

## 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): August 18, 2008

В.	DISTRICT OFFICE, FILE NAME, AND	D NUMBER: Sacramento Dist	rict, Redding Office	e, Bethel Church Extentio	n, SPK-2007-
228	[				

C.	PROJECT LOCATION AND BACKGROUND INFORMATION:
	State:California County/parish/borough: Shata City: Redding
	Center coordinates of site (lat/long in degree decimal format): Lat. 40.6109° N, Long122.3566° W.  Universal Transverse Mercator:
	Name of nearest waterbody: Boulder Creek
	Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Sacramento River
	Name of watershed or Hydrologic Unit Code (HUC): 18020112
	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):
υ.	Office (Desk) Determination. Date: July 18, 2008
	Field Determination. Date(s): April 10, 2008
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	CTION II: SUMMARY OF FINDINGS RHA SECTION 10 DETERMINATION OF JURISDICTION.
T1	Annual State of the Action of the Action Discourse of Health and Action (and Action (and Action Line 22 CER) and 2200) in the
	re <b>Are no</b> "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the ew area. [Required]
10 11	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: .
В. (	CWA SECTION 404 DETERMINATION OF JURISDICTION.
The	re Are "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): <sup>1</sup>
	TNWs, including territorial seas
	<ul> <li>Wetlands adjacent to TNWs</li> <li>Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs</li> </ul>
	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
	Wetlands adjacent to but not directly abutting 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: 570 linear feet: 1width (ft) and/or 0.018 acres.
	Wetlands: acres.
	c. Limits (boundaries) of jurisdiction based on: Established by OHWM.
	Elevation of established OHWM (if known):
	2. Non-regulated waters/wetlands (check if applicable): <sup>3</sup>
	Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain:
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SEC	CTION III: CWA ANALYSIS

## A. TNWs AND WETLANDS ADJACENT TO TNWs

<sup>&</sup>lt;sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>&</sup>lt;sup>2</sup> 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).

Supporting documentation is presented in Section III.F.

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<sup>4</sup> 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: 26599acres
	Drainage area: 20 acres
	Average annual rainfall: 33 inches
	Average annual snowfall: inches
(ii)	Physical Characteristics:
	(a) Relationship with TNW:
	☐ Tributary flows directly into TNW.
	Tributary flows through 3 tributaries before entering TNW.
	Project waters are 5-10 river miles from TNW.
	Project waters are 1-2 river miles from RPW.
	Project waters are <b>1-2</b> aerial (straight) miles from TNW.
	Project waters are <b>1-2</b> aerial (straight) miles from RPW.
	Project waters cross or serve as state boundaries. Explain:
	Identify flow route to TNW <sup>5</sup> : The non-RPW's assessed on this form flow into a tributary to Boulder Creek. Boulder
	Creek flows into Churn Creek which flows into the Sacramento River.
	Tributary stream order, if known: 1st.
	Thousand Steel, it allows: 15th
	(b) General Tributary Characteristics (check all that apply):
	Tributary is: 🔀 Natural
	Artificial (man-made). Explain:

<sup>&</sup>lt;sup>4</sup> Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

<sup>&</sup>lt;sup>5</sup> 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.

	Manipulated (man-altered). Explain:
	<b>Tributary</b> properties with respect to top of bank (estimate):  Average width: 2 feet  Average depth: 2 feet  Average side slopes: <b>Vertical (1:1 or less).</b>
	Primary tributary substrate composition (check all that apply):  Silts Sands Concrete Cobbles Gravel Muck Bedrock Vegetation. Type/% cover: Other. Explain:
sloughing due	Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: The banks are somewhat eroding and to steep topography in some locations of the project.  Presence of run/riffle/pool complexes. Explain: no.  Tributary geometry: <b>Relatively straight</b> Tributary gradient (approximate average slope): 5 %
	Flow: Tributary provides for: Ephemeral flow Estimate average number of flow events in review area/year: 11-20 Describe flow regime: Other information on duration and volume: Tributaries were dry at time of site visit but showed indicators of high flows as storm events. These tributaries likely carry large quanities of water during and immediately after storm events.
rain events.	Surface flow is: <b>Discrete and confined.</b> Characteristics: Water only passes outside bed and banks on non-typical large
	Subsurface flow: No. Explain findings:
	Tributary has (check all that apply):  Bed and banks  OHWM <sup>6</sup> (check all indicators that apply):  clear, natural line impressed on the bank changes in the character of soil shelving vegetation matted down, bent, or absent leaf litter disturbed or washed away sediment deposition water staining other (list):  Discontinuous OHWM. <sup>7</sup> 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:
Char	mical Characteristics: racterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: water color and quality is unkown. The watershed and local drainage area for this project site is in good condition.  tify specific pollutants, if known: Human urban runoff.
(iv) Biolo	ogical Characteristics. Channel supports (check all that apply): Riparian corridor. Characteristics (type, average width): Wetland fringe. Characteristics:

<sup>&</sup>lt;sup>6</sup>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.

<sup>7</sup>Ibid.

				lain findings: -sensitive species. Explain f	indings: . ty of wildlife could exist and use	e the aquatic resources.
2.	Cha	ract	eristics of wetlands adjace	ent to non-TNW that flow o	lirectly or indirectly into TNW	7
	(i)		rsical Characteristics:  General Wetland Characte Properties:  Wetland size: acr Wetland type. Explain Wetland quality. Expl Project wetlands cross or s	res 1: .	plain: .	
		(b)	General Flow Relationship Flow is: Pick List. Explain	n: .		
			Surface flow is: Pick List Characteristics:			
			Subsurface flow: Pick List  Dye (or other) test			
		(c)	Wetland Adjacency Determ  Directly abutting  Not directly abutting  Discrete wetland h  Ecological connect  Separated by berm	nydrologic connection. Expl tion. Explain: .	ain: .	
		(d)	Project waters are <b>Pick Li</b> Flow is from: <b>Pick List.</b>	o TNW List river miles from TNW. ist aerial (straight) miles fro ation of wetland as within the		
	(ii)	Cha	emical Characteristics: racterize wetland system (e characteristics; etc.). Expl ntify specific pollutants, if k	lain: .	vn, oil film on surface; water qu	ality; general watershed
	(iii)	Bio	Riparian buffer. Character Vegetation type/percent co Habitat for:  Federally Listed specie Fish/spawn areas. Expl	es. Explain findings: lain findings: -sensitive species. Explain f		
3.	Cha	All	wetland(s) being considered	acent to the tributary (if and in the cumulative analysis: n total are being considered	1	
		For	each wetland, specify the fo	ollowing:		
			Directly abuts? (Y/N) WF05 Y	Size (in acres) 0.027	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: This wetland is also abutting OW03. The wetland acts as a filter and mechanism for transporting high quality water and traps pollutants.

#### 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:
- 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: Wetland feature WF05 abuts this non-RPW and would normally require a significant nexus evaluation. However, it is also abutting OW03 which is a RPW and is therefore jurisdictional under Rapanos. It is assessed separately under the JD Form for OW03. OW02, OW04, and OW10 are being assessed for jurisdiction on this form. All three of these streams are similarly situated in that they all have ephemeral flow and would hold/carry water for the same period of time, they are all directly tributary to OW01, a RPW, and the have similar biological, chemical, and physical makeup. They are topographically and geographically very similarly situated as well (OW02 is culverted into a stormdrain that leads into OW01 onsite but does connect hydrologically). These three streams do have a significant nexus with the downstream TNW. Based on their capacity to hold and/or carry sufficient quantities of water which could contain pollutants. These waters could also contribute to the amount of floodwaters transported to the TNW by reducing flood risk or transporting the floodwaters away from small areas to the larger Sacramento River. Though these ephemeral streams are not themselves habitat for fish, they do provide nutrient rich water, organic carbons, food, and resources that would be utilized by wildlife, including fish (some of which are federally listed spp.) in downstream TNW. The water and nutrients from these streams provide feeding, nesting, spawning, and rearing in the waters it feeds into. The wetland abutting these streams provides filtering of pollutants, and aids in transfering nutrient rich water downstream. This wetland was functioning well at the time of the site visit and was sustaining hydrology and diverse, thriving aquatic plant life. Hydrology at the time of the site visit was not present in the streams however. This area had not received any precipitation in approximately one month. However, based on visual evidence and traces left from previous storms, the streams do have the capability of possessing a significant nexus with the Sacramento River. The debris and wrack line left along the banks indicated that it transported high velocities and quantities of water during and after storm events for a period of time long enough that could have affected local flooding which would inevitably end up in the Sacramento River. Therefore, these similarily situated streams (in combination with the abutting wetland) have been found to have a significant nexus with the TNW.
- 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):

ı.	IN WS and Adja	icent vveuanas.	Check all that app	ory and provide size estimates in review a	rea:
	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 <sup>8</sup> 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: 570 linear feet1-2 width (ft).  Other non-wetland waters: acres.  Identify type(s) of waters:
4.	<ul> <li>Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.</li> <li>Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.</li> <li>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:</li> <li>Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is</li> </ul>
	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.   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).
DE	DLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, GRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY CH WATERS (CHECK ALL THAT APPLY): <sup>10</sup>

E.

See Footnote # 3.
 To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

<sup>&</sup>lt;sup>10</sup> 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.

	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 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 <u>sole</u> 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 width (ft).  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, width (ft).  Lakes/ponds: acres.  Other non-wetland waters: acres. List type of aquatic resource: .  Wetlands: acres.
SEC	CTION IV: DATA SOURCES.
A. S	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.
	<ul> <li>□ Data sheets prepared by the Corps:</li> <li>□ Corps navigable waters' study:</li> <li>□ U.S. Geological Survey Hydrologic Atlas:</li> <li>□ USGS NHD data.</li> <li>□ USGS 8 and 12 digit HUC maps.</li> </ul>
	<ul> <li>U.S. Geological Survey map(s). Cite scale &amp; quad name:Enterprise quad, 1"=.5 miles.</li> <li>USDA Natural Resources Conservation Service Soil Survey. Citation: <ul> <li>National wetlands inventory map(s). Cite name:</li> <li>State/Local wetland inventory map(s):</li> <li>FEMA/FIRM maps:</li> <li>100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)</li> </ul> </li> <li>Photographs:</li></ul>
	Previous determination(s). File no. and date of response letter:  Applicable/supporting case law:  Applicable/supporting scientific literature:  Other information (please specify):site visit.

**B.** ADDITIONAL COMMENTS TO SUPPORT JD: Assessed on other JD forms are OW08 and OW06 which require a significant nexus and flow directly into Boulder Creek. Those are the only other features whose jurisdiction is not established. The large tributary to Boulder Creek (listed as OW01) is a high function and value, high quality stream with diverse emergent hydrophytic vegetation thriving underwater or on it's fringe. WF01, WF02, WF03, WF06, WF07, WF08, WF09 are all abutting wetlands to OW01 and help filter it's water as well as the water from the ephemeral streams OW02, OW04, OW06, OW08, and OW10 giving them more of a significant nexus with the TNW. Additionally, WF05 does abut OW10. Other streams onsite which are seasonal RPW's and jurisdictional are OW09, and OW03. These two RPW's flow into OW01 before it flows into Boulder Creek. Boulder Creek and OW03 have an additional 3 abutting wetlands onsite as well (WF04 abuts OW03, WF10, WF02 abut Boulder Creek). Therefore, based on my site visit and available scientific evidence, the onsite ephemeral streams possess a significant nexus to the TNW and combine to make this site physically, biologically, and chemically valuable to the aquatic ecosystem.



