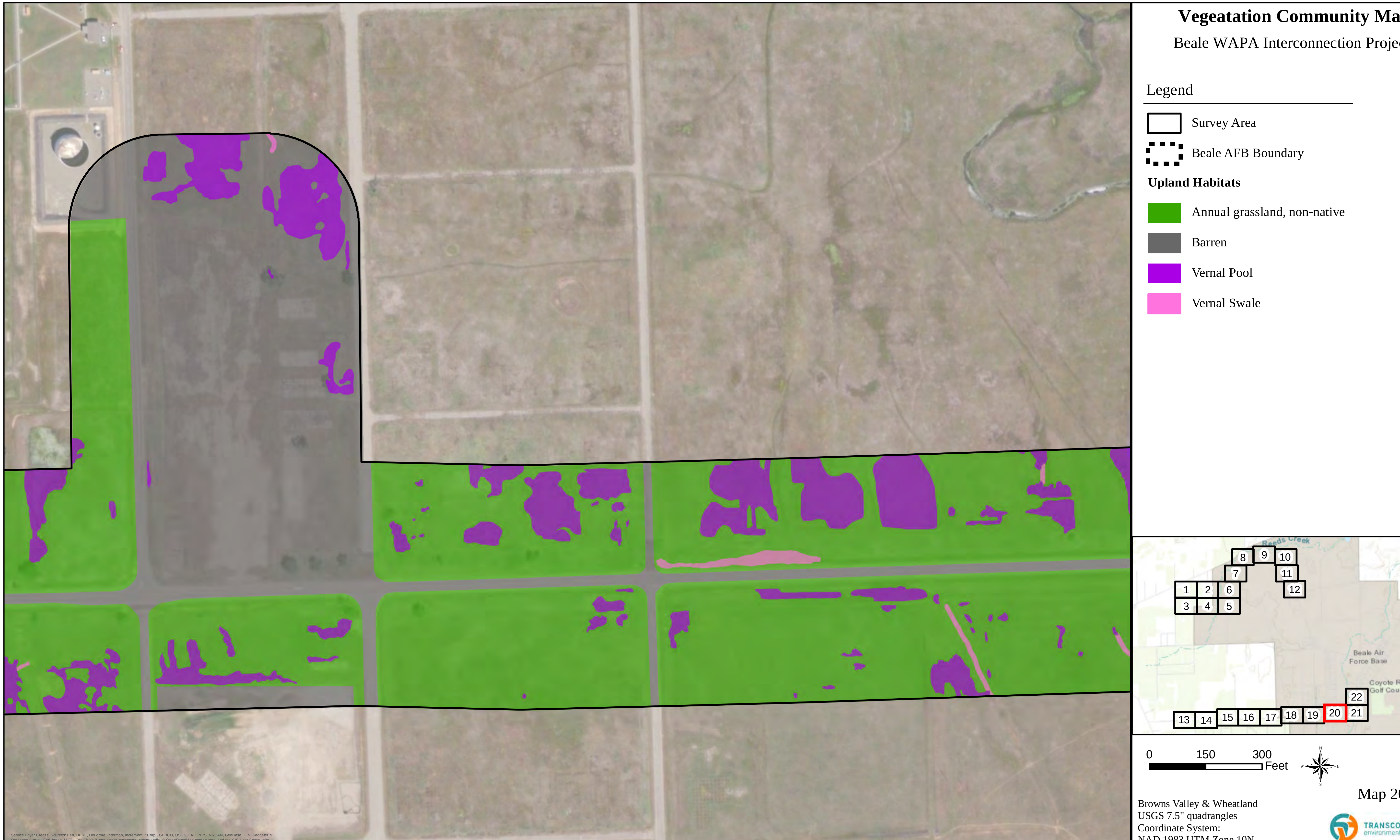


Vegeatation Community Map

Beale WAPA Interconnection Project

Legend

Survey Area

Beale AFB Boundary

Upland Habitats

Annual grassland, non-native

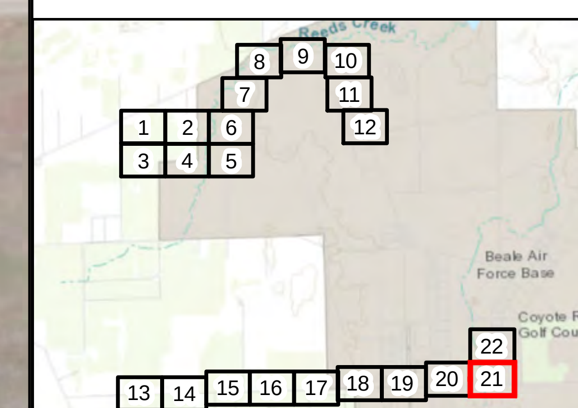
Barren

Wetland Habitats

Waters, rivers and creeks

Vernal Pool

Vernal Swale



0 150 300 Feet

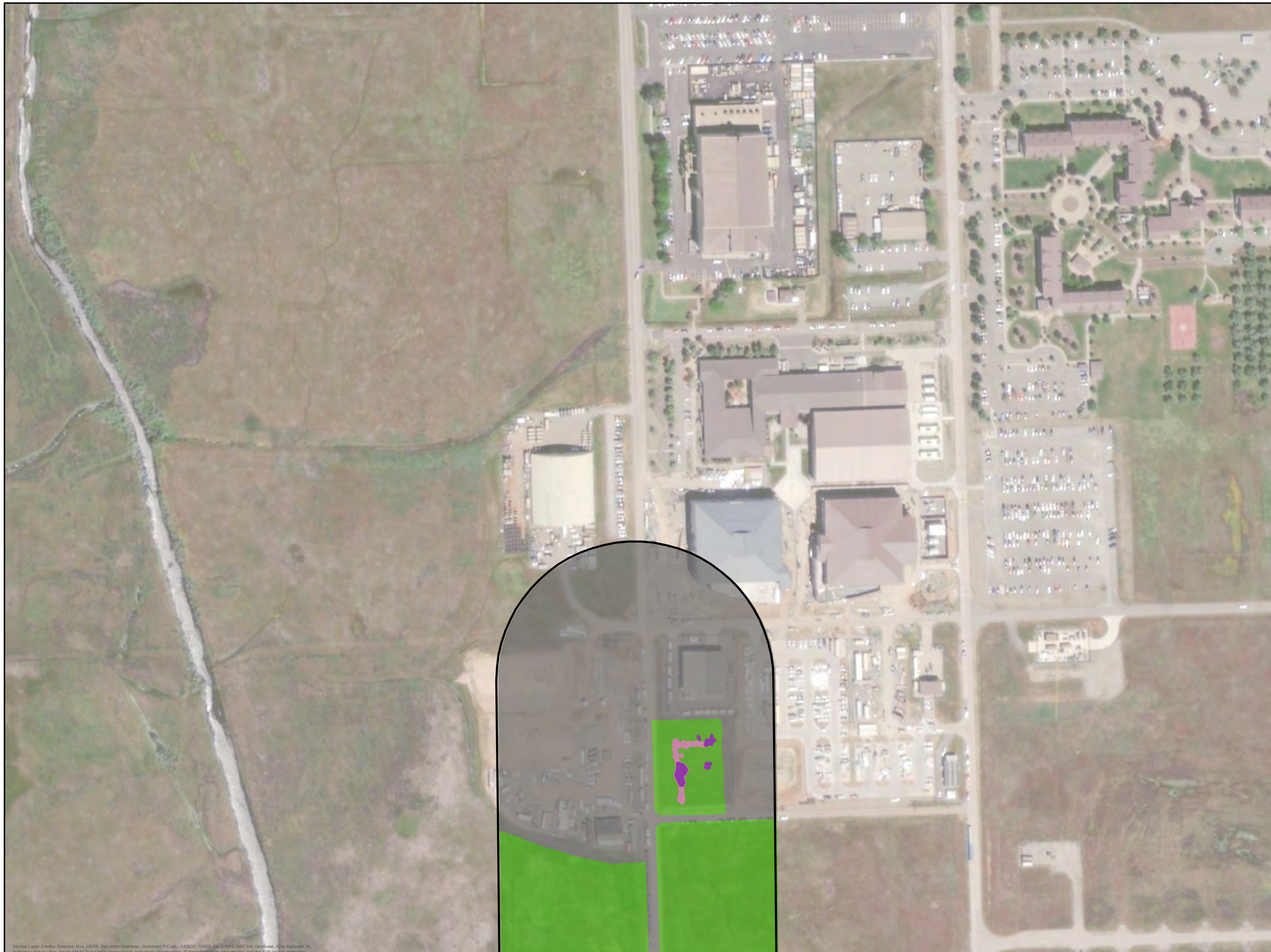
Map 21

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

Vegeatation Community Map

Beale WAPA Interconnection Project

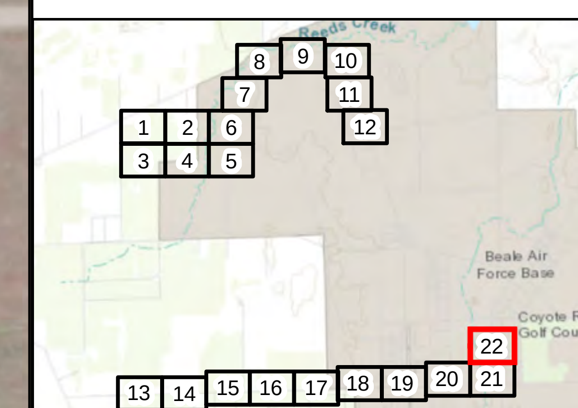


Legend

- Survey Area
- Beale AFB Boundary

Upland Habitats

- Annual grassland, non-native
- Barren
- Vernal Pool
- Vernal Swale



0 150 300 Feet

Map 22

Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N

TRANSCON environmental

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APPENDIX C

LIST OF REGIONALLY OCCURRING SPECIAL-STATUS SPECIES AND POTENTIAL TO OCCUR IN THE SURVEY AREAS

TABLE C-1 REGIONALLY OCCURRING SPECIAL-STATUS SPECIES AND POTENTIAL TO OCCUR IN THE SURVEY AREAS				
SPECIES	**STATUS***	**KNOWN OCCURRENCES WITHIN 3 MILES**	**HABITAT REQUIREMENTS**	**POTENTIAL TO OCCUR WITHIN SURVEY AREA**
PLANTS				
Hartweg's golden sunburst *Pseudobahia bahiifolia*	**FE/SE**/CRPR1B.1	Yes (Historic)	Known to occur in small numbers on clay soils of grasslands and open woodlands in Fresno, Madera, Merced, Stanislaus, and Tuolumne counties.	**No**; historic occurrences in Yuba County are presumed extirpated and this species is not expected to occur within the survey area.
Veiny monardella *Monardella venosa*	CRPR 1B.1	Yes (Historic)	Known to occur in small numbers on heavy clay soils of grasslands and open woodlands in Butte, Tuolumne, and Yuba counties.	**No**; historic occurrences are possibly extirpated and this species is not expected to occur within the survey area.
Legenere *Legenere limosa*	CRPR 1B.1	Yes	Occurs primarily in vernal pools.	**Yes**; there are several known occurrences of this species within 0.5 mile of the survey area and suitable habitat is present.
Dwarf downingia *Downingia pusilla*	CRPR 2B.2	Yes	Occurs primarily in vernal pools and mesic (moist) valley and foothill grassland sites.	**Yes**; there are several known occurrences of this species within 0.5 mile of the survey area and suitable habitat is present.
BRANCHIOPOD				
Conservancy fairy shrimp *Branchinecta conservation*	**FE**	No	Occurs in large, cool-water vernal pools when inundated during the wet season. May inhabit similar habitats such as artificial depressions or ditches.	**No**; there are no known occurrences within Yuba County and this species is not expected to occur within the survey area.
Vernal pool fairy shrimp *Branchinecta lynchi*	**FT**	Yes	Occurs only in cool-water vernal pools when inundated during the wet season. May inhabit similar habitats such as artificial depressions or ditches.	**Yes**; there are several known occurrences of this species within 0.5 mile of the survey area and suitable habitat is present.
Vernal pool tadpole shrimp *Lepidurus packardi*	**FE**	Yes	Occurs in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands.	**Yes**; there are several known occurrences of this species within 0.5 mile of the survey area and suitable habitat is present.

TABLE C-1 REGIONALLY OCCURRING SPECIAL-STATUS SPECIES AND POTENTIAL TO OCCUR IN THE SURVEY AREAS				
SPECIES	**STATUS***	**KNOWN OCCURRENCES WITHIN 3 MILES**	**HABITAT REQUIREMENTS**	**POTENTIAL TO OCCUR WITHIN SURVEY AREA**
FISH				
Steelhead—Central Valley DPS *Oncorhynchus mykiss irideus*	**FT**	Yes	An anadromous species that inhabits ocean environments for much its life before returning to inland freshwater streams to spawn. Streams must be clean and cold, with gravel beds and water temperatures between 6 and 16 degrees Celsius for spawning. The Central Valley DPS occurs in accessible portions of the Sacramento and San Joaquin rivers and their associated tributaries.	**No**; although occurrences of this species have been documented in the lower reaches of Dry Creek in the western portion of Beale AFB, suitable spawning or rearing habitat is not present in any of the intermittent streams that intersect the Project area and this species is not expected to occur within the survey area.
Chinook salmon—Central Valley Fall and Late Fall-run ESU *Oncorhynchus tshawytshca*	NMSC/SSC	Yes	An anadromous species that inhabits ocean environments for much its life before migrating to inland freshwater streams to spawn. The Central Valley Fall and Late Fall-run ESU occurs in accessible portions of the Sacramento and San Joaquin rivers and their associated tributaries.	**No**; although occurrences of this species have been documented in the lower reaches of Dry Creek in the western portion of Beale AFB, suitable spawning or rearing habitat is not present in any of the intermittent streams that intersect the Project area and this species is not expected to occur within the survey area.
Delta Smelt *Hypomesus transpacificus*	**FT**	No	A smelt species endemic to the San Francisco Estuary, spending much if its life in the low salinity zone of the estuary and migrating into freshwater sloughs and channels to spawn.	**No;** the waterways within the survey area are not tidally influenced and this species is not expected to occur within the survey area.

TABLE C-1 REGIONALLY OCCURRING SPECIAL-STATUS SPECIES AND POTENTIAL TO OCCUR IN THE SURVEY AREAS				
SPECIES	**STATUS***	**KNOWN OCCURRENCES WITHIN 3 MILES**	**HABITAT REQUIREMENTS**	**POTENTIAL TO OCCUR WITHIN SURVEY AREA**
INSECTS				
Valley elderberry long-horned beetle *Desmocerus californicus dimorphus*	**FT**	Yes	This species is always found on or near elderberry (*Sambucus* spp.) shrubs/trees in moist or riparian areas along streams, edges of meadows, canyons, and forest openings.	**Yes**; past surveys on Beale AFB have detected possible exit holes on elderberry shrubs and one elderberry shrub was identified within the survey area.
REPTILES/AMPHIBIANS				
Western spadefoot *Spea hammondi*	SSC	No	This species prefers open areas with sandy or gravelly soils, in a variety of habitats, including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Suitable breeding habitat must be inundated for a minimum of 4 weeks and must not have established predators (bullfrogs, fish, or crayfish).	**Yes**; multiple surveys on-Base have established that suitable habitat is present within the Project area, though no individuals have been identified.
Western pond turtle *Emys marmorata*	SSC	Yes	This species is known to occur in a variety of aquatic habitats including small mountain creeks, large rivers and oxbow lakes, and modified habitats, such as wastewater treatment ponds, irrigation ditches, urban parks, and artificially created lakes.	**Yes**; multiple surveys on-Base have documented suitable habitat and western pond turtle individuals, and suitable habitat is present within the survey area.
Giant gartersnake *Thamnophis gigas*	**FT/ST**	No	This species is found primarily in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields, and occasionally in slow-moving creeks. Prefers habitat with vegetation close to the water for basking.	**Yes**; multiple surveys on-Base have established that suitable habitat is present. Though no individuals have been identified, this species has potential to occur within the survey area.

TABLE C-1 REGIONALLY OCCURRING SPECIAL-STATUS SPECIES AND POTENTIAL TO OCCUR IN THE SURVEY AREAS				
SPECIES	**STATUS***	**KNOWN OCCURRENCES WITHIN 3 MILES**	**HABITAT REQUIREMENTS**	**POTENTIAL TO OCCUR WITHIN SURVEY AREA**
MAMMALS				
Townsend's big-eared bat *Corynorhinus townsendii*	SSC	Yes	This species is known to occur in a wide variety of habitats, including the grassland habitats within the Project area. It is known to roost in caves, mines, man-made structures, and basal hollows in large trees.	**Yes**; multiple surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.
Western red bat *Lasiurus blossevillii*	SSC	Yes	This species is known to occur in a wide variety of habitats, including the grassland habitats within the Project area. It is known to primarily roost in trees and occasionally shrubs.	**Yes**; multiple surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.
Pallid bat *Antrozous pallidus*	SSC	Yes	This species is known to occur in a wide variety of habitats, including the grassland habitats within the Project area. It is known to roost in caves, mines, man-made structures, and basal hollows in large trees.	**Yes**; multiple surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.
BIRDS				
California black rail *Laterallus jamaicensis*	**ST**/FP/BCC	Yes	This species is known to occur in freshwater and salt marshes, wet meadows, and flooded grassy vegetation. Breeding habitat consists of fine-stemmed emergent plants, rushes, grasses, or sedges.	**Yes**; though no individuals have been identified, this species has potential to occur within the survey area.
Western burrowing owl *Athene cunicularia*	SSC/BCC	Yes	This species is known to occur in open, treeless areas in grassland, steppe, or desert habitats, as well as disturbed areas.	**Yes**; past surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.
Tricolored blackbird *Agelaius tricolor*	**ST**/BCC	Yes	This species is known to occur in marshes, emergent wetlands, riparian thickets or swamps. Breeding habitat consists of freshwater marshes and blackberry thickets.	**Yes**; past surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.

TABLE C-1 REGIONALLY OCCURRING SPECIAL-STATUS SPECIES AND POTENTIAL TO OCCUR IN THE SURVEY AREAS				
SPECIES	**STATUS***	**KNOWN OCCURRENCES WITHIN 3 MILES**	**HABITAT REQUIREMENTS**	**POTENTIAL TO OCCUR WITHIN SURVEY AREA**
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	**FT**/**SE**/BCC	No	This species occurs in dense cottonwood and willow trees in riparian habitats. Nesting habitat is primarily patches of riparian habitat greater than 25 acres in size.	**No**; suitable habitat is not present within the survey area and this species is not expected to occur.
Swainson's hawk *Buteo swainsoni*	**ST**/BCC	Yes	This species typically occurs in grasslands and agricultural areas, often nesting in adjacent trees or large shrubs.	**Yes**; suitable habitat is present, and this species has potential to occur within the survey area.
Golden eagle *Aquila chrysaetos*	BGEPA/FP/BCC	Yes	This species is most likely to nest in chaparral and oak woodland, oak savanna, and grassland habitats among low, rolling hills characterized by diverse vegetation. Nest sites are most often located on cliffs, but can also occur in trees and a variety of manmade structures, including electrical transmission structures.	**Yes**; past surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.
Bald eagle *Haliaeetus leucocephalus*	BGEPA/**SE**/BCC	Yes	This species is most likely to nest within large, old-growth, and/or dominant live conifer trees (especially ponderosa pine) with open branches, generally within 0.5 mile of rivers, ocean shores, lake margins, and other fish-bearing waters.	**Yes**; observations of the species have been documented on-Base, though suitable nesting habitat does not occur within the survey area.
Short-eared owl *Asio flammeus*	SSC	Yes	This species is typically found in open areas with few trees, such as annual and perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands.	**Yes**; past surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.
Bank swallow *Riparia riparia*	ST	Yes	This species typically nests on vertical banks, cliffs and bluffs in alluvial, friable soils along rivers and lakes.	**No**; there is no suitable nesting habitat within the survey area and this species is not expected to occur.
Purple martin *Progne subis*	SSC	No	This species is typically nests in mature riparian and oak woodland habitats in the Sierra Nevada foothills, northern California, and central coast areas.	**No**; there is no suitable nesting habitat within the survey area and this species is not expected to occur.

TABLE C-1 REGIONALLY OCCURRING SPECIAL-STATUS SPECIES AND POTENTIAL TO OCCUR IN THE SURVEY AREAS				
SPECIES	**STATUS***	**KNOWN OCCURRENCES WITHIN 3 MILES**	**HABITAT REQUIREMENTS**	**POTENTIAL TO OCCUR WITHIN SURVEY AREA**
Yellow-breasted chat *Icteria virens*	SSC	No	This species typically nests in dense, multilayered riparian forests adjacent to perennial or nearly perennial waters.	**No**; there is no suitable nesting habitat within the survey area and this species is not expected to occur.
Loggerhead shrike *Lanius ludovicianus*	SSC/BCC	Yes	A common resident and winter visitor in the lowlands and foothills throughout California. Highest density occurs in open-canopied valley foothill hardwood, riparian, pinyon-juniper, desert riparian, and Joshua tree habitats. Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	**Yes**; past surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.
Northern harrier *Circus cyaneus*	SSC	Yes	A common resident of the lowlands and valleys throughout California. Nests in dense grasslands and wetlands; forages in wetlands, grasslands, and agricultural fields.	**Yes**; past surveys on-Base have documented suitable habitat and individuals, and suitable habitat is present within the survey area.
Grasshopper sparrow *Ammodramus savannarum*	SSC	Yes	A summer resident of open grasslands and prairies in California.	**Yes**; past surveys on-Base have documented suitable habitat and this species has the potential to occur within the survey area.
Yellow warbler *Setophaga petechia*	SSC/BCC	Yes	A common resident in the montane riparian woodlands of the Sierra Nevada, northeastern California, interior valleys, and south-central coasts. Nests in riparian forests (including willow and cottonwood), montane chaparral, conifer forests with substantial brush, and desert woodlands.	**No**; there is no suitable nesting habitat within the survey area and this species is not expected to occur.
Long-eared owl *Asio otus*	SSC	Yes	Uncommon yearlong resident of dense, riparian and oak woodland near meadow edges as well as dense conifer stands at higher elevations.	**No**; there is no suitable nesting habitat within the survey area and this species is not expected to occur.

TABLE C-1 REGIONALLY OCCURRING SPECIAL-STATUS SPECIES AND POTENTIAL TO OCCUR IN THE SURVEY AREAS				
SPECIES	**STATUS***	**KNOWN OCCURRENCES WITHIN 3 MILES**	**HABITAT REQUIREMENTS**	**POTENTIAL TO OCCUR WITHIN SURVEY AREA**
***Special-status species is defined as FE, threatened, candidate, proposed threatened, or proposed endangered (FE, FT, FC, FPT, FPE); species covered by the BGEPA; USFWS Birds of Conservation Concern (BCC); State of California endangered, threatened, or candidate (SE, ST, SC); California Department of Fish & Wildlife species of concern or FP (SSC); and California Rare Plant Rank 1.B1 (Plants rare, threatened, or endangered in California and elsewhere) and 2B.2 (Plants rare, threatened, or endangered in California but more common elsewhere) (Source: USFWS 2017; CDFW 2018, CNPS 2018).				

APPENDIX D

STANDARD OPERATION PROCEDURES AND
PROJECT CONSERVATION MEASURES

TABLE D-1 STANDARD OPERATION PROCEDURES	
Vernal Pools, Vernal Pool Grasslands, and Seasonal Wetlands	
PCM-W001	Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally May 1 to October 31, or as determined by qualified personnel[1] based on personal observation of the soils). For patrolling the ROW off of established roads in a pickup truck, or for inspecting hardware on structures with a bucket truck, vernal pools, vernal pool grasslands, and seasonal wetlands will be avoided by 50 feet during the wet season. No avoidance will be necessary if soils are completely dry (generally May 1 to October 31). All equipment will be stored, fueled, and maintained in a designated vehicle staging area with appropriate spill containment. These designated areas will be previously developed areas whenever possible. Undeveloped staging areas, if any, will be the maximum distance possible from any vernal pool, vernal pool grassland, or seasonal wetland. Prior to the onset of work, workers will ensure a plan, to allow a prompt and effective response to any accidental spills, is in place. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur. When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas. A 50-foot buffer zone from the edge of the vernal pool or wetland will be maintained and the vernal pool or wetland will be protected from siltation and contaminant run-off by use of erosion control. Erosion control measures (straw waddles, silt fencing) will be installed where hydrological continuity exists between the construction activities and the wetland or when work is within 25 feet of a wetland/drainage/vernal pool. A USFWS-approved biologist[2] or natural resources monitor will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species. Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources. If vegetation-management activities are proposed within 250 feet of a vernal pool, vernal pool grassland, or seasonal wetland, a qualified biologist[3] will be present at all times to ensure the protection of the work-area limits below OR qualified personnel[1] will clearly fence the limits of the work area, according to limits presented in the following, prior to the maintenance activity. (The herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different.) • Mixing or application of pesticides, herbicides, or other potentially toxic chemicals will be prohibited • Herbicide application to target vegetation by direct application methods (e.g., injection or cut-stump treatment) will be prohibited within 50 feet in the wet season (generally October 1 to May 31) and allowed up to the edge of the pool or seasonal wetland in the dry season (generally June 1 to September 30) • Herbicide application by basal spray and foliage spray methods will be prohibited within 100 feet in any season • Manual clearing of vegetation (chainsaw, axe, clippers) will be allowed up to the edge of the pool or seasonal wetland in the wet season (generally October 1 to May 31); a buffer will not be necessary in the dry season (generally June 1 to September 30) • Mechanical clearing of vegetation (heavy-duty mowers, crawler tractors, or chippers) will be prohibited within 100 feet in the wet season (generally October 1 to May 31); a buffer will not necessary in the dry season (generally June 1 to September 30)

TABLE D-1 STANDARD OPERATION PROCEDURES	
Seep, Spring, Pond, Lake, River, Stream, and Marsh	
PCM-W002	The following activities will be prohibited at all times within 100 feet of a seep, spring, pond, lake, river, stream, or marsh, and their associated habitats: • vehicle access, except on existing access and maintenance roads • dumping, stockpiling, or burying of any material • mixing of pesticides, herbicides, or other potentially toxic chemicals • open petroleum products All equipment will be stored, fueled, and maintained in a designated vehicle staging area with appropriate spill containment. These designated areas will be previously developed areas whenever possible. Undeveloped staging areas, if any, will be the maximum distance possible from any seep, spring, pond, lake, river, stream, marsh, or their associated habitats. When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas. For vegetation management or maintenance within 100 feet of any seep, spring, pond, lake, river, stream, or marsh, or any of their associated habitats, the following work-area limits will be provided (the herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different): • Only manual-clearing of vegetation will be permitted • Basal and foliar application of herbicides will be prohibited. Only direct application treatments (e.g., injection and cut-stump) of target vegetation will be allowed using herbicide approved for aquatic use by the EPA and in coordination with the appropriate federal land manager All instream work, such as culvert replacement or installation, bank recontouring, or placement of bank protection below the high-water line, will be conducted during no-flow or low-flow conditions and in a manner to avoid impacts to water flow and will be restricted to the minimum area necessary for completion of the work. All equipment used below the ordinary high-water mark will be free of exterior contamination. Erosion control measures (straw waddles, silt fencing) will be installed where work is within 25 feet of a drainage. A USFWS-approved biologist[2] or natural resources monitor will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species. Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources. Seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed and will be composed of native species or sterile nonnative species. Seed mixtures used on Beale AFB will be approved by Beale AFB 9 CES/CEIEC and in accord with the Integrated Natural Resources Management Plan. WAPA will obtain appropriate 404 discharge and 401 water-quality permits prior to any maintenance activities that must take place within jurisdictional wetlands or other Waters of the US. These will be coordinated with USACE and RWQCB as needed.

TABLE D-1 STANDARD OPERATION PROCEDURES	
	Dewatering work for maintenance operations adjacent to or encroaching on seeps, springs, ponds, lakes, rivers, streams, or marshes will be conducted to prevent muddy water and eroded materials from entering the water or marsh. All stream crossings will be constructed such that they permit fish to pass and reduce the potential for stream flows to result in increased scour, washout, or disruption of water flow. Wherever possible, stream crossings will be located in stream segments without riparian vegetation, and structure footings will be installed outside of stream banks. Should WAPA need to modify existing access roads or install new access roads, they will be built at right angles to streams and washes to the extent practicable. Trees providing shade to water bodies will be trimmed only to the extent necessary and will not be removed unless they present a specific safety concern. Trees that must be removed will be felled to avoid damaging riparian habitat. They will be felled out of and away from the stream maintenance zone and riparian habitat, including springs, seeps, bogs, and any other wet or saturated areas. Trees will not be felled into streams in a way that will obstruct or impair the flow of water, unless instructed otherwise. Tree removal that could cause stream-bank erosion or result in increased water temperatures will not be conducted in and around streams. Tree removal in riparian or wetland areas will be done only by manual methods.
Biological Resources	
SOP	**Description**
B-SOP-1	All contract crews will complete biological pre-maintenance awareness training to ensure they are familiar with sensitive biological resources and associated SOPs and PCMs. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance.
B-SOP-2	WAPA crews will complete annual awareness training to ensure they are familiar with sensitive biological resources and associated SOPs and PCMs. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. Further, WAPA crews will have access to the O&M GIS database in the field to be able to identify sensitive resources and associated PCMs.
B-SOP-3	O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day, or have escape ramps provided to prevent the entrapment of wildlife. Trenches and holes will be inspected for entrapped wildlife before being filled. Any entrapped animals will be allowed to escape voluntarily before O&M activities resume, or they may be removed by qualified personnel[1], with an appropriate handling permit if necessary.
B-SOP-4	Vehicle traffic will be restricted to designated access routes and the immediate vicinity of construction/O&M sites. Vehicle speeds will not exceed 15 miles per hour on access and maintenance roads and 10 miles per hour on unimproved access routes. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas, to the maximum extent feasible. Off-road travel outside of the demarcated construction boundaries will be prohibited. Per the Fugitive Dust Emissions rule, a person shall take every reasonable precaution to not cause or allow the emissions of fugitive dust from being airborne past the action area especially near threatened or endangered species or their habitats.
B-SOP-5	No pets or firearms will be permitted at Project sites.

TABLE D-1 STANDARD OPERATION PROCEDURES	
B-SOP-6	During construction activities, all trash that may attract animals will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and Project construction-related materials in construction areas will be removed immediately following Project completion. At the end of each work day, O&M workers will leave work areas and adjacent habitats to minimize disturbance to actively foraging animals, and remove food-related trash from the work site in closed containers for disposal. Workers will not deliberately or inadvertently feed wildlife.
B-SOP-7	Nighttime O&M activities will be minimized to emergency situations. If nighttime O&M work is required, lights will be directed to the minimum area needed to illuminate Project work areas.
B-SOP-8	Where feasible and appropriate, tall dead trees will be topped and left in place as snags or as downed logs to support wildlife dependent on these important features, in coordination with the land owner.
B-SOP-9	Mortalities or injuries to any wildlife that occur as a result of Project- or maintenance-related actions will be reported immediately to the WAPA Natural Resources Department or other designated point of contact, who will instruct O&M personnel on the appropriate action, and who will contact the appropriate agency if the species is listed. The phone number for the Western Natural Resources Department or designated point of contact will be provided to maintenance supervisors and to the appropriate agencies.
B-SOP-10	Caves, mine tunnels, and rock outcrops will never be entered, climbed upon, or otherwise disturbed.
B-SOP-11	If a pesticide label stipulates a buffer zone width for protection of natural resources that differs from that specified in a PCM, the buffer zone width that offers the greatest protection will be applied.
B-SOP-12	To protect nesting birds (birds not specifically protected by PCMs but protected by the MBTA), whose nests could occur within the ROW, WAPA and its subcontractors will perform construction activities outside the nesting season, which runs from March 1 through August 15. Alternatively, a qualified biologist[3] will conduct nesting-bird surveys prior to Project activities. For special-status birds, see specific PCMs. • An additional survey may be required if gaps between the survey and the Project activity exceed three weeks. • Should an active nest be discovered, the qualified biologist will establish an appropriate buffer zone (in which O&M activity is not allowed) to avoid disturbance in the vicinity of the nest. Maintenance activities will not take place until the biologist has determined that the nestlings have fledged or that maintenance activities will not adversely affect adults or newly fledged young. • Alternatively, the qualified biologist will develop a monitoring/mitigation plan that permits the maintenance activity to continue in the vicinity of the nest while monitoring nesting activities to ensure that the nesting birds are not disturbed. The Project will adhere to the guidance in the Avian Protection Plan for Beale Air Force Base (2017) and WAPA's Avian Protection Plan (2016).
B-SOP-13	Measures described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006) and *Mitigation Bird Collisions with Power Lines: The State the Art in 1994* (Avian Power Line Interaction Committee 1994) will be implemented during O&M activities to minimize bird mortality and injury. The Project will adhere to the guidance in the Avian Protection Plan for Beale Air Force Base (2017) and WAPA's Avian Protection Plan (2016).

TABLE D-1 STANDARD OPERATION PROCEDURES	
B-SOP-14	At completion of work or according to erosion control plans, and at the request of the land owner/manager, all work areas except permanent access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion. All areas of upland ground disturbance or exposed soil from construction will be reseeded with a native "weed free" seed mix. Seed mixtures used on Beale AFB will be approved by Beale AFB 9 CES/CEIEC and in accord with the Integrated Natural Resources Management Plan.
B-SOP-15	Prior to any application of herbicide, WAPA will query the California Department of Pesticide Regulation PRESCRIBE database, entering location information by county, township, range, and section, entering both the commercial name and the formulation of the desired pesticide, and will follow all use limitations provided to ensure compliance with applicable pesticide standards. This database is currently located at http://www.cdpr.ca.gov/docs/endspec/prescint.htm. The measures generated by the PRESCRIBE database will supersede those in the PCMs where they are different. On Beale AFB, the application of any pesticide, including herbicides will be conducted in accordance with approved Integrated Pest Management Plan, Invasive Plant Species Management Guidelines, and Integrated Natural Resources Management Plan.
B-SOP-16	The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the Project goal. Routes and boundaries will be clearly demarcated, and these areas will avoid wetlands/drainage areas whenever feasible.
B-SOP-17	A USFWS-approved biologist[2] will conduct preconstruction surveys of all ground disturbance areas within sensitive habitats to determine if any federally-listed species may be present during the start of construction. These surveys will be conducted prior to the start of construction activities in and around any sensitive habitat.
B-SOP-18	A natural resources monitor will monitor construction activities in or adjacent to sensitive habitats. The natural resources monitor will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats.
B-SOP-19	If federally-listed species are found that are likely to be affected by work activities, the USFWS-approved biologist[2] will have the authority to stop any aspect of the Project that could result in take of a federally-listed species in coordination from Beale AFB and/or the Contracting Officer. If the USFWS-approved biologist[2] exercises this authority, she/he must coordinate this with the Environmental Office of Beale and/or WAPA.
B-SOP-20	Any worker that inadvertently kills or injures a federally-listed species, or finds one injured or trapped, will immediately report the incident to the on-site biologist. The biologist will inform the appropriate Natural Resources Office (WAPA off-Base or Beale NRM on-Base) immediately. The Natural Resources Office will verbally notify the Sacramento Fish and Wildlife Office within one day and will provide written notification of the incident within five days.
B-SOP-21	Unless otherwise designated as part of a habitat restoration plan, all excess soil excavated during construction in the vicinity of vernal pools and other wetlands will be removed and disposed of outside the Project area. Coordination with the Beale AFB Environmental Office and appropriate regulatory agencies is required prior to disposal of the excavated soil.

TABLE D-1 STANDARD OPERATION PROCEDURES	
B-SOP-22	A USFWS-approved biologist [2] or Natural Resources Monitor will inspect equipment for cleanliness to minimize spread of invasive and noxious weeds onto and around Beale AFB. The designated biologist or monitor may reject equipment that has visible clumps of mud when arriving on site. The biologist or monitor will also identify any listed noxious weed found on Project site, and will hand-pull noxious weeds where practical.
B-SOP-23	Prior to initiation of construction activities, sensitive areas, such as vernal pools, wetlands, riparian areas, and potential habitat for federally-listed species (i.e., VP Fairy Shrimp/VP Tadpole Shrimp or Giant Garter Snake), will be staked and flagged as exclusion zones where construction activities cannot take place. Orange construction barrier fencing (or an appropriate alternative method) will designate exclusion zones where construction activities cannot occur. The flagging and fencing will be clearly marked as an *environmentally sensitive area*. The contractor will remove all fencing, stakes and flagging within 60 days of construction completion.
B-SOP-24	For areas on Beale AFB, ground disturbance within vernal pools will require a restoration plan and two years of follow-up monitoring by a USFWS-approved biologist [2]. Direct impacts to wetlands (in all areas) may require a Clean Water Act Section 404 permit issued by the USACE and a Section 401 Water Quality Certification from the State Regional Water Quality Control Board.

TABLE D-2 SPECIAL-STATUS WILDLIFE PROJECT CONSERVATION MEASURES		
PCM-ID	**Species Name**	**PCM**
PCM-B001	Giant garter snake *Thamnophis gigas*	Follow SOPs and PCM-W002 in aquatic GGS habitat. PCM-W002 will supersede those below where they are different. Movement of heavy equipment will be confined to existing roadways to minimize habitat disturbance. Vegetation management will be confined to the minimum area necessary to facilitate O&M activities. GGS aquatic and upland habitats will be flagged as environmentally sensitive areas by a USFWS-approved biologist[2] within or adjacent to the disturbance footprint. Only manual vegetation removal will be allowed within the flagged area. A USFWS-approved monitor[2] will be present for construction and O&M activities within the flagged area. All potentially affected aquatic habitats will be dewatered prior to any ground disturbance. Dewatered areas will remain dry with no puddled water remaining for at least 15 consecutive days prior to excavation or filling of that habitat. If a site cannot be completely dewatered, prey items will be netted or otherwise salvaged if present. To the extent possible, disturbance to hibernacula and aestivation areas (i.e., rocks, burrows, logs, brush piles, etc.), will be avoided during cold and cool-weather periods when the GGS would be using these areas. Ground disturbance will be confined to the minimum area necessary to facilitate construction and O&M activities. All construction-related holes will be covered to prevent entrapment of individual GGS. Within the construction area, silt fencing can be used to keep snakes from entering the Project site and being harmed. All construction equipment shall be checked daily prior to starting work for the presence of snakes. Pre- and post-Project surveys will be conducted to record habitat condition before the start of a Project and after completion of the Project for tracking purposes. This may include photos and/or species surveys. Any temporary fill and debris will be removed. Restoration work could include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel. If herbicide spraying is required within and near GGS habitat, only herbicide without toxic surfactants, approved for use in aquatic environments, will be used.

TABLE D-2 SPECIAL-STATUS WILDLIFE PROJECT CONSERVATION MEASURES		
PCM-ID	**Species Name**	**PCM**
PCM-B002	Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	Follow SOPs at all times and PCM-W002 in riparian habitat. Prior to initiating Project-related construction activities, qualified personnel[1] will clearly flag or fence each elderberry plant that has a stem measuring one inch or greater in diameter at ground level. If an elderberry plant meeting this criterion is present, a minimum buffer zone of 20 feet outside of the dripline of each elderberry plant will be provided during all Project-related construction activities.
PCM-B003	Vernal pool fairy shrimp *Branchinecta lynchi* - Vernal pool tadpole shrimp *Lepidurus packardi* - Western spadefoot *Spea hammondi* - Legenere *Legenere limosa* - Dwarf downingia *Downingia pusilla*	Follow SOPs and PCM-W001. On Beale AFB, the following measures will apply within 250 feet of potential vernal pool habitat to avoid or minimize disturbances and adverse effects to the species: • No work will be conducted in the vicinity of vernal pool species' habitat between 1 Nov and 1 May unless specifically approved by the Beale AFB NRM who will field- verify soil saturation, visual ponding, and expected surface disturbance. The USFWS will be notified of any off-pavement work within 250 feet approved between 1 Nov and 1 May in the Project Effects Analysis Report • Mowing in and around vernal pool habitat after seed set during the dry season (1 May to 15 Oct) may help reduce thatch in the vernal pool. Mowing conducted earlier in the season may be desirable to maintain appropriate conditions for vernal pool species. If mowing occurs in or near vernal pools, it will occur only when the soil is no longer saturated to ensure tracks are not left in or near wetlands. The mower height must be set to avoid the flowering heads of sensitive vernal pool plant species • Projects that occur on road surfaces and along road shoulders will avoid direct impacts to wetland habitats, including roadside ditches that act as seasonal wetlands • If access routes crossing vernal pool habitats cannot be avoided, ground protection mats will be used to disperse the weight of vehicles and equipment so as to not harm any existing cysts. These can be used in both dry and wet seasons • A USFWS-approved biologist [2] will flag vernal pool species' habitat and a reasonable buffer to be avoided. The area will be protected by placing construction fencing or other appropriate protective fencing around the pools, including a buffer. Fencing will be used in locations where Project equipment and/or personnel will be situated adjacent to or in the near vicinity of suitable vernal pool species' habitat • Dust control measures will be utilized during Project construction to prevent excessive dust from silting nearby vernal pools. Type of dust control measure will take into account potential to impact proximal vernal pool landscape and thus will not impact nearby pools

TABLE D-2 SPECIAL-STATUS WILDLIFE PROJECT CONSERVATION MEASURES		
PCM-ID	**Species Name**	**PCM**
		• If herbicide spraying is required within and near vernal pool species' habitat, only herbicide without toxic surfactants, approved for use in aquatic environments, will be used • All equipment used in projects requiring access to sites within vernal pool species' habitat will be staged outside of vernal pool habitat and will be on paved or gravel surfaces wherever possible. If paved or gravel surfaces are not available, construction mats and or drip pans will be placed under vehicles to minimize impacts. To further minimize adverse effects, the following measures will be implemented at these Project sites near vernal pools: a. No work shall occur within vernal pool habitat when water is present b. Ground disturbances, such as trenching, and permanent disturbances, such as pole installation, will avoid hydrologically connected areas c. As necessary, a USFWS-approved biologist[2] will be present during access and Project work within vernal pool habitat to monitor activities d. For projects adjacent to (within 10 meters) vernal pool species' habitat or hydrologically connected to the habitat, silt fencing or other appropriate BMPs to prevent siltation shall be implemented prior to work within that area. A USFWS-approved biologist [2] will flag areas where silt fencing or BMPs shall be implemented. BMPs may include sand bags and weed-free straw bales or straw wattles e. Spill containment kits will be present at all sites where petroleum-fueled equipment is used • If Project activities encroach within the perimeter of a pool, the following measures will be implemented: a. Protective mats should be used as first resort, if not possible, equipment with pneumatic tires should be used over tracked equipment b. Non-wetlands present within adjacent habitat will be used as an equipment-parking platform. Alternately, ground protection mats, boards, or plates will be used to distribute the weight of construction equipment for access. Drip pans will also be placed under vehicles parked on non-wetland vegetation c. Project will be implemented during the dry season only, when the pool is dry • Pre- and post-Project surveys will be conducted to record habitat condition before the start of a Project and after completion of the Project for tracking purposes. This may include photos and/or species surveys and will be used to better manage for the species
PCM-B004	Bald eagle *Haliaeetus leucocephalus* (nesting and wintering)	Follow SOPs. From February 1 to August 15 herbicide application or noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be prohibited anywhere that bald eagles are known to nest OR a qualified biologist[3] will conduct nesting surveys using methods described in Jackman and Jenkins 2004. If a nest is detected, all herbicide application and O&M activities will be prohibited at a distance determined by the qualified biologist, based on topography and/or other environmental considerations.

TABLE D-2 SPECIAL-STATUS WILDLIFE PROJECT CONSERVATION MEASURES		
PCM-ID	**Species Name**	**PCM**
PCM-B005	Western burrowing owl *Athene cunicularia* (burrow sites winter and summer)	Follow SOPs. From February 1 to August 31 herbicide application (with the exception of direct application) and other O&M activity will be prohibited within 250 feet of potential burrowing owl nesting dens (ground squirrel burrows, culverts, concrete slabs, debris piles that could support nesting burrowing owls). From September 1 through January 31, disturbance will be prohibited within 160 feet of potential burrowing owl dens. OR a qualified biologist[3] will conduct nesting and wintering surveys using methods described in California Burrowing Owl Consortium 1993. If nesting or wintering activity is detected, a qualified biologist will mark and monitor an appropriate non-disturbance buffer in the vicinity of burrows that have been active within the last three years. Within the buffer zone, all O&M activities and herbicide applications will be prohibited from February 1 to August 31.
PCM-B006	California black rail *Laterallus jamaicensis coturniculus*	Follow SOPs and PCM-W002. From February 15 to July 31, surface disturbances including noise or changes to the hydrological regime will be prohibited in potential black rail habitat (shallowly flooded wetlands or irrigated pasture) OR a qualified biologist[3] will conduct nesting surveys to verify absence. If nesting activity is detected or likely, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities will be prohibited from February 15 to July 31.
PCM-B007	Swainson's hawk *Buteo swainsoni* (nesting)	From April 1 to July 31 herbicide application and tree removal will be prohibited within 0.25 mile of Swainson’s hawk nest trees. A 0.25-mile buffer zone will be established and maintained around potential Swainson's hawk nest trees, within which there will be no intensive disturbance (e.g., use of heavy equipment, power saws, chippers, cranes, or draglines). This buffer may be adjusted, as assessed by a qualified biologist[3], based on changes in sensitivity exhibited by birds over the course of the nesting season and the type of O&M activity performed (e.g., high noise or human activity such as mechanical vegetation maintenance versus low noise or human activity such as semi-annual patrols). Within 0.25 mile of an active nest (as confirmed by a qualified biologist), routine O&M activities will be deferred until after the young have fledged or until it was determined by a qualified biologist that the activities will not adversely affect adults or young OR a qualified biologist will conduct nest surveys using methods described in SHTAC 2000 (or the most recent survey protocol) to determine absence.

TABLE D-2 SPECIAL-STATUS WILDLIFE PROJECT CONSERVATION MEASURES		
PCM-ID	**Species Name**	**PCM**
PCM-B008	Tricolored blackbird *Agelaius tricolor* (nesting colony)	Follow SOPs and PCM-W002. From March 15 to August 15 herbicide application (with the exception of direct application) and vegetation clearing/disturbance will be prohibited in marshes, willows, and blackberry thickets OR a qualified biologist[3] will conduct a nesting survey prior to O&M activities. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nesting colony within which all O&M activities and herbicide applications will be prohibited from March 15 to August 15.
PCM-B010	Pallid bat *Antrozous pallidus*	Follow SOPs. Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of tunnels and rock outcrops. Snags and live trees will be left standing to the maximum extent possible.
PCM-B011	Townsend's big-eared bat *Corynorhinus townsendii*	Follow SOPs. Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of tunnels.
PCM-B012	Western red bat *Lasiurus blossevillii*	Follow SOPs. Live broadleaf trees will be left standing to the maximum extent possible.
PCM-B013	Western pond turtle *Actinemys marmorata*	Follow SOPs and PCM-W002. From April 15 to July 15, any ground-disturbing activity within 400 feet of a permanent pond, lake, creek, river, or slough that could affect the bed, bank, or water quality of any of these features will be prohibited OR a qualified biologist3 will inspect the Project area. If adult or juvenile pond turtles are present, a qualified biologist will monitor Project activities to ensure that no turtles are harmed. If a qualified biologist determined that nests could be adversely affected, potential nesting areas will be avoided between June 1 and October 31.

TABLE D-2 SPECIAL-STATUS WILDLIFE PROJECT CONSERVATION MEASURES		
PCM-ID	Species Name	PCM

[1] Qualified personnel are those who are capable of consistently and accurately identifying the subject resource and have been approved by Western's Natural Resource Department.

[2] A USFWS-approved biologist is one whose resume has been submitted to and who has been formally approved by the U.S. Fish and Wildlife Service. This biologist's resume reflects a high level of experience with the federally-listed species covered by a particular PCM.

[3] A qualified biologist is one who has previous experience with the species covered by a particular PCM and who understands the habitat requirements of the species such that he/she can make a well-informed decision about potential presence, potential Project-related impacts, and appropriate avoidance/minimization measures.

TABLE F-1
SPECIAL-STATUS SPECIES ELIMINATED FROM CONSIDERATION

Species Name	Status*	Reason for Elimination from Consideration
Plants		
Hartweg's golden sunburst *Pseudobahia bahiifolia*	FE	No suitable habitat in Project area and presumed extirpated from the region
Veiny monardella *Monardella venosa*	CRPR 1B.1	One historic CNDDB occurrence within 3 miles of the Project area. Likely extirpated from the region
Invertebrates		
Conservancy fairy shrimp *Branchinecta conservatio*	FE	There are no known occurrences of this species within Yuba County.
Fish		
Chinook salmon—Central Valley Fall and Late Fall-run Evolutionary Significant Unit *Oncorhynchus tshawytscha*	NSOC/SSC	Although occurrences of this species have been documented in the lower reaches of Dry Creek in the western portion of Beale AFB (Beale AFB 2019), suitable spawning or rearing habitat is not present in any of the intermittent streams that intersect the Project area.
Delta smelt *Hypomesus transpacificus*	FT	The waterways intersecting the Project area are not tidally influenced.
Steelhead—Central Valley Distinct Population Segment *Oncorhynchus mykiss irideus*	FT	Although occurrences of this species have been documented in the lower reaches of Dry Creek in the western portion of Beale AFB (Beale AFB 2019), suitable spawning or rearing habitat is not present in any of the intermittent streams that intersect the Project area.
Birds		
Bank swallow *Riparia riparia*	ST	There is no suitable nesting habitat (i.e., vertical cliffs or bluffs along rivers or lakes) within the Project area (Beale AFB 2019; Transcon 2019b).
Long-eared owl *Asio otus*	SSC	There is no suitable nesting habitat (i.e., dense riparian or conifer forests) within the Project area (Beale AFB 2019; Transcon 2019b).
Purple martin *Progne subis*	SSC	There is no suitable nesting habitat (i.e., dense riparian or oak woodlands) within the Project area (Beale AFB 2019; Transcon 2019b).

TABLE F-1
SPECIAL-STATUS SPECIES ELIMINATED FROM CONSIDERATION

Species Name	Status*	Reason for Elimination from Consideration
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT	There is no suitable nesting habitat (i.e., dense riparian woodlands) within the Project area (Beale AFB 2019; Transcon 2019b).
Yellow-breasted chat *Icteria virens*	SSC	There is no suitable nesting habitat (i.e., dense riparian woodlands) within the Project area (Beale AFB 2019; Transcon 2019b).
Yellow warbler *Setophaga petechia*	SSC/BCC	There is no suitable nesting habitat (i.e., dense riparian woodlands, montane chaparral, or coniferous forests) within the Project area (Beale AFB 2019; Transcon 2019b).

***Status codes:** FE=Federally Endangered, FT=Federally Threatened, BCC=USFWS Bird of Conservation Concern, NSOC=National Oceanic and Atmospheric Administration Species of Concern, ST=State Threatened, SC=State Candidate, SSC=State Species of Concern. **California Rare Plant Ranking (CRPR)**: 1B.1= Plant rare, threatened, or endangered in California and elsewhere.

TABLE F-2
SPECIAL-STATUS SPECIES CONSIDERED

Species Name	Status*	Project Area Habitat Types	Areas for Potential Occurrence	Measure ID**
Plants				
Dwarf downingia *Downingia pusilla*	CRPR 2B.2	Vernal pools Vernal swales	All Project alternatives	PCM-W001 PCM-B003
Legenere *Legenere limosa*	CRPR 1B.1	Vernal pools Vernal swales	All Project alternatives	PCM-W001 PCM-B003
Invertebrates				
Valley elderberry long-horned beetle *Desmocerus californicus dimorphus*	FT	Elderberry (isolated individual shrub)	Northern Alternatives (unlikely)	PCM-B002 PCM-W002
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Wetlands—vernal pools	All Project alternatives	PCM-B003 PCM-W001
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	Wetlands—vernal pools	All Project alternatives	PCM-B003 PCM-W001
Amphibians				
Western spadefoot toad *Spea hammondii*	SSC	Annual grasslands Wetlands—seasonal Wetlands—vernal pools	All Project alternatives	PCM-B003 PCM-W001
Reptiles				
Giant garter snake *Thamnophis gigas*	FT	Agricultural lands (rice fields) Wetlands—seasonal Wetlands—freshwater marsh Waters—man-made Waters—creeks/streams	All Project alternatives	PCM-B001 PCM-W002
Western pond turtle *Emys marmorata*	SSC	Agricultural lands Annual grasslands Waters—man-made Waters—creeks/streams	All Project alternatives	PCM-B013 PCM-W001
Mammals				

TABLE F-2
SPECIAL-STATUS SPECIES CONSIDERED

Species Name	Status*	Project Area Habitat Types	Areas for Potential Occurrence	Measure ID**
Pallid bat *Antrozous pallidus*	SSC	Agricultural lands Annual grasslands Urban Waters—creeks/streams	All Project alternatives	PCM-B010
Townsend's big-eared bat *Corynorhinus townsendii*	SSC	Agricultural lands Annual grasslands Urban Waters—creeks/streams	All Project alternatives	PCM-B011
Western red bat *Lasiurus blossevillii*	SSC	Agricultural lands Annual grasslands Waters—creeks/streams	All Project alternatives	PCM-B012
Birds				
American peregrine falcon	SFP/BCC	Agricultural lands Annual grasslands Wetlands—freshwater marsh Wetlands—seasonal Waters—creeks/streams	*Nesting habitat:* None *Foraging habitat:* All Project alternatives	B-SOP-12 B-SOP-13
Bald eagle *Haliaeetus leucocephalus*	BGEPA/SE/ BCC	Annual grasslands	*Nesting habitat:* None *Foraging habitat*: All Project alternatives	PCM-B004
California black rail *Laterallus jamaicensis*	ST/FP/BCC	Wetlands—freshwater marsh Waters—man-made Waters—creeks/streams	*Nesting habitat:* None *Foraging habitat:* All Project alternatives	PCM-B006 PCM-W002
Golden eagle *Aquila chrysaetos*	BGEPA/FP/ BCC	Agricultural lands Annual grasslands	*Nesting habitat:* Southern Alternative *Foraging habitat:* All Project alternatives	B-SOP-12 B-SOP-13
Grasshopper sparrow *Ammodramus savannarum*	SSC	Agricultural lands Annual grasslands	*Nesting habitat:* All Project alternatives *Foraging habitat:* All Project alternatives	B-SOP-12 B-SOP-13
Loggerhead shrike *Lanius ludovicianus*	SSC/BCC	Agricultural lands Annual grasslands	*Nesting habitat:* All Project alternatives *Foraging habitat:* All Project alternatives	B-SOP-12 B-SOP-13

TABLE F-2
SPECIAL-STATUS SPECIES CONSIDERED

Species Name	Status*	Project Area Habitat Types	Areas for Potential Occurrence	Measure ID**
Northern harrier *Circus cyaneus*	SSC	Agricultural lands Annual grasslands Wetlands—freshwater marsh Wetlands—seasonal Waters—creeks/streams	*Nesting habitat*: All Project alternatives *Foraging habitat:* All Project alternatives	B-SOP-12 B-SOP-13
Prairie falcon *Falco mexicanus*	SWL	Agricultural lands Annual grasslands	*Nesting habitat:* None *Foraging habitat:* All Project alternatives	B-SOP-12 B-SOP-13
Short-eared owl *Asio flammeus*	SSC	Agricultural lands Annual grasslands Wetlands—freshwater marsh Wetlands—seasonal	*Nesting habitat:* All Project alternatives *Foraging habitat:* All Project alternatives	B-SOP-12 B-SOP-13
Swainson's hawk *Buteo swainsoni*	ST/BCC	Agricultural lands Annual grasslands	*Nesting habitat* All Project alternatives *Foraging habitat:* All Project alternatives	PCM-B007
Tricolored blackbird *Agelaius tricolor*	ST/BCC	Annual grassland Wetlands—freshwater marsh Wetlands—seasonal Waters—creeks/streams Waters—man-made	*Nesting habitat:* All Project alternatives *Foraging habitat:* All Project alternatives	PCM-B008 PCM-W002
White tailed kite *Elanus caeruleus*	SFP	Agricultural lands Annual grasslands Wetlands—freshwater marsh Wetlands—seasonal Waters—creeks/streams	*Nesting habitat:* None *Foraging habitat:* All Project alternatives	B-SOP-12 B-SOP-13
Western burrowing owl *Athene cunicularia*	SSC/BCC	Annual grassland Barren	*Nesting habitat:* All Project alternatives *Foraging habitat*: All Project alternatives	PCM-B005

***Status codes:** FE=Federally Endangered, FT=Federally Threatened, BCC=USFWS Bird of Conservation Concern, SE=State Endangered, ST=State Threatened, SC=State Candidate, SFP=State Fully Protected, SSC=State Species of Concern, SWL=State Watch List. **CNPS Listing**: List 1B = Plants rare, threatened, or endangered in California and elsewhere; List 2 = Plants rare, threatened, or endangered in California but more common elsewhere; Extensions: .2 = Fairly endangered in California, .1 = Seriously endangered in California

****Measures:** Full text of measures (PCMs and SOPs) are provided in Appendix D of the EA.

AQUATIC RESOURCE DELINEATION REPORT

Beale Western Area Power Administration Interconnection Project
Yuba County, California

Prepared for:

Western Area Power Administration
Sierra Nevada Region
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TRANSCON environmental

November 2019

EXECUTIVE SUMMARY

In response to an interconnection request from Beale Air Force Base for a redundant electrical transmission system, the Western Area Power Administration (WAPA) is proposing a new transmission line to connect to WAPA's Cottonwood to Roseville transmission line in Yuba County, California. A delineation of all wetlands and other potentially jurisdictional Waters of the United States has been conducted in accordance with the 2007 United States Army Corps of Engineers (USACE) Jurisdictional Determination Form Instructional Guidebook (USACE 2007), the 1987 USACE Wetland Delineation Manual, the 2008 "Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States" (Lichvar & McColley 2008), and the Interim Regional Supplement to the USACE Wetland Delineation Manual, Arid West Region (USACE 2008).

All accessible portions of the survey area were field-verified in March and October 2018. All wetlands and potentially jurisdictional waters were surveyed on foot by a qualified wetland specialist who performed all delineations, recorded relevant site information, and photographed existing site conditions.

Desktop review and field verification identified five potentially jurisdictional waters and multiple potentially jurisdictional wetland features within the 1,070-acre survey area. Approximately 24.4 acres of potentially jurisdictional waters and 147.2 acres of potentially jurisdictional wetlands were identified within the survey area.

Depending upon the selected route, approximately 480–700 square feet of permanent impacts and up to 2,016 square feet of temporary impacts to potentially jurisdictional ditches are anticipated from the installation of culverts for new access roads. If the Southern Alternative is constructed, approximately 1,306 square feet of vernal pool wetlands would be permanently removed.

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ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
CFR	Code of Federal Regulations
CWA	Clean Water Act
dbh	diameter at breast height
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GIS	Geographic Information System
GPS	Global Positioning System
kV	kilovolt
NAD	North American Datum
NL	Not Listed
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
O&M	Operations and Maintenance
OBL	Obligate
OHWM	Ordinary High Water Mark
PJD	Preliminary Jurisdictional Delineation
RWQCB	Regional Water Quality Control Board
UPL	Upland
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WAPA	Western Area Power Administration
WOTUS	Waters of the United States
YCWA	Yuba County Water Agency

SECTION 1 INTRODUCTION

1.1 Contact Information

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Folsom, California 95630
Phone: (916) 353-4526

1.2 Purpose of Assessment

On behalf of the Western Area Power Administration (WAPA) and Beale Air Force Base (AFB), Transcon Environmental, Inc. (Transcon) has prepared this aquatic resource delineation report to determine the extent of potential jurisdictional waters prior to the construction of a proposed 230-kilovolt (kV)/60-kV transmission line on Beale AFB and adjacent properties and to document the extent of potential jurisdictional waters that currently exists within and adjacent to the proposed project areas.

The purpose of this report is to: 1) delineate any potential Waters of the United States (WOTUS) subject to federal jurisdiction of the United States Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (CWA); and 2) delineate any waters of the state that may be subject to the jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the CWA.

In this report, the term “project areas” refers specifically to the proposed project footprint where the facilities may be located; “survey area” refers to a 650–800-foot-wide corridor encompassing all areas near and adjacent to the project footprint. This delineation is based on currently available data and site conditions at the time of the site visits. The results of this delineation are preliminary until verified by USACE.

1.3 Project Location

The project area is approximately 8 miles east of Marysville, California. The project area consists of three proposed alternative alignments currently under review that occur on the western portion of Beale AFB and extend west into neighboring private parcels (**Figures 1 and 2**).

1.4 Project Description

In response to an interconnection request from Beale AFB for a redundant electrical transmission system, WAPA is proposing a new transmission line to connect to WAPA’s Cottonwood to Roseville 230-kV transmission line in Yuba County, California. The Project consists of a new 230-kV/60-kV transmission line, including a new substation, that extends approximately 6 miles from its connection point at the existing Cottonwood Roseville 230-kV transmission line and terminates on-Base at an existing substation. There are no additional interrelated or interdependent actions being planned within the project area.

Alternatives

All alternative alignments begin perpendicular to the existing Cottonwood-Roseville line and continue in a nearly straight east-to-west line, following existing roadways up to the westernmost edge of Beale AFB. Off-base portions of the line are bordered by agricultural fields to the north and south. Once on-Base, the two northern alternative alignments curve to avoid Beale AFB infrastructure and runway clearances, while the southern alternative alignment stays straight until turning 90 degrees north near its eastern terminus. The Project, along all alternatives, will be constructed as 230-kV overhead, aerial lines feeding into a proposed new substation on-Base. The substation will step from 230-kV down to 60-kV and deliver electricity to Beale AFB via 60-kV lines. All off-Base portions of the Project will be overhead, aerial 230-

kV lines; once on-Base, the Project will consist of overhead 230-kV lines, underground 60-kV lines, and overhead 60-kv lines (Southern Alternative alignment only).

Ground Disturbance

Ground disturbance for all alternatives would occur from: grading construction staging areas and landing zones; grading and drilling holes for new structure foundations; constructing and improving roads for vehicle and equipment access; establishing pull sites for conductor installation; and construction of the new substation.

Permanent disturbance for this project is defined as those areas where Project facilities will be built and remain (i.e., pole foundations, new access roads, and the new substation). Temporary disturbance for this project is defined as those areas needed to construct Project facilities and any areas needed to conduct future maintenance activities (e.g., equipment staging and laydown areas, pulling and tensioning sites, etc.); these areas are expected to be disturbed in the short-term and restored to original conditions if feasible.

Construction Activities

Construction would commence after securing all required permits and land rights. Multiple crews may work simultaneously on different Project components. Construction generally would take place between 7:00am and 7:00pm, 6 days per week, except for those areas where local ordinances, traffic considerations, or permit conditions dictate otherwise, in which case working hours would be consistent with local requirements. All work will follow WAPA's Environmental Quality Protection Construction Standard and Project Conservation Measures.

Construction Staging

Temporary construction staging areas would be needed to store and stage materials, construction equipment, and vehicles. There are three existing previously disturbed locations on-Base that have been identified as candidate areas to store and stage material; additional locations will be needed and, although their exact locations have not been determined, locations would be selected that minimize ground disturbance and impacts to sensitive resources.

Access for Construction

Construction of a new transmission line requires access to each tower site for construction crews, materials, and equipment. Access to each site would be on an existing road where feasible or on new roads. Existing roads may need to be improved.

Improving existing access roads would involve grading, erosion control, and the installation of culverts or rip-rap to maintain stormwater flows within ephemeral wash areas. Lost surface material would be replaced, and the road would be graded and shaped. A motor grader is the primary equipment type used to conduct this work, but bulldozers may be used in some areas. Watering may be required to control dust and to retain fine surface rock. In determining the final location of new roads, impacts to large trees or other natural features will be minimized. New access roads would be constructed using a bulldozer or grader followed by a roller to compact and smooth the ground. Front-end loaders would be used to move the soil locally or off-site.

During the trenching on Patrol Road, temporary access may be necessary on either side of the road for vehicle and equipment passing. This temporary access will not be more than 12 feet wide and will be designed to avoid vernal pool and wetland features to the extent feasible. For those areas where avoidance of vernal pool or wetland features is not possible, weight dispersion mats will be placed over the feature and removed upon completion or work in that area. Dispersion mats will only be used during the dry season, as these areas would be completely avoided during the wet season.

After Project construction, existing and new permanent access roads would be used by maintenance crews, as well as vehicles for inspection and maintenance activities. Temporary construction roads not required for future maintenance access would be removed and restored to pre-construction condition to the extent feasible.

Overhead Transmission Line Construction

Excavation and Foundation Installation for Transmission Line Structures

Installation of structure foundations may require grading and vegetation removal. Where grading is needed, topsoil would be removed and stockpiled for use in site restoration. Temporary topsoil stockpiles would be protected from erosion during construction. Excavating transmission structure foundations is typically done with a backhoe, front-end loader, or pressure auger.

Reinforced concrete foundations would be used for most structures. After the foundation concrete is placed, a mechanical tamp would be used to re-compact soil around the foundation. The disturbed area would be re-graded so that surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation or re-seeding, provide for proper drainage, and prevent erosion.

Structure Assembly and Erection

Structure components would typically be transported to installation sites by truck or helicopter. Structures would be erected with cranes. Structure assembly equipment may include cranes (ground or helicopter), augers, bulldozers, bucket trucks, backhoes, air compressors, electric generators, pickup trucks and other vehicles, machinery, and equipment. Structures would be assembled, erected, and attached to the foundations.

Conductor Stringing

Conductor stringing would occur at designated pull and tensioning sites which would be located within the survey area. Angle-structure pull sites would require temporary easement rights if located outside the easement to pull the conductor on a straight line. The locations of pull sites depend on environmental constraints, conductor length, and equipment access.

Large reels of conductor would be transported to the staging areas or pulling sites on flatbed trucks. Other equipment would include stringing trailers, tensioning machines, pullers, bulldozers, and several trucks including a bucket truck.

Temporary stringing sheaves or travelers (pulleys) would be attached on the cross-arms of each structure at the bottom of the insulator strings. A sock line (rope or lightweight wire) would then be strung from structure to structure through the stringing sheaves. This may be completed using a helicopter. A pulling line would then be attached to the end of the sock line and pulled back through the sheaves between pull site locations. Conductor would then be strung using the pulling line.

Powered pulling equipment would be used at one end and tensioning equipment would be used at the other end to establish the proper tension and sag for crews to permanently "clip" conductors onto structure hardware, and to maintain the proper ground clearance for the conductors. After conductors are clipped in, the stringing sheaves would be removed, and the new conductor would be connected to the insulators hanging from the cross-arms. Ground wire would be installed last and would be attached to the top of the structures using a pulling technique similar to that used for the conductors.

New Substation Construction

Generally, substation construction would include site grading, property and substation fencing, and installation of electrical facilities. The site would be excavated and graded to accommodate the required construction and permanent facility buildings, equipment, and electrical structures. A fence would be erected around the substation perimeter. Up to 5 acres would be graded for the new substation. Area lighting would be provided by multiple 300-watt, tungsten-quartz lamps mounted near major electrical equipment inside the substation. Additionally, downward-oriented 100-watt, yellow flood lamps would be placed near entrances and the substation gate for night entry and would remain lit throughout the night.

Construction Equipment and Workforce

Typical quantities of personnel and equipment needed for proposed construction activities are shown in **Table 1**. The tasks would be conducted in stages; therefore, personnel and equipment would not be working on all tasks simultaneously at a given location, but there would be some overlap in tasks.

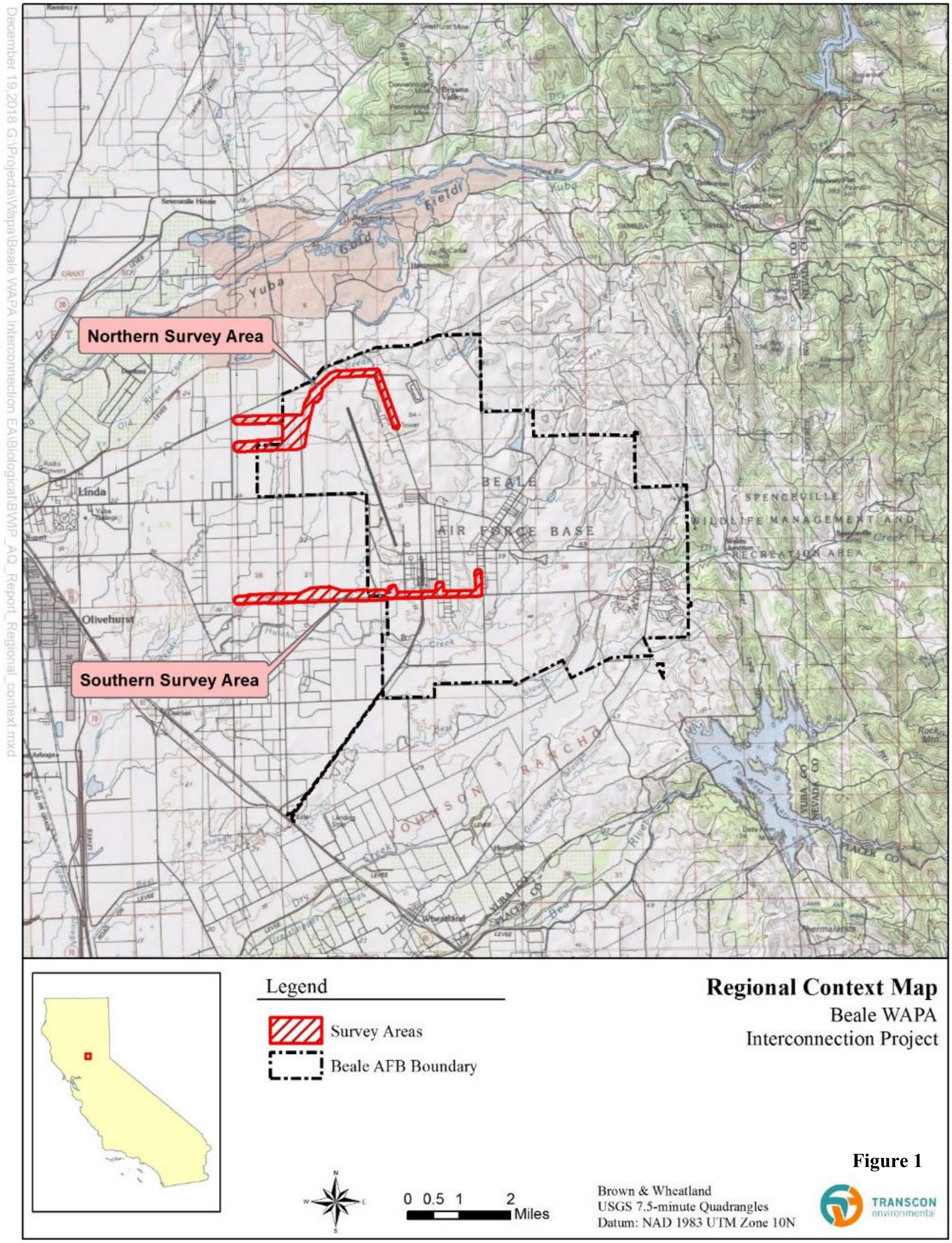
TABLE 1
PERSONNEL AND EQUIPMENT FOR CONSTRUCTION ACTIVITIES

Activity	Personnel	Equipment	
Right-of-Way (access roads and vegetation clearing)	2–4 equipment operators	1 motor grader excavator 2 pickup trucks 1 roller	2 bulldozers 1 backhoe/excavator 2 dump trucks
Excavation for foundations	4–8 laborers/equipment operators	2 augers 2 backhoes	2 pickup trucks 2 compressors
Foundation installation (anchor bolt/rebar cages)	4–6 laborers/equipment operators 3–5 ironworkers	2 flat-bed trucks 2 pickup trucks 2 air compressors 2 hydro-lifts 2 welders	2–3 mixer trucks per structure for direct-embedded foundations 10–12 mixer trucks per structure anchor bolt foundations
Structure assembly and erection	4–6 linemen/laborers and crane operators	2 hydro-cranes 2 tractors	2 manlifts 2 pickup trucks
Helicopter use	1 pilot 1 ground person fueler	Helicopter Hughes 500 Fuel truck	
Conductor stringing	20–25 linemen/groundmen	2 pullers 2 tensioners 2 bulldozers 4 reel trailers	1 materials truck 2 manlifts 5–6 pickup trucks 1 light truck
Disturbance area restoration (cleanup and revegetation)	3–6 laborers	1 bulldozer w/ ripper 1 blader 1 front-end loader	1 tractor/harrow/disc 1 light truck
Substation construction	20–40 electricians, linemen, laborers, equipment operators, and ironworkers	2 flat-bed trucks 2 bulldozers 2 cranes 2 excavators 5 pickup trucks 1 fuel truck 1 puller	1 tensioner 2 reel trailers 1 tractor 2 materials trucks 1 blader 2 mixer trucks 1 front end loader
Underground concrete bank installation	8 to 12 laborers/ equipment operators 3 to 5 ironworkers	2 flatbed trucks 1 cranes 1 excavators 2 pickup trucks	1 tractor 2 materials trucks 1 blader 2 mixer trucks

TABLE 1 PERSONNEL AND EQUIPMENT FOR CONSTRUCTION ACTIVITIES			
Activity	**Personnel**	**Equipment**	
		1 fuel truck	1 front end loader
Underground vault installation	8 to 12 laborers/ equipment operators 3 to 5 ironworkers	1 cranes 1 excavators 2 pickup trucks 1 fuel truck	1 tractor 2 materials trucks 1 blader 2 mixer trucks 1 front end loader

Operation and Maintenance (O&M)

WAPA must comply with North American Electric Reliability Corporation and Western Electricity Coordinating Council standards and requirements for transmission system reliability, including maintenance and vegetation management. In order to comply with these requirements, WAPA has a comprehensive O&M program for all of its property and facilities including transmission lines, substations, communication facilities, and legal access roads. This O&M program ensures reliability of the transmission systems and safe, all-weather access to the transmission line structures and other WAPA facilities. The O&M activities proposed for this Project would be consistent with WAPA O&M program and Beale AFB management plans for on-base portions of the Project.


December 19,2018 G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWP_AQ_Report_Regional_context.mxd
Northern Survey Area
Southern Survey Area
BEALE
AIR FORCE BASE
SPENCEVILLE
WILDLIFE MANAGEMENT AND
RECREATION AREA
Linda
Olivehurst
Wheatland
JOHNSON RANCHO
Legend
Survey Areas
Beale AFB Boundary
Regional Context Map
Beale WAPA
Interconnection Project
Figure 1
0 0.5 1 2
Miles
Brown & Wheatland
USGS 7.5-minute Quadrangles
Datum: NAD 1983 UTM Zone 10N
TRANSCON
environmental

Survey Area Map
Beale WAPA Interconnection Project
Legend
Survey Areas
Beale AFB Boundary
Roads
Northern Survey Area
Southern Survey Area
Grumman Ave
Brophy Rd
Sun Ave
Beale Rd
Patrol Rd
A Rd
Doolittle Dr
Erle Rd
Gavin Mandry Dr
14th St
Wakefield Trl
0
0.5
1
Miles
Browns Valley & Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
Figure 2
TRANSCON environmental

SECTION 2 REGULATORY FRAMEWORK

2.1 USACE/CWA Section 404

Section 404 of the CWA gives the United States Environmental Protection Agency and the USACE regulatory and permitting authority regarding discharge of dredged or filled material into "navigable waters of the United States." Section 502(7) of the CWA defines navigable waters as "Waters of the United States, including territorial seas." Section 328 of Chapter 33 in the Code of Federal Regulations (CFR) defines WOTUS as they apply to the jurisdictional limits of USACE authority under the CWA. A summary of this definition in 33 CFR 328.3 includes: 1) waters used for commerce; 2) interstate waters and wetlands; 3) "Other Waters of the United States" (other waters) such as intrastate lakes, rivers, streams, and wetlands; 4) impoundments of waters; 5) tributaries to the above waters; 6) territorial seas; and 7) wetlands adjacent to waters. For the purposes of determining USACE jurisdiction under the CWA, "navigable waters," as defined in the CWA, are the same as "Waters of the United States" as defined in the CFR above.

The limits of USACE jurisdiction under Section 404, as given in 33 CFR Section 328.4, are as follows: (a) territorial seas—3 nautical miles in a seaward direction from the baseline; (b) tidal WOTUS—high tide line or to the limit of adjacent non-tidal waters; (c) non-tidal WOTUS—ordinary high watermark (OHWM) or to the limit of adjacent wetlands; and (d) wetlands—to the limit of the wetland.

2.2 RWQCB/CWA Section 401

The RWQCB regulates activities pursuant to Section 401(a)(1) of the CWA. Section 401 of the CWA (33 U.S.C. Section 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into WOTUS to obtain certification from the state in which the discharge originates. As a result, fill proposed to be deposited in waters and wetlands requires coordination with the appropriate RWQCB that administers Section 401 and provides certification. The RWQCB also reviews water quality and wetland issues, including avoidance and minimization of impacts. Section 401 certification is required prior to issuance of a Section 404 permit.

SECTION 3 METHODOLOGY

3.1 Survey Area

The survey area, which extends between 325 and 400 feet from each proposed alternative alignment (inclusive of poles/pole foundations, underground facilities, substations, and access roads) was established to capture any potential wetlands or waters occurring within or adjacent to the Project footprint. Portions of the proposed alternatives on-Base were buffered 325 feet while those located off-Base on private parcels were buffered 400 feet. In addition, on-Base areas between where Northern Alternatives A and B diverge were also surveyed to account for any potential adjustments to either northern alternative.

The survey area is further divided between a “northern survey area” that was established around the proposed Northern Alternatives A and B and a “southern survey area” that was established around the proposed Southern Alternative (**Figure 2**), collectively referred to as the “survey areas”.

All accessible areas within the survey area were investigated on foot with the exception of several off-Base private parcels with right-of-entry access restrictions along both alternatives. Portions of the survey area with right-of-entry access restrictions were surveyed from the public right-of-way or from adjacent parcels where access was granted.

3.2 Delineation Methods

The methods used to delineate potentially jurisdictional waters and locate any other potential aquatic features (including wetlands) within the study area were based on the USACE Jurisdictional Determination Form Instructional Guidebook (USACE 2007), Wetland Delineation Manual (USACE 1987), and Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (USACE 2008).

Transcon used two methods to identify wetlands/WOTUS within the survey area:

- Existing spatial data depicting potential wetlands and waters within the study areas were identified via GIS and later investigated in the field (if accessible).
- Accessible portions of the study areas were traversed on foot and inspected for signs of wetlands and waters (i.e., changes in vegetation, depressions holding water, or channels) that may not have been apparent from existing spatial data.

3.2.1 Field Surveys

One field survey was conducted from March 12, 2018 to March 15, 2018 and another field survey was conducted on October 4, 2018 by two delineators, Benjamin Lardiere (Senior Biologist) and Molly Dodge (Senior Biologist). The delineators used Apple® iPads to record all photos, GIS data, and datasheet information. Any spatial data was collected using a sub-meter accurate Trimble® R1 GPS antenna paired to the iPad via Bluetooth technology. Spatial data and data point images were uploaded to ArcGIS Online, a secure internet-based Esri application, via ArcCollector.

3.2.2 Existing Data

Prior to conducting the field assessment, the following spatial data and literature was reviewed to determine the potential presence of jurisdictional aquatic resources:

- Current and historical aerial imagery (Google 2018; Esri 2018)
- U.S. Geological Survey (USGS) topographic maps (USGS 1973)
- National Wetland Inventory (NWI) data from the United States Fish and Wildlife Service (USFWS) (USFWS 2017)

- Soil data from the Natural Resource Conservation Service (NRCS) (NRCS 2018a)
- Existing vernal pool and wetland spatial data (for Beale AFB only) (USACE 2006). The data presented in this dataset was derived from multi-spectral imagery and LIDAR (Light Detection and Ranging) data. The data was approved by the USACE to serve as a Preliminary Jurisdictional Delineation (PJD) for aquatic resources on Beale AFB.

3.2.3 CWA "Waters of the United States"

WOTUS are defined by Title 40 of the CFR 230.3 part 230.3 and by 33 CFR 328.3 as:

- All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce
- All interstate waters, including interstate wetlands
- All impoundments of waters otherwise identified as WOTUS
- All tributaries of interstate waters or territorial seas
- All waters adjacent to identified WOTUS, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters
- All waters determined to have a "significant nexus" to a Water of the United States

The term 'significant nexus' is defined in 40 CFR 203.3 and 33 CFR 328.3 as:

> *"…a water, including wetlands, either alone or in combination with other similarly situated waters in the region, significantly affects the chemical, physical, or biological integrity of a water identified…" as a WoUS. "For an effect to be significant, it must be more than speculative or insubstantial. Waters are similarly situated when they function alike and are sufficiently close to function together in affecting downstream waters."*

Federal Register Vol. 80, No. 124
Parts 230.3 (c) and 328.3 (c). June 29, 2015.

This delineation evaluated the presence of all waters potentially subject to USACE jurisdiction under Section 404 of the CWA. Waters subject to USACE jurisdiction include lakes, rivers, and streams (including intermittent streams), in addition to all areas below the high tide line in areas subject to tidal influence. Jurisdiction in non-tidal areas extends to the OHWM, defined as:

> *"…that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."*

Federal Register Vol. 80, No. 124
Parts 230.3 (c) and 328.3 (c). June 29, 2015.

Additionally, if adjacent wetlands are present, USACE jurisdiction extends beyond the OHWM to the limit of the adjacent wetlands.

3.2.4 Ordinary High-Water Mark

Identification of the OHWM followed the USACE Regulatory Guidance Letter Number 05-05, OHWM Identification (USACE 2005) and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar & McColley 2008). Most of the survey area was accessible by foot, except for a small portion due to high waters and those that were not accessible due to right-of-entry constraints. The extent of the OHWM was determined in the field by identifying a break between upland and wetland characteristics, as identified in the Arid West Regional Supplement, and topographic information from ArcGIS software, Esri ArcMap 10.4.1, was used to extend the break throughout the entire feature.

Channel lengths were approximated along the centerline of main channel flow. Feature widths and depths are representative averages and were measured from cross channel measurements conducted with ArcGIS, general field observations, and post-field calculations. Delineations of the OHWM were conducted using handheld GPS with submeter accuracy and are an accurate representation of the OHWM at the time of survey.

3.2.5 Wetlands

In addition to WOTUS, the study area was evaluated for the presence or absence of indicators of the three wetland parameters described in the USACE manual (USACE 1987) and the Arid West Regional Supplement (USACE 2008): 1) hydrophytic vegetation, 2) wetland hydrology, and 3) hydric soils. Sections 230.3 and 328.3 of the Federal CFR define wetlands as:

> *"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."*

According to the USACE manual, for areas not considered "problem areas" or "atypical situations:"

> *"…evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination."*

Data on vegetation, hydrology, and soils collected at sample points during the site visit was reported on Wetland Determination Data—Arid West Region forms. Once an area was determined to be a potential jurisdictional wetland, its boundaries were delineated using the aforementioned GPS methodology. Indicators described in the Arid West Regional Supplement were used to make wetland determinations at each sample point in the study area and are summarized below.

On Beale AFB, wetlands previously identified in the existing Beale AFB PJD spatial data (USACE 2006) were confirmed based on the presence of both appropriate wetland plant species, wetland hydrology, and/or topography. Due to digging restrictions on Beale AFB, soil samples were not collected at any potential wetlands identified within the survey area on Beale AFB, though numerous georeferenced photos were collected.

Vegetation

This report discusses botanical species with both their scientific and common names. Plant species identified within the study area are assigned a wetland status based on the USFWS list of plant species that occur in wetlands (Lichvar and Kartesz 2009). This wetland classification system is based on the expected frequency of species occurrence in wetlands (**Table 2**).

TABLE 2 WETLAND CLASSIFICATION SYSTEM BASED ON EXPECTED FREQUENCY OF SPECIES OCCURRENCE IN WETLANDS		
Class*	**Description**	**Frequency percentage**
OBL	Occur almost always in wetlands under natural conditions	Greater than 99
FACW	Usually occur in wetlands	67 to 99
FAC	Equally likely to occur in wetlands or non-wetlands	34 to 66
FACU	Usually occur in non-wetlands	1 to 33
UPL	Occur almost always in non-wetlands under natural conditions	Less than 1
***Note:** OBL—Obligate; FACW—Facultative Wetland; FAC—Facultative; FACU—Facultative Upland; UPL—Obligate Upland		

The Arid West Regional Supplement requires a three-step process to determine if hydrophytic vegetation is present. The procedure first requires the delineator to apply the manual's 50/20 rule (Indicator 1), wherein species are chosen independently for each of the four vegetation strata: tree, sapling/shrub, herbaceous, and woody vine.[1] In general, dominant species are determined for each vegetation stratum from a sampling plot of an appropriate size surrounding the sample point. Dominants are generally the most abundant species that individually or collectively account for more than 50 percent of total vegetative cover in the stratum, plus any other species that by itself accounts for at least 20 percent of the total cover. If greater than 50 percent of the dominant species has an OBL, FACW, or FAC status, the sample point meets the hydrophytic vegetation criterion.

If the sample point fails the application of Indicator 1, and both hydric soils and wetland hydrology are absent, then the sample point does not meet the hydrophytic vegetation criterion (unless the site is a problematic wetland situation). However, if the sample point fails Indicator 1, but hydric soils and wetland hydrology are both present, the delineator must apply Indicator 2.

Indicator 2 is the Prevalence Index, which is a weighted average of the wetland indicator status for all plant species within the sampling plot. Each indicator status is given a numeric code: OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5. Application of Indicator 2 requires the delineator to estimate the percent cover of each species in every stratum of the community and sum the cover estimates for any species that are present in more than one stratum. The delineator must then organize all species into groups according to their wetland indicator status and calculate the Prevalence Index using the following formula, where "A" equals total percent cover:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

The Prevalence Index will yield a number between one and five. If the Prevalence Index is equal to or less than three, the sample point meets the hydrophytic vegetation criterion; however, if the Prevalence Index is greater than three, the delineator must proceed to Indicator 3.

[1]The tree stratum includes woody plants, excluding woody vines, approximately 20 feet or more in height and 3 inches or larger in diameter at breast height (DBH). The sapling/shrub stratum includes woody plants, excluding woody vines less than three inches DBH, regardless of height. The herb stratum includes all herbaceous (non-woody) plants, including herbaceous vines regardless of size and woody plants, except woody vines less than approximately three feet in height. The woody vine stratum includes all woody vines regardless of height (USACE 2008).

Application of Indicator 3 assesses presence of morphological adaptations. If more than 50 percent of the individuals of a FACU species have morphological adaptations for life in wetlands, that species is considered a hydrophyte and its indicator status should be reassigned to FAC. If such observations are made, the delineator must recalculate Indicators 1 and 2 using a FAC indicator status for this species. The sample point meets the hydrophytic vegetation criterion if either test is satisfied.

This three-step process was utilized to determine if sample points within the survey area met the hydrophytic vegetation criterion.

Hydrology

The USACE jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated long enough to create anoxic soil conditions during the growing season (i.e., a minimum of 14 days in the Arid West Region). Evidence of wetland hydrology can include primary indicators, such as visible inundation or saturation, drift deposits, oxidized root channels, or salt crusts; or secondary indicators such as the FAC-neutral test, the presence of a shallow aquitard, or frost-heave hummocks. The Arid West Regional Supplement contains 18 primary hydrology indicators and 9 secondary hydrology indicators. Only one primary indicator is required to meet the wetland hydrology criterion. If secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

The presence or absence of the primary or secondary indicators described in the Arid West Regional Supplement was utilized to determine if sample points within the delineation study area met the wetland hydrology criterion.

Soils

NRCS defines a hydric soil as follows:

> *"A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part."*

Vasilas et al. 2010

Soils formed over prolonged periods of time under wetland (anaerobic) conditions often possess characteristics that indicate they meet the definition of hydric soils. Hydric soils can have a hydrogen sulfide (i.e., rotten egg) odor; low chroma matrix color (0, 1, or 2); presence of redox concentrations; gleyed or depleted matrix; or high organic matter content.

Specific indicators that can be used to determine whether a soil is hydric for wetland delineation are provided in the NRCS Field Indicators of Hydric Soils in the United States (Vasilas et al. 2010). The Arid West Regional Supplement provides a list of 19 hydric soil indicators that are known to occur in the Arid West Region. Where possible, soil samples were collected and described according to the methodology provided in the Arid West Regional Supplement. Soil chroma and values were determined by utilizing a standard Munsell soil chart (Munsell 2009). Hydric soils were determined to be present if any of the soil samples met one or more of the 19 hydric soil indicators described in the Arid West Regional Supplement.

Due to digging restrictions on Beale AFB, soils were not assessed at any potential wetlands identified within the survey area on Beale AFB.

3.2.6 Areas Outside of Section 404 Jurisdiction

Some areas that meet the technical criteria for wetlands or other waters may not be jurisdictional under the CWA. Included in this category are some manmade wetlands, which are areas that have developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities.

Examples of man-induced wetlands may include, but are not limited to, irrigated wetlands, impoundments, drainage ditches excavated in uplands, wetlands resulting from filling of formerly deep-water habitats, dredge material disposal areas, and depressions within construction areas. Three settling basins and numerous agricultural ditches meet this criteria and are discussed in further detail in the Results section of this report (Section 5.4–Non-Waters of the United States).

In addition, some isolated wetlands and other waters may be considered outside of USACE jurisdiction as a result of the Supreme Court's decision in Solid Waste Agency of Northern Cook County versus USACE (531 U.S. 159 [2001]). Isolated wetlands and other waters are those areas that do not have a surface or groundwater connection, are not adjacent to a navigable "Waters of the United States," do not otherwise exhibit an interstate commerce connection.

SECTION 4 EXISTING SITE CONDITIONS

4.1 Climate

The survey area experiences a Mediterranean climate, which consists of cool, wet winters and hot, dry summers. The region experiences an average high temperature of 73 degrees Fahrenheit (F) and average low of 49 degrees F, with an average yearly precipitation of approximately 23 inches. The region (NRCS 2018b) received approximately 7 inches of rain during the 60 days prior to when the first survey was conducted (March 12 to 15, 2018), which is slightly above the average for that timeframe (6 inches) (USCD 2018). The region (NRCS 2018b) did not receive any rain during the 60 days prior to when the second survey was conducted (October 4, 2018), which is slightly below the average for that timeframe (0.40 inches) (USCD 2018). Weather during the first surveys was partly cloudy with scattered rain showers, with an average temperature of 55 degrees F. Weather during the second survey was partly cloudy, with an average temperature of 75 degrees F.

4.2 Land Use

The northern survey area begins on private parcels that consist mostly of agricultural lands (irrigated cropland for rice, alfalfa, safflower, and corn) and lightly developed residential areas. The portions of the northern survey area within Beale AFB are adjacent to but outside of the airfield area and are primarily located along sparsely developed, open grasslands and adjacent to Patrol Road and Doolittle Drive.

The southern survey area also begins on private parcels that consist of agricultural lands and lightly developed residential areas. The portions of the southern survey area within Beale AFB occur mostly on lightly developed grasslands. The southern survey area parallels Erle Road off-Base and Gavin Mandry Drive on-Base.

4.3 Landscape Setting

The survey area is located within the southeast extent of the Sacramento Valley, a northern region of California's Central Valley that lies north of the Sacramento–San Joaquin River Delta. Located less than 10 miles west of the foothills of the Sierra Nevada, the northern and southern survey areas are located approximately 3 and 6 miles south of the Yuba River, respectively. Both survey areas consist of relatively flat grasslands that range in elevation from 70 to 150 feet above sea level.

4.3.1 Vegetation Communities

The survey area is located within the Sacramento Valley Subregion of the California Floristic province. The dominant ecological systems, as mapped by the USGS National Gap Analysis Program, include California Central Valley and Southern Coastal Grassland, California Central Valley Riparian Woodland and Shrubland, and Cultivated Cropland (USGS 2017). Based on observations made in the field, vegetation communities found within the survey area are described below.

Annual Grasslands

The most commonly occurring vegetation community within the survey areas is annual grassland. This community is primarily located in the portions of the survey area within Beale AFB and on a small off-Base portion of the southern survey area along Erle Road. This community is dominated by non-native grasses and forbs including wild oat (*Avena* spp.) ripgut brome (*Bromus diandrus*), Italian ryegrass (*Lolium perennis*), soft chess (*Bromus hordeaceus*), medusahead (*Elymus caput-medusae*), foxtail barley (*Hordeum jubatum*), filaree (*Erodium* spp.), black mustard (*Brassica nigra*), and common vetch (*Vicia sativa*). Interspersed with these non-native species are native grasses and forbs that include purple needlegrass (*Stipa pulchra*), California melic (*Melica californica*), fiddleneck (*Amsinckia* spp.), doveweed

(*Eremocarpus setigerus*), lupine (*Lupinus* spp.), mariposa lily (*Calochortus* spp.) and brodiaea (*Brodiaea* spp.).

Vernal Pools

Numerous vernal pools are interspersed within the annual grasslands throughout both survey areas. These small, shallow depressions are temporary seasonal wetlands that fill with water during the rainy season and dry down during the spring and summer months. Dominant plants within these pools include coyote thistle (*Eryngium vaseyi*), white head navarretia (*Navarretia leucocephala*), Fremont's goldfields (*Lasthenia fremontii*), Carter's buttercup (*Ranunuculus bonariensis*), field owl's-clover (*Castilleja campestris*), and dwarf wooly marbles (*Psilocarphus brevissimus*).

Freshwater Marsh

Freshwater marsh habitats are present to varying degrees in both study areas, primarily on the fringes of several intermittent waterways (e.g., Reeds Creek), manmade ponds, and agricultural drainages. This community is often dominated by hydrophytic species including cattail (*Typha* spp.), bulrush (*Schoenoplectus* spp.), sedges (*Carex* spp.), and other rushes (*Juncus* spp.).

Cropland/Pasture

Cropland/pasture are present within the western portion of the survey area that is not within Beale AFB. These consist of irrigated cropland for rice, alfalfa, safflower, and corn as well as pasture lands for livestock. Grazing also occurs on the annual grasslands and vernal pools within Beale AFB.

4.3.2 Hydrology

The survey area is within the Reeds Creek (Hydrological Unit Code [HUC] 180201590302) and Hutchinson Creek (HUC 180201590301) subwatersheds, both of which are within the larger Honcut Headwaters-Lower Feather (HUC 18020159) watershed. Reeds Creek, which originates north of Beale AFB and bisects the northern survey area, generally flows southwest along the northern border of Beale AFB, flowing southwest for approximately 10 miles before it eventually empties in to the Bear River via an agricultural canal. Hutchinson Creek originates north of Beale AFB and flows south until it converges with Reeds Creek before emptying into the Bear River. There are also extensive vernal pool complexes throughout Beale AFB, many of which are within the study area.

National Wetlands Inventory

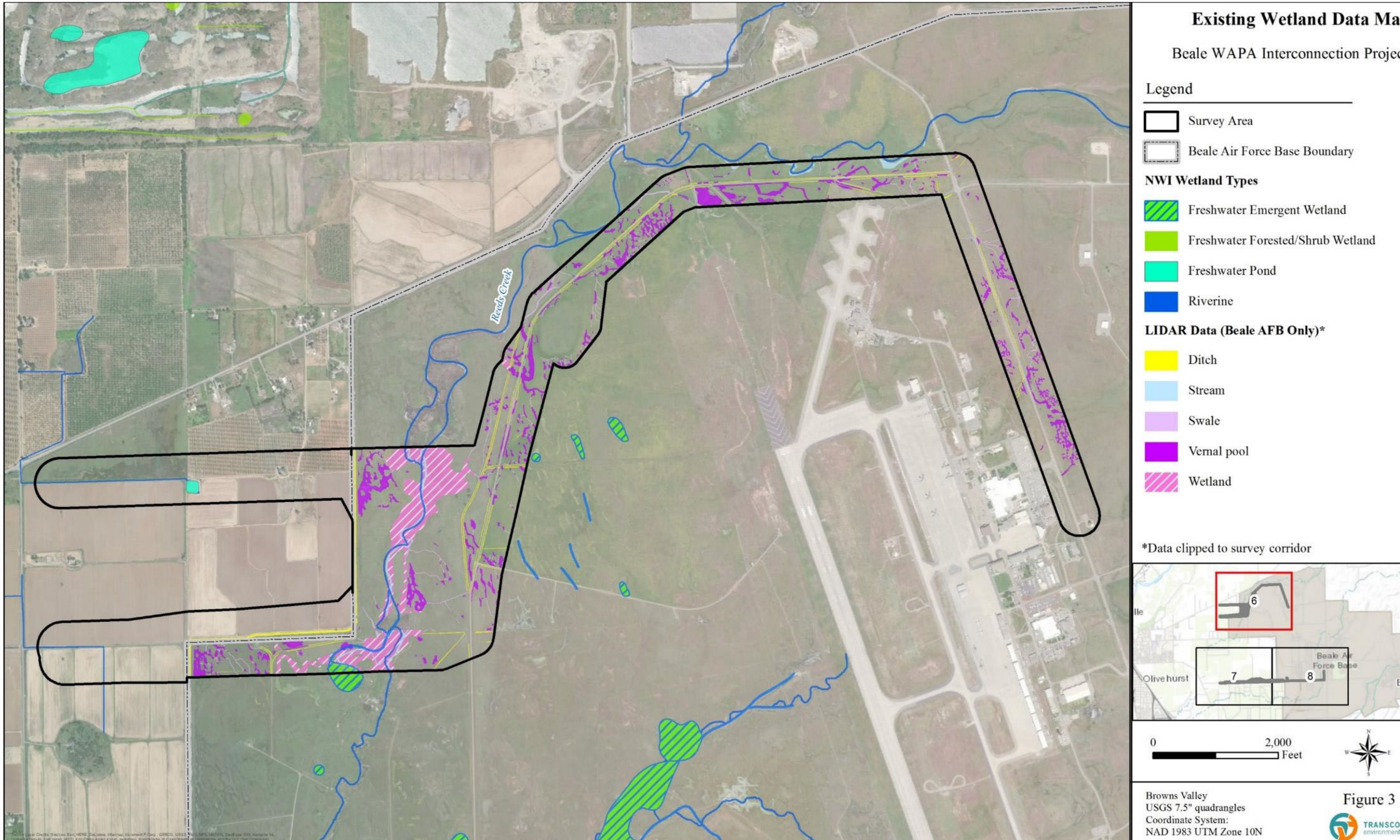
A map of the study area depicts potential wetlands using NWI data provided by the USFWS (**Figures 3, 4 and 5**) (USFWS 2017). The feature types that intersect the Project study area, as reported by NWI, are listed below (**Table 3**). Linear aquatic features shown to occur within the survey area include five intermittent riverine features.

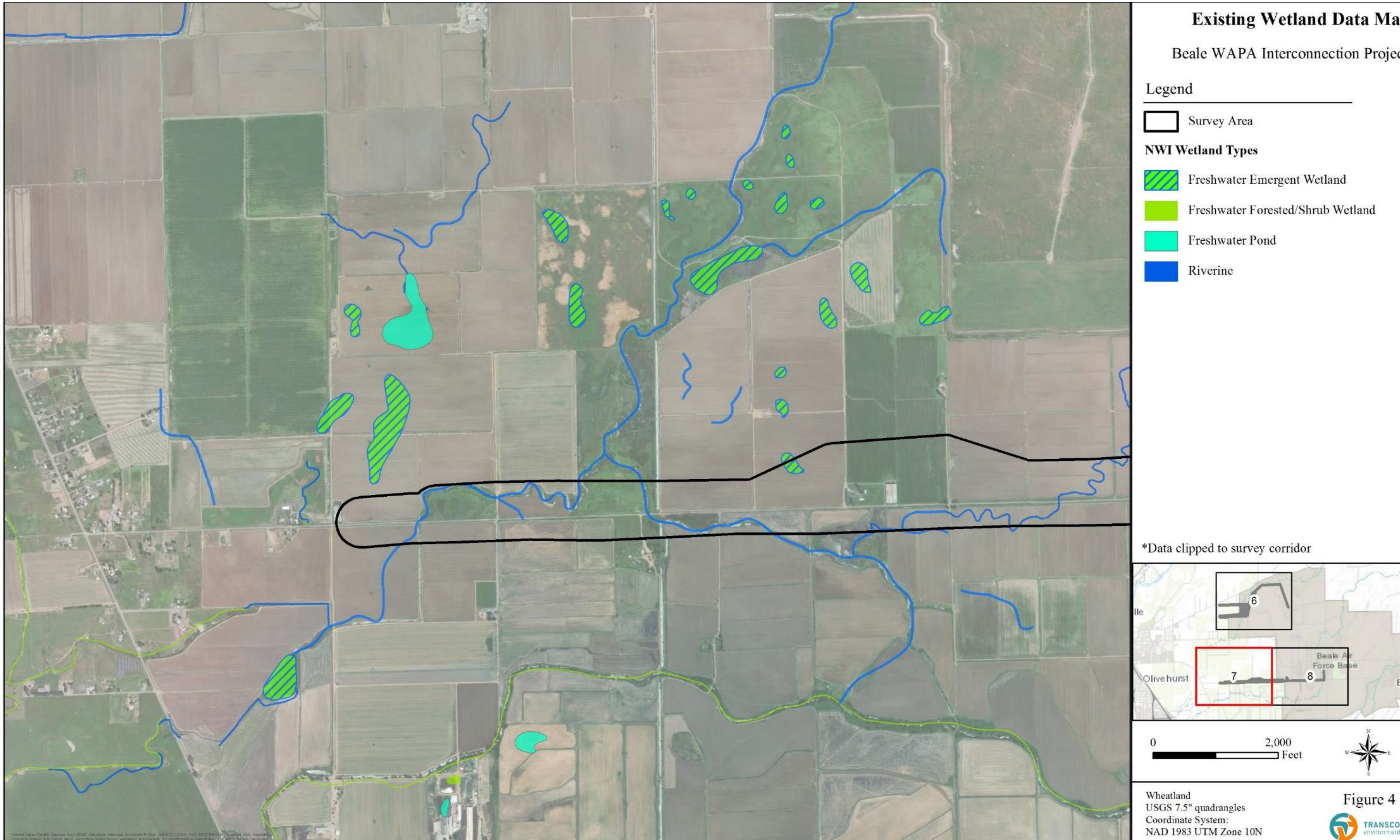
TABLE 3
NWI FEATURES WITHIN THE STUDY AREA

NWI Wetland ID	NWI Feature Type	Wetland Classification Code*	Mapped Area (Acres)
1	Freshwater Emergent Wetland	PEM	0.67
2	Freshwater Emergent Wetland	PEM1A	2.54
3	Freshwater Emergent Wetland	PEM1C	4.32
4	Freshwater Pond	PUBK	0.87

TABLE 3 NWI FEATURES WITHIN THE STUDY AREA			
NWI Wetland ID	**NWI Feature Type**	**Wetland Classification Code***	**Mapped Area (Acres)**
5	Riverine	R4SBA	2.47
6	Riverine	R4SBC	3.52
7	Riverine	R5UBF	0.04
8	Riverine	R5UBFx	1.20
		TOTAL	**15.64**

***Note:** Wetlands and Deepwater Habitats Classification (Cowardin et al. 1979): **System:** P=Palustrine, R=Riverine; **Subsystem:** 4=Lower perennial, 5=Unknown perennial; Class: EM=Emergent, SB=Streambed, UB=Unconsolidated bottom; **Subclass:** 1=Persistent; **Modifiers:** A=Temporarily Flooded, C=Seasonally Flooded, F=Semi-permanently Flooded, K=Artificially Flooded, x=Excavated


Existing Wetland Data Map
Beale WAPA Interconnection Project
Legend
Survey Area
Beale Air Force Base Boundary
NWI Wetland Types
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine
LIDAR Data (Beale AFB Only)*
Ditch
Stream
Swale
Vernal pool
Wetland
*Data clipped to survey corridor
Reeds Creek
Olivehurst
Beale Air Force Base
6
7
8
0
2,000
Feet
Browns Valley
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
Figure 3
TRANSCON environmental


Existing Wetland Data Map
Beale WAPA Interconnection Project
Legend
Survey Area
NWI Wetland Types
Freshwater Emergent Wetland
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*Data clipped to survey corridor
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Olivehurst
Beale Air Force Base
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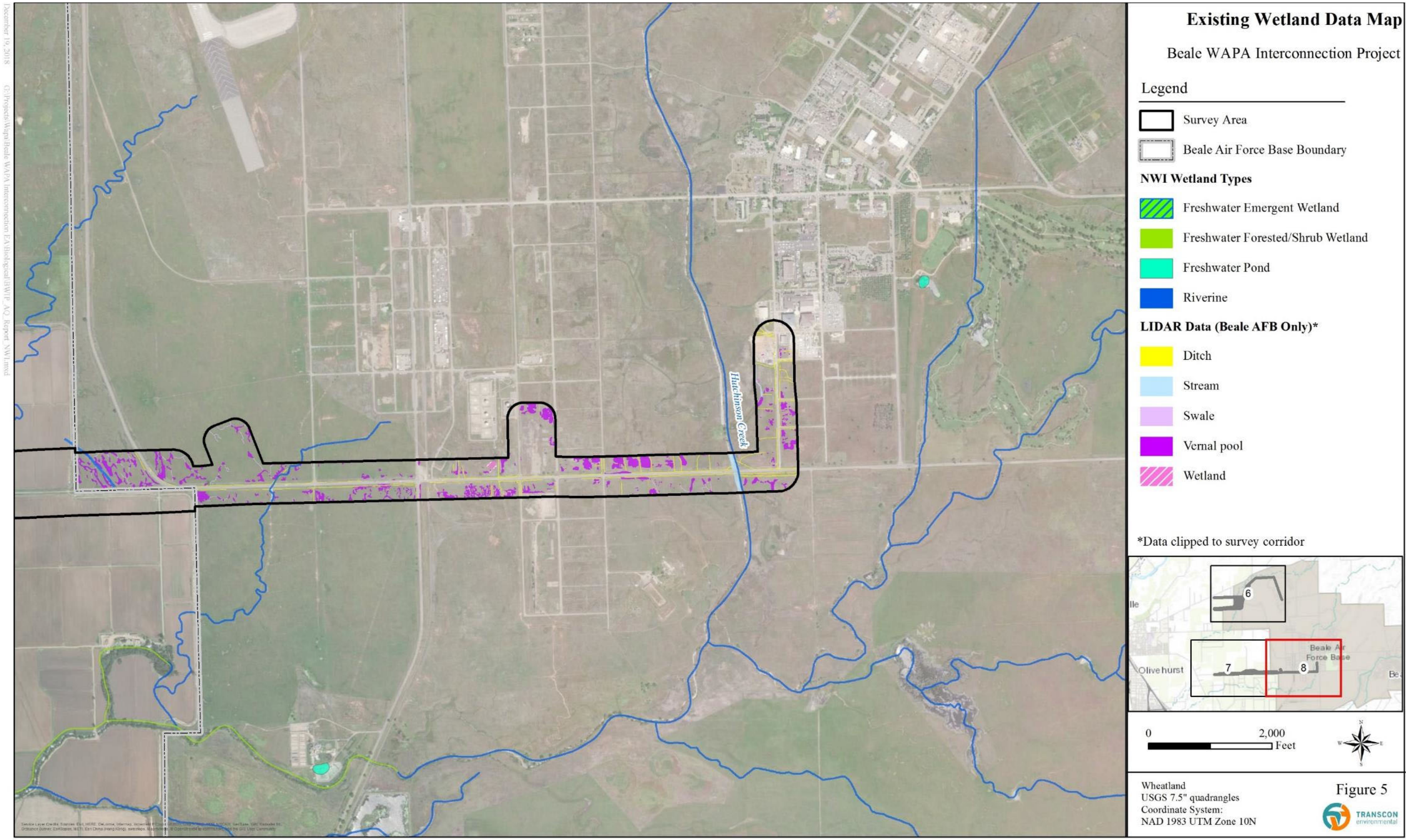
Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
Figure 4
TRANSCON environmental



Existing Wetland Data Map
Beale WAPA Interconnection Project
Legend
Survey Area
Beale Air Force Base Boundary
NWI Wetland Types
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine
LIDAR Data (Beale AFB Only)*
Ditch
Stream
Swale
Vernal pool
Wetland
*Data clipped to survey corridor
Hutchinson Creek
Olivehurst
Beale Air Force Base
6
7
8
0
2,000
Feet
Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
Figure 5
TRANSCON environmental

4.3.3 Soils

NRCS soil survey data for Yuba County, California indicated four soil types within the survey area (NRCS 2018a), including Kimball loam, Perkins loam, Redding-Corning complex, and San Joaquin loam (**Figures 6, 7, and 8**). The soil types and whether they meet the NRCS hydric soil criteria are listed below (**Table 4**).

Kimball Loam

The Kimball soils are typically found on low terraces and have slopes of 0 to 15 percent. They formed in alluvium from a variety of sources including sedimentary, meta-sedimentary, meta-basic and granitic rock. They can be found at elevations from 30 to 1,000 feet and are typically found in sub-humid climates with hot, dry summers and cool, moist winters.

Perkins Loam

Perkins soils are typically found on terraces with slopes from 0 to 30 percent but usually have slopes of less than 9 percent. They formed in alluvium from a variety of rock sources, including sedimentary, granitic, and metamorphosed acid-igneous rock at elevations between 50 and 1,700 feet in dry climates with hot, dry summers and cool, moist winters.

Redding-Corning Complex

Redding soils are typically found on nearly level or dissected fan remnants where slopes are 0 to 30 percent. They form from alluvium of mixed rocks at elevations between 40 and 2,000 feet in sub-humid climates with hot dry summers and cool moist winters. Microrelief may be hummocky, with gravel and cobbles tending to concentrate in the swales in these hummocky areas. Vernal pools are common in Redding soils with slopes of 0 to 3 percent.

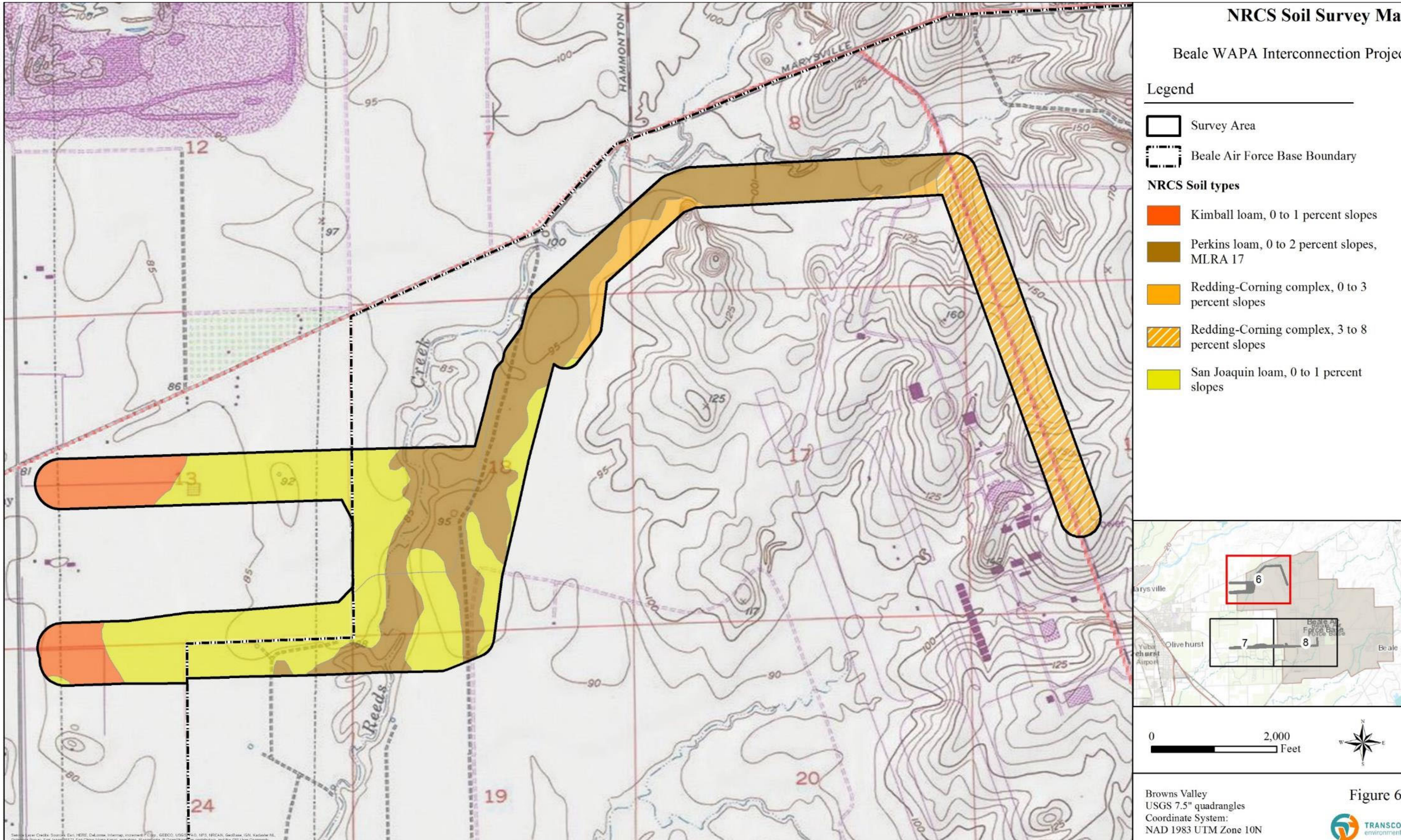
Corning soils are typically found on nearly level to gently rolling treads on high fan remnants with mound and swale microrelief and risers on fan remnants. These soils formed in gravelly alluvium derived from mixed rock sources at elevations between 75 and 1,300 feet in sub-humid climates with hot, dry summers and cool, moist winters. Slopes are 0 to 30 percent.

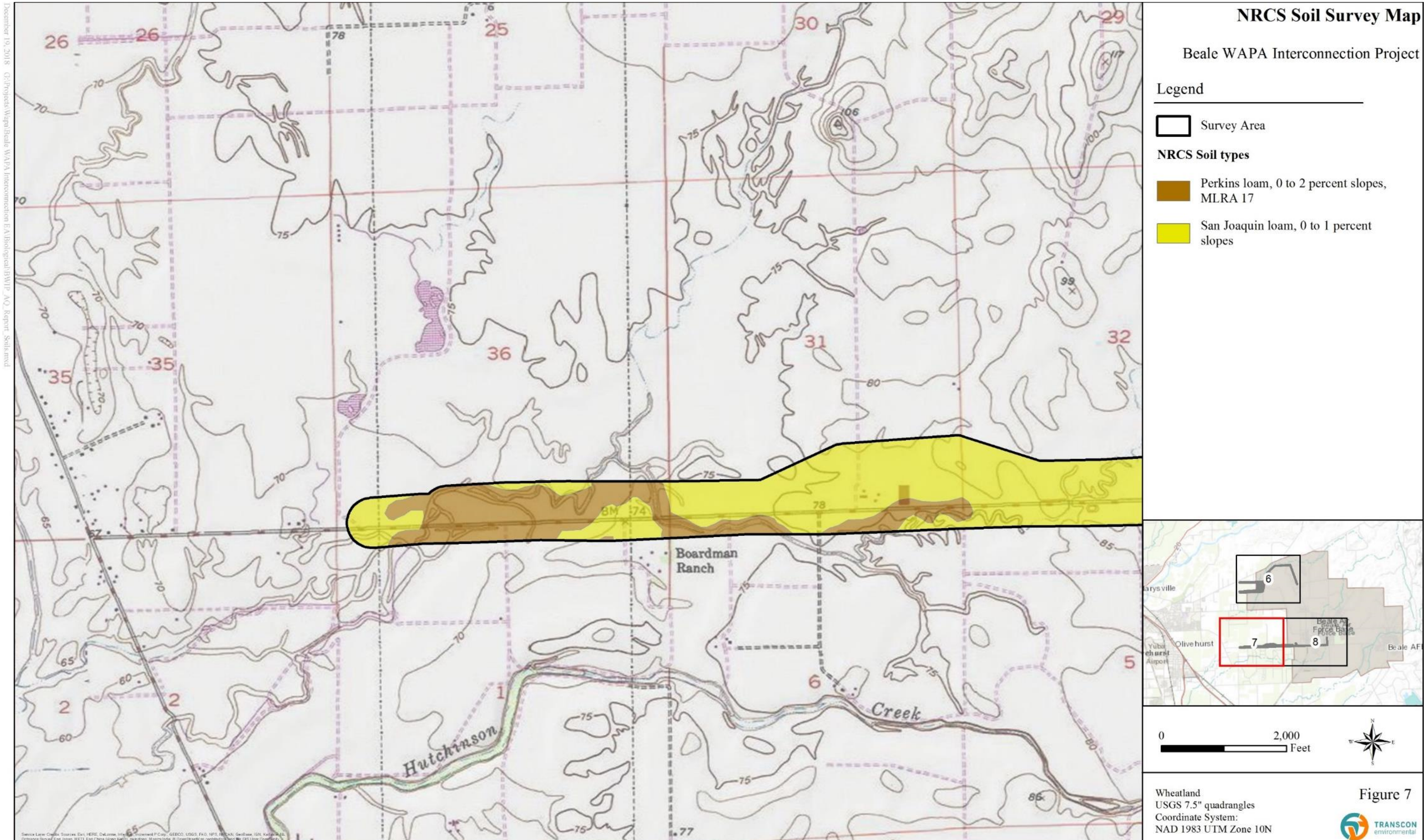
San Joaquin Loam

San Joaquin soils are typically found on hummocky, nearly level to undulating terraces at elevations of about 20 to 500 feet. They formed in alluvium from mixed but mainly granitic rock sources in dry climates with hot, dry summers and cool, moist, and foggy winters.

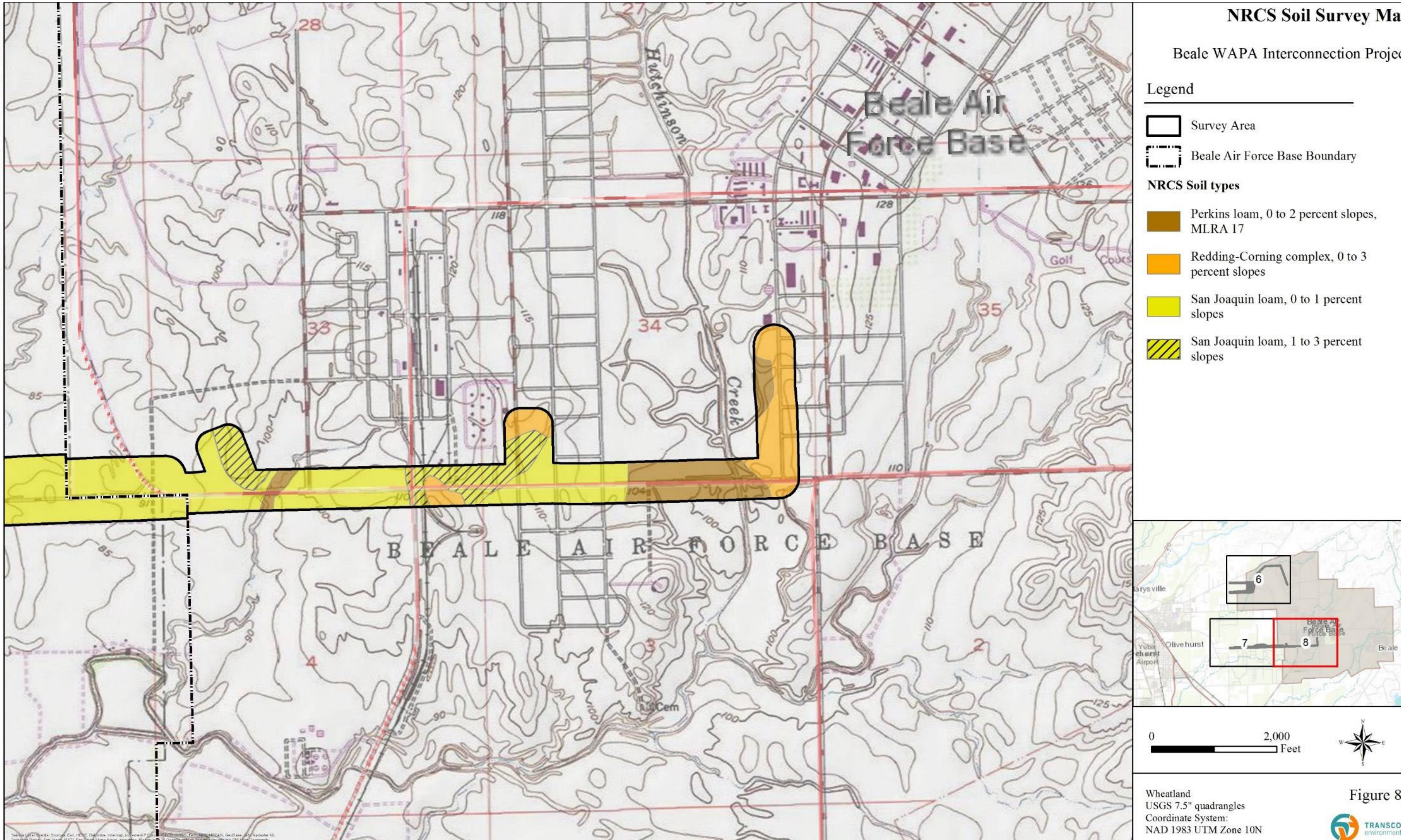
TABLE 4
NATIVE SOIL TYPES IN THE SURVEY AREA

Map Unit Name	Acres (approx.)	Percentage of Project Study Area (approx.)	NRCS Hydric Soil
Kimball loam, 0 to 1 percent slopes	62.51	5	No
Perkins loam, 0 to 2 percent slopes	375.51	30	No
Redding-Corning complex, 0 to 3 percent slopes	69.67	6	Yes
Redding-Corning complex, 3 to 8 percent slopes	94.02	8	Yes
San Joaquin loam, 0 to 1 percent slopes	613.13	49	Yes
San Joaquin loam, 1 to 3 percent slopes	35.84	3	Yes
TOTAL ACRES	**1250.68**		


NRCS Soil Survey Map
Beale WAPA Interconnection Project
Legend
Survey Area
Beale Air Force Base Boundary
NRCS Soil types
Kimball loam, 0 to 1 percent slopes
Perkins loam, 0 to 2 percent slopes, MLRA 17
Redding-Corning complex, 0 to 3 percent slopes
Redding-Corning complex, 3 to 8 percent slopes
San Joaquin loam, 0 to 1 percent slopes
0
2,000
Feet
Browns Valley
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
Figure 6
TRANSCON environmental



NRCS Soil Survey Map
Beale WAPA Interconnection Project
Legend
Survey Area
NRCS Soil types
Perkins loam, 0 to 2 percent slopes, MLRA 17
San Joaquin loam, 0 to 1 percent slopes
Boardman Ranch
Hutchinson
Creek
Olivehurst
Beale AF
0
2,000
Feet
Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
Figure 7
TRANSCON environmental



NRCS Soil Survey Map
Beale WAPA Interconnection Project
Legend
Survey Area
Beale Air Force Base Boundary
NRCS Soil types
Perkins loam, 0 to 2 percent slopes, MLRA 17
Redding-Corning complex, 0 to 3 percent slopes
San Joaquin loam, 0 to 1 percent slopes
San Joaquin loam, 1 to 3 percent slopes
Beale Air Force Base
BEALE AIR FORCE BASE
Hutchinson
Creek
0
2,000
Feet
Wheatland
USGS 7.5" quadrangles
Coordinate System:
NAD 1983 UTM Zone 10N
Figure 8
TRANSCON environmental

SECTION 5 RESULTS

5.1 Overview

The entire survey area was evaluated for the presence of jurisdictional waters and wetlands. However, due to right-of-entry access restrictions for private parcels within the survey area, only 750 acres (out of 1,251 total acres) were accessible for verification during field surveys conducted from March 12, 2018 to March 15, 2018 and October 4, 2018. Potential wetlands within accessible portions of the survey area were assessed directly in the field, via adjacent parcels, or remotely through aerial imagery. Based on the desktop review and field surveys, multiple potentially jurisdictional waters and freshwater emergent wetlands were identified within the survey area (**Appendix A**).

5.2 Other Waters of the United States

The pre-field desktop review of the survey area indicated the possible presence of seven linear aquatic features within the survey area. One intermittent waterway (Reeds Creek) was shown to intersect the northern survey area in four separate locations and four distinct intermittent waterways were shown to intersect the southern survey area. Additionally, one canal was shown to intersect the northern survey area and another canal was shown to intersect the southern survey area. Field verification, following USACE guidelines, confirmed the presence of these features and their potential status as WOTUS. No additional potential WOTUS were discovered during the field visit. Each linear aquatic feature identified within the Survey area is described in detail along with a summary of these features (**Table 5**). No project-related disturbance to these Other Waters of the US are anticipated.

5.2.1 Reeds Creek

Reeds Creek is an intermittent stream that runs in a northeast to southwesterly direction, intersecting the northern survey area at four separate locations but only intersecting the proposed Project footprint at one location. The OHWM, which was mapped using existing LIDAR data (USACE 2006) and field verified at several locations, was well-defined due to an abrupt break-in-slope and change in vegetation. Approximately 4.45 acres and 6,000 linear feet of Reeds Creek was mapped within the northern survey area. The width of the stream, as measured from the bank to bank OHWMs, ranges from 20 to 130 feet. The height of the banks, as measured at the OHWM, vary throughout the survey area from 2 to 5 feet. During the field survey, flowing water was present in Reeds Creek, and the depth of water varied from 0.5 to 3 feet. The substrate of Reeds Creek primarily consists of medium to small-sized cobble (less than 6 inches in diameter) and silty-clay substrate.

Reeds Creek has little to no transitional woody riparian plant species along its banks. The banks are mostly dominated by plant species similar to the surrounding annual grasslands, including wild oat, Italian ryegrass, foxtail barley, filaree, and black mustard. However, when the floodplain broadens and the channel becomes more sinuous in the western portion of the survey area, the banks of Reeds Creek are often dominated by Pacific rush (*Juncus effusus*). Shallow portions of the channel are dominated by emergent vegetation such as mannagrass (*Glyceria* spp.) while deeper parts of the channel are dominated by patches of emergent vegetation such as bulrush, cattail, and sedges (*Cyperus* spp.). Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch (*Vicia* spp.), and black mustard.

Due to the presence of flowing water during the field visit and the fact that it is a tributary to the Bear River, itself a tributary to the Feather River (which subsequently empties into the Sacramento River delta system), Reeds Creek displays evidence of a significant nexus to the Sacramento River and likely falls under the jurisdiction of the USACE and RWQCB.

5.2.2 Hutchinson Creek

Hutchinson Creek is an intermittent stream that runs in a northeast to southwesterly direction, intersecting the southern survey area and proposed Project footprint at one location. The OHWM, which was mapped using existing LIDAR data (USACE 2006) and field verified, was well-defined due to an abrupt break-in-slope and change in vegetation. Approximately 1.12 acres and 660 linear feet of Hutchinson Creek was mapped within the southern survey area. The width of the stream, as measured from the bank to bank OHWMs, ranges from 60 to 80 feet. The height of the banks, as measured at the OHWM, averages 10 feet within the survey area. During the field survey, flowing water was present in Hutchinson Creek, and the depth of water was approximately 3 feet. The substrate of Hutchinson Creek primarily consists of medium to small-sized cobble (less than 6 inches in diameter) and silty-clay substrate.

Within the survey area, Hutchinson Creek has little to no transitional woody riparian plant species along its banks. Instead, the banks are mostly dominated by plant species similar to the surrounding annual grasslands including wild oat, Italian ryegrass, foxtail barley, filaree, and black mustard. Shallow portions of the channel are dominated by emergent vegetation such as mannagrass. Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard.

Due to the presence of flowing water during the field visit and the fact that it eventually empties into the Bear River, itself a tributary to the Feather River (which subsequently empties into the Sacramento River delta system), Hutchinson Creek displays evidence of a significant nexus to the Sacramento River and likely falls under the jurisdiction of the USACE and RWQCB.

5.2.3 Intermittent Stream S1

An unnamed intermittent stream (Stream S1) intersects the southern survey area and proposed Project footprint at one location (39.100595°N, -121.481271°W). Stream S1 runs in a northeast to southwesterly direction, crossing Erle Road beneath a two-lane bridge. The OHWM, which was mapped in the field with a sub-meter-accurate GPS antenna, was well-defined due to an abrupt break-in-slope and change in vegetation. Approximately 4.85 acres and 4,300 linear feet of Stream S1 was mapped within the southern survey area. The width of the stream, as measured from the bank to bank OHWMs, ranges from 20 to 60 feet. The height of the banks, as measured at the OHWM, averages 10 feet within the survey area. During the field survey, flowing water was present in Stream S1, and the depth of water was approximately 3 to 4 feet. Stream S1 primarily has a silty-clay substrate with occasional medium to small-sized cobble (less than 6 inches in diameter).

Within the survey area, the banks of Stream S1 are mostly dominated by Himalayan blackberry (*Rubus armeniacus*), Pacific rush, sedges, black mustard, and other native and non-native grasses and forbs. In-channel vegetation includes patches of emergent vegetation such as bulrush and cattails. Adjacent upland habitats consist of ruderal weeds and agricultural cropland.

Due to the presence of flowing water during the field visit and the fact that it is a tributary to Reeds Creek (which subsequently empties into the Bear River and Sacramento River delta system), Stream S1 displays evidence of a significant nexus to the Sacramento River and likely falls under the jurisdiction of the USACE and RWQCB.

5.2.4 Intermittent Stream S2

An unnamed intermittent stream (Stream S2) intersects the southern survey area and proposed Project footprint at one location (39.100882°N, -121.468854°W). Stream S2 runs in an east to westerly direction, crossing Erle Road beneath a two-lane bridge before joining up with Stream S1. The OHWM, which was mapped via desktop and in the field (when accessible) with a sub-meter-accurate GPS antenna, was well-defined due to an abrupt break-in-slope and change in vegetation. Approximately 2.36 acres and 2,140 linear feet of Stream S2 was mapped within the southern survey area. The width of the stream, as measured from the bank to bank OHWMs, averages 30 feet. The height of the banks, as measured at the OHWM, averages 5 feet within the survey area. During the field survey, flowing water was present in Stream S2, and the depth of water was approximately 3 feet. Stream S2 primarily has a silty-clay substrate with occasional medium to small-sized cobble (less than 6 inches in diameter). Within the survey area, the banks of Stream S2 are mostly dominated by Himalayan blackberry, Pacific rush, sedges, black mustard, and other native and non-native grasses and forbs. In-channel vegetation includes patches of emergent vegetation such as bulrush and cattails. Adjacent upland habitats consist of ruderal weeds and agricultural cropland.

Due to the presence of flowing water during the field visit and the fact that it is a tributary to Reeds Creek (which subsequently empties into the Bear River and Sacramento River delta system), Stream S2 displays evidence of a significant nexus to the Sacramento River and likely falls under the jurisdiction of the USACE and RWQCB.

5.2.5 Intermittent Stream S3

An unnamed intermittent stream (Stream S3) intersects the southern survey area and proposed Project footprint at one location (39.100441°N, -121.426682°W). Stream S3 runs in a north to southerly direction, crossing Gavin Mandry Drive via a culvert. The OHWM, which was mapped via desktop and in the field (when accessible) with a sub-meter-accurate GPS antenna, was well-defined due to an abrupt break-in-slope. Approximately 0.14 acre and 250 linear feet of Stream S2 was mapped within the southern survey area. The width of the stream, as measured from the bank to bank OHWMs, averages 15 feet. The height of the banks, as measured at the OHWM, averages 3 feet within the survey area. During the field survey, flowing water was present in Stream S3, and the depth of water was approximately 1 foot. Stream S3 primarily has a silty-clay substrate with occasional medium to small sized-cobble (less than 6 inches in diameter). The banks of Stream 3 are mostly dominated by native and non-native grasses and forbs. Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard.

Based on aerial imagery and field conditions at the time of the survey, Stream 3 intersects the eastern berm of an unnamed agricultural canal (39.094810°N, -121.431042°W) and flows south until it empties into Hutchinson Creek. As Hutchinson Creek eventually empties into the Bear River (which subsequently empties into the Sacramento River delta system), Stream S3 displays evidence of a significant nexus to the Sacramento River and likely falls under the jurisdiction of the USACE and RWQCB.

5.2.6 Agricultural Canals

Approximately 6.8 acres of canals intersect both the northern and southern survey areas in three separate locations. Generally flowing north to south, the Yuba County Water Agency (YCWA) South Canal intersects the northern survey area at coordinates (39.150888°N, -121.467747°W) and (39.144502° N, -121.467569°W) and the southern survey area at coordinates (39.100208°N, -121.468188°W). Additionally, the Yuba-Wheatland Canal parallels the southern survey area for approximately 2,000 feet from 39.100489°N, -121.438148°W to 39.100621°N, -121.431120°W.

The OHWM, which was mapped via desktop and in the field (when accessible) with a sub-meter-accurate GPS antenna, was well-defined due to an abrupt break-in-slope. Approximately 6.78 acres and 9,228 linear feet of agricultural canals was mapped within the northern and southern survey areas. The width of the canals, as measured from the bank to bank OHWMs, averages 30 feet. The height of the banks, as measured at the OHWM, averages 3 feet within the survey area. During the field survey, flowing water was present in all the canals and the depth of water was approximated to be 4 feet. The canals appear to have a variety of substrate materials including concrete, rip-rap, and natural silt-clay. The banks of the canals are mostly dominated by non-native grasses and forbs. Adjacent upland habitats mostly consist of croplands and occasional annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard.

Based on aerial imagery, field conditions at the time of the survey, and YCWA documents (YCWA 2015), the YCWA South Canal receives inflows from the Yuba River to the north and distributes water to agricultural fields south of Beale AFB as well as outflows to Reeds Creek. The Yuba-Wheatland Canal receives Yuba River water via the YCWA South canal and distributes water to agricultural fields to areas south of Beale AFB as well as outflows to Hutchinson Creek. As Reeds Creek and Hutchinson Creek both eventually empty in to the Bear River (which subsequently empties into the Sacramento River delta system), and the canals display perennial flows, these agricultural canals display evidence of a significant nexus to the Sacramento River and an indirect connection to interstate commerce. As such, these canals likely fall under the jurisdiction of the USACE and RWQCB.

TABLE 5 LINEAR AQUATIC FEATURES										
Feature Name	**Latitude/Longitude (Decimal Degrees)**	**Periodicity**	**OHWM**	**Sediment Transport**	**Connection to Water Body**	**Distinct Banks/ Channelization**	**Additional Notes**	**Average Linear Width (Bank to Bank)**	**Linear Length within Study Area (Feet)**	**Acreage within Survey Area (Acres)**
Reeds Creek	[39.144400°N, -121.465431°W], [39.161579°N, -121.452956°W], [39.164010°N, -121.445798°W], [39.163697°N, -121.441946°W], [39.164038°N, -121.437161°W]	Intermittent	Yes	Yes	Yes	Yes	This waterway appears to have intermittently flowing water during certain times of the year. Flowing water was observed during the field visit and aerial imagery shows the waterway to have surficial connectivity to the Sacramento River.	75	6000	4.45
Hutchinson Creek	[39.100792°N -121.400187°W]	Intermittent	Yes	Yes	Yes	Yes	This waterway appears to have intermittently flowing water during certain times of the year. Flowing water was observed during the field visit and aerial imagery shows the waterway to have surficial connectivity to the Sacramento River.	70	660	1.12
Stream S1	[39.100595°N, -121.481271°W]	Intermittent	Yes	Yes	Yes	Yes	This waterway appears to have intermittently flowing water during certain times of the year. Flowing water was observed during the field visit and aerial imagery shows the waterway to have surficial connectivity to the Sacramento River.	40	4300	4.85

TABLE 5 LINEAR AQUATIC FEATURES										
Feature Name	**Latitude/Longitude (Decimal Degrees)**	**Periodicity**	**OHWM**	**Sediment Transport**	**Connection to Water Body**	**Distinct Banks/ Channelization**	**Additional Notes**	**Average Linear Width (Bank to Bank)**	**Linear Length within Study Area (Feet)**	**Acreage within Survey Area (Acres)**
Stream S2	[39.100882°N, -121.468854°W]	Intermittent	Yes	Yes	Yes	Yes	This waterway appears to have intermittently flowing water during certain times of the year. Flowing water was observed during the field visit and aerial imagery shows the waterway to have surficial connectivity to the Sacramento River.	30	2140	2.36
Stream S3	[39.100441°N, -121.426682°W]	Intermittent	Yes	Yes	Yes	Yes	This waterway appears to have intermittently flowing water during certain times of the year. Flowing water was observed during the field visit, but it is not apparent whether this waterway has surficial connectivity to a WOTUS.	15	250	0.14
YCWA South Canal (Northern Survey Area)	[39.143885° N, -121.472940°W]	Perennial	Yes	Yes	Yes	Yes	This waterway appears to have perennially flowing water. Flowing water was observed during the field visit, but it is not apparent whether this waterway has surficial connectivity to a WOTUS.	30	4351	2.96
YCWA South Canal (Southern Survey Area)	[39.100212° N, -121.468197°W]	Perennial	Yes	Yes	Yes	Yes	This waterway appears to have perennially flowing water. Flowing water was observed during the field visit, but it is not apparent whether this waterway has surficial connectivity to a WOTUS.	30	3842	2.97

TABLE 5 LINEAR AQUATIC FEATURES										
Feature Name	**Latitude/Longitude (Decimal Degrees)**	**Periodicity**	**OHWM**	**Sediment Transport**	**Connection to Water Body**	**Distinct Banks/ Channelization**	**Additional Notes**	**Average Linear Width (Bank to Bank)**	**Linear Length within Study Area (Feet)**	**Acreage within Survey Area (Acres)**
Yuba-Wheatland Canal	[39.100889° N, -121.438196°W]	Perennial	Yes	Yes	Yes	Yes	This waterway appears to have perennially flowing water. Flowing water was observed during the field visit, but it is not apparent whether this waterway has surficial connectivity to a WOTUS.	30	1035	0.85
								TOTALS	22,578	19.70

5.3 Wetlands

The pre-field desktop review indicated the potential presence of multiple freshwater emergent wetlands throughout the study area. The majority of these wetlands were located on Beale AFB; were evident from the LIDAR data (USACE 2006); and were categorized as vernal pools, swales, wetlands, or ditches. During the field visit, many of these wetlands on-Base were confirmed through visual inspection. Due to the high number of these wetlands and limitations on ground disturbance on Beale AFB (i.e., digging restrictions), sampling site data was not collected for those wetlands already mapped via the LIDAR data.

During the field visit, there were also several areas identified within the survey area that exhibited potential wetland characteristics (based on vegetation, soil, and hydrology assessments following USACE guidelines) that were not evident from the pre-field desktop review. The edges of these wetlands were delineated visually based on vegetation type and/or topography and, if possible, were confirmed from soil samples collected at the sampling sites. Partial sampling site data (no soil pits due to digging restrictions) was collected for 17 wetland features (16 vernal pools and 1 swale) that were identified within the survey area on-Base.

The Wetland Determination Data Forms in **Appendix B** document plant species and percentages, soil profile descriptions, hydric soil indicators, and wetland hydrology indicators for sampling points. A summary of the wetlands located within the Survey area is provided below (**Table 6**), and representative photos of the wetlands are included in **Appendix A**.

5.3.1 Vernal Pools

Vernal pools—seasonal freshwater wetlands—were the most abundant wetland type encountered in the survey area, accounting for nearly 64 acres. Dominant vegetation at the time of the surveys consisted mostly of OBL and FACW plant species including Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*), pale spikerush (*Eleocharis macrostachya*), coyote thistle, and winged water starwort (*Callitriche marginata*). Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard. The vast majority (greater than 90 percent) of vernal pools were inundated at the time of the surveys and averaged 6 inches in depth.

The majority of the vernal pools within the survey area were primarily mapped using pre-existing spatial data (USACE 2006) that was confirmed in the field. Field work included confirmation of the presence of both appropriate vernal pool plant species, vernal pool hydrology, and/or topography. Sampling points were not taken due to ground disturbance restrictions on Beale AFB, though numerous georeferenced photos of vernal pools were taken (**Appendix A**). Sixteen potential vernal pools not mapped by the LIDAR data, ranging from 40 square feet to 0.1 acre in size, were documented within the survey area. Each pool was delineated based on hydrology and topography, and partial sampling site data (hydrology & plant species data) was collected for the majority of them.

Many of these vernal pools have surficial connection to one another by swales and ditches (and likely via subsurface hydrology as well). Many of the vernal pools, swales, and ditches in this system are also hydrologically linked to at least one of the aforementioned Other WOTUS (e.g., Reeds Creek) that are likely jurisdictional waters. As such, the majority of the vernal pools within the survey area likely fall under the jurisdiction of the USACE and RWQCB.

5.3.2 Swales

Swales, another type of seasonal freshwater wetland, accounted for nearly 8.45 acres of the survey area. Swales connect and channel water to and from adjacent vernal pools but are typically shallower and experience shorter periods of inundation. Dominant vegetation at the time of the surveys consisted of a combination of OBL, FACW, FAC, and UPL plant species such Carter's buttercup, coyote thistle, Italian ryegrass, Fremont's tidy-tips (*Layia fremontii*), and butter-and-eggs (*Triphysaria eriantha*). Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard. The majority of the swales were inundated at the time of the surveys, with depths averaging 3 to 6 inches.

The swales identified within the survey area were primarily mapped using pre-existing spatial data (USACE 2006) that was confirmed in the field. Field work included confirmation of the presence of both appropriate plant species, hydrology, and/or topography. Sampling points were not taken due to ground disturbance restrictions on Beale AFB, though numerous georeferenced photos of the swales were taken (**Appendix A**). One swale (0.04 acre) not mapped by the LIDAR data was documented within the southern survey area. The swale was delineated based on hydrology and topography, and partial sampling site data (hydrology & plant species data) was collected.

As previously stated, many of the swales within the survey area are hydrologically linked to at least one of the aforementioned Other WOTUS (e.g., Reeds Creek) that are likely jurisdictional waters. As such, the majority of the swales within the survey area likely fall under the jurisdiction of the USACE and RWQCB.

5.3.3 Ditches

Another type of manmade seasonal freshwater wetland, hereafter referred to as "ditches," accounts for approximately 16.06 acres of the survey area. Originally mapped using LIDAR (USACE 2006), these ditches occur throughout the Survey area on Beale AFB and are linear depressional features typically associated with roadsides and other historic manmade earthen features (e.g., berms). These ditches display similar characteristics to the swale features described above, with a mixture of OBL, FACW, FAC, and UPL plant species such Carter's buttercup, coyote thistle, Italian ryegrass, Fremont's tidy-tips, and butter-and-eggs. Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard. The majority of the ditches were inundated at the time of the surveys, with depths averaging 3 to 6 inches.

The majority of the ditches within the survey area were primarily mapped using pre-existing spatial data (USACE 2006) that was confirmed in the field. Field work included confirmation of the presence of both appropriate plant species, hydrology, and/or topography. Sampling points were not taken due to ground disturbance restrictions on Beale AFB, though numerous georeferenced photos of ditches were taken (**Appendix A**).

As previously stated, many of the ditches within the survey area are hydrologically linked to at least one of the aforementioned Other WOTUS (e.g., Reeds Creek) that are likely jurisdictional waters. As such, the majority of the ditches within the survey area likely fall under the jurisdiction of the USACE and RWQCB. Approximately 300–480 square feet (depending on project alternative) of project impacts to these ditches are anticipated from the installation of culverts for new access roads.

5.3.4 Wetlands—Reeds and Hutchinson Creeks

Approximately 42.91 acres of wetlands were identified in the floodplains associated with Reeds and Hutchinson Creeks, occupying the lowlands immediately adjacent to the creeks. The dominant vegetation of these wetlands includes Pacific rush, Baltic rush (*Juncus balticus*), bulrush, and cattails interspersed with native and non-native grasses and forbs. Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard. The wetlands are likely intermittently flooded or saturated as the majority of them were inundated (hydrology indicator A1) at the time of the field surveys to depths between 6 to 12 inches.

These wetlands were mapped using pre-existing spatial data (USACE 2006) that was confirmed in the field. Field work included confirmation of the presence of both appropriate wetland plant species, hydrology, and/or topography. Sampling points were not taken due to ground disturbance restrictions on Beale AFB, though numerous georeferenced photos of these wetlands were taken (**Appendix A**).

As these wetlands are hydrologically linked to their respective intermittent creeks (Reeds and Hutchinson Creeks) that are likely jurisdictional waters, these wetlands likely fall under the jurisdiction of the USACE and RWQCB.

5.3.5 Wetlands—Stream S1

Approximately 4 acres of wetlands (five distinct wetlands) were identified in the floodplain associated with Stream S1, occupying both the lowlands and upper terrace immediately adjacent to the waterway. Three of the wetlands were mapped during the field survey while two wetlands on inaccessible properties were mapped via desktop and distant field observations. The dominant vegetation of these wetlands includes Pacific rush, sedges, bulrush, and cattails interspersed with native and non-native grasses and forbs. Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard. The wetlands are likely intermittently flooded, as the majority of them were inundated or saturated (hydrology indicators A1 or A3) at the time of the field surveys at depths between 0 to 6 inches.

Four sampling points (S1W, S1U, S2W, and S2U) and associated soil samples were taken for two of the Stream S1 wetland features. Sampling points S1W and S2W were both within identified wetlands and exhibited signs of hydrophytic vegetation (i.e., Pacific rush, Baltic rush), hydric soil indicators (depleted matrix [F3]), and wetland hydrology indicators (surface water [A1], high water table [A2], saturation [A3], and/or inundation visible on aerial imagery [B7]). Additional sampling sites were not deemed necessary due to obvious differences in topography and between upland and wetland vegetation types.

As these wetlands are hydrologically linked to Stream S1, which is likely a jurisdictional water due to its connectivity with Reeds Creek (which subsequently empties into the Feather River and Sacramento River delta system), these wetlands likely fall under the jurisdiction of the USACE and RWQCB.

5.3.6 Wetlands—Stream S2

Approximately 10.24 acres of wetlands (four distinct wetlands) were identified in the floodplain associated with Stream S2, occupying both the lowlands and upper terrace immediately adjacent to the waterway. All of these wetlands were mapped via desktop and distant field observations due to inaccessibility at the time of the survey. The dominant vegetation of these wetlands includes Pacific rush, sedges, bulrush, and cattails interspersed with native and non-native grasses and forbs. Adjacent upland habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, and black mustard. The wetlands are likely intermittently or permanently flooded, as the majority of them appeared inundated or saturated (hydrology indicators A1 or A3) at the time of the field surveys. No sampling points were collected at any of these wetlands as they were all located on private parcels with access restrictions.

As these wetlands are hydrologically linked to Stream S2, which is likely a jurisdictional water due to its connectivity with Reeds Creek (which subsequently empties into the Feather River and Sacramento River delta system), these wetlands likely fall under the jurisdiction of the USACE and RWQCB.

TABLE 6 WETLAND FEATURES IDENTIFIED WITHIN THE SURVEY AREA					
Delineated Wetland	**Wetland Type**	**Wetland Classification Code** *	**Mapped Area (acres)**	**Potential Temporary Disturbance (acres)**	**Potential Permanent Disturbance (acres)**
Vernal Pools	Freshwater Emergent Wetland	PEM2E	63.94	0	0.03**
Swales	Freshwater Emergent Wetland	PEM2C	8.45	0	0
Ditches	Freshwater Emergent Wetland	PEM2C	16.06	0.05	0.02
Wetlands (Reeds Creek)	Freshwater Emergent Wetland	PEM1A	42.53	0	0
Wetlands (Hutchinson Creek)	Freshwater Emergent Wetland	PEM1A	0.38	0	0
Wetlands (Stream S1)	Freshwater Emergent Wetland	PEM1C	4.00	0	0
Wetlands (Stream S2)	Freshwater Emergent Wetland	PEM1C	10.24	0	0
		TOTALS	**145.52**	**0.05**	**0.05**

***Note:** Wetlands and Deepwater Habitats Classification (Cowardin et al. 1979): **System:** P=Palustrine; **Class:** EM=Emergent; **Subclass:** 1=Persistent, 2=Non-Persistent; **Modifiers:** A=Temporarily Flooded, C=Seasonally Flooded, E=Seasonally Flooded/Saturated
**Permanent impacts related to the Southern Alternative only.

5.4 Non-Waters of the United States

The following aquatic features were identified within the survey area but are potentially excluded from regulation under the CWA for reasons addressed here (**Table 7**).

5.4.1 Agricultural Ditches

Approximately 12.49 acres of agricultural ditches were mapped within the survey area, all of which are located on private properties off-Base. These ditches are all located adjacent to existing agricultural fields and/or Erle Road. The dominant vegetation of these ditches includes a mix of sedges, bulrush, and occasional cattails interspersed with native and non-native grasses and forbs. Adjacent habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, black mustard, and other agricultural weeds.

Unlike the agricultural canals described in Section 5.2.6, these agricultural ditches either contain only ephemeral or intermittent flows or fail to flow into a jurisdictional water (or both). As such, the ditches are potentially excluded from regulation under the CWA per § 230.3(s)(2) (iii)).[2]

[2] Per § 230.3(s)(2) (iii) of the CWA, ditches that meet the following criteria are not "waters of the US':
(A) Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary;
(B) Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands; or

5.4.2 Settling Basins/Stock Water Ponds

Approximately 1.65 acres of settling basins were mapped within the survey area, both on- and off-Base. The dominant vegetation of these ditches includes a mix of emergent vegetation on the boundaries (sedges, bulrush) interspersed with native and non-native grasses and forbs. Adjacent habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, black mustard, and other agricultural weeds. These settling basins are potentially excluded from regulation under the CWA per § 230.3(s)(2)(iv)(B).[3]

5.4.3 Rice Fields

Approximately 324 acres of agricultural fields likely intermittently flooded for growing rice were identified within the survey area. At the time of the survey, the fields were either fallow or flooded with no apparent vegetation. Adjacent habitats consist of annual grasslands dominated by Italian ryegrass, medusahead, vetch, black mustard, and other agricultural weeds. These rice fields are potentially excluded from regulation under the CWA per Rule Text § 230.3(s)(2)(iii)(B).[4]

TABLE 7
NON-WATERS OF THE UNITED STATES WITHIN THE SURVEY AREA

Feature Type	Mapped Area (acres)
Agricultural Ditches	12.49
Settling Basins	1.65
Rice Fields	324

(C) Ditches that do not flow, either directly or through another water, into [a traditional navigable water, interstate water, or the territorial seas.]"

[3] Per § 230.3(s)(2)(iv)(B) of the CWA, "Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds…" are excluded from regulation under the CWA.

[4] Per § 230.3(s)(2)(iii)(B) of the CWA "(B) Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds;" are excluded from regulation under the CWA.

SECTION 6 CONCLUSION

Based on field review, seven potentially jurisdictional waters and multiple wetland features were identified within the survey area. Based on known connectivity to the Sacramento River, all the other waters identified in the survey area likely have jurisdictional status and are likely subject to regulation by the USACE under Section 404 of the CWA.

All efforts are being made to ensure that the Project will not impact these potentially jurisdictional waters and wetlands. Tower foundations, underground facilities, substations, and laydown areas will be sited outside of the identified aquatic features. However, depending upon the selected route, approximately 480–700 square feet of permanent impacts and up to 2,016 square feet of temporary impacts to potentially jurisdictional ditches are anticipated from the installation of culverts for new access roads. If the Southern Alternative is constructed, approximately 1,306 square feet of vernal pool wetlands would be permanently removed. In order to ensure any unanticipated impacts to these aquatic resources, all aquatic features will be further protected through the implementation of best management practices during the course of construction.

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APPENDIX A

DELINEATED AQUATIC RESOURCES MAPS

Aquatic Resources Delineation Map

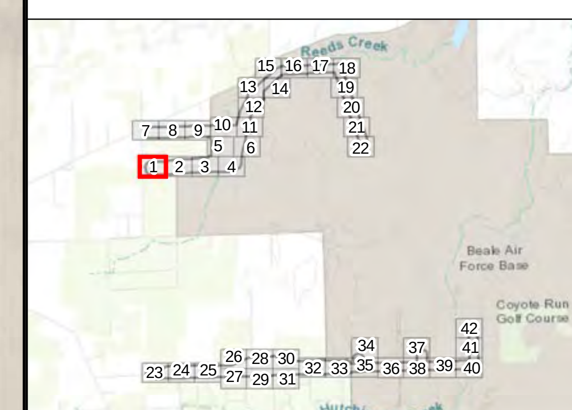
Beale WAPA Interconnection Project

Legend

Survey Area

Non-Waters of the U.S.

Agricultural Ditch



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 1

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

- Survey Area
- Photopoints (w/direction)

Wetlands

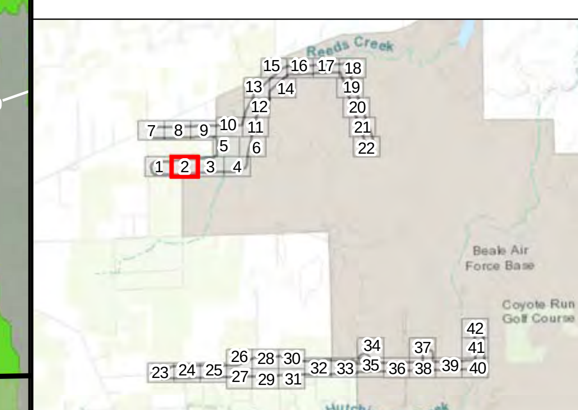
- Ditch
- Swale
- Vernal Pool

Other Waters of the U.S.

- Canal

Non-Waters of the U.S.

- Agricultural Ditch
- Beale Air Force Base



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by Ben Lardiere and Molly Dodge

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Map 2

TRANSCON environmental

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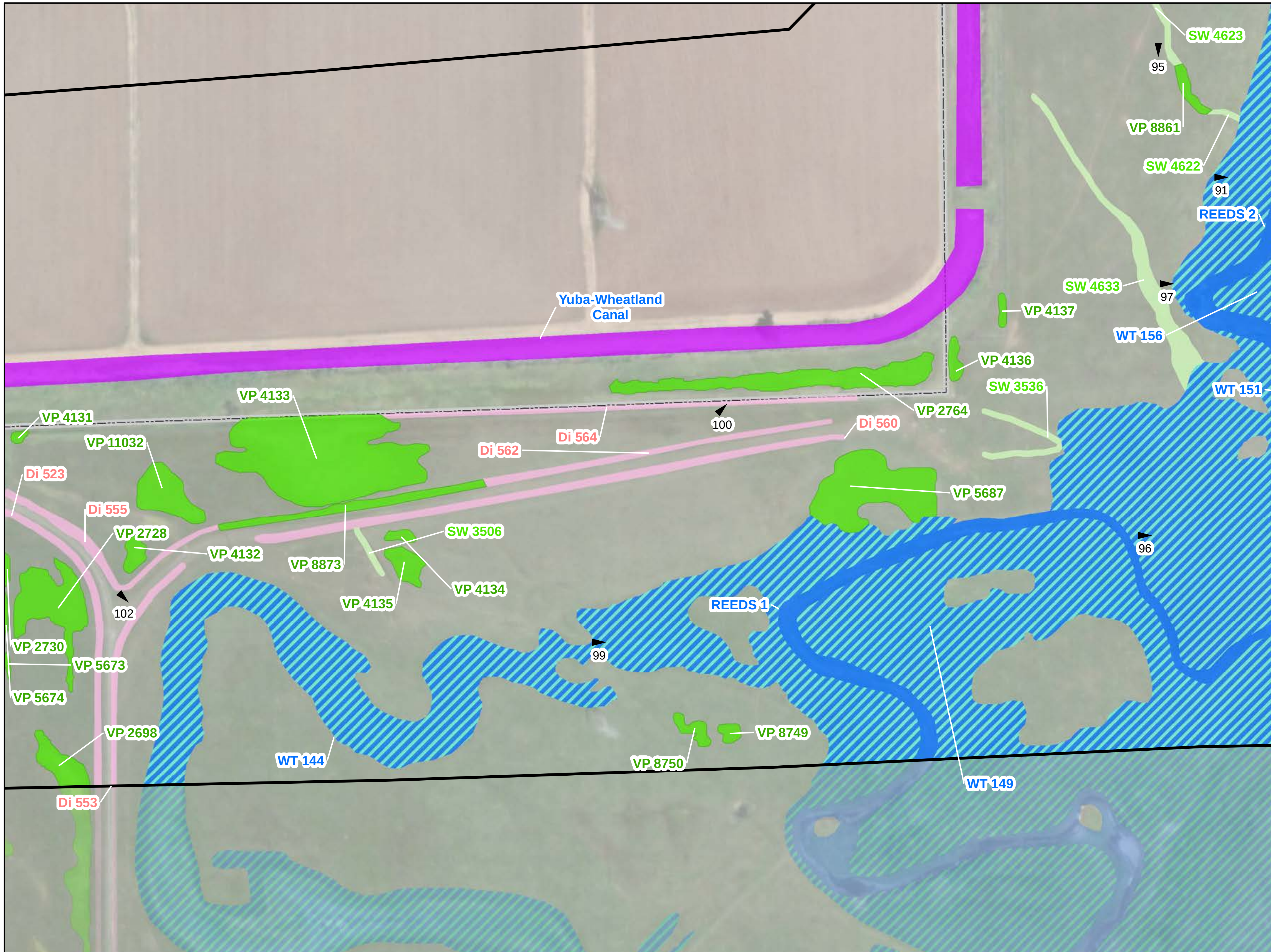


Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Wetlands

Ditch

Swale

Vernal Pool

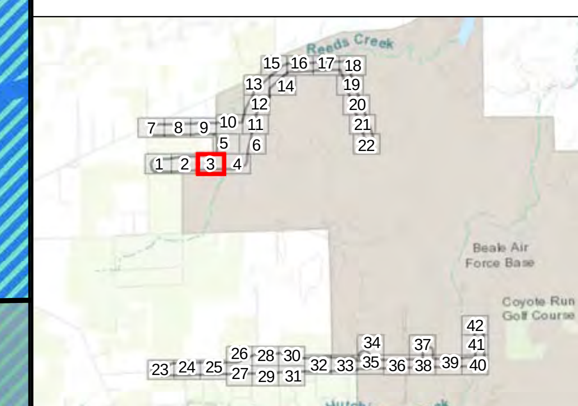
Wetland

Other Waters of the U.S.

Canal

Stream

Beale Air Force Base



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Delineations conducted:
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by Ben Lardiere and Molly Dodge

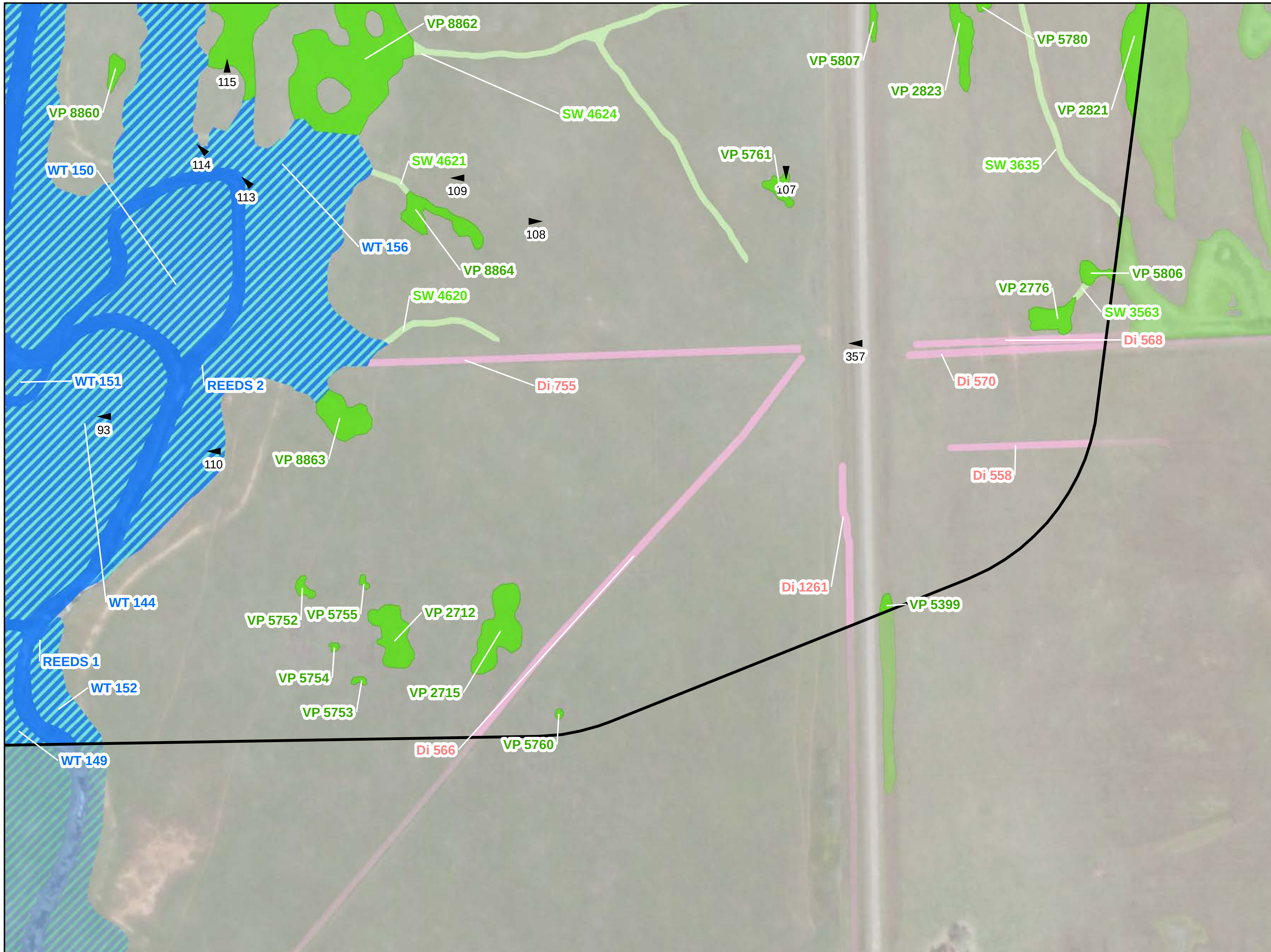
Coordinate System:
NAD 1983 UTM Zone 10N

Map 3

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project



Legend

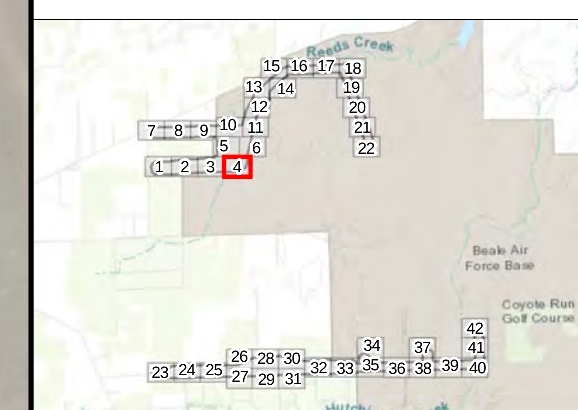
- Survey Area
- Photopoints (w/direction)

Wetlands

- Ditch
- Swale
- Vernal Pool
- Wetland

Other Waters of the U.S.

- Stream
- Beale Air Force Base



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by Ben Lardiere and Molly Dodge

Coordinate System:
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Map 4

TRANSCON environmental

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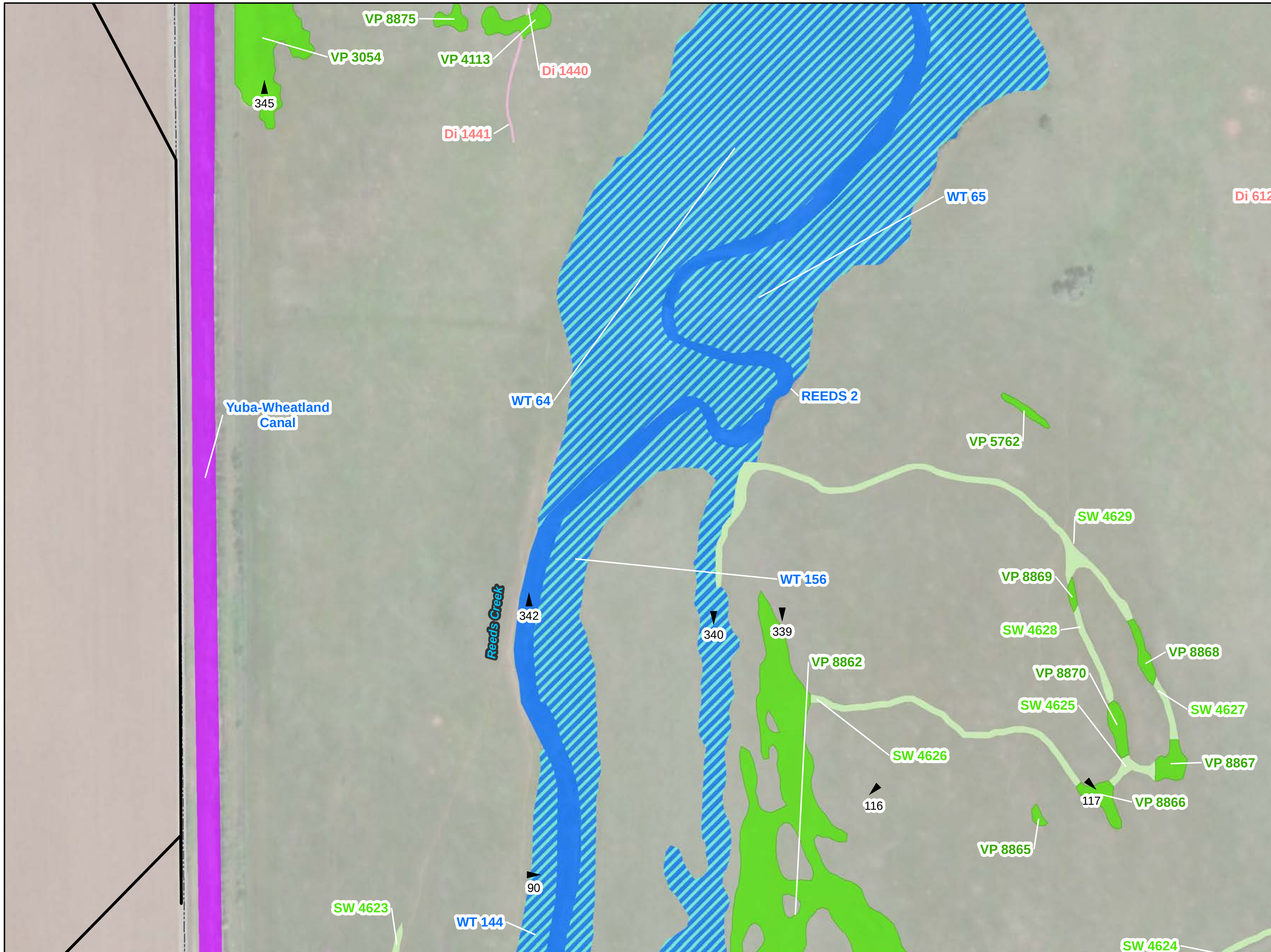
Aquatic Resources Delineation Map

Beale WAPA Interconnection Project



Legend

Survey Area

Photopoints (w/direction)

Wetlands

Ditch

Swale

Vernal Pool

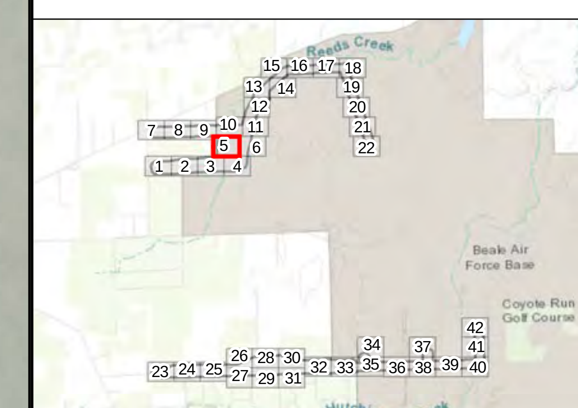
Wetland

Other Waters of the U.S.

Canal

Stream

Beale Air Force Base



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Delineations conducted:
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by Ben Lardiere and Molly Dodge

Coordinate System:
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Map 5

TRANSCON environmental

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Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Data points

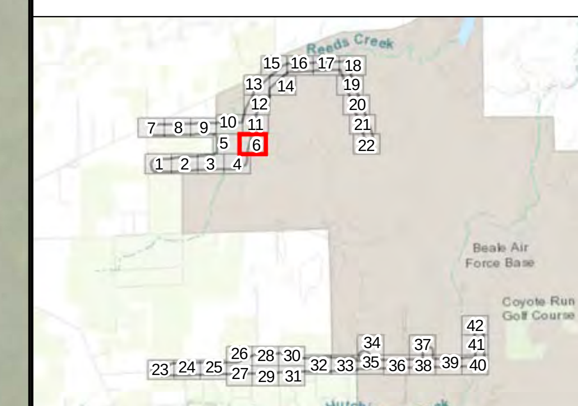
Wetlands

Ditch

Swale

Vernal Pool

Beale Air Force Base



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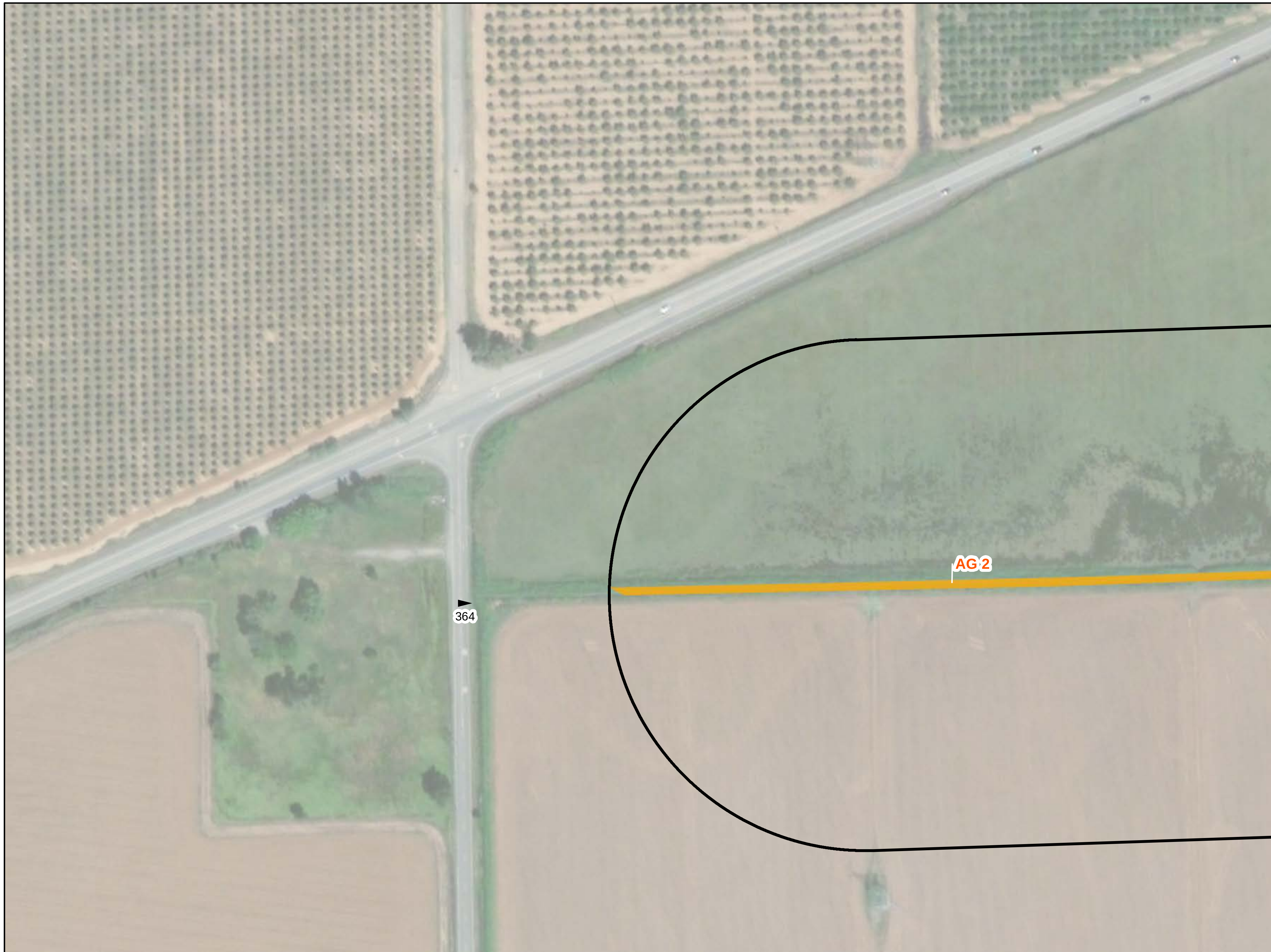
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 6

TRANSCON environmental



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

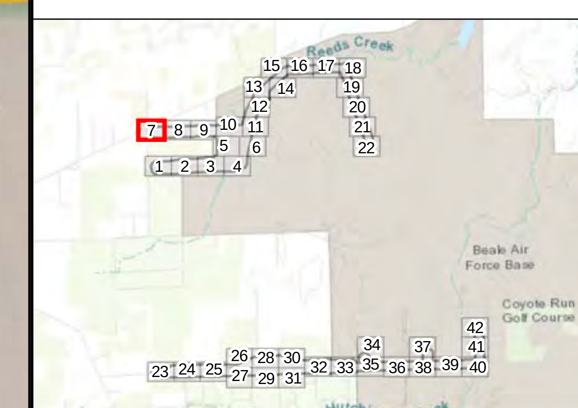
Legend

Survey Area

Photopoints (w/direction)

Non-Waters of the U.S.

Agricultural Ditch



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
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Map 7

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Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

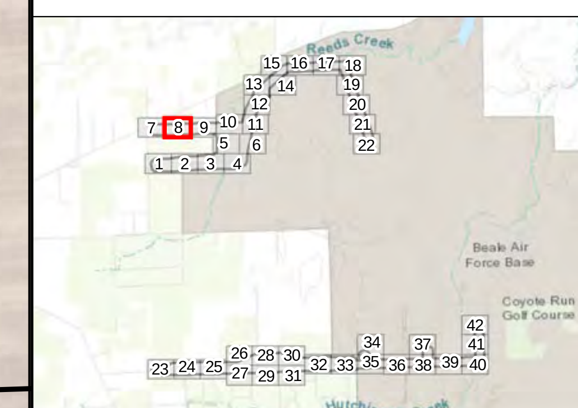
Legend

Survey Area

Non-Waters of the U.S.

Agricultural Ditch

Settling Basin



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 8

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

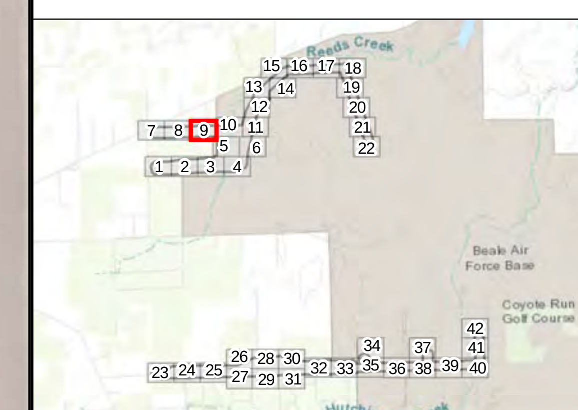
Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Beale Air Force Base Boundary



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

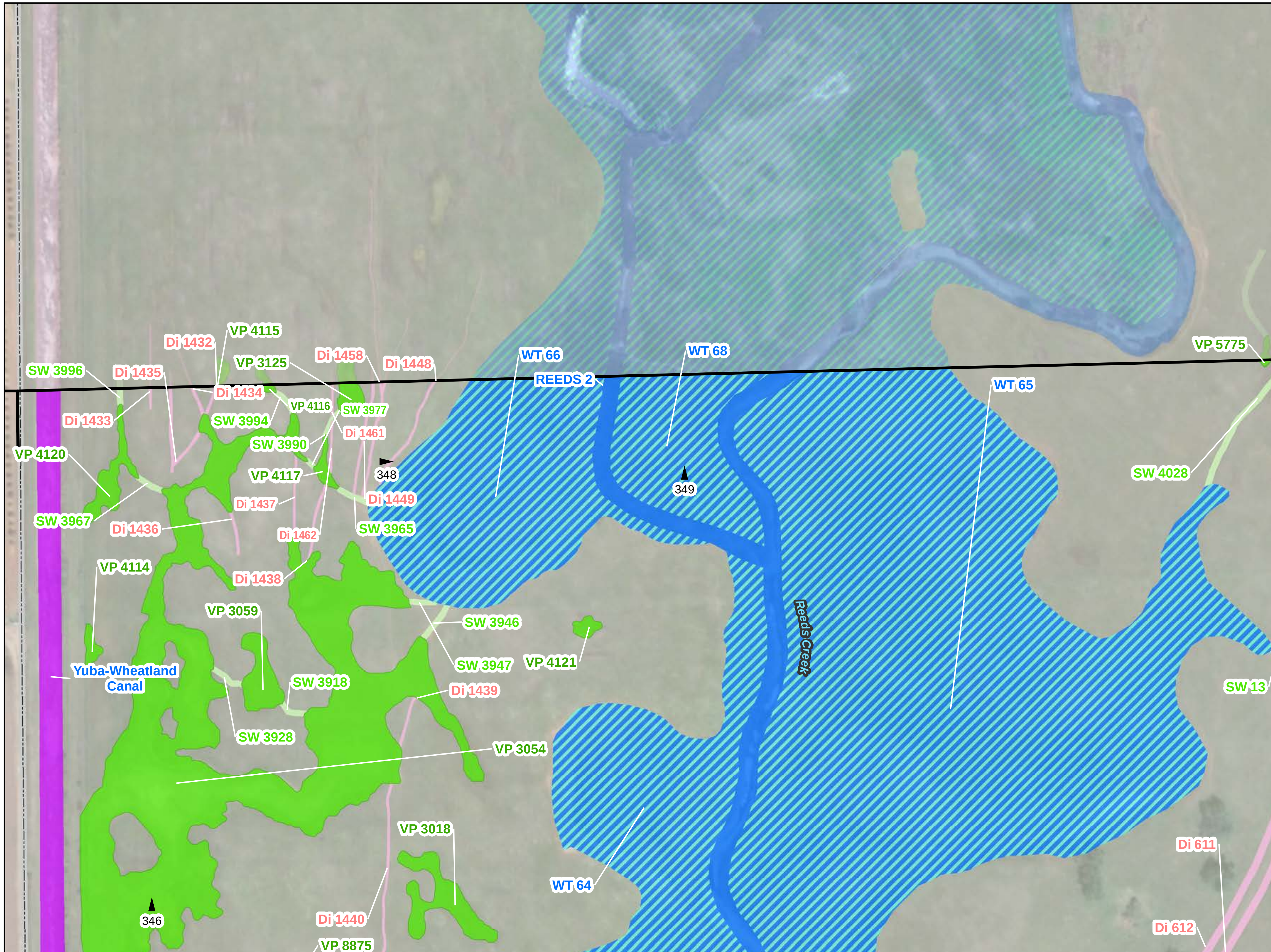
Coordinate System:
NAD 1983 UTM Zone 10N

Map 9

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project



Legend

Survey Area

Photopoints (w/direction)

Wetlands

Ditch

Swale

Vernal Pool

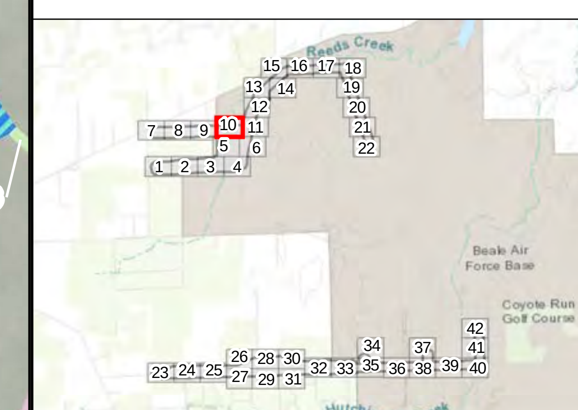
Wetland

Other Waters of the U.S.

Canal

Stream

Beale Air Force Base Boundary



0 100 200 Feet

N W E S

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

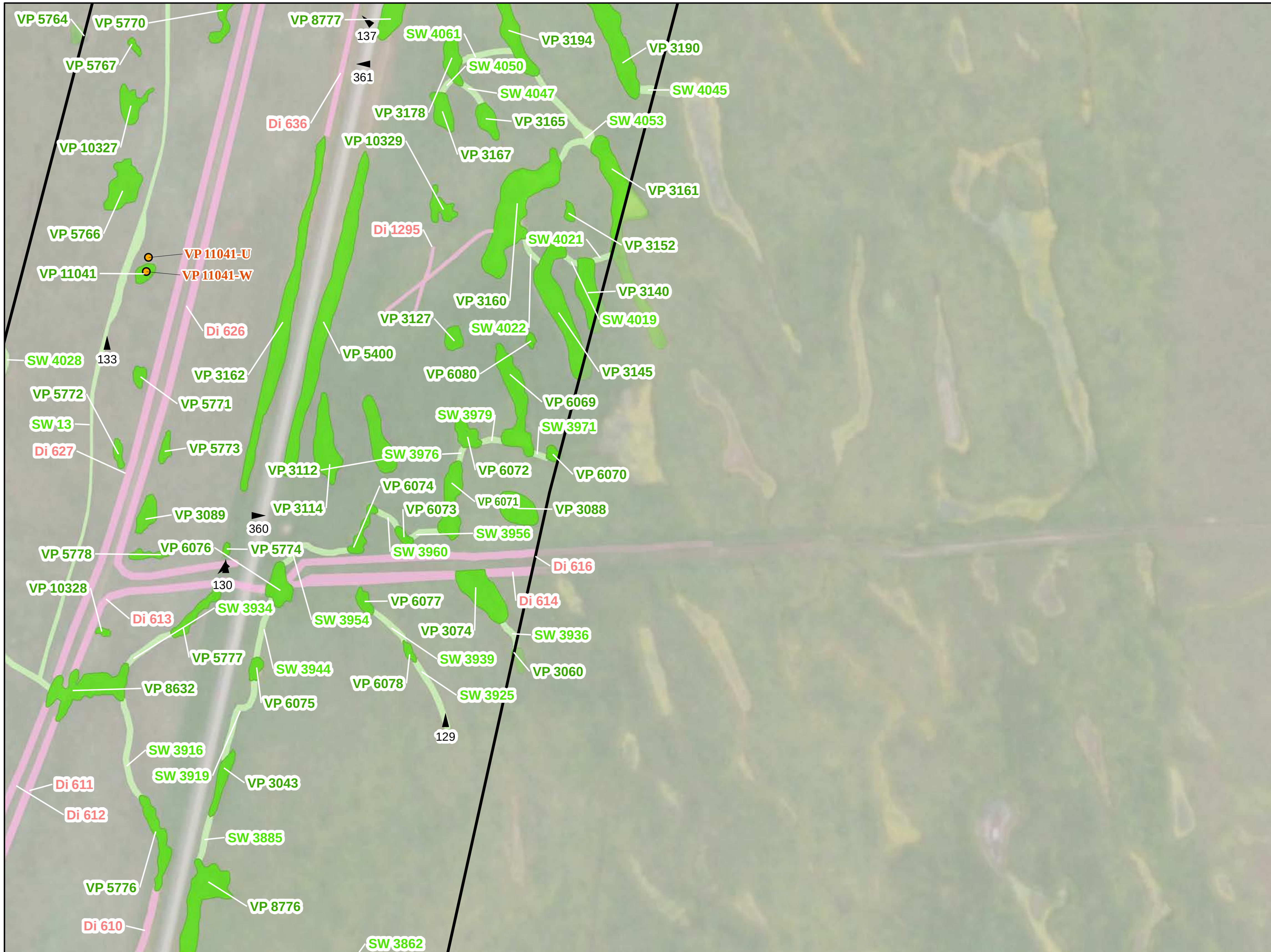
Coordinate System:
NAD 1983 UTM Zone 10N

Map 10

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Data points

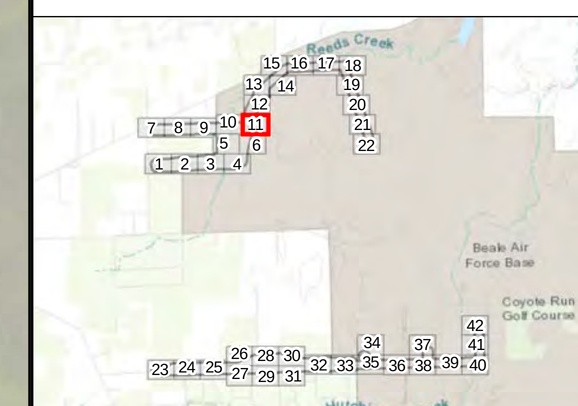
Wetlands

Ditch

Swale

Vernal Pool

Beale Air Force Base Boundary



0 100 200 Feet

N S E W

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

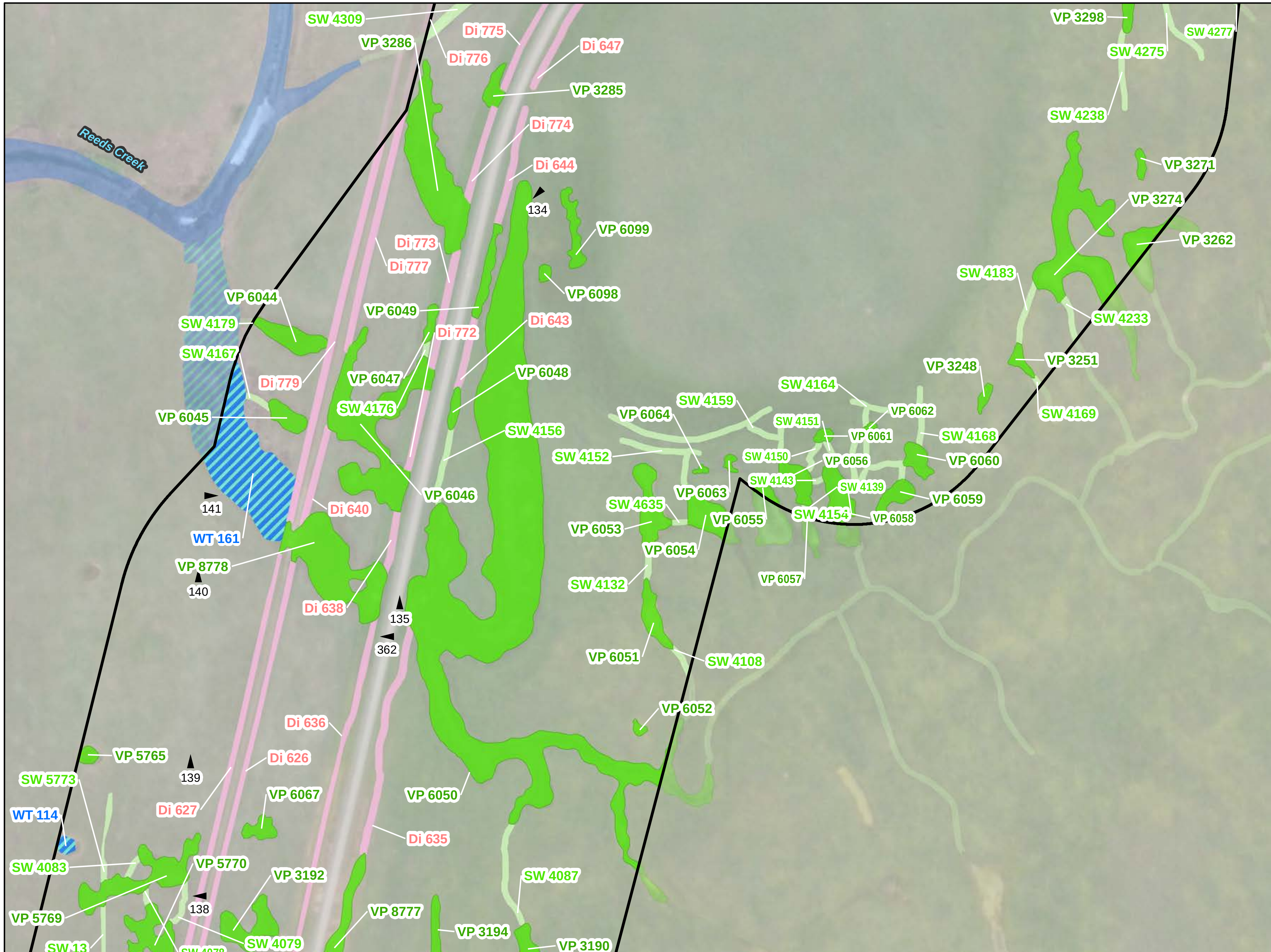
Coordinate System:
NAD 1983 UTM Zone 10N

Map 11

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

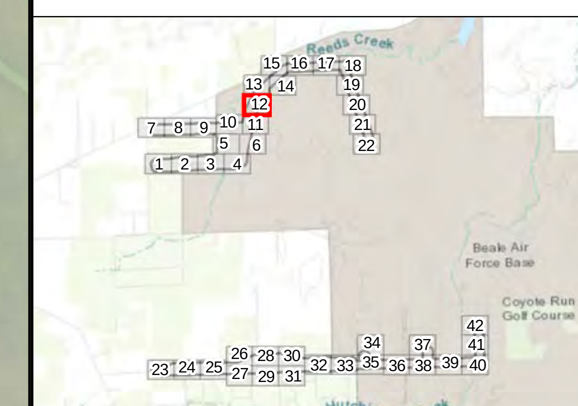


Legend

- Survey Area
- Photopoints (w/direction)

Wetlands

- Ditch
- Swale
- Vernal Pool
- Wetland
- Beale Air Force Base Boundary



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 12

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Data points

Wetlands

Ditch

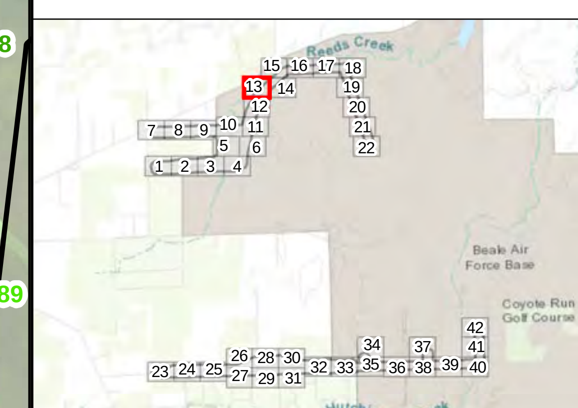
Swale

Vernal Pool

Other Waters of the U.S.

Stream

Beale Air Force Base Boundary



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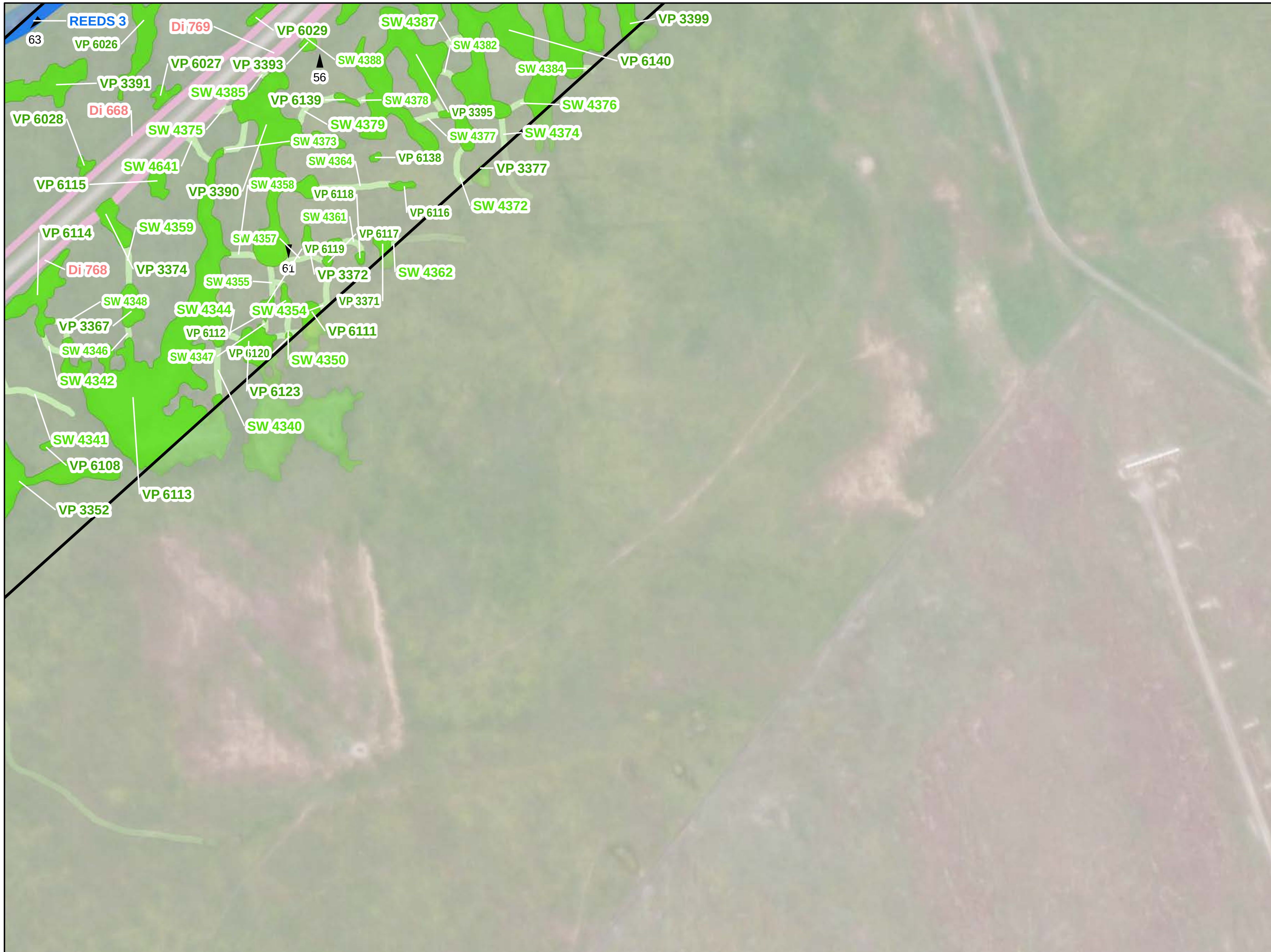
Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 13

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

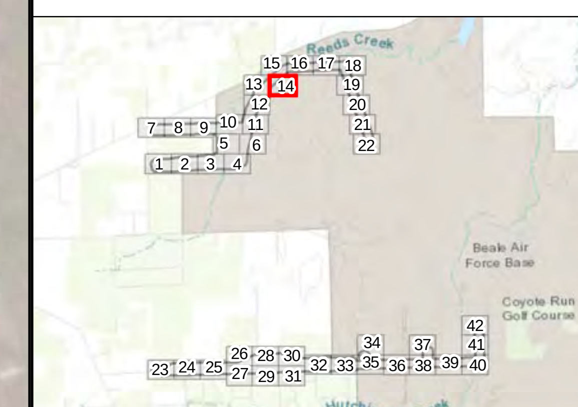
- Survey Area
- Photopoints (w/direction)

Wetlands

- Ditch
- Swale
- Vernal Pool

Other Waters of the U.S.

- Stream
- Beale Air Force Base Boundary



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 14

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

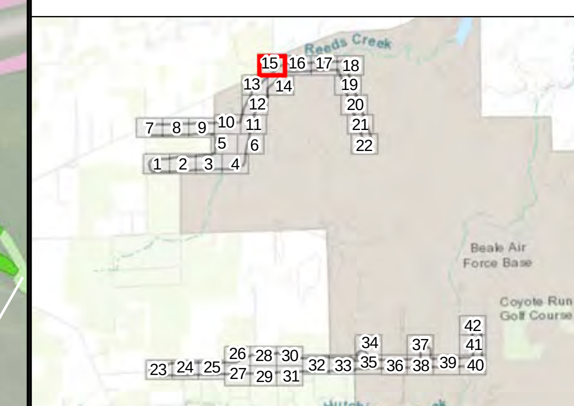
- Survey Area
- Photopoints (w/direction)
- Data points

Wetlands

- Ditch
- Swale
- Vernal Pool

Other Waters of the U.S.

- Stream
- Beale Air Force Base Boundary



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 15

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Data points

Wetlands

Ditch

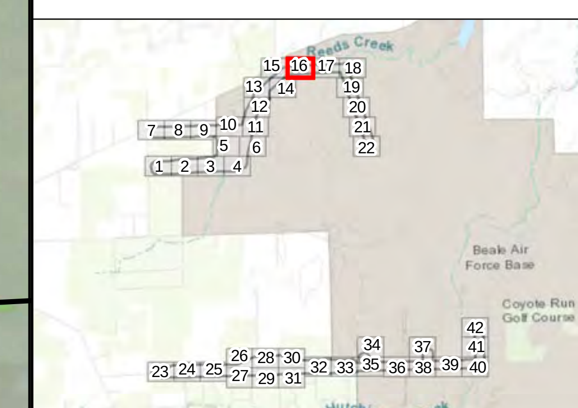
Swale

Vernal Pool

Other Waters of the U.S.

Stream

Beale Air Force Base Boundary



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

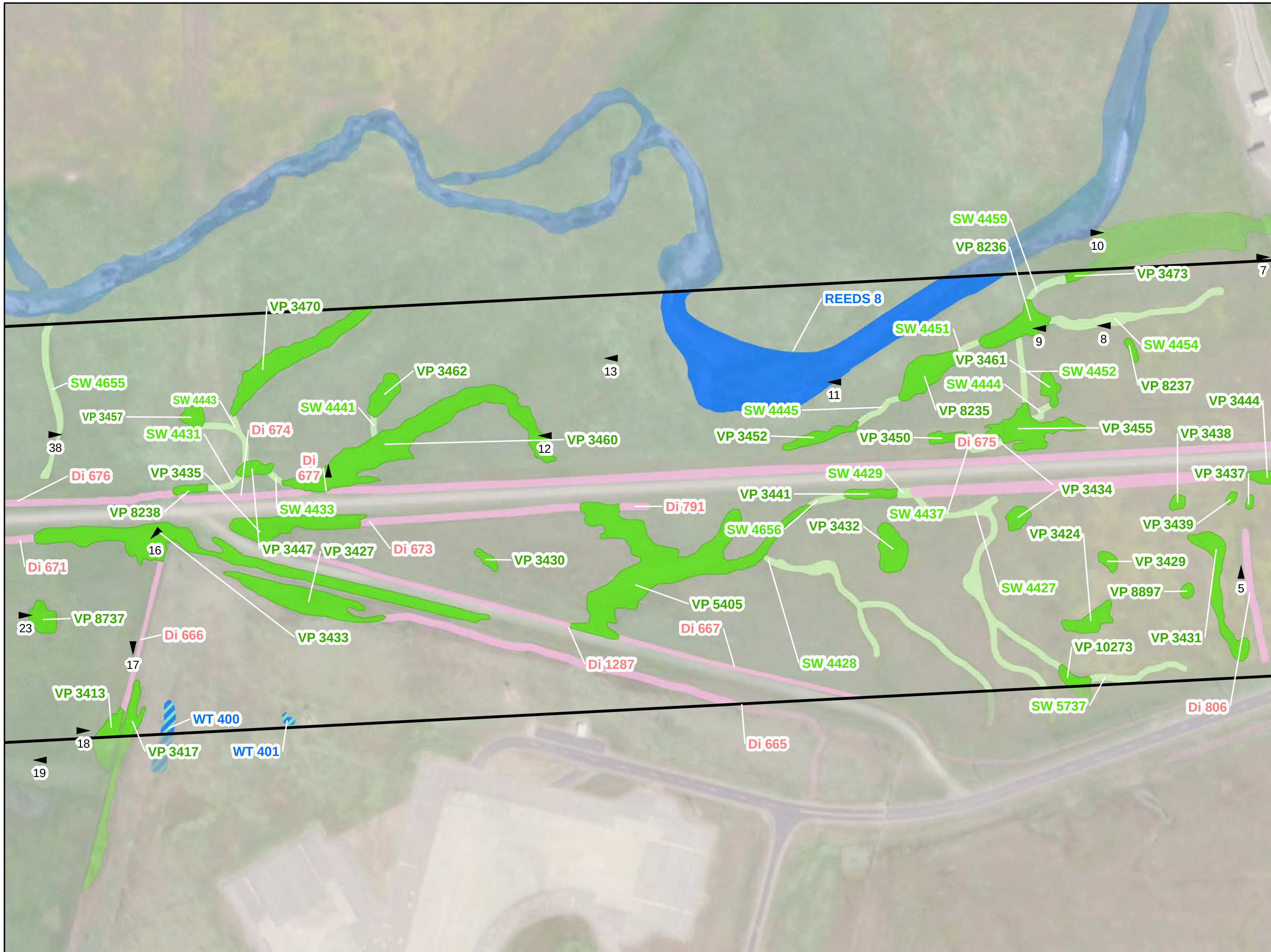
Coordinate System:
NAD 1983 UTM Zone 10N

Map 16

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project



Legend

Survey Area

Photopoints (w/direction)

Wetlands

Ditch

Swale

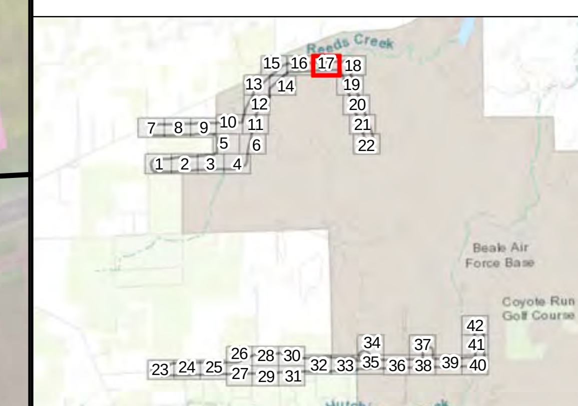
Vernal Pool

Wetland

Other Waters of the U.S.

Stream

Beale Air Force Base Boundary



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

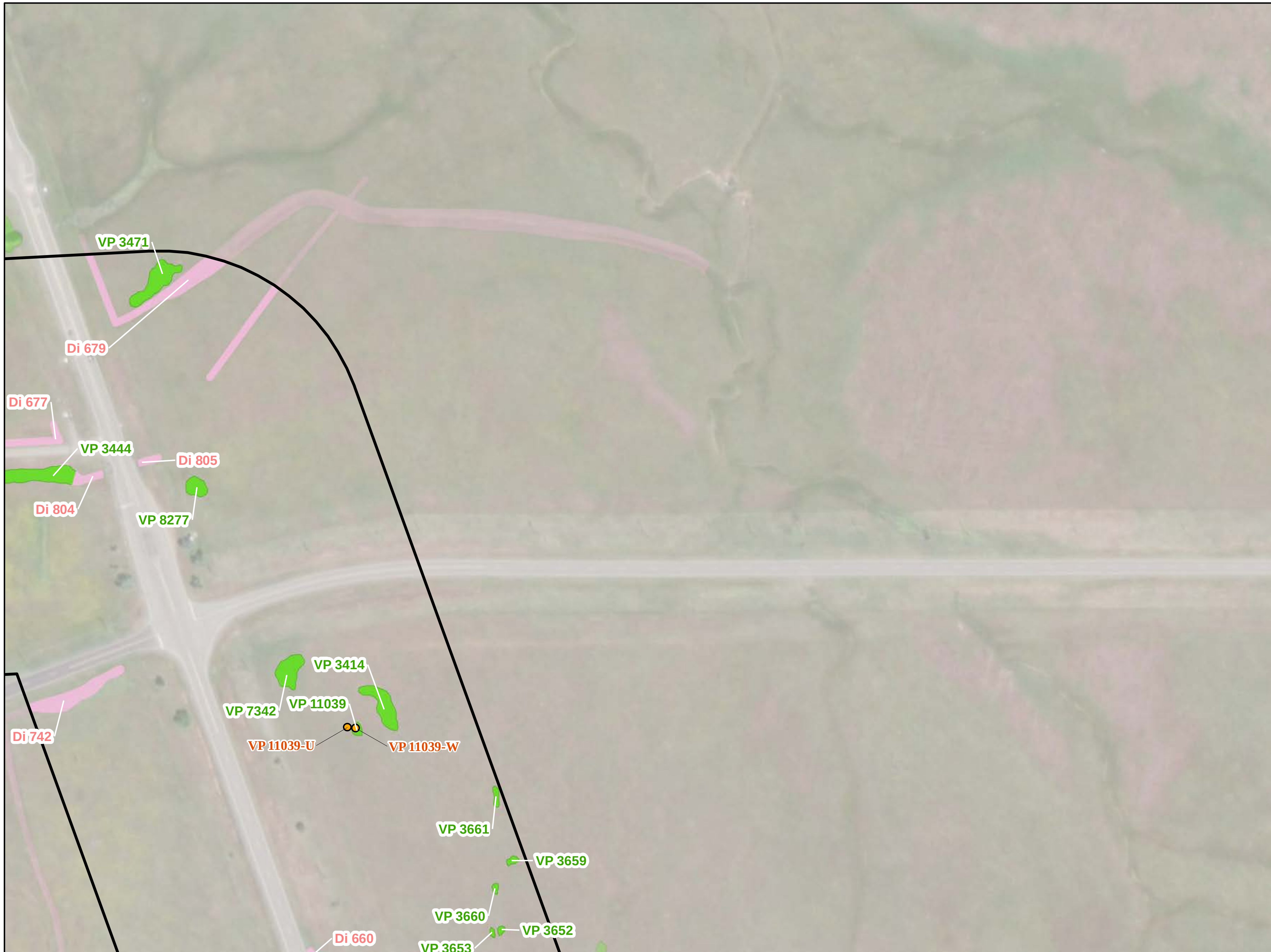
Map 17

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project



Legend

Survey Area

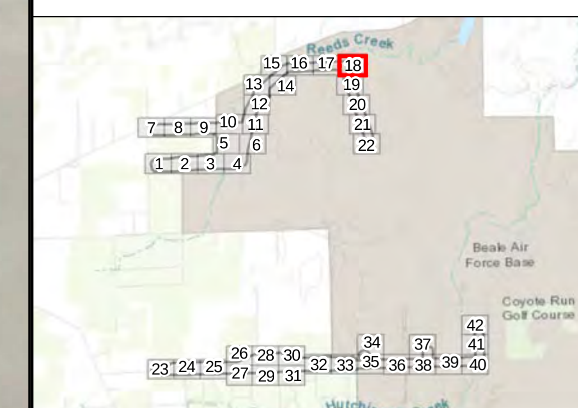
Data points

Wetlands

Ditch

Vernal Pool

Beale Air Force Base Boundary



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 18

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

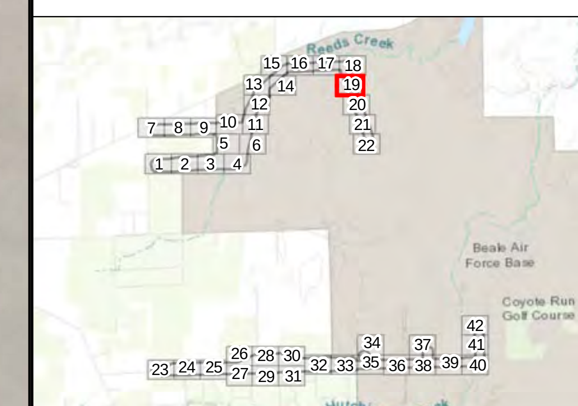
Wetlands

Ditch

Swale

Vernal Pool

Beale Air Force Base Boundary



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 19

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

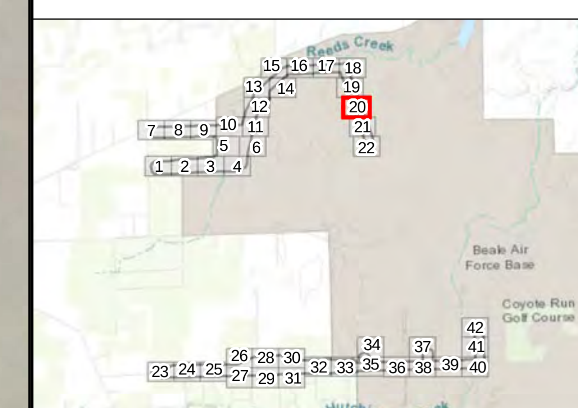
Wetlands

Ditch

Swale

Vernal Pool

Beale Air Force Base Boundary



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 20

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

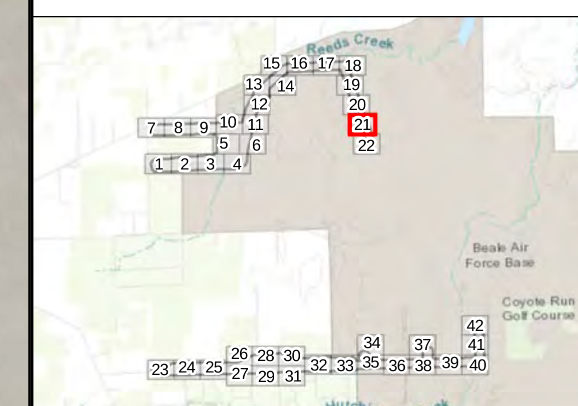
Photopoints (w/direction)

Wetlands

Swale

Vernal Pool

Beale Air Force Base Boundary



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 21

TRANSCON environmental

Aquatic Resources Delineation Map

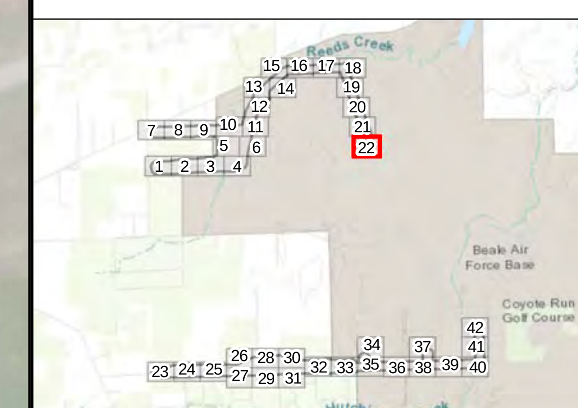
Beale WAPA Interconnection Project

Legend

- Survey Area
- Data points

Wetlands

- Swale
- Vernal Pool
- Beale Air Force Base Boundary



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

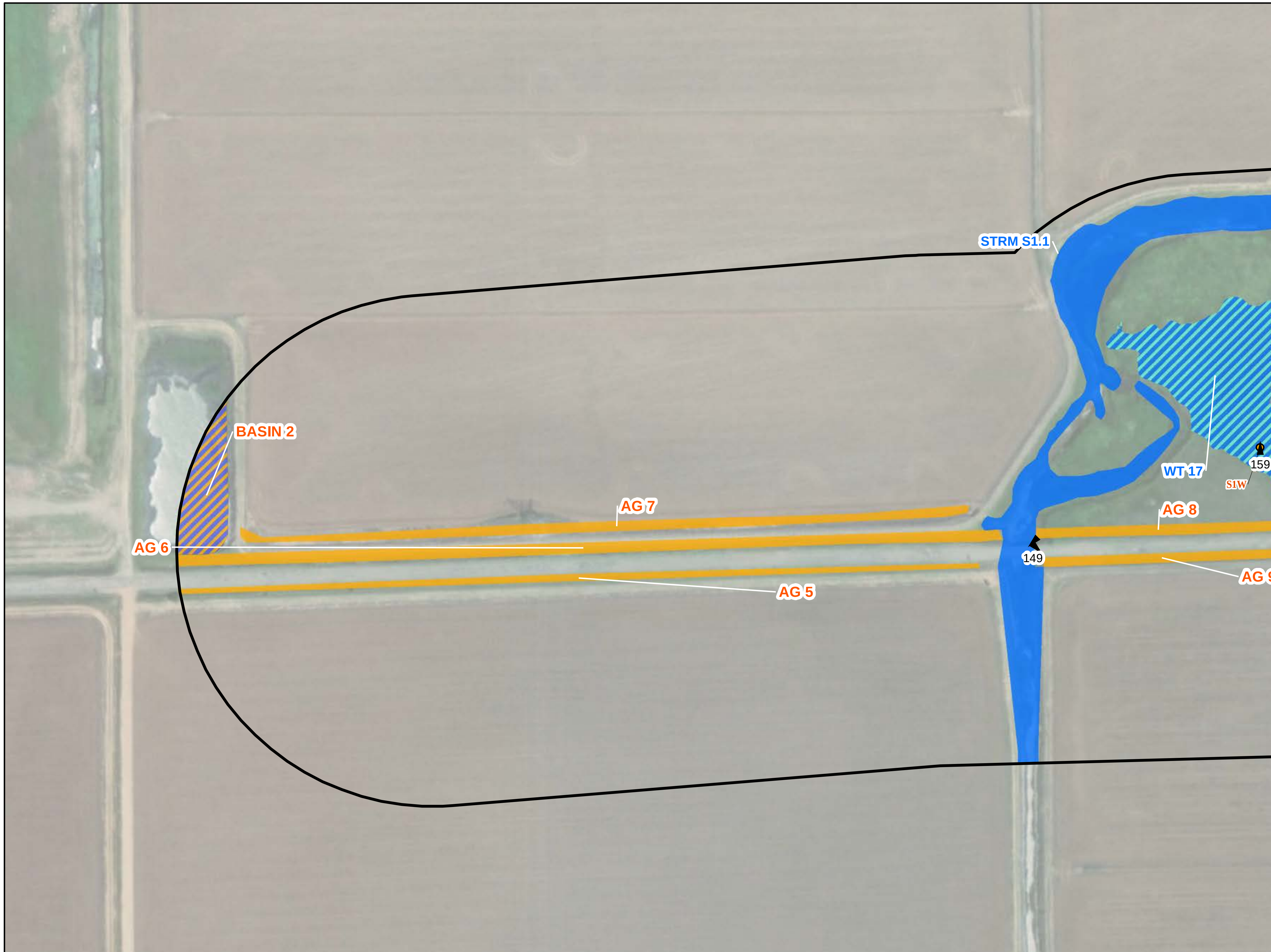
Map 22

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project



Legend

Survey Area

Photopoints (w/direction)

Data points

Wetlands

Wetland

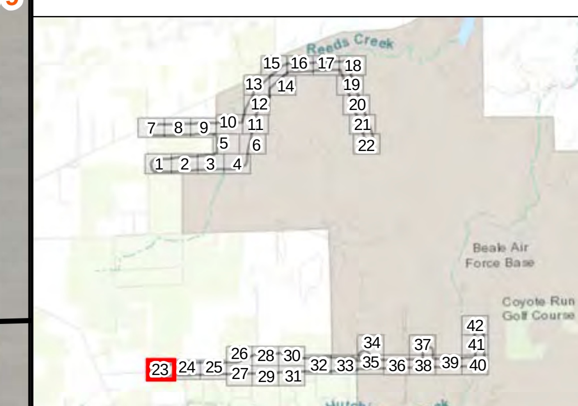
Other Waters of the U.S.

Stream

Non-Waters of the U.S.

Agricultural Ditch

Settling Basin



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 23

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Data points

Wetlands

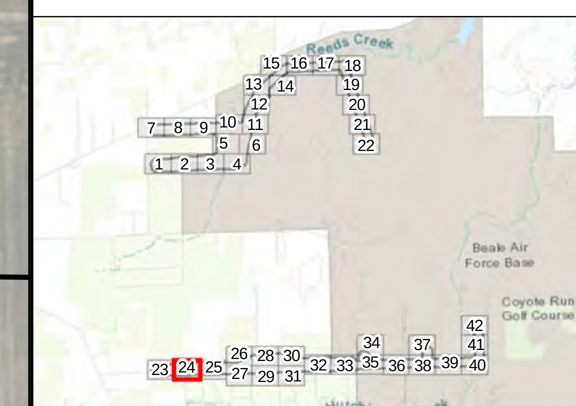
Wetland

Other Waters of the U.S.

Stream

Non-Waters of the U.S.

Agricultural Ditch



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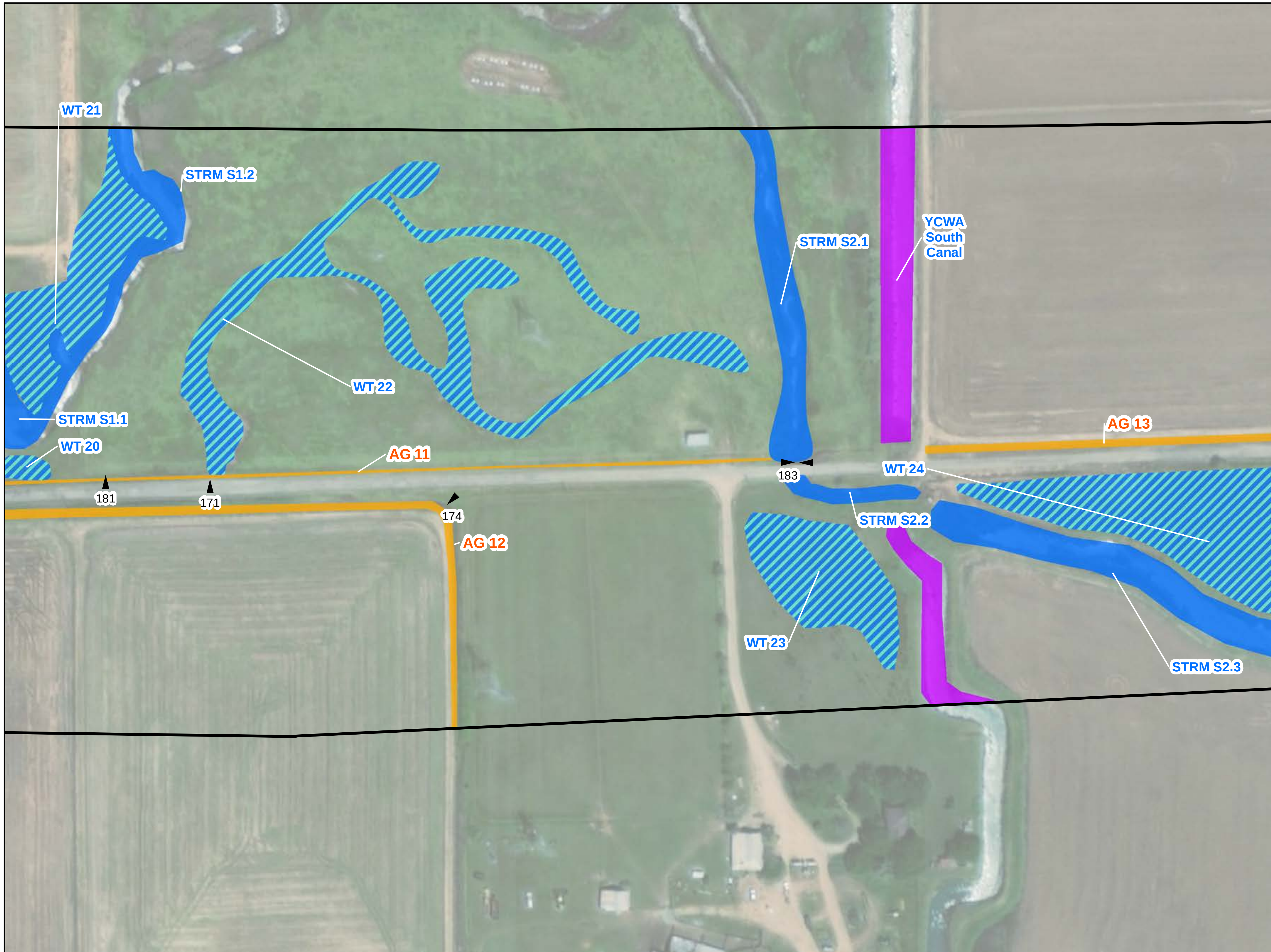
Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 24



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Wetlands

Wetland

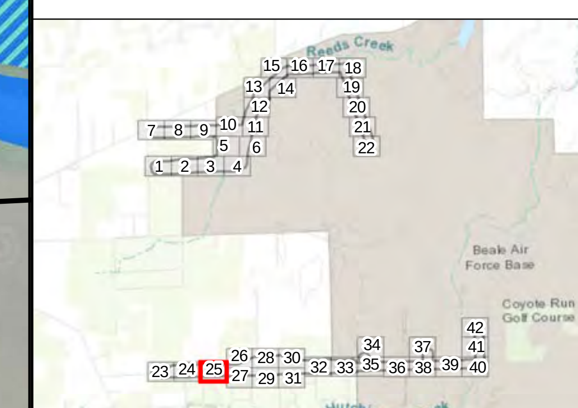
Other Waters of the U.S.

Canal

Stream

Non-Waters of the U.S.

Agricultural Ditch



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 25

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

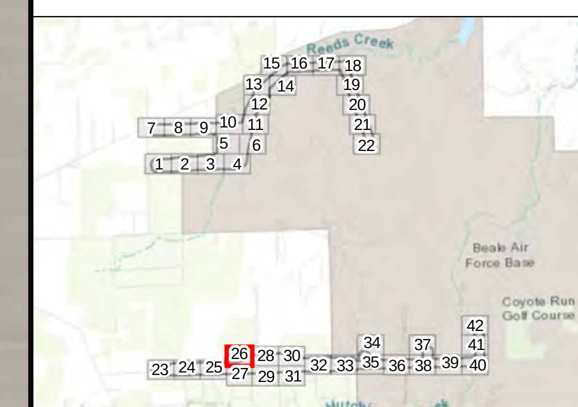
Beale WAPA Interconnection Project

Legend

Survey Area

Non-Waters of the U.S.

Agricultural Ditch



0 100 200 Feet

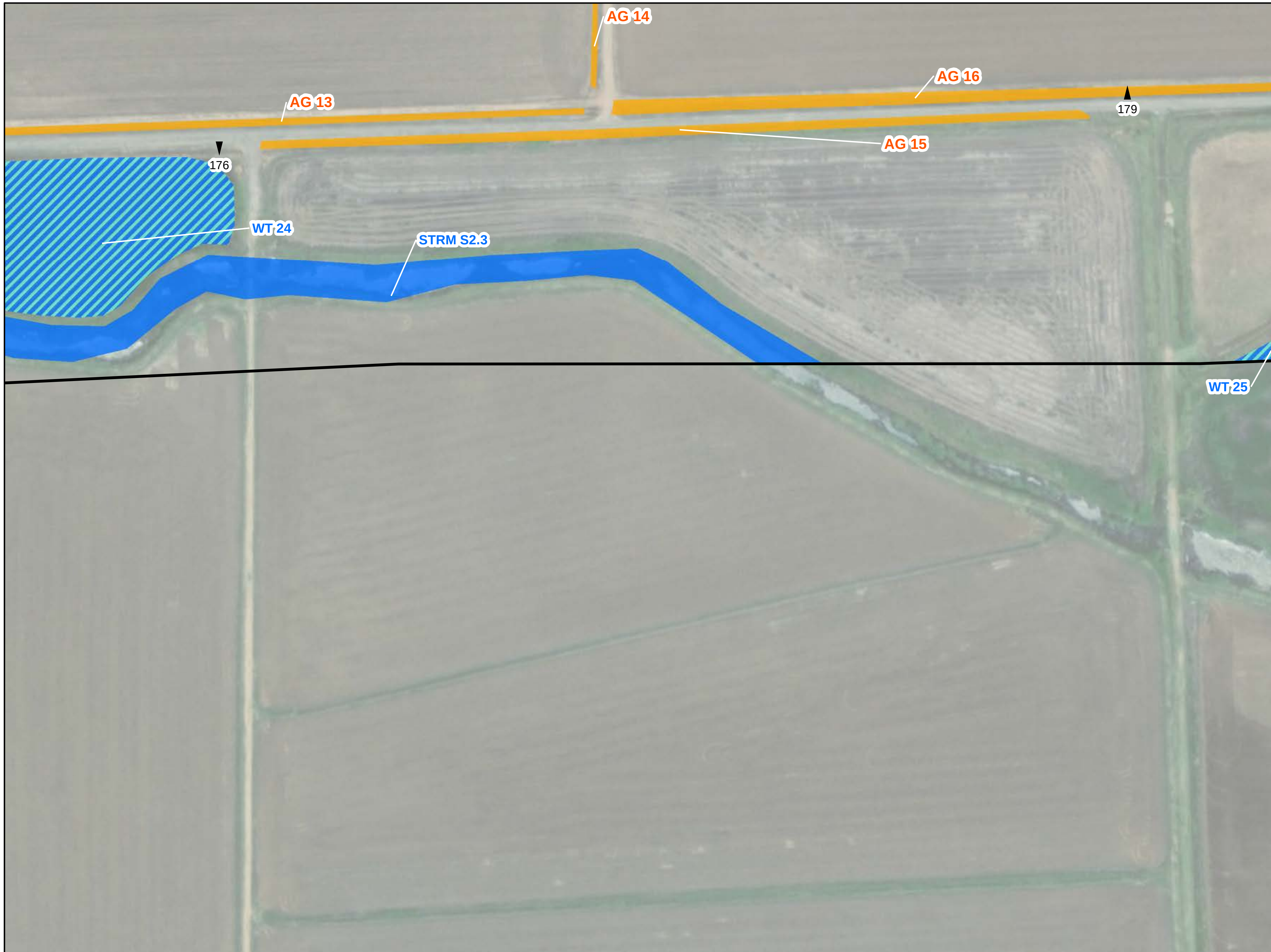
Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 26

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Wetlands

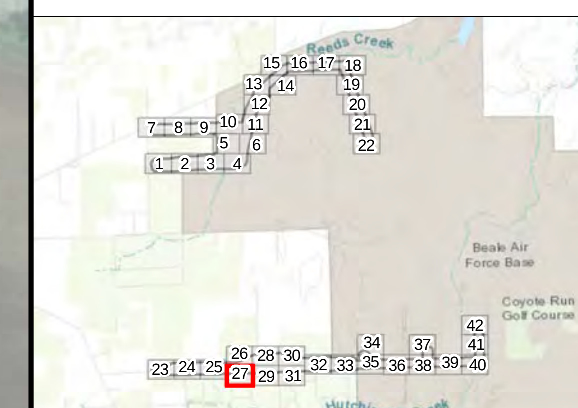
Wetland

Other Waters of the U.S.

Stream

Non-Waters of the U.S.

Agricultural Ditch



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 27

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

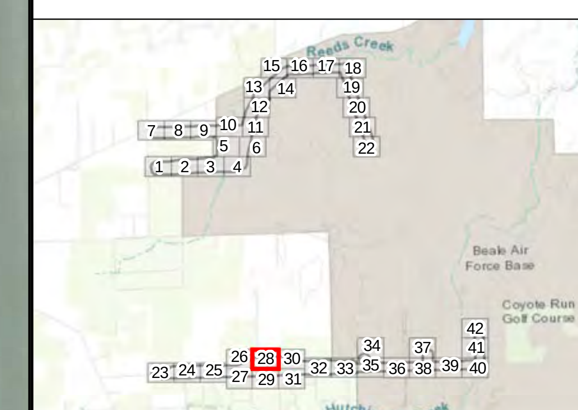
Survey Area

Wetlands

Wetland

Non-Waters of the U.S.

Agricultural Ditch



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Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 28

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

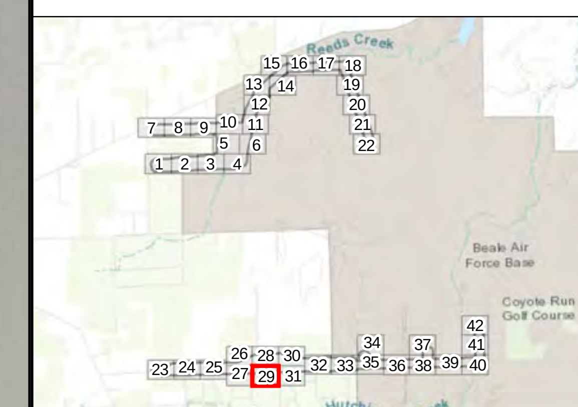
Photopoints (w/direction)

Wetlands

Wetland

Non-Waters of the U.S.

Agricultural Ditch



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 29

TRANSCON environmental

Aquatic Resources Delineation Map

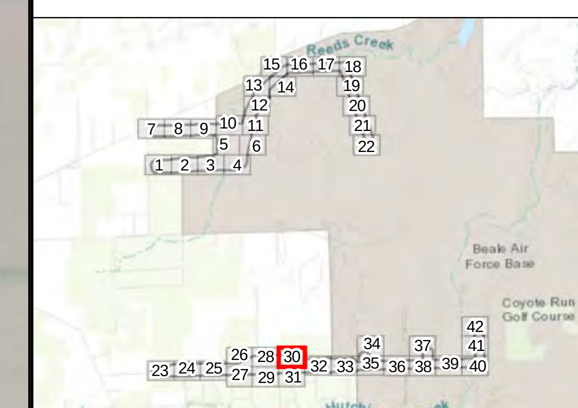
Beale WAPA Interconnection Project

Legend

Survey

Non-Waters of the U.S.

Agricultural Ditch



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 30

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

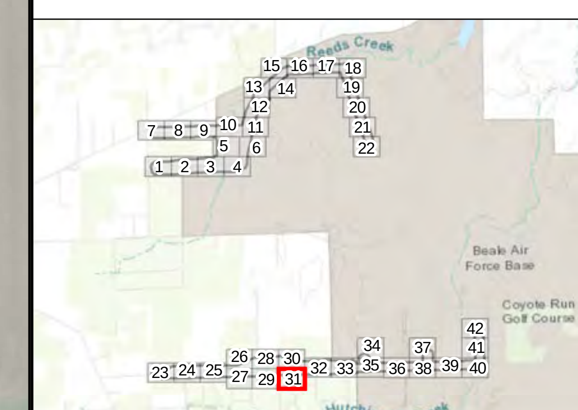
Legend

Survey Area

Photopoints (w/direction)

Non-Waters of the U.S.

Agricultural Ditch



0 100 200
Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 31

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

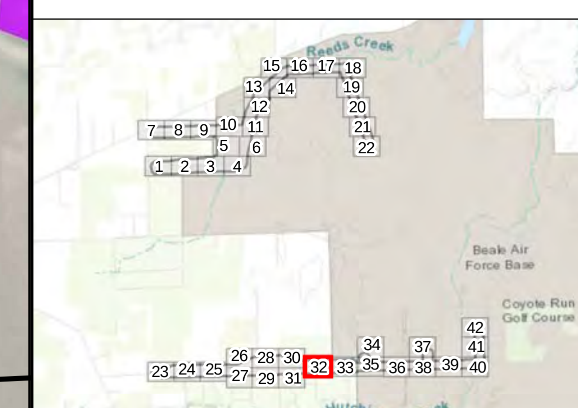
- Survey Area
- Photopoints (w/direction)

Other Waters of the U.S.

- Canal

Non-Waters of the U.S.

- Agricultural Ditch



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

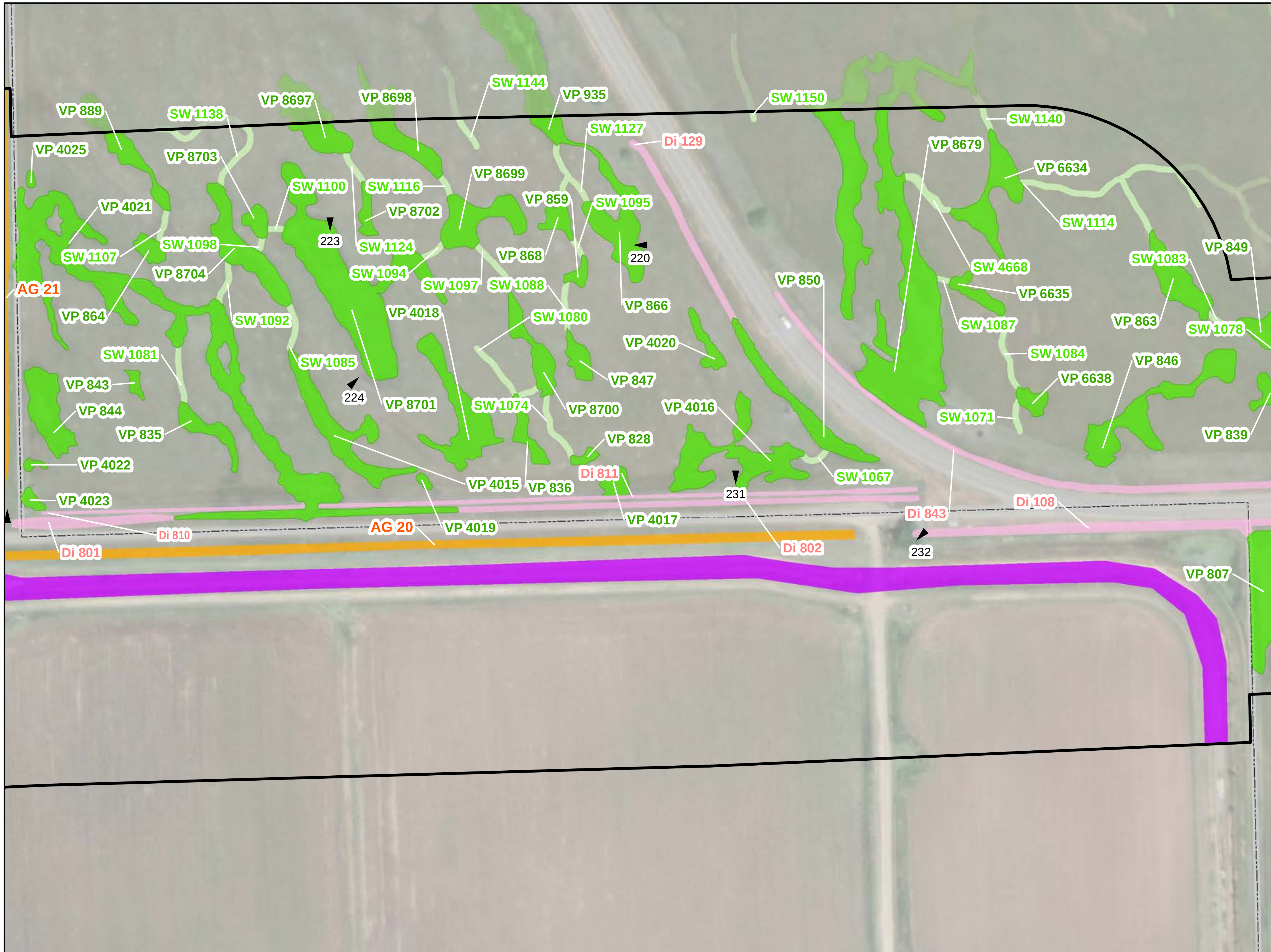
Map 32

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project



Legend

- Survey Area
- Photopoints (w/direction)

Wetlands

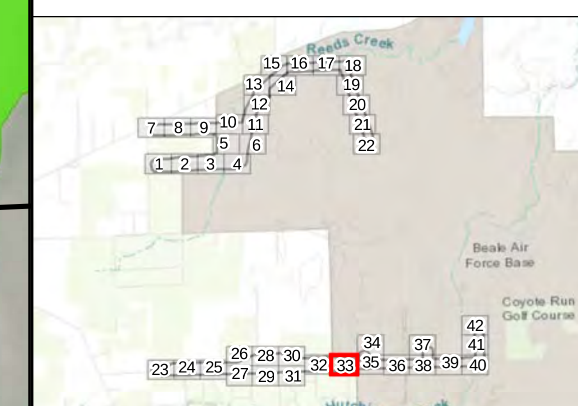
- Ditch
- Swale
- Vernal Pool

Other Waters of the U.S.

- Canal

Non-Waters of the U.S.

- Agricultural Ditch
- Beale Air Force Base



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 33

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

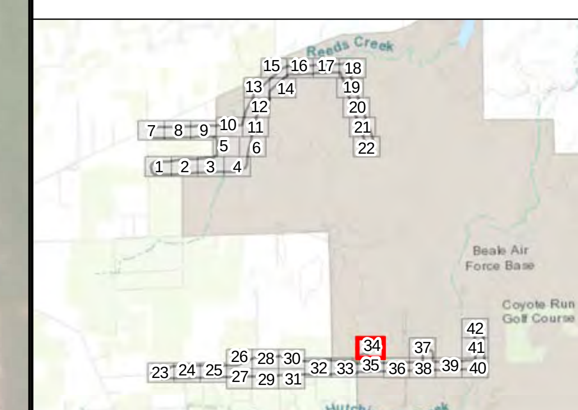
Survey Area

Wetlands

Swale

Vernal Pool

Beale Air Force Base



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 34

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

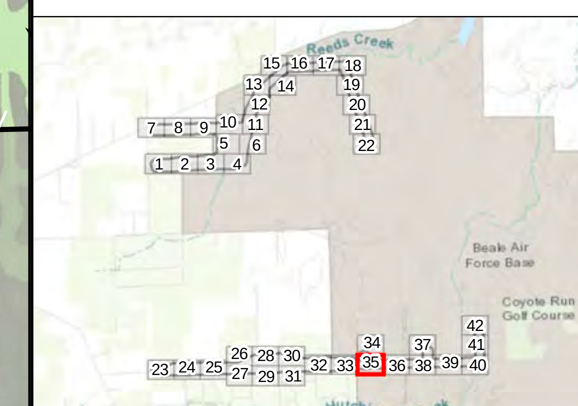
- Survey Area
- Photopoints (w/direction)
- Data points

Wetlands

- Ditch
- Swale
- Vernal Pool

Other Waters of the U.S.

- Stream
- Beale Air Force Base



0 100 200 Feet

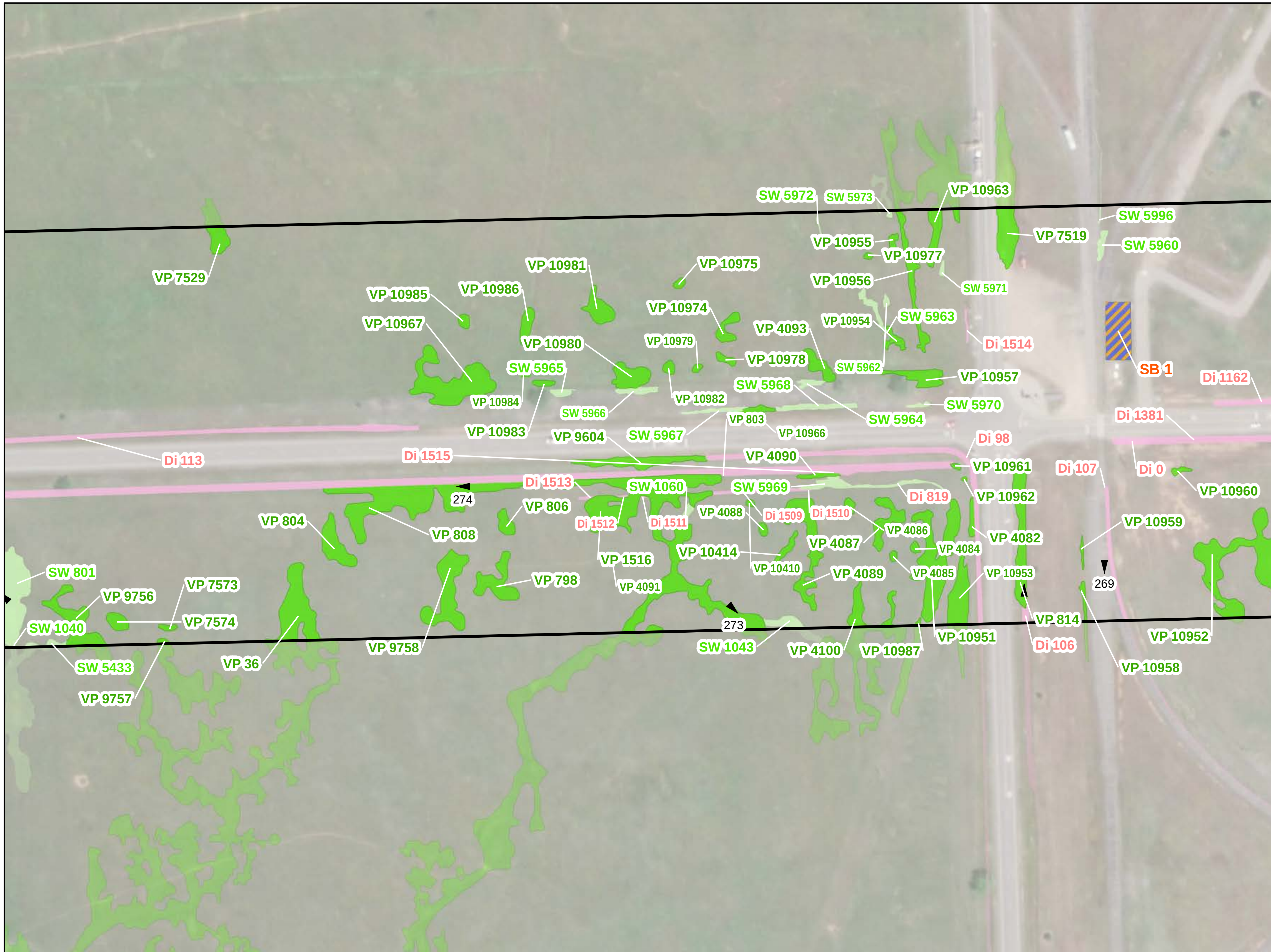
Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 35

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

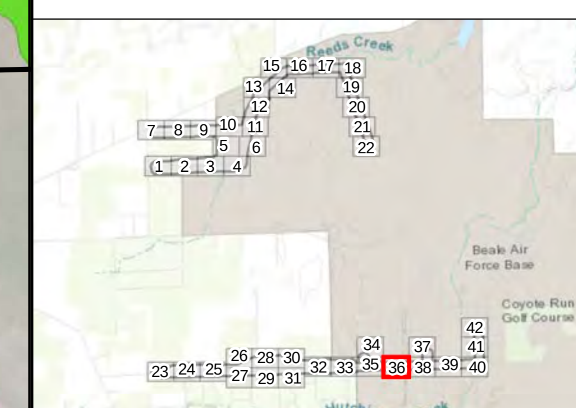
- Survey Area
- Photopoints (w/direction)

Wetlands

- Ditch
- Swale
- Vernal Pool

Non-Waters of the U.S.

- Settling Basin
- Beale Air Force Base



0 100 200 Feet

N W E S

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

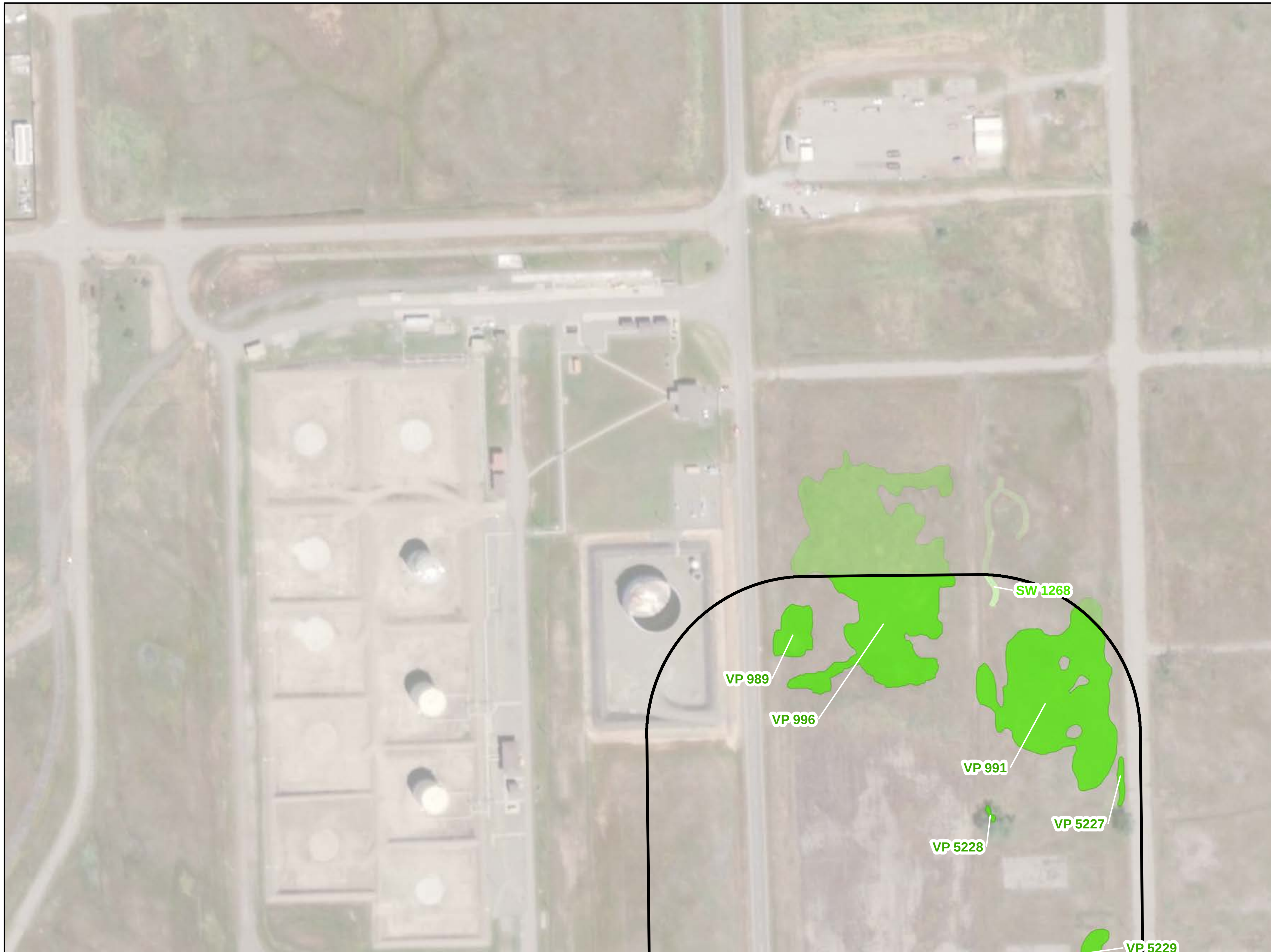
Coordinate System:
NAD 1983 UTM Zone 10N

Map 36

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

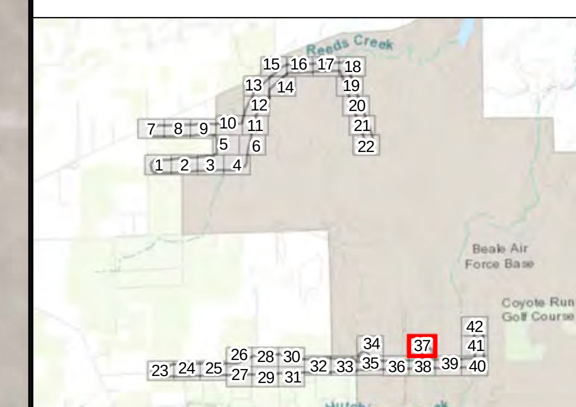
Survey Area

Wetlands

Swale

Vernal Pool

Beale Air Force Base



0 100 200 Feet

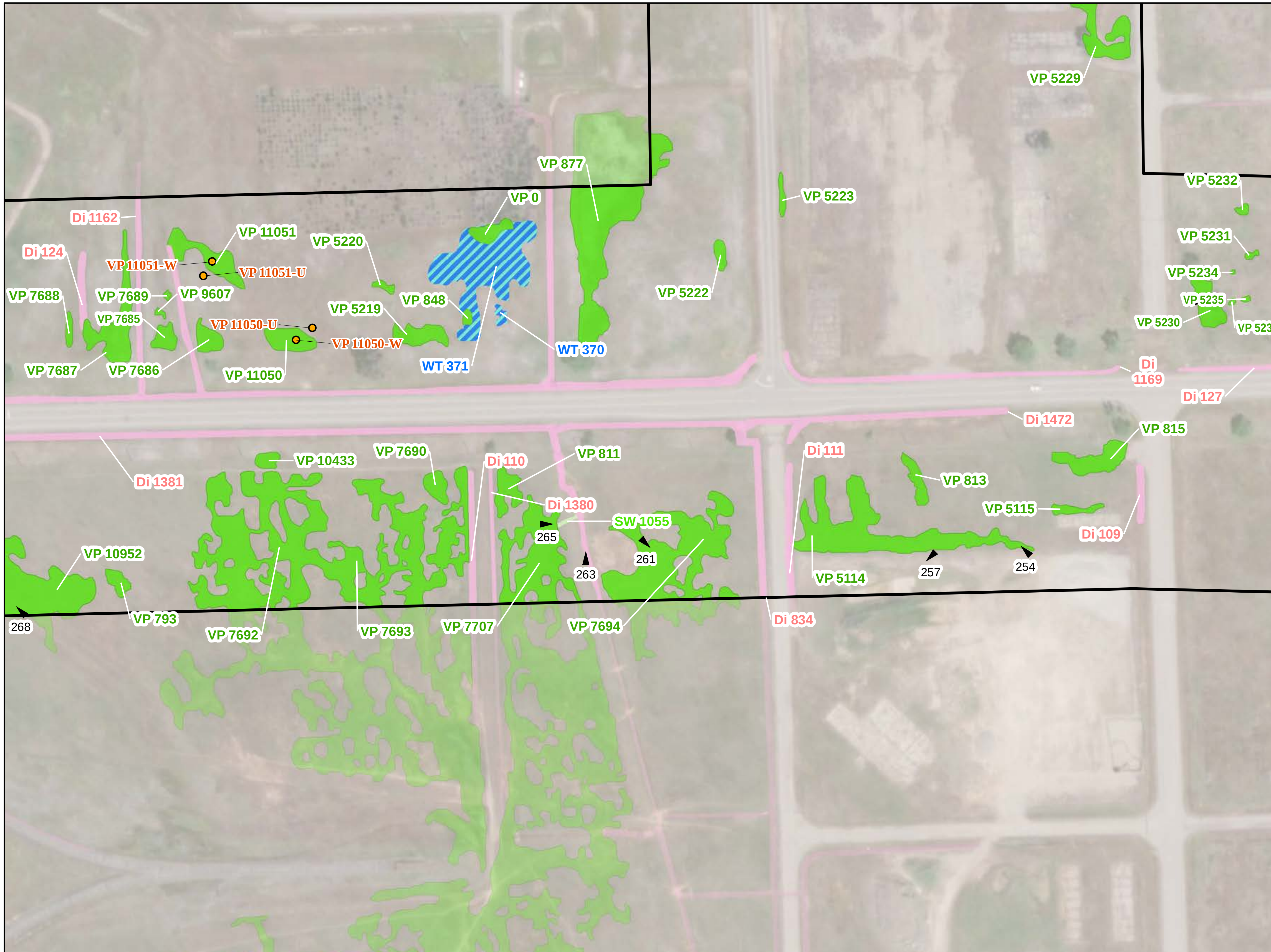
Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 37

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Data points

Wetlands

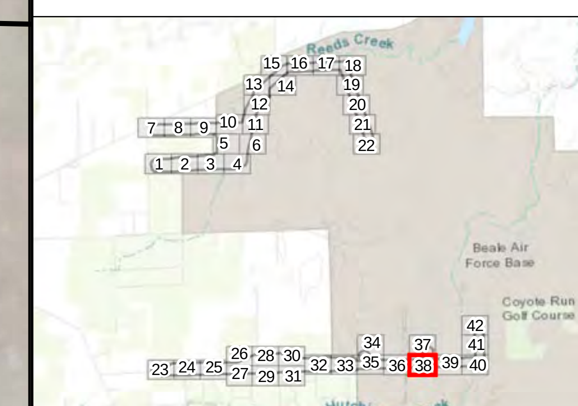
Ditch

Swale

Vernal Pool

Wetland

Beale Air Force Base



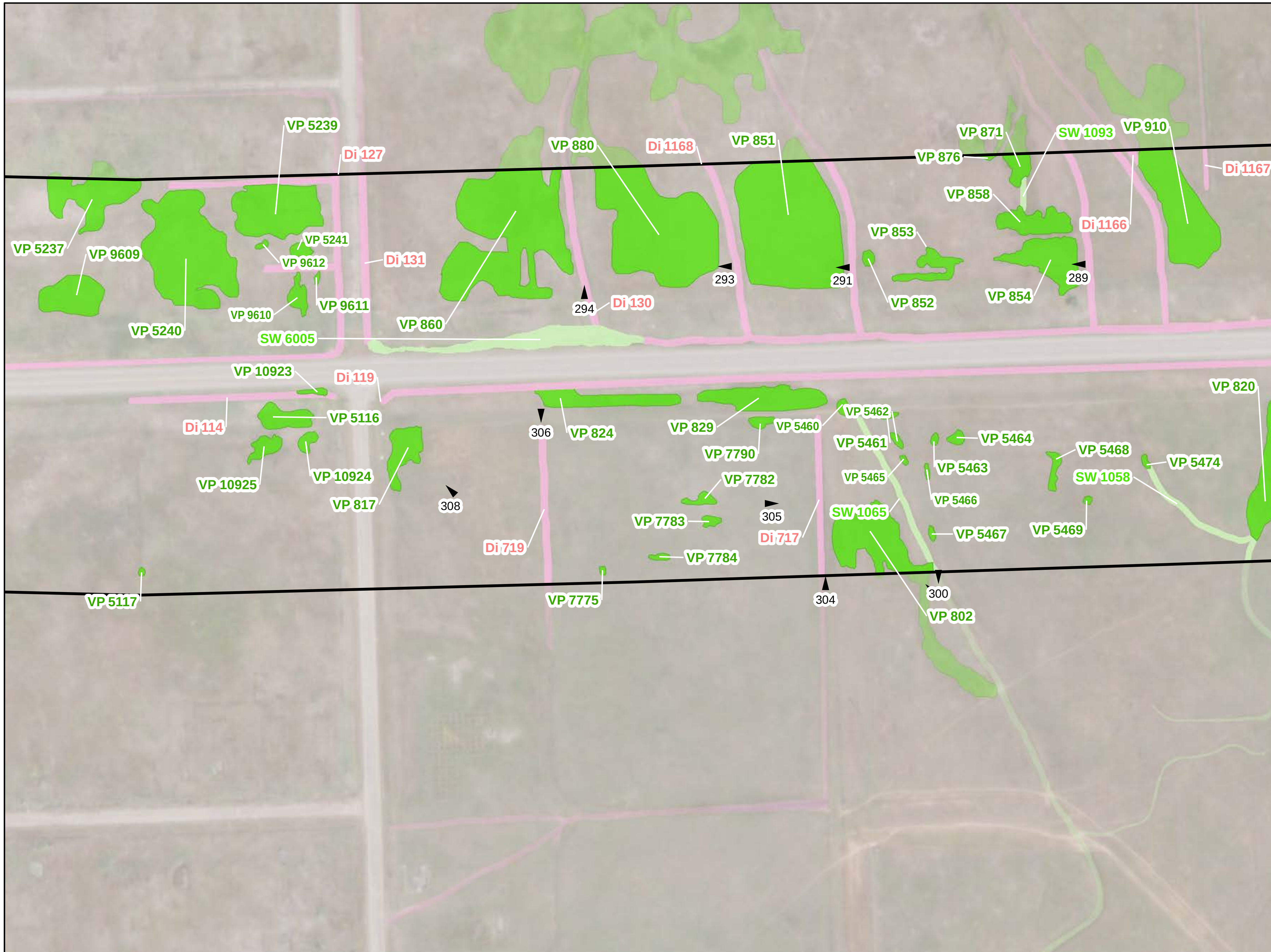
0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 38

TRANSCON environmental



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

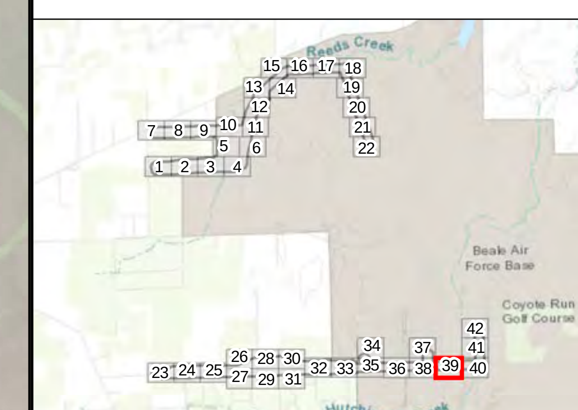
Wetlands

Ditch

Swale

Vernal Pool

Beale Air Force Base



0 100 200 Feet

N W E S

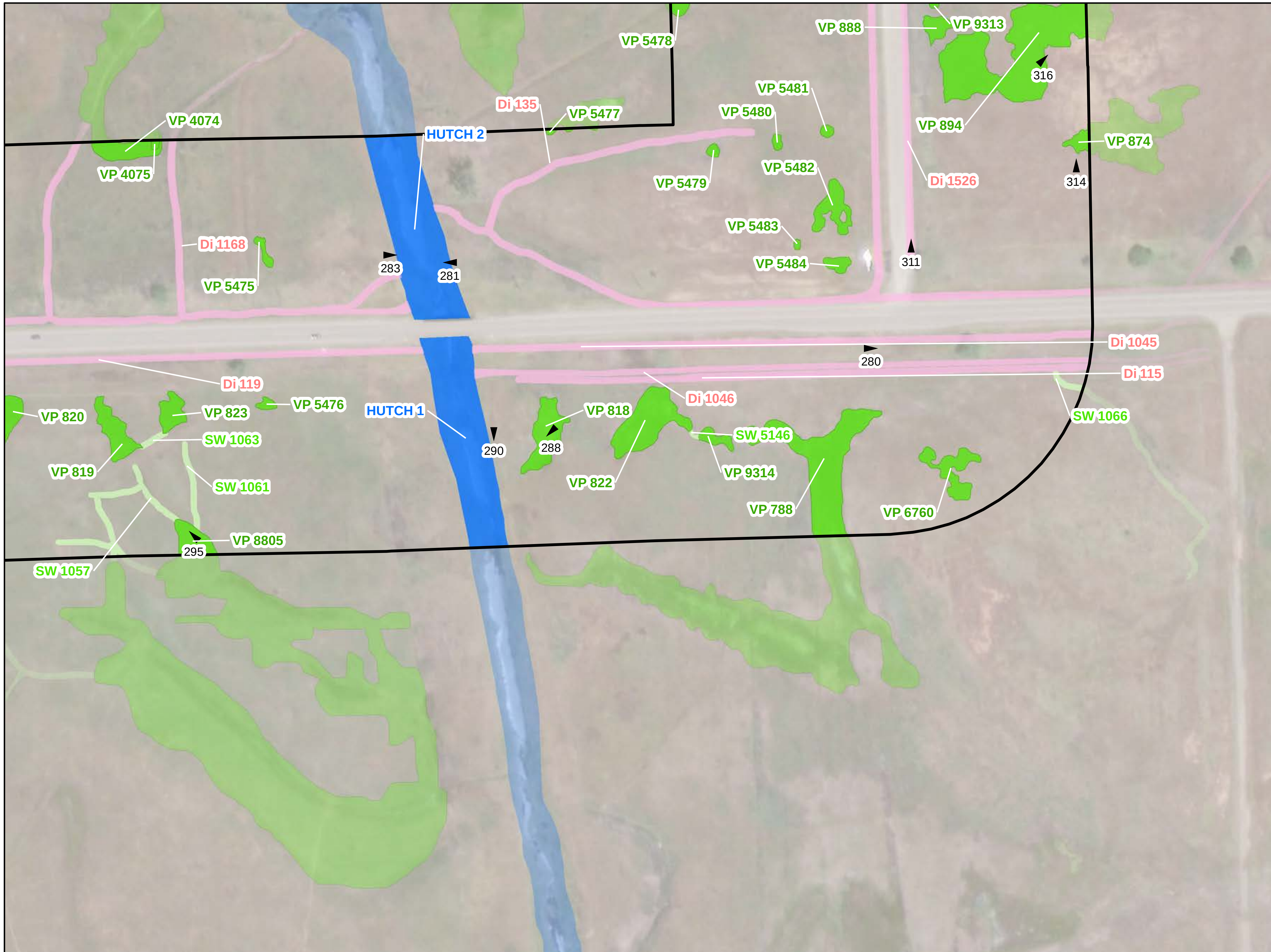
Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 39

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

Legend

Survey Area

Photopoints (w/direction)

Wetlands

Ditch

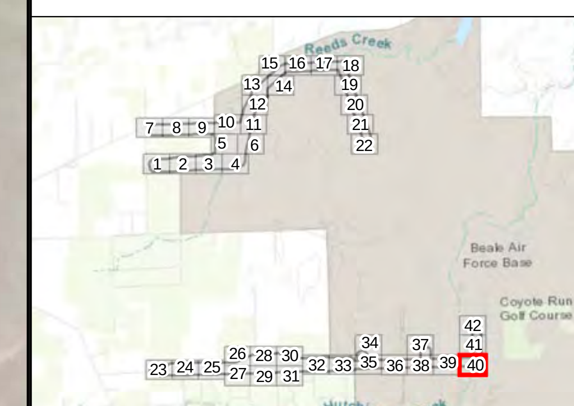
Swale

Vernal Pool

Other Waters of the U.S.

Stream

Beale Air Force Base Boundary



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

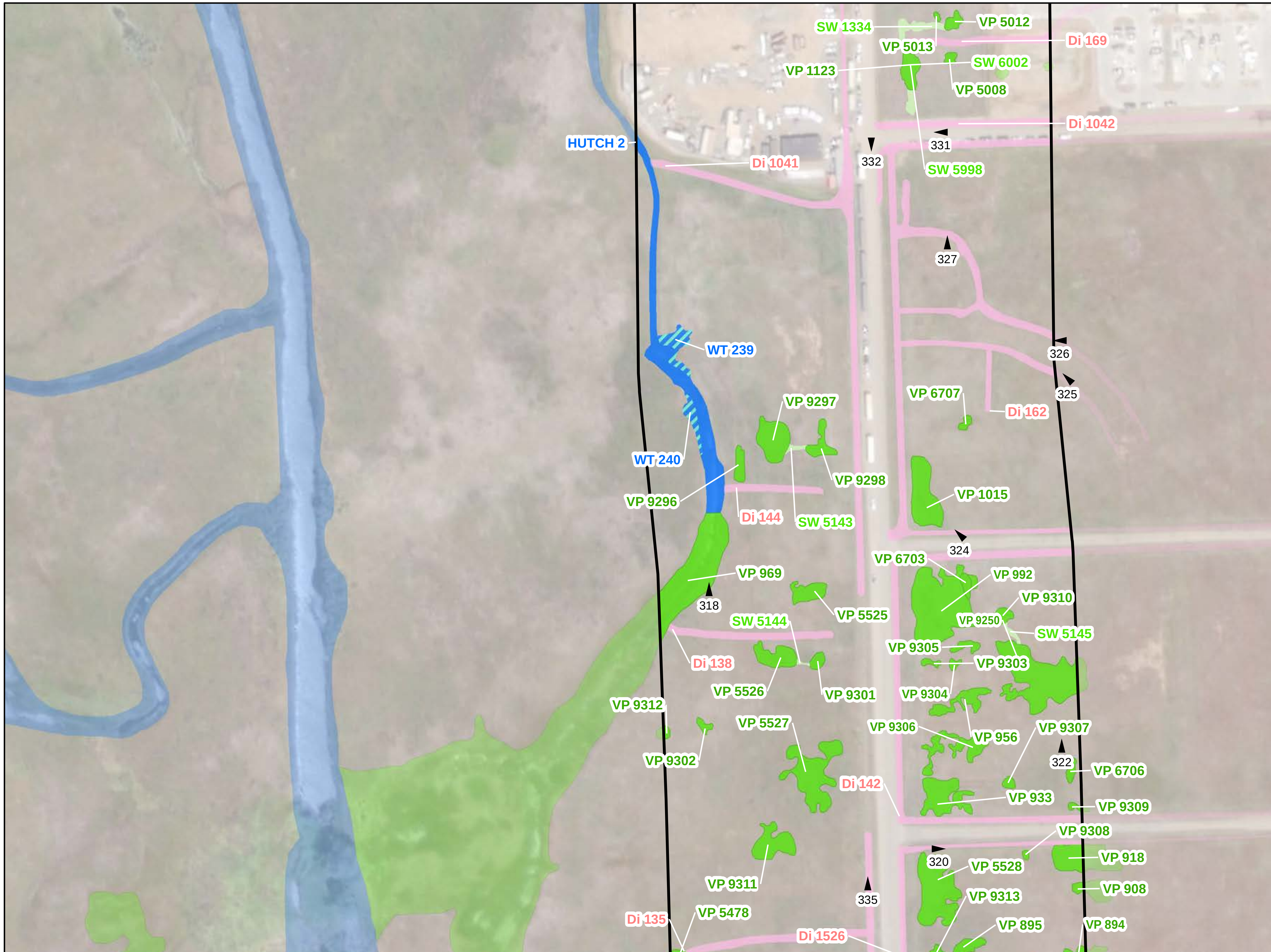
Coordinate System:
NAD 1983 UTM Zone 10N

Map 40

TRANSCON environmental

Aquatic Resources Delineation Map

Beale WAPA Interconnection Project



Legend

Survey Area

Photopoints (w/direction)

Wetlands

Ditch

Swale

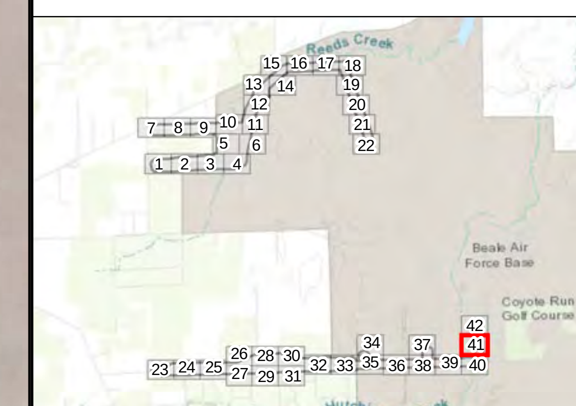
Vernal Pool

Wetland

Other Waters of the U.S.

Stream

Beale Air Force Base



0 100 200 Feet

N E S W

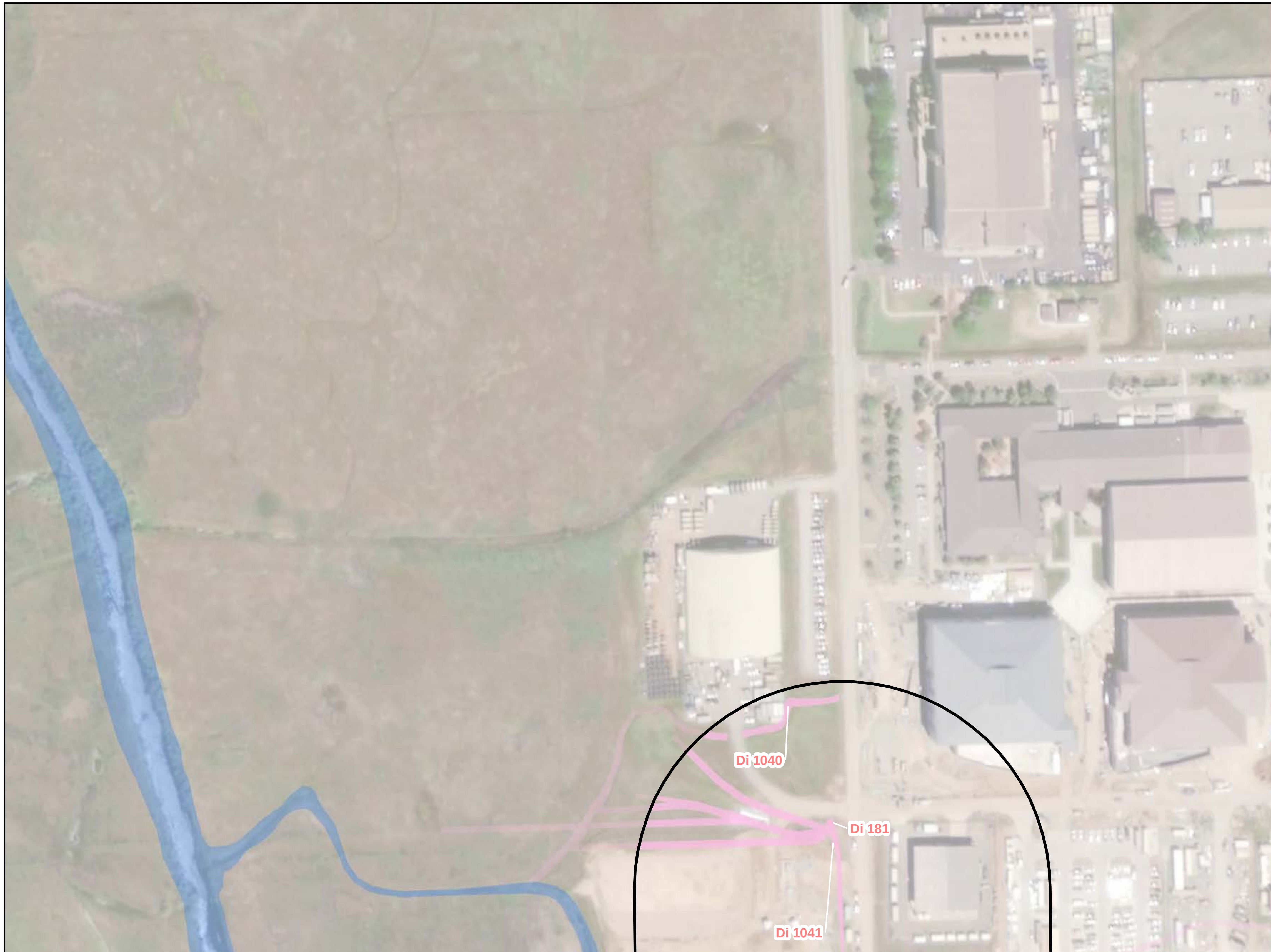
Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 41

TRANSCON environmental

Map Created on: January 3, 2019 Document Path: G:\Projects\Wapa\Beale WAPA Interconnection EA\Biological\BWIP_AQ_mapped_waters.mxd



Aquatic Resources Delineation Map

Beale WAPA Interconnection Project

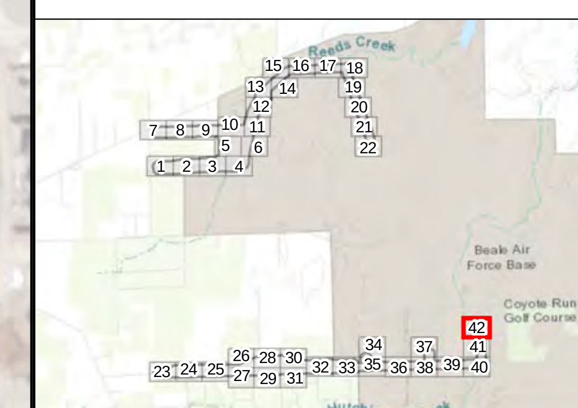
Legend

Survey Area

Wetlands

Ditch

Beale Air Force Base



0 100 200 Feet

Delineations conducted:
3/12/18 to 3/15/18 and 10/4/18
by Ben Lardiere and Molly Dodge

Coordinate System:
NAD 1983 UTM Zone 10N

Map 42

TRANSCON environmental

APPENDIX B

REPRESENTATIVE SITE PHOTOGRAPHS

APPENDIX C

PLANT LIST

Photo 1. Reeds Creek (Intermittent)
[-121.442749, 39.163850] - Facing East

Photo 2. Reeds Creek (Intermittent)
[-121.464482, 39.144570] – Facing Northwest

Photo 3.
Emergent freshwater wetland (Reeds Creek)
[-121.466180, 39.144621] – Facing East

Photo 4.
Emergent freshwater wetland (Reeds Creek)
[-121.464690, 39.143457] – Facing West

Photo 5. Hutchinson Creek (Intermittent)
[-121.400166, 39.101128] – Facing North

Photo 6.
Freshwater emergent wetland (Hutchinson Creek)
[-121.398710, 39.103825] – Facing North

Photo 7. Stream S1 (Intermittent stream)
[-121.481565, 39.100012] – Facing Southwest

Photo 8. Wetland (Freshwater emergent wetland—Stream S1) [-121.480112, 39.100122] – Facing South

Photo 9. Wetland (Freshwater emergent wetland—Stream S1) [-121.477585, 39.100661] – Facing Northwest

Photo 10. Stream S2 (Intermittent stream) [-121.468716, 39.100016] – Facing North

Photo 11. Stream S3 (Intermittent stream) [-121.426721, 39.100115] – Facing South

Photo 12. Vernal Pool (Freshwater emergent wetland)
[-121.436043, 39.101721] – Facing South

Photo 13. Vernal Pool (Freshwater emergent wetland)
[-121.430372, 39.159209] – Facing South

Photo 14. Vernal Pool vegetation (Freshwater emergent wetland)

Photo 15. Vernal Pool vegetation (Freshwater emergent wetland)

Photo 16. Swale (Freshwater emergent wetland)
[-121.435203, 39.164210] – Facing West

Photo 17. Swale (Freshwater emergent wetland)
[-121.426763, 39.150507] – Facing West

Photo 18. Swale (Freshwater emergent wetland)
[-121.450461, 39.162911] – Facing West

Photo 19. Ditch (Freshwater emergent wetland)
[-121.406512, 39.101078] – Facing North

Photo 20. Ditch (Freshwater emergent wetland)
[-121.434208, 39.162880] – Facing North

Photo 21. Agricultural canal (off-base) [-121.438002, 39.100503] – Facing Northeast

Photo 22. Agricultural ditch (off-base)

Photo 23. Settling basin (Beale AFB)
[-121.417659, 39.101091] – Facing South

PLANTS SPECIES IDENTIFIED WITHIN THE SURVEY AREAS			
GENUS	**Common Name**	**Scientific Name**	**Wetland indicator status**
APIACEAE	coyote thistle	*Eryngium vaseyi*	FACW
ASTERACEAE	coyote brush	*Baccharis pilularis*	NL
	prickly lettuce	*Lactuca serriola*	FACU
	Fremont's goldfields	*Lasthenia fremontii*	OBL
	tarweed	*Madia elegans*	NL
	pineapple weed	*Matricaria discoidea*	FACU
	dwarf wooly marbles	*Psilocarphus brevissimus*	FACW
	milk thistle	*Silybum marianum*	NL
	cocklebur	*Xanthium strumarium*	FAC
BORAGINACEAE	fiddleneck	*Amsinckia mensiesii* var. *mensiesii*	NL
BRASSICACEAE	black mustard	*Brassica nigra*	NL
	wild radish	*Raphanus sativus*	NL
CONVOLVULACEAE	field bindweed	*Convolvulus arvensis*	NL
CYPERACEAE	sedge	*Carex* sp.	UNK
	umbrella sedge	*Cyperus eragrostis*	FACW
	common spikerush	*Eleocharis macrostachya*	OBL
	hardstem bulrush	*Schoenoplectus acutus*	OBL
EUPHORBIACEAE	doveweed	*Eremocarpus setigerus*	NL
FABACEAE	trefoil	*Lotus* sp.	UNK
	miniature lupine	*Lupinus bicolor*	NL
	bur-clover	*Medicago polymorpha*	NL
	common vetch	*Vicia sativa*	UPL
GERANIACEAE	filaree	*Erodium cicutarium*	NL
JUNCACEAE	Baltic rush	*Juncus balticus*	FACW
ONAGRACEAE	willow-herb	*Epilobium* sp.	UNK
OROBANCHACEAE	field owl's-clover	*Castilleja campestris*	OBL
PAPAVERACEAE	frying pan poppy	*Eschscholzia lobbii*	NL
PLANTAGINACEAE	California plantain	*Plantago erecta*	FACU

PLANTS SPECIES IDENTIFIED WITHIN THE SURVEY AREAS			
GENUS	**Common Name**	**Scientific Name**	**Wetland indicator status***
POACEAE	short-awn foxtail	*Alopecurus aequalis*	OBL
	pacific foxtail	*Aleopecurus saccatus*	OBL
	wild oat	*Avena fatua*	NL
	ripgut brome	*Bromus diandrus*	FAC
	soft chess	*Bromus hardeaceus*	FACU
	Bermuda grass	*Cynodon dactylon*	FAC
	medusahead	*Elymus caput-medusae*	NL
	foxtail barley	*Hordeum jubatum*	FAC
	mediterranean barley	*Hordeum marinum*	FAC
	Italian ryegrass	*Lolium perennis*	FAC
	California melic	*Melica californica*	NL
	annual bluegrass	*Poa annua*	FAC
	purple needlegrass	*Stipa pulchra*	NL
POLEMONIACEAE	white head navarretia	*Navarretia leucocephala*	OBL
POLYGONACEAE	knotweed	*Polygonum* sp.	UNK
	curly dock	*Rumex crispus*	FAC
RANUNCULACEAE	Carter's buttercup	*Ranunuculus bonariensisRanunculus bonariensis*	OBL
SALICACEAE	willow	*Salix* sp.	UNK
THEMIDACEAE	California brodiaea	*Brodiaea californica*	NL
	blue-dicks	*Dichelostemma capitatum*	FACU
TYPHACEAE	cattail	*Typha latifolia*	OBL
***OBL =** Obligate, **FACW** = Facultative Wetland, **FAC** = Facultative, **FACU** = Facultative Upland, **UPL** = Obligate Upland, **NL** = Not Listed			

APPENDIX D

WETLAND DELINEATION FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: SW 6012U

Investigator(s): Ben Lardiere Section, Township, Range: Section 04, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100015 Long: -121.427634 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ✓	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** ✓
Hydric Soil Present?	Yes ___	No ✓	
Wetland Hydrology Present?	Yes ___	No ✓	

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: SW 6012U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______________
Water Table Present? Yes ______ No ✓ Depth (inches): ______________
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: SW 6012W

Investigator(s): Ben Lardiere Section, Township, Range: Section 04, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100015 Long: -121.427559 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the Sampled Area within a Wetland?** **Yes** ✓ **No** ___
Hydric Soil Present?	Yes ___	No ✓	
Wetland Hydrology Present?	Yes ✓	No ___	

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	20	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	20	Y	NL
4. Ranunuculus bonariensis	5		OBL
5. Eryngium vaseyi	5		FACW
6. Eleocharis spp.	10		UNK
7. Poaceae spp. 2	20		UNK
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ___

Remarks:

Inconclusive; multiple dominant grass species were unidentified due to lack of inflorescence.

SOIL

Sampling Point: SW 6012W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ______	Depth (inches): ______
Water Table Present?	Yes ✓	No ______	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ✓	No ______	Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11037W

Investigator(s): Ben Lardiere Section, Township, Range: Section 07, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.161232 Long: -121.45344 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ____
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	20	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	20	Y	NL
4. Ranunuculus bonariensis	10		OBL
5. Eryngium vaseyi	10		FACW
6. Eleocharis spp	10		UNK
7.			
8.			
= Total Cover	90		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks:

Could not definitively prove presence/absence of hydrophytic vegetation; several species could not be identified during the season in which surveys were conducted

SOIL

Sampling Point: VP 11037

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ___

Remarks:

Unknown...soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

✓ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): ___
Water Table Present? Yes ✓ No ___ Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11037U

Investigator(s): Ben Lardiere Section, Township, Range: Section 07, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.161182 Long: -121.45339 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11037

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11038W

Investigator(s): Ben Lardiere Section, Township, Range: Section 07, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.15927 Long: -121.453505 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: PEM2E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

The sampled area is a wetland; wetland hydrology and hydrophytic vegetation emblematic of ephemeral wetlands (i.e. vernal pools) were present; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5 ft radius)			
1. Eryngium vaseyi	5	N	FACW
2. Brassica rapa	5	N	NL
3. Ranunuculus bonariensis	30	Y	OBL
4. Aleopecurus saccatus	25	Y	OBL
5. Callitriche marginata	25	Y	OBL
6. Poaceae spp.	10	N	UNK
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Hydrophytic vegetation present

SOIL

Sampling Point: VP 11038W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ______	Depth (inches): ______
Water Table Present?	Yes ✓	No ______	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ✓	No ______	Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11038U

Investigator(s): Ben Lardiere Section, Township, Range: Section 07, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.159302 Long: -121.453484 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11038

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______________
Water Table Present? Yes ______ No ✓ Depth (inches): ______________
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11040W

Investigator(s): Ben Lardiere Section, Township, Range: Section 18, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.147858 Long: -121.459128 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: PEM2E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ___	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

The sampled area is a wetland; wetland hydrology and hydrophytic vegetation emblematic of ephemeral wetlands (i.e. vernal pools) were present; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5 ft radius)			
1. Aleopecurus saccatus	50	Y	OBL
2. Ranunuculus bonariensis	15	N	OBL
3. Brassica rapa	15	N	NL
4. Poaceae spp.	5	N	UNK
5.			
6.			
7.			
8.			
= Total Cover	85		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Hydrophytic vegetation present

SOIL

Sampling Point: VP 11040H

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix: Color (moist)	Matrix: %	Redox Features: Color (moist)	Redox Features: %	Redox Features: Type[1]	Redox Features: Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ___

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

✓ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): ___

Water Table Present? Yes ✓ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11040U

Investigator(s): Ben Lardiere Section, Township, Range: Section 18, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.147887 Long: -121.459152 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? **Yes** ___ **No** ✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11040

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? **Yes** ______ **No** ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ________

Water Table Present? Yes ______ No ✓ Depth (inches): ________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ________

Wetland Hydrology Present? **Yes** ______ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11041W

Investigator(s): Ben Lardiere Section, Township, Range: Section 18, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.15239 Long: -121.459896 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ✓, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		
Hydric Soil Present?		
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ____ No ____

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	20	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	20	Y	NL
4. Ranunuculus bonariensis	10	N	OBL
5. Eryngium vaseyi	5	N	FACW
6. Alopecurus saccatus	5	N	OBL
7. Poaceae spp. 2	20	Y	UNK
8.			
= Total Cover	95		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	5	x 2 = 10
FAC species		x 3 =
FACU species		x 4 =
UPL species	45	x 5 = 225
Column Totals:	70 (A)	255 (B)

Prevalence Index = B/A = 3.21

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks:

Inconclusive; multiple dominant grass species were unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11041

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): 3

Water Table Present? Yes ✓ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11041U

Investigator(s): Ben Lardiere Section, Township, Range: Section 18, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.15245 Long: -121.459883 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? **Yes** ___ **No** ✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11041

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: __________

Depth (inches): __________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ________

Water Table Present? Yes ______ No ✓ Depth (inches): ________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11042W

Investigator(s): Ben Lardiere Section, Township, Range: Section 16, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.148776 Long: -121.426304 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ✓, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ____
Hydric Soil Present?	Yes ____ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	30	Y	UNK
2. Poaceae spp. 2	30	Y	UNK
3. Elymus caput-medusae	10	N	NL
4. Ranunuculus bonariensis	10	N	OBL
5. Aleopecurus saccatus	10	N	OBL
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks:

Inconclusive; multiple dominant grass species were unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11042

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): ______

Water Table Present? Yes ✓ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11042U

Investigator(s): Ben Lardiere Section, Township, Range: Section 16, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.148767 Long: -121.426257 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11042

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ____________

Water Table Present? Yes ______ No ✓ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ____________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11043W

Investigator(s): Ben Lardiere Section, Township, Range: Section 18, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.101173 Long: -121.4287 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ✓, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		
Hydric Soil Present?		
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ____ No ____

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	35	Y	UNK
2. Poaceae spp. 2	30	Y	UNK
3. Elymus caput-medusae	20	Y	NL
4. Ranunuculus bonariensis	5	N	OBL
5. Eryngium vaseyi	5	N	FACW
6. Aleopecurus saccatus	5	N	OBL
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks:

Inconclusive; multiple dominant grass species were unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11043V

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): 3

Water Table Present? Yes ✓ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11043U

Investigator(s): Ben Lardiere Section, Township, Range: Section 18, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.101173 Long: -121.428779 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11043

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______________
Water Table Present? Yes ______ No ✓ Depth (inches): ______________
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11044W

Investigator(s): Ben Lardiere Section, Township, Range: Section 08, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.16367 Long: -121.44821 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ✓, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No ___	**Is the Sampled Area within a Wetland?** Yes ___ No ___
Hydric Soil Present?	Yes ___ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	25	Y	UNK
2. Poaceae spp. 2	25	Y	UNK
3. Elymus caput-medusae	20	Y	NL
4. Brassica rapa	20	N	OBL
5. Eryngium vaseyi	5	N	FACW
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ___

Remarks:

Inconclusive; multiple dominant grass species were unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11044

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): 3

Water Table Present? Yes ✓ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11043U

Investigator(s): Ben Lardiere Section, Township, Range: Section 08, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.163746 Long: -121.448108 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Hydric Soil Present?	Yes ____	No ✓		
Wetland Hydrology Present?	Yes ____	No ✓		

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11043

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11045W

Investigator(s): Ben Lardiere Section, Township, Range: Section 08, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.164045 Long: -121.447967 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: PEM2E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No	Is the Sampled Area within a Wetland? Yes ✓ No
Hydric Soil Present?	Yes	No	
Wetland Hydrology Present?	Yes ✓	No	

Remarks:

The sampled area is a wetland; wetland hydrology and hydrophytic vegetation emblematic of ephemeral wetlands (i.e. vernal pools) were present; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size:)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5 ft radius)			
1. Ranunuculus bonariensis	30	Y	OBL
2. Aleopecurus saccatus	20	Y	OBL
3. Callitriche marginata	5	N	OBL
4. Eleocharis spp.	10	N	UNK
5.			
6.			
7.			
8.			
= Total Cover	65		
Woody Vine Stratum (Plot size:)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Hydrophytic vegetation present

SOIL

Sampling Point: VP 11045

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

✓ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): ______
Water Table Present? Yes ✓ No ______ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11045U

Investigator(s): Ben Lardiere Section, Township, Range: Section 08, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.164008 Long: -121.447926 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Stratum / Species	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11045

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11047W

Investigator(s): Ben Lardiere Section, Township, Range: Section 08, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.163688 Long: -121.448922 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ✓, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ___
Hydric Soil Present?	Yes ___	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ___ No ___

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	25	Y	UNK
2. Poaceae spp. 2	25	Y	UNK
3. Elymus caput-medusae	20	Y	NL
4. Brassica rapa	20	N	NL
5. Eryngium vaseyi	5	N	FACW
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ___

Remarks:

Inconclusive; multiple dominant grass species were unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11047

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ______	Depth (inches): 3
Water Table Present?	Yes ✓	No ______	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ✓	No ______	Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11047U

Investigator(s): Ben Lardiere Section, Township, Range: Section 08, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.163694 Long: -121.448771 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? **Yes** ___ **No** ✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11047

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes ____ No ____

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____
Water Table Present? Yes ____ No ✓ Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11048W

Investigator(s): Ben Lardiere Section, Township, Range: Section 33, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.101127 Long: -121.428333 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ✓, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ___
Hydric Soil Present?	Yes ___	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ___ No ___

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	90	Y	UNK
2. Elymus caput-medusae	10	N	UNK
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ___

Remarks:

Inconclusive; dominant grass species was unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11048V

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

✓ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): 3
Water Table Present? Yes ✓ No ______ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11048U

Investigator(s): Ben Lardiere Section, Township, Range: Section 33, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.101114 Long: -121.428314 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11048

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11049W

Investigator(s): Ben Lardiere Section, Township, Range: Section 04, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100264 Long: -121.425497 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: PEM2E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ___**
Hydric Soil Present?	Yes ___ No ___		
Wetland Hydrology Present?	Yes ✓ No ___		

Remarks:

The sampled area is a wetland; wetland hydrology and hydrophytic vegetation emblematic of ephemeral wetlands (i.e. vernal pools) were present; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5 ft radius)			
1. Ranunuculus bonariensis	40	Y	OBL
2. Aleopecurus saccatus	40	Y	OBL
3. Callitriche marginata	5	N	OBL
4. Poaceae spp.	5	N	UNK
5.			
6.			
7.			
8.			
= Total Cover	90		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✓ No ___**

Remarks:

Hydrophytic vegetation present

SOIL

Sampling Point: VP 11049

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________________

Depth (inches): ____________________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ______	Depth (inches): ____________
Water Table Present?	Yes ✓	No ______	Depth (inches): ____________
Saturation Present? (includes capillary fringe)	Yes ✓	No ______	Depth (inches): ____________

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11049U

Investigator(s): Ben Lardiere Section, Township, Range: Section 04, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100245 Long: -121.425424 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No ✓	**Is the Sampled Area within a Wetland?** Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11049

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No ✓	Depth (inches): ______
Water Table Present?	Yes ______	No ✓	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No ✓	Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11050W

Investigator(s): Ben Lardiere Section, Township, Range: Section 33, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.10101 Long: -121.415137 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ✓, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ___
Hydric Soil Present?	Yes ___	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ___ No ___

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	25	Y	UNK
2. Brassica rapa	20	Y	NL
3. Eryngium vaseyi	20	Y	FACW
4. Ranunuculus bonariensis	10	N	OBL
5. Aleopecurus saccatus	10	N	OBL
6.			
7.			
8.			
= Total Cover	85		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ___

Remarks:

Inconclusive; dominant grass species was unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11050W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): 3

Water Table Present? Yes ✓ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11050U

Investigator(s): Ben Lardiere Section, Township, Range: Section 33, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.101062 Long: -121.415046 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11050

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11051W

Investigator(s): Ben Lardiere Section, Township, Range: Section 33, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.101354 Long: -121.41559 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ✓, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ___
Hydric Soil Present?	Yes ___	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? **Yes** ___ **No** ___

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	35	Y	UNK
2. Poaceae spp. 2	35	Y	NL
3. Eryngium vaseyi	5	N	FACW
4. Ranunuculus bonariensis	10	N	OBL
5. Brassica rapa	10	N	NL
6.			
7.			
8.			
= Total Cover	95		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ___

Remarks:

Inconclusive; dominant grass species was unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11051

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

✓ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): 3

Water Table Present? Yes ✓ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11051U

Investigator(s): Ben Lardiere Section, Township, Range: Section 33, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.101294 Long: -121.41564 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11051

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ____________

Water Table Present? Yes ______ No ✓ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ____________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11052W

Investigator(s): Ben Lardiere Section, Township, Range: Section 33, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100892 Long: -121.423969 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ✓, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		
Hydric Soil Present?		
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ___ No ___

Remarks:

Inconclusive - some plant species were unidentified and hydrophytic vegetation test was inconclusive; also soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp. 1	45	Y	UNK
2. Poaceae spp. 2	45	Y	NL
3. Eryngium vaseyi	5	N	FACW
4. Ranunuculus bonariensis	5	N	OBL
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ___

Remarks:

Inconclusive; dominant grass species was unidentified due to lack of inflorescence.

SOIL

Sampling Point: VP 11052

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

✓ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): 3
Water Table Present? Yes ✓ No ______ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present (A1)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: VP 11052U

Investigator(s): Ben Lardiere Section, Township, Range: Section 33, Township 15N, Range 5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100857 Long: -121.423976 Datum: NAD83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** ✓
Hydric Soil Present?	Yes ____	No ✓		
Wetland Hydrology Present?	Yes ____	No ✓		

Remarks:

The sampled area is within an upland area; soil samples could not be collected due to U.S. Navy restrictions for Beale Air Force Base.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5' radius)			
1. Poaceae spp.	30	Y	UNK
2. Brassica rapa	20	Y	NL
3. Elymus caput-medusae	30	Y	NL
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ✓

Remarks:

Hydrophytic vegetation not present; grass species was not identified due to lack of inflorescence

SOIL

Sampling Point: VP 11052

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ______

Remarks:

Soil sample was not taken due to ground disturbance restrictions on Beale AFB

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: S1U

Investigator(s): Ben Lardiere Section, Township, Range: Section 36, Township 15N, Range 4E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100909 Long: -121.480106 Datum: ______

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are “Normal Circumstances” present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ____	No ✓

Is the Sampled Area within a Wetland? **Yes** ____ **No** ✓

Remarks:

The sampled area is not a wetland; sampled area emblematic of similar adjacent upland areas interspersed with wetland/swale features.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5 foot radius)			
1. Elymus caput-medusae	80	Y	FACU
2. Brassica nigra	10	Y	NL
3. Vicia sativa	10	Y	FACU
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	90 (A)		360 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ✓

Remarks:

Hydrophytic vegetation not present

SOIL

Sampling Point: S1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5 YR 3/2	100					silty-clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** ✓

Remarks:

Hydric soils not present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? **Yes** ___ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present; no signs of inundation via historic aerial imagery

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: S1W

Investigator(s): Ben Lardiere Section, Township, Range: Section 36, Township 15N, Range 4E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100391 Long: -121.480320 Datum: NAD 83

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ✓	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

Feature is within a wetland (swale)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1. n/a			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5 foot radius)			
1. Unknown Poaceae	30	Y	UNK
2. Rumex crispus	10	N	FAC
3. Juncus effusus	15	N	FACW
4. Juncus balticus	10	N	FACW
5. Cyperus eragrostis	5	N	FACW
6. Persicaria hydropiper	25	Y	OBL
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: ___)			
1. n/a			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	35	x 2 =	70
FAC species	10	x 3 =	30
FACU species		x 4 =	
UPL species	30	x 5 =	150
Column Totals:	100 (A)		275 (B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Hydrophytic vegetation present; although dominant grass was not indentified, prevalence index indicated hydrophytic vegetation; Persicaria was dead herbage from previous growing season

SOIL

Sampling Point: S1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 8	7.5YR 3/2	60	2.5 YR	40	D	M	silty-clay	Depleted matrix very prevalent

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ______

Remarks:

Depleted matrix (F3) very prevalent throughout

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): see notes

Water Table Present? Yes ✓ No ______ Depth (inches): 4 inches

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 0-8

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Ponded water in small portion of site at lowest end; soil saturated; soil pit filled with water up to 4 inches from surface; inundation visible on several years of historic aerial imagery

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: S2U

Investigator(s): Ben Lardiere Section, Township, Range: Section 36, Township 15N, Range 4E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100795 Long: -121.477942 Datum: ____

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

The sampled area is not a wetland; sampled area emblematic of similar adjacent upland areas interspersed with wetland/swale features.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5 foot radius)			
1. Elymus caput-medusae	80	Y	FACU
2. Brassica nigra	10	Y	NL
3. Vicia sativa	10	Y	FACU
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	90 (A)		360 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Hydrophytic vegetation not present

SOIL

Sampling Point: S2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5 YR 3/2	100					silty-clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5) (**LRR C**)
__ 1 cm Muck (A9) (**LRR D**)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
__ Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)
__ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) (**LRR C**)
__ 2 cm Muck (A10) (**LRR B**)
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? **Yes** ____ **No** ✓

Remarks:

Hydric soils not present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1) (**Nonriverine**)
__ Sediment Deposits (B2) (**Nonriverine**)
__ Drift Deposits (B3) (**Nonriverine**)
__ Surface Soil Cracks (B6)
__ Inundation Visible on Aerial Imagery (B7)
__ Water-Stained Leaves (B9)
__ Salt Crust (B11)
__ Biotic Crust (B12)
__ Aquatic Invertebrates (B13)
__ Hydrogen Sulfide Odor (C1)
__ Oxidized Rhizospheres along Living Roots (C3)
__ Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Tilled Soils (C6)
__ Thin Muck Surface (C7)
__ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

__ Water Marks (B1) (**Riverine**)
__ Sediment Deposits (B2) (**Riverine**)
__ Drift Deposits (B3) (**Riverine**)
__ Drainage Patterns (B10)
__ Dry-Season Water Table (C2)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Shallow Aquitard (D3)
__ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ______
Water Table Present? Yes ____ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ______

Wetland Hydrology Present? **Yes** ____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present; no signs of inundation via historic aerial imagery

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beale WAPA Interconnection Project City/County: Yuba County Sampling Date: 3/12/2018

Applicant/Owner: WAPA State: CA Sampling Point: S2W

Investigator(s): Ben Lardiere Section, Township, Range: Section 36, Township 15N, Range 4E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): C-California Subtropical Lat: 39.100923 Long: -121.477856 Datum: ____

Soil Map Unit Name: Perkins loam, 0 to 2 percent slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ____	**Is the Sampled Area within a Wetland?**	**Yes** ✓ **No** ____
Hydric Soil Present?	Yes ✓ No ____		
Wetland Hydrology Present?	Yes ✓ No ____		

Remarks:

Feature is LIKELY a wetland (swale) that comes to a confluence with nearby intermittent creek; however, presence of hydrophytic vegetation was not confirmed due to timing of survey

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. n/a			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5 foot radius)			
1. Poaceae sp.	80	Y	Unk
2. Rumex crispus	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. n/a			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ____

Remarks:

Dominant grass species could not be identified in the field

SOIL

Sampling Point: S2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5 YR 3/2	80	2.5 YR 3/6	20	D	PL	Silty-clay	
8-12	7.5 YR 3/2	90	GLY 2.5/5PB	10	D	M	silty-clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ______

Remarks:

Redox very apparent

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 8 inches

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple wetland hydrology indicators present

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Beale WAPA Interconnection Project
Project Number: S1 OHWM
Stream: Stream S1
Investigator(s): B.Lardiere, M.Dodge

Date: 3/14/18 **Time:** 1:30 pm
Town: **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: UTM **Datum:** NAD 83
Coordinates: -121.480790, 39.101425

Potential anthropogenic influences on the channel system:

Channelized intermittent stream;

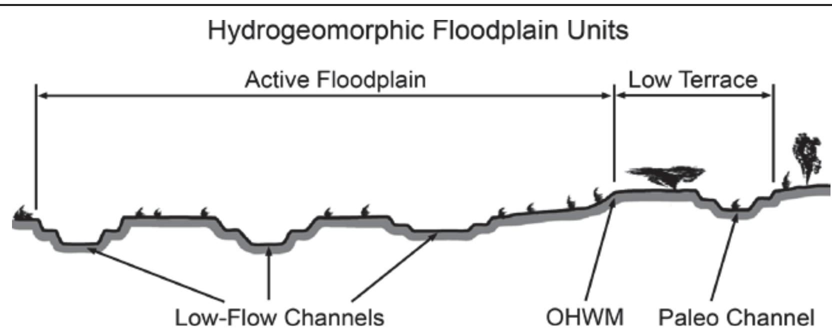
Brief site description:

Stream S1 is a channelized intermittent stream. However, in some years, it likely has perennial characteristics due to agricultural run-off

Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

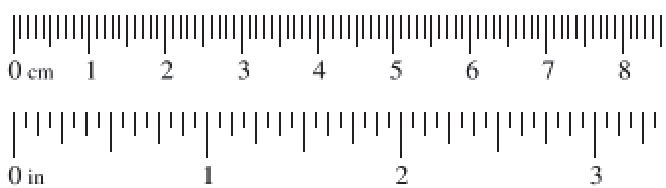


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ Digitized on computer
   - ☒ GPS
   - ☐ Other:

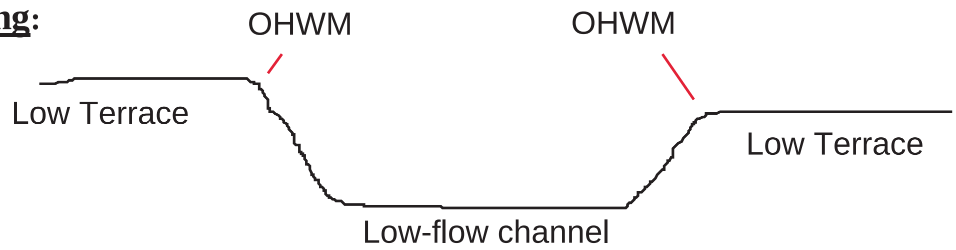
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
			Boulder	Gravel
	10.08	256		Gravel
			Cobble	Gravel
	2.56	64		Gravel
			Pebble	Gravel
	0.157	4		Gravel
			Granule	Gravel
	0.079	2.00		
			Very coarse sand	Sand
	0.039	1.00		Sand
			Coarse sand	Sand
	0.020	0.50		Sand
			Medium sand	Sand
1/2	0.0098	0.25		Sand
			Fine sand	Sand
1/4	0.005	0.125		Sand
			Very fine sand	Sand
1/8	0.0025	0.0625		
			Coarse silt	Silt
1/16	0.0012	0.031		Silt
			Medium silt	Silt
1/32	0.00061	0.0156		Silt
			Fine silt	Silt
1/64	0.00031	0.0078		Silt
			Very fine silt	Silt
1/128	0.00015	0.0039		
			Clay	Mud



Project ID: S1 OHWM **Cross section ID:** S1 OHWM **Date:** 3/14/18 **Time:** 1:30 pm

Cross section drawing:



OHWM

GPS point: -121.478699, 39.101493

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☐ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: ____________
- ☐ Other: ____________

Comments:

OHWM very evident due to abrupt break in slope and obvious change in vegetation species (upland grasses and forbs to bulrush)

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: -121.478706, 39.101574

Characteristics of the floodplain unit:

Average sediment texture: Unknown

Total veg cover: 15 % Tree: ____% Shrub: ____% Herb: 15 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: ____________
- ☐ Other: ____________
- ☐ Other: ____________

Comments:

Low-flow channel is apparent due to the presence of water during the survey. Low-flow channel was intermittently bordered by bulrush.

Project ID: S1 OHWM **Cross section ID:** S1 OHWM **Date:** 3/14/18 **Time:** 1:30 pm

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: -121.478706 , 39.101439

Characteristics of the floodplain unit:
Average sediment texture: Coarse silt
Total veg cover: 90 % Tree: ____% Shrub: ____% Herb: 90 %
Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: ____________
- ☐ Other: ____________
- ☐ Other: ____________

Comments:

The low terrace is apparent due to an obvious change in vegetation and break in slope. Vegetation species consist of weedy FAC/UPL/NL grasses and forbs.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: ____________________

Characteristics of the floodplain unit:
Average sediment texture: ____________
Total veg cover: ____ % Tree: ____% Shrub: ____% Herb: ____%
Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: ____________
- ☐ Other: ____________
- ☐ Other: ____________

Comments:

No apparent active floodplain

BEALE WAPA INTERCONNECT PROJECT ACAM ASSUMPTIONS

Project Characteristics

- Air Basin; Sacramento Valley
- Construction Start Date: 4/1/2020
- Construction duration:
  - 60kV underground line: 362 days
  - On-base 230kV T-line: 284 days
  - Off-base 230kV T-line: 468 days
  - Substation construction: 408 days
- Operational Year: 2023
- Climate Zone: 3
- Land Use Setting: Rural
- Utility Provider: N/A
- 6-day work weeks, 10 hours per day of productivity

Transmission Line

Table A-1. Transmission Line Footprint

Alternative	Length (miles)	Tower Estimate
Preferred Route		21
Northern A Alternative		21
Southern Alternative		30

Table A-2. Phases

Phases	Phase Description	Start Date	Duration* (working days)	Footprint (acres)	Footprint (sq. ft.)
1. ROW/Grading	Vegetation clearing and building access roads	6/7/2021	120	2.9	126,000
2. Foundation Excavation	Excavation for structure foundations	9/7/2021	120	12.6	549,000
3. Foundation Installation	Installation of structure foundations	10/1/2021	180	-	20,000
4. Monopole/Tower Assembly and Erection	Assembly and erection of monopoles/towers	12/1/2022	150	-	-
5. Conductor Stringing	Conductor stringing and sagging	3/1/2022	150	7	300,000
6. Disturbance Area Restoration	Restoration	9/1/2022	60	19.6	854,000
7. Substation Construction	Construction of substation	5/3/2021	408	11	479,000
8. Underground Line Construction	Construction of the underground line segment on Beale AFB	4/1/2020	362	0	68,640
*Estimates – Full calendar schedule is approximately 530 days, activities will be staggered					

Construction

- Assume 1 construction crew, due to short length of the line

Table A-3. Off-Road Equipment for Above Ground Construction

Phase	Equipment	Amount	Hours/Day
ROW Clearing (4 personnel)	Rubber-tired Dozers	2	10
	Graders	1	10
	Excavator	1	10
	Backhoe	1	10
	Dump Truck[1]	1	-
	Pickup truck[2]	2	6
Foundation Excavation (6 personnel)	Augers	2	10
	Backhoes	2	10
	Pickup Truck[2]	2	6
	Air Compressor	2	10
	Fuel Trucks[1]	1	-
Foundation Installation (6 personnel)	Flat Bed Truck	2	6
	Pickup Truck[2]	2	6
	Air Compressor	2	10
	Aerial Lifts	2	8
	Welder	2	10
	Concrete trucks[1]	2	-
Structure Assembly (6 personnel)	Cranes	2	8
	Aerial Lifts	2	8
	Pickup Truck[2]	2	6
	Tractors	1	10
	Fuel Truck[1]	1	-
	Helicopter[3]	1	0.25
Conductor Stringing (6 personnel)	Puller/tensioner	2	10
	Rubber-tired Dozers	2	10
	Aerial Lift	2	8
	Pickup truck[2]	6	6
	Materials truck[1]	1	-
	Light truck[1]	1	-
Restoration (4 personnel)	Rubber-tired Dozers	1	10
	Tractors/Loaders/Backhoes	1	10
	Light/dump truck[1]	1	-
Substation Construction (6 personnel)	Rubber-tired Dozers	2	10
	Crane	2	8
	Excavator	2	10
	Tensioner	1	8
	Tractor/blader	2	10
	Fuel/materials truck[1]	3	-
	Concrete truck[1]	2	-
	Pickup truck[2]	5	6

1. Emissions are counted in vendor trip calculations, not off-road
2. Pickup use on site. Pickup use offsite calculated as labor trips.
3. Helicopter use likely exaggerated

Table A-4. Off-Road Equipment for 60kV Below Ground Construction

Phase	Equipment	Amount	Hours/Day
60-xV Below Ground Construction	Trencher	1	10
	Excavator	1	10
	Materials truck[1]	1	-
	Light truck[1]	1	-
	Pickup trucks[2]	2	6

1. Emissions are counted in vendor trip calculations, not off-road
2. Pickup use on site. Pickup use offsite calculated as labor trips.

Table A-5. Trips and VMT

Phase	Number Workers	Daily Worker Trips	Total Estimated Vendor/Local Trips	Total Estimated Haul Trips	Worker Trip Length	Vendor Trip Length	Haul Trip Length
1. ROW/Grading	4	8	80	0	22.0	22.0	90.0
2. Foundation excavation	6-8	14	80	0	22.0	22.0	90.0
3. Foundation installation	6-8	14	500	350	22.0	22.0	90.0
3.Monopole/Tower assembly and erection	6-8	14	100	80	22.0	22.0	90.0
4. Conductor stringing	6-8	14	50	250	22.0	22.0	90.0
5. Disturbance restoration	4	8	40	10	22.0	22.0	90.0
6. Substation Construction	6-8	14	400	600	22.0	22.0	90.0
7. Underground Line Construction	4-6	10	400	100	22.0	22.0	90.0

- Haul trips primarily during phases 2 and 4
- Haul converted to cubic yards of material for modeling purposes assuming 20-yd truck
- Total haul scaled to ~10% of CoSu project, converted to capacity for ACAM
- Substation and underground line construction rough estimates based on other phases
- Worker trips= average workers x 2
- Average haul distance: 90-mile round-trip
- Average labor/vendor trip distance: 22-mile round-trip
- Vendor trips include cement and water trucks
- Road Dust
    - Assume last mile of each trip is unpaved
        - Worker trips: 85% paved
        - Vendor trips: 85% paved
        - Hauling trips: 95% paved

Operation and Maintenance

- Total number of miles in the San Joaquin, Alameda, and Contra Costa counties: 228.3
- Total O&M equipment usage among these three counties: 18%
- Scaled hours per line-mile for equipment given in table below:

Table A-6. Maintenance Equipment Usage

Equipment	Type	Total 2017 Usage (hours – off-road, miles – on-road)	Usage for Beale Interconnect (hours or miles)
2017 JLG 600 AJ Boomlift	Off-road	30	0.071
2015 Hyundai 33D-9 Forklift	Off-road	13	0.031
2014 Bobcat T550 Skid Loader	Off-road	25	0.059
2014 Bobcat E35 Excavator	Off-road	62	0.147
2013 JLG Telehandler	Off-road	2	0.005
2013 Caterpillar D6N XL Tractor	Off-road	15	0.036
2013 JLG Telehandler	Off-road	30	0.071
2014 Toyota Forklift	Off-road	16	0.038
2014 Toyota Forklift	Off-road	46	0.109
2014 Toyota Forklift	Off-road	2	0.005
2012 JLG 45 Ft	Off-road	21	0.050
2012 JLG 45 Ft	Off-road	37	0.087
2009 Toyota Forklift	Off-road	38	0.089
2007 JLG	Off-road	8	0.019
2004 New Holland Backhoe, LB90	Off-road	10	0.028
Helicopter	Off-road	16	0.038
2016 Ford F350 Utility Truck	On-road	9,027	21.35
2016 Ford F550 Utility Truck	On-road	9,656	22.83
2008 Freightliner/Versalift Bucket Truck	On-road	2,665	6.30
2015 Freightliner Tractor Truck	On-road	1,676	3.96
2015 Bronto SI 197 HDT Aerial Lift Truck	On-road	2,159	5.11
2015 Altec/Peterbilt AC 2395 Crane Truck	On-road	1,133	2.68
2015 Altec/Freightliner Digger Truck	On-road	1,786	4.22
2016 Ford F350 Utility Truck	On-road	8,780	20.77
2018 National 400B Crane Boom Truck	On-road	130	0.31
TOTAL HOURS	OFF-ROAD		<1
TOTAL MILES	ON-ROAD		88

Table A-7. Grading Information

Mitigation

- Use cleaner engines for construction equipment
    - All equipment minimum tier 3
- Water exposed area 2 times per day, 55% reduction
- Reduce vehicle speed on unpaved roads to 15 mph
- Replace ground cover
- Clean roads

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:
Base: BEALE AFB
State: California
County(s): Yuba
Regulatory Area(s): Yuba City-Marysville, CA

b. Action Title: Beale WAPA Interconnection Project

c. Project Number/s (if applicable):

d. Projected Action Start Date: 4 / 2020

e. Action Description:

The Proposed Action, also referred to as the Northern B Alternative, totals approximately 4.3 miles of transmission line; approximately 0.9 mile located off Beale AFB and 3.4 on Beale AFB. It would consist of approximately 1.8 miles of overhead installation (0.9 mile off Beale AFB and 0.9 mile on Beale AFB), and 2.5 miles of underground installation (all within Beale AFB boundaries). The Proposed Action alignment would begin at its interconnection point and perpendicular to the existing Cottonwood-Roseville line; overhead double-circuit 230-kV lines would continue in a near-straight east-to-west line, following existing agricultural dirt up to the westernmost edge of Beale AFB. A substation would be constructed on Beale AFB property.

The Northern A Alternative alignment is very similar to the Proposed Action alignment, sited about 0.5 mile north and crossing Reed's Creek at a different location. It totals approximately 4.5 miles of transmission line; approximately 0.8 mile located off Beale AFB and 3.7 on Beale AFB. It would consist of approximately 2 miles of overhead installation (0.8 mile off Beale AFB and 1.2 miles on Beale AFB), and 2.5 miles of underground installation (all within Beale AFB boundaries). A substation would be constructed on Beale AFB property.

The Southern Alternative is located about 3.25 miles south of the Proposed Action and Northern A Alternatives. It totals approximately 5 miles of transmission line; approximately 2.5 miles located off Beale AFB and 2.5 on Beale AFB. It would consist of approximately 2.5 miles of overhead installation off Beale AFB, 0.4 mile on Beale AFB, then it would consist of 1 mile of underground installation and 1.5 miles of overhead 60-kV installation. A substation would be constructed on Beale AFB property.

Because all three alternatives are very similar in length and general construction timeline and techniques, these were all modeled as a conservative scenario as ALTERNATIVE 1 in ACAM.

The No Action Alternative would likely result in the use of emergency generators in the event PG&E is unable to supply Beale AFB with power. This is modeled as ALTERNATIVE 2 in ACAM.

f. Point of Contact:

Name: Ian Snyder
Title: Environmental Planner - Noise and Air Specialist
Organization: Transcon Environmental
Email: isnyder@transcon.com
Phone Number: (707) 786-6501 x503

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

Conformity Analysis Summary:

2020

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Yuba City-Marysville, CA			
VOC	0.210	100	No
NOx	1.088	100	No
CO	1.168		
SOx	0.002	100	No
PM 10	7.439		
PM 2.5	0.064	100	No
Pb	0.000		
NH3	0.001	100	No
CO2e	228.0		

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Yuba City-Marysville, CA			
VOC	1.949	100	No
NOx	13.751	100	No
CO	10.592		
SOx	0.040	100	No
PM 10	55.736		
PM 2.5	0.501	100	No
Pb	0.000		
NH3	0.020	100	No
CO2e	4017.7		

2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Yuba City-Marysville, CA			
VOC	1.970	100	No
NOx	13.146	100	No
CO	9.992		
SOx	0.039	100	No
PM 10	65.418		
PM 2.5	0.480	100	No
Pb	0.000		
NH3	0.016	100	No
CO2e	3867.8		

2023 - (Steady State)

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Yuba City-Marysville, CA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000		
SOx	0.000	100	No
PM 10	0.000		
PM 2.5	0.000	100	No
Pb	0.000		
NH3	0.000	100	No
CO2e	0.0		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

____ ____________________

Ian Snyder, Environmental Planner - Noise and Air Specialist DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
Base: BEALE AFB
State: California
County(s): Yuba
Regulatory Area(s): Yuba City-Marysville, CA

- Action Title: Beale WAPA Interconnection Project

- Project Number/s (if applicable):

- Projected Action Start Date: 4 / 2020

- Action Purpose and Need:

The Department of Defense (DoD) issued an Electric Power Resilience memorandum in December 2013 that documented key resilience policies and requested DoD installations adherence to them. It directed an electric power resilience review to examine installation adherence to key resilience policies, identify gaps in policy, and define future energy resilience requirements.

In response to this directive, Beale AFB began planning to repair aged and outdated electrical infrastructure following the components defined in satisfying critical energy/power supply requirements. Currently, all electricity to Beale AFB is delivered solely from two existing Pacific Gas and Electric (PG&E) lines, for which PG&E is contracted to deliver 25 megawatts (MW) to Beale AFB. As part of the planning activities in response to the DoD's memorandum, it was determined that Beale AFB is expected to require 38MW by 2022. Additionally, communications between Beale AFB and PG&E revealed that, in the event of a power outage, PG&E will prioritize first responders and other institutions (e.g., hospitals) before Beale AFB.

For these reasons, Beale AFB is requesting an interconnection with WAPA's existing line to provide Beale AFB electricity supply that will support their current and future missions and because WAPA would prioritize restoring Beale AFB power in the event of an outage.

- Action Description:

The Proposed Action, also referred to as the Northern B Alternative, totals approximately 4.3 miles of transmission line; approximately 0.9 mile located off Beale AFB and 3.4 on Beale AFB. It would consist of approximately 1.8 miles of overhead installation (0.9 mile off Beale AFB and 0.9 mile on Beale AFB), and 2.5 miles of underground installation (all within Beale AFB boundaries). The Proposed Action alignment would begin at its interconnection point and perpendicular to the existing Cottonwood-Roseville line; overhead double-circuit 230-kV lines would continue in a near-straight east-to-west line, following existing agricultural dirt up to the westernmost edge of Beale AFB. A substation would be constructed on Beale AFB property.

The Northern A Alternative alignment is very similar to the Proposed Action alignment, sited about 0.5 mile north and crossing Reed's Creek at a different location. It totals approximately 4.5 miles of transmission line; approximately 0.8 mile located off Beale AFB and 3.7 on Beale AFB. It would consist of approximately 2 miles of overhead installation (0.8 mile off Beale AFB and 1.2 miles on Beale AFB), and 2.5 miles of underground installation (all within Beale AFB boundaries). A substation would be constructed on Beale AFB property.

The Southern Alternative is located about 3.25 miles south of the Proposed Action and Northern A Alternatives. It totals approximately 5 miles of transmission line; approximately 2.5 miles located off Beale AFB and 2.5 on Beale AFB. It would consist of approximately 2.5 miles of overhead installation off Beale AFB, 0.4 mile on Beale AFB, then it would consist of 1 mile of underground installation and 1.5 miles of overhead 60-kV installation. A substation would be constructed on Beale AFB property.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Because all three alternatives are very similar in length and general construction timeline and techniques, these were all modeled as a conservative scenario as ALTERNATIVE 1 in ACAM.

The No Action Alternative would likely result in the use of emergency generators in the event PG&E is unable to supply Beale AFB with power. This is modeled as ALTERNATIVE 2 in ACAM.

- Point of Contact

Name: Ian Snyder
Title: Environmental Planner - Noise and Air Specialist
Organization: Transcon Environmental
Email: isnyder@transcon.com
Phone Number: (707) 786-6501 x503

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Right of Way Clearing
3.	Construction / Demolition	On and off base overhead construction
4.	Construction / Demolition	Conductor Stringing
5.	Construction / Demolition	Restoration
6.	Construction / Demolition	Substation Construction
7.	Construction / Demolition	Underground 60-kV Construction

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Yuba
Regulatory Area(s): Yuba City-Marysville, CA

- Activity Title: Right of Way Clearing

- Activity Description:
Vegetation clearing and improvement of access roads

- Activity Start Date
Start Month: 6
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 9
End Month: 2021

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.401407
SO_x	0.005991
NO_x	2.584710

Pollutant	Total Emissions (TONs)
PM 2.5	0.103338
Pb	0.000000
NH_3	0.000573

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CO	1.924359
PM 10	6.120645

CO_2e	588.2

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 4
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 126000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 1600

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 6

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	10
Graders Composite	1	10
Off-Highway Trucks Composite	2	6
Rubber Tired Dozers Composite	2	10
Tractors/Loaders/Backhoes Composite	1	10

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 22

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 22

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Off-Highway Trucks Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1369	0.0026	0.7382	0.5475	0.0246	0.0246	0.0123	260.39
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Yuba
Regulatory Area(s): Yuba City-Marysville, CA

- Activity Title: On and off base overhead construction

- Activity Description:
Foundation excavation, foundation installation, and monopole/tower erection and assembly

- Activity Start Date
Start Month: 9
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 4
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.718681

Pollutant	Total Emissions (TONs)
PM 2.5	0.178728

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SO_x	0.014687
NO_x	4.892132
CO	4.020117
PM 10	1.150483

Pb	0.000000
NH_3	0.006196
CO_2e	1464.4

3.1 Trenching/Excavating Phase

3.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 4
Number of Days: 0

3.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 20000
Amount of Material to be Hauled On-Site (yd^3): 17000
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: No
Average Day(s) worked per week: 6

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Bore/Drill Rigs Composite	2	10

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 90

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 22

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Air Compressors Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0441	0.0007	0.2927	0.3051	0.0158	0.0158	0.0039	63.706
Off-Highway Trucks Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1369	0.0026	0.7382	0.5475	0.0246	0.0246	0.0123	260.39
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

3.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.2 Building Construction Phase

3.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 10
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 7
Number of Days: 0

3.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 9000
Height of Building (ft): 100
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: No
Average Day(s) worked per week: 6

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Aerial Lifts Composite	2	8
Air Compressors Composite	2	10
Cranes Composite	2	8
Off-Highway Trucks Composite	4	6
Tractors/Loaders/Backhoes Composite	1	10
Welders Composite	2	10

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 90

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 22

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 22

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

3.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Aerial Lifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0238	0.0003	0.1726	0.1676	0.0079	0.0079	0.0021	34.775
Air Compressors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0441	0.0007	0.2927	0.3051	0.0158	0.0158	0.0039	63.706
Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Off-Highway Trucks Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1369	0.0026	0.7382	0.5475	0.0246	0.0246	0.0123	260.39
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0280	0.0003	0.1634	0.1787	0.0088	0.0088	0.0025	25.665

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

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3.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location
County: Yuba
Regulatory Area(s): Yuba City-Marysville, CA

- Activity Title: Conductor Stringing

- Activity Description:
Stringing of conductor

- Activity Start Date
Start Month: 3
Start Month: 2022

- Activity End Date
Indefinite: False
End Month: 7
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.705218
SO_x	0.012178
NO_x	4.313979
CO	3.085011
PM 10	0.161668

Pollutant	Total Emissions (TONs)
PM 2.5	0.157592
Pb	0.000000
NH_3	0.001945
CO_2e	1216.1

4.1 Trenching/Excavating Phase

4.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 5
Number of Days: 0

4.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 0
Amount of Material to be Hauled On-Site (yd^3): 6000
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: No
Average Day(s) worked per week: 6

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Aerial Lifts Composite	2	8
Off-Highway Trucks Composite	6	6
Other General Industrial Equipmen Composite	2	10
Rubber Tired Dozers Composite	2	10

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 90

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 22

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.240	000.004	000.179	002.019	000.047	000.020		000.034	00349.301
LDGT	000.529	000.004	000.390	003.951	000.049	000.022		000.034	00438.299
HDGV	001.133	000.012	002.177	017.401	000.185	000.079		000.045	01175.364
LDDV	000.057	000.003	000.387	000.455	000.084	000.055		000.008	00322.805
LDDT	000.127	000.004	000.747	000.768	000.138	000.107		000.008	00404.546
HDDV	000.429	000.015	008.814	001.758	000.338	000.240		000.029	01587.930
MC	004.838	000.002	001.285	028.044	000.019	000.009		000.050	00181.592

4.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5. Construction / Demolition

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5.1 General Information & Timeline Assumptions

- Activity Location
County: Yuba
Regulatory Area(s): Yuba City-Marysville, CA

- Activity Title: Restoration

- Activity Description:
Restoration of disturbed areas

- Activity Start Date
Start Month: 9
Start Month: 2022

- Activity End Date
Indefinite: False
End Month: 11
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.041902
SO_x	0.000775
NO_x	0.246247
CO	0.318429
PM 10	30.595228

Pollutant	Total Emissions (TONs)
PM 2.5	0.010964
Pb	0.000000
NH_3	0.000145
CO_2e	71.9

5.1 Site Grading Phase

5.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 3
Number of Days: 0

5.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 854000
Amount of Material to be Hauled On-Site (yd^3): 1000
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 6

- Construction Exhaust

Equipment Name	Number Of	Hours Per Day

	Equipment	
Rubber Tired Loaders Composite	1	10
Tractors/Loaders/Backhoes Composite	1	10

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20

Average Hauling Truck Round Trip Commute (mile): 22

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 22

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Rubber Tired Loaders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0661	0.0012	0.3848	0.4358	0.0180	0.0180	0.0059	108.76
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

5.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location
County: Yuba
Regulatory Area(s): Yuba City-Marysville, CA

- Activity Title: Substation Construction

- Activity Description:

Construction of the on-base substation

- Activity Start Date
Start Month: 5
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 6
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.981479
SO_x	0.044622
NO_x	14.498045
CO	10.845757
PM 10	80.645995

Pollutant	Total Emissions (TONs)
PM 2.5	0.509618
Pb	0.000000
NH_3	0.027146
CO_2e	4468.8

6.1 Site Grading Phase

6.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 14
Number of Days: 0

6.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 479000
Amount of Material to be Hauled On-Site (yd^3): 16000
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 6

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	2	10
Excavators Composite	2	10
Off-Highway Trucks Composite	5	6
Other Construction Equipment Composite	1	8
Rubber Tired Loaders Composite	2	10
Tractors/Loaders/Backhoes Composite	2	10

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20

Average Hauling Truck Round Trip Commute (mile): 90

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 22

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

6.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Off-Highway Trucks Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1369	0.0026	0.7382	0.5475	0.0246	0.0246	0.0123	260.39
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Loaders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0705	0.0012	0.4274	0.4380	0.0206	0.0206	0.0063	108.76
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

6.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

6.2 Building Construction Phase

6.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 5

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Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 14
Number of Days: 0

6.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 479000
Height of Building (ft): 20
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: No
Average Day(s) worked per week: 6

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 90

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 22

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 22

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

6.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857

HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

6.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

- Activity Location
County: Yuba
Regulatory Area(s): Yuba City-Marysville, CA

- Activity Title: Underground 60-kV Construction

- Activity Description:
Construction of the on-base underground portion of the line

- Activity Start Date
Start Month: 4
Start Month: 2020

- Activity End Date
Indefinite: False
End Month: 3
End Month: 2021

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.280277
SO_x	0.003254
NO_x	1.450503
CO	1.557570
PM 10	9.918995

Pollutant	Total Emissions (TONs)
PM 2.5	0.085268
Pb	0.000000
NH_3	0.000736
CO_2e	304.0

7.1 Trenching/Excavating Phase

7.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2020

- Phase Duration
Number of Month: 12
Number of Days: 0

7.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 68640
Amount of Material to be Hauled On-Site (yd^3): 500
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: No
Average Day(s) worked per week: 6

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Dumpers/Tenders Composite	1	10
Excavators Composite	1	10
Trenchers Composite	1	10

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 90

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 22

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.240	000.004	000.179	002.019	000.047	000.020		000.034	00349.301
LDGT	000.529	000.004	000.390	003.951	000.049	000.022		000.034	00438.299
HDGV	001.133	000.012	002.177	017.401	000.185	000.079		000.045	01175.364
LDDV	000.057	000.003	000.387	000.455	000.084	000.055		000.008	00322.805
LDDT	000.127	000.004	000.747	000.768	000.138	000.107		000.008	00404.546
HDDV	000.429	000.015	008.814	001.758	000.338	000.240		000.029	01587.930
MC	004.838	000.002	001.285	028.044	000.019	000.009		000.050	00181.592

7.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

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$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons