MEMORANDUM

SUBJECT: Waters of the U.S. Evaluation for the Santa Cruz River and an unnamed tributary arroyo to the Santa Cruz River, Santa Fe County, New Mexico

FROM: TN Tom Nystrom, Enforcement Officer, EPA Region 6

TO: File 9/30/2016

EPA Region 6 is preparing several enforcement actions involving knowing and repeat violations at two sites along the Santa Cruz River, Santa Fe, New Mexico. One series of violations, involving the Santa Cruz River Site, involves riverbank manipulation and road construction directly in the channel of the river. The other series of violations, involving the unnamed tributary arroyo Site, involves repeated filling of a direct tributary arroyo, so much so that the entire flow of the arroyo was diverted from its historic channel onto the property of an adjacent landowner.

Waters that are jurisdictional under the Clean Water Act ("CWA") are defined in Section 502(7) of the CWA, 33 U.S.C. § 1362(7), as "navigable waters," and are further defined at 40 C.F.R. § 232.2 as "waters of the United States." This definition includes tributaries to waters susceptible to use in interstate commerce and/or waters that could be used for recreational or other purposes. "Waters of the United States" are limited to "relatively permanent, standing or continuously flowing bodies of water;" or to waters that possess a "significant nexus" to a navigable water. *Rapanos v. U.S.,* 547 U.S. 715 (2006).

Based on the attached information provided by Tom Nystrom, EPA Region 6 Wetlands Section, the Santa Cruz River is a "relatively permanent" perennial tributary that flows into the Rio Grande, a Traditional Navigable Water that is susceptible to use in interstate commerce and/or could be used for recreational or other purposes. The unnamed arroyo is an ephemeral, non-relatively permanent water, and is a tributary to the Santa Cruz River and thus is also a water of the United States. Region 6 believes that the unnamed tributary arroyo possesses a significant chemical, physical, and biological nexus to downstream Traditional Navigable Waters, when considered in combination with other ephemeral arroyos in the region. Therefore, both the Santa Cruz River and the unnamed tributary arroyo meet the definition of a "water of the United States" and, as such, are jurisdictional under the Clean Water Act.

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Waters of the U.S. Evaluation for the Santa Cruz River and an unnamed tributary arroyo at the Vigil violation site, La Puebla, New Mexico
EPA Region 6

I. Background

The location of the Santa Cruz River site is within the Santa Cruz River and is north of Rio Vista Run, south of New Mexico highway 76, in La Puebla, New Mexico. The approximate coordinates of the Site are latitude 35.997796 north and longitude -105.985620 west. Multiple road building violations and bank stabilization events, some including the use of carpet and various appliances, have occurred along Rio Vista Run over the last several years. (see website link 1)

The unnamed tributary arroyo site is just upstream from the Santa Cruz River site, south of the Santa Cruz river, at approximate coordinates 35.998351 north and -105.979988 west. The unnamed tributary arroyo was completely filled in from property line to river confluence beginning in 2001 and continuing to 2012, with probable continuing reworking of fill material annually (See Figures 1 and 2). In 2014, logs were piled and fill was placed in the arroyo near its confluence with the Santa Cruz River (See photos)

II. Site Visits and Brief Enforcement History

Both Corps Albuquerque District staff and EPA Region 6 staff have visited both sites on numerous occasions. EPA issued Administrative Orders to Clyde and Virgil Vigil on January 5, 2010 for unauthorized work on the tributary arroyo. The Orders required the arroyo to be restored, but no restoration was ever performed. The Santa Cruz River is perennial and as such was flowing on each of these occasions. The violations at the Santa Cruz River site involve attempts by the landowner to prevent his access road from being washed away by the river and attempts by the landowner to rebuild his access road, most recently right down the middle of the Santa Cruz River channel (See photo section). Neither the Corps or EPA are opposed to the landowner having a road in the vicinity, but this enforcement action seeks to bring it into compliance with Corps bank stabilization standards and the CWA.

The unnamed tributary arroyo has been completely filled in over multiple fill events. Annual and smaller flow events are now diverted onto the adjacent property owner's pasture, and thence to the Santa Cruz River. Major runoff events (the last one was in 2014) overtop the fill and follow the path of the original unnamed tributary arroyo to the Santa Cruz River, often triggering additional unauthorized filling by the landowner. This has resulted in sedimentation and loss of land use for the adjacent landowner, and disruption of the nearby irrigation system, the Acequia de La Puebla, which dates back to 1781. Sedimentation caused by the filling of the unnamed tributary arroyo blocks one of the Acequia's clean out points (desague), forcing the Acequia District to spend funds to maintain the system. The Acequia District has also attempted to reopen the filled unnamed tributary arroyo, but their excavations were quickly pushed back into the unnamed tributary arroyo the next day by the landowner. EPA and the Corps seek

restoration of the unnamed tributary arroyo connection.

In 2015, EPA requested the Corps Albuquerque District to review their determination that the unnamed tributary arroyo is a water of the United States. The new Corps staff person, Deanna Cummings, revisited the site, and confirmed that in her opinion the unnamed tributary arroyo is jurisdictional. While she did not submit a written report, she is available to discuss her observations, (505) 342-3280.

III. Jurisdictional Analysis[1] for Santa Cruz River

The violations on the Santa Cruz River site are approximately 5.25 miles upstream from its confluence with the Rio Grande. A United States Geological Survey stream gauge (08291000) is located approximately 6 miles further upstream, near Cundiyo, NM, which has 83 years of flow data (See website link 2). Mean daily discharges range from highs of over 100 cfs in late May/early June to low winter flows of over 9 cfs in January.

The Bureau of Land Management (BLM) operates the Santa Cruz Lake Recreation Area about 5 miles further upstream of the Santa Cruz River violation site, providing year round recreational opportunities (See website link 3). Other studies have also been reviewed to support the conclusions of this review. They can be found in the Website Links section below.

Video link 1 shows kayakers in action on the Santa Cruz River in between the USGS gauge and the BLM's Santa Cruz Lake.

1. **Scalia Test**: Federal jurisdiction extends to waters that are "relatively permanent, standing or flowing." Justice Scalia explains that "relatively permanent" may include waters that "might dry up in extraordinary circumstances such as drought" or "seasonal rivers, which contain continuous flow during some months of the year but no flow during dry months." See 547 U.S. at 733 n.5. Based on information reviewed, the relevant reach of the Santa Cruz River is a perennial stream with documented year-round flow for the last 83 years, and therefore is a "relatively permanent water" and thus a water of the United States.
2. **Kennedy's Significant Nexus Test.** ". . . the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable.'" Although Kennedy applied the significant nexus standard specifically to the wetlands at issue in the Rapanos and Carabell cases, Rapanos guidance states that the same significant nexus standard applies to tributaries

[1] The Tenth Circuit has not yet decided which *Rapanos* test controls. *United States v. Hamilton*, 952 F. Supp. 2d 1271, 1274 (D. Wyo. 2013). The District Court of Wyoming in *United States v. Hubenka* held that "federal agencies have regulatory jurisdiction under the Clean Water Act where a water body satisfies either the legal standard of the plurality or Justice Kennedy's concurrence, because in either case a majority of the Court's Justices would find jurisdiction." *United States v. Hubenka*, No. 10-CV-93J, 2010 U.S. Dist. LEXIS 146897, at *13-14 (D. Wyo. Aug. 30, 2010). It is EPA's position that jurisdiction exists under the CWA if either the plurality's or Justice Kennedy's standard is satisfied. *See Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (USEPA, USACE, (2008)).

themselves. A significant nexus test is necessary when a water does not meet the Scalia test and is not determined to be a relatively permanent water based on Rapanos guidance. The Corps 2007 Jurisdictional Determination Form Instructional Guidebook (JD Guidebook) states that: *A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands*[2].

The Santa Cruz River is a perennial stream with an estimated annual mean discharge of 30.5 cfs to the Rio Grande. This is equivalent to 19.7 million gallons per day. This estimate is based on gauge data from 1933 to 2014, collected at USGS station 08291000 located at Cundiyo, NM. The Santa Cruz River provides for the transport of water, sediment, nutrients and is valuable habitat for both fish and wildlife species. Some of the important ecologic functions of the river and its wetlands are described in the report Keeping Santa Fe County Wetlands Viable and Functioning, A Wetlands Action Plan for Santa Fe County, December 31, 2012, Prepared by Jan-Willem Jansens of Ecotone for the NMED Wetlands program. Flooding of the Santa Cruz is significant to the extent that the NRCS has a watershed project involving flood control dams. A recent repair project noted that the maintenance of Site 4 flood control dam (alone) will protect 1,400 residents, 350 small farms and provide over $357,000 in average annual flood damage reductions including reducing sediment damages by over 44,000 tons per year. The small farms in the valley include the raising of cattle, horses, donkeys, poultry, and rabbits, the runoff from which contribute to high E. coli levels in the Santa Cruz River.

Conclusion for Santa Cruz River

Based on observations at the Santa Cruz River violation site, remote sensing, and 83 years of recorded evidence of perennial flow, the Santa Cruz River is a relatively permanent water of the U.S. We also conclude that the Santa Fe River has a significant nexus with the Rio Grande. The perennial status of the Santa Cruz River is well established, including its flooding problems and large sediment load delivery and its TMDL listing due to e. coli issues. Factors to support this finding of significant nexus can be found in numerous links identified in this document and in the Website links section. The significant nexus factors specific to the unnamed arroyo, and the 15 similar arroyos that flow into the lower section of the Santa Cruz River, would also be factors that contribute to the significant nexus defense of the Santa Cruz River itself.

IV. Jurisdictional Analysis for unnamed tributary arroyo

[2] U.S. Army Corps of Engineers, Jurisdictional Determination Form Instructional Guidebook (JD Guidebook). (Washington D.C.: USACE, USEPA, (2007):7).

The U.S. EPA analyzes the jurisdictional status of waters of the United States according to the Corps/U.S. EPA joint June 2007 Rapanos guidance (supplemented in December 2008), the 2006 Rapanos/Carabell Supreme Court decision, and other case law. There are two tests used to determine the jurisdictional status of waters. They are known at the "Scalia test" and the "Kennedy significant nexus test." Accordingly, the two tests are discussed in turn below.

The "relevant reach" is the particular reach of waters evaluated for the purpose of making a significant nexus determination for a tributary and its adjacent wetlands. A relevant reach is the entire reach of the stream that is of the same order (i.e., from the point of confluence, where two lower order streams meet to form the tributary, downstream to the point the tributary enters a higher order stream). For the purposes of this analysis of jurisdiction we are evaluating the USGS mapped unnamed tributary upward from its confluence with the Santa Cruz River. From this point it is approximately 6 miles to the confluence of the Santa Cruz River and the Rio Grande. The unnamed tributary arroyo is mapped on the USGS 7.5 minute quad for the area as a blue line aquatic feature (see Figure 3). It is also mapped by the National Hydrography Dataset as an ephemeral tributary of the Santa Cruz River. StreamStats data calculate the size of the arroyo watershed to be 0.53 sq miles (339 acres), while the size of the Santa Cruz watershed is approximately 182 square miles.

The arroyo within the Watershed Boundary Dataset (USGS) 8-digit Hydrologic Unit Code (HUC) 13020101, Upper Rio Grande Basin, which roughly constitutes a watershed or drainage area. The HUC 13020101 is approximately 2,082,687 acres or 3,254 square miles in area. The reach lies in the 12-digit HUC 130201011004, the Santa Cruz Reservoir-Santa Cruz River sub-watershed, which is approximately 30,678 acres or 48 square miles. The NHD Plus 2.1 Watershed Characterization Report for the segment of the Santa Cruz River to which the arroyo drains estimates the cumulative drainage area from the headwaters to this point as 166.4 square miles. Using the EPA MyWaters mapping tool, 15-18 similar arroyos and Rio Quemado discharge into the Santa Cruz River from its point of entry into the Rio Grande and the dam at Santa Cruz Lake. Each of these similarly situated arroyos would have similar ecologic effects on and contributions to the Santa Cruz River.

1. **Scalia Test**: Federal jurisdiction extends only as far as wetlands adjacent to waters that are "relatively permanent, standing or flowing." Justice Scalia explains that "relatively permanent" may include waters that "might dry up in extraordinary circumstances such as drought" or "seasonal rivers, which contain continuous flow during some months of the year but no flow during dry months." See 547 U.S. at 733 n.5. Based on information reviewed, the relevant reach primarily flows after precipitation events and only for a limited time as a result of a high water table accessing the surface, and therefore is not a "relatively permanent water."

2. **Kennedy's Significant Nexus Test:** ". . . the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable.'" Although Kennedy applied the significant nexus

standard specifically to the wetlands at issue in the Rapanos and Carabell cases, Rapanos guidance states that the same significant nexus standard applies to tributaries themselves. A significant nexus test is necessary when a water does not meet the Scalia test and is not determined to be a relatively permanent water based on Rapanos guidance. The Corps 2007 Jurisdictional Determination Form Instructional Guidebook (JD Guidebook) states that: *A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.*[3]

i. Chemical Integrity

Chemical connections are linkages between headwater and other tributary streams and their downstream waters based on the transport of chemical elements and compounds (e.g., nutrients, dissolved and particulate organic matter, ions, and contaminants). Chemical connectivity between streams and rivers involves the transformation, removal, and transport of these substances throughout the river network; these processes, in turn, influence water quality, sediment deposition, nutrient availability, and biotic functions in rivers.[4] Studies have shown the high nutrient-processing potential of headwater streams that significantly improves downstream water quality.[5] Studies have also demonstrated that headwater streams modify and export organic carbon that significantly affects ecosystem processes throughout the river network.[6] Lastly, the movement of contaminants and pathogens from headwater streams to downstream waters has been shown in many studies of mining operations, fossil fuel extractions, and even wastewater treatment facilities to have significant detrimental effects downstream.[7]

The stretch of the Santa Cruz River from the dam at the BLM/Santa Cruz River Lake to the Santa Clara Pueblo boundary, just below the confluence with the Rio Grande, is on the TMDL list for the Upper Rio Grande Watershed based on E. coli levels. Both the upstream landowner and the Vigils have raised livestock species on the lands adjacent to the unnamed arroyo, which can be expected to contribute the E.coli level of the arroyo and downstream Santa Cruz River.

Therefore, EPA concludes that the unnamed tributary arroyo's flow, alone or in

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[3] U.S. Army Corps of Engineers, Jurisdictional Determination Form Instructional Guidebook (JD Guidebook). (Washington D.C.: USACE, USEPA, (2007):7).

[4] U.S. Environmental Protection Agency, Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (Final Report), EPA/600/R-14/475F, (Washington, D.C.: U.S. Environmental Protection Agency, (2015):3-21).

[5] Final Report, p. 3-25

[6] Final Report, p. 3-29

[7] Final Report, p. 3-33 to 3-37

combination with 15-18 other similar arroyos, provides chemical connectivity to the Santa Cruz River and Rio Grande, and significantly affects and influences the chemical integrity and water quality of these waters of the United States.

ii. Physical Integrity

Physical connections involve the transport of nonliving materials that do not chemically change (or change slowly) enroute from upstream to downstream waters. The transport of these materials: water, temperature (heat energy), sediment, and wood in streams can significantly affect the physical integrity of downstream waters.[8] Surface water flow is the primary medium carrying materials from upstream to downstream waters, and the dynamics of this flow influence the physical, chemical, and biological connectivity between these waters.[9] In the arid southwest, arroyos such as the unnamed tributary arroyo to the Santa Cruz River can have substantial cumulative effects on downstream waters via sediment storage and transport, and they are important for maintaining channels and floodplains.[10] Wood entering headwater streams can be transported downstream from headwater streams where it is important habitat for aquatic life, a source of dissolved and particulate organic matter, and influential in controlling hydrodynamics and channel morphology of downstream waters.[11] Water temperature is a fundamental property that drives the physical, biological, and biogeochemical characteristics of stream ecosystems; it can cumulatively have significant indirect effects on downstream waters via its effects on other forms of connectivity. Studies have shown that upstream water temperature is significantly related to downstream water temperature, even over relatively long distances.[12]

The relevant reach of the unnamed tributary arroyo contributes flow and sediment flow to the Santa Cruz River, and then the Rio Grande. Blockage of the arroyo by the unauthorized discharge has caused major adverse impacts to the adjacent landowners and to operation of the Acequia de la Puebla. Numerous photos are available in the file to show this problem. Limited sediment data is available, however one NRCS flood control dam in the Santa Cruz River watershed was estimated to reduce sediment damages by over 44,000 tons per year. There are 7 such structures in the Santa Cruz River Watershed (Santa Cruz River Watershed: A Pilot Rehabilitation Project, NRCS)

Therefore, EPA concludes that the unnamed tributary arroyo's flow, alone or in combination with 15-18 other similar arroyos, provides physical connectivity to the Santa Cruz River and Rio Grande, and significantly affects and influences the physical integrity and water quality of these waters of the United States.

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[8] Final Report, p. 3-5
[9] Ibid.
[10] Final Report, p. 3-15
[11] Final Report, p. 3-18 to 3-19
[12] Final Report, p. 3-19 to 3-20

iii. Biological Integrity

Biological connections are linkages throughout the river network, from headwater streams to their downstream waters that are mediated by living organisms (such as invertebrates and fish) or their products.[13] Many organisms have complex life cycles that involve migration through the river network, from headwater streams to downstream rivers and oceans, over the course of their lives. The importance of headwater streams in the life cycles of many these organisms capable of moving throughout river networks provides strong evidence for connectivity among these systems.[14]

Although the unnamed tributary has an ephemeral flow regime, the JD Guidebook provides further support for the chemical, physical and biological influences of ephemeral tributaries on downstream waters and the importance of ephemeral streams as wildlife habitat in arid landscapes:

Ephemeral waters in the arid west that are tributaries may have a significant nexus to a TNW. For example, in some cases they may serve as a critical transitional area between the upland environment and the traditional navigable waters. Such ephemeral tributaries, with the associated riparian corridor, may provide refugia, foraging and breeding opportunities in areas that may have limited stands of vegetation and water due to the environmental conditions of the arid southwest. During and following precipitation events, ephemeral tributaries collect and transport water or sometimes sediment from the upper reaches of the landscape to the traditional navigable waters. These ephemeral tributaries, and associated riparian corridors, may provide habitat for wildlife and aquatic organisms. These biological and physical processes may further support nutrient cycling, sediment retention and transport, pollutant trapping and filtration, and improvement of water quality, functions that may affect the integrity of a TNW.[15]

The unnamed arroyo historically had a tree canopy which contributed to shading of the arroyo and was a part of the Santa Cruz River riparian corridor. Shaded corridor and buffer can provide temperature regulation of flows. Vegetated riparian buffers provide downstream ecosystems with organic carbon (through leaf litter and other seasonal inputs), and become available to downstream organisms. Aquatic and riparian plant seeds can also travel downstream to act as a food source for aquatic organisms or establish vegetation in and along downstream waters. The tributary and riparian buffer provides habitat for birds, mammals, amphibians and reptiles, and macroinvertebrates. These organisms use habitats during one or more stages of their life cycles and provide food resources to downstream communities

[13] Final Report, p. 3-37
[14] Final Report, p. 3-46
[15] JD Guidebook, p. 54.

and are part of the stream and TNW river foodweb. During flows, macroinvertebrates, and adult, juvenile, or egg amphibians can move through the tributary to the Santa Cruz River and the Rio Grande.

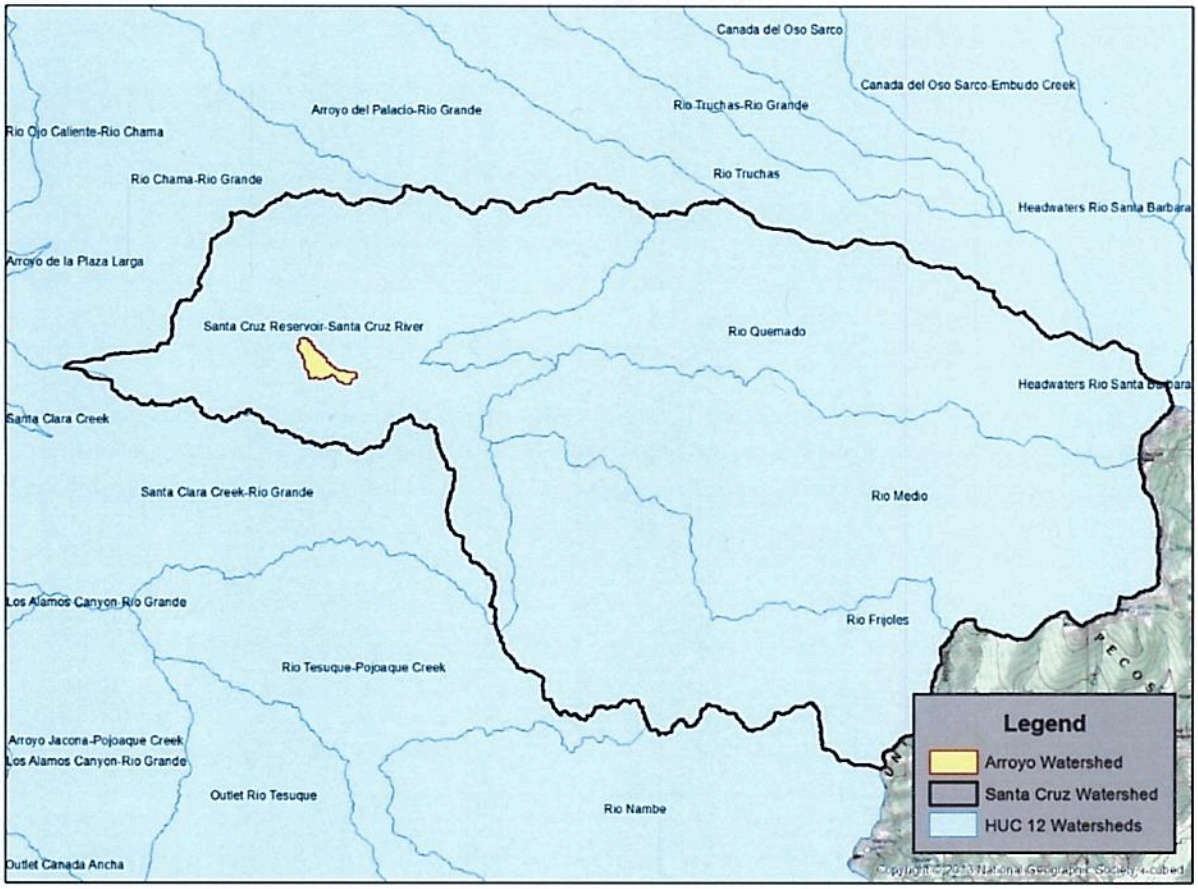
Therefore, EPA concludes that the unnamed tributary arroyo's flow, alone or in combination with 15-18 other similar arroyos, provides biological connectivity to the Santa Cruz River and Rio Grande, and significantly affects and influences the biologic integrity and water quality of these waters of the United States.

Conclusion for unnamed tributary arroyo

Based on observations at the Site, remote sensing, as well as photographic evidence of flow after precipitation events, a significant volume of water flows through the unnamed tributary arroyo at moderate frequencies, but generally for short durations of time. It has been mapped as a hydrologic feature by the USGS and maintains, although illegally altered, surface connectivity and contributes flow to downstream waters of the United States including the Santa Cruz River and the Rio Grande, a TNW.

The unnamed tributary arroyo's hydrologic connection, close proximity to the downstream TNW (less than 6 miles), discharge from runoff, and watershed size demonstrate its ability to carry pollutants, floodwaters, nutrients and organic carbon to the downstream waters of the United States and the Rio Grande, a TNW, thereby establishing a significant chemical, physical and/or biological nexus with those waters of the United States. Therefore, it is the opinion of the EPA Region 6 Wetlands Section staff that the unnamed tributary arroyo to the Santa Cruz River is a non-relatively permanent water of the United States supported by this significant nexus determination.

Nested Watersheds Region 6 Arroyo Case



Supporting Data Reviewed for Jurisdictional Determination
7.5 minute topographic quadrangle map, USGS
Google Earth digital aerial imagery
National Hydrography Dataset Plus V2.1, USGS/USEPA
Watershed Boundary Dataset, USGS
New Mexico Surface Water Quality Bureau List of TMDLs
EPA MyWaters Mapper for the Santa Cruz Reservoir – Santa Cruz River HUC12

Website Links for information considered in evaluating Jurisdiction

1. Santa Cruz River at violation site:

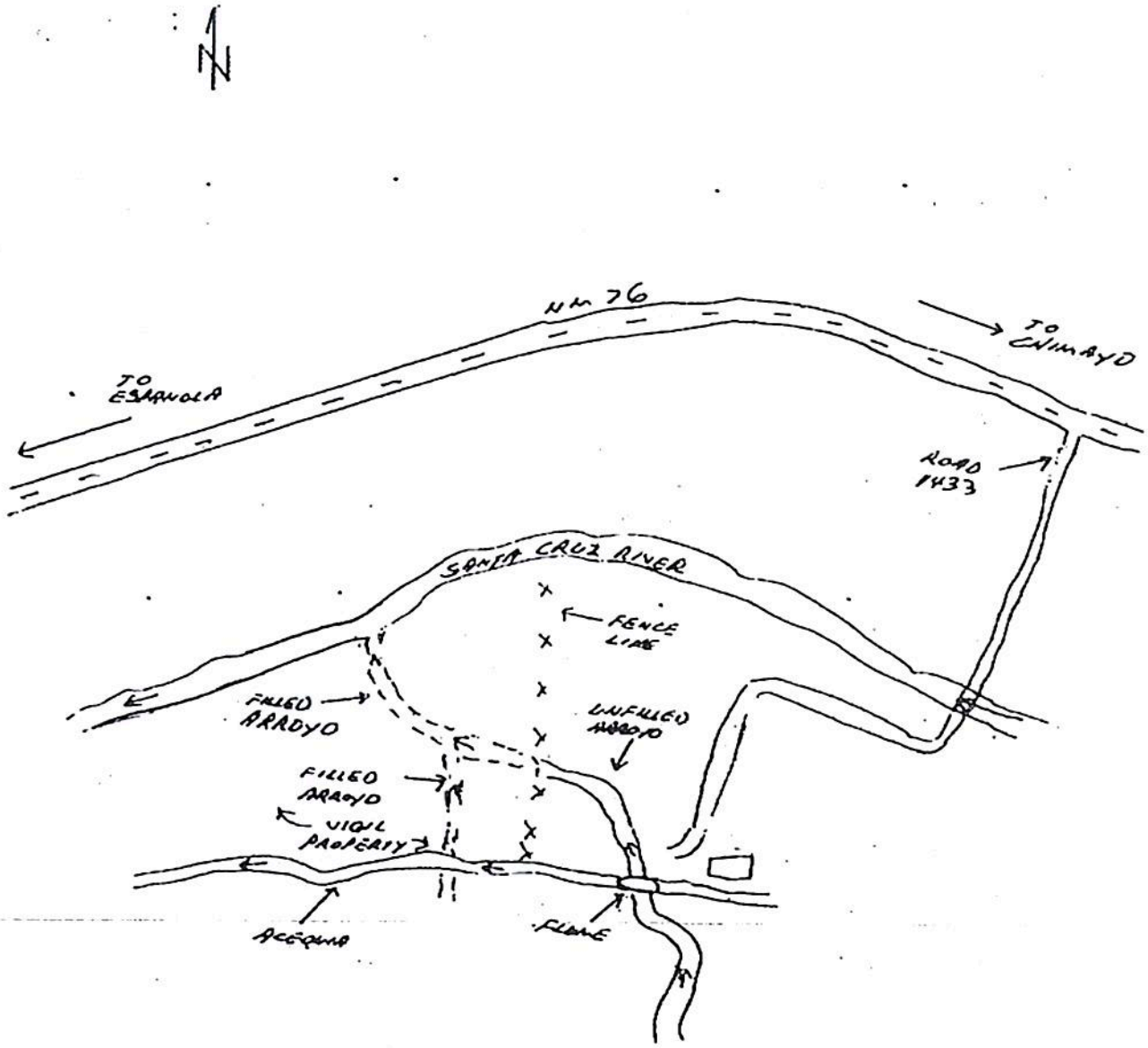
https://www.google.com/maps/place/Cundiyo,+NM+87506/@35.9977611,-105.9847191,649m/data=!3m1!1e3!4m5!3m4!1s0x871836b8f6d53dc5:0xf1cf0d7cb23045b3!8m2!3d35.9591921!4d-105.8964091?hl=en

2. USGS Daily Statistics for Santa Cruz River near Cundiyo, NM
   http://waterdata.usgs.gov/nm/nwis/dvstat/?site_no=08291000&por_08291000_99737=558765,00060,99737
3. BLM Recreation Area:
   http://www.blm.gov/nm/st/en/prog/recreation/taos/santa_cruz_lake.html
4. Canoe/Kayak user information: http://www.riverfacts.com/rivers/11988.html
5. NRCS Santa Cruz Watershed project:
   http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_025584.pdf
6. Hook and Bullet fishing information for Santa Cruz River:
   http://www.hookandbullet.com/fishing-santa-cruz-river-espanola-nm/
7. Tracking New Mexico Watershed Health: http://watershedwiser.org/santa-cruz-river
8. Environmental Assessment for the Acequia De Los Ranchos Rehabilitation Project, Santa Fe County, NM:
   http://www.spa.usace.army.mil/Portals/16/docs/environmental/fonsi/Acequia%20de%20los%20Ranchos%20EA%20and%20Appendices.pdf
9. USGS gauge on the Rio Grande: http://waterdata.usgs.gov/nwis/uv?site_no=08313000
10. Santa Cruz River Watershed: A Pilot Rehabilitation Project, NRCS
    http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_007701.pdf

Video link:

1. Kayaking on the Santa Cruz River:
   https://www.youtube.com/watch?v=FuibtzeRy24

Figure 1. Sketch of unnamed arroyo historic pathway



AREA/PROJECT SKETCH - Show prominent features, flow direction, OHWM, fills, dimensions, volumes, material types, vegetation types/locations, wetland boundaries, borrow areas, etc. (NOT TO SCALE)

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Figure 1
Area/Project Sketch

Figure 2. Aerial view of historic path of arroyo, after being filling

Google Maps

Approximate location of arroyo

Figure 3. USGS topo of arroyo

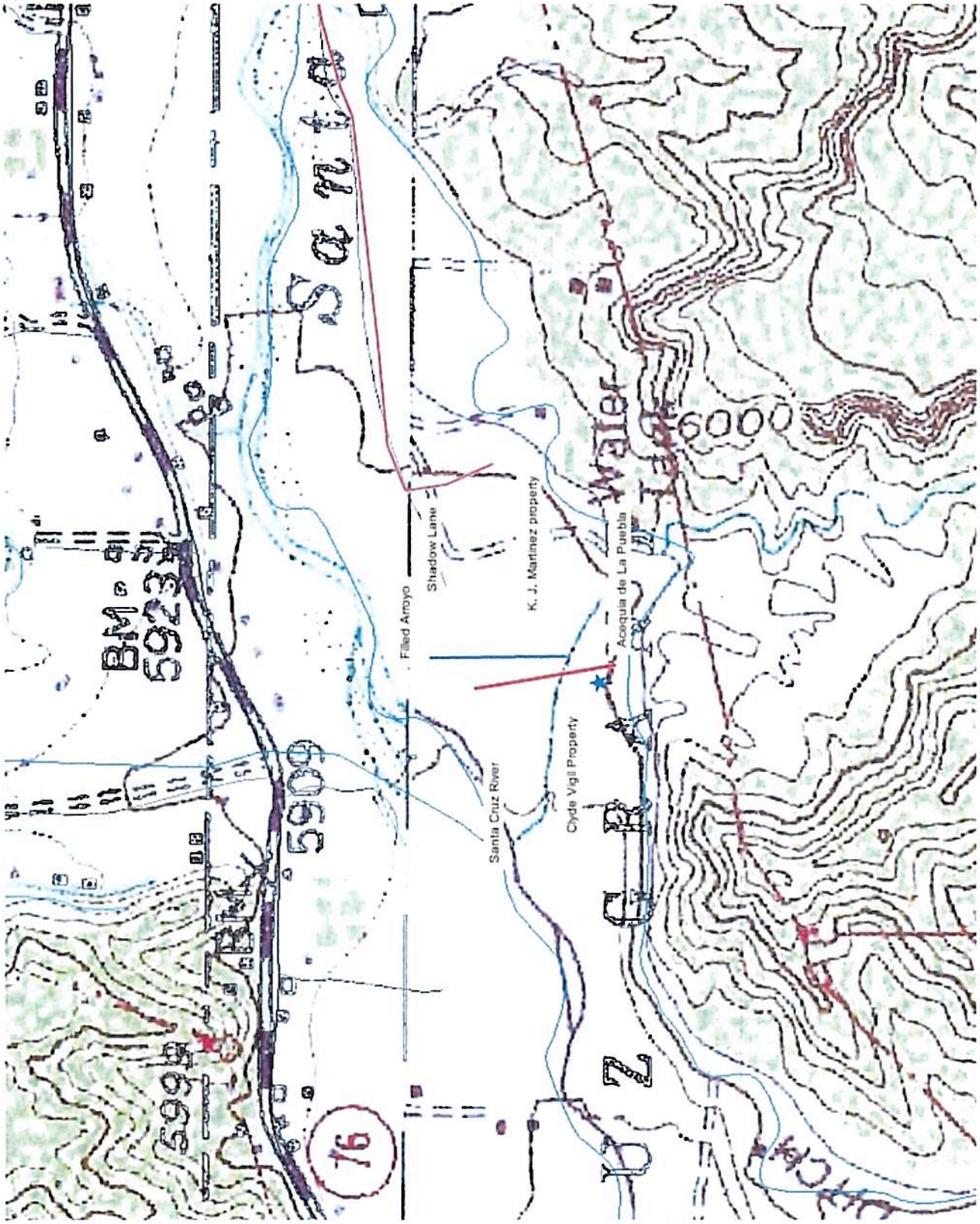

Photo 1. Flow in the unnamed arroyo at Martinez (upstream landowner) property

Sluice gate covered in silt. In this condition, the sluice is useless for acequia maintenance.

An example of the natural run-off waters which are impeded by Virgil Vigils interference with the arroyo.

Photo 2. Arroyo leaving adjacent (Martinez) property, view is of filled arroyo pathway

199900267 7 Jun 2001
Unnamed Arroyo near Chimayo, NM
C. Vigil-Arroyo Fill
View of arroyo, locking downstream at
blocked arroyo on Vigil property.
REGULATORY BRANCH
ATTN: CESPA-OD-R (505) 342-3280
By J. Wood

Photo 3. Arroyo confluence with Santa Cruz River, after initial filling in 2001

199900267 7 Jun 2001
Unnamed Arroyo near Chimayo, NM
C. Vigil-Arroyo Fill
View of point where filled arroyo met the
Santa Cruz River, looking NW.
REGULATORY BRANCH
ATTN: CESPA-CD-R (505) 342-3280
By J. Wood

Photo 4. Logs piled at confluence of arroyo and Santa Cruz River. Note depth of fill material behind log dam. New work, 2014

Photo 5. New access road built in channel of Santa Cruz River, 4/23/2014

Photo 6. New fill in channel from 2014. Note upholstery-based attempt at bank stabilization from 2009.

Photo 7. Poor selection of bank stabilization materials, not up to Corps of Engineers permit standards. 2014