Further evaluation and consideration of information provided by the Appellant pursuant to Administrative Appeal Decision dated 9 September 2015 for Tracy Lakes Property, San Joaquin County, California, Sacramento District

(SPK-2011-01069)

December 11, 2015

<u>Reason 1 Action:</u> The District must reconsider its decision that the Tracy Lakes are wetlands. The District must include sufficient documentation in the AR to support its final decision.

<u>Response to Reason 1 Action:</u> Tracy Lakes (two aquatic features, specifically Tracy Lake North and Tracy Lake South, hereafter simply "Tracy Lakes" unless referring to one of the two aquatic features) were delineated as "lakes" by the appellant, and no wetland data sheets were included in the original delineation report. A copy of the appellant's jurisdictional delineation map is provided in **Appendix A**.

District staff (Ms. Mary Pakenham-Walsh as lead, Mr. Jordan Krug as field assistant) conducted a September 30, 2015, field visit to the JD study area to collect vegetation, soils and hydrology data for the Tracy Lakes, in accordance with the methodology contained in the Corps' 1987 Wetland Delineation Manual and Arid West Regional Supplement (Regional Supplement). Data sheets for Corps data points (DPs) A-H, a field map created by the Corps (dated October 30, 2015), and representative site photographs taken during the September 30, 2015, field visit are included in **Appendix B.**

<u>Tracy Lake North</u>. Data points A-C characterize Tracy Lake North. Data points A and B represented the lowest areas of the eastern and western portions of the lake. Data point C represented a transition area midway in elevation between the lower "lake bed" and surrounding upland.

As DPs A-C show, non-hydrophytic vegetation occurs within the lake, with representative dominants including Alkali mallow (*Malvella leprosa*, FACU), pitseed goosefoot (*Chenopodium berlandieri* var. *sinuatum*, UPL), prickly lettuce (*Lactuca serriola*, FACU), bull thistle (*Cirsium vulgare*, FACU) and ripgut grass (*Bromus diandrus*, NOL). None of the DPs exhibited hydrophytic vegetation, nor were other substantially different, potentially Hydrophytic plant communities observed within the ordinary high water mark (OHWM) of the lake during the field visit. See photos 7 – 12 in **Appendix B**.

Soils in Tracy Lake North were consistently hydric, meeting the "depleted matrix" (F3) hydric soil indicator. The primary wetland hydrology indicator "inundation visible on aerial imagery" (B7) was met for DPs A-C, thus wetland hydrology is present. District staff reviewed recent (within the last 5 years, representing a parallel timeline to that established in the Corps' JD verification procedures, wherein approved JDs expire after 5 years) aerial imagery using Google Earth. Copies of representative aerials are included in **Appendix C**). The following aerial images showed visible inundation in Tracy Lake North in the location of DPs A-C: March, June, September and October 2011.

All three DPs for Tracy Lake North exhibited hydric soil, wetland hydrology, but non-hydrophytic vegetation. Therefore, the District has modified its decision on the wetland status of Tracy Lake North. The aquatic feature is considered to be a lake with a OHWM (as originally described in Sycamore Environmental's JD report), but not a lake that also contains wetlands within its OHWM.

Tracy Lake South. Data points D-H characterize Tracy Lake South. Data points D and F represented transitional areas toward higher ground. Data points F, G and H represented distinguishable plant communities within lower portions of the lake bed. All DPs in Tracy Lake South except for DP D exhibited hydrophytic vegetation, with representative dominants including Rabbitsfoot grass (*Polypogon monspeliensis*, FACW), curly dock (*Rumex crispus*, FAC) and an unidentifiable smartweed (*Persicaria sp.*, most of which are FACW or OBL).

Soils in Tracy Lake South were consistently hydric, meeting the "depleted matrix" (F3) hydric soil indicator. The primary wetland hydrology indicator "inundation visible on aerial imagery" (B7) was met for DPs D-H, thus wetland hydrology is present. District staff reviewed recent (within the last 5 years, as described above) aerial imagery using Google Earth; copies of representative aerials are included in **Appendix C**). The following aerial images showed visible inundation in Tracy Lake South in the location of DPs D-H: March and June 2011, and April 2013. September and October 2011 show inundation at DPs G and H (i.e., surface water appears to be "retreating;" the next available aerial image is from May 2012, and no inundation is apparent in the western portion of Tracy Lake South lying within the JD study area (eastward, nearby, inundation is apparent on this date). June 2013 shows inundation at DP-G, which is likely to be the lowest-elevation DP relative to DPs D, E, F and H. The time sequence of aerials between April and August 2013 depict a drying-down of Tracy Lake South from an inundated condition (April 2013) to a non-inundated condition (August 2013), with the interim condition in June 2013 appearing to be indicative of microtopography in

the lake bed, based on the location of inundation vs. non-inundation as the lake dried down.

Based on the findings documented by DPs D-H, a portion of Tracy Lake South exhibits all three wetland parameters (hydric soil, wetland hydrology and hydrophytic vegetation). An estimate of the wetland/non-wetland boundary within the OHWM of Tracy Lake South is shown on an August 2013 aerial photo, included in **Appendix B**. The roughly-estimated boundary is based on the information provided by DPs D-H, field observations of subtle differences in topography and plant communities within the lake bed, corroborated with office-based analysis of aerial photography, in particular the "dry-down" sequence of April through August 2013 described above. The area calculation provided by Google Earth for the Corps' estimated wetland area is approximately 6 acres.

Therefore, the District has provided information to support its decision on the wetland status of Tracy Lake South, yet notes there are areas of the lake bed that do not meet wetland criteria. Based on the District's estimated extent of wetlands within Tracy Lake South, approximately 6 acres of wetlands occur in the eastern portion of the JD study area, extending southward to the newly-installed outfall location along the lake's south shoreline (authorized by NWP-12, SPK-2011-01069 [Tracy Lake Groundwater Recharge project]). The outfall is the discharge point for a just-constructed (summer 2015) 1,000-ft-long, 36-inch diameter pipeline that originates at a newly installed water diversion intake structure along the Mokelumne River. A copy of the project's site plan and a photograph taken on September 30, 2015, are included in **Appendix D**.

Summary of District's Findings.

Presence or Absence of Wetlands within OHWM of Tracy Lakes. The District documented conditions for Tracy Lake North and has revised its determination regarding this aquatic feature. Data points and other general field observations indicate this feature is a lake with a OHWM that does not contain wetlands within its OHWM. The District also documented conditions for Tracy Lake South, and has modified its prior determination, but has not wholly reversed it. Tracy Lake South contains approximately 6 acres of wetlands.

Based on review of recent aerial photography (in the last 5 years), in addition to other information already contained in the administrative record (e.g., USGS maps), the District believes that Tracy Lake North is a substantially "drier" lake relative to Tracy Lake South, with a much smaller natural watershed. Furthermore, Tracy Lake South

has a man-made outlet at its west end, which the administrative record has already documented contains a water control valve allowing for surface water from Tracy Lake South to be drained through a wetland ditch (shown on the delineation map) into Tracy Lake North.

Revised Approved JD Form. To document the above-described modifications to the district's JD assessment, a revised approved JD form was prepared and is included in **Appendix E**. The following highlights of the District's revised JD decision are documented in the form:

- Tracy Lake North is a lake with a OHWM that does not contain wetlands.
- As a lake that does not contain wetlands, the jurisdictional basis of a significant nexus to a TNW (Mokelumne River) was documented for Tracy Lake North.
- In response to Reasons 4 and 5 actions, below, the District documented its considerations concerning adjacency and hydrologic connectivity (for specific actions, please see below).
- Wetland acreage was reduced to account for the lack of wetlands in Tracy Lake North, and less wetlands than previously determined in the original JD form.

Reason 2 Action: ***The District must include documentation, including wetland data sheets, of its evaluation of the potential for aquatic features on the Property to be wetlands.***

Response to Reason 2: Please see response to Reason #1.

Reason 3 Action: *(No action required; reason for appeal did not have merit).*

Response to Reason 3: N/A

Reason 4 Action: ***The District must first complete and document its evaluation of whether or not the aquatic resources on the Property are wetlands, as described in the responses to reasons 1 and 2, above. If the District's conclusion is that the aquatic resources on the Property are wetlands, the District must then document its evaluation of whether or not those aquatic features can be considered adjacent wetlands.***

Response to Reason 4: Please see the response to Reason #1 regarding documenting the evaluation of Tracy Lake North and Tracy Lake South for presence or absence of wetlands within the OHWM.

Evaluation of Adjacent Wetlands.

Tracy Lake North. Tracy Lake North does not contain wetlands within its OHWM; therefore the District will not evaluate a jurisdictional basis of adjacency to the Mokelumne River for this aquatic feature.

Tracy Lake South. Approximately 6 acres of seasonal wetlands occur within Tracy Lake South, including along the lake's southern perimeter. Therefore, the District in its revised JD form retained the evaluation of adjacency from the previous JD form that served as the basis for the District's original JD decision, and further bolstered its evaluation in Section III.A.2 of the revised JD form.

Other Wetlands Within Study Area. Adjacency of wetlands (other than those potentially occurring within the OHWM of the Tracy Lakes) within the study area was not appealed. Thus, the District confirms that it considers adjacency to be retained as the basis for jurisdiction for all of the other wetlands within the study area (i.e., those not contained within the OHWM of Tracy Lake South). In addition to retaining its evaluation of adjacency, the District further bolstered its evaluation in Section III.A.2 of the revised JD form.

Reason 5 Action: District must reconsider assertion that there are hydrologic connections between the aquatic features on the Property and the Mokelumne River.

Response to Reason 5: The District has reconsidered the assertion of hydrologic connections. The appeal decision's discussion under Reason 5 included the following statement: "The District, while having a basis to believe that these hydrologic connections might exist from its review of LiDAR, aerial photographs, and topographic maps, as described above, did not document observations or other evidence which would confirm the existence of the hydrologic connections it expected to find."

As part of (but not solely) providing an evaluation basis for jurisdiction of wetlands adjacent to a TNW, the District had considered the role of both potential surface hydrologic connections, and potential groundwater hydrologic connections between the site's aquatic features and the Mokelumne River. Hydrologic connections as support basis for adjacency of wetlands to a TNW, however, is just one of three criteria clarified in the December 2, 2008 US EPA/Corps guidance memorandum

following the Rapanos v. United States and Carabell V. United States Supreme Court decision. In its revised JD form, the District clarified its primary use of the third criterion documented in the December 2, 2008 guidance as the leading basis for jurisdiction of seasonal wetlands adjacent to the Mokelumne River. The third criterion considers a wetland to be adjacent when the feature is in "reasonably close" proximity to a jurisdictional water, supporting the scientific inference that such wetlands have an ecological interconnection with jurisdictional waters.

The District's reconsideration of hydrologic connections between the Tracy Lakes and the Mokelumne River follows.

Sub-surface Hydrologic Connection. In its original JD form, the District documented primarily its belief that shallow sub-surface hydrologic connections are likely to occur between both of the Tracy Lakes and the Mokelumne River. A shallow sub-surface or surface hydrologic connection (even if intermittent) is one of the three criteria for wetland jurisdiction by basis of adjacency, as clarified in the December 2, 2008 US EPA/Corps post-Rapanos guidance memorandum.

Wetlands located near to rivers in riparian or floodplain landscape settings can be connected to the nearby river both overland flow and/or by subsurface (e.g., hyporheic) flow (USEPA 2015, pg. 2-7). In absence of obvious direct (e.g., field-observed) or indirect (e.g., discernible on aerial imagery) evidence of connectivity via overland flow, shallow sub-surface hydrologic connectivity is generally difficult to characterize for riparian/floodplain wetlands (USEPA, pg. 2-8).

The District retains its belief based on best professional judgment applied to available documentation in the administrative record (e.g., soil mapping, regional groundwater information, LiDAR imagery [already in administrative record; copy provided in **Appendix C**] and elevation data for the study area), that shallow sub-surface hydrologic connections are likely to be present between the wetlands in the study area and the Mokelumne River, at least on an intermittent basis. The land surface elevations between the Tracy Lakes and the river range from 20 to 30 ft. above mean sea level (msl); however, this does not preclude the opportunity for shallow sub-surface hydrologic connectivity through soils mapped in the area between the lakes and river that range from deep to "very deep," and are moderately well-drained (see Bates #441-444). Also, the OHWM of the Mokelumne River in the study area is estimated to be 17 ft. msl, and the OHWM of North and South Tracy Lakes, respectively, estimated to be 16 and 18 ft. msl. Areas of these lake bottoms within the study area were estimated by use of GPS devices and ocular observations during the District's Sept. 30, 2015 field work to be up to 5 ft. lower than the OWHM elevations (e.g., 11 ft. for North Tracy Lake, and 13 ft. for South Tracy Lakes). In absence of evidence to the contrary, the District cannot preclude the potential for intermittent, shallow sub-surface hydrologic

connectivity between lake bottoms that are between 4 and 6 ft. below the OHWM of the Mokelumne River, during times when water occurs in the lake(s).

The above being said, the District has clarified on the revised JD form that its reliance on the potential (lacking direct evidence, e.g., data from shallow groundwater monitoring wells) of an intermittent, shallow sub-surface hydrologic connection is not its *primary* rationale or criterion for jurisdiction of the wetlands in Tracy Lake South on the basis of adjacency to the TNW, but rather a secondary basis. The District further asserts that the appellant has not provided conclusive evidence that would contradict the potential for a shallow sub-surface hydrologic connection to occur. For example, the lack of observable seeps or "daylighted" areas of lateral hydrologic flow between either of the lakes and the Mokelumne River, e.g., in Forested Wetland (FW) 9, which has a bottom elevation of 12 ft. msl, is not conclusive in negating a shallow sub-surface groundwater connection with the TNW. First, the subsurface connection could be lower than 12 ft., tapping into the open water and/or groundwater zones of the Mokelumne River. Second, all field observations made as part of this JD action have been during a drought period, not during one of the sporadic higher water times that are evidenced by aerial photography (as described above). It cannot be ruled out that seepage could potentially occur along the side of one or more forested wetland, particularly those closer to the river (e.g., FW-1, FW-3, FW-4, FW-8 and/or FW-9) during a higher water event and/or prolonged precipitation cycle.

Surface Hydrologic Connection. In its original JD form, the District documented primarily its belief that shallow sub-surface hydrologic connections are likely to occur between both of the Tracy Lakes and the Mokelumne River. The District also indicated on the JD form the potential for water from the Tracy Lakes to flow laterally across the surface, downslope to the south and west into the river. In its reconsideration of the potential for surface water pathways, the District has clarified in the revised JD form that with one exception, there does not appear to be a direct pathway for a surface hydrologic connection between the Tracy Lakes and the river, as unique and confounding as the site's geomorphology may be in that neither site observations nor remote sensing (e.g., LiDAR) assessment depict such a clear pathway for lateral, south-westerly surface water between either of the lakes and the TNW.

The District notes on the revised JD form that there is one surface hydrologic connection with the potential to be "intermittent," based on available data. This factor is presented, as a *secondary* basis for jurisdiction by adjacency, to bolster the District's primary basis for jurisdiction by adjacency (of "reasonably close" proximity/ecological interconnection). The man-made ditch, constructed sometime between 1953 and 1968 to drain Tracy Lake South as part of its agricultural use, has a controlled valve/gate at its northern end. Information in the record indicates the gate may not have been opened for the better part of 20 years (Bates #418), however, the District notes the

potential for a surface hydrologic connection as one that has been acknowledged to have occurred in the past. The appellant's representative also described a surface hydrology connection in a December 22, 2014 letter requesting the appeal of the District's original JD; "[w]hile it is unclear why the valve at the end of the ditch was left open in 2011, this resulted in water entering South Tracy Lake from the River through a man-made ditch and control structure during a high flow event." Thus, as recently as 2011, which is the year during which the March 2011 aerial depicts water in the subject ditch, there appears to have been a surface hydrology connection between Tracy Lake South and the Mokelumne River. The District concedes that a surface hydrology connection between these features may be sporadic enough in nature (in response to climatic conditions and human intervention to control the gate structure) so as to be less than intermittent, which is the standard cited in the December, 2008 US EPA/Corps guidance. This is further complicated by the infrastructure just installed (summer 2015) under the Tracy Lakes Groundwater Recharge project DA authorization (described above). The project's infrastructure is designed to allow operators to control water inflow pumped upgradient into Tracy Lake South from the Mokelumne River on a highly precise basis. In order to the serve the purpose of groundwater recharge, it is all the more unlikely that surface water releases would be necessary in the future, unless potentially a significant rain event(s) occurred. The applicant's project description for the groundwater recharge project did not state that the existing culvert or gate structure would be removed, so the District assumes that it is still present, barring new information.

Based on the above analysis of surface hydrologic connections, the District has reconsidered the potential for Tracy Lake North to have a surface connection to the Mokelumne River on a time scale at least intermittent in nature. Analysis of available evidence does not support this finding.

Jurisdictional Assessment of Tracy Lake North. The District applied appropriate jurisdictional assessment standards this non-wetland aquatic feature, starting with a determination of whether Tracy Lake South was an "isolated" non-navigable intrastate water. Applying this standard, the District does not consider the feature to be isolated from the TNW, based on the reason that there is a connecting ditch that carries water (via a gate-controlled culvert) from Tracy Lake South into Tracy Lake North. Thus, the lakes are hydrologically connected. With a man-made ditch connection between Tracy Lake South and the TNW, there is the potential for water from the TNW to reach Tracy Lake South (from a surface water connection perspective, much less likely vice-versa).

The District then applied the significant nexus standard to Tracy Lake North (considered to be a "not relatively permanent" tributary, which is inclusive of lakes per

the guidance contained in the Corps' post-Rapanos "Instructional Guidebook, dated May 30, 2007). Based on this standard, the feature would need to have a more than speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW. In considering the relevant factors of flow frequency and duration between Tracy Lake North and the TNW, there are three justifications supporting a finding that any effects to the TNW are speculative or insubstantial:

1. As noted above (and in the administrative record for the project), the direction of flow for surface water in the study area is from Tracy Lake South to Tracy Lake North (in combination with Tracy Lake North' own upstream watershed drainage). With the pending operation of the groundwater recharge project, the potential for water from the Mokelumne River to reach Tracy Lake North is likely to be augmented. However, the potential for vice-versa to result is likely to be even more diminished than it was in a pre-project condition. The aerial photo sequence between April and August 2013 (**Appendix C**) is a helpful illustration of the propensity for Tracy Lake South to retain water for a longer time period than Tracy Lake North.

2. As noted above, the District reconsidered the potential for a direct surface water hydrology connection between Tracy Lake North and the Mokelumne River. If water from the Mokelumne River flows into Tracy Lake North, this would not affect the integrity of the Mokelumne River in a way that could be said to be more than speculative. For example, once the water is taken off-stream, the formal project description for the groundwater recharge project designates Tracy Lake South as "the" reservoir (not both lakes).

3. As noted above, there is a potential for an intermittent sub-surface hydrologic connection between Tracy Lake North and the Mokelumne River. However, lacking evidence such as presence of "seeps" in intervening topographic depressions in the area between the lake and the river, this factor cannot be said to have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW.

In summary, the District's determination, as also documented on the revised JD form, is that Tracy Lake North does not meet the significant nexus standard. As of December 10, 2015, the District completed coordination regarding this determination with US EPA Region 9, in accordance with the procedures identified in the June 5, 2007 US EPA/Corps coordination memorandum. As a result, the District has determined that Tracy Lake North is a non-jurisdictional intrastate lake.

Jurisdictional Assessment of Non-Wetland Areas of Tracy Lake South. The District applied appropriate jurisdictional assessment standards to the approximately 7.054

acres of non-wetland lakebed within the OHWM of this aquatic feature, starting with a determination of whether Tracy Lake South was an “isolated” non-navigable intrastate water. Applying this standard, the District does not consider the feature to be isolated from the TNW, based on the reason that there is an above-mentioned man-made ditch connection between Tracy Lake South and the TNW, thus there is the potential for water from the TNW to reach Tracy Lake South (from a surface water connection perspective, much less likely vice-versa).

The District then applied the significant nexus standard to the 7.054 acres of non-wetland lakebed within the OHWM of this aquatic feature (considered to be a “not relatively permanent” tributary, which is inclusive of lakes per the guidance contained in the Corps’ post-Rapanos “Instructional Guidebook, dated May 30, 2007). Based on this standard, the feature would need to have a more than speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW. In considering the relevant factors of flow frequency and duration between the subject aquatic feature and the TNW, there are two justifications supporting a finding of not more than speculative or insubstantial effect on the TNW:

1. As noted above, the man-made ditch constructed sometime between 1953 and 1968 was built to drain Tracy Lake South as part of its agricultural use. The ditch has a controlled valve/gate at its northern end, and information in the record indicates the gate may not have been opened to drain Tracy Lake South toward the Mokelumne River for the better part of 20 years (Bates #418). As also described above, apparently in 2011 there was water from the Mokelumne River that entered into Tracy Lake South; it is unknown if there was a flow of water from the lake into the river. The year 2011 is four years ago from present, and more than likely the event in question occurred in the spring (e.g., March 2011’s aerial photo discussed above). This would influence the timeline to +/- 4.5 years from present. If water from the Mokelumne River flows into Tracy Lake South on a highly intermittent basis (unknown except for the event indicated by the appellant’s representative, as discussed above), this would not affect the chemical, physical and/or biological integrity of the Mokelumne River in a way that could be said to be more than speculative within the last approximately five years. Regulatory Guidance Letter 05-02 speaks to the potential for “rapidly changing environmental conditions” to affect specific geographic areas, which is part of the rationale behind the Corps’ 5-year expiration date for approved JDs. If this man-made ditch had been assessed in the 1990’s, for instance, the District may have found evidence of a less-than-speculative effect of Tracy Lake South waters on the TNW. In more recent time (2010-2015), the District does not have evidence that surface water from Tracy Lake South has reached the TNW.

2. As noted above, there is a potential for an intermittent sub-surface hydrologic connection between Tracy Lake South and the Mokelumne River. However, lacking evidence such as presence of “seeps” in intervening topographic depressions (including the man-made ditch) in the area between Tracy Lake South and the river, this factor cannot be said to have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW.

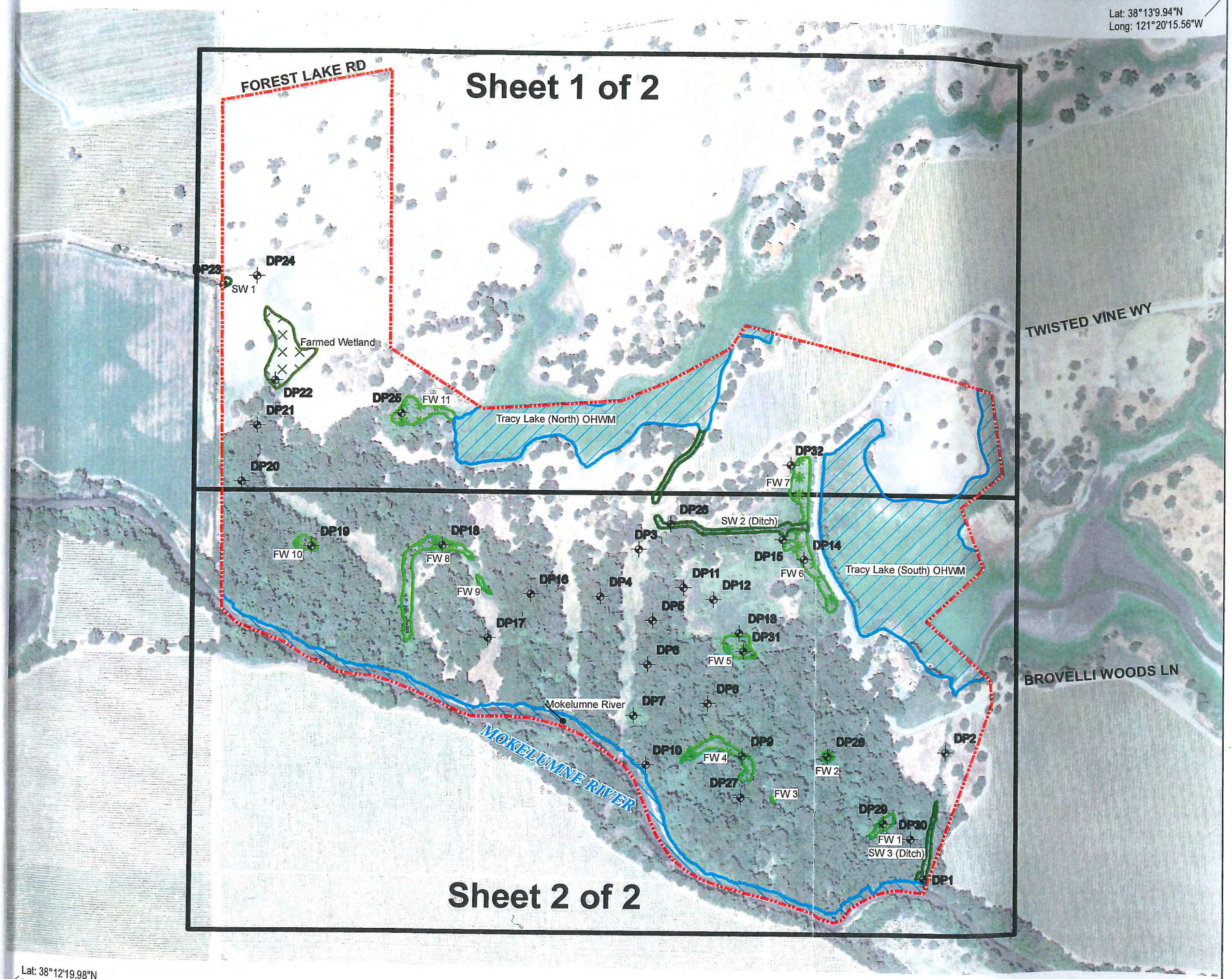
In summary, the District’s determination, as also documented on the revised JD form, is that the 7.054 acres of non-wetland lakebed within the OHWM of Tracy Lake South does not meet the significant nexus standard. Therefore, the District has determined that non-wetland areas of Tracy Lake South are non-jurisdictional lake due to failing to meet the significant nexus standard.

References

U.S. Environmental Protection Agency. Connectivity of streams and wetlands to downstream waters: a review and synthesis of the scientific evidence. EPA/600/R-14-475F, January 2015.

APPENDIX A

Appellant's JD Map



Tracy Lake Groundwater Recharge
San Joaquin County, CA
29 July 2013

Figure 4. Jurisdictional Delineation Map
Key to Sheets

- Project Study Area (PSA)
- Seasonal Wetland (SW)
- Forested Wetland (FW)
- Farmed Wetland
- Mokelumne River OHWM
- Lake OHWM
- Data point location and number
- Sheet Layout

Feature	Length (ft)	Avg. Width (ft)	Area (ac)
Wetlands			
Seasonal Wetland (SW)			
SW 1	--	--	0.033
SW 2 (Ditch)	1,320	21.5	0.651
SW 3 (Ditch)	--	--	0.204
Farmed Wetland	--	--	1.041
Forested Wetland (FW)			
FW 1	--	--	0.126
FW 2	--	--	0.042
FW 3	--	--	0.006
FW 4	--	--	0.428
FW 5	--	--	0.294
FW 6	--	--	0.567
FW 7	--	--	0.469
FW 8	--	--	0.718
FW 9	--	--	0.042
FW 10	--	--	0.129
FW 11	--	--	0.488
Other Waters			
Mokelumne River (in PSA)	4,185	50	5.000
Tracy Lake (North; In PSA)	--	--	6.778
Tracy Lake (South; in PSA)	--	--	13.034
Total	**5,505**	**--**	**25.049**

500 250 0 500 Feet

N

Scale: 1 inch = 500 feet

Date	Scale	Delineators	Agency/Company
29 Jul 13	Original	C. Hughes	Sycamore Environmental

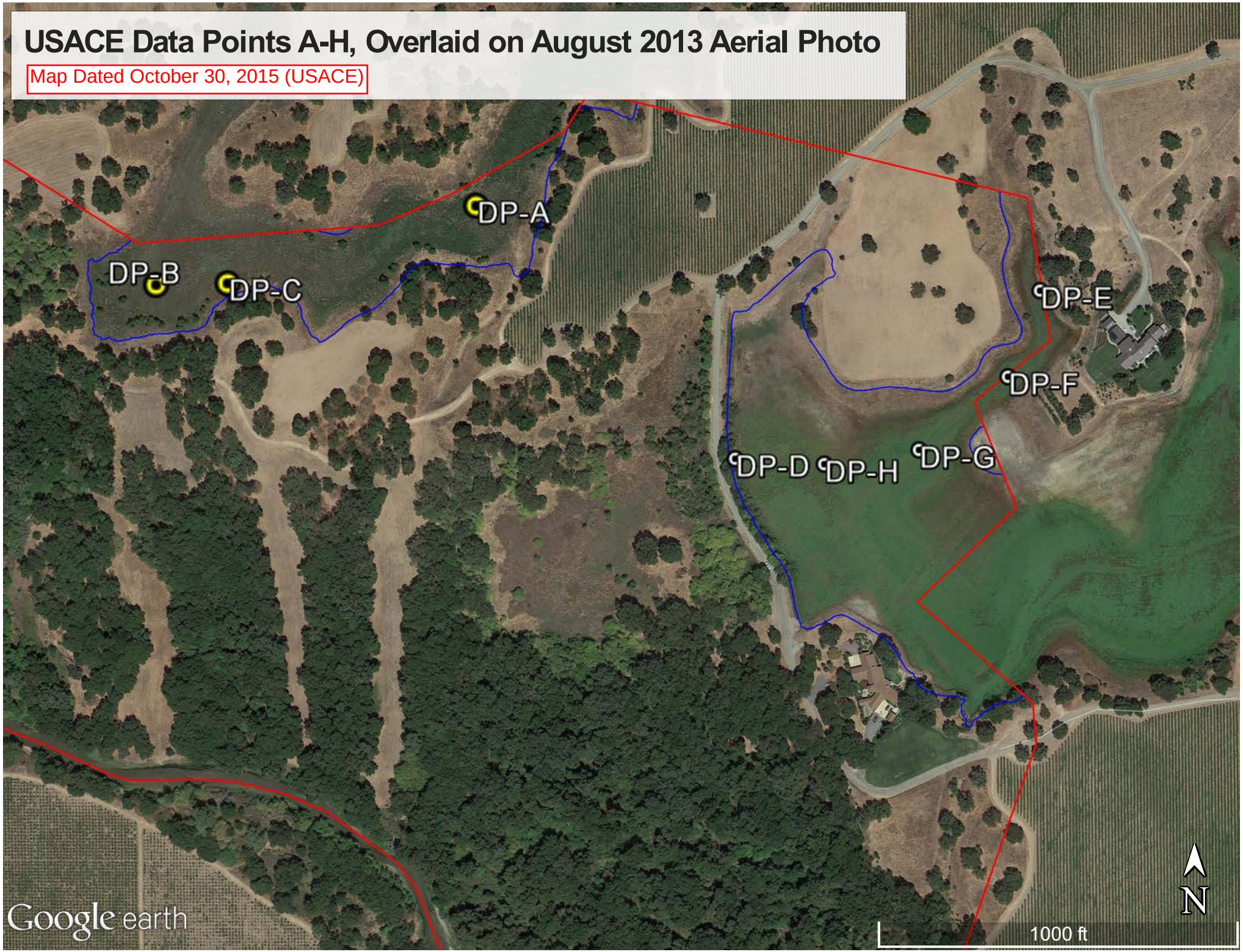
SYCAMORE
Environmental
Consultants, Inc.

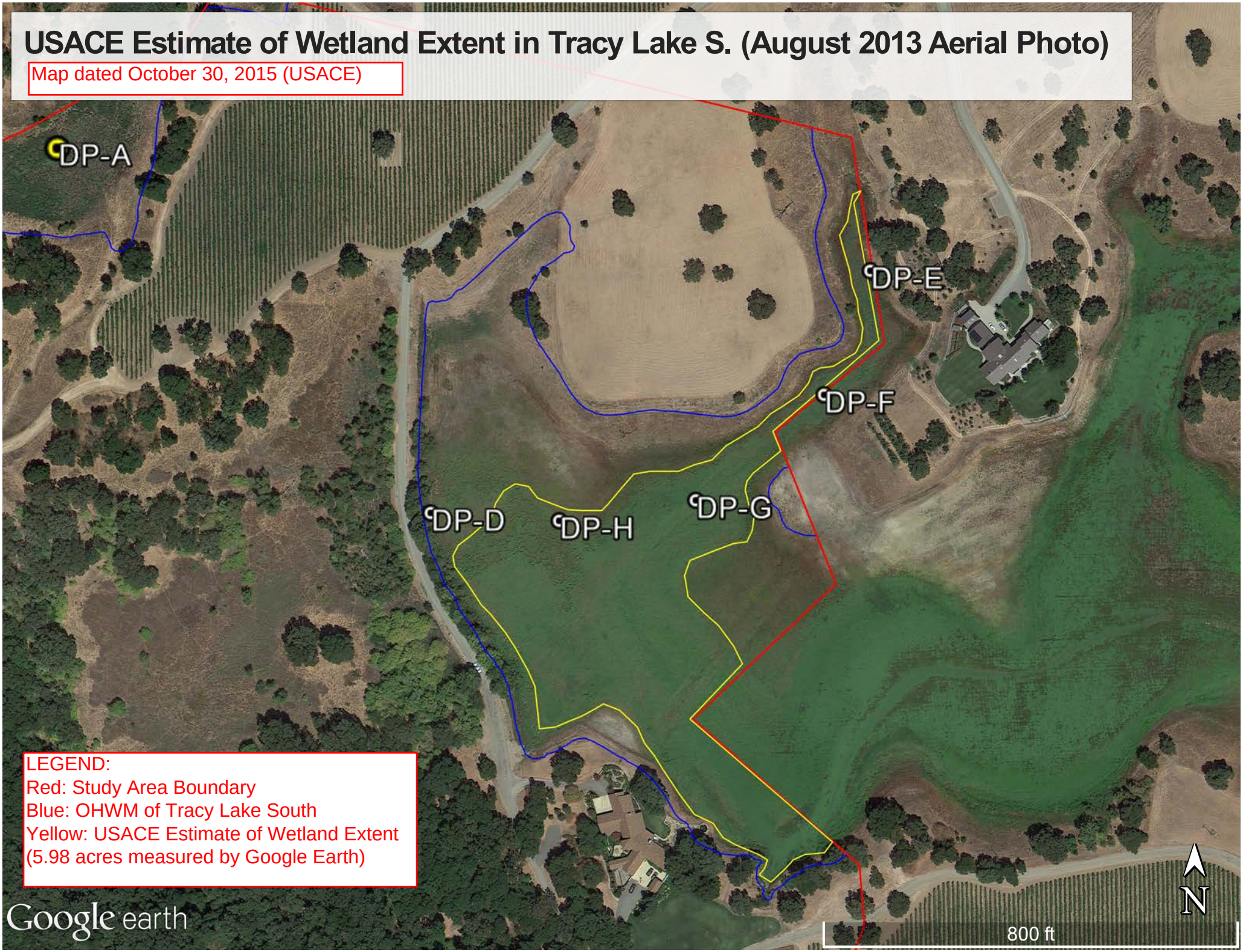
Aerial Photograph: 20 May 2013, Google Earth Pro Imagery

13024TracyLakeGroundwater_Fig4DelinMap_KeytoSheets_v.mxd

APPENDIX B

USACE Data Sheets, JD Map and Representative Site Photos


USACE Data Points A-H, Overlaid on August 2013 Aerial Photo
Map Dated October 30, 2015 (USACE)
DP-A
DP-B
DP-C
DP-D
DP-H
DP-G
DP-F
DP-E
Google earth
1000 ft
N


USACE Estimate of Wetland Extent in Tracy Lake S. (August 2013 Aerial Photo)
Map dated October 30, 2015 (USACE)
DP-A
DP-E
DP-F
DP-G
DP-H
DP-D
LEGEND:
Red: Study Area Boundary
Blue: OHWM of Tracy Lake South
Yellow: USACE Estimate of Wetland Extent
(5.98 acres measured by Google Earth)
Google earth
N
800 ft

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tracy Lakes (SPK-2011-01069) City/County: San Joaquin Sampling Date: Sept. ~~29~~ 30, 2015

Applicant/Owner: North San Joaquin Water Conservation District State: CA Sampling Point: A

Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D. Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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? N 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 X	**Is the Sampled Area within a Wetland?** Yes No X
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks: DP is in a lower area of the North Lake. Elevation estimate from Sycamore's GPS loaded with LIDAR was 11.5' MSL.

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' rad.)			
1. Malvella leprosa	40	Y	FACU
2. Chenopodium berlandieri var.	25	Y	UPL
3. Bare Ground Sinvatum	23	—	--
4. Lactuca serriola	5	N	FACU
5. Hirschfeldia incana	5	N	NOL
6. Persicaria sp.	T	N	FAC-OBL
7. Galium aparine	2	N	FACU
8.			
	77 = Total Cover		
Woody Vine Stratum (Plot size:)	Dom. [50% = 38.5; 20% = 15.4]		
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 23% % Cover of Biotic Crust n/a

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (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 X

Remarks:

SOIL

Sampling Point: A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	80	7.5YR 4/6	20	C	M	SiCL	

[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)
- X 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: _____ N/A

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

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)
- X 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 X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Aerials: March, June, Sept. + October 2011 show inundation at this data point location

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tracy Lakes (SPK-2011-01069) City/County: San Joaquin Sampling Date: Sept. 30, 2015

Applicant/Owner: North San Joaquin Water Conservation District State: CA Sampling Point: B

Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X 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 X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: DP is in a lower area of the North Lake. Elevation Estimate from Sycamore's GPS loaded with LIDAR was 11' msl.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' rad)			
1. Cirsium vulgare	20	Y	FACU
2. Lactuca serriola	30	Y	FACU
3. Bare ground	25	--	--
4. Bromus diandrus	T	N	NOL
5. Chenopodium berlandieri var. sinuatum	T	N	UPL
6. Hirschfeldia incana	5	N	NOL
7. Hordeum sp. (murinum or marinum)	T	N	FAC-FACU
8. Galium aparine	20	Y	FACU
	75 = Total Cover		
Woody Vine Stratum (Plot size: _____)	Dom. [50% = 37.5 / 20% = 15]		
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust n/a

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 X

Remarks:

SOIL

Sampling Point: B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	80	7.5YR 4/6	20	C	M	SICL	

[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)
- X 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): _____ N/A

Hydric Soil Present? Yes X No ____

Remarks:

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)
- X 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 X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Aerials: March, June, Sept. + Oct 5th 2011 show inundation at this data point location

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tracy Lakes (SPK-2011-01069) City/County: San Joaquin Sampling Date: Sept. 30, 2015

Applicant/Owner: North San Joaquin Water Conservation District State: CA Sampling Point: C

Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D. Section, Township, Range:

Landform (hillslope, terrace, etc.): Gentle slope Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? N Are "Normal Circumstances" present? Yes X 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 X	**Is the Sampled Area within a Wetland?** Yes No X
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks: DP characterizes the transition zone between the "lake" bottom and Sycamore offering demarcation at 16' elevation (a 13' msl) for T.L. North.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5' rad.)			
1. Bromus diandrus	40	Y	NOL
2. Polypogon monspeliensis	30	Y	FACW
3. Lactuca serriola	15	N	FACU
4. Galium aparine	10	N	FACU
5. Cirsium vulgare	T	N	FACU
6. Bare Ground	5	--	--
7.			
8.			
	95% = Total Cover		
Woody Vine Stratum (Plot size:)	Dom: 50% = 47.5, 20% = 19		
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust n/a

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	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 X

Remarks:

SOIL

Sampling Point: C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	80	7.5YR 4/6	20	C	M	SCL	
		ranging to						
			5YR 4/6					
			(mixed)					

[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)
- X 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): _____ N/A

Hydric Soil Present? Yes X No _____

Remarks:

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)
- X 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 X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Aerials: March, June, September + Oct. 2011 show inundation at this data point location.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tracy Lakes (SPK-2011-01069) City/County: San Joaquin Sampling Date: Sept. 30, 2015

Applicant/Owner: North San Joaquin Water Conservation District State: CA Sampling Point: D

Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): (edge of) depression Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (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 X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: About 10% aerial overhang of Salix goodingii which is rooted 3-4' higher along the slope immediately west of DP. Did not include in plot b/c not representative of topographic conditions at DP-D. DP Elevation ~13.5' msl)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' rad)			
1. Galium aparine	30	Y	FACW
2. Polypogon monspeliensis	30	Y	FACW
3. Bromus diandrus	30	Y	NOL
4. Rumex crispus	10	N	FAC
5. Carduus pycnocephalus	T	N	NOL
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)	Dom. [50% = 50 / 20% = 20]		
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum n/a % Cover of Biotic Crust n/a

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (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 X

Remarks:

SOIL

Sampling Point: D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	80	7.5YR 4/6	20	C,P	M	SiC	more clayey than A-C

[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)
- X 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: _____ n/a

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

Noted redox along pore linings, many of which were not in top of soil and unable to confirm as live roots. Texture and gestalt indicated roots likely old/dead. Also not common (<2%).

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)
- X 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 X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(See note above under soils. Studied for possible ORCs but did not consider indicator to be met.

Aerials showing inundation: March, June, Sept.; Oct. 2011; April; June 2013.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tracy Lakes (SPK-2011-01069) City/County: San Joaquin Sampling Date: Sept. 30, 2015

Applicant/Owner: North San Joaquin Water Conservation District State: CA Sampling Point: E

Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 0.5%

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: DP represents a transition from mowed "lake bottom". Approximate elevation based on Sycamore GPS w/ LiDAR layer: 13' msl.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' rad.)			
1. Polypogon maspeliensis	20	Y	FACW
2. Rumex crispus	20	Y	FAC
3. Bromus hordeaceus	40	Y	FACU
4. Bromus diandrus	5	N	NOL
5. Festuca perennis (Italian rye grass)	T	N	FAC
6. Bare Ground	15	—	—
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. Down: 50% = 42.5, 20% = 17			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust n/a

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (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:

X 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:

SOIL

Sampling Point: E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	80	7.5YR 4/6	20	C,P	M	SiC	

[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)
- X 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 X No ___

Remarks:

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)
- X 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 X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Inundation visible on aerials dated March, June, Sept. & October 2011, and April & June 2013.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tracy Lakes (SPK-2011-01069) City/County: San Joaquin Sampling Date: Sept. 30, 2015

Applicant/Owner: North San Joaquin Water Conservation District State: CA Sampling Point: F

Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? N Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Data point transitioned from "arm" of T.L. South where DP-E is located, southward toward main body of the lake.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' rad)			
1. Rumex crispus	30	Y	FAC
2. Polygonum monspeliensis	30	Y	FACW
3. Bare ground	40	–	–
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dom. [50% = 30, 20% = 12]

% 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 X No _____

Remarks:

SOIL

Sampling Point: F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	80	7.5YR 4/6	20	C,P	M	SiC	

[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)
- X 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 X No ____

Remarks:

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)
- X 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 X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Inundation visible on aerials dated March, June, Sept. + Oct, 2011, and April + June 2013.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tracy Lakes (SPK-2011-01069) City/County: San Joaquin Sampling Date: Sept. 30, 2015

Applicant/Owner: North San Joaquin Water Conservation District State: CA Sampling Point: G

Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? N Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: A low "saddle" midway north-to-south slightly higher than Lake "arm" to north (e.g., DP-F) and higher than outfall area to south, along lakeshore.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' rad.)			
1. Rumex crispus	35	Y	FAC
2. Lactuca serriola	35	Y	FACU
3. Deschampsia danthonoides	20	Y	FACW
4. Bare Ground	10		—
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____) Dom. [50% = 45, 20% = 18]			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust n/a

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (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:

X 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 X No _____

Remarks:

SOIL

Sampling Point: G

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	80	7.5YR 4/6	20	C, P	M	SiCL	

[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)
- X 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 X No ____

Remarks: Soil texture more "blocky" in this location.

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)
- X 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 X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Inundation visible on aerials dated March, June, Sept, + Oct. 2011, and April and June 2013.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tracy Lakes (SPK-2011-01069) City/County: San Joaquin Sampling Date: Sept. 30, 2015

Applicant/Owner: North San Joaquin Water Conservation District State: CA Sampling Point: H

Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? N Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

In the "green patch" of western Tracy Lake, NW of

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' rad.)			
1. Persicaria sp.	30	Y	FAC-OBL
2. Polypogon monspeliensis	40	Y	FACW
3. Cirsium vulgare	3	N	FACU
4. Lactuca serriola	5	N	FACU
5. Rumex crispus	2	N	FAC
6. Bare Ground	20	-	-
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)	Dom [50% = 40, 20% = 16]		
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: 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:

X 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 X No _____

Remarks:

SOIL

Sampling Point: H

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	80	7.5YR 4/6	20	C/P	M	SiCL	

[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)
- X 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 X No ____

Remarks:

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)
- X 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 X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (Includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Inundation visible on aerials dated March, June, Sept. + Oct. 2011, and April and June 2013.

9/30/15

Photo 1. Shooting West at DP-A, Tracy Lake North. DP-A is in foreground.

9/30/15

Photo 2. Shooting SW from DP-B across extent of "lake" bottom. Adjacent upland visible behind willows.

9/30/15

Photo 3. Shooting East from DP-B across "lake" bottom. North shore of "Lake" visible in Background.

9/30/15

Photo 4. Soils at DP B.

9/20/15

Photo 5. Shooting North toward DP-C in Tracy Lake North.

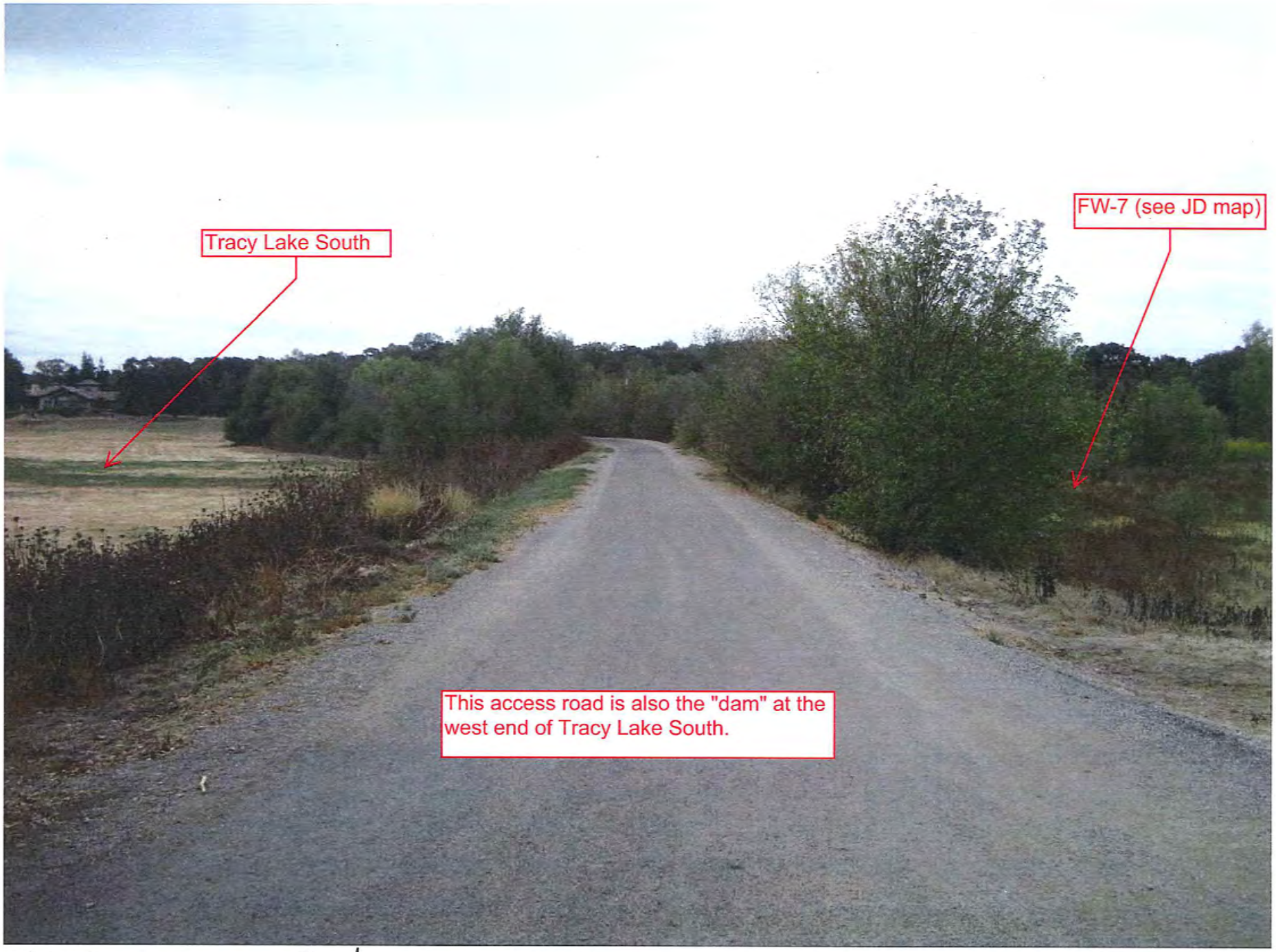


Photo 6. Shooting south along the road abutting the west end of Tracy Lake South.

9/30/15

Photo 7. Shooting SE across Tracy Lake South. View of DP-H location where green "wash" is.

9/30/15

Photo 8. Shooting NW toward DP-D along margin of Tracy Lake South.

9/30/15

Photo 9. Shooting South toward DP-E, Tracy Lake South.

9/30/15

Photo 10. Shooting South from near DP-G toward south shore of Tracy Lake South.

9/30/15

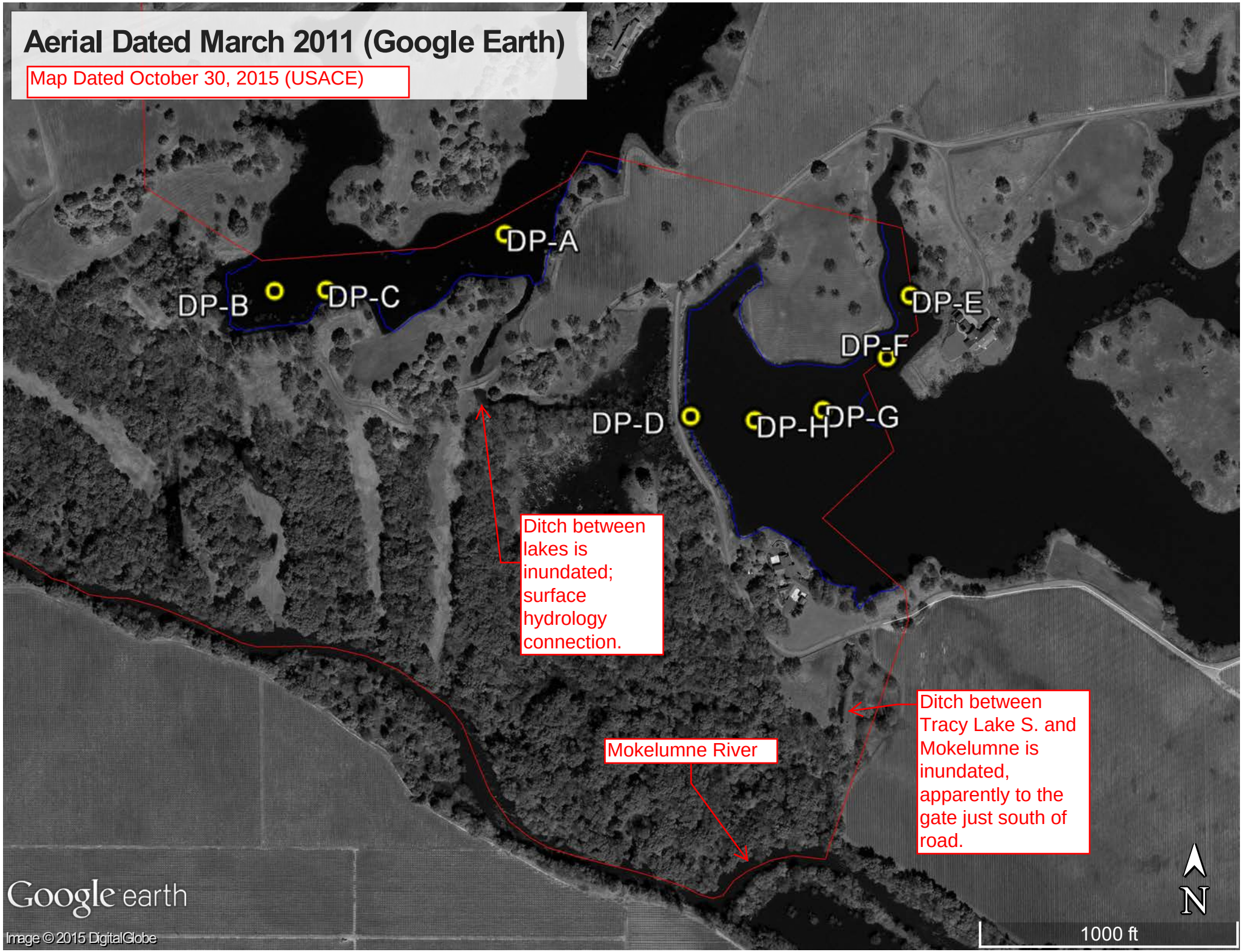
Photo 11. Shooting SW from near DP-6 across Tracy Lake South.

9/30/15

Photo 12. DP-H with persicaria sp. which was the primary species having a green appearance in Tracy Lake South.

APPENDIX C

Representative Aerial Photos and LiDAR Mapping

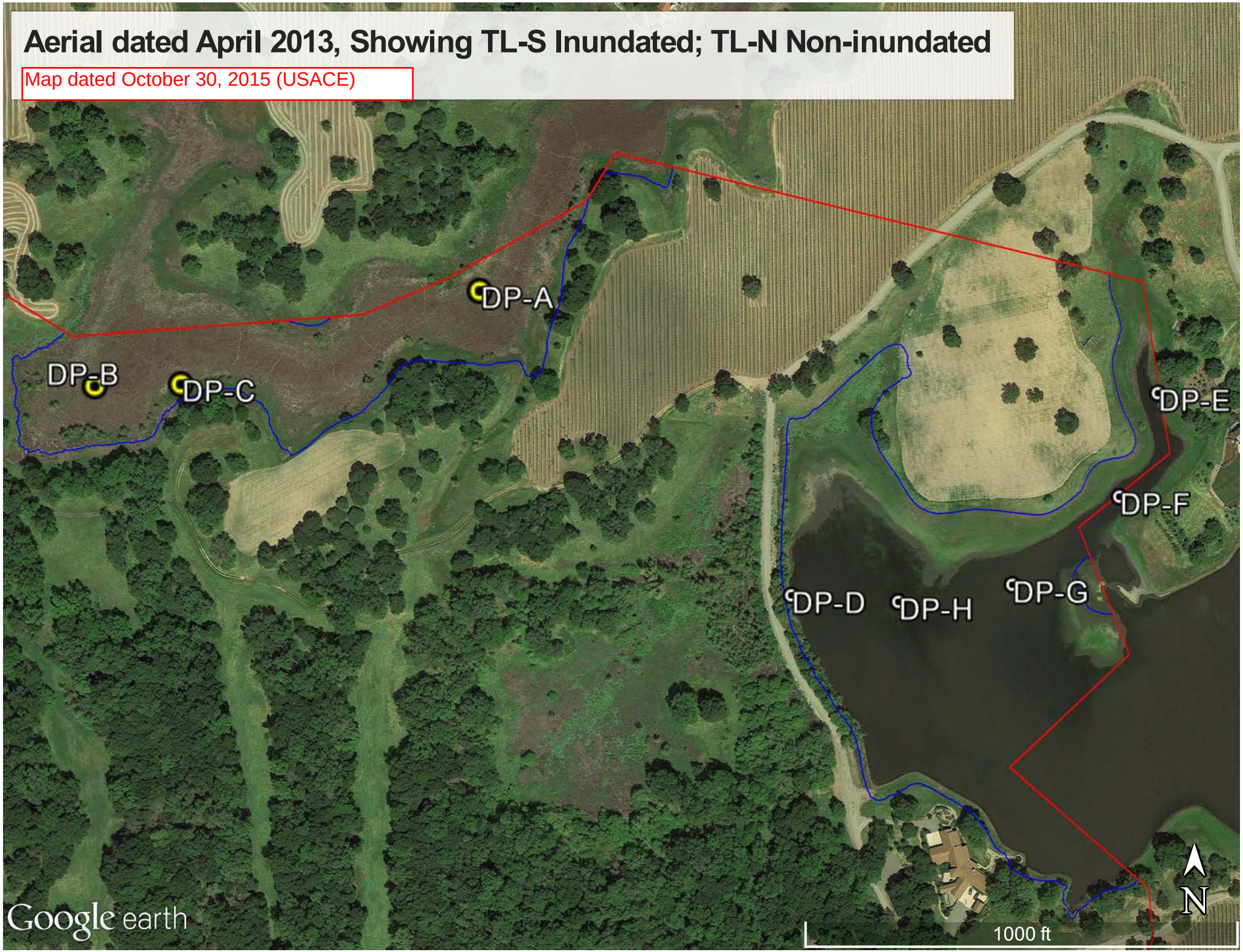

Aerial Dated March 2011 (Google Earth)
Map Dated October 30, 2015 (USACE)
DP-A
DP-B
DP-C
DP-D
DP-E
DP-F
DP-G
DP-H
Ditch between lakes is inundated; surface hydrology connection.
Mokelumne River
Ditch between Tracy Lake S. and Mokelumne is inundated, apparently to the gate just south of road.
Google earth
Image © 2015 DigitalGlobe
N
1000 ft

Aerial dated October 2011, Showing Both Lakes Inundated

Map dated October 30, 2015 (USACE)

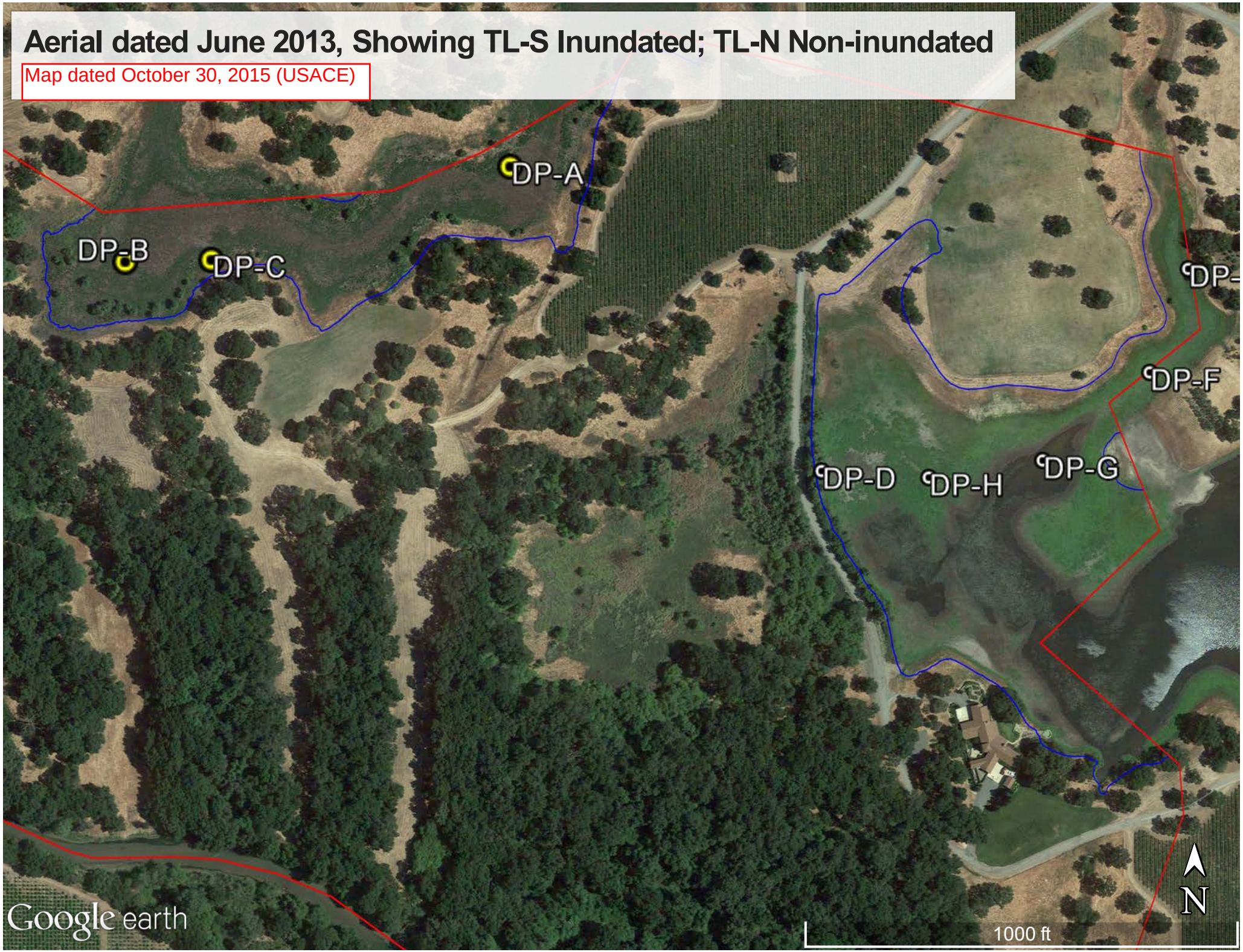
Aerial dated April 2013, Showing TL-S Inundated; TL-N Non-inundated

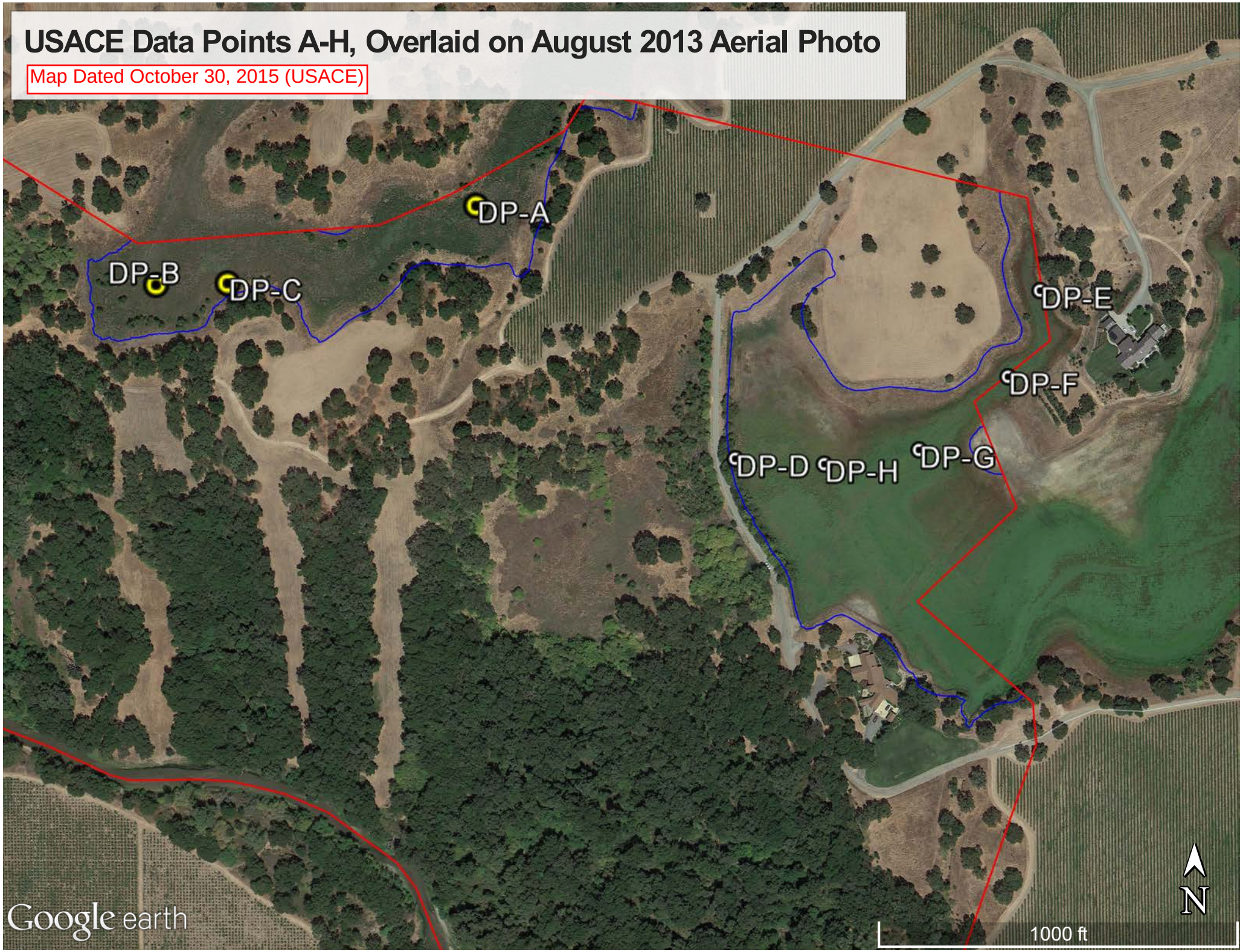
Map dated October 30, 2015 (USACE)

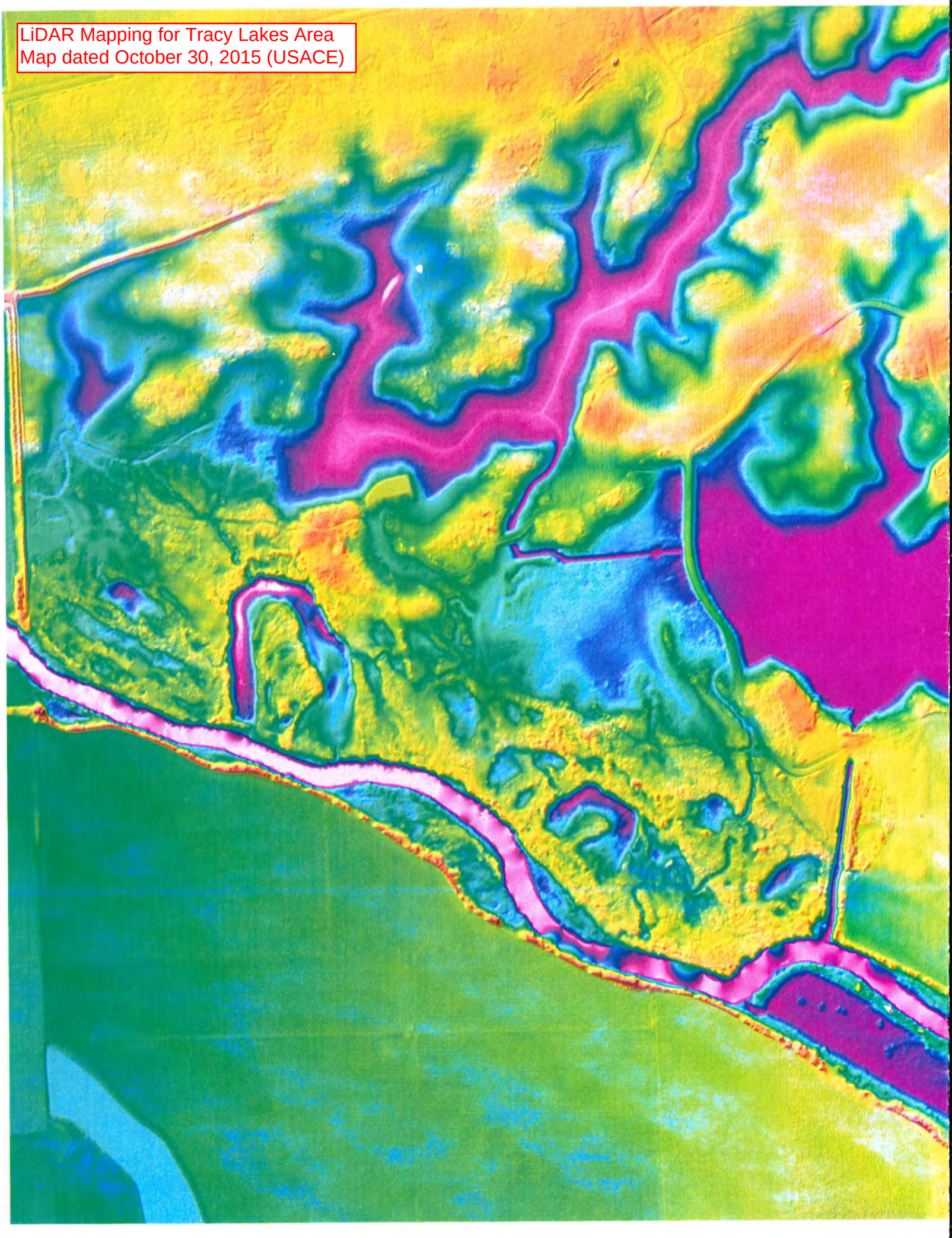


Aerial dated June 2013, Showing TL-S Inundated; TL-N Non-inundated

Map dated October 30, 2015 (USACE)




USACE Data Points A-H, Overlaid on August 2013 Aerial Photo
Map Dated October 30, 2015 (USACE)
DP-A
DP-B
DP-C
DP-D
DP-H
DP-G
DP-F
DP-E
Google earth
N
1000 ft


LiDAR Mapping for Tracy Lakes Area
Map dated October 30, 2015 (USACE)

APPENDIX D

Tracy Lakes Groundwater Recharge Project Information (SPK-2011-01069; NWP-12 Verified on 17 November 2014)

Feature	Temporary Impact (ac)	Permanent Impact (ac)	Total Impact (ac)
Mokelumne River	0.050	0.003	0.053
Tracy Lake (South)	0.041	0.087	0.128
Seasonal Wetland 3 (Ditch)	0.018	0.007	0.025
Total	**0.109**	**0.097**	**0.206**

Mokelumne River
(A = 4.379 ac; in PSA)

FW 1
(A = 0.126 ac)

Intake Permit Area
(A = 0.48 ac)

PUMP STATION AND DISCHARGE PIPING

STAGING AREA

SW 3 (Ditch)
(A = 0.204 ac)

INTAKE STRUCTURE & FISH SCREEN

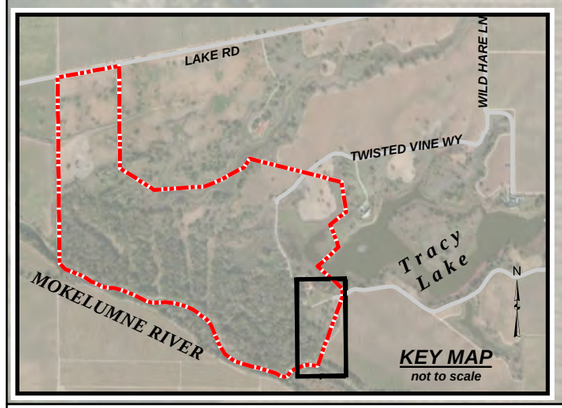
Tracy Lake (South) OHWM
(A = 13.034 ac; in PSA)

PROPOSED ALL-WEATHER ROAD

PIPE OUTFALL

RSP STILL BASIN

Outfall Permit Area
(A = 0.53 ac)



Tracy Lake Groundwater Recharge
San Joaquin County, CA
21 August 2014

Project Impacts to Wetlands and Waters

- Permit Areas
- Project Study Area (PSA)
- Seasonal Wetland (SW)
- Forested Wetland (FW)
- Mokelumne River OHWM
- Lake OHWM
- Proposed Pump Station and Piping Improvements
- Limits of Grading
- Staging Area
- Permanent Impact
- Temporary Impact

80 40 0 80 Feet

Scale: 1 inch = 80 feet

SYCAMORE Environmental Consultants, Inc.

Aerial Photograph: 2 February 2012,
US-CA-Sacramento, Microsoft Imagery
ESRI Arcmap Basemap layer service
Design: Tracy Lakes Groundwater Recharge Project
Transmission Pipeline - Plan & Profile
DRAFT 65% Submittal (June 2013)
Layout.dwg by KSN Engineers & Land Surveyors

13024TracyLakeGroundwater_PumpStaPipe_Impacts_v2.mxd

Newly Installed Outfall Along South Shoreline of Tracy Lake South (USACE, photo taken September 30, 2015)

APPENDIX E

Revised JD Form

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): November 23, 2015

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District, Tracy Lake Groundwater Recharge , SPK-2011-01069

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: **California** County/parish/borough: **San Joaquin** City:
Center coordinates of site (lat/long in degree decimal format): Lat. **A38.2121°**, Long. **-121.3481°**
Universal Transverse Mercator: **10 644621.51 4230635.25**
Name of nearest waterbody: **Mokelumne River**
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: **Mokelumne River**
Name of watershed or Hydrologic Unit Code (HUC): **Lower Consumnes-Lower Mokelumne. California., 18040005; Jahant Slough 180400121101**
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form:

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: **20 Nov 2015**
☒ Field Determination. Date(s): **10 Apr 2014, 30 Sep 2015**

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Pick List** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Pick List** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☒ TNWs, including territorial seas
      ☒ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: **4185** linear feet, **~50** wide, and/or **~18.632 (Mokelumne River ~4.80 acres and Tracy Lake North ~6.778 acres, Tracy Lake South non-wetland lake ~7.054 acres)** acres.
      Wetlands: **6.468 (~5.980 acres within OHWM of Tracy Lake South, and 0.488 acre other wetlands identified on Sycamore Environmental's July 29, 2013 JD map)** acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
      Elevation of established OHWM (if known): **~17 ft (Mokelumne River); 16 ft (Tracy Lake North); 18 ft (Tracy Lake South)**

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **See Section III (F).**

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: **Mokelumne River**

Summarize rationale supporting determination: **Documented tidal and Section 10 approximately 2 miles downstream. Tidal influence may extend into study area. Documented historical and current commercial and recreational navigation upstream and downstream and through the study area. The Mokelumne at this location may also be susceptible for use to transport interstate or foreign commerce. For example, the Lower Mokelumne (below Camanche Dam) is known as a popular fishing river for fall-run chinook salmon and bass, among other species, thus recreational boating including guided fishing trips occur along the Lower Mokelumne (http://www.anglerweb.com/fishing_spots/mokelumne-river and http://www.fishtrips.net/gt_mokelumne_float.htm).**

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent": **All wetlands identified on the JD map dated 29 July 2013 (attached) are considered adjacent to the TNW (The Mokelumne River) (5.237 acres total, consisting of SW 1-3, Farmed Wetland (a single feature) and Forested Wetlands FW 1-11). In addition to this, approximately 5.98 acres of area within the ordinary high water mark (OHWM) of Tracy Lake South in the study area is seasonal wetland, for a total of 11.22 acres of seasonal wetland within the study area.**

"Adjacent" means "bordering, neighboring or contiguous" (33 CFR 328.3[c]). The December 2, 2008 US EPA/Corps guidance memorandum further clarified the meaning of the term "adjacent wetlands" as those wetland meeting at least one of the following three criteria: First, when a wetland has an unbroken surface or shallow sub-surface hydrologic connection to jurisdictional waters (even if it is intermittent). Second, when a wetland is physically separated from jurisdictional waters by man-made dikes or barriers, natural river berms, beach dunes and the like. Third, when a wetland is in "reasonably close" proximity to a jurisdictional water, supporting the scientific inference that such wetlands have an ecological interconnection with jurisdictional waters.

The wetlands within the study area are considered to be adjacent to the Mokelumne River, a TNW, since they are neighoring in the specific sense of being in reasonably close proximity to the TNW such that an implied ecological interconnection is more than speculative or insubstantial. Examples provided in the December 2, 2008, guidance include amphibians that move between such waters (i.e., a TNW and an adjacent wetland) in support of their life stage requirements. The wetlands within the study area are located either within or in very close proximity to a complex riparian/floodplain forest which supports a variety of bird and mammal species, as documented in the project's administrative record. The ecosystem functions as a riparian/floodplain forest and non-speculative ecological interconnection, when considering the physical and biological interactions that underpin ecology, especially in the occasional "flooded up" character of the riparian landscape between the river and the Tracy Lakes, inclusive of the ditch connecting the two lakes, and the ditch that has in the past drained water from Tracy Lake South to the Mokelumne River, shown in the March 2011 aerial photo in the record. Riparian areas in general, and during intermittent "flooded up" times, provide interconnection via food webs, including movements between riparian wetlands and the river for breeding, foraging and other life history requirements of invertebrates and amphibians, many species of which use aquatic areas and nearby uplands for different parts of their life histories. Relatively rare flood events can still have notable ecological effects, for example through nutrient storage and related modifications in nutrient cycling, or influencing organisms (e.g., insects, amphibians) to retreat to floodplain wetlands during such events. Another species-based ecological interconnection example is provided by the western pond turtle (Clemmys marmorata), which the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) documented the Tracy Lakes Groundwater Recharge project's (a NWP verified under the same project number, SPK-2011-01069) coverage under the SJMSCP, as a species with suitable habitat occuring within the project site (no occurrences have been found, however suitable habitat has been determined to occur). The SJMSCP required a western pond turtle-specific minimization measure that read, in part: "When nesting areas for pond turtles are identified on a project site, a buffer area of 300 feet shall be established between the nesting site (which may be immediately adjacent to wetlands or extend up to 400 feet away from wetland areas in uplands) and the wetland located near the nesting site" (San Joaquin Council of Governments, Inc., findings dated September 19, 2014, found in JD file's administrative record).

Wetlands located near to rivers in riparian or floodplain landscape settings can be connected to the nearby river both overland flow and/or by subsurface (e.g., hyporheic) flow (USEPA 2015*, pg. 2-7). In absence of obvious direct (e.g., field-observed) or indirect (e.g., discernible on aerial imagery) evidence of connectivity via overland flow, shallow sub-surface hydrologic connectivity is generally difficult to characterize for riparian/floodplain wetlands (USEPA, pg. 2-8). Based on best professional judgment applied to available documentation (e.g., soil mapping, regional groundwater information, LiDAR imagery and elevation data for the study area), shallow sub-surface hydrologic connections are likely to be present between the wetlands in the study area and the Mokelumne River, at least on an intermittent basis. The land surface elevations between the Tracy Lakes and the river range from 20 to 30 ft. above mean sea level (msl); however, this does not preclude the opportunity for shallow sub-surface hydrologic connectivity through soils mapped in the area between the lakes and river that range from deep to "very deep," and are moderately well-drained. Also, the OHWM of the Mokelumne River in the study area is estimated to be 17 ft. msl, and the OHWM of North and South Tracy Lakes, respectively, estimated to be 16 and 18 ft. msl. Areas of these lake bottoms within the study area were estimated by use of GPS devices and ocular observations during the District's Sept. 30, 2015 field work to be up to 5 ft. lower than the OWHM elevations (e.g., 11 ft. for North Tracy Lake, and 13 ft. for South Tracy Lakes). In absence of evidence to the contrary, the District cannot preclude the potential for intermittent, shallow sub-surface hydrologic connectivity between lake bottoms that are between 4 and 6 ft. below the OHWM of the Mokelumne River, during times when water occurs in the lake(s). Reliance on the potential (lacking direct evidence, e.g., data from shallow groundwater monitoring wells) of an intermittent, shallow sub-surface hydrologic connection is not the primary rationale or criterion for jurisdiction of the wetlands in Tracy Lake South on the basis of adjacency to the TNW, but rather a secondary rationale. The District does not consider that available conclusive evidence exists that would contradict the potential for a shallow sub-surface hydrologic connection between the wetlands in the study area and the Mokelumne River. For example, the lack of observable seeps or "daylighted" areas of lateral hydrologic flow between either of the lakes and the Mokelumne River, e.g., in Forested Wetland (FW) 9, which has a bottom elevation of 12 ft. msl, is not conclusive in negating a shallow sub-surface groundwater connection with the TNW. First, the subsurface connection could be lower than 12 ft., tapping into the open water and/or groundwater zones of the Mokelumne River. Second, all field observations made as part of this JD action have been during a drought period, not during one of the sporadic higher water times that are evidenced by aerial photography (as described above). It cannot be ruled out that seepage could occur along the side of one or more forested wetland, particularly those closer to the river (e.g., FW-1, FW-3, FW-4, FW-8 and/or FW-9) during a higher water event and/or prolonged precipitation cycle.

With one exception, there does not appear to be a direct pathway for a surface hydrologic connection between the Tracy Lakes and the river, based on site observations and remote sensing (e.g., LiDAR). There is one surface hydrologic connection with the potential to be "intermittent," based on available data. This factor is presented, as a secondary basis for jurisdiction by adjacency, to bolster the primary basis noted above (of "reasonably close" proximity/ecological interconnection). The man-made ditch constructed sometime between 1953 and 1968 to drain Tracy Lake South as part of its agricultural use has a controlled valve/gate at its northern end. Information in the record indicates the gate may not have been opened for the better part of 20 years, however, the potential for a surface hydrologic connection is noted as one that has been acknowledged to have occurred in the past. The applicant's representative also described a surface hydrology connection in a December 22, 2014 requesting the appeal of the District's original JD; "[w]hile it is unclear why the valve at the end of the ditch was left open in 2011, this resulted in water entering South Tracy Lake from the River through a man-made ditch and control structure during a high flow event." Thus, as recently as 2011, which is the year during which the March 2011 aerial depicts water in the subject ditch, there appears to have been a surface hydrology connection between Tracy Lake South and the Mokelumne River. A surface hydrology connection between these features may be sporadic enough in nature (in response to climatic conditions and human intervention to control the gate structure) so as to be less than intermittent, which is the standard cited in the December, 2008 US EPA/Corps guidance. This is further complicated by the infrastructure just installed (summer 2015) under the Tracy Lakes Groundwater Recharge project DA authorization. The project's infrastructure is designed to allow operators to control water inflow pumped upgradient into Tracy Lake South from the Mokelumne River on a highly precise basis. In order to the serve the purpose of groundwater recharge, it is all the more unlikely that surface water releases would be necessary in the future, unless potentially a significant rain event(s) occurred. The applicant's project description for the groundwater recharge project did not state that the existing culvert or gate structure would be removed, so it is assumed that it is still present, barring new information. Based on the above analysis of surface hydrologic connections, Tracy Lake North does not have a surface connection to the Mokelumne River on a time scale at least intermittent in nature.

In summary, based on the available information, the wetlands within the study area (inclusive of the wetlands within Tracy Lake South) are adjacent to the Mokelumne River, a TNW. The basis for adjacency results primarily from the wetlands' "reasonably close" proximity to the TNW, supporting the scientific inference that such wetlands have an ecological interconnection with jurisdictional waters. A supportive, secondary rationale for adjacency is provided by the non-speculative nature of sporadic surface water connectivity between Tracy Lake South and the Mokelumne River via the man-made ditch, and for the

potential, in absence of conclusive evidence to the contrary, for a shallow sub-surface hydrologic connection between the aquatic features in the river's floodplain area and the river itself.

***U.S. Environmental Protection Agency. Connectivity of streams and wetlands to downstream waters: a review and synthesis of the scientific evidence. EPA/600/R-14-475F, January 2015.**

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **acres**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW[5]:
Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural
☐ Artificial (man-made). Explain:
☐ Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:
Presence of run/riffle/pool complexes. Explain:
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime:
Other information on duration and volume:

Surface flow is: **Pick List.** Characteristics:

Subsurface flow: **Pick List**. Explain findings:
☐ Dye (or other) test performed:

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain:
Identify specific pollutants, if known:

(iv) Biological Characteristics. Channel supports (check all that apply):
☐ Riparian corridor. Characteristics (type, average width):
☐ Wetland fringe. Characteristics:
☐ Habitat for:
☐ Federally Listed species. Explain findings:
☐ Fish/spawn areas. Explain findings:
☐ Other environmentally-sensitive species. Explain findings:
☐ Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain:
Wetland quality. Explain:
Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain:

Surface flow is**: Pick List**
Characteristics:

Subsurface flow: **Pick List**. Explain findings:
☐ Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
☐ Discrete wetland hydrologic connection. Explain:
☐ Ecological connection. Explain:
☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:
Identify specific pollutants, if known:

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width):
☐ Vegetation type/percent cover. Explain:
☐ Habitat for:
☐ Federally Listed species. Explain findings:
☐ Fish/spawn areas. Explain findings:
☐ Other environmentally-sensitive species. Explain findings:
☐ Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus

include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☒ TNWs: **4,185** linear feet, **~50 ft.** wide, Or **~4.80** acres.
   ☒ Wetlands adjacent to TNWs: **6.468** acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   ☐ Tributary waters: linear feet wide.
   ☐ Other non-wetland waters: acres.
   Identify type(s) of waters:

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   ☐ Tributary waters: linear feet, wide.
   ☐ Other non-wetland waters: acres.
   Identify type(s) of waters:

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

[8]See Footnote # 3.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

☐ Demonstrate that impoundment was created from "waters of the U.S.," or

☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or

☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.

☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

☐ which are or could be used for industrial purposes by industries in interstate commerce.

☐ Interstate isolated waters. Explain:

☐ Other factors. Explain:

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet, wide.

☐ Other non-wetland waters: acres.

Identify type(s) of waters:

☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.

☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:

Tracy Lake North: This feature is a sporadically-flooded non-RPW "tributary" (a term that is inclusive of lakes per the guidance contained in the Corps' post-Rapanos "Instructional Guidebook, dated May 30, 2007) that does not contain wetlands within its OHWM, fails the Significant Nexus standard, since the waters do not

[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW (Mokelumne River). Supporting rationale is as follows:

1) the direction of flow for surface water in the study area is from Tracy Lake South to Tracy Lake North (in combination with Tracy Lake North' own upstream watershed drainage). With the pending operation of the groundwater recharge project, the potential for water from the Mokelumne River to reach Tracy Lake North is likely to be augmented. However, the potential for vice-versa to result is likely to be even more diminished than it was in a pre-project condition. The aerial photo sequence between April and August 2013 is a helpful illustration of the propensity for Tracy Lake South to retain water for a longer time period than Tracy Lake North;

2) As noted above, the potential for a direct surface water hydrology connection between Tracy Lake North and the Mokelumne River. If water from the Mokelumne River flows into Tracy Lake North, this would not affect the integrity of the Mokelumne River in a way that could be said to be more than speculative or insubstantial. For example, once the water is taken off-stream, the formal project description for the groundwater recharge project designates Tracy Lake South as "the" reservoir (not both lakes); and,

3) As noted above, there is a potential for an intermittent sub-surface hydrologic connection between Tracy Lake North and the Mokelumne River. However, lacking evidence such as presence of "seeps" in intervening topographic depressions in the area between the lake and the river, and/or data from groundwater monitoring wells, this factor cannot be said to have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW. In summary, Tracy Lake North does not meet the significant nexus standard.

Tracy Lake South (7.054 acres of non-wetland lakebed within the OHWM of lake): The non-wetland portion of the lake, which is also a sporadically-flooded non-RPW "tributary" fails the Significant Nexus standard, since the waters do not have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW (Mokelumne River). Supporting rationale is as follows:

1) As noted above, the man-made ditch constructed sometime between 1953 and 1968 was built to drain Tracy Lake South as part of its agricultural use. The ditch has a controlled valve/gate at its northern end, and information in the record indicates the gate may not have been opened to drain Tracy Lake South toward the Mokelumne River for the better part of 20 years. As also described above, apparently in 2011 there was water from the Mokelumne River that entered into Tracy Lake South; it is unknown if there was a flow of water from the lake into the river. The year 2011 is four years ago from present, and more than likely the event in question occurred in the spring (e.g., March 2011's aerial photo discussed above). This would influence the timeline to +/- 4.5 years from present. If water from the Mokelumne River flows into Tracy Lake South on a highly intermittent basis (unknown except for the event indicated by the appellant's representative, as discussed above), this would not affect the chemical, physical and/or biological integrity of the Mokelumne River in a way that could be said to be more than speculative within the last approximately five years. Regulatory Guidance Letter 05-02 speaks to the potential for "rapidly changing environmental conditions" to affect specific geographic areas, which is part of the rationale behind the Corps' 5-year expiration date for approved JDs. If this man-made ditch had been assessed in the 1990's, for instance, the District may have found evidence of a less-than-speculative effect of Tracy Lake South waters on the TNW. In more recent time (2010-2015), the District does not have evidence that surface water from Tracy Lake South has reached the TNW; and,

2) As noted above, there is a potential for an intermittent sub-surface hydrologic connection between Tracy Lake South and the Mokelumne River. However, lacking evidence such as presence of "seeps" in intervening topographic depressions (including the man-made ditch) and/or data from groundwater monitoring wells, this factor cannot be said to have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW. In summary, the District has determined that the 7.054 acres of non-wetland lakebed within the OHWM of Tracy Lake South does not meet the significant nexus standard.

☐ Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, wide.
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource:
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, wide.
☒ Lakes/ponds: **6.778** acres.
☐ Other non-wetland waters: acres. List type of aquatic resource:
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Tracy Lake Groundwater Recharge Figure 4: Jurisdictional Delineation Map (dated 29 July 2013, by Sycamore Environmental Consultants)**
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☒ Office does not concur with data sheets/delineation report.
☒ Data sheets prepared by the Corps: **30 Sept. 2015, DPs A - H**
☐ Corps navigable waters' study:
☒ U.S. Geological Survey Hydrologic Atlas:
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: **1:24K; CA-LODI NORTH**
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: **Soil Survey of San Joaquin County, CA (October 1992)**
☒ National wetlands inventory map(s). Cite name:
☐ State/Local wetland inventory map(s):
☒ FEMA/FIRM maps: **FEMA Map Number 06077C0155F (October 16, 2009)**
☒ 100-year Floodplain Elevation is: **29-31 ft. (NAVD 88)** (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): **Google Earth, Bing Maps**
or ☒ Other (Name & Date):
☒ Previous determination(s). File no. and date of response letter: **SPK-2011-01069 (2 Oct 2014)**
☒ Applicable/supporting case law:
☒ Applicable/supporting scientific literature: **CONNECTIVITY OF STREAMS AND WETLANDS TO DOWNSTREAM WATERS: A REVIEW AND SYNTHESIS OF THE SCIENTIFIC EVIDENCE (EPA/600/R-14/475F), January 2015**
☒ Other information (please specify): **LiDAR**

B. ADDITIONAL COMMENTS TO SUPPORT JD:

Tracy Lake North was assessed as a potential isolated non-navigable intrastate non-relatively permanent water, and found to not be isolated from the TNW for the reason that there is a connecting ditch that carries water (via a gate-controlled culvert) from Tracy Lake South into Tracy Lake North. Thus, the lakes are hydrologically connected. With a man-made ditch connection between Tracy Lake South and the TNW, there is the potential for water from the TNW to reach Tracy Lake South (from a surface water connection perspective, much less likely vice-versa).