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): 3 March 2014

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:Los Angeles District, Kramer Junction, SPL-2013-00162-BEM

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State:California County/parish/borough: San Bernardino City: Kramer
Center coordinates of site (lat/long in degree decimal format): Lat. 34.992232° **N**, Long. 117.541437° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: Rogers Dry Lake, Harper Dry Lake
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A
Name of watershed or Hydrologic Unit Code (HUC): Antelope-Fremont Valleys (18090206) and Coyote-Cuddeback Lakes(18090207)

☒ 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: February 26, 2014
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*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 **Are no** "*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: linear feet: width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Pick List**
      Elevation of established OHWM (if known): .

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: **The project area and its 57 waters are located within the Antelope-Fremont Valley 8- digit HUC (18090206) and the 8-digit Coyote-Cuddeback Lakes HUC (18090207)(See Attachment A). The westernmost waters, STRM-1 and**

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[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.

STRM-2 are located within the Peerless Valley 10- digit HUC (1809020621) which is within the Antelope-Fremont Valleys HUC (18090206). Based on a previous approved jurisdictional determination (SPL-2012-00698-SLP) that included this entire 10-digit HUC, waters in this basin have been determined to be an isolated intrastate system which lacks the presence of a TNW. STRM-1 and STRM-2 appear to dead-end just outside the project area; however, any continuing flow would terminate at Rogers Dry Lake, which has previously been determined (SPL-2012-00698-SLP) NOT to be a (a)(3) water as defined by 33 CFR 328.3, as it does not meet criteria (a)(3)(iii), since surface waters are NOT used for industrial or other commercial purposes by interstate commerce industries.

STRM-3 through STRM-56 and MMD-1 are located within the Coyote-Cuddeback Lakes 8-digit HUC (18090207). A previous approved jurisdictional determination (SPL-2007-01449) was made within this same HUC and it was determined the ephemeral non-RPW drainages within this watershed flow north to Harper Dry Lake during major storm events. Similarly, the non-RPW drainages in the project area flow north to Harper Dry Lake. These drainages generally dissipate into smaller braided channels as they progress toward Harper Dry Lake. Average annual precipitation is 5 inches and ranges from 3 to 7 inches. Harper Dry Lake is the terminus for these designated non-RPWs, as well as for other non-RPWs within the watershed. Since surface waters are ephemeral, there are no recreational, industrial, or fisheries uses that use surface waters for interstate commerce. The natural recharge of the Harper Valley groundwater basin is mainly from infiltration of rainfall and percolation of surface runoff through alluvial fans and around edges of the valley. Harper Valley also receives some groundwater underflow from the Mojave River Valley and Cuddeback Valley groundwater basins. In general, groundwater flows toward Harper Dry Lake, in the southern part of the valley (California Groundwater Bulletin 118, 2004, Attachment B). Harper Lake is an isolated intrastate water with no recreational navigation activities. These drainage features are NOT (a)(3) waters as defined by 33 CFR 328.3, and do not meet criteria (a)(3)(iii), since surface waters are NOT used for industrial or other commercial purposes for interstate commerce.

Therefore, based on the information above, the Corps concludes these ephemeral non-RPW drainage features are isolated with no connection to a downstream TNW, and thus are non-jurisdictional (NOT waters of the United States) .

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<u>SECTION III: CWA ANALYSIS</u>

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: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

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: **Pick List**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) <u>Relationship with TNW:</u>
☐ 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: .

[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.

(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

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: .

[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.

(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

(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: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: 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 width (ft).

☐ 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 width (ft).

☐ 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.

☐ 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: .

[8]See Footnote # 3.

[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.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ 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: **.**
☐ Other: (explain, if not covered above): **.**

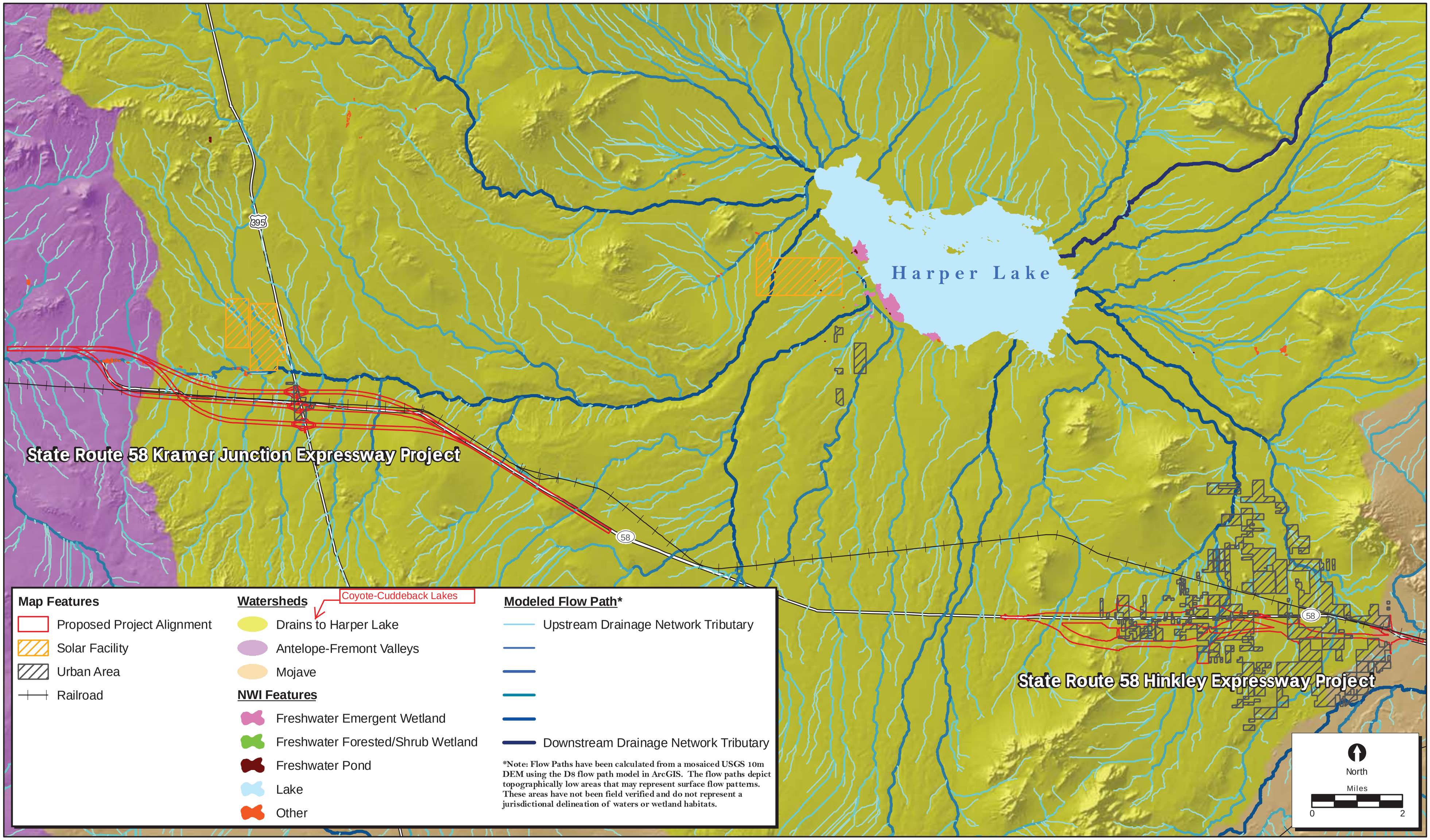
Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **12,984 acres, 36,555 LF** linear feet **range from 4-33 ft.** width (ft).
☐ Lakes/ponds: acres.
☒ Other non-wetland waters: , 8,065 LF, 63,124 acres. List type of aquatic resource: ditch.
☐ 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, width (ft).
☐ Lakes/ponds: 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: .
☒ 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: .
☐ 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: .
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☐ Photographs: ☒ Aerial (Name & Date):Google Earth Aerials.
or ☒ Other (Name & Date):Corps Maps Database.
☒ Previous determination(s). File no. and date of response letter:SPL-2007-01449-VCC (3 August 2012), SPL-2012-00698-SLP (29 May 2013).
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☒ Other information (please specify):California Groundwater Bulletin 118: Harper Valley Groundwater Basin.

B. ADDITIONAL COMMENTS TO SUPPORT JD: N/A.



N:\2008\2008-040 Caltrans District 8\Task 012\MAPS\HYDROLOGY\TO1214_Flow_HarperLake.mxd

Watersheds generated from the USGS 10m DEM using ArcGIS D8 drainage model

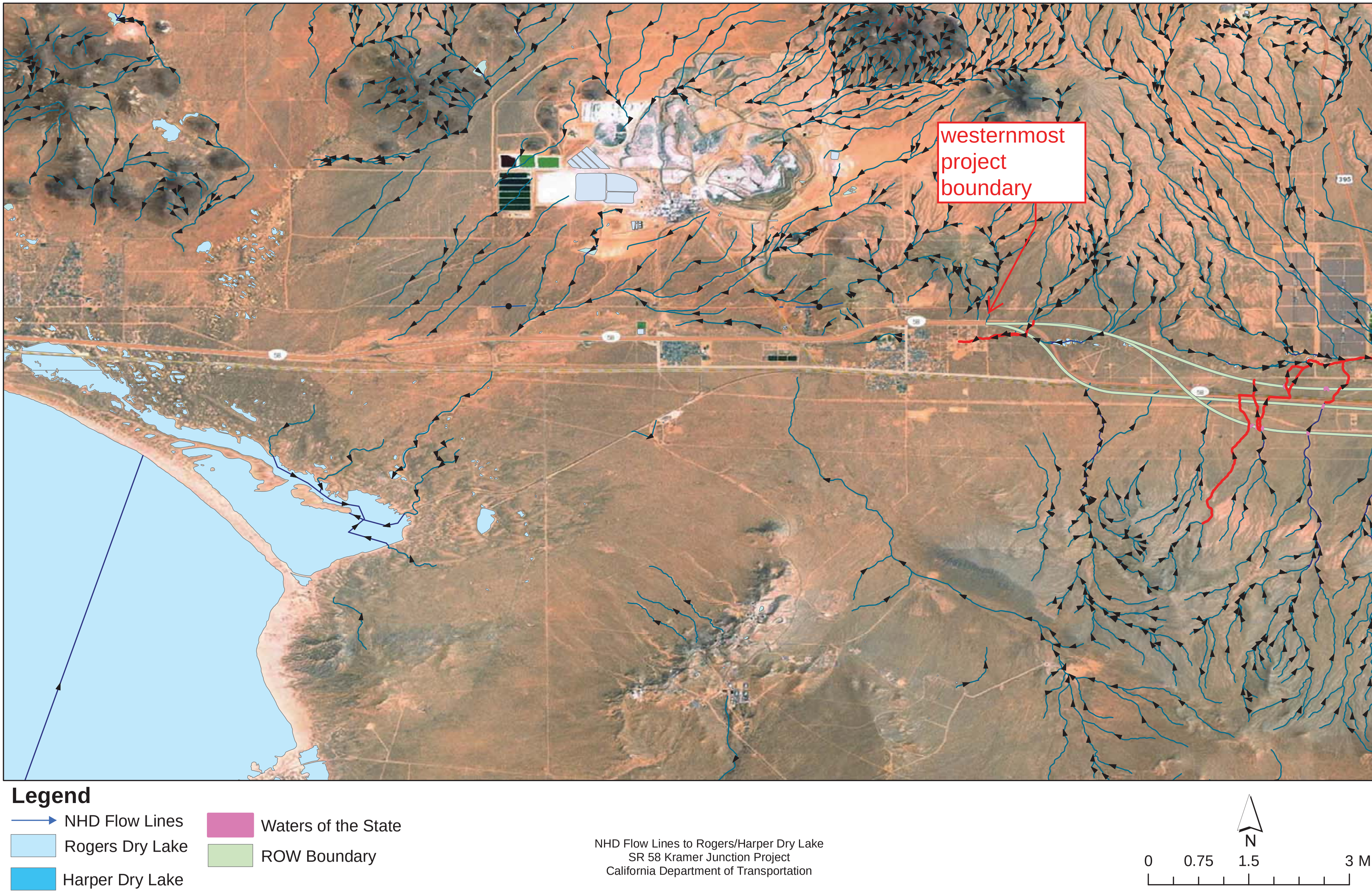
Map Date: 11/24/2009

Task Orders 12 & 14 Flow to Harper Lake

2008-040 CalTrans District 8

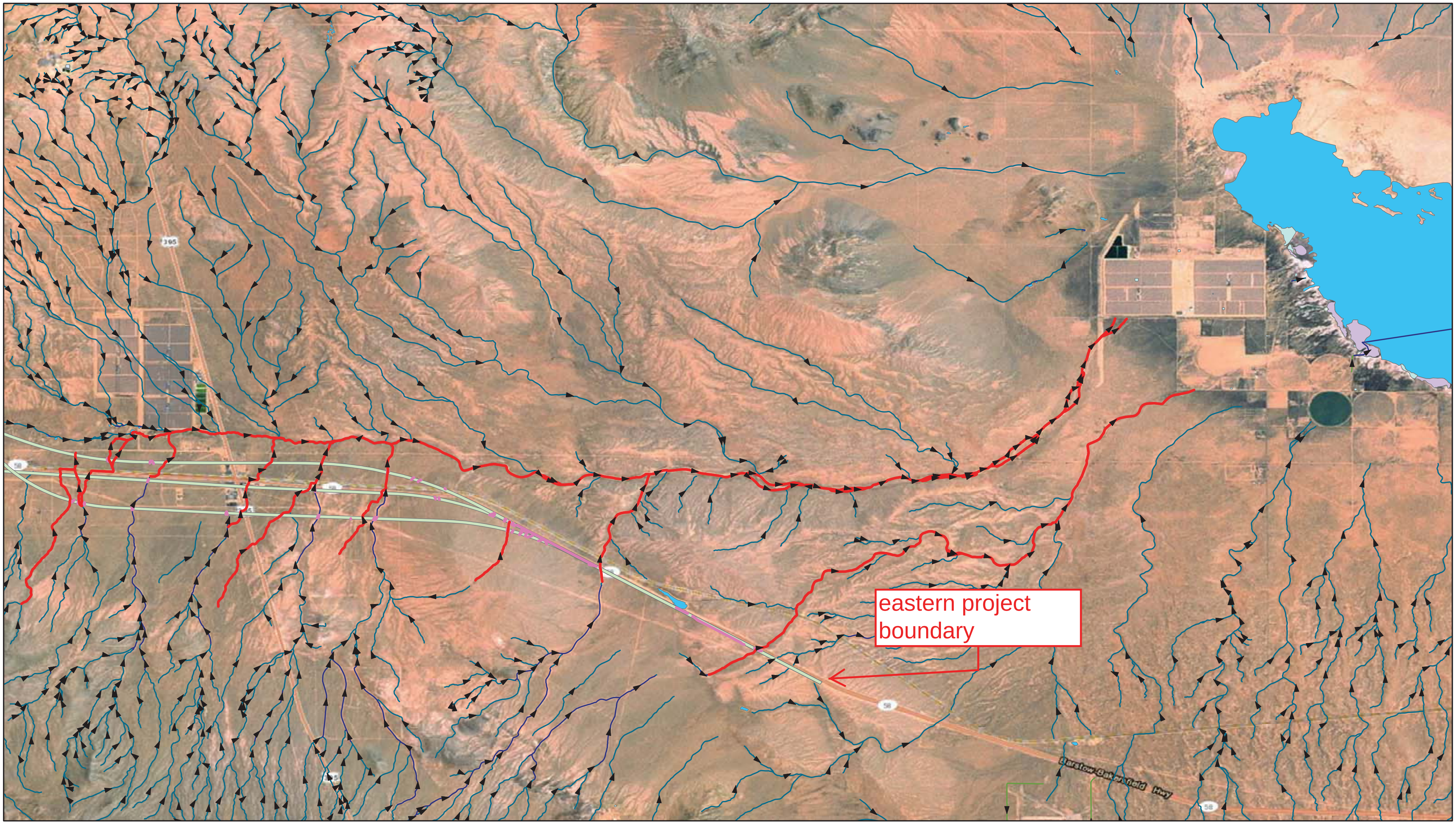
Antelope-Fremont Valley 8-Digit HUC (18090206) and
Coyote-Cuddeback Lakes 8-digit HUC (18090207)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS



NHD Flow Lines to Rogers/Harper Dry Lake
SR 58 Kramer Junction Project
California Department of Transportation

NHD flow lines to Rogers Lake



Legend

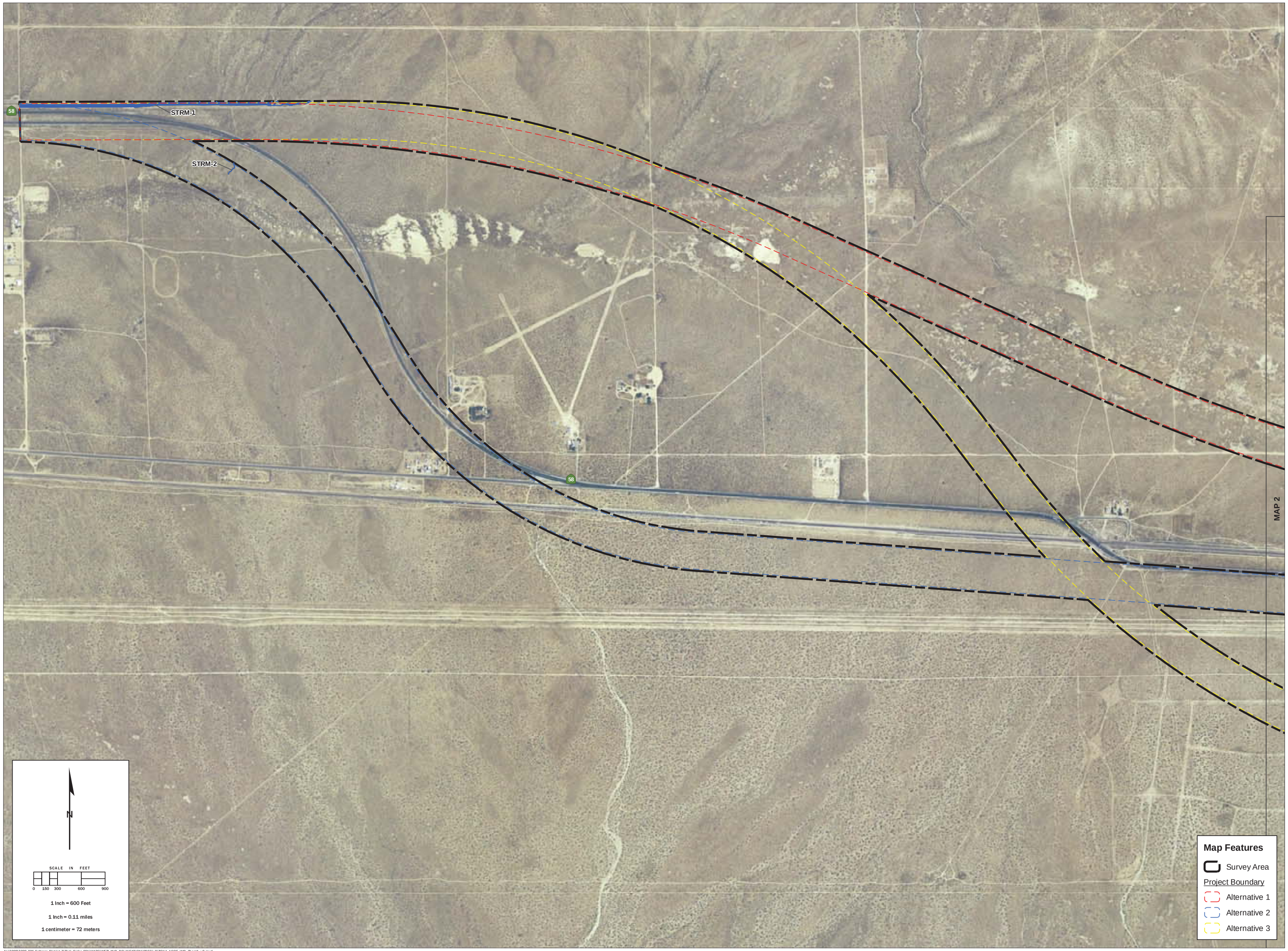
- NHD Flow Lines
- Rogers Dry Lake
- Harper Dry Lake
- Waters of the State
- ROW Boundary

NHD Flow Lines to Rogers/Harper Dry Lake
SR 58 Kramer Junction Project
California Department of Transportation

N

0 0.75 1.5 3 Miles

NHD flow lines to Harper Lake



OTHER WATERS

STREAMBED

ID	EXISTING SQ FT	EXISTING ACREAGE	EXISTING LINEAR FT
STRM-1	119,662	2.747	4,061
STRM-2	731	0.017	181
STRM-3	1,203	0.028	159
STRM-4	3,752	0.086	544
STRM-5	6,482	0.149	936
STRM-6	1,896	0.044	473
STRM-7	7,237	0.166	775
STRM-8	897	0.021	604
STRM-9	42,394	0.973	1,188
STRM-10	8,350	0.192	891
STRM-11	5,127	0.118	733
STRM-12	5,214	0.120	1,430
STRM-13	16,963	0.389	1,971
STRM-14	125	0.003	62
STRM-15	3,885	0.089	686
STRM-16	3,660	0.084	826
STRM-17	35,065	0.805	1,127
STRM-18	46	0.001	22
STRM-19	6,449	0.148	513
STRM-20	611	0.014	202
STRM-21	10,023	0.230	593
STRM-22	77,292	1.774	1,776
STRM-23	5,411	0.124	548
STRM-24	9,100	0.209	583
STRM-25	1,310	0.030	325
STRM-26	2,747	0.063	512
STRM-27	535	0.012	267
STRM-28	458	0.011	152
STRM-29	137	0.003	137
STRM-30	139	0.003	139
STRM-31	3,983	0.091	648
STRM-32	4,029	0.092	399
STRM-33	966	0.022	229
STRM-34	141	0.003	141
STRM-35	594	0.014	142
STRM-36	378	0.009	124
STRM-37	1,531	0.035	356
STRM-38	474	0.011	156
STRM-39	117	0.003	116
STRM-40	701	0.016	138
STRM-41	80,644	1.851	1,145
STRM-42	3,236	0.074	453
STRM-43	3,341	0.077	378
STRM-44	17,754	0.408	1,590
STRM-45	149	0.003	149
STRM-46	2,187	0.050	444
STRM-47	3,896	0.089	653
STRM-48	226	0.005	61
STRM-49	133	0.003	133
STRM-50	132	0.003	132
STRM-51	129	0.003	129
STRM-52	154	0.004	154
STRM-53	9,685	0.222	650
STRM-54	8,229	0.189	823
STRM-55	32,414	0.744	3,835
STRM-56	13,467	0.309	961

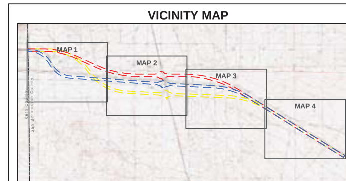
MAN-MADE DITCH

ID	EXISTING SQ FT	EXISTING ACREAGE	EXISTING LINEAR FT
MMD-1	1.449	63,124	8,065

CDFG HABITAT ACREAGE

CLASSIFICATION	EXISTING ACREAGE
OTHER WATERS:	
Man-made Ditch	1.449
Streambed	12.984
TOTAL:	14.443

VICINITY MAP



USGS: Boron, Saddleback Mountain, Kramer Junction, Kramer Hills , CA 7.5 Min. Quadrangle

Map Date:09/15/2009

Attachment X. California Department of Fish & Game Wetland Delineation - Sheet 1 of 4

2008-040 Caltrans District 8 - Task Order 014

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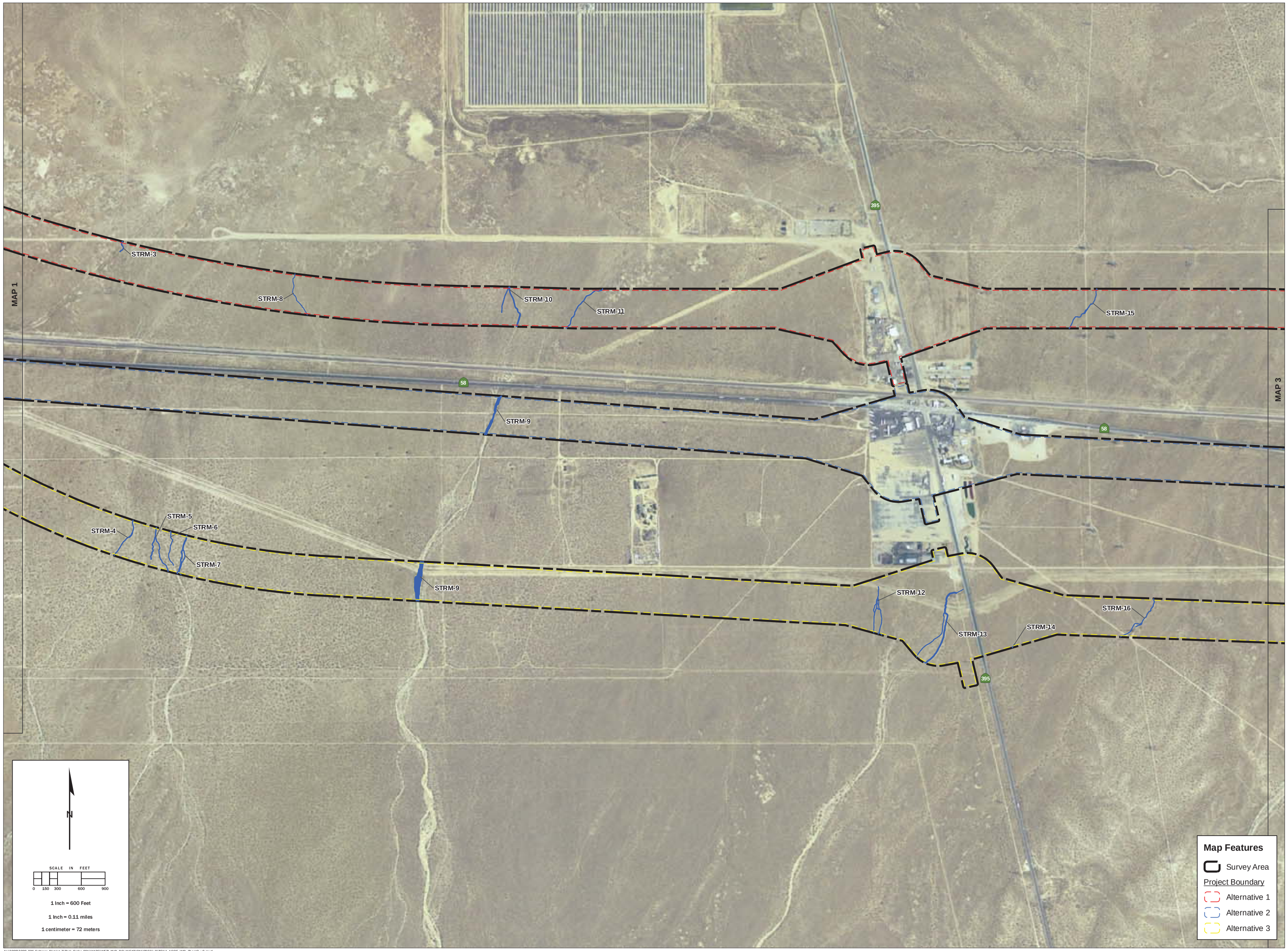

OTHER WATERS

STREAMBED

ID	EXISTING SQ FT	EXISTING ACREAGE	EXISTING LINEAR FT
STRM-1	119,662	2.747	4,061
STRM-2	731	0.017	181
STRM-3	1,203	0.028	159
STRM-4	3,752	0.086	544
STRM-5	6,482	0.149	936
STRM-6	1,896	0.044	473
STRM-7	7,237	0.166	775
STRM-8	897	0.021	604
STRM-9	42,394	0.973	1,188
STRM-10	8,350	0.192	891
STRM-11	5,127	0.118	733
STRM-12	5,214	0.120	1,430
STRM-13	16,963	0.389	1,971
STRM-14	125	0.003	62
STRM-15	3,885	0.089	686
STRM-16	3,660	0.084	826
STRM-17	35,065	0.805	1,127
STRM-18	46	0.001	22
STRM-19	6,449	0.148	513
STRM-20	611	0.014	202
STRM-21	10,023	0.230	593
STRM-22	77,292	1.774	1,776
STRM-23	5,411	0.124	548
STRM-24	9,100	0.209	583
STRM-25	1,310	0.030	325
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STRM-39	117	0.003	116
STRM-40	701	0.016	138
STRM-41	80,644	1.851	1,145
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STRM-44	17,754	0.408	1,590
STRM-45	149	0.003	149
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STRM-50	132	0.003	132
STRM-51	129	0.003	129
STRM-52	154	0.004	154
STRM-53	9,685	0.222	650
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STRM-55	32,414	0.744	3,835
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MAN-MADE DITCH

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CDFG HABITAT ACREAGE

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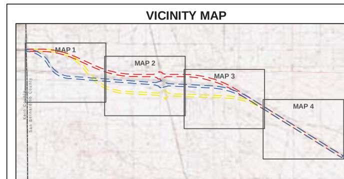
VICINITY MAP



USGS: Boron, Saddleback Mountain, Kramer Junction, Kramer Hills, CA 7.5 Min. Quadrangle

Map Date: 09/15/2009

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Attachment X. California Department of Fish & Game Wetland Delineation - Sheet 2 of 4

2008-040 Caltrans District 8 - Task Order 014

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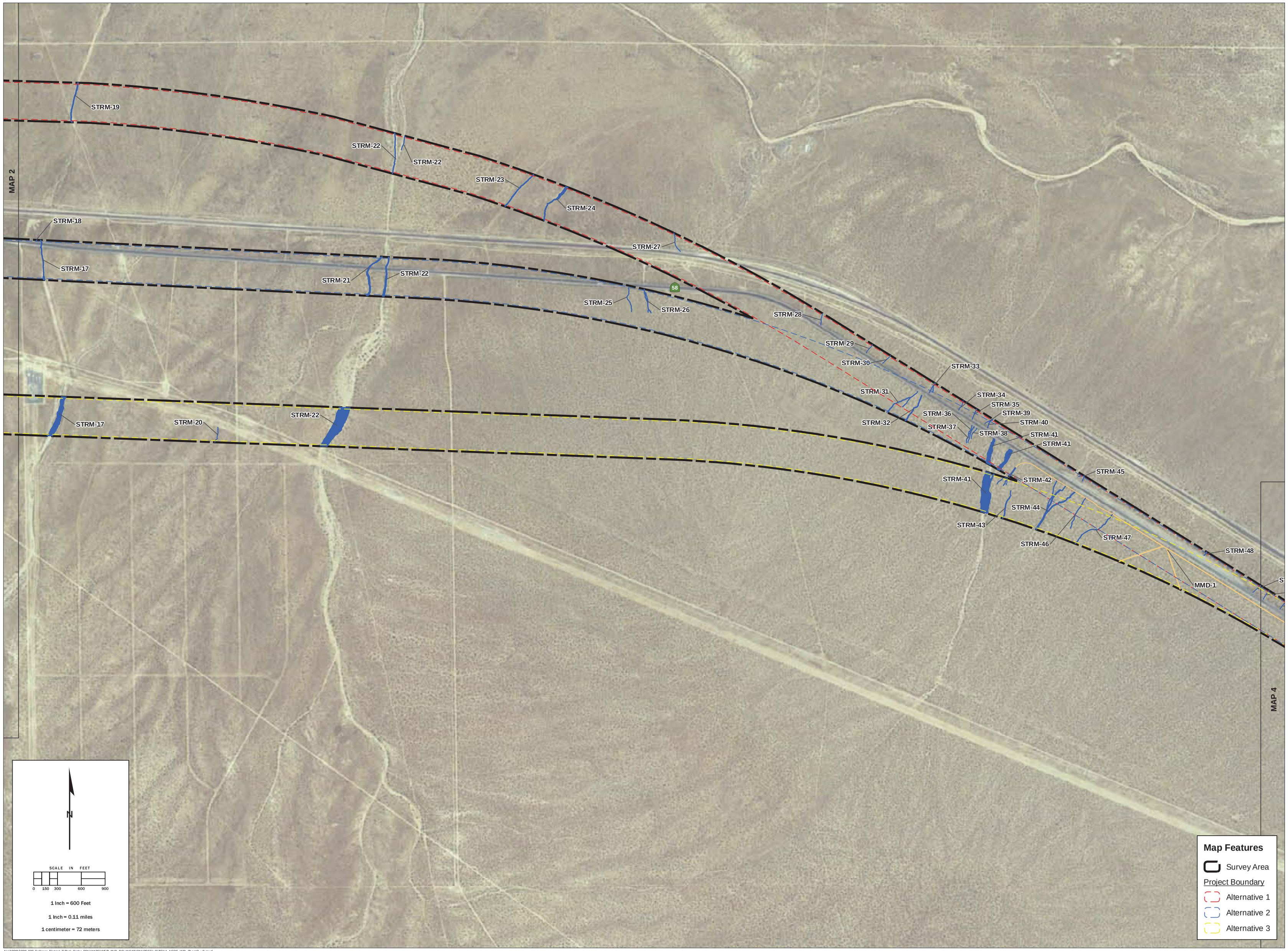

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STRM-7	7,237	0.166	775
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STRM-9	42,394	0.973	1,188
STRM-10	8,350	0.192	891
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STRM-17	35,065	0.805	1,127
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STRM-20	611	0.014	202
STRM-21	10,023	0.230	593
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STRM-50	132	0.003	132
STRM-51	129	0.003	129
STRM-52	154	0.004	154
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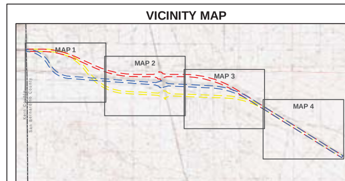

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Map Date: 09/15/2009

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Attachment X. California Department of Fish & Game Wetland Delineation - Sheet 3 of 4

2008-040 Caltrans District 8 - Task Order 014

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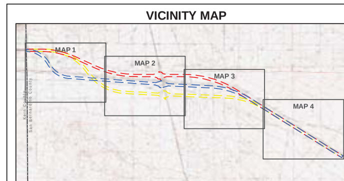

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Map Date: 09/15/2009

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Attachment X. California Department of Fish & Game Wetland Delineation - Sheet 4 of 4

2008-040 Caltrans District 8 - Task Order 014

Harper Valley Groundwater Basin

- Groundwater Basin Number: 6-47
- County: Kern, San Bernardino
- Surface Area: 410,000 acres (640 square miles)

Basin Boundaries and Hydrology

This groundwater basin underlies Harper Valley in western San Bernardino and eastern Kern Counties of the central Mojave Desert. This basin is bounded on the east by nonwater-bearing rocks of Fremont Peak, Black Mountain, the Gravel Hills, and the Mud Hills. The basin is bounded on the west by a combination of surface drainage divides, portions of the Harper, Kramer Hills and Lockhart faults, and nonwater-bearing rocks of the Kramer Hills and other low-lying basement hills. The basin is bounded on the south by nonwater-bearing rocks of Mount General, Iron Mountain, and the Waterman Hills, and by subsurface drainage patterns. The basin is bounded on the north by nonwater-bearing rocks of the Rand Mountains (DWR 1964; Jennings and others 1962; Rogers 1967)

Harper Valley is drained by numerous ephemeral streams towards Harper (dry) Lake (Jennings and others 1962; Rogers 1967). Floodwater from Grass Valley occasionally flows into Harper Valley via Black Canyon on the eastern side of the valley (DWR 1964). Average annual precipitation is about 5 inches and ranges from about 3 to 7 inches.

Hydrogeologic Information

Water Bearing Formations

Quaternary lacustrine and alluvial deposits, including unconsolidated younger alluvial fan material and unconsolidated to semi-consolidated older alluvium, can be water-bearing within the basin. The younger alluvium generally lies above the groundwater surface; whereas, the older alluvium extends beneath the groundwater table (DWR 1971). The alluvial deposits gradually thin and become interbedded with layers of silty clay of lacustrine origin toward the middle of the basin (Bader 1969; DWR 1964). The older alluvium is the most important water-bearing strata in the basin. Average yield of wells in the older alluvium is about 725 gpm with a maximum of 3,000 gpm (DWR 1975). Groundwater in the basin is generally unconfined, although confined conditions are found near Harper Lake (DWR 1971).

Restrictive Structures

The Lockhart, Mount General, and Harper Lake faults are partial barriers to groundwater flow (Mendez and Christensen 1997). A possible groundwater barrier, indicated by a change in the slope of the groundwater surface near Iron Mountain, may be caused by concealed faults (Stamos and Predmore 1995).

Recharge Areas

The natural recharge of the basin is mainly from infiltration of rainfall and percolation of surface runoff through alluvial fans around the edges of the valley (Bader 1969; DWR 1964). Harper Valley also receives some groundwater underflow from the Middle Mojave River Valley and Cuddeback Valley Groundwater Basins (Bader 1969; DWR 1964; 1971). In general, groundwater flows toward Harper Lake, in the southern part of the valley (Bader 1969).

Groundwater Level Trends

A water-level hydrograph for a well the northwestern part of the basin indicates a rapid rise of 34 feet in 1957. In this same well, the water level was relatively stable during 1974 through 1999, rising about 1.6 feet. Hydrographs for wells in the western portion of the basin indicate steady groundwater levels during 1992 through 1998. The hydrograph for a well in the southern part of the basin indicates that the groundwater surface elevation declined about 12 feet during 1992 through 1998. The hydrograph for a well in the southeastern part of the basin shows a drop of 17 feet from 1967 to 1999; whereas, a nearby well remained steady during 1987 through 1993. During 1996 through 1999, the water level in this well fluctuated widely. Groundwater flows dominantly toward Harper Lake (Bader 1969; DWR 1971).

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity of the groundwater basin is estimated to be 6,975,000 af (DWR 1975).

Groundwater in Storage. For 1990, the groundwater in storage was estimated to be 101,500 (Bookman Edmonston 1994).

Groundwater Budget (Type A)

For the 1997-98 water year, replenishment is estimated to have been 36,300 af from natural sources, 487 af from spreading of treated waste water, and 1,383 af from spreading of imported water (MWA 1999). For 1997-98, extractions are estimated to have been 11,400 af urban use, 13,600 af for agricultural use, and 1,800 af for industrial and recreational use (MWA 1999). Average subsurface flow is estimated to be 2,000 af/yr in and 3,000 af/yr out (DWR 1967).

Groundwater Quality

Characterization. Groundwater in the northern portion of the basin is sodium sulfate-bicarbonate character with relative high concentrations of sodium, fluoride, and boron. Water from the western part of the basin is mostly sodium chloride character, has TDS contents ranging from 1,350 to 1,650 mg/L, and high concentrations of fluoride, boron, and sulfate. Water samples from beneath the west side of Harper Lake have uneven mixtures of sodium, chloride, bicarbonate, and sulfate, with TDS content as high as 2,391 mg/L. Groundwater from the southern part of the basin is of calcium-sodium sulfate character with high sulfate, boron, and TDS concentrations (DWR 1964). Water from 3 public supply wells has an average TDS content of 452 mg/L and a range of 179 to 784 mg/L.

Impairments. Water quality of the basin is generally marginal to inferior for irrigation and domestic uses because of high concentrations of boron, fluoride, and sodium. The average concentration of boron is 1.76 mg/L with a range of 0.26 to 3.38 mg/L. Fluoride concentration is generally less than 1.5 mg/L with a range of 0.5 to 3.0 mg/L (DWR 1964).

Water Quality in Public Supply Wells

Constituent Group[1]	**Number of wells sampled**[2]	**Number of wells with a concentration above an MCL**[3]
Inorganics – Primary	2	0
Radiological	2	0
Nitrates	2	0
Pesticides	4	0
VOCs and SVOCs	4	0
Inorganics – Secondary	2	0

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Maximum: 3,000	Average: 725 (DWR 1975)
	Total depths (ft)	
Domestic		
Municipal/Irrigation		

Active Monitoring Data

Agency	**Parameter**	**Number of wells /measurement frequency**
USGS	Water levels	11/ annually
USGS	Miscellaneous water quality	3
Department of Health Services and Cooperators	Title 22 water quality	19

Basin Management

Groundwater management:	Part of this groundwater basin is contained within the area of the Mojave Basin adjudication and is managed by the Mojave Water Agency.
Water agencies	
Public	Mojave Water Agency
Private	

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Errata

Substantive changes made to the basin description will be noted here.