

**Delineation of Waters of the United States and Department of Fish  
and Wildlife Jurisdictional Habitats for**

**Tentative Tract Map 36911**

**APN 335-080-056 (5.8 acres), 335-080-066 (9.81 acres), 335-080-067 (6.05 acres)**

**In the**

**City of Menifee, County of Riverside**

**USGS 7.5-minute Romoland topographic quadrangle map in Section 20 of  
Township 5 South, Range 3 West**



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Report Date: June 16, 2019

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# 1. TITLE PAGE

- A. Date report prepared:** June 16, 2019
- B. Report Title:** Delineation of Waters of the United States and Department of Fish and Wildlife Jurisdictional Habitats for Tentative Tract Map 36911 APN 335-080-056 (5.8 acres), 335-080-066 (9.81 acres), 335-080-067 (6.05 acres) City of Menifee, Riverside County, California
- C. Project site location:** USGS 7.5-minute Romoland topographic quadrangle map in Section 20 of Township 5 South, Range 3 West
- D. Location(s):** Menifee
- E. Owner/Applicant:**  
Recreational Land Investments, Inc  
5642 Research Drive, Unit A  
Huntington Beach, CA 92649
- F. Principal Investigator(s):** Teresa Gonzales and Paul Gonzales  
**Address:** 358 Crystal Drive  
San Jacinto, CA 92583  
**Phone:** 760.777-1621
- G. Name and phone number of person preparing report and of all persons who performed fieldwork on the site**

<u>Name of Person</u>	<u>Role on project</u>
Teresa Gonzales	Prepared report and performed fieldwork
Paul Gonzales	Performed fieldwork
Justin Palmer	GIS

CERTIFICATION: I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: 6-16-19

*Teresa Gonzales*

## Acronyms and Abbreviations

USACE	U.S. Army Corps of Engineers
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
GIS	Geographic Information System
GPS	Global Positioning System
HA	Hydrologic Area
HR	Hydrologic Region
HU	Hydrologic Unit
HUC	Hydrologic Unit Codes
HUC 8	Hydrologic Unit Codes the finest level of examination
LSAA	Lake or Streambed Alteration Agreement
NEPA	National Environmental Policy Act
NRCS	National Resource Conservation Society
NWP	Nationwide Permit
OHWM	ordinary high water mark
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
RWQCB	State Water Resources Control Board, Santa Ana Region

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## 2. INTRODUCTION

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This report contains the results of a streambed/wetland delineation conducted for Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) Section 6.1.2 jurisdictional areas, U.S. Army Corps of Engineers (USACE), California Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (DFW) jurisdiction for APN 335-080-056 (5.8 acres), 335-080-066 (9.81 acres), 335-080-067 (6.05 acres) City of Menifee, Riverside County, California.<sup>1</sup>

This report presents the findings of a delineation of wetlands and waters of the United States and California Department of Fish and Wildlife (CDFW) for the proposed project. The information presented in this report is intended to assist the U.S. Army Corps of Engineers (USACE) determine the extent of jurisdictional Waters of the U.S. within the proposed project area. Data have been collected in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and additional supplemental manuals (USACE 1987, 2008a, and 2008b). This report is also intended to aid the California Department of Fish and Wildlife (CDFW) with determination of the extent of jurisdictional habitats in the project and City of Riverside with determination of the extend of jurisdictional habitats according to Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) Section 6.12 riparian/riverine jurisdictional areas.

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<sup>1</sup> This report presents the best effort at estimating the subject jurisdictional boundaries using the most up-to-date regulations and written policy and guidance from the ACOE, RWQCB, and DFG. Only ACOE, RWQCB, and DFG can make a final determination of jurisdictional boundaries.

### 3. PROJECT AND PROPERTY DESCRIPTION

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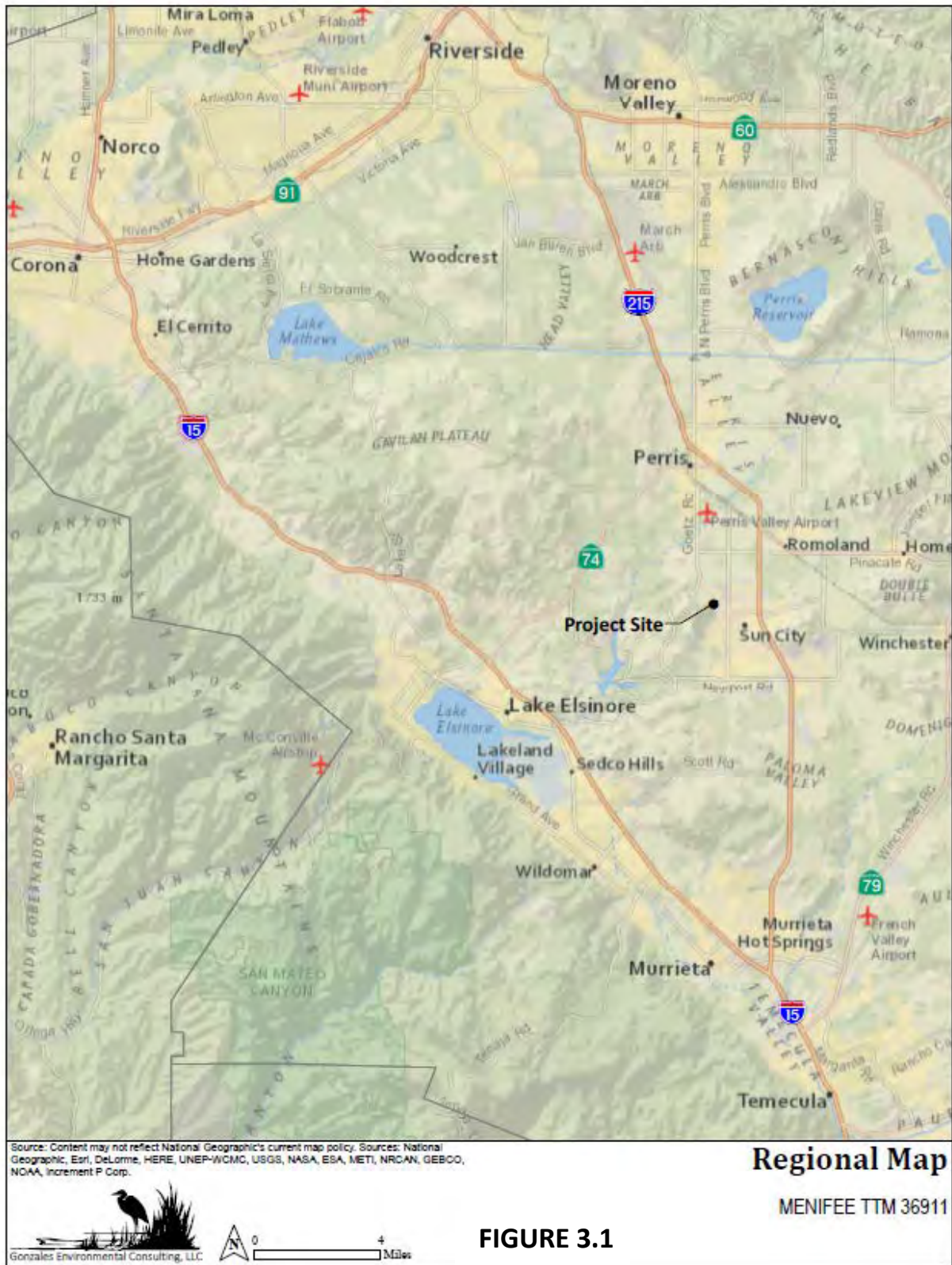
#### 3.1 Project Description

The project site (site) discussed in this report is located west of Interstate 215, west of Valley Boulevard and north and south of Chambers Avenue in the City of Menifee, Riverside County, California. See Figures 1 and 2.

The site is located within San Bernardino Meridian in a portion of Section 20, Township 5 South, Range 3 West in Riverside County, California (Figures 3.1, 3.2 and 3.3). This location is shown on the Romoland, California 7.5-minute U.S. Geological Survey (USGS) quadrangle (Romoland Photorevised 1979); page 837 grids J4 and J5 of the Riverside County Street Guide and Directory (Thomas Brothers Maps Design 2013). The approximate center of the site is located at 33.720146°N, - 117.213911°W.

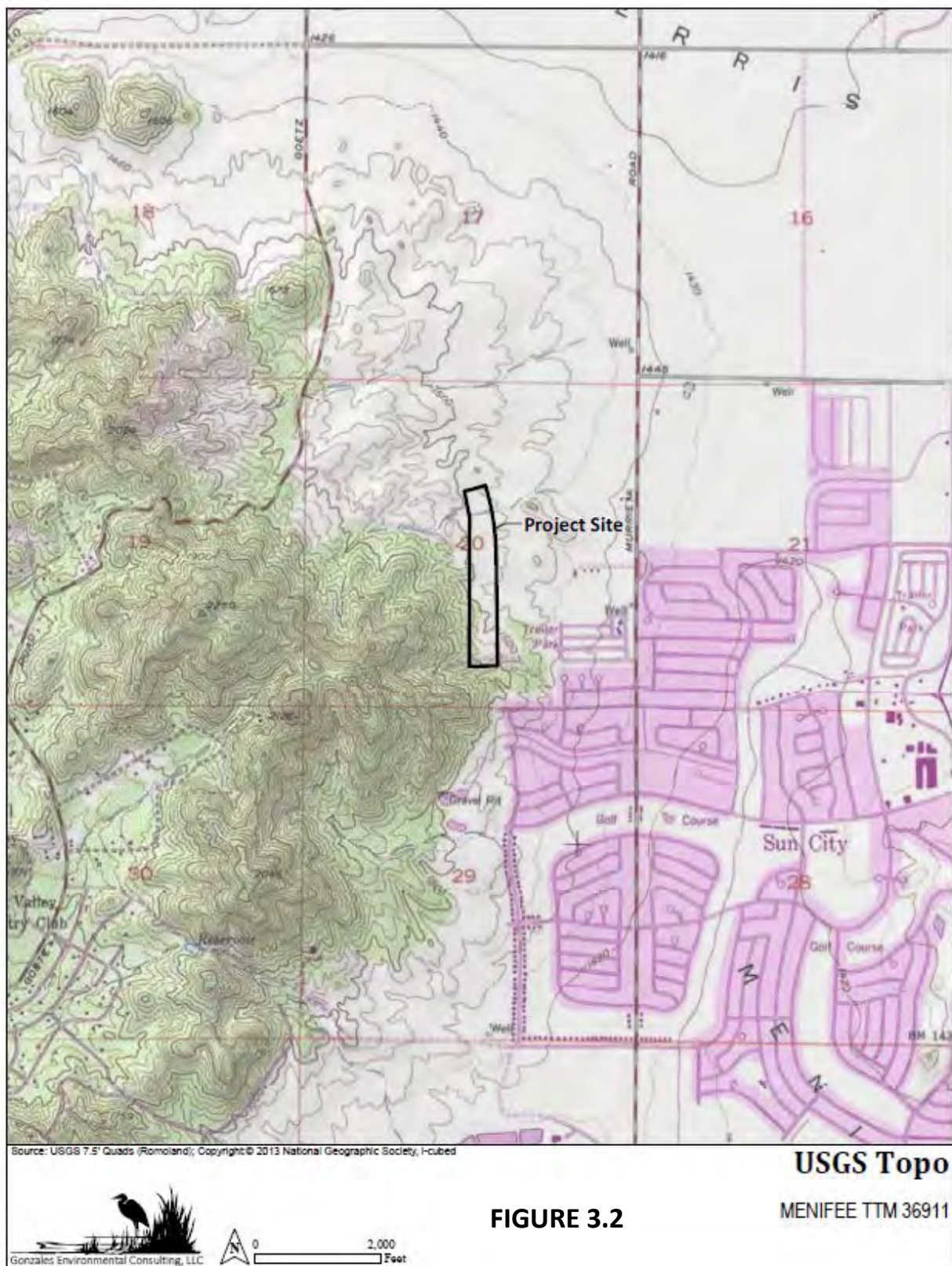
Elevation of the assessment area ranges from a low of 1484± feet above mean sea level (msl) in the northern portion of the assessment area to a high of 1560± feet above msl in the southwestern portion of the assessment area. This represents an elevational change across the assessment area of 76± feet. The entire site consists of undulating, sloping land among sage scrub habitat. The project site has been impacted by anthropogenic activities. Land use in the surrounding area varies between natural, semi-rural and single family residential.

The primary vegetation communities in the project area are primarily *Eriogonum fasciculatum* Alliance – Disturbed, Grasslands – Disturbed (*Bromus diandrus*-mixed herb Alliance), *Baccharis salicifolia* Alliance (Mule Fat Scrub), *Populus fremontii* (Cottonwood Scrub) Alliance, *Tamarix ramosissima* (Tamarisk Scrub) Alliance and developed.



**FIGURE 3.1**









### 3.2 Environmental Setting

The project area is in the interior basin of western Riverside County. To the north is the Santa Ana River basin; east are the San Jacinto Mountains. Slopes range from 0-25%. The project area is on old alluvial fans and terraces. The areas are dissected by drainageways, or barrancas, that have flat bottoms and steep sides. The average annual rainfall for the area ranges from 9-15 inches. The average annual temperature is 61-64 degrees, with 220-300 frost-free days.<sup>2</sup>

The project site itself is west of Interstate 215, west of Valley Boulevard and north and south of Chambers Avenue. Unnamed Drainage 2, which is a forked drainage, is located in the southern portion of the project site and flows west to east until joining into a single drainage that flows north to a culvert which is directed under Valley Boulevard. Unnamed Drainage 2 appears to be a created drainage as a result of graded development lots to the northeast. Drainage 2, with its check-dams under laid with black plastic, appears to have been created in order to channelize flow coming off of the graded area to the northeast on to Chambers Avenue. Another fenced drainage structure is located in the northeastern portion of the project site. This structure has no flow directed to it, has no evidence of flow and exists for unknown function. Access to the project site is uncontrolled. The majority of the project site has been disturbed by anthropogenic disturbances. Drainages and vegetation have been disturbed by homeless camps, non-authorized access and adjacent land uses. During our site visits we personally observed a homeless camp, abundant off-road vehicles, dog walkers, mountain bikers, construction staging, and construction equipment accessing the site with mechanized equipment. Vehicle tracks and roads traverse the site, degrading plant and animal habitat and creating road ruts.

Land immediately adjacent to the site's western boundary is graded with no construction occurring. Land to the north is part of the unfinished project to the west. Land use to the east is single family housing. The land to the south is a disturbed strip of natural habitat until intersecting with McCall Boulevard and what would be the continuation of Valley Boulevard. The project will not impact public/quasi-public (PQP) land.

### 3.3 Hydrology

The entire project site falls within the San Jacinto Valley watershed (HUC 18070202). The waters of the U.S. found on the project site are eventually tributary to Santa Ana River. The hydrology in the project area has been altered. Both drainages are ephemeral streams (have less flow than intermittent streams, are typically shallow, and have flowing water for brief periods in response to rainfall. Ephemeral streams and ditches are normally dry for most of the year).

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<sup>2</sup> United States Department of Agriculture Soil Conservation Service. 1971. Soil Survey Western Riverside Area California. 157 pp.,illus.

### 3.4 Vegetation

The site consists of vegetation communities, characterized as *Eriogonum fasciculatum* Alliance – Disturbed, Grasslands – Disturbed (*Bromus diandrus*-mixed herb Alliance), *Baccharis salicifolia* Alliance (Mule Fat Scrub), *Populus fremontii* (Cottonwood Scrub) Alliance, *Tamarix ramosissima* (Tamarisk Scrub) Alliance and developed. The project site has been subject to anthropogenic disturbances. The existing plant communities are described in more detail below.



### **Disturbed *Eriogonum fasciculatum* Alliance**

This series is considered part of the coastal scrub, which is better thought of as a collection of series. This approach allows stands of composition, which can be considered, regardless of geographic location. This series has California buckwheat (*Eriogonum fasciculatum*) as the dominant plant species. Other sage scrub alliances noted on site: *Artemisia californica* - *Eriogonum fasciculatum* (California sagebrush – California buckwheat scrub) Alliance. This community braids with disturbed grassland on most of the project area.



*Artemisia californica* - *Eriogonum fasciculatum* (California sagebrush – California buckwheat scrub) Alliance is considered a subassociation of Disturbed *Eriogonum fasciculatum* Alliance. Small patches of California sagebrush – California buckwheat scrub are found throughout the Disturbed *Eriogonum fasciculatum* Alliance. The subassociation was not mapped or quantified separately.

***Bromus diandrus*-mixed Herb Alliance (Grasslands – Disturbed)**

Stands of *Bromus diandrus*-mixed herbs form a dense herbaceous layer (75%) at 0-0.5m tall. Shrub and tree layers are absent. Total vegetation cover is 75%.



PICTURE 3.2  
*Bromus diandrus*-mixed Herb Alliance



### **Mule Fat Scrub (*Baccharis salicifolia*) Alliance**

An individual mulefat was observed in one of the drainage check dams. One emergent *Populus fremontii* was found next to the mulefat. A single tamarisk was also found in this area separate from the mulefat and cottonwood. Wide space bare of vegetation between plants was observed. The check dam is an anthropogenic creation and is lined with black plastic.



### ***Populus fremontii*(Cottonwood Scrub) Alliance**

One emergent *Populus fremontii* was found in one of drainages, next to one mulefat (*Baccharis salicifolia*). The one cottonwood has a split trunk from which two almost equal parts are growing. Growth was noted in one of the check dam areas only. A single tamarisk was also found in this area separate from the mulefat and cottonwood. Soil consists of fine course sand on top of black plastic. Some wide space bare of vegetation is prevalent, especially where deposition seems to indicate strong periodic flows. Check dam areas are anthropogenic creations and lined with black plastic.

### ***Tamarix ramosissima* (Tamarisk Scrub) Alliance**

A single tamarisk (*Tamarix ramosissima*) was found in the checkdam area separate from the mulefat and cottonwood. Growth was noted in one of the check dam areas only. Soil consists of fine course sand on top of black plastic. Some wide space bare of vegetation is prevalent, especially where deposition seems to indicate strong periodic flows. Check dam areas are anthropogenic creations and lined with black plastic.

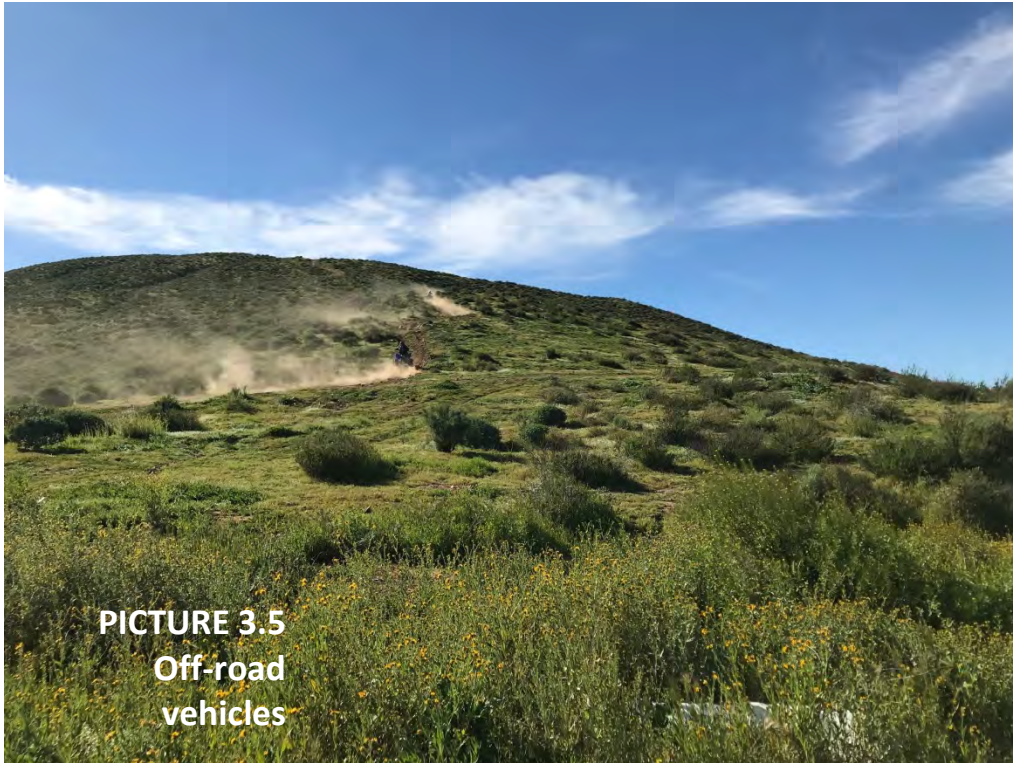
**Disturbed/Developed**

Disturbed areas are characterized by predominantly non-native species introduced and established through human action. Disturbed or barren areas are areas that either completely lack vegetation or have a predominance of non-native species.



**PICTURE 3.4**  
**Disturbed**





**PICTURE 3.5**  
**Off-road**  
**vehicles**



**PICTURE 3.6**  
**Dumping & construction**  
**equipment on-site**



Unnamed Drainage 2, which is a forked (2 tributaries converge into 1 drainage), is located in the southern portion of the project site and flows west to east until joining into a single drainage that flows north to a culvert which is directed under Valley Boulevard. Bed and bank are subtle yet obvious in parts of the drainage.







Unnamed Drainage 1 is a created drainage (2005 aerial shows the creation) as a result of graded development lots to the northeast. Drainage 1, with its check-dams lined with black plastic, (2007 aerial) appears to have been created in order to channelize flow coming off of the graded area to the northeast on to Chambers Avenue. During our examination of the project site, the two check-dams on the project site contained ponded water features. Flow from Unnamed Drainage 2 sheet flows, when check-dams are full, off-site on to Chambers Avenue. There is no drainage structure directing flow so flow ends up crossing Valley Boulevard and flowing down Chambers Avenue.







**PICTURE 3.10**  
**EASTERN CHECK-DAM ON UNNAMED D-1**



**PICTURE 3.11**  
**EASTERN CHECK-DAM ON UNNAMED D-1 AT**  
**CHAMBERS AVENUE**



Another fenced drainage structure is located in the northeastern portion of the project site. This structure has no flow directed to it, has no evidence of flow and exists for unknown function. The drainage appears to be blocked by plywood. It is evident on 2002 aerials and appears to have been developed as part of the development to the south.





We found three tire rills holding water on the project site. The soils were not hydric soils and there was no vegetation. The tire rills are not vernal pools.



**PICTURE 3.13  
TIRE RILLS WITH WATER**



**PICTURE 3.14  
TIRE RILLS # 2 DRYING OUT**





**TABLE 3.1**  
**ACREAGE OF DIRECT IMPACTS TO HABITAT TYPES ON THE PROJECT SITE**

<b>Vegetation</b>	<b>Existing</b>
Developed	
<i>Erogonium fasciculatum</i> Alliance - Disturbed	10.063
Fremont's Cottonwood (Single tree)	0.004
Grasslands - Disturbed	16.485
Mule Fat Scrub (Single scrub)	0.002
Spillway	0.031
Streambed –dry, unvegetated	0.363
Tamarisk (Single tree)	0.003
<b>TOTAL (acres)</b>	<b>26.951</b>

Study area is larger than APN acreages as adjacent area was studied as required. Note buffer area around project site on Figure 3.1. APN total acreages are 21.66 acres.





### 3.5 Soils

The soil series mapped for the area are shown in Figure 3.5. The soil associations mapped for the area are Monserate-Arlington-Exeter association. Monserate-Arlington-Exeter association: Well-drained nearly level to moderately steep soils that have a surface layer of sandy loam to loam and are shallow to deep to a hardpan<sup>3</sup>. The soil series mapped for the area are described in Table 3.2. The soils found are similar in texture and color to those mapped, but were highly disturbed from anthropogenic activities. The soils were compacted and unstratified over portions of the project site. The soils at soil pit locations did not meet the criteria for hydric soils within project boundaries.

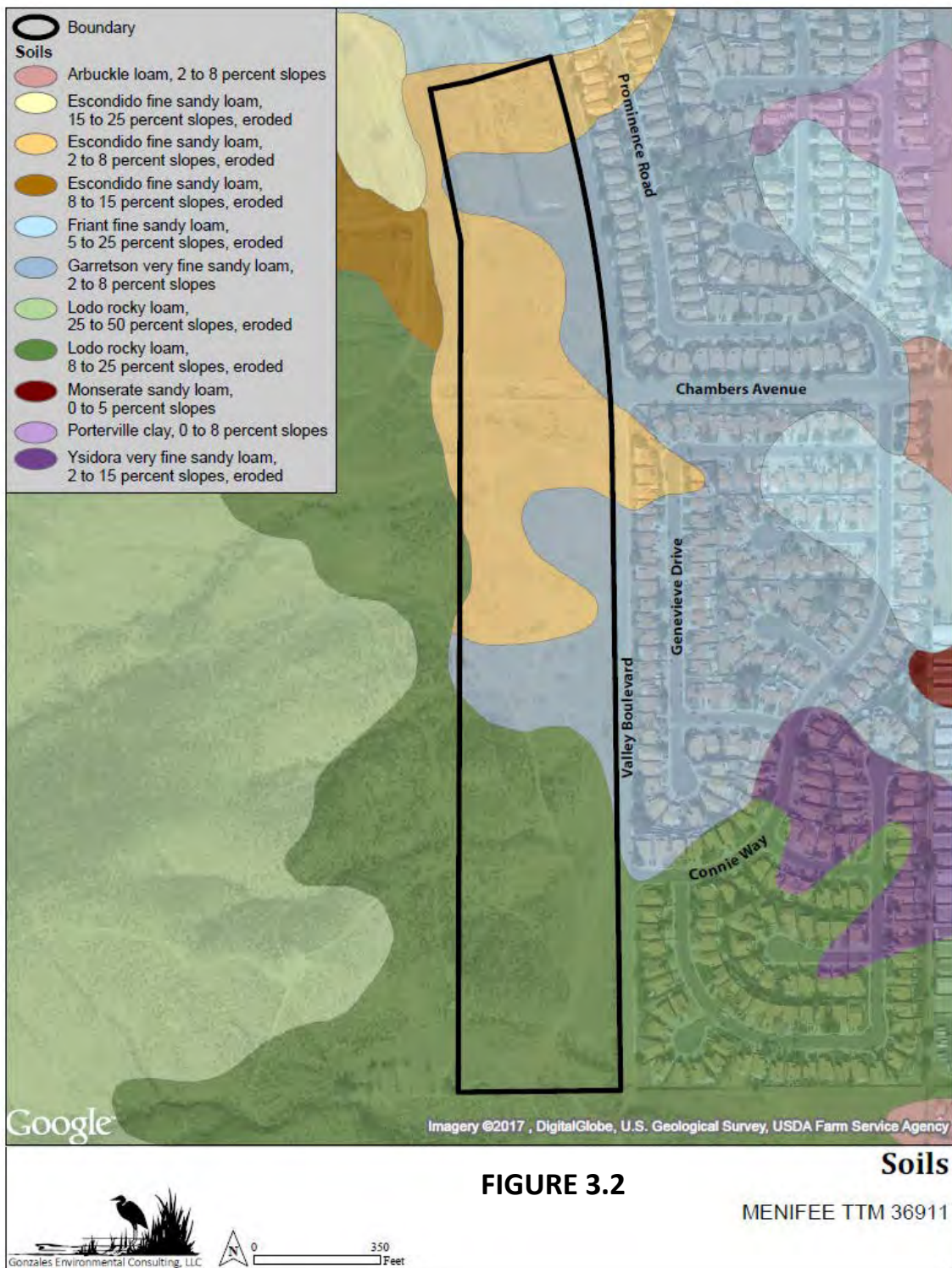
**TABLE 3.2**  
**SOIL SERIES MAPPED FOR THE AREA**

Name	Description
Arbuckle loam 2-8% slopes	Well-drained and have slopes of 2-8%. They occur on alluvial fans and developed in alluvium from metasedimentary rocks. Elevations range from 600-1,600 feet. The average annual rainfall ranges from 10-15 inches, the average annual temperature from 59-64 degrees F, and the average frost-free season from 240-280 days. Vegetation is chiefly annual grasses, forbs and chamise.
Escondido fine sandy loam 15-25% slopes, eroded	Well-drained and have slopes of 15-25%. These soils developed in metamorphosed fine-grained sandstone and schist. Elevations range from 1,000-2,800 feet. The average annual rainfall ranges from 10-13 inches, the average annual temperature from 62-65 degrees F, and the average frost-free season from 230-280 days. Vegetation is chiefly annual grasses, forbs, salvia and chaparral.
Escondido fine sandy loam 2-8% slopes, eroded	Well-drained and have slopes of 2-8%. These soils developed in metamorphosed fine-grained sandstone and schist. Elevations range from 1,000-2,800 feet. The average annual rainfall ranges from 10-13 inches, the average annual temperature from 62-65 degrees F, and the average frost-free season from 230-280 days. Vegetation is chiefly annual grasses, forbs, salvia and chaparral.
Escondido fine sandy loam 8-15% slopes, eroded	Well-drained and have slopes of 8-15%. These soils developed in metamorphosed fine-grained sandstone and schist. Elevations range from 1,000-2,800 feet. The average annual rainfall ranges from 10-13 inches, the average annual temperature from 62-65 degrees F, and the average frost-free season from 230-280 days. Vegetation is chiefly annual grasses, forbs, salvia and chaparral.
Friant fine sandy loam, 5-25% slopes, eroded	Well-drained soils that developed on slightly weathered mica-schist. These soils are on uplands and have slopes of 5-25%. Elevations range from 800-3,000 feet. The average annual rainfall ranges from 10-14 inches, the average annual temperature from 59-65 degrees F, and the average frost-free season from 210-280 days. Vegetation is chiefly annual grasses, forbs, buckwheat and chaparral.
Garretson very fine sandy loam, 2-8% slopes	Well-drained soils on alluvial fans. Slopes range from 2-8%. These soils developed in alluvium made up chiefly of metasedimentary materials. Elevations range from 600-2,000 feet. The average annual rainfall ranges from 10-14 inches, the average annual temperature from 61-64 degrees F, and the average frost-free season from 220-280 days. Vegetation is chiefly annual grasses, forbs, chamise and sumac.
Lodo rocky loam, 25-50% slopes, eroded	Somewhat excessively drained upland soils on slopes of 25-50%. These soils developed on metamorphosed fine-grained sandstone. Elevations range from 700-2,500 ft. The average annual rainfall ranges from 10-14 inches, the average annual temperature from 62-65 degrees F, and the average frost-free season from 230-250 days. The vegetation is chiefly annual grasses, forbs and chaparral.
Lodo rocky loam, 8-25% slopes, eroded	Somewhat excessively drained upland soils on slopes of 8-25%. These soils developed on metamorphosed fine-grained sandstone. Elevations range from 700-2,500 ft. The average annual rainfall ranges from 10-14 inches, the average annual temperature from 62-65 degrees F, and the average frost-free season from 230-250 days. The vegetation is chiefly annual grasses, forbs and chaparral.
Monserate sandy loam, 0-5% slopes	Well-drained soils that developed in alluvium from predominately granitic materials. Slopes range from 0-5%. These soils are on terraces and on old alluvial fans. Elevations range from 700-2,500 feet. The average annual rainfall ranges from 9-14 inches, the average annual temperature from 61-64 degrees F., and the average frost-free season from 220-280 days. Vegetation is chiefly annual grasses, forbs and chamise.
Porterville clay, 0-8% slopes	Well-drained soils on alluvial fans. Slopes range from 0-8%. These soils developed in alluvium consisting mainly of very fine basic igneous materials. Elevations range from 1,000-2,700 feet. The average annual rainfall ranges from 10-14 inches, the average annual temperature from 61-64 degrees F, and the average frost-free season from 230-280 days. Vegetation is chiefly annual grasses, forbs, salvia and buckwheat.
Ysidora very fine sandy loam, 2-15%	Moderately well-drained soils on old alluvial fans in valley fills, and on terraces. Slopes range from 2-15%. These soils developed in alluvium predominantly of metasedimentary origin. They are underlain by an iron-

<sup>3</sup> United States Department of Agriculture. 1971. Soil Survey of Western Riverside Area, California. 157 pgs. Illus.



Name	Description
slopes, eroded	silica cemented pan. Elevations range from 1,000-2,500 ft. The average annual rainfall ranges from 10-14 inches, the average annual temperature from 61-65 degrees F., the average frost-free season from 220-280 days. Vegetation is chiefly annual grasses, forbs and chamise.



## 4. DELINEATION OF WATERS OF THE UNITED STATES

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### 4.1 Regulatory Background

On May 27, 2015, the U.S. Environmental Protection Agency and Army Corps of Engineers issued their Clean Water Rule, defining the term “waters of the United States” (WOTUS) for purposes of Clean Water Act jurisdiction (Docket No. EPA-HQ-OW-2011-0880). The Agencies indicate that the rule defining WOTUS clarifies their jurisdiction to implement the Clean Water Act in the context of several US Supreme Court decisions. The final rule can be found in the June 29, 2015 issue of the Federal Register (Vol. 80, No. 24, pp. 37054-37127; <http://www.regulations.gov/#%21documentDetail;D=EPA-HQ-OW-2011-0880-20862>) and became effective on August 28, 2015. A stay was issued on the rule and it is not currently in effect.

The Rule creates three classifications of waters: (1) waters that are jurisdictional in all instances by rule (categorical WOTUS); (2) waters that are subject to case-specific analysis to determine jurisdiction; and, (3) waters that are excluded from jurisdiction by rule.

Six categories of waters are designated as jurisdictional by rule:

1. Traditional navigable waters (“All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide”)
2. All interstate waters, including interstate wetlands
3. The territorial seas
4. All impoundments of waters otherwise identified as WOTUS
5. All tributaries, as defined in the final rule
6. All waters adjacent to one of the above water features, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters

The Rule acknowledges that the great majority of tributaries as defined by the Rule are headwater streams. Ditches also will be jurisdictional if they meet the definition of “tributary” and are not excluded.

“Adjacent” waters includes those “bordering, contiguous, or neighboring” categories 1 through 4 above, even if separated from those waters by “constructed dikes or barriers, natural river berms, beach dunes and the like.”

“Neighboring” waters include those located in whole or part within the 100-year floodplain and that are within 1500 feet of the ordinary high water mark of traditional navigable water, interstate water, territorial sea, impoundment, or a tributary.

The preamble of the Rule states that “adjacent waters” do not include waters subject to established normal farming, silviculture, and ranching activities as those terms are used in Section 404(f) of the Clean Water Act.

“Other waters” determined on a case-specific basis to have a “significant nexus” to traditional navigable water, interstate water, or territorial sea also will be jurisdictional. The Rule identifies

five specific types of other waters for which there is no need for a case-specific finding and, therefore, they should be analyzed “in combination” (as a group, rather than individually) when determining if they are jurisdictional:

- Prairie potholes
- Carolina bays and Delmarva bays
- Pocosins
- Western vernal pools
- Texas coastal prairie wetlands

The Clean Water Rule also indicates that waters within the 100-year floodplain of traditional navigable water, interstate water, or the territorial seas, or within 4,000 feet of an ordinary high water mark may have a significant effect on downstream waters. These waters should be evaluated individually or in combination to determine if they are jurisdictional.

Several waters and features are excluded from jurisdiction in the Clean Water Rule, even if they otherwise qualify for jurisdiction under the tributary, adjacent, or other waters categories discussed above. Examples include prior converted cropland, waste treatment systems, and log ponds. The Rule states that it retains existing exclusions from the definition of WOTUS, and that “several exclusions reflecting longstanding agency practice are added to the regulation for the first time.”

#### Definitions:

(4) Wetlands. The term wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that, under normal circumstances, do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(1) Adjacent. The term adjacent means bordering, contiguous, or neighboring a water identified in paragraphs (a)(1) through (5) of this section, including waters separated by constructed dikes or barriers, natural river berms, beach dunes, and the like. For purposes of adjacency, an open water such as a pond or lake includes any wetlands within or abutting its ordinary high water mark. Adjacency is not limited to waters located laterally to a water identified in paragraphs (a)(1) through (5) of this section. Adjacent waters also include all waters that connect segments of a water identified in paragraphs (a)(1) through (5) or are located at the head of a water identified in paragraphs (a)(1) through (5) of this section and are bordering, contiguous, or neighboring such waters. Waters being used for established normal farming, ranching, and silviculture activities (33 U.S.C. 1344(f)) are not adjacent. (The rule includes wetlands and other waters that meet the definition of adjacent, including “neighboring,” which is defined separately. Only waters, not land, are adjacent. Within the definition of “adjacent,” the terms bordering and contiguous are well understood, and the agencies will continue to interpret and implement those terms consistent with current policy and practice.)

(7) High tide line. The term high tide line means the line of intersection of the land with the water’s surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a

more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(6) Ordinary high water mark. The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area. ("Ordinary high water mark" sets the boundary of adjacent non-wetland waters (e.g., open waters such as lakes and ponds). Physical indicators of ordinary high water mark can be created by perennial, intermittent, and ephemeral flows.)

(2) Neighboring. The term neighboring means: (i) All waters located within 100 feet of the ordinary high water mark of a water identified in paragraphs (a)(1) through (5) of this section. The entire water is neighboring if a portion is located within 100 feet of the ordinary high water mark; (ii) All waters located within the 100- year floodplain of a water identified in paragraphs (a)(1) through (5) of this section and not more than 1,500 feet from the ordinary high water mark of such water. The entire water is neighboring if a portion is located within 1,500 feet of the ordinary high water mark and within the 100-year floodplain; (iii) All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (a)(1) or (a)(3) of this section, and all waters within 1,500 feet of the ordinary high water mark of the Great Lakes. The entire water is neighboring if a portion is located within 1,500 feet of the high tide line or within 1,500 feet of the ordinary high water mark of the Great Lakes. ("Neighboring" is the key determinant of whether a water is "adjacent," and thus jurisdictional by rule. Where the 100-year floodplain is greater than 1,500 feet, all wetlands within 1,500 feet of the tributary's ordinary high water mark are jurisdictional because they are "neighboring" to the tributary, regardless of the wetlands position relative to each other. Waters within the 100-year floodplain that are located more than 1,500 feet and up to 4,000 feet from the ordinary high water mark, or high tide line, are subject to case-specific significant nexus analysis under paragraph (a)(8).)

Riparian area omitted in the final rule because the agencies determined that the use of the riparian area was unnecessarily complicated and that as a general matter, waters within the riparian area will be within the 100-year floodplain.

(3) Tributary and tributaries. The terms tributary and tributaries each mean a water that contributes flow, either directly or through another water (including an impoundment identified in paragraph (a)(4) of this section), to a water identified in paragraphs (a)(1) through (3) of this section that is characterized by the presence of the physical indicators of a bed and banks and an ordinary high water mark. These physical indicators demonstrate there is volume, frequency, and duration of flow sufficient to create a bed and banks and an ordinary high water mark, and thus to qualify as a tributary. A tributary can be a natural,

man-altered, or man-made water and includes waters such as rivers, streams, canals, and ditches not excluded under paragraph (b) of this section. A water that otherwise qualifies as a tributary under this definition does not lose its status as a tributary if, for any length, there are one or more constructed breaks (such as bridges, culverts, pipes, or dams), or one or more natural breaks (such as wetlands along the run of a stream, debris piles, boulder fields, or a stream that flows underground) so long as a bed and banks and an ordinary high water mark can be identified upstream of the break. A water that otherwise qualifies as a tributary under this definition does not lose its status as a tributary if it contributes flow through a water of the United States that does not meet the definition of tributary or through a nonjurisdictional water to a water identified in paragraphs (a)(1) through (3) of this section. (This term has not previously been defined in any regulation or preamble. Bed and banks and ordinary high water mark (OHWM) are features that generally are physical indicators of flow. OHWM generally defines the lateral limits of a water. In many tributaries, the bed is that part of the channel below the OHWM, and the banks often extend above the OHWM. Man-altered and man-made tributaries perform many of the same functions as natural tributaries and provide connectivity between streams and downstream rivers.)

(8) Significant nexus. The term significant nexus means that a water, including wetlands, either alone or in combination with other similarly situated waters in the region, significantly affects the chemical, physical, or biological integrity of a water identified in paragraphs (a)(1) through (3) of this section. The term “in the region” means the watershed that drains to the nearest water identified in paragraphs (a)(1) through (3) of this section. For an effect to be significant, it must be more than speculative or insubstantial. Waters are similarly situated when they function alike and are sufficiently close to function together in affecting downstream waters. For purposes of determining whether or not a water has a significant nexus, the water’s effect on downstream (a)(1) through (3) waters shall be assessed by evaluating the aquatic functions identified in paragraphs (A) through (I) of this paragraph. A water has a significant nexus when any single function or combination of functions performed by the water, alone or together with similarly situated waters in the region, contributes significantly to the chemical, physical, or biological integrity of the nearest water identified in paragraphs (a)(1) through (3) of this section. Functions relevant to the significant nexus evaluation are the following: (i) Sediment trapping, (ii) Nutrient recycling, (iii) Pollutant trapping, transformation, filtering, and transport, (iv) Retention and attenuation of flood waters, (v) Runoff storage, (vi) Contribution of flow, (vii) Export of organic matter, (viii) Export of food resources, and (ix) Provision of life cycle-dependent aquatic habitat (such as foraging, feeding, nesting, breeding, spawning, or use as a nursery area) for species located in a water identified in paragraphs (a)(1) through (3) of this section. (In the final rule, the agencies list specific functions relevant to significant nexus evaluation to add clarity and transparency. A water does not need to perform all functions. If a water performs a single function that has significant impact on a downstream water, that is a significant nexus. Under the final rule, only waters covered by subparagraph (a)(7) or (a)(8) require case-specific analysis.)

*Notes: The proposed rule that was announced on March 25, 2014, was published in the Federal Register on April 21, 2014 (79 Federal Register 22188-22274). The final revised rule was announced jointly by EPA and the Army Corps on May 27, 2015, and was published in the Federal*

*Register on June 29: Department of the Army, Corps of Engineers, and Environmental Protection Agency, "Clean Water Rule: Definition of 'Waters of the United States,' Final Rule," 80 Federal Register 37054-37127, June 29, 2015. a. 33 C.F.R. 328.3, 40 C.F.R. 122.2, 40 C.F.R. 230.3, and 40 C.F.R. 232.2 (definition of "waters of the United States"). The term "navigable waters" is defined at 40 C.F.R. 110.1 (Discharge of Oil); 40 C.F.R. 112.2 (Oil Pollution Prevention); 40 C.F.R. 116.3 (Designation of Hazardous Substance); 40 C.F.R. 117.1(i) (Determination of Reportable Quantities for Hazardous Substances); 40 C.F.R. 300.5 and Appendix E 1.5 to Part 300 (National Oil and Hazardous Substances Pollution Contingency Plan); and 40 C.F.R. 302.3 (Designation, Reportable Quantities, and Notification). b. Comments in this table are drawn from the preamble and text of the final rule. c. The term "prior converted cropland" is included in the U.S. Department of Agriculture's administrative definition of the term "wetland" (see 7 C.F.R. 12.2). d. A definition of "waste treatment system" is found in EPA regulations (35 C.F.R. 35.905): "Complete waste treatment system. A complete waste treatment system consists of all of the treatment works necessary to meet the requirements of title III of the Act, involved in (a) The transport of waste waters from individual homes or buildings to a plant or facility where treatment of the waste water is accomplished; (b) the treatment of the waste waters to remove pollutants; and (c) the ultimate disposal, including recycling or reuse, of the treated waste waters and residues which result from the treatment process. One complete waste treatment system would, normally, include one treatment plant or facility, but also includes two or more connected or integrated treatment plants or facilities." e. Probably should be "(i) through (ix) of this paragraph."*

## 4.2 Methods

The starting point for this study was a field trip to the project site in 2017 and again in 2019. For this study the "Routine Onsite Determination Method" data forms were used, onto which recorded information or otherwise compiled notes regarding the descriptive physical and biological attributes from the area. From a combination of field experience, references, assistance from others, and reconnaissance trips information resources were compiled from which the jurisdictional determinations have been made. Photographs were taken on each visit, some of which are included in this document. Field notes and photographs were arranged by date.

The routine approach (potential problem area) was utilized on this project, with on-site determination based on the three parameters of dominant plant species, soil characteristics, and hydrologic characteristics of the area.

Data sources used:

- a. USGS quadrangle maps
- b. Soil Surveys
- c. Aerial photos
- d. State list of hydric soils
- e. National Wetland Plant List 2017
- f. Munsell Soil Charts

The following steps were performed:

1. Project area was identified and mapped on USGS quadrangle map.



2. Vegetation for the project area was summarized and identified utilizing transects and observation points.
3. Area soils were characterized and identified.
4. Hydrology data was gathered utilizing field hydrologic indicators and available data.

In order to be considered a wetland, an area must exhibit at least minimal hydric characteristics within these three parameters. Non-wetland waters of the U.S. are delineated based on the limits of the OHWM as determined by erosion, the deposition of vegetation or debris, and changes in the vegetation. RWQCB shares USACE jurisdiction, unless isolated conditions are present. In the presence of isolated conditions, RWQCB takes jurisdiction from the OHWM and/or the 3—parameter wetland methodology utilized by the USACE. CDFW takes jurisdiction defined to the top of the bank of the stream/channel or to the extreme limits of the adjacent riparian vegetation (drip line).

GEC wetland/streambed biologists Teresa Gonzales and Paul Gonzales visited the site during March and April 2019 to conduct a delineation of potentially jurisdictional waters utilizing the methodology described below.

#### **4.2.1 Federal Delineation Methods-Non-Wetland Waters of the U.S.**

Potential jurisdictional features were evaluated prior to conducting the field assessment by using a series of current aerial photographs, detailed topographic maps, the available soils information, and the local and state hydric soil list (NRCS 2011a, 2011b). Additionally, prior to conducting the field assessment, transects (ranging from 0.15 to 0.5 miles in length) were drawn on a one-meter resolution aerial photograph. During the field assessment, points where these transects intercepted potentially jurisdictional waters were mapped on the aerial photographs or with a Garmin GPS unit. Field maps were digitized using Geographic Information System (GIS) technology and the total area of jurisdictional features was calculated.

Jurisdictional non-wetland “waters of the U.S.” were delineated based on the limits of the ordinary high water mark (OHWM) as determined by changes in physical and biological features, such as bank erosion, deposited vegetation or debris, and vegetation characteristics. Criteria used to aid in the determination of the limit and/or presence of the/an OHWM are presented below in Tables 4-1 and 4-2.

**TABLE 4-1**  
**POTENTIAL GEOMORPHIC INDICATORS OF ORDINARY HIGH WATER MARKS FOR THE ARID WEST**

<b>Potential Geomorphic OHWM Indicators</b>		
<b>(A) Below OHWM</b>	<b>(B) At OHWM</b>	<b>(C) Above OHWM</b>
<ol style="list-style-type: none"> <li>1. In-stream dunes</li> <li>2. Crested ripples</li> <li>3. Flaser bedding</li> <li>4. Harrow marks</li> <li>5. Gravel sheets to rippled sands</li> <li>6. Meander bars</li> <li>7. Sand tongues</li> <li>8. Muddy point bars</li> <li>9. Long gravel bars</li> <li>10. Cobble bars behind obstructions</li> <li>11. Scour holes downstream of obstructions</li> <li>12. Obstacle marks</li> <li>13. Stepped-bed morphology in gravel</li> <li>14. Narrow berms and levees</li> <li>15. Streaming lineations</li> <li>16. Dessication/mud cracks</li> <li>17. Armored mud balls</li> <li>18. Knick Points</li> </ol>	<ol style="list-style-type: none"> <li>1. Valley flat</li> <li>2. Active floodplain</li> <li>3. Benches: low, mid, most prominent</li> <li>4. Highest surface of channel bars</li> <li>5. Top of point bars</li> <li>6. Break in bank slope</li> <li>7. Upper limit of sand-sized particles</li> <li>8. Change in particle size distribution</li> <li>9. Staining of rocks</li> <li>10. Exposed root hairs below intact soil layer</li> <li>11. Silt deposits</li> <li>12. Litter (organic debris, small twigs and leaves)</li> <li>13. Drift (organic debris, larger than twigs)</li> </ol>	<ol style="list-style-type: none"> <li>1. Desert pavement</li> <li>2. Rock varnish</li> <li>3. Clast weathering</li> <li>4. Salt splitting</li> <li>5. Carbonate etching</li> <li>6. Depositional topography</li> <li>7. Caliche rubble</li> <li>8. Soil development</li> <li>9. Surface color/tone</li> <li>10. Drainage development</li> <li>11. Surface relief</li> <li>12. Surface rounding</li> </ol>

**TABLE 4-2**  
**POTENTIAL VEGETATION INDICATORS OF ORDINARY HIGH WATER MARKS FOR THE ARID WEST**

Potential Vegetation OHWM Indicators			
	(D) Below OHWM	(E) At OHWM	(F) Above OHWM
Hydroriparian indicators	<ol style="list-style-type: none"> <li>1. Herbaceous marsh species</li> <li>2. Pioneer tree seedlings</li> <li>3. Sparse, low vegetation</li> <li>4. Annual herbs, hydromesic ruderals</li> <li>5. Perennial herbs, hydromesic clonals</li> </ol>	<ol style="list-style-type: none"> <li>1. Annual herbs, hydromesic ruderals</li> <li>2. Perennial herbs, hydromesic clonals</li> <li>3. Pioneer tree seedlings</li> <li>4. Pioneer tree saplings</li> </ol>	<ol style="list-style-type: none"> <li>1. Annual herbs, xeric ruderals</li> <li>2. Perennial herbs, non-clonal</li> <li>3. Perennial herbs, clonal and non-clonal co-dominant</li> <li>4. Mature pioneer trees, no young trees</li> <li>5. Mature pioneer trees w/upland species</li> <li>6. Late-successional species</li> </ol>
Mesoriarian indicators	<ol style="list-style-type: none"> <li>6. Pioneer tree seedlings</li> <li>7. Sparse, low vegetation</li> <li>8. Pioneer tree saplings</li> <li>9. Xeroriparian species</li> </ol>	<ol style="list-style-type: none"> <li>5. Sparse, low vegetation</li> <li>Annual herbs, hydromesic ruderals</li> <li>6. Perennial herbs, hydromesic clonals</li> <li>8. Pioneer tree seedlings</li> <li>9. Pioneer tree saplings</li> <li>10. Xeroriparian species</li> <li>11. Annual herbs, xeric ruderals</li> </ol>	<ol style="list-style-type: none"> <li>7. Xeroriparian species</li> <li>8. Annual herbs, xeric ruderals</li> <li>9. Perennial herbs, non-clonal</li> <li>10. Perennial herbs, clonal and non-clonal codominant</li> <li>11. Mature pioneer trees, no young trees</li> <li>12. Mature pioneer trees, xeric understory</li> <li>13. Mature pioneer trees w/upland species</li> <li>14. Late-successional species</li> <li>15. Upland species</li> </ol>
Xeroriparian indicators	<ol style="list-style-type: none"> <li>10. Sparse, low vegetation</li> <li>11. Xeroriparian species</li> <li>12. Annual herbs, xeric Ruderals</li> </ol>	<ol style="list-style-type: none"> <li>12. Sparse, low vegetation</li> <li>13. Xeroriparian species</li> <li>14. Annual herbs, xeric ruderals</li> </ol>	<ol style="list-style-type: none"> <li>16. Annual herbs, xeric ruderals</li> <li>17. Mature pioneer trees w/upland species</li> <li>18. Upland species</li> </ol>

#### 4.2.2 Federal Delineation Methods- Wetlands

This jurisdictional wetland delineation used a routine determination according to the methods outlined in the USACE Wetland Delineation Manual (1987) and the Arid West Supplement (2008) based on three wetland parameters: dominant hydrophytic vegetation, wetland hydrology, and hydric soils. Data on vegetation, hydrology, and soils were collected using the methods described below and, recorded on Wetland Determination Data Forms.

##### 4.2.2.1 Vegetation

Plant species in each stratum (tree, sapling/shrub, herb, and woody vine) were ranked according to their canopy dominance (USACE 2008). Beginning with the species with the highest coverage, species that contributed to a cumulative coverage total of at least 50 percent and any species that comprised at least 20 percent of the total coverage for each stratum were recorded on the Field Data Sheets (50/20 Rule). The wetland indicator status was assigned to each dominant species using the *National Wetland Plant List* (National Wetlands Inventory, 2012). If greater than 50 percent of the dominant species from all

strata were Obligate, Facultative-wetland, or Facultative species, the criteria for wetland vegetation was considered to be met. The following indicator plant status categories were used:

- Obligate Wetland (OBL): Plants that occur almost always (estimated >99%) in wetlands under natural conditions, but which may also occur rarely (estimated <1% in non-wetlands (i.e., cat-tails or pickleweed).
- Facultative Wetland (FACW): Plants that occur usually (estimated 67-99%) in wetlands, but also occur (estimated 1-33%) in none-wetlands (i.e., mulefat or willow).
- Facultative (FAC): Plants with similar likelihood (estimated 33-67%) of occurring in both wetlands and none-wetlands.
- Facultative Upland (FACU): Plants that occur sometimes (estimated 1-32%) in wetlands, but occur more often (estimated 67-99%) in non-wetlands.
- Obligate Upland (UPL): Plants that occur rarely (estimated <1%) in wetlands, but occur almost always (estimated >99%) in none-wetlands under natural conditions.

#### 4.2.2.2 Hydrology

The potential presence of wetland hydrology was evaluated by recording the extent of observed primary and secondary indicators (USACE, 2008). Indicators such as, but not limited to, surface water or saturated soils (both Group A indicators) were recorded if observed. The Arid West Supplement includes two additional indicator groups that can be used during dry conditions or in areas where surface water/saturated soils are not present including Group B (evidence of recent inundation) and Group C (evidence of recent soil saturation) (USACE, 2008). The indicators are divided into two categories (primary and secondary indicators) and the presence of one primary indicator from any of the groups is considered evidence of wetland hydrology. These indicators are intended to be one-time observations of site conditions representing evidence of wetland hydrology when hydrophytic vegetation and hydric soils are present (USACE, 2008).

**TABLE 4-3**  
**WETLAND HYDROLOGY INDICATORS \***

Primary Indicators	Secondary Indicators
Watermarks	Oxidized Rhizospheres Associated with Living Roots
Water-Borne Sediment Deposits	FAC-Neutral Test
Drift Lines	Water-Stained Leaves
Drainage Patterns Within Wetlands	

\* Based on 1987 USACE Manual and Related Guidance Documents

**TABLE 4-4**  
**WETLAND HYDROLOGY INDICATORS FOR THE ARID WEST\***

	<b>Primary Indicator</b> (any one indicator is sufficient to make a determination that wetland hydrology is present)	<b>Secondary Indicator</b> (two or more indicators are required to make a determination that wetland hydrology is present)
<b>Group A – Observation of Surface Water or Saturated Soils</b>		
A2 - High Water Table		
<b>Group B – Evidence of Recent Inundation</b>		
81-WaterMarks		X (Riverine)
82-Sediment Deposits		X (Riverine)
83-DriftDeposits		X (Riverine)
86-SurfaceSoil Cracks	X	
87 - Inundation Visible on AerialImagery	X	
89-Water-Stained Leaves	X	
810-Drainage	X	X
811 -SaltCrust		
812 -8ioticCrust		
<b>Group C – Evidence of Current or Recent Soil Saturation</b>		
C2 - Dry-Season Water Table		
C9 - Saturation Visible on AerialImagery		X
<b>Group D – Evidence from other Site Conditions or Data</b>		
D3 -ShallowAquitard		
D5 - FAC-NeutralTest		X

#### 4.2.2.3 Soils

Soils are Monserate-Arlington-Exeter association: Well-drained nearly level to moderately steep soils that have a surface layer of sandy loam to loam and are shallow to deep to a hardpan. Data from observations of on-site soil characteristics were used as the basis for evaluating whether hydric/wetland soils are present on the site.

**TABLE 4-5**  
**FIELD INDICATORS OF HYDRIC SOIL CONDITIONS\***

a. Terrace Escarpments
b. Histic Epipedon
c. Stripped Matrix
d. Loamy Mucky Mineral

\* Based on 1987 USACE Manual and Related Guidance Documents



### Conditions Assessed from the Literature

Prior to onsite fieldwork, USGS topographic maps [Romoland, California 7.5' USGS topographic Quadrangle], National Resource Conservation Service Hydric Soils List for California (2018), local precipitation data, hydrological information and relevant literature (complete listing is found under References for this report) were reviewed.

USGS 7.5' Topographic Quadrangle- Romoland, California: Elevation of the assessment area ranges from a low of 1484± feet above mean sea level (msl) in the northern portion of the assessment area to a high of 1560± feet above msl in the southwestern portion of the assessment area. This represents an elevational change across the assessment area of 76± feet. The entire site consists of undulating, sloping land among sage scrub habitat. The project site has been impacted by anthropogenic activities. Land use in the surrounding area varies between natural, semi-rural and single family residential. The project will not impact public/quasi-public (PQP) land.

Recent Aerial Photography: Aerial photography is from Google 2019.

Soil Survey: Natural Resources Conservation Service

Hydric Soils List of California: Natural Resources Conservation Service

All of the mapped features were further analyzed using Geographic Information Systems (GIS) software and high resolution aerial imagery. The total acreage of all potentially jurisdictional features occurring in the surrounding buffer was calculated using GIS software.

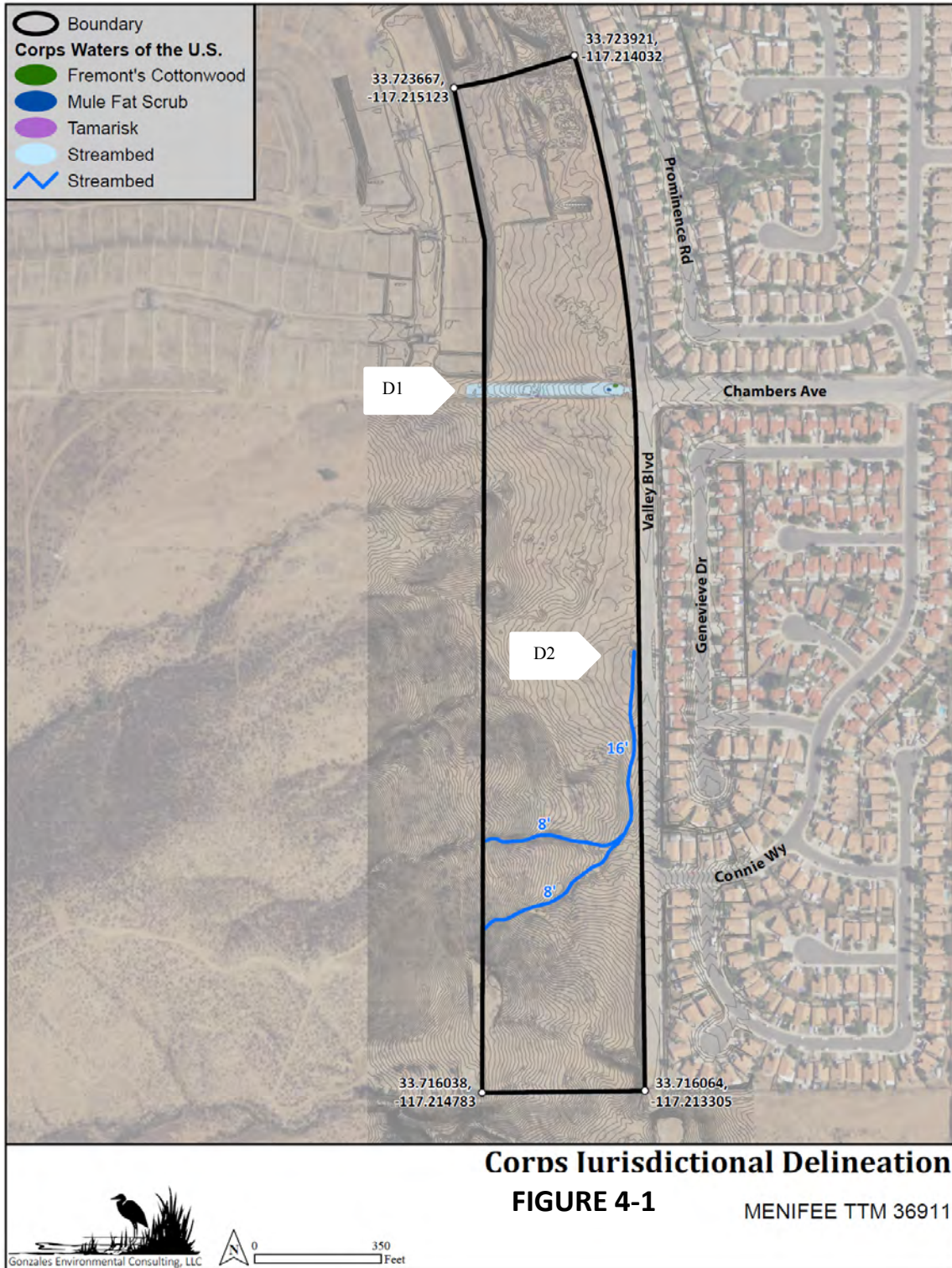
### 4.3 Results

GEC found federal waters of the U.S. Unnamed Drainage 2, which is a forked drainage, is located in the southern portion of the project site and flows west to east until joining into a single drainage that flows north to a culvert which is directed under Valley Boulevard. Unnamed Drainage 1 appears to be a created drainage as a result of graded development lots to the northeast. Drainage 1, with its check-dams under laid with black plastic, appears to have been created in order to channelize flow coming off of the graded area to the northeast on to Chambers Avenue.

Delineation studies found waters of the U.S. (WOUS) on the project site. 0.726 acre of WOUS are found on the project site.

**TABLE 4-6**  
**SUMMARY OF POTENTIAL USACE JURISDICTION BY HABITAT AND DRAINAGE**

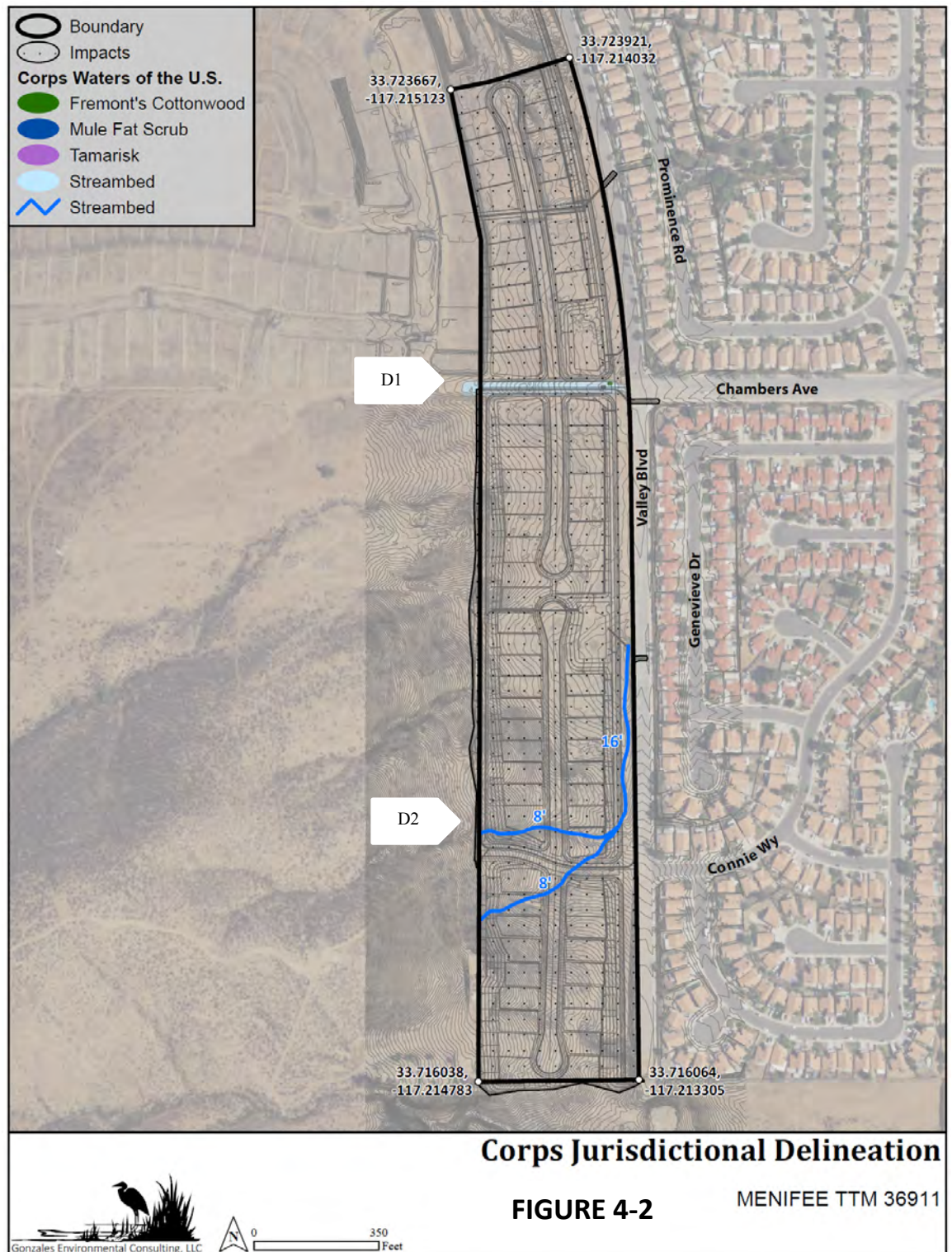
<b>USACE Jurisdictional Delineation</b>	<b>Existing On-site</b>	<b>Linear Feet</b>	<b>Impacts On-Site</b>	<b>Impacts Linear feet On-Site</b>	<b>Impacts Off-Site</b>
WOUS	0.726 acre	885 feet	0.726 acre	885 feet	0.004 acre





### 4.3.1 Summary of Potentially Federal Jurisdictional Impacts

Impacts were calculated and is shown in Table 4-6 and Figure 4-2.



## 5. DELINEATION OF CDFW JURISDICTIONAL HABITATS

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### 5.1 Regulatory Background

Fish and Game Code Chapter 6, Fish and Wildlife Protection and Conservation, Section 1600 *et seq.* was enacted to provide for the conservation of fish and wildlife resources associated with stream ecosystems. The FGC further defines fish and wildlife to include: all wild animals, birds, plants, fish, amphibians, invertebrates, reptiles, and related ecological communities, including the habitat upon which they depend for continued viability (FGC Division 5, Chapter 1, section 45, and Division 2, Chapter 1, section 71 I.2(a), respectively). Fish means wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn or ova thereof (FGC, Division 5, Chapter 1, section 45).

For the purposes of implementing sections 1601 and 1603 of the FGC, California Code of Regulations Title 14, section 720 requires submission to the Department of general plans sufficient to indicate the nature of a project for construction by or on behalf of any person, government agency, state or local, and any public utility, of any project which will divert, obstruct or change the natural flow or bed of any river, stream or lake designated by the Department, or will use material from the streambeds designated by the Department, all rivers, streams, lakes, and streambeds in the State of California, including all rivers, streams and streambeds which may have intermittent flows of water, are hereby designated for such purpose.

Division 2, Chapter 5, Article 6, Section 1600 *et seq.* of the California Fish and Game Code does not limit jurisdiction to areas defined by specific flow events or seasonal changes in water flow. Accordingly, it has been the practice of the Department to define the stream channel as that area where water uniformly or habitually flows over a given course, and where the width of the watercourse can reasonably be defined. Thus, a channel is not defined by a specific flow event, nor by the path of surface water as this path might vary seasonally. Rather, it is the Department's practice to define the channel based on the topography or elevations of land that confine the water to a definite course when the waters of a creek rise to their highest point. To define jurisdictional boundaries otherwise would result in a morass of jurisdictional boundaries that differed from stream to stream, changed with variations in channel morphology along the same stream, or that shifted seasonally on any given stream along with seasonal changes in flow.

The Department's website has additional information regarding dryland streams in "A review of Stream Processes and Forms in Dryland Watersheds" at this location: <http://www.dfg.ca.gov/habcon/1600/1600resources.html>.

CDFG's definition of "lake" includes "natural lakes or man-made reservoirs."

Diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake which supports fish or wildlife, require authorization



from CDFG by means of entering into an agreement pursuant to Section 1601 or 1603 of the Fish and Game Code.

## 5.2 CDFG Jurisdictional Waters

State-jurisdictional streambeds were delineated in the field concurrently with the delineation of non-wetland federal waters (Section 4.2.1, above). Prior to conducting field assessments, transects (ranging from 0.15 to 0.5 miles in length) were drawn on a one-meter resolution aerial photograph. During the field assessment, points where these transects intercepted potentially jurisdictional waters were mapped on the aerial photographs or with a Trimble GeoXT GPS unit. Field maps were digitized using GIS technology and the total area of jurisdictional features was calculated.

CDFW jurisdictional areas were calculated based on mapping episodic stream activity boundaries (MESA) or dripline of riparian vegetation, whichever was greater.

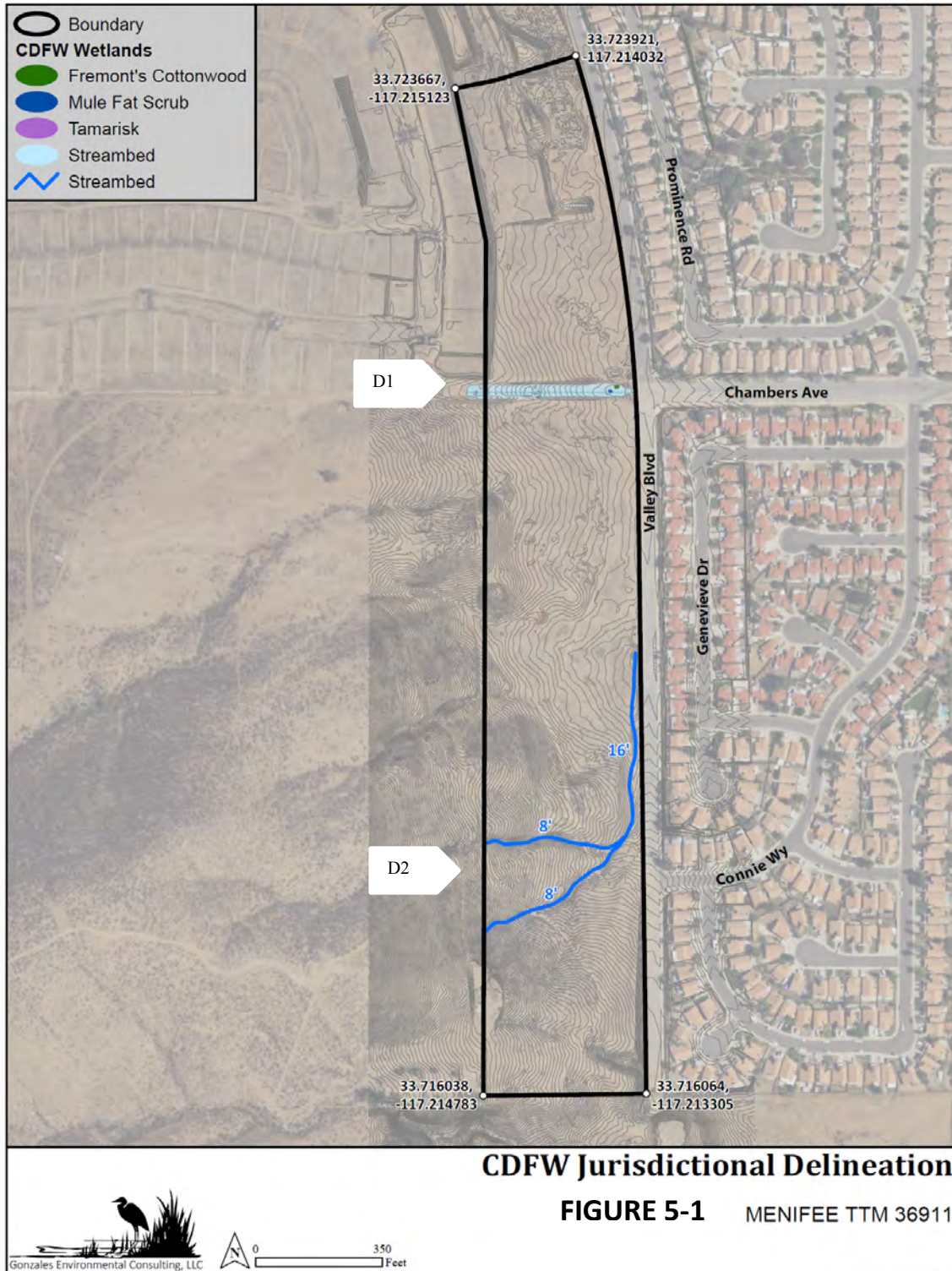
## 5.3 Results

GEC found CDFW jurisdictional streambed on the project site. Refer to Table 5-1 and Figure 5-1 for the locations and acreages of jurisdictional features.

Delineation studies found 0.726 acres of streambed on the project site.

**TABLE 5-1  
SUMMARY OF POTENTIAL CDFW JURISDICTION BY HABITAT**

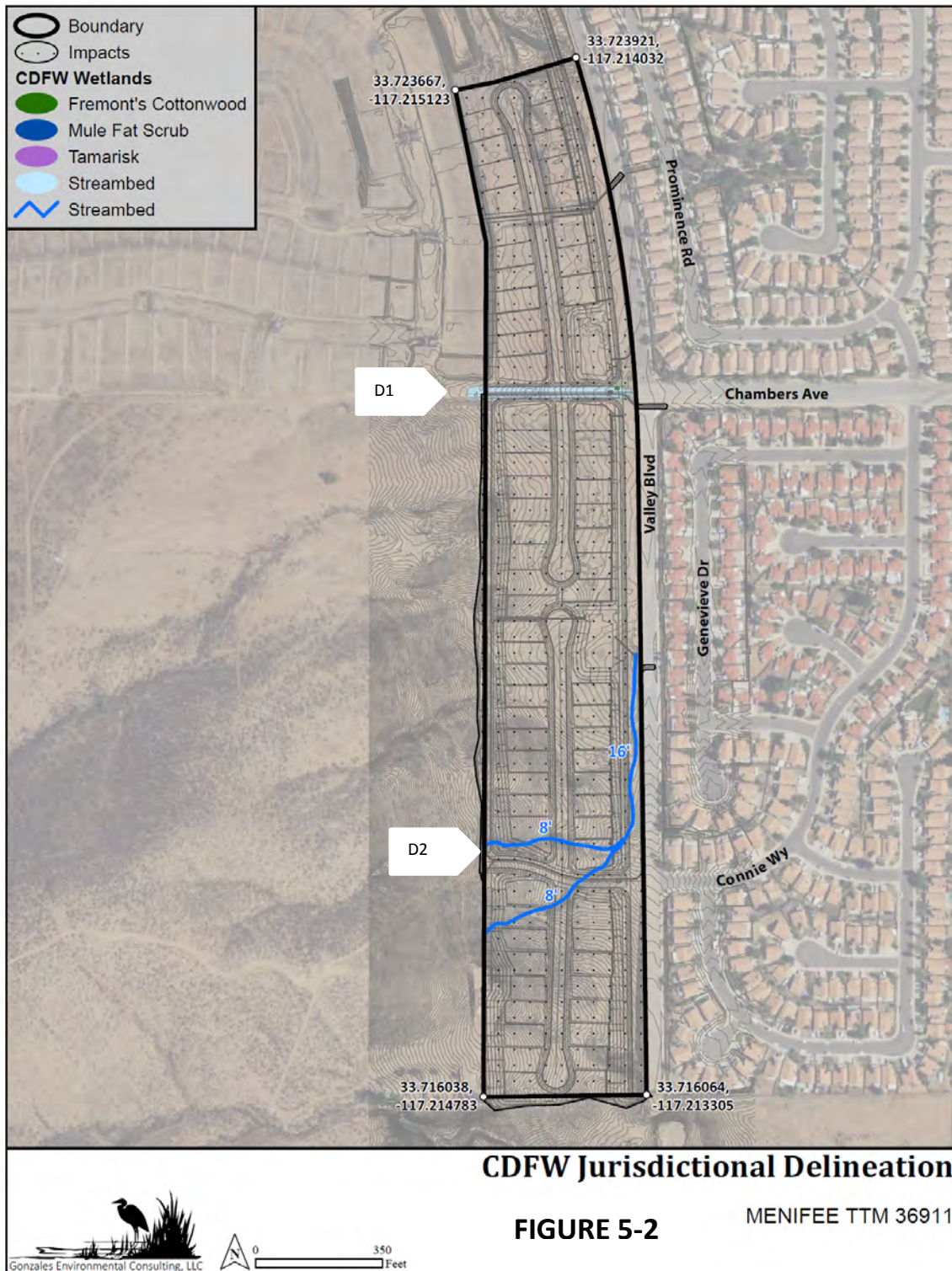
CDFW Jurisdictional Delineation	Existing		Impacts		
	Existing On-site	Existing On-site (length in feet)	Impacts On-site	Length in feet	Impacts Off-site
<b><i>Drainage 1 (Chambers St)</i></b>					
Fremont's Cottonwood	0.004	0	0.004	0	
Mule Fat Scrub	0.002	0	0.002	0	
Tamarisk	0.003	0	0.003	0	0.004
Streambed	0.363	414	0.363	414	
<b><i>Drainage 2 (Connie Wy)</i></b>					
Streambed	0.354	471	0.354	471	
<b>TOTAL</b>	<b>0.726</b>	<b>885</b>	<b>0.726</b>	<b>885</b>	





### 5.3.1 Summary of Potentially CDFW Jurisdictional Impacts

Impacts were calculated and are shown in Table 5-1 and Figure 5-2.





## 6. MSHCP 6.1.2 RIVERINE & RIPARIAN HABITATS

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### 6.1 Regulatory Background

#### Riverside County Multi-Species Habitat Conservation Plan (MSHCP)

Riverside County has reached the end of a comprehensive planning effort called the Riverside County Integrated Project (RCIP). RCIP integrates three regional planning efforts: 1) County General Plan, 2) Community and Environmental Transportation Acceptability Process to determine present and future roadway infrastructure, and 3) Multiple Species Habitat Conservation Plan (MSHCP) to conserve listed and sensitive species and their habitats. The final MSHCP was approved by the County Board of Supervisors on June 17, 2003.

The MSHCP is a comprehensive, multi-jurisdictional effort that includes portions of Western Riverside County and fourteen cities. Rather than deal with endangered species on a one-by-one basis, the MSHCP plans for the conservation of 146 species. The MSHCP proposes a reserve system of approximately 500,000 acres of which approximately 347,000 acres are currently within public ownership and 153,000 acres are currently in private ownership. The approved MSHCP is intended to contribute to the economic viability of the region by providing landowners, developers and those who build public infrastructure with regulatory certainty, a streamlined regulatory process and identified project mitigation.

The MSHCP has been adopted by the County, the Implementation Agreement signed, and federal/state permits have also been issued. Since the permits are granted, no further surveys for 75% of the 146 species covered by the MSHCP will be required. Habitat assessments and/or surveys may be undertaken within suitable habitat areas within specific areas, depending on Cell Group Criteria.

The project site is in Sun City/Menifee Valley Plan. Habitat assessment for burrowing owl is required.

#### Section 6.1.2

Section 6.1.2 of the MSHCP requires an assessment of the potentially significant effects of the proposed project on riparian/riverine areas, and vernal pools as currently required by CEQA using available information augmented by project-specific mapping. Riparian/riverine areas and vernal pools are defined as follows:

- **Riparian/Riverine Areas** are lands which contain Habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year.

- **Vernal pools** are seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics, and the definition of the watershed supporting vernal pool hydrology, must be made on a case-by case basis. Such determinations should consider the length of the time the area exhibits upland and wetland characteristics and the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, and drainage characteristics, uses, to which it has been subjected, and weather and hydrologic records.

With the exception of wetlands created for the purpose of providing wetlands habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, areas demonstrating characteristics as described above which are artificially created are not included in these definitions.

## 6.2 Section 6.1.2 Riverine and Riparian

Section 6.1.2 riverine and riparian were delineated in the field concurrently with the delineation of federal waters/wetlands and state wetlands/streambed (Sections 4.2.1 and 5.2 above). Prior to conducting field assessments, transects (ranging from 0.15 to 0.5 miles in length) were drawn on a one-meter resolution aerial photograph. During the field assessment, points where these transects intercepted potentially jurisdictional waters were mapped on the aerial photographs or with a Trimble GeoXT GPS unit. Field maps were digitized using GIS technology and the total area of jurisdictional features was calculated.

## 6.3 Functions and Values

The project site supports a minimally vegetated, ephemeral drainage. As required in MSHCP Section 6.1.2, the following is a discussion of the functions and values (hydrologic regime, flood storage and flood flow modification, sediment trapping and transport, nutrient retention and transformation, toxicant trapping, public use, wildlife habitat, and aquatic habitat) of the MSHCP Riparian/Riverine areas in the study area.

Potential impacts to water quality could occur during construction and operation of the proposed project due to increased erosion and storm water runoff. However, construction BMPs would be implemented during construction of the proposed project to reduce impacts to water quality and beneficial water resource values.

During construction of the current site existing vegetation will be trimmed and/or removed. Impacts to these features would result in impacts to conservation of habitats and may result in impacts to covered species. As previously discussed, MSHCP 6.1.2 areas, United States Army Corps of Engineers potential jurisdictional areas, CDFW jurisdictional areas, and Regional Water Quality Control Board (RWQCB) jurisdictional areas are present on the site. Unnamed Drainages 1 and 2 have non-wetland waters (Riverine), as defined by the MSHCP. The Unnamed Drainages in this location have low functions and values for flood storage and flood flow modification, sediment trapping and transport, nutrient retention and transformation, toxicant trapping, public use, and wildlife and aquatic habitat due to its small size, severe anthropogenic impacts by homeless, off-road vehicles, equipment access via Valley Boulevard and Chambers Avenue, and lack of perennial or intermittent sources of water. Implementation of the proposed project would not result in significant impacts to natural and beneficial floodplain values.

## **6.4 Results**

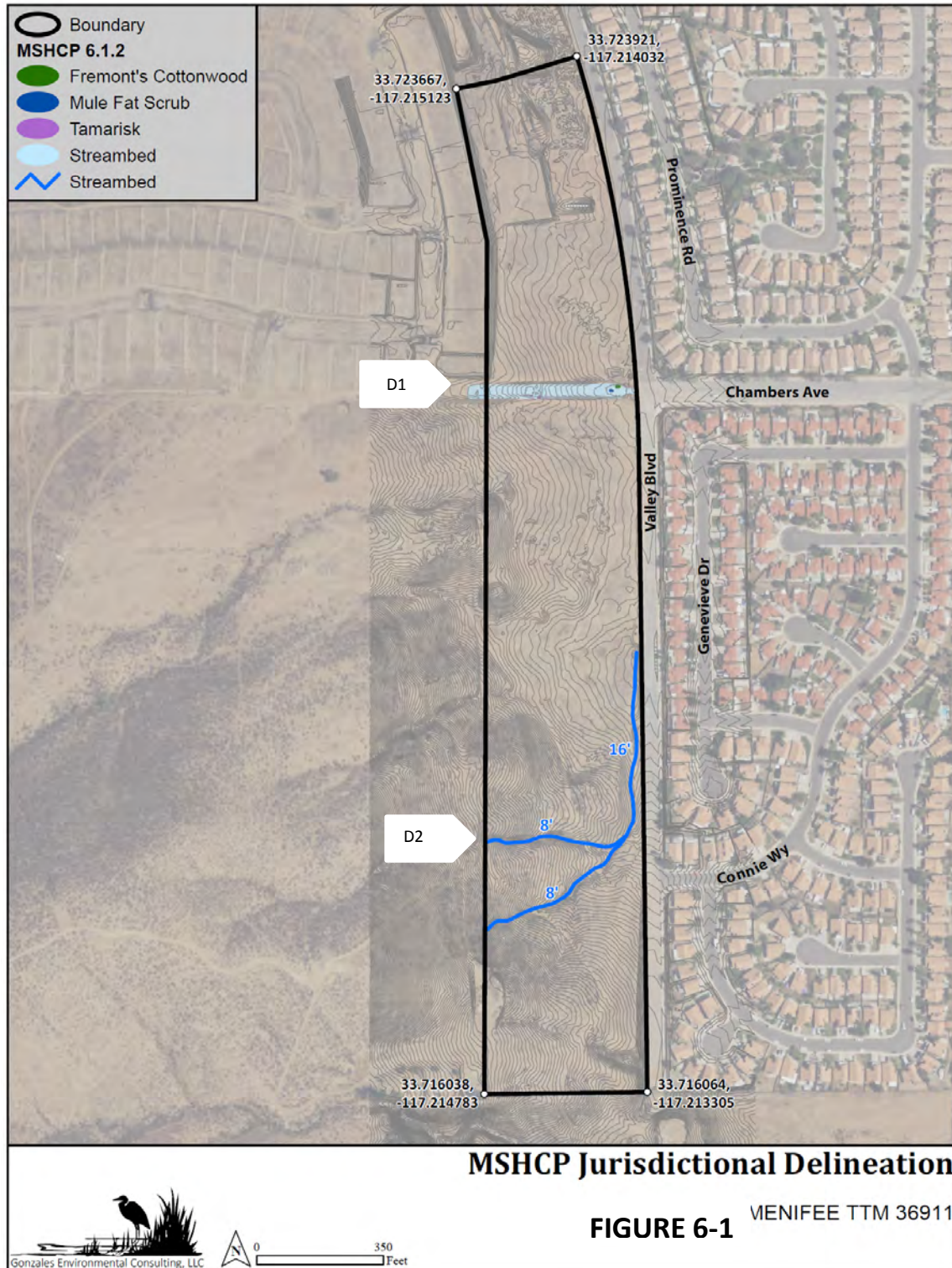
GEC found Section 6.1.2 riverine areas on the project site. Refer to Table 6-1 and Figure 6-1 for the locations and acreages of jurisdictional features.

Delineation studies found 0.723 acres of streambed (riverine) were found on the project site.



**TABLE 6-1  
SUMMARY OF POTENTIAL SECTION 6.1.2 AREAS BY HABITAT**

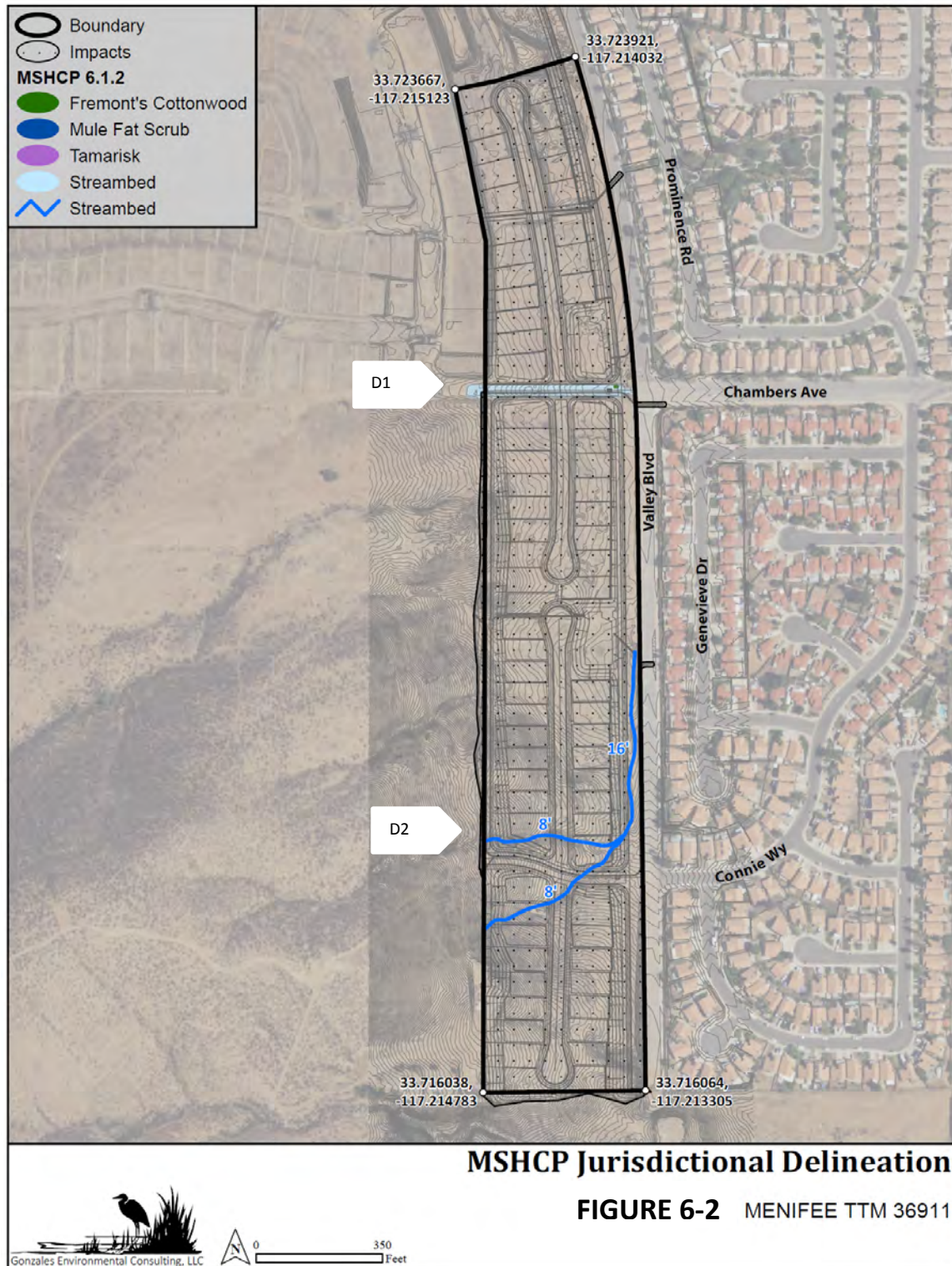
	Existing		Impacts		
	Existing On-site	Existing On-site (length in feet)	Impacts On-site	Length in feet	Impacts Off-site
<b>MSHCP 6.1.2</b>					
<b>Riverine [Drainage 1 (Chambers St)]</b>					
Fremont's Cottonwood	0.004	0	0.004	0	
Mule Fat Scrub	0.002	0	0.002	0	
Tamarisk	0.003	0	0.003	0	0.004
Streambed	0.363	414	0.363	414	
<b>Riverine [Drainage 2 (Connie Wy)]</b>					
Streambed	0.354	471	0.354	471	
<b>TOTAL</b>	<b>0.726</b>	<b>885</b>	<b>0.726</b>	<b>885</b>	





### 6.4.1 Summary of Potential Section 6.1.2 Impacts

Impacts were calculated and are shown in Table 6-1 and Figure 6-2.





## 7. PERMITS/AGREEMENTS

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### Permits/agreements needed

The area is under the jurisdiction of the California Department of Fish and Wildlife, U.S. Army Corps of Engineers and California Regional Water Quality Control Board. Permits/Agreements for activities within the streambed will be required by the California Department of Fish and Wildlife, U. S. Army Corps of Engineers and California Regional Water Quality Control Board. Final authority over the area rests with the appropriate agencies. U.S. Army Corps of Engineers has requested that the following statement be added to all delineations:

“This delineation/determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.”

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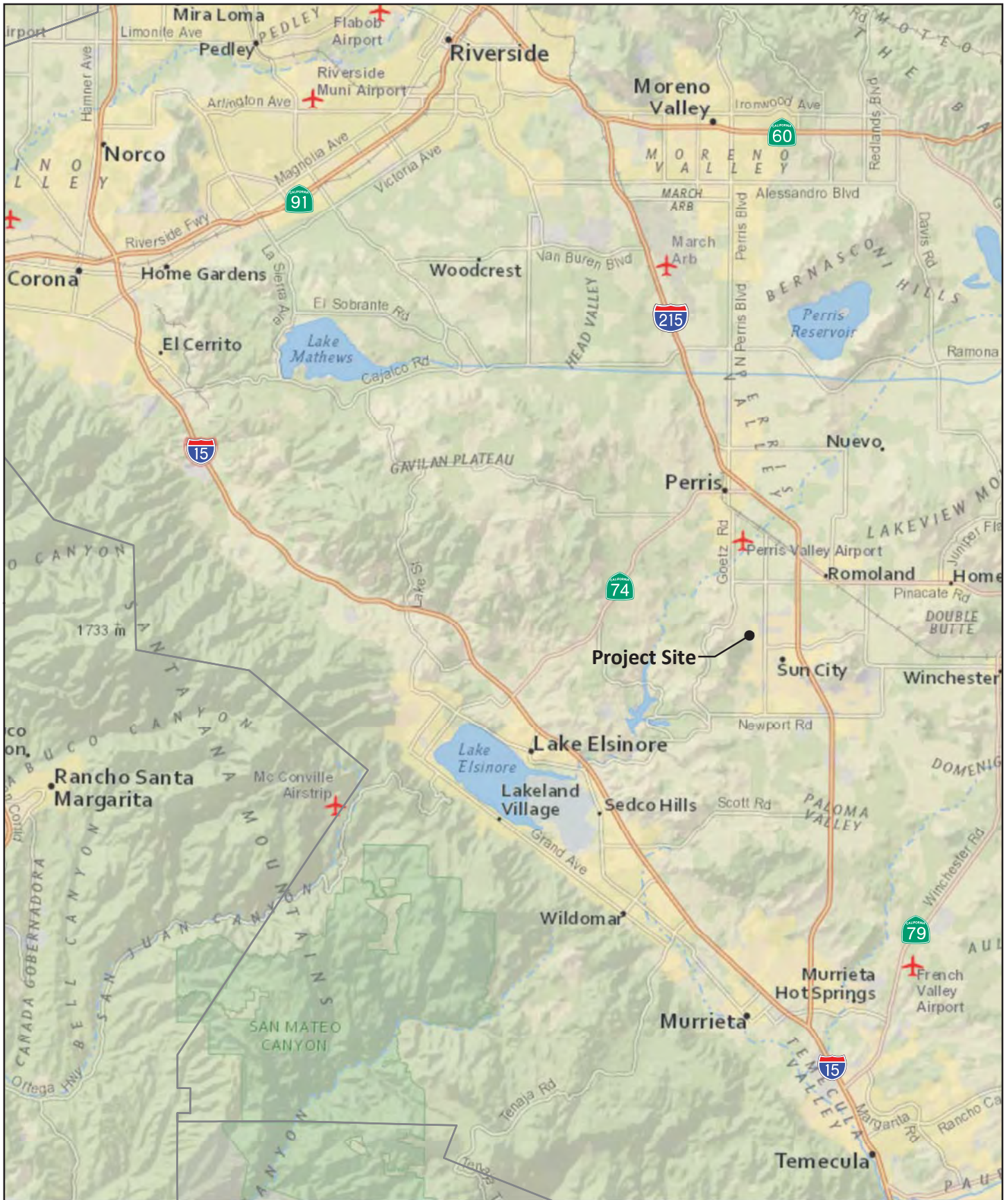
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USGS. Photorevised 1979. Romoland, California 7.5 minute topographic quadrangle.



## APPENDIX A

### Regional, USGS, Vegetation Mapping



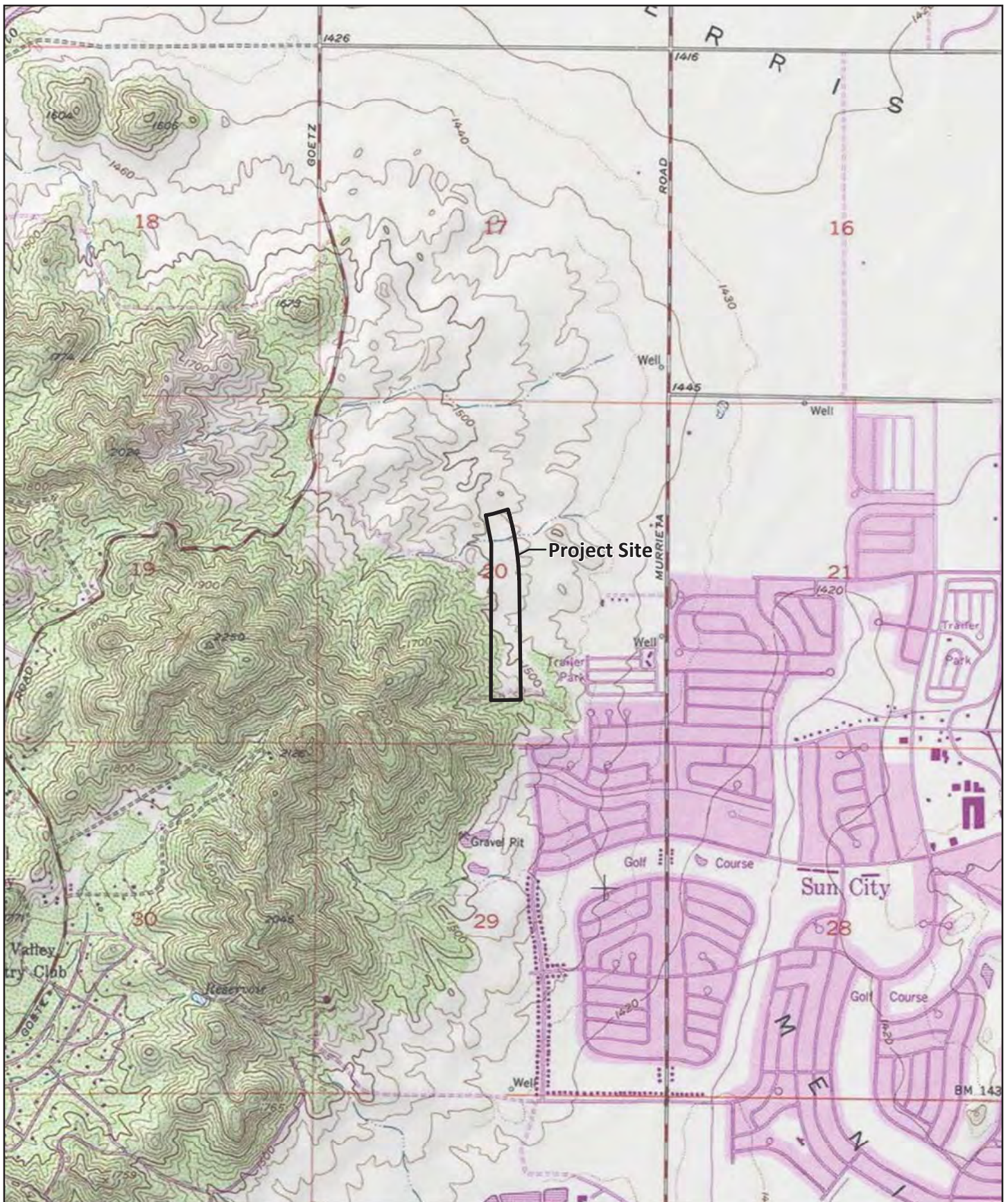
Source: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

## Regional Map

MENIFEE TTM 36911








Source: USGS 7.5' Quads (Romoland); Copyright:© 2013 National Geographic Society, i-cubed

**USGS Topo**

MENIFEE TTM 36911



 Boundary




Imagery ©2017 , DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency

## Aerial Photograph

MENIFEE TTM 36911



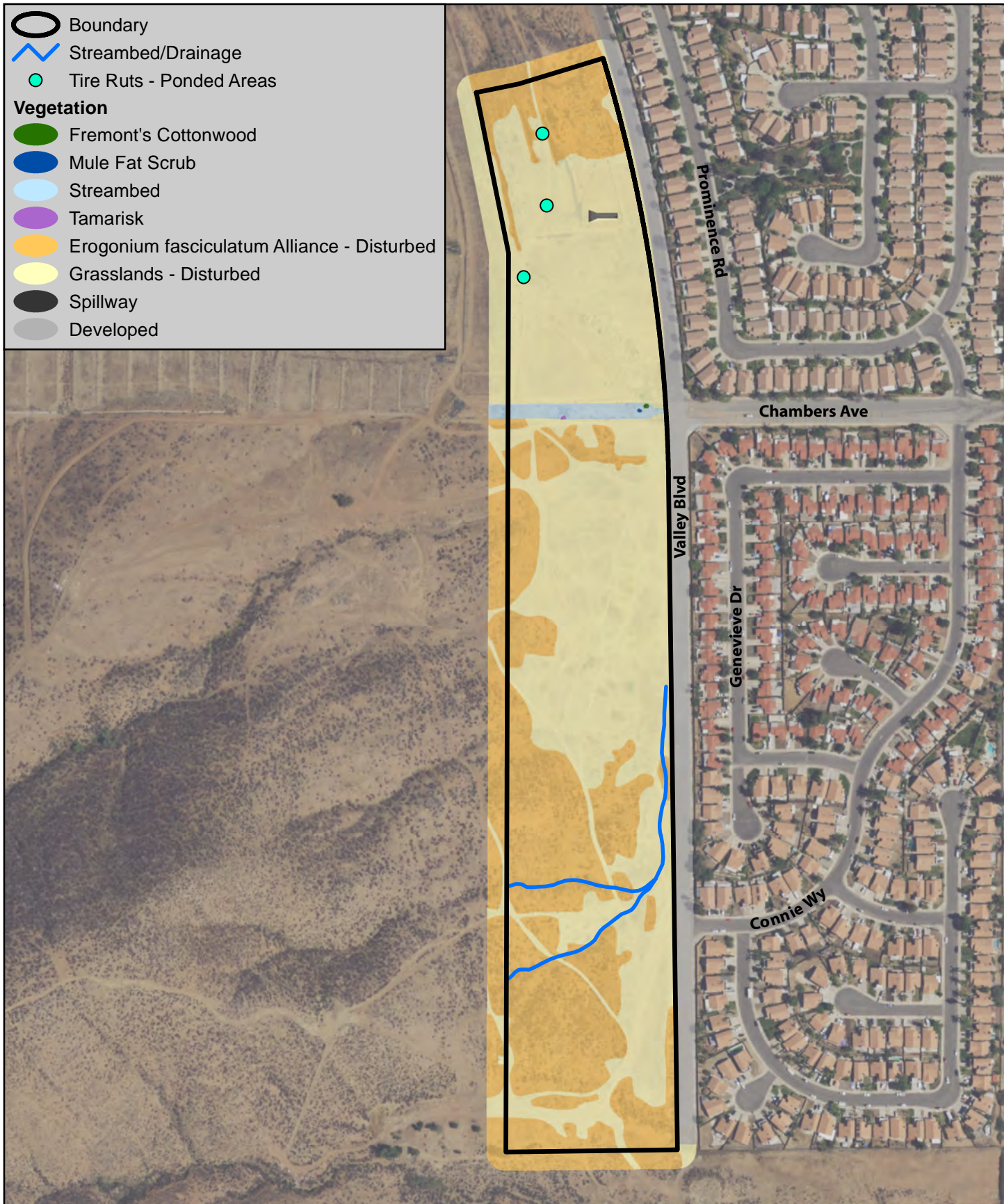
 Boundary



## Aerial Photograph

MENIFEE TTM 36911





# Biological Resources

MENIFEE TTM 36911



# Appendix A

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Photo key & Photos







**Figure 2**  
Picture 1  
View North





**Figure 3**  
Picture 2  
View South





**Figure 4**  
Picture 3  
View East





**Figure 5**  
Picture 4  
View East



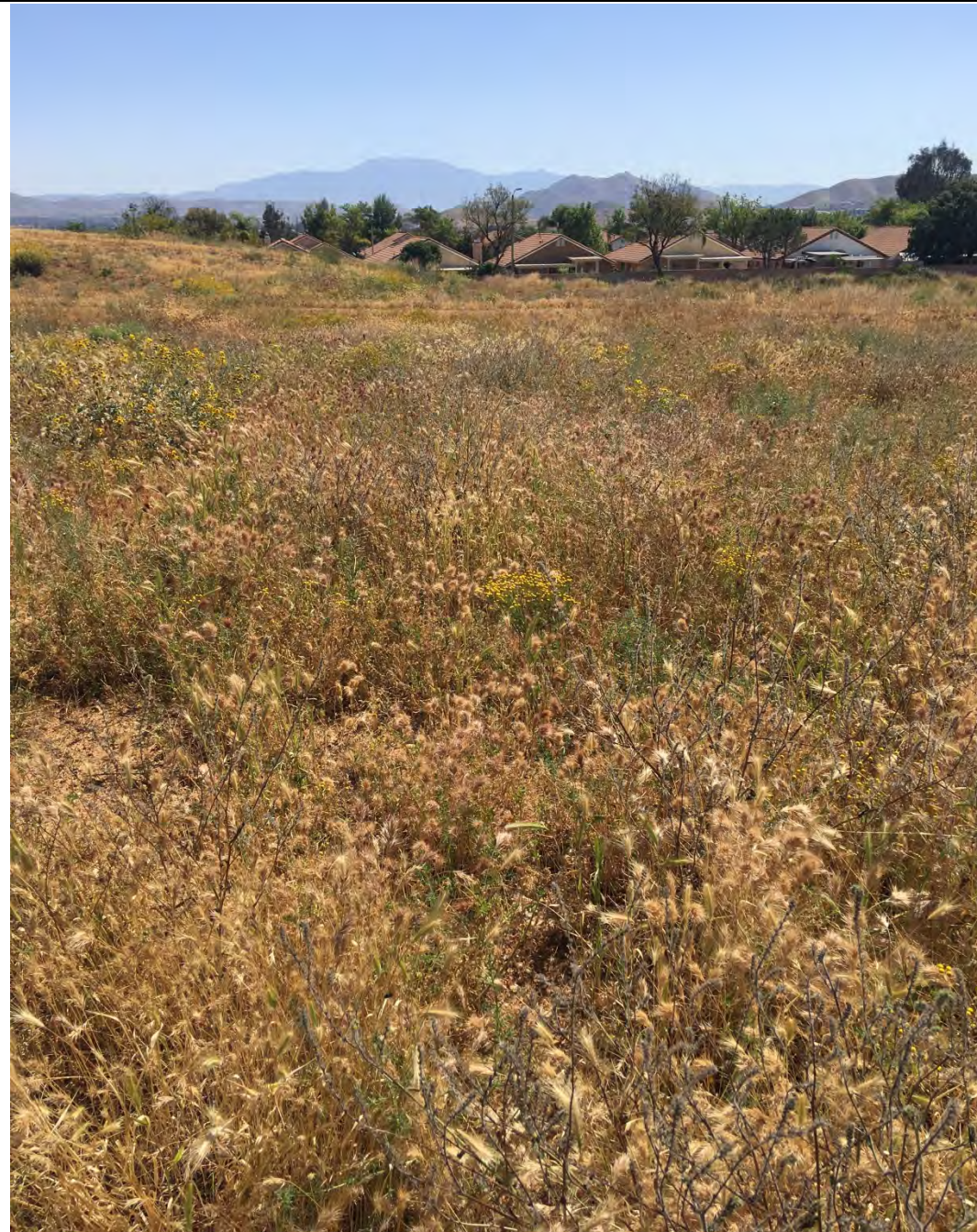


**Figure 6**  
Picture 5  
View East



**Figure 7**  
Picture 6  
View Northeast





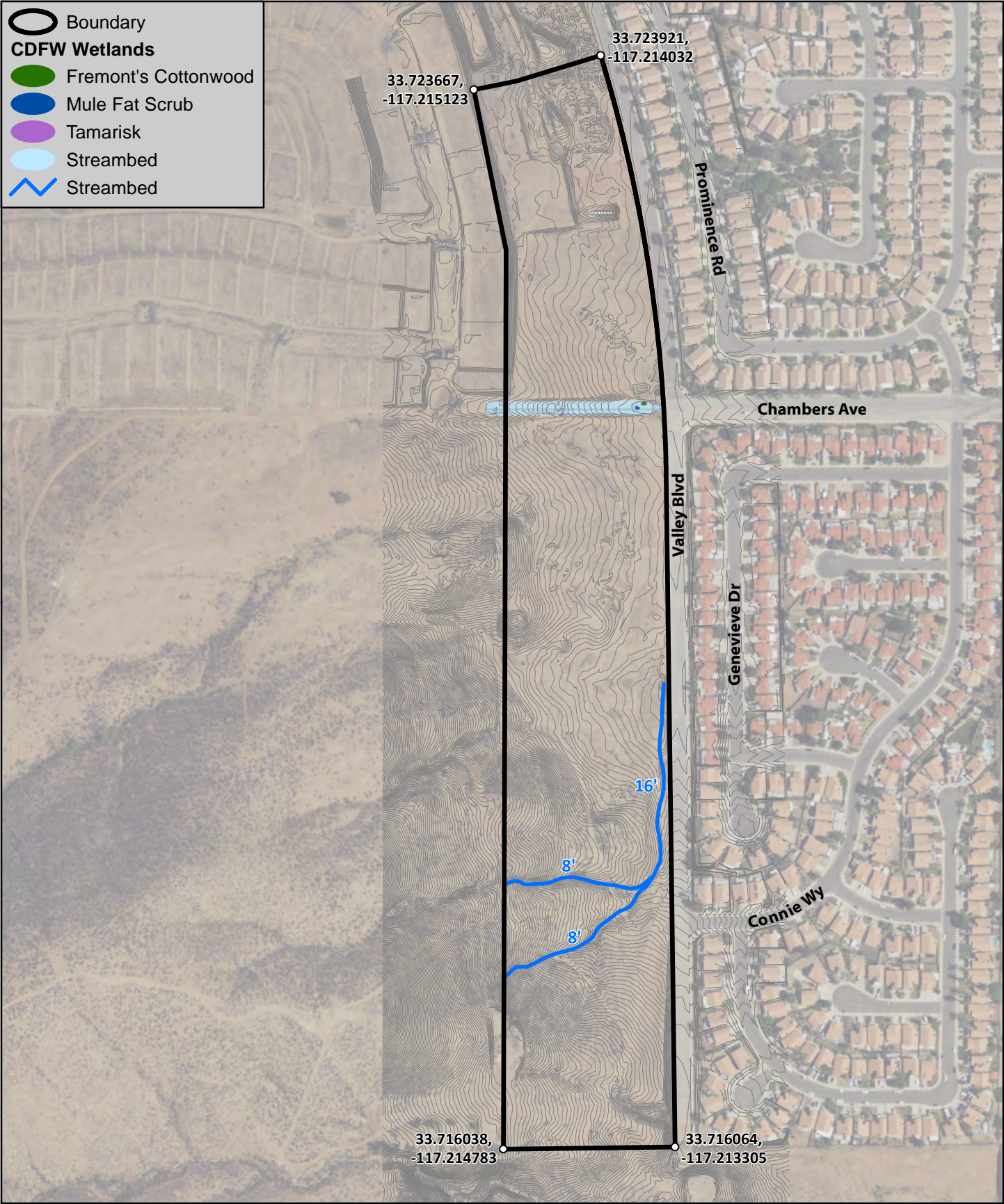
**Figure 8**  
Picture 7  
View Northeast



## APPENDIX B

### USACE, CDFW & MSHCP 6.1.2 MAPPING

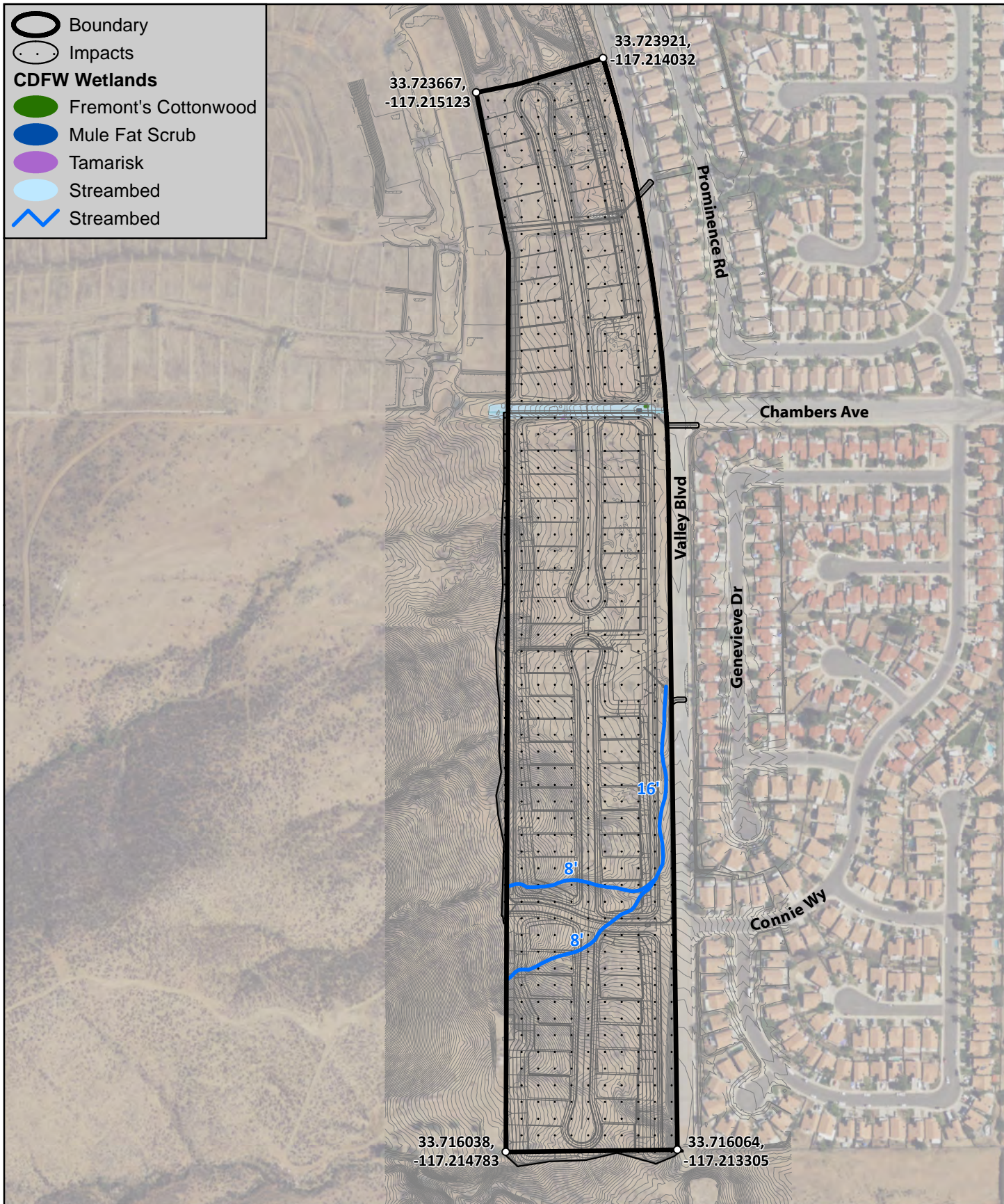
- Boundary
- CDFW Wetlands**
- Fremont's Cottonwood
- Mule Fat Scrub
- Tamarisk
- Streambed
- Streambed



CDFW Jurisdictional Delineation

MENIFEE TTM 36911



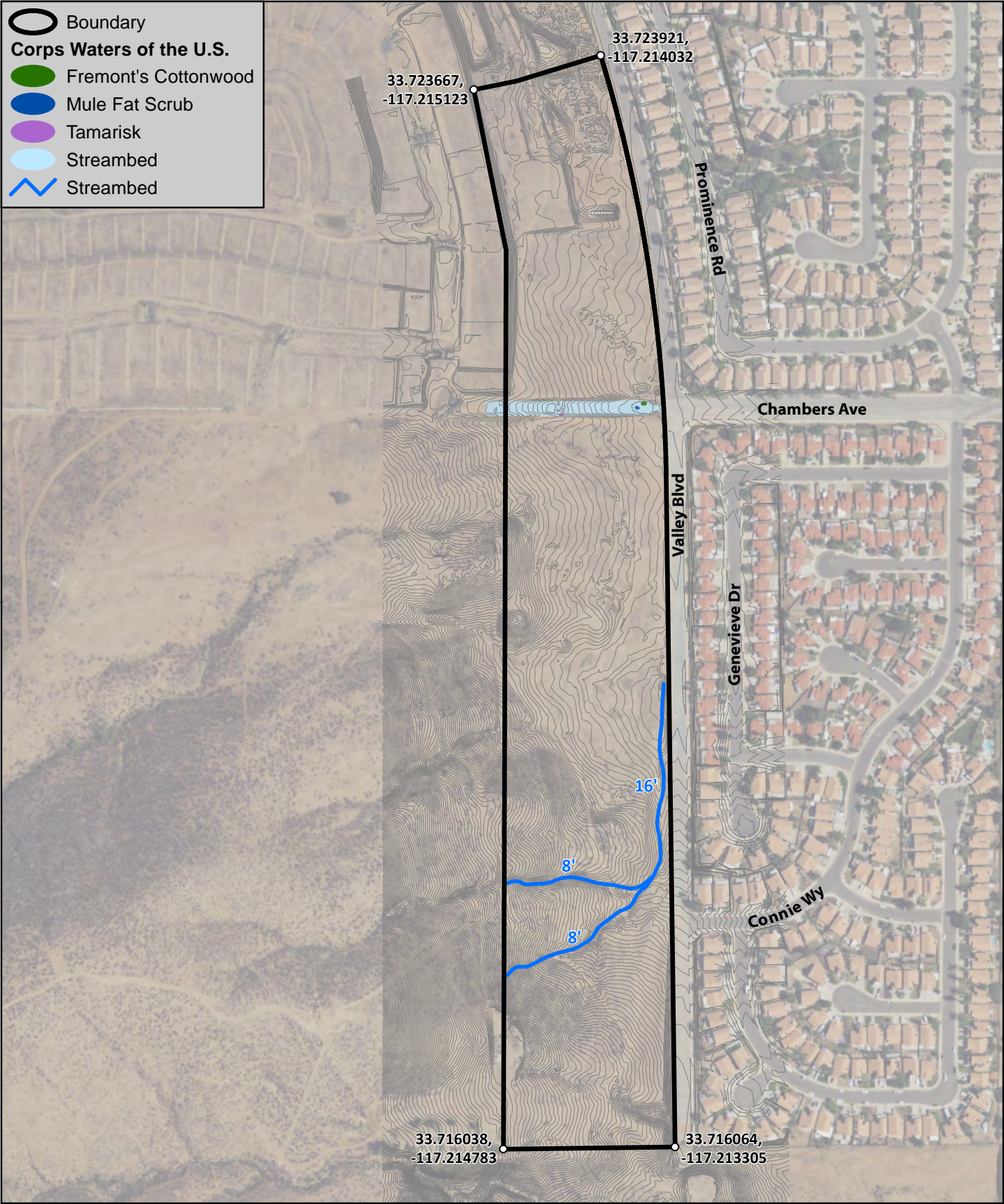


## CDFW Jurisdictional Delineation

MENIFEE TTM 36911




- Boundary
- Corps Waters of the U.S.**
- Fremont's Cottonwood
- Mule Fat Scrub
- Tamarisk
- Streambed
- Streambed




**Corps Jurisdictional Delineation**


MENIFEE TTM 36911






Boundary



Impacts


**Corps Waters of the U.S.**

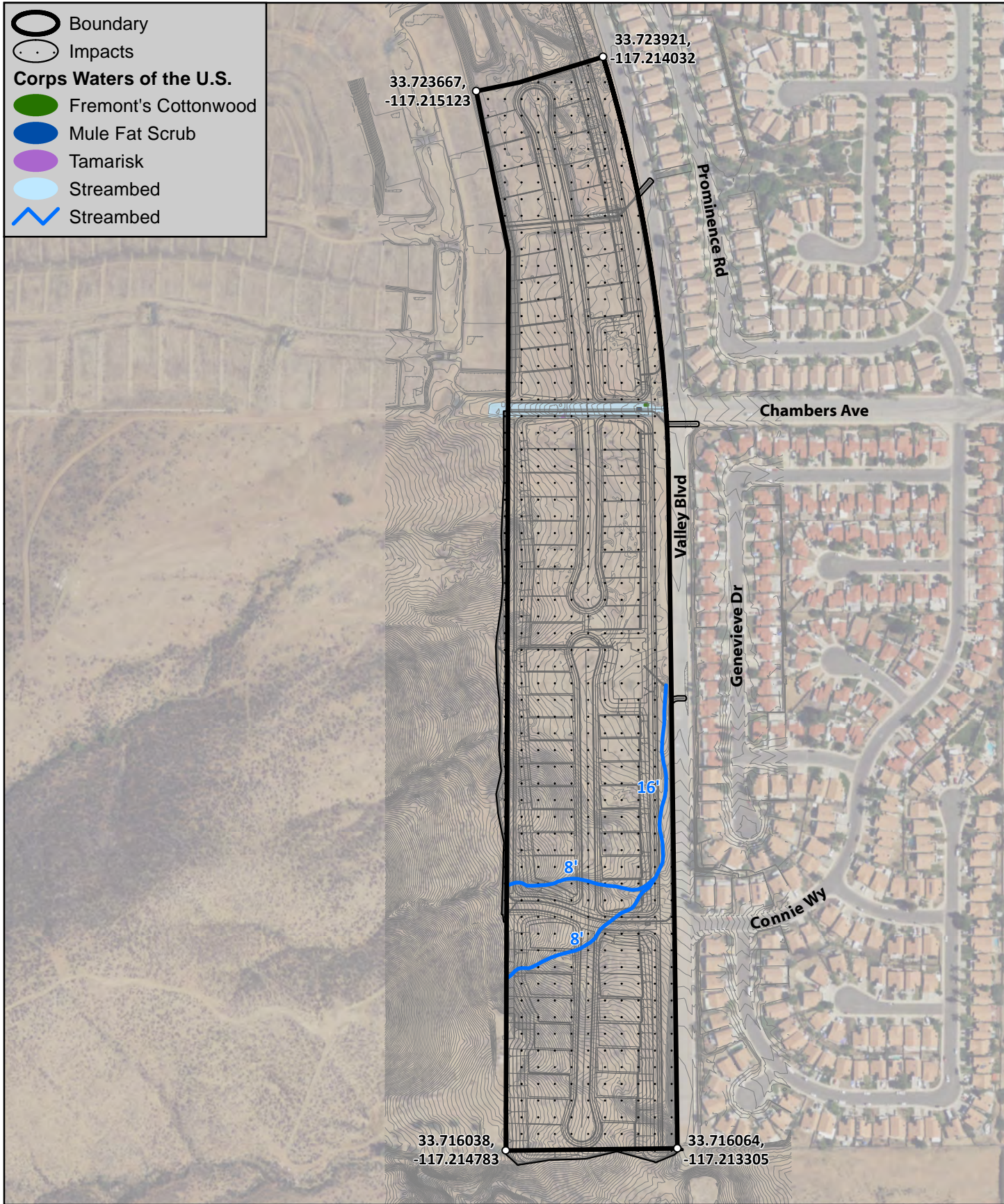

Fremont's Cottonwood


Mule Fat Scrub


Tamarisk


Streambed


Streambed

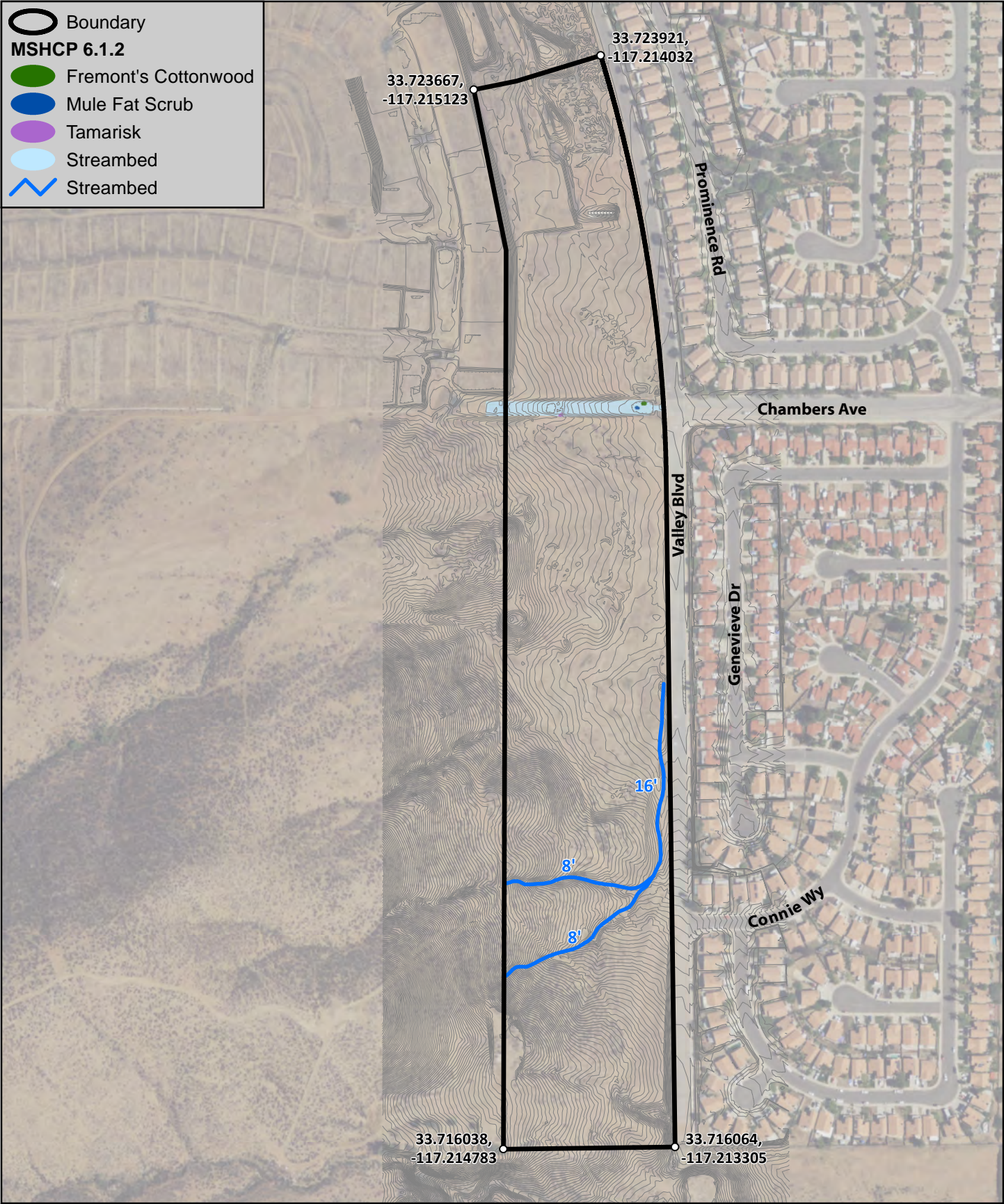


# Corps Jurisdictional Delineation

MENIFEE TTM 36911




- Boundary
- MSHCP 6.1.2**
- Fremont's Cottonwood
- Mule Fat Scrub
- Tamarisk
- Streambed
- Streambed




MSHCP Jurisdictional Delineation


MENIFEE TTM 36911






Boundary



Impacts


MSHCP 6.1.2

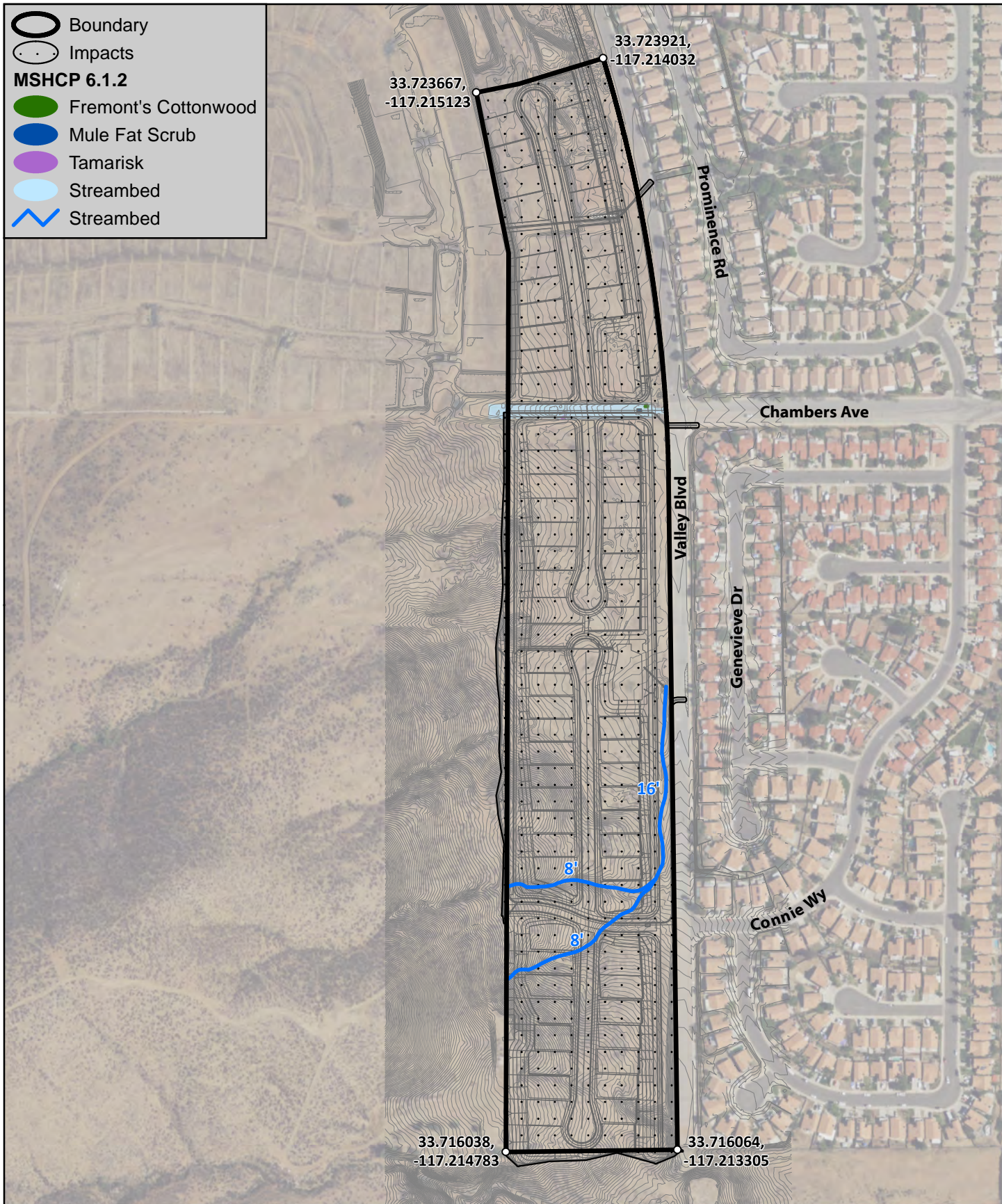

Fremont's Cottonwood


Mule Fat Scrub


Tamarisk


Streambed


Streambed



# MSHCP Jurisdictional Delineation

MENIFEE TTM 36911

# APPENDIX C

## DATA SHEETS



# WETLAND DETERMINATION DATA FORM-Arid West Region

Project/Site :TM 36911		City/County: Menifee/Riverside	Sampling Date: 5-15-19
Applicant / Owner : Private		State:CA	Sampling Point: Unnamed Drainage 2
Investigators: Teresa Gonzales and Paul Gonzales		Section, Township, Range: Romoland quadrangle Township 5 South, Range 3 West, Section 20	
Landform (hilltop,terrace.etc.) terrace		Local relief (concave, convex, none): Concave	Slope (%): 4%
Subregion (LRR): LRR D		Lat: 33.717154 N	Long: 117° 214912W Datum:
Soil Map Unit Name: Monserate-Arlington-Exeter association		NWI classification: 34.134.28.1.163.5280, 34.134.28.1.163.6531 Riverine Lower intermittent. Subclass riverbed or streambed sand, intermittently-flooded regime, freshwater, Valley streams, Asteracea (Lupinus) and Festuca arundinacea	
Are climatic/hydrologic conditions on the site typical for this time of year? Yes: √		No: If no, explain in Remarks.	
Are Vegetation, Soil, or Hydrology significantly disturbed?		Are "Normal Circumstances" present?	Yes: √ No:
Are Vegetation, Soil, or Hydrology naturally problematic?		(If needed, explain any answers in Remarks)	

## SUMMARY OF FINDINGS-(Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No √	Is the Sampled Area within a Wetland? Yes No √
Hydric Soil Present?	Yes√	No	
Wetland Hydrology Present?	Yes√	No	
Remarks:			

## VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Species	Dominance Test worksheet:
1.		√	UPL	Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
2.				Number of Dominant Species Across All Strata: 0 (B)
3.				Percent of Dominant Species That Are OBL,FACW, or FAC: 0% (A/B)
4.				

Total Cover:

Sampling/Shrub Stratum				Prevalence Index worksheet:
1. <i>Phacelia cicutaria</i>	5		NI	Total % Cover of: Multiply by:
2. <i>Artemisia californica</i>	10		NI	OBL species X1=
3. <i>Salvia apiana</i>	3		NI	FACW species 0 X2=
4. <i>Cylindropuntia californica</i>	2		NI	FAC species 0 X3=
5.				FACU species 0 X4=
6.				UPL species 0 X5=0
7.				Column Totals: 0 (A) 0 (B)
8.				Prevalence Index=B/A= 0

Total Cover: 20%

Herb Stratum				Hydrophytic Vegetation Indicators:
1. <i>Festuca arundinacea</i>	3		NI	Dominance Test is >50%
2. <i>Avena fatua</i>	2		NI	Prevalence Index is <3.0 <sup>1</sup>
3. <i>Plagiobothrys canescens</i>	3		NI	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
4. <i>Lupinus bicolor</i>	2		NI	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.

Total Cover: 10%

Woody Vine Stratum				Hydrophytic Vegetation Present:
				Yes No√

Total Cover:

%Bare Ground in Herb Stratum: 70%	% Cover of Biotic Crust	Hydrophytic Vegetation Present:
		Yes No√

Remarks: In Drainage channel non-indicator species

## Streambed Delineation Report

Page 1

# SOIL

Sampling Point: Unnamed Drainage-2

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color(moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
22"	10 YR 6/3						Sandy loam	sand

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils<sup>3</sup>:

	Histosol (A1)		Sandy Redox (S5)		1 cm Muck (A9) (LRR C)
	Histic Epipedon (A2)	√	Stripped Matrix (S6)		2 cm Muck (A10) (LRR B)
	Black Histic (A3)	√	Loamy Mucky Mineral (F1)		Reduced Vertic (F18)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F 2)		Red Parent Material (TF 2)
	Stratified Layers (A5) (LRR C)		Depleted Matrix (F3)		Other (Explain in Remarks)
	1 cm Muck (A9) (LRR D)		Redox Dark Surface (F6)		
	Depleted Below Dark Surface (A 11)		Depleted Dark Surface (F7)		
	Thick Dark Surface (A 12)		Redox Depressions (F8)		
	Sandy Mucky Mineral (S1)		Vernal Pools (F9)		
	Sandy Gleyed Matrix (S4)				<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (If present):

Type:	Hydric Soil Present?	Yes	No
Depth (inches):	Fluvial soils	√	

Remarks: Drainage soils with redox features

## HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

	Surface Water (A1)		Salt Crust (B11)	√	Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)	√	Sediment Deposits (B2) (Riverine)
	Saturation(A3)		Aquatic Invertebrates (B13)	√	Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulfide Odor (C1)	√	Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Thin Muck Surface (C7)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Plowed Soils (C6)		Crayfish Burrows (C8)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C90)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No√		Depth (inches):		Wetland Hydrology Present:
Water Table Present?	Yes		No√		Depth (inches):		Yes No√
Saturation Present? (includes capillary fringe)	Yes		No√		Depth (inches):		

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

Riverside County Hydrology Manual  
Santa Ana River Rain Gage  
2019 Aerial Photos

Remarks: waters of US –Unnamed Drainage 2



## Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** TM 36911

**Date:** 3-15-19

**Project Number:**

**Town:** Menifee **State:** CA

**Stream:** Unnamed Drainage 2

**Investigator(s):** Teresa Gonzales and Paul Gonzales

Y x/ N ☐ Do normal circumstances exist on the site?

**Location Details:** Unnamed Drainage 1 with surface runoff and storm runoff

Y ☐/ N x Is the site significantly disturbed?

**Projection:**

**Datum:**

**Coordinates:** 33.727254/-117.214912

**Potential anthropogenic influences on the channel system:** Unnamed Drainage 2 receives surface flow from storm events. Upstream areas have been influenced by anthropogenic activities (off-roading).

**Brief site description:** Unnamed Drainage 2 begins on the road on the western edge of the project and traverses the project site from the west to east before joining equal branch and flowing together to existing culvert under Village Boulevard. There are signs of hydrology (i.e. Drift lines, sediment deposits, and shelving) throughout the length of both forks of Unnamed Drainage 2 on the project site.

### Checklist of resources (if available):

x Aerial photography

Dates: 2019

x Topographic maps

☐ Geologic maps

x Vegetation maps

x Soils maps

x Rainfall/precipitation maps

Existing delineation(s) for site

x Global positioning system (GPS)

x Other studies

X Stream gage data

Gage number: 11066460

Period of record:

X History of recent effective discharges

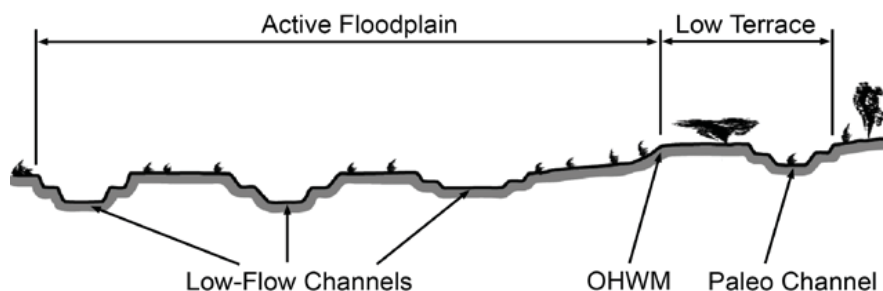
☐ History of recent effective discharges

☐ Results of flood frequency analysis

☐ Most recent shift-adjusted rating

☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

### Hydrogeomorphic Floodplain Units



### Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

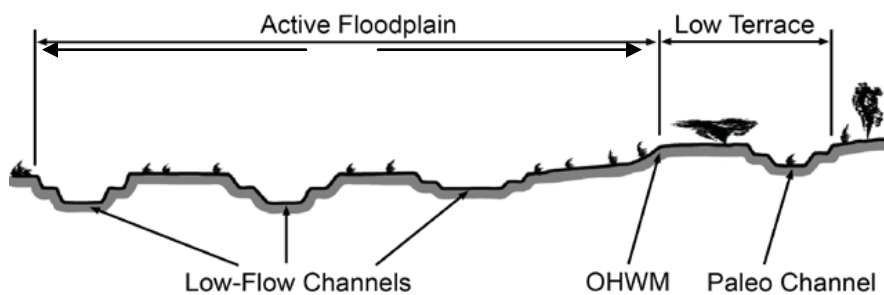
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
  - a) Record the floodplain unit and GPS position.
  - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
  - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

x Mapping on aerial photograph

x GPS

☐ Digitized on computer

☐ Other:

**Cross section drawing:****Hydrogeomorphic Floodplain Units****OHWM****GPS point:** gps**Indicators:**

xChange in average sediment texture

xChange in vegetation species

xChange in vegetation cover

x Break in bank slope

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments:****Floodplain unit:** ☐ Low-Flow Channel☒ Active Floodplain☐ Low Terrace**GPS point:****Characteristics of the floodplain unit:**Average sediment texture: sand/siltTotal veg cover: 30% Tree: 0% Shrub: 10 % Herb: 20%

Community successional stage:

☐ NA☒ Early (herbaceous & seedlings)☐ Mid (herbaceous, shrubs, saplings)☐ Late (herbaceous, shrubs, mature trees)**Indicators:**☐ Mudcracks☐ Ripples

x Drift and/or debris

x Presence of bed and bank

x Benches

xSoil development

xSurface relief

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments: Waters of US**



## WETLAND DETERMINATION DATA FORM-Arid West Region

Project/Site :TM 36911		City/County: Menifee/Riverside	Sampling Date: 5-15-19
Applicant / Owner : Private		State:CA	Sampling Point: Unnamed Drainage 2-2
Investigators: Teresa Gonzales and Paul Gonzales		Section, Township, Range: Romoland quadrangle Township 5 South, Range 3 West, Section 20	
Landform (hilltop,terrace.etc.) terrace		Local relief (concave, convex, none): Concave	Slope (%): 4%
Subregion (LRR): LRR D		Lat: 33.717154 N	Long: 117° 214912W Datum:
Soil Map Unit Name: Monserate-Arlington-Exeter association		NWI classification: 34.134.28.1.163.5280, 34.134.28.1.163.6531 Riverine Lower intermittent. Subclass riverbed or streambed sand, intermittently-flooded regime, freshwater, Valley streams, Asteracea (Lupinus) and <i>Festuca arundinacea</i>	
Are climatic/hydrologic conditions on the site typical for this time of year?		Yes: <input checked="" type="checkbox"/>	No: If no, explain in Remarks.
Are Vegetation, Soil, or Hydrology significantly disturbed?		Are "Normal Circumstances" present?	Yes: <input checked="" type="checkbox"/> No:
Are Vegetation, Soil, or Hydrology naturally problematic?		(If needed, explain any answers in Remarks)	

## SUMMARY OF FINDINGS-(Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No	Yes No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No	
Remarks:			

## VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Species	Dominance Test worksheet:
1.		<input checked="" type="checkbox"/>	UPL	Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
2.				Number of Dominant Species Across All Strata: 0 (B)
3.				Percent of Dominant Species That Are OBL,FACW, or FAC: 0% (A/B)
4.				
Total Cover:				

Sampling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Species	Prevalence Index worksheet:
1. <i>Phacelia cicutaria</i>	10		NI	Total % Cover of: Multiply by:
2. <i>Artemisia californica</i>	5		NI	OBL species X1=
3. <i>Salvia apiana</i>	5		NI	FACW species 0 X2=
4.			NI	FAC species 0 X3=
5.				FACU species 0 X4=
6.				UPL species 0 X5=0
7.				Column Totals: 0 (A) 0 (B)
8.				Prevalence Index=B/A= 0
Total Cover: 20%				

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Species	Hydrophytic Vegetation Indicators:
1. <i>Festuca arundinacea</i>	3		NI	Dominance Test is >50%
2. <i>Avena fatua</i>	2		NI	Prevalence Index is <3.0 <sup>1</sup>
3. <i>Plagiobothrys canescens</i>	3		NI	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
4. <i>Lupinus bicolor</i>	2		NI	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
Total Cover:10%				

Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Species	Hydrophytic Vegetation Present:
				Yes No <input checked="" type="checkbox"/>
Total Cover:				
%Bare Ground in Herb Stratum: 70%	% Cover of Biotic Crust			Hydrophytic Vegetation Present:
				Yes No <input checked="" type="checkbox"/>

Remarks: In Drainage channel non-indicator species

# SOIL

Sampling Point: Unnamed Drairage-2-2

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color(moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
22"	10 YR 6/3						Sandy loam	sand

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils<sup>3</sup>:

	Histosol (A1)		Sandy Redox (S5)		1 cm Muck (A9) (LRR C)
	Histic Epipedon (A2)	√	Stripped Matrix (S6)		2 cm Muck (A10) (LRR B)
	Black Histic (A3)	√	Loamy Mucky Mineral (F1)		Reduced Vertic (F18)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F 2)		Red Parent Material (TF 2)
	Stratified Layers (A5) (LRR C)		Depleted Matrix (F3)		Other (Explain in Remarks)
	1 cm Muck (A9) (LRR D)		Redox Dark Surface (F6)		
	Depleted Below Dark Surface (A 11)		Depleted Dark Surface (F7)		
	Thick Dark Surface (A 12)		Redox Depressions (F8)		
	Sandy Mucky Mineral (S1)		Vernal Pools (F9)		
	Sandy Gleyed Matrix (S4)				<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (If present):

Type:	Hydric Soil Present?	Yes	No
Depth (inches):	Fluvial soils	√	

Remarks: Drainage soils with redox features

## HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

	Surface Water (A1)		Salt Crust (B11)	√	Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)	√	Sediment Deposits (B2) (Riverine)
	Saturation(A3)		Aquatic Invertebrates (B13)	√	Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulfide Odor (C1)	√	Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Thin Muck Surface (C7)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Plowed Soils (C6)		Crayfish Burrows (C8)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C90)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No√		Depth (inches):		Wetland Hydrology Present:
Water Table Present?	Yes		No√		Depth (inches):		Yes No√
Saturation Present? (includes capillary fringe)	Yes		No√		Depth (inches):		

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

Riverside County Hydrology Manual  
Santa Ana River Rain Gage  
2019 Aerial Photos

Remarks: waters of US –Unnamed Drainage 2



## Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** TM 36911

**Date:** 3-15-19

**Project Number:**

**Town:** Menifee **State:** CA

**Stream:** Unnamed Drainage 2 -2

**Investigator(s):** Teresa Gonzales and Paul Gonzales

Y x/ N ☐ Do normal circumstances exist on the site?

**Location Details:** Unnamed Drainage 1 with surface runoff and storm runoff

Y ☐/ N x Is the site significantly disturbed?

**Projection:**

**Datum:**

**Coordinates:** 33.727254/-117.214912

**Potential anthropogenic influences on the channel system:** Unnamed Drainage 2 receives surface flow from storm events. Upstream areas have been influenced by anthropogenic activities (off-roading).

**Brief site description:** Unnamed Drainage 2 begins on the road on the western edge of the project and traverses the project site from the west to east before joining equal branch and flowing together to existing culvert under Village Boulevard. There are signs of hydrology (i.e. Drift lines, sediment deposits, and shelving) throughout the length of both forks of Unnamed Drainage 2 on the project site.

### Checklist of resources (if available):

x Aerial photography

Dates: 2019

x Topographic maps

☐ Geologic maps

x Vegetation maps

x Soils maps

x Rainfall/precipitation maps

Existing delineation(s) for site

x Global positioning system (GPS)

x Other studies

X Stream gage data

Gage number: 11066460

Period of record:

X History of recent effective discharges

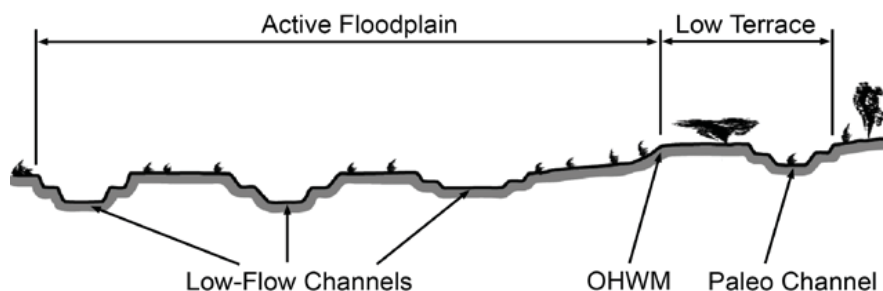
☐ History of recent effective discharges

☐ Results of flood frequency analysis

☐ Most recent shift-adjusted rating

☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

### Hydrogeomorphic Floodplain Units



### Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

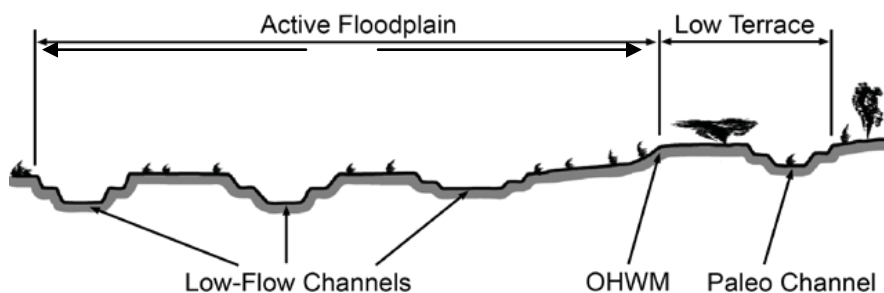
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
  - a) Record the floodplain unit and GPS position.
  - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
  - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

x Mapping on aerial photograph

x GPS

☐ Digitized on computer

☐ Other:

**Cross section drawing:****Hydrogeomorphic Floodplain Units****OHWM****GPS point:** gps**Indicators:**

xChange in average sediment texture

xChange in vegetation species

xChange in vegetation cover

x Break in bank slope

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments:****Floodplain unit:** ☐ Low-Flow Channel☒ Active Floodplain☐ Low Terrace**GPS point:****Characteristics of the floodplain unit:**Average sediment texture: sand/siltTotal veg cover: 30% Tree: 0% Shrub: 10 % Herb: 20%

Community successional stage:

☐ NA☒ Early (herbaceous & seedlings)☐ Mid (herbaceous, shrubs, saplings)☐ Late (herbaceous, shrubs, mature trees)**Indicators:**☐ Mudcracks☐ Ripples

x Drift and/or debris

x Presence of bed and bank

x Benches

x Soil development

x Surface relief

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments: Waters of US**



# WETLAND DETERMINATION DATA FORM-Arid West Region

Project/Site :TM 36911		City/County: Menifee/Riverside	Sampling Date: 5-15-19
Applicant / Owner : Private		State:CA	Sampling Point: Unnamed Drainage 2-3 confluence
Investigators: Teresa Gonzales and Paul Gonzales		Section, Township, Range: Romoland quadrangle Township 5 South, Range 3 West, Section 20	
Landform (hilltop,terrace.etc.) terrace		Local relief (concave, convex, none): Concave	Slope (%): 4%
Subregion (LRR): LRR D		Lat: 33.717154 N	Long: 117° 214912W Datum:
Soil Map Unit Name: Monserate-Arlington-Exeter association		NWI classification: 34.134.28.1.163.5280, 34.134.28.1.163.6531 Riverine Lower intermittent. Subclass riverbed or streambed sand, intermittently-flooded regime, freshwater, Valley streams, Asteracea (Lupinus) and <i>Festuca arundinacea</i>	
Are climatic/hydrologic conditions on the site typical for this time of year?		Yes: <input checked="" type="checkbox"/>	No: <input type="checkbox"/> If no, explain in Remarks.
Are Vegetation, Soil, or Hydrology significantly disturbed?		Are "Normal Circumstances" present?	Yes: <input checked="" type="checkbox"/> No: <input type="checkbox"/>
Are Vegetation, Soil, or Hydrology naturally problematic?		(If needed, explain any answers in Remarks)	

## SUMMARY OF FINDINGS-(Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

## VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Species	Dominance Test worksheet:
1.		<input checked="" type="checkbox"/>	UPL	Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
2.				Number of Dominant Species Across All Strata: 0 (B)
3.				Percent of Dominant Species That Are OBL,FACW, or FAC: 0% (A/B)
4.				
Total Cover:				

Sampling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Species	Prevalence Index worksheet:
1.				Total % Cover of: <input type="checkbox"/> Multiply by:
2.				OBL species X1=
3.				FACW species 0 X2=
4.				FAC species 0 X3=
5.				FACU species 0 X4=
6.				UPL species 0 X5=0
7.				Column Totals: 0 (A) 0 (B)
8.				Prevalence Index=B/A= 0
Total Cover:				

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Species	Hydrophytic Vegetation Indicators:
1. <i>Festuca arundinacea</i>	25		NI	Dominance Test is >50%
2. <i>Avena fatua</i>	25		NI	Prevalence Index is <3.0 <sup>1</sup>
3. <i>Plagiobothrys canescens</i>	25		NI	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
4. <i>Lupinus bicolor</i>	25		NI	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
Total Cover:100%				

Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Species	Hydrophytic Vegetation Present:
				Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Total Cover:				

%Bare Ground in Herb Stratum: %	% Cover of Biotic Crust	Hydrophytic Vegetation Present:
		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Remarks: In Drainage channel non-indicator species

# SOIL

Sampling Point: Unnamed Drainage-2-3 confluence

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color(moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
22"	10 YR 6/3						Sandy loam	sand

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils<sup>3</sup>:

	Histosol (A1)		Sandy Redox (S5)		1 cm Muck (A9) (LRR C)
	Histic Epipedon (A2)	√	Stripped Matrix (S6)		2 cm Muck (A10) (LRR B)
	Black Histic (A3)	√	Loamy Mucky Mineral (F1)		Reduced Vertic (F18)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F 2)		Red Parent Material (TF 2)
	Stratified Layers (A5) (LRR C)		Depleted Matrix (F3)		Other (Explain in Remarks)
	1 cm Muck (A9) (LRR D)		Redox Dark Surface (F6)		
	Depleted Below Dark Surface (A 11)		Depleted Dark Surface (F7)		
	Thick Dark Surface (A 12)		Redox Depressions (F8)		
	Sandy Mucky Mineral (S1)		Vernal Pools (F9)		
	Sandy Gleyed Matrix (S4)				<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (If present):

Type:	Hydric Soil Present? Yes No
Depth (inches):	Fluvial soils √

Remarks: Drainage soils with redox features

## HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

	Surface Water (A1)		Salt Crust (B11)	√	Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)	√	Sediment Deposits (B2) (Riverine)
	Saturation(A3)		Aquatic Invertebrates (B13)	√	Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulfide Odor (C1)	√	Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Thin Muck Surface (C7)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Plowed Soils (C6)		Crayfish Burrows (C8)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C90)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No√		Depth (inches):		Wetland Hydrology Present:
Water Table Present?	Yes		No√		Depth (inches):		Yes No√
Saturation Present? (includes capillary fringe)	Yes		No√		Depth (inches):		

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

Riverside County Hydrology Manual  
Santa Ana River Rain Gage  
2019 Aerial Photos

Remarks: waters of US –Unnamed Drainage 2

## Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** TM 36911

**Date:** 3-15-19

**Project Number:**

**Town:** Menifee **State:** CA

**Stream:** Unnamed Drainage 2 -3 confluence

**Investigator(s):** Teresa Gonzales and Paul Gonzales

Y x/ N ☐ Do normal circumstances exist on the site?

**Location Details:** Unnamed Drainage 1 with surface runoff and storm runoff

Y ☐/ N x Is the site significantly disturbed?

**Projection:**

**Datum:**

**Coordinates:** 33.727254/-117.214912

**Potential anthropogenic influences on the channel system:** Unnamed Drainage 2 receives surface flow from storm events. Upstream areas have been influenced by anthropogenic activities (off-roading).

**Brief site description:** Unnamed Drainage 2 begins on the road on the western edge of the project and traverses the project site from the west to east before joining equal branch and flowing together to existing culvert under Village Boulevard. There are signs of hydrology (i.e. Drift lines, sediment deposits, and shelving) throughout the length of both forks of Unnamed Drainage 2 on the project site.

### Checklist of resources (if available):

x Aerial photography

Dates: 2019

x Topographic maps

☐ Geologic maps

x Vegetation maps

x Soils maps

x Rainfall/precipitation maps

Existing delineation(s) for site

x Global positioning system (GPS)

x Other studies

X Stream gage data

Gage number: 11066460

Period of record:

X History of recent effective discharges

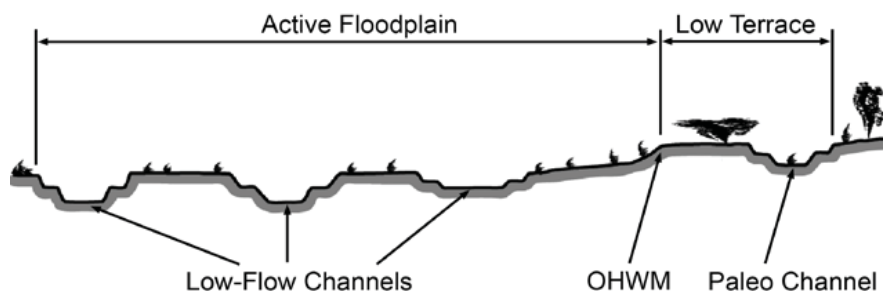
☐ History of recent effective discharges

☐ Results of flood frequency analysis

☐ Most recent shift-adjusted rating

☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

### Hydrogeomorphic Floodplain Units



### Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
  - a) Record the floodplain unit and GPS position.
  - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
  - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

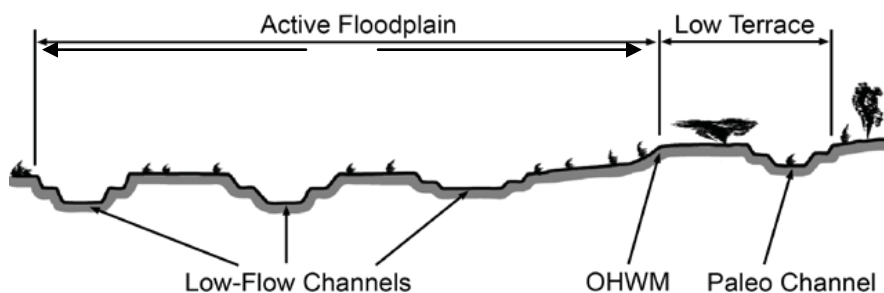
x Mapping on aerial photograph

x GPS

☐ Digitized on computer

☐ Other:



**Cross section drawing:****Hydrogeomorphic Floodplain Units****OHWM****GPS point:** gps**Indicators:**

xChange in average sediment texture

xChange in vegetation species

xChange in vegetation cover

x Break in bank slope

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments:****Floodplain unit:** ☐ Low-Flow Channel☒ Active Floodplain☐ Low Terrace**GPS point:****Characteristics of the floodplain unit:**Average sediment texture: sand/siltTotal veg cover: 100% Tree: 0% Shrub: 0 % Herb: 100%

Community successional stage:

☐ NA☒ Early (herbaceous & seedlings)☐ Mid (herbaceous, shrubs, saplings)☐ Late (herbaceous, shrubs, mature trees)**Indicators:**☐ Mudcracks☐ Ripples☒ Drift and/or debris☒ Presence of bed and bank☒ Benches☒ Soil development☒ Surface relief

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments: Waters of US**

## WETLAND DETERMINATION DATA FORM-Arid West Region

Project/Site :TM 36911		City/County: Menifee/Riverside	Sampling Date: 5-15-19
Applicant / Owner : Private		State:CA	Sampling Point: Unnamed Drainage 2-outlet
Investigators: Teresa Gonzales and Paul Gonzales		Section, Township, Range: Romoland quadrangle Township 5 South, Range 3 West, Section 20	
Landform (hilltop,terrace.etc.) terrace		Local relief (concave, convex, none): Concave	Slope (%): 4%
Subregion (LRR): LRR D		Lat: 33.717154 N	Long: 117° 214912W Datum:
Soil Map Unit Name: Monserate-Arlington-Exeter association		NWI classification: 34.134.28.1.163.5280, 34.134.28.1.163.6531 Riverine Lower intermittent. Subclass riverbed or streambed sand, intermittently-flooded regime, freshwater, Valley streams, Asteracea (Lupinus) and <i>Festuca arundinacea</i>	
Are climatic/hydrologic conditions on the site typical for this time of year?		Yes: √	No: If no, explain in Remarks.
Are Vegetation, Soil, or Hydrology significantly disturbed?		Are "Normal Circumstances" present?	Yes: √ No:
Are Vegetation, Soil, or Hydrology naturally problematic?		(If needed, explain any answers in Remarks)	

## SUMMARY OF FINDINGS-(Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No √	Is the Sampled Area within a Wetland?
Hydric Soil Present?	Yes√	No	Yes No √
Wetland Hydrology Present?	Yes√	No	
Remarks:			

## VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Species	Dominance Test worksheet:
1.		√	UPL	Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
2.				Number of Dominant Species Across All Strata: 0 (B)
3.				Percent of Dominant Species That Are OBL,FACW, or FAC: 0% (A/B)
4.				
Total Cover:				

Sampling/Shrub Stratum				Prevalence Index worksheet:
1.				Total % Cover of: Multiply by:
2.				OBL species X1=
3. <i>Salvia apiana</i>				FACW species 0 X2=
4.				FAC species 0 X3=
5.				FACU species 0 X4=
6.				UPL species 0 X5=0
7.				Column Totals: 0 (A) 0 (B)
8.				Prevalence Index=B/A= 0
Total Cover: %				

Herb Stratum				Hydrophytic Vegetation Indicators:
1. <i>Festuca arundinacea</i>	33		NI	Dominance Test is >50%
2. <i>Avena fatua</i>	33		NI	Prevalence Index is <3.0 <sup>1</sup>
3. <i>Plagiobothrys canescens</i>	33		NI	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
4. <i>Lupinus bicolor</i>	1		NI	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
Total Cover:100%				

Woody Vine Stratum				Hydrophytic Vegetation Present:
				Yes No√
Total Cover:				

%Bare Ground in Herb Stratum: %	% Cover of Biotic Crust	Hydrophytic Vegetation Present:
		Yes No√

Remarks: In Drainage channel non-indicator species

# SOIL

Sampling Point: Unnamed Drainage-2-outlet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color(moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
22"	10 YR 6/3						Sandy loam	sand

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils<sup>3</sup>:

	Histosol (A1)		Sandy Redox (S5)		1 cm Muck (A9) (LRR C)
	Histic Epipedon (A2)	√	Stripped Matrix (S6)		2 cm Muck (A10) (LRR B)
	Black Histic (A3)	√	Loamy Mucky Mineral (F1)		Reduced Vertic (F18)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F 2)		Red Parent Material (TF 2)
	Stratified Layers (A5) (LRR C)		Depleted Matrix (F3)		Other (Explain in Remarks)
	1 cm Muck (A9) (LRR D)		Redox Dark Surface (F6)		
	Depleted Below Dark Surface (A 11)		Depleted Dark Surface (F7)		
	Thick Dark Surface (A 12)		Redox Depressions (F8)		
	Sandy Mucky Mineral (S1)		Vernal Pools (F9)		
	Sandy Gleyed Matrix (S4)				<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (If present):

Type:	Hydric Soil Present?	Yes	No
Depth (inches):	Fluvial soils	√	

Remarks: Drainage soils with redox features

## HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

	Surface Water (A1)		Salt Crust (B11)	√	Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)	√	Sediment Deposits (B2) (Riverine)
	Saturation(A3)		Aquatic Invertebrates (B13)	√	Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulfide Odor (C1)	√	Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Thin Muck Surface (C7)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Plowed Soils (C6)		Crayfish Burrows (C8)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C90)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No√		Depth (inches):		Wetland Hydrology Present:
Water Table Present?	Yes		No√		Depth (inches):		Yes No√
Saturation Present? (includes capillary fringe)	Yes		No√		Depth (inches):		

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

Riverside County Hydrology Manual  
Santa Ana River Rain Gage  
2019 Aerial Photos

Remarks: waters of US –Unnamed Drainage 2



## Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** TM 36911

**Date:** 3-15-19

**Project Number:**

**Town:** Menifee **State:** CA

**Stream:** Unnamed Drainage 2 -outlet

**Investigator(s):** Teresa Gonzales and Paul Gonzales

Y x/ N ☐ Do normal circumstances exist on the site?

**Location Details:** Unnamed Drainage 1with surface runoff and storm runoff

Y ☐/ N x Is the site significantly disturbed?

**Projection:**

**Datum:**

**Coordinates:** 33.727254/-117.214912

**Potential anthropogenic influences on the channel system:** Unnamed Drainage 2 receives surface flow from storm events. Upstream areas have been influenced by anthropogenic activities (off-roading).

**Brief site description:** Unnamed Drainage 2 begins on the road on the western edge of the project and traverses the project site from the west to east before joining equal branch and flowing together to existing culvert under Village Boulevard. There are signs of hydrology (i.e. Drift lines, sediment deposits, and shelving) throughout the length of both forks of Unnamed Drainage 2 on the project site.

### Checklist of resources (if available):

x Aerial photography

Dates: 2019

xTopographic maps

☐Geologic maps

x Vegetation maps

x Soils maps

x Rainfall/precipitation maps

Existing delineation(s) for site

xGlobal positioning system (GPS)

xOther studies

XStream gage data

Gage number: 11066460

Period of record:

XHistory of recent effective discharges

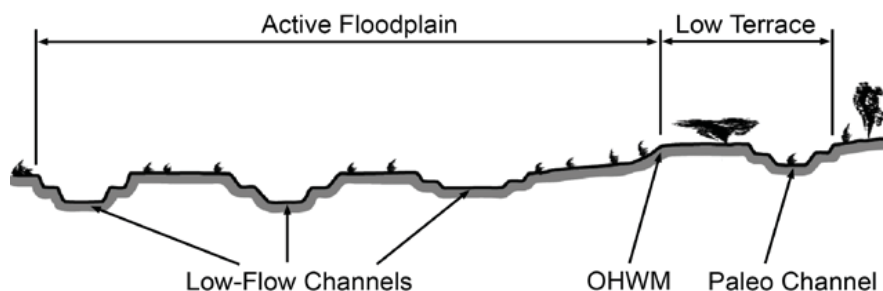
☐History of recent effective discharges

☐Results of flood frequency analysis

☐Most recent shift-adjusted rating

☐Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

### Hydrogeomorphic Floodplain Units



### Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

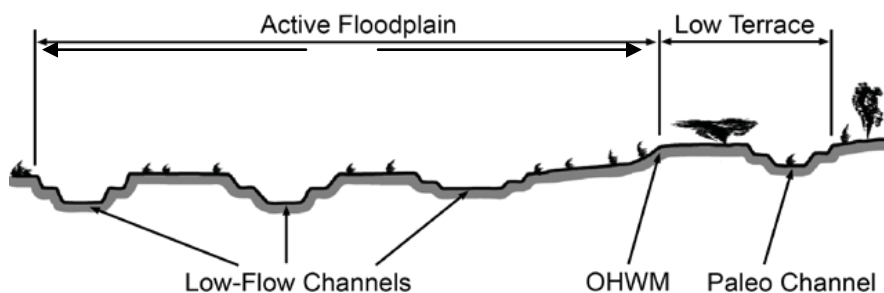
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
  - a) Record the floodplain unit and GPS position.
  - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
  - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

x Mapping on aerial photograph

xGPS

☐Digitized on computer

☐Other:

**Cross section drawing:****Hydrogeomorphic Floodplain Units****OHWM****GPS point:** gps**Indicators:**

xChange in average sediment texture

xChange in vegetation species

xChange in vegetation cover

x Break in bank slope

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments:****Floodplain unit:** ☐ Low-Flow Channel☒ Active Floodplain☐ Low Terrace**GPS point:****Characteristics of the floodplain unit:**Average sediment texture: sand/siltTotal veg cover: 100% Tree: 0% Shrub: 0 % Herb: 100%

Community successional stage:

☐ NA☒ Early (herbaceous & seedlings)☐ Mid (herbaceous, shrubs, saplings)☐ Late (herbaceous, shrubs, mature trees)**Indicators:**☐ Mudcracks☐ Ripples

x Drift and/or debris

x Presence of bed and bank

x Benches

x Soil development

x Surface relief

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments: Waters of US**

## WETLAND DETERMINATION DATA FORM-Arid West Region

Project/Site :TM 36911		City/County: Menifee/Riverside	Sampling Date: 5-15-19
Applicant / Owner : Private		State:CA	Sampling Point: Unnamed Drainage 1-check dam W
Investigators: Teresa Gonzales and Paul Gonzales		Section, Township, Range: Romoland quadrangle Township 5 South, Range 3 West, Section 20	
Landform (hilltop,terrace.etc.) terrace		Local relief (concave, convex, none): Concave	Slope (%): 4%
Subregion (LRR): LRR D		Lat: 33.717154 N	Long: 117° 214912W Datum:
Soil Map Unit Name: Monserate-Arlington-Exeter association		NWI classification: 34.134.28.1.163.5781, Riverine Lower intermittent. Subclass riverbed or streambed sand, intermittently-flooded regime, freshwater, Valley streams, <i>Tamarix ramosissima</i>	
Are climatic/hydrologic conditions on the site typical for this time of year? Yes: <input checked="" type="checkbox"/>		No:	If no, explain in Remarks.
Are Vegetation, Soil, or Hydrology significantly disturbed? <input checked="" type="checkbox"/>		Are "Normal Circumstances" present? Yes:	No: <input checked="" type="checkbox"/>
Are Vegetation, Soil, or Hydrology naturally problematic? <input checked="" type="checkbox"/>		(If needed, explain any answers in Remarks) Drainage created during construction of lots west of site- check-dams lined with black plastic to create pools	

## SUMMARY OF FINDINGS-(Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes	No <input checked="" type="checkbox"/>	
Remarks:			

## VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Species	<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: 1 (A) Number of Dominant Species Across All Strata: 0 (B) Percent of Dominant Species That Are OBL,FACW, or FAC: 10% (A/B)
1. <i>Tamarix ramosissima</i>	10	<input checked="" type="checkbox"/>	FAC	
2.				
3.				
4.				

Total Cover: 10%

Sampling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiply by:
2.				OBL species	X1=
3.				FACW species 0	X2=
4.				FAC species 10	X3=30
5.				FACU species 0	X4=
6.				UPL species 0	X5=0
7.				Column Totals: 10 (A)	30 (B)
8.				Prevalence Index=B/A=	3

Total Cover:

Herb Stratum				<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is <3.0 <sup>1</sup> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
1.				
2.				
3.				
4.				

Total Cover: 10%

Woody Vine Stratum				Hydrophytic Vegetation Present:
				Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>

Total Cover:

% Bare Ground in Herb Stratum: % 90	% Cover of Biotic Crust	Hydrophytic Vegetation Present:
		Yes <input checked="" type="checkbox"/> No

Remarks: 90% standing water



## SOIL

Sampling Point: Unnamed Drainage-1 checkdam W

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color(moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
22"	10 YR 5/3						Sandy loam	sand

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils<sup>3</sup>:

	Histosol (A1)		Sandy Redox (S5)		1 cm Muck (A9) (LRR C)
	Histic Epipedon (A2)	✓	Stripped Matrix (S6)		2 cm Muck (A10) (LRR B)
	Black Histic (A3)	✓	Loamy Mucky Mineral (F1)		Reduced Vertic (F18)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F 2)		Red Parent Material (TF 2)
	Stratified Layers (A5) (LRR C)		Depleted Matrix (F3)		Other (Explain in Remarks)
	1 cm Muck (A9) (LRR D)		Redox Dark Surface (F6)		
	Depleted Below Dark Surface (A 11)		Depleted Dark Surface (F7)		
	Thick Dark Surface (A 12)		Redox Depressions (F8)		
	Sandy Mucky Mineral (S1)		Vernal Pools (F9)		
	Sandy Gleyed Matrix (S4)				<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (If present):

Type:	Hydric Soil Present?	Yes	No✓
Depth (inches):	Fluvial soils		

Remarks: Created check dam

## HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

	Surface Water (A1)		Salt Crust (B11)	✓	Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)	✓	Sediment Deposits (B2) (Riverine)
	Saturation(A3)		Aquatic Invertebrates (B13)	✓	Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulfide Odor (C1)	✓	Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Thin Muck Surface (C7)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Plowed Soils (C6)		Crayfish Burrows (C8)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C90)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes✓		No		Depth (inches):	8"	Wetland Hydrology Present:
Water Table Present?	Yes✓		No		Depth (inches):		Yes ✓ No
Saturation Present? (includes capillary fringe)	Yes✓		No		Depth (inches):		

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

Riverside County Hydrology Manual  
Santa Ana River Rain Gage  
2019 Aerial Photos

Remarks: waters of US –Unnamed Drainage 1- check-dam W

## Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** TM 36911

**Date:** 3-15-19

**Project Number:**

**Town:** Menifee **State:** CA

**Stream:** Unnamed Drainage 1 Check-dam W

**Investigator(s):** Teresa Gonzales and Paul Gonzales

Y x/ N ☐ Do normal circumstances exist on the site?

**Location Details:** Unnamed Drainage 2 with surface runoff and storm runoff

Y ☐/ N x Is the site significantly disturbed?

**Projection:**

**Datum:**

**Coordinates:** 33.721344/-117.214749

**Potential anthropogenic influences on the channel system:** Unnamed Drainage 1 receives surface flow from storm events. Upstream areas have been influenced by anthropogenic activities -abandoned construction site and off road activities

**Brief site description:** Unnamed Drainage 1 begins on the edge of dirt road on the western edge of the project and traverses the project site from the west to east with 2 check-dams on site to existing via sheet flow down Village Boulevard. There are signs of hydrology (i.e. Drift lines, sediment deposits, and shelving) throughout the length of Unnamed Drainage 1 on the project site.

### Checklist of resources (if available):

x Aerial photography

Dates: 2019

x Topographic maps

☐ Geologic maps

x Vegetation maps

x Soils maps

x Rainfall/precipitation maps

Existing delineation(s) for site

x Global positioning system (GPS)

x Other studies

X Stream gage data

Gage number: 11066460

Period of record:

X History of recent effective discharges

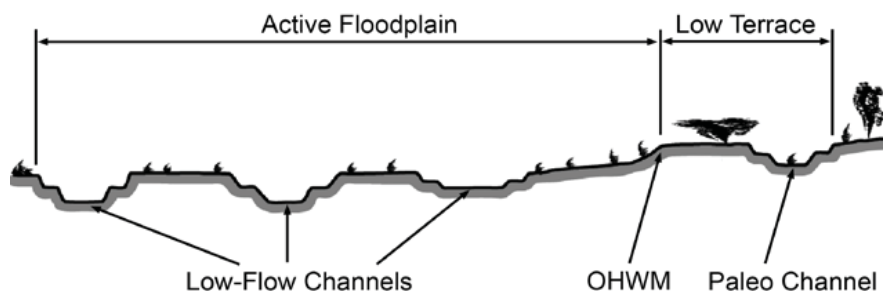
☐ History of recent effective discharges

☐ Results of flood frequency analysis

☐ Most recent shift-adjusted rating

☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

### Hydrogeomorphic Floodplain Units



### Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

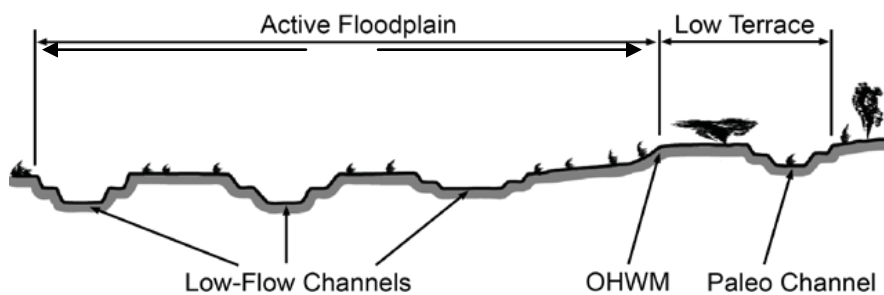
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
  - a) Record the floodplain unit and GPS position.
  - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
  - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

x Mapping on aerial photograph

x GPS

☐ Digitized on computer

☐ Other:

**Cross section drawing:****Hydrogeomorphic Floodplain Units****OHWM****GPS point:** gps**Indicators:**

xChange in average sediment texture

xChange in vegetation species

xChange in vegetation cover

x Break in bank slope

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments:****Floodplain unit:** ☐ Low-Flow Channel☒ Active Floodplain☐ Low Terrace**GPS point:****Characteristics of the floodplain unit:**Average sediment texture: sand/siltTotal veg cover: 10% Tree: 10% Shrub: \_\_\_\_\_ % Herb: \_\_\_\_\_ %

Community successional stage:

☐ NA☐ Early (herbaceous & seedlings)☒ Mid (herbaceous, shrubs, saplings)☐ Late (herbaceous, shrubs, mature trees)**Indicators:**☐ Mudcracks☐ Ripples

x Drift and/or debris

x Presence of bed and bank

x Benches

x Soil development

x Surface relief

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments: Waters of US**



# WETLAND DETERMINATION DATA FORM-Arid West Region

Project/Site :TM 36911		City/County: Menifee/Riverside	Sampling Date: 5-15-19
Applicant / Owner : Private		State:CA	Sampling Point: Unnamed Drainage 1-check dam W
Investigators: Teresa Gonzales and Paul Gonzales		Section, Township, Range: Romoland quadrangle Township 5 South, Range 3 West, Section 20	
Landform (hilltop,terrace.etc.) terrace		Local relief (concave, convex, none): Concave	Slope (%): 4%
Subregion (LRR): LRR D		Lat: 33.717154 N	Long: 117° 214912W Datum:
Soil Map Unit Name: Monserate-Arlington-Exeter association		NW1 classification: 34.134.28.1.163.5982, Riverine Lower intermittent. Subclass riverbed or streambed sand, intermittently-flooded regime, freshwater, Valley streams, <i>Populus fremontii</i>	
Are climatic/hydrologic conditions on the site typical for this time of year? Yes: <input checked="" type="checkbox"/>		No: If no, explain in Remarks.	
Are Vegetation, Soil, or Hydrology significantly disturbed? <input checked="" type="checkbox"/>		Are "Normal Circumstances" present? Yes: No: <input checked="" type="checkbox"/>	
Are Vegetation, Soil, or Hydrology naturally problematic? <input checked="" type="checkbox"/>		(If needed, explain any answers in Remarks) Drainage created during construction of lots west of site- check-dams lined with black plastic to create pools	

## SUMMARY OF FINDINGS-(Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No	Is the Sampled Area within a Wetland? Yes No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes	No <input checked="" type="checkbox"/>	
Remarks:			

## VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Species	Dominance Test worksheet:
1. <i>Populus fremontii</i>	10	<input checked="" type="checkbox"/>	FACW	Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
2. <i>Baccharis salicifolia</i>	10	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species Across All Strata: 2 (B)
3.				Percent of Dominant Species That Are OBL,FACW, or FAC: 100% (A/B)
4.				

Total Cover:20%

Sampling/Shrub Stratum				Prevalence Index worksheet:
1.				Total % Cover of:
2.				OBL species X1=
3.				FACW species 10 X2=20
4.				FAC species 10 X3=30
5.				FACU species 0 X4=
6.				UPL species 0 X5=0
7.				Column Totals:20 (A) 50 (B)
8.				Prevalence Index=B/A= 2.5

Total Cover:

Herb Stratum				Hydrophytic Vegetation Indicators:
1.				Dominance Test is >50%
2.				Prevalence Index is <3.0 <sup>1</sup>
3.				Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
4.				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.

Total Cover: %

Woody Vine Stratum				Hydrophytic Vegetation Present:
				Yes No <input checked="" type="checkbox"/>

Total Cover:

% Bare Ground in Herb Stratum: % 80	% Cover of Biotic Crust	Hydrophytic Vegetation Present:
		Yes <input checked="" type="checkbox"/> No

Remarks: 80% standing water

## SOIL

Sampling Point: Unnamed Drainage-1 checkdam E

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color(moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
22"	10 YR 5/3						Sandy loam	sand

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils<sup>3</sup>:

	Histosol (A1)		Sandy Redox (S5)		1 cm Muck (A9) (LRR C)
	Histic Epipedon (A2)	✓	Stripped Matrix (S6)		2 cm Muck (A10) (LRR B)
	Black Histic (A3)	✓	Loamy Mucky Mineral (F1)		Reduced Vertic (F18)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F 2)		Red Parent Material (TF 2)
	Stratified Layers (A5) (LRR C)		Depleted Matrix (F3)		Other (Explain in Remarks)
	1 cm Muck (A9) (LRR D)		Redox Dark Surface (F6)		
	Depleted Below Dark Surface (A 11)		Depleted Dark Surface (F7)		
	Thick Dark Surface (A 12)		Redox Depressions (F8)		
	Sandy Mucky Mineral (S1)		Vernal Pools (F9)		
	Sandy Gleyed Matrix (S4)				<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (If present):

Type:	Hydric Soil Present?	Yes	No✓
Depth (inches):	Fluvial soils		

Remarks: Created check dam

## HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

	Surface Water (A1)		Salt Crust (B11)	✓	Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)	✓	Sediment Deposits (B2) (Riverine)
	Saturation(A3)		Aquatic Invertebrates (B13)	✓	Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulfide Odor (C1)	✓	Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Thin Muck Surface (C7)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Plowed Soils (C6)		Crayfish Burrows (C8)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C90)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes✓		No		Depth (inches):	8"	Wetland Hydrology Present:
Water Table Present?	Yes✓		No		Depth (inches):		Yes ✓ No
Saturation Present? (includes capillary fringe)	Yes✓		No		Depth (inches):		

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

Riverside County Hydrology Manual  
Santa Ana River Rain Gage  
2019 Aerial Photos

Remarks: waters of US –Unnamed Drainage 1- check-dam W

## Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** TM 36911

**Date:** 3-15-19

**Project Number:**

**Town:** Menifee **State:** CA

**Stream:** Unnamed Drainage 1 Check-dam E

**Investigator(s):** Teresa Gonzales and Paul Gonzales

Y x/ N ☐ Do normal circumstances exist on the site?

**Location Details:** Unnamed Drainage 2 with surface runoff and storm runoff

Y ☐/ N x Is the site significantly disturbed?

**Projection:**

**Datum:**

**Coordinates:** 33.721344/-117.214749

**Potential anthropogenic influences on the channel system:** Unnamed Drainage 1 receives surface flow from storm events. Upstream areas have been influenced by anthropogenic activities -abandoned construction site and off road activities

**Brief site description:** Unnamed Drainage 1 begins on the edge of dirt road on the western edge of the project and traverses the project site from the west to east with 2 check-dams on site to existing via sheet flow down Village Boulevard. There are signs of hydrology (i.e. Drift lines, sediment deposits, and shelving) throughout the length of Unnamed Drainage 1 on the project site.

### Checklist of resources (if available):

x Aerial photography

Dates: 2019

xTopographic maps

☐Geologic maps

x Vegetation maps

x Soils maps

x Rainfall/precipitation maps

Existing delineation(s) for site

xGlobal positioning system (GPS)

xOther studies

XStream gage data

Gage number: 11066460

Period of record:

XHistory of recent effective discharges

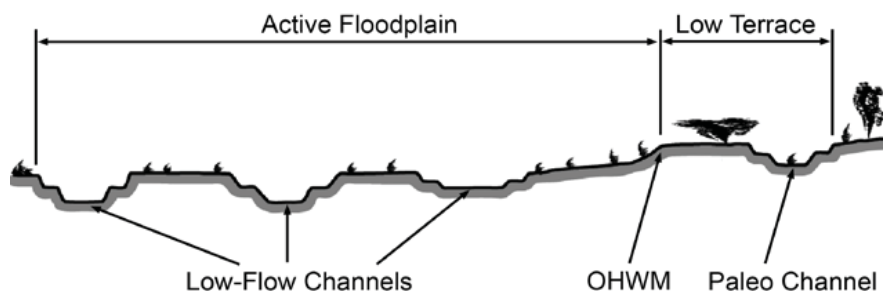
☐History of recent effective discharges

☐Results of flood frequency analysis

☐Most recent shift-adjusted rating

☐Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

### Hydrogeomorphic Floodplain Units



### Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
  - a) Record the floodplain unit and GPS position.
  - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
  - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

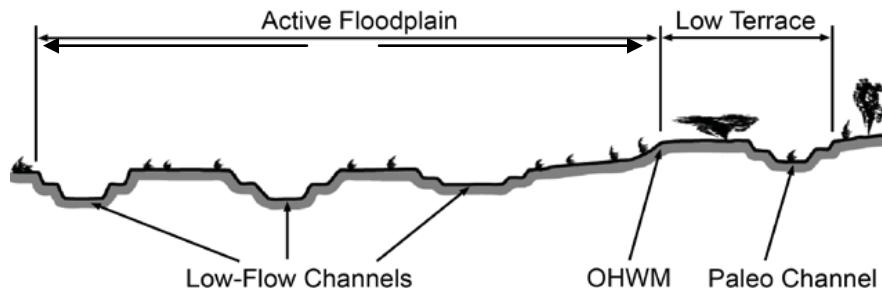
x Mapping on aerial photograph

xGPS

☐Digitized on computer

☐Other:



**Cross section drawing:****Hydrogeomorphic Floodplain Units****OHWM****GPS point:** gps**Indicators:**

- xChange in average sediment texture
- xChange in vegetation species
- xChange in vegetation cover

x Break in bank slope

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

**Comments:****Floodplain unit:** ☐ Low-Flow Channel☒ Active Floodplain☐ Low Terrace**GPS point:****Characteristics of the floodplain unit:**Average sediment texture: sand/siltTotal veg cover: 20% Tree: 20% Shrub: \_\_\_\_\_ % Herb: \_\_\_\_\_ %

Community successional stage:

☐ NA☐ Early (herbaceous & seedlings)☒ Mid (herbaceous, shrubs, saplings)☐ Late (herbaceous, shrubs, mature trees)**Indicators:**☐ Mudcracks☐ Ripples

x Drift and/or debris

x Presence of bed and bank

x Benches

x Soil development

x Surface relief

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

□Other: \_\_\_\_\_

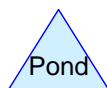
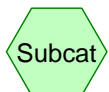
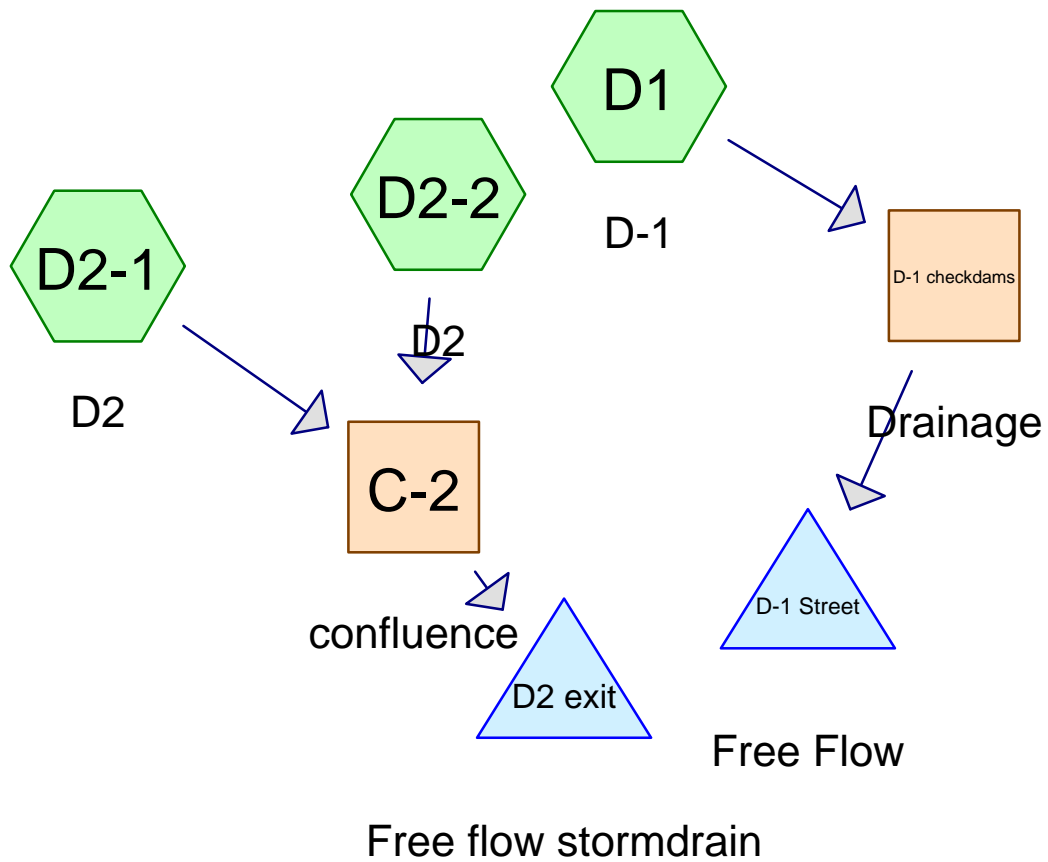
**Comments: Waters of US**



# APPENDIX D

## HYDROCAD REPORT





# **Routing Diagram for TM 36911**

Prepared by Gonzales Environmental Consulting, LLC, Printed 9/26/2019  
HydroCAD® 10.10-1 s/n 02488 © 2019 HydroCAD Software Solutions LLC

**Summary for Reach C-2: confluence**

Inflow Area = 94.000 ac, 0.00% Impervious, Inflow Depth > 0.14" for 2 yr event  
 Inflow = 1.57 cfs @ 12.86 hrs, Volume= 1.132 af  
 Outflow = 1.57 cfs @ 12.92 hrs, Volume= 1.124 af, Atten= 0%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.69 fps, Min. Travel Time= 2.1 min

Avg. Velocity = 3.49 fps, Avg. Travel Time= 2.2 min

Peak Storage= 201 cf @ 12.89 hrs

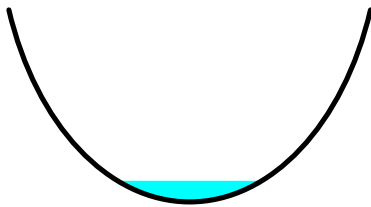
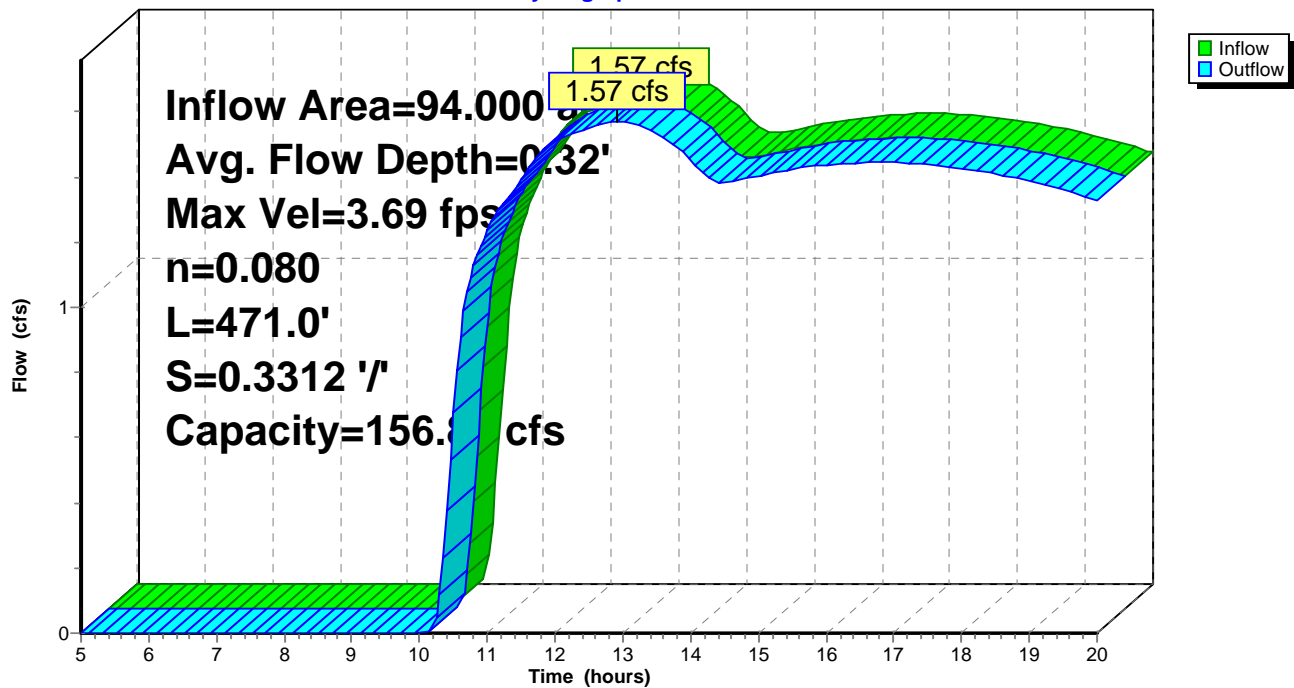
Average Depth at Peak Storage= 0.32' , Surface Width= 1.97'

Bank-Full Depth= 3.00' Flow Area= 12.0 sf, Capacity= 156.87 cfs

6.00' x 3.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

Length= 471.0' Slope= 0.3312 '/'

Inlet Invert= 1,641.00', Outlet Invert= 1,485.00'

**Reach C-2: confluence****Hydrograph**

**Hydrograph for Reach C-2: confluence**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	1,641.00	0.00	18.25	1.42	187	1,641.31	1.42
5.25	0.00	0	1,641.00	0.00	18.50	1.41	186	1,641.31	1.41
5.50	0.00	0	1,641.00	0.00	18.75	1.40	185	1,641.31	1.40
5.75	0.00	0	1,641.00	0.00	19.00	1.39	184	1,641.31	1.39
6.00	0.00	0	1,641.00	0.00	19.25	1.37	183	1,641.30	1.38
6.25	0.00	0	1,641.00	0.00	19.50	1.36	181	1,641.30	1.36
6.50	0.00	0	1,641.00	0.00	19.75	1.34	180	1,641.30	1.35
6.75	0.00	0	1,641.00	0.00	20.00	1.33	179	1,641.30	1.33
7.00	0.00	0	1,641.00	0.00					
7.25	0.00	0	1,641.00	0.00					
7.50	0.00	0	1,641.00	0.00					
7.75	0.00	0	1,641.00	0.00					
8.00	0.00	0	1,641.00	0.00					
8.25	0.00	0	1,641.00	0.00					
8.50	0.00	0	1,641.00	0.00					
8.75	0.00	0	1,641.00	0.00					
9.00	0.00	0	1,641.00	0.00					
9.25	0.00	0	1,641.00	0.00					
9.50	0.00	0	1,641.00	0.00					
9.75	0.00	0	1,641.00	0.00					
10.00	0.00	0	1,641.00	0.00					
10.25	0.19	26	1,641.08	0.05					
10.50	0.85	122	1,641.23	0.68					
10.75	1.14	158	1,641.28	1.10					
11.00	1.27	171	1,641.29	1.24					
11.25	1.34	179	1,641.30	1.32					
11.50	1.42	186	1,641.31	1.40					
11.75	1.48	192	1,641.31	1.47					
12.00	1.52	196	1,641.32	1.52					
12.25	1.54	198	1,641.32	1.54					
12.50	1.56	199	1,641.32	1.55					
12.75	<b>1.57</b>	<b>201</b>	<b>1,641.32</b>	<b>1.57</b>					
13.00	<b>1.57</b>	<b>201</b>	<b>1,641.32</b>	<b>1.57</b>					
13.25	1.56	200	1,641.32	1.56					
13.50	1.53	197	1,641.32	1.54					
13.75	1.49	194	1,641.32	1.50					
14.00	1.44	189	1,641.31	1.46					
14.25	1.39	185	1,641.31	1.40					
14.50	1.39	184	1,641.31	1.39					
14.75	1.40	185	1,641.31	1.39					
15.00	1.41	186	1,641.31	1.41					
15.25	1.42	187	1,641.31	1.42					
15.50	1.43	188	1,641.31	1.43					
15.75	1.44	188	1,641.31	1.43					
16.00	1.44	189	1,641.31	1.44					
16.25	1.44	189	1,641.31	1.44					
16.50	1.45	189	1,641.31	1.45					
16.75	1.45	189	1,641.31	1.45					
17.00	1.45	189	1,641.31	1.45					
17.25	1.44	189	1,641.31	1.44					
17.50	1.44	189	1,641.31	1.44					
17.75	1.43	188	1,641.31	1.44					
18.00	1.43	188	1,641.31	1.43					



**Summary for Reach D-1 checkdams: Drainage**

Inflow Area = 50.000 ac, 0.00% Impervious, Inflow Depth > 0.15" for 2 yr event  
 Inflow = 0.84 cfs @ 12.56 hrs, Volume= 0.620 af  
 Outflow = 0.84 cfs @ 12.61 hrs, Volume= 0.617 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.05 fps, Min. Travel Time= 1.7 min

Avg. Velocity = 3.90 fps, Avg. Travel Time= 1.8 min

Peak Storage= 86 cf @ 12.58 hrs

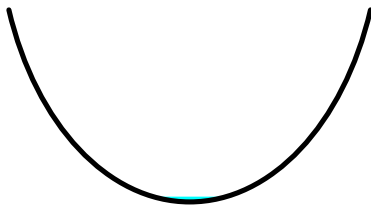
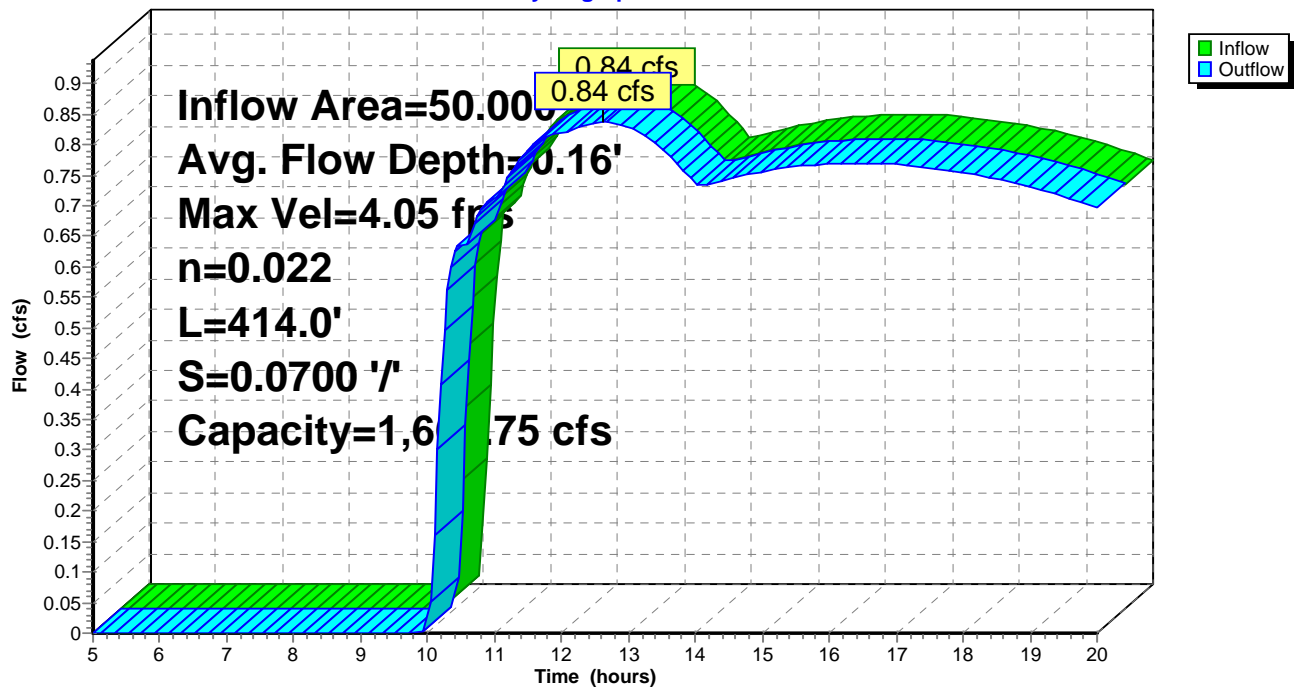
Average Depth at Peak Storage= 0.16' , Surface Width= 1.94'

Bank-Full Depth= 6.00' Flow Area= 48.0 sf, Capacity= 1,665.75 cfs

12.00' x 6.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight

Length= 414.0' Slope= 0.0700 '/'

Inlet Invert= 1,513.00', Outlet Invert= 1,484.00'

**Reach D-1 checkdams: Drainage****Hydrograph**

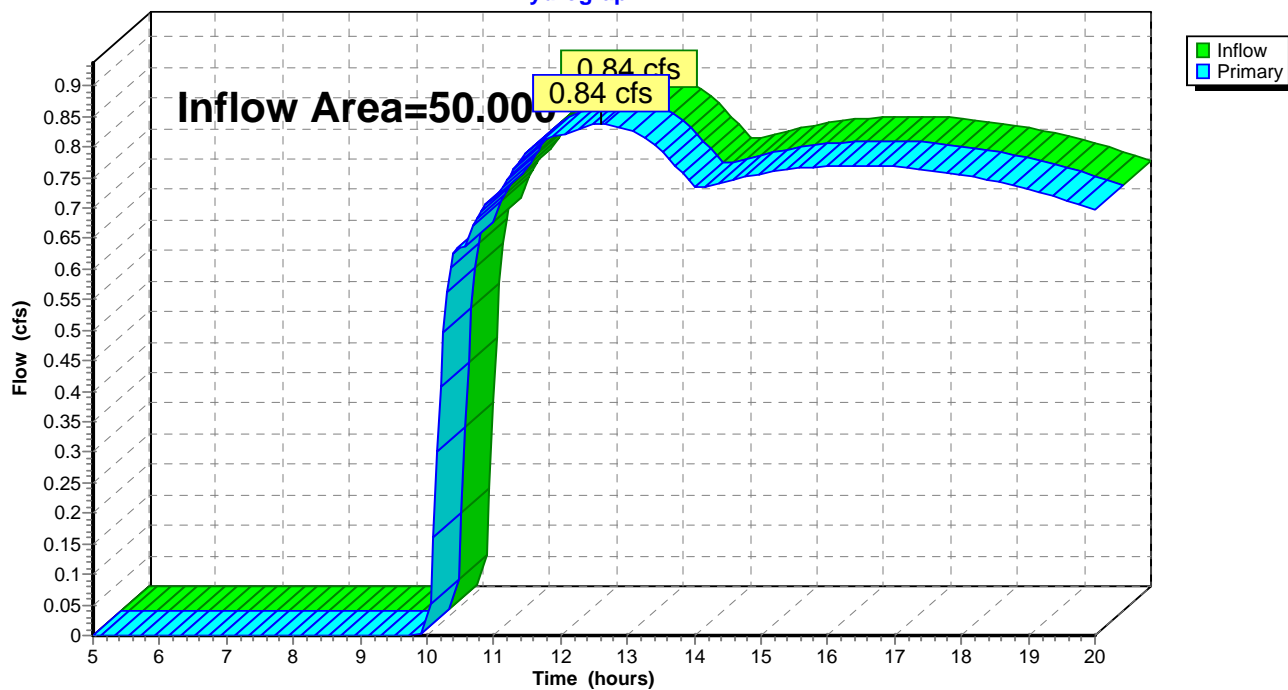
**Hydrograph for Reach D-1 checkdams: Drainage**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	1,513.00	0.00	18.25	0.75	79	1,513.15	0.75
5.25	0.00	0	1,513.00	0.00	18.50	0.74	79	1,513.15	0.74
5.50	0.00	0	1,513.00	0.00	18.75	0.74	78	1,513.15	0.74
5.75	0.00	0	1,513.00	0.00	19.00	0.73	78	1,513.15	0.73
6.00	0.00	0	1,513.00	0.00	19.25	0.72	77	1,513.15	0.72
6.25	0.00	0	1,513.00	0.00	19.50	0.71	76	1,513.15	0.71
6.50	0.00	0	1,513.00	0.00	19.75	0.70	76	1,513.14	0.71
6.75	0.00	0	1,513.00	0.00	20.00	0.69	75	1,513.14	0.70
7.00	0.00	0	1,513.00	0.00					
7.25	0.00	0	1,513.00	0.00					
7.50	0.00	0	1,513.00	0.00					
7.75	0.00	0	1,513.00	0.00					
8.00	0.00	0	1,513.00	0.00					
8.25	0.00	0	1,513.00	0.00					
8.50	0.00	0	1,513.00	0.00					
8.75	0.00	0	1,513.00	0.00					
9.00	0.00	0	1,513.00	0.00					
9.25	0.00	0	1,513.00	0.00					
9.50	0.00	0	1,513.00	0.00					
9.75	0.00	0	1,513.00	0.00					
10.00	0.06	4	1,513.01	0.01					
10.25	0.56	63	1,513.13	0.50					
10.50	0.62	70	1,513.14	0.63					
10.75	0.69	75	1,513.14	0.68					
11.00	0.71	76	1,513.15	0.71					
11.25	0.76	80	1,513.15	0.75					
11.50	0.80	83	1,513.15	0.79					
11.75	0.82	84	1,513.16	0.81					
12.00	0.82	84	1,513.16	0.82					
12.25	0.83	85	1,513.16	0.83					
12.50	<b>0.84</b>	<b>86</b>	<b>1,513.16</b>	<b>0.84</b>					
12.75	<b>0.84</b>	<b>86</b>	<b>1,513.16</b>	<b>0.84</b>					
13.00	0.83	85	1,513.16	0.83					
13.25	0.81	84	1,513.16	0.81					
13.50	0.79	82	1,513.15	0.79					
13.75	0.76	80	1,513.15	0.77					
14.00	0.73	78	1,513.15	0.74					
14.25	0.74	78	1,513.15	0.74					
14.50	0.74	79	1,513.15	0.74					
14.75	0.75	79	1,513.15	0.75					
15.00	0.76	80	1,513.15	0.76					
15.25	0.76	80	1,513.15	0.76					
15.50	0.76	80	1,513.15	0.76					
15.75	0.77	80	1,513.15	0.77					
16.00	0.77	80	1,513.15	0.77					
16.25	0.77	81	1,513.15	0.77					
16.50	0.77	81	1,513.15	0.77					
16.75	0.77	81	1,513.15	0.77					
17.00	0.77	80	1,513.15	0.77					
17.25	0.77	80	1,513.15	0.77					
17.50	0.76	80	1,513.15	0.76					
17.75	0.76	80	1,513.15	0.76					
18.00	0.75	79	1,513.15	0.75					

**Summary for Pond D-1 Street: Free Flow**

Inflow Area = 50.000 ac, 0.00% Impervious, Inflow Depth > 0.15" for 2 yr event  
Inflow = 0.84 cfs @ 12.61 hrs, Volume= 0.617 af  
Primary = 0.84 cfs @ 12.61 hrs, Volume= 0.617 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Pond D-1 Street: Free Flow****Hydrograph**



## Hydrograph for Pond D-1 Street: Free Flow

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00		0.00	18.25	0.75		0.75
5.25	0.00		0.00	18.50	0.74		0.74
5.50	0.00		0.00	18.75	0.74		0.74
5.75	0.00		0.00	19.00	0.73		0.73
6.00	0.00		0.00	19.25	0.72		0.72
6.25	0.00		0.00	19.50	0.71		0.71
6.50	0.00		0.00	19.75	0.71		0.71
6.75	0.00		0.00	20.00	0.70		0.70
7.00	0.00		0.00				
7.25	0.00		0.00				
7.50	0.00		0.00				
7.75	0.00		0.00				
8.00	0.00		0.00				
8.25	0.00		0.00				
8.50	0.00		0.00				
8.75	0.00		0.00				
9.00	0.00		0.00				
9.25	0.00		0.00				
9.50	0.00		0.00				
9.75	0.00		0.00				
10.00	0.01		0.01				
10.25	0.50		0.50				
10.50	0.63		0.63				
10.75	0.68		0.68				
11.00	0.71		0.71				
11.25	0.75		0.75				
11.50	0.79		0.79				
11.75	0.81		0.81				
12.00	0.82		0.82				
12.25	0.83		0.83				
12.50	<b>0.84</b>		<b>0.84</b>				
12.75	<b>0.84</b>		<b>0.84</b>				
13.00	0.83		0.83				
13.25	0.81		0.81				
13.50	0.79		0.79				
13.75	0.77		0.77				
14.00	0.74		0.74				
14.25	0.74		0.74				
14.50	0.74		0.74				
14.75	0.75		0.75				
15.00	0.76		0.76				
15.25	0.76		0.76				
15.50	0.76		0.76				
15.75	0.77		0.77				
16.00	0.77		0.77				
16.25	0.77		0.77				
16.50	0.77		0.77				
16.75	0.77		0.77				
17.00	0.77		0.77				
17.25	0.77		0.77				
17.50	0.76		0.76				
17.75	0.76		0.76				
18.00	0.75		0.75				

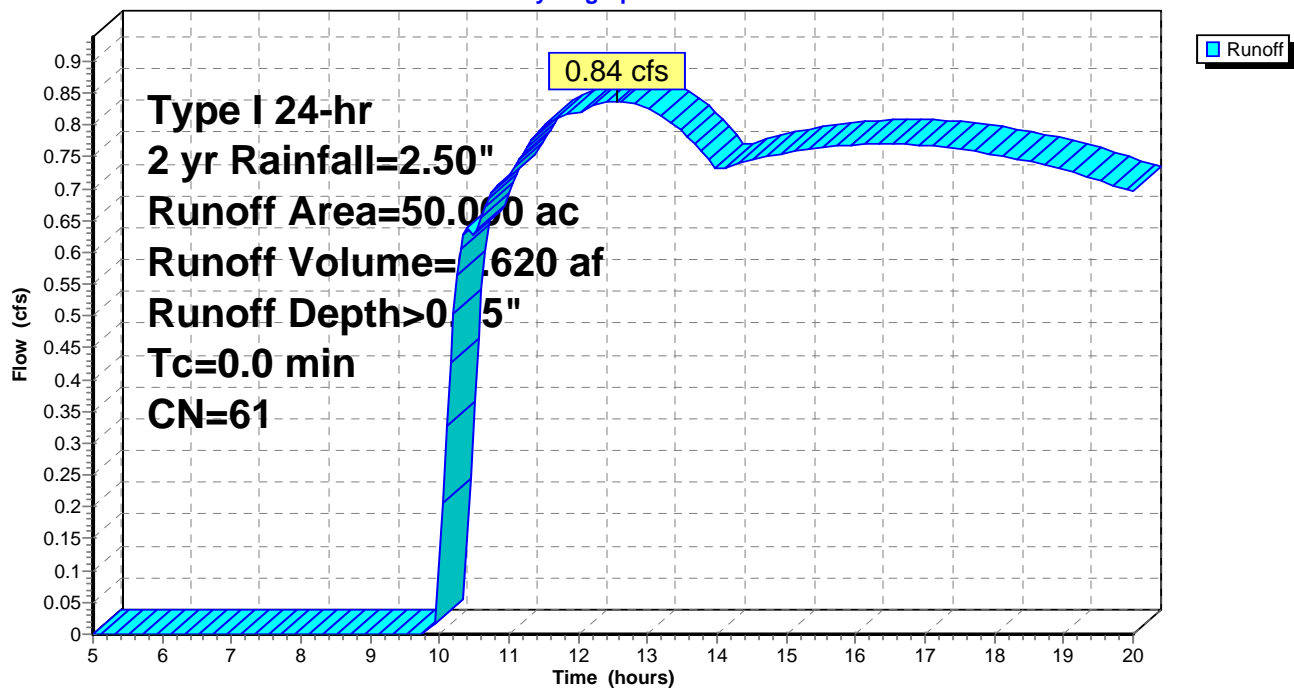
**Summary for Subcatchment D1: D-1**

Runoff = 0.84 cfs @ 12.56 hrs, Volume= 0.620 af, Depth&gt; 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type I 24-hr 2 yr Rainfall=2.50"

Area (ac)	CN	Description
50.000	61	>75% Grass cover, Good, HSG B
50.000		100.00% Pervious Area

**Subcatchment D1: D-1****Hydrograph**

## Hydrograph for Subcatchment D1: D-1

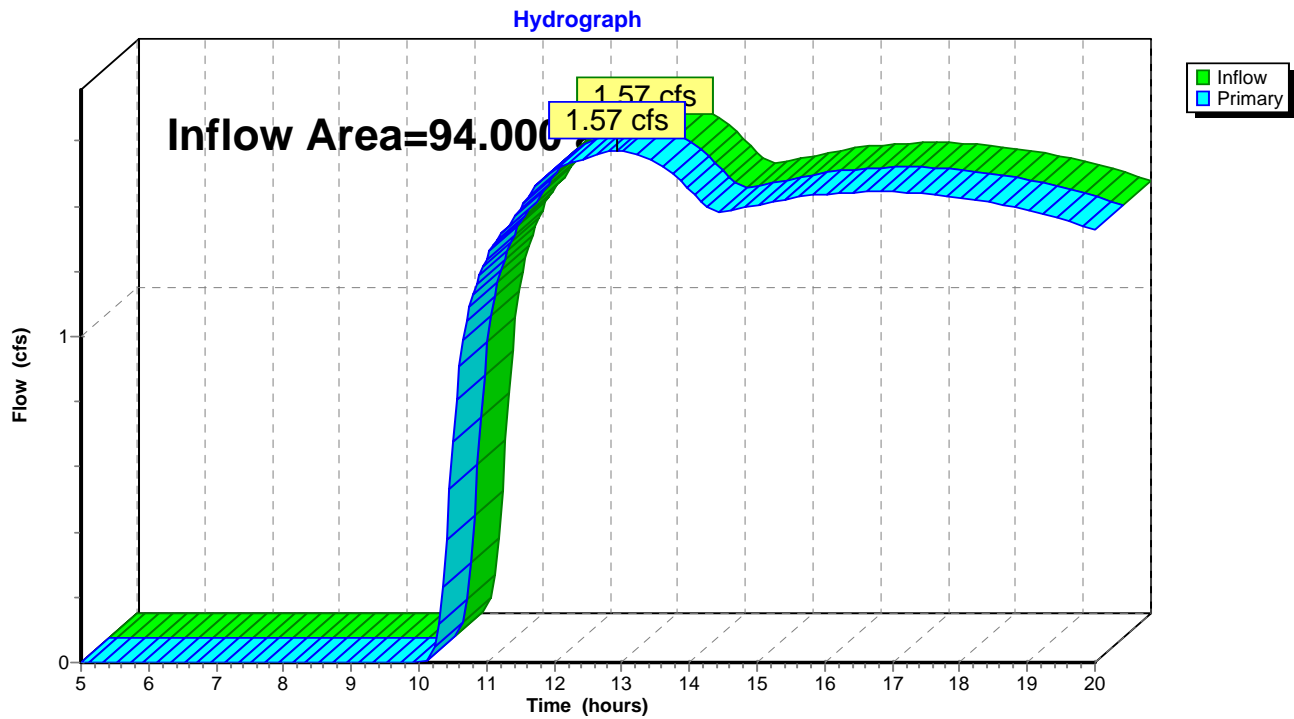
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.25	0.00	0.00	10.30	1.40	0.00	0.60	15.60	2.05	0.08	0.77
5.10	0.26	0.00	0.00	10.40	1.43	0.00	0.64	15.70	2.06	0.08	0.77
5.20	0.26	0.00	0.00	10.50	1.46	0.00	0.62	15.80	2.07	0.09	0.77
5.30	0.27	0.00	0.00	10.60	1.48	0.01	0.66	15.90	2.07	0.09	0.77
5.40	0.27	0.00	0.00	10.70	1.50	0.01	0.68	16.00	2.08	0.09	0.77
5.50	0.28	0.00	0.00	10.80	1.52	0.01	0.70	16.10	2.09	0.09	0.77
5.60	0.29	0.00	0.00	10.90	1.54	0.01	0.71	16.20	2.09	0.09	0.77
5.70	0.29	0.00	0.00	11.00	1.56	0.01	0.71	16.30	2.10	0.09	0.77
5.80	0.30	0.00	0.00	11.10	1.57	0.01	0.73	16.40	2.11	0.10	0.77
5.90	0.31	0.00	0.00	11.20	1.59	0.01	0.75	16.50	2.12	0.10	0.77
6.00	0.31	0.00	0.00	11.30	1.61	0.02	0.77	16.60	2.12	0.10	0.77
6.10	0.32	0.00	0.00	11.40	1.62	0.02	0.79	16.70	2.13	0.10	0.77
6.20	0.33	0.00	0.00	11.50	1.64	0.02	0.80	16.80	2.14	0.10	0.77
6.30	0.33	0.00	0.00	11.60	1.65	0.02	0.81	16.90	2.14	0.10	0.77
6.40	0.34	0.00	0.00	11.70	1.67	0.02	0.81	17.00	2.15	0.10	0.77
6.50	0.35	0.00	0.00	11.80	1.68	0.02	0.82	17.10	2.16	0.11	0.77
6.60	0.36	0.00	0.00	11.90	1.70	0.03	0.82	17.20	2.16	0.11	0.77
6.70	0.36	0.00	0.00	12.00	1.71	0.03	0.82	17.30	2.17	0.11	0.76
6.80	0.37	0.00	0.00	12.10	1.72	0.03	0.82	17.40	2.18	0.11	0.76
6.90	0.38	0.00	0.00	12.20	1.74	0.03	0.83	17.50	2.18	0.11	0.76
7.00	0.39	0.00	0.00	12.30	1.75	0.03	0.83	17.60	2.19	0.11	0.76
7.10	0.40	0.00	0.00	12.40	1.76	0.03	0.84	17.70	2.20	0.12	0.76
7.20	0.41	0.00	0.00	12.50	1.77	0.04	<b>0.84</b>	17.80	2.20	0.12	0.76
7.30	0.42	0.00	0.00	12.60	1.78	0.04	<b>0.84</b>	17.90	2.21	0.12	0.76
7.40	0.43	0.00	0.00	12.70	1.80	0.04	0.84	18.00	2.21	0.12	0.75
7.50	0.44	0.00	0.00	12.80	1.81	0.04	0.83	18.10	2.22	0.12	0.75
7.60	0.45	0.00	0.00	12.90	1.82	0.04	0.83	18.20	2.23	0.12	0.75
7.70	0.46	0.00	0.00	13.00	1.83	0.04	0.83	18.30	2.23	0.12	0.75
7.80	0.47	0.00	0.00	13.10	1.84	0.05	0.82	18.40	2.24	0.13	0.75
7.90	0.48	0.00	0.00	13.20	1.85	0.05	0.81	18.50	2.25	0.13	0.74
8.00	0.48	0.00	0.00	13.30	1.86	0.05	0.81	18.60	2.25	0.13	0.74
8.10	0.50	0.00	0.00	13.40	1.87	0.05	0.80	18.70	2.26	0.13	0.74
8.20	0.51	0.00	0.00	13.50	1.88	0.05	0.79	18.80	2.26	0.13	0.73
8.30	0.52	0.00	0.00	13.60	1.89	0.05	0.78	18.90	2.27	0.13	0.73
8.40	0.53	0.00	0.00	13.70	1.90	0.05	0.77	19.00	2.27	0.13	0.73
8.50	0.55	0.00	0.00	13.80	1.91	0.06	0.76	19.10	2.28	0.14	0.73
8.60	0.56	0.00	0.00	13.90	1.92	0.06	0.74	19.20	2.29	0.14	0.72
8.70	0.58	0.00	0.00	14.00	1.92	0.06	0.73	19.30	2.29	0.14	0.72
8.80	0.60	0.00	0.00	14.10	1.93	0.06	0.73	19.40	2.30	0.14	0.72
8.90	0.62	0.00	0.00	14.20	1.94	0.06	0.74	19.50	2.30	0.14	0.71
9.00	0.63	0.00	0.00	14.30	1.95	0.06	0.74	19.60	2.31	0.14	0.71
9.10	0.66	0.00	0.00	14.40	1.96	0.07	0.74	19.70	2.31	0.14	0.71
9.20	0.68	0.00	0.00	14.50	1.97	0.07	0.74	19.80	2.32	0.15	0.70
9.30	0.70	0.00	0.00	14.60	1.97	0.07	0.75	19.90	2.32	0.15	0.70
9.40	0.73	0.00	0.00	14.70	1.98	0.07	0.75	20.00	<b>2.33</b>	<b>0.15</b>	0.69
9.50	0.76	0.00	0.00	14.80	1.99	0.07	0.75				
9.60	0.80	0.00	0.00	14.90	2.00	0.07	0.75				
9.70	0.86	0.00	0.00	15.00	2.00	0.07	0.76				
9.80	0.97	0.00	0.00	15.10	2.01	0.08	0.76				
9.90	1.16	0.00	0.00	15.20	2.02	0.08	0.76				
10.00	1.29	0.00	0.06	15.30	2.03	0.08	0.76				
10.10	1.33	0.00	0.33	15.40	2.04	0.08	0.76				
10.20	1.37	0.00	0.50	15.50	2.04	0.08	0.76				



**Summary for Pond D2 exit: Free flow stormdrain**

Inflow Area = 94.000 ac, 0.00% Impervious, Inflow Depth > 0.14" for 2 yr event  
Inflow = 1.57 cfs @ 12.92 hrs, Volume= 1.124 af  
Primary = 1.57 cfs @ 12.92 hrs, Volume= 1.124 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Pond D2 exit: Free flow stormdrain**

## Hydrograph for Pond D2 exit: Free flow stormdrain

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00		0.00	18.25	1.42		1.42
5.25	0.00		0.00	18.50	1.41		1.41
5.50	0.00		0.00	18.75	1.40		1.40
5.75	0.00		0.00	19.00	1.39		1.39
6.00	0.00		0.00	19.25	1.38		1.38
6.25	0.00		0.00	19.50	1.36		1.36
6.50	0.00		0.00	19.75	1.35		1.35
6.75	0.00		0.00	20.00	1.33		1.33
7.00	0.00		0.00				
7.25	0.00		0.00				
7.50	0.00		0.00				
7.75	0.00		0.00				
8.00	0.00		0.00				
8.25	0.00		0.00				
8.50	0.00		0.00				
8.75	0.00		0.00				
9.00	0.00		0.00				
9.25	0.00		0.00				
9.50	0.00		0.00				
9.75	0.00		0.00				
10.00	0.00		0.00				
10.25	0.05		0.05				
10.50	0.68		0.68				
10.75	1.10		1.10				
11.00	1.24		1.24				
11.25	1.32		1.32				
11.50	1.40		1.40				
11.75	1.47		1.47				
12.00	1.52		1.52				
12.25	1.54		1.54				
12.50	1.55		1.55				
12.75	<b>1.57</b>		<b>1.57</b>				
13.00	<b>1.57</b>		<b>1.57</b>				
13.25	1.56		1.56				
13.50	1.54		1.54				
13.75	1.50		1.50				
14.00	1.46		1.46				
14.25	1.40		1.40				
14.50	1.39		1.39				
14.75	1.39		1.39				
15.00	1.41		1.41				
15.25	1.42		1.42				
15.50	1.43		1.43				
15.75	1.43		1.43				
16.00	1.44		1.44				
16.25	1.44		1.44				
16.50	1.45		1.45				
16.75	1.45		1.45				
17.00	1.45		1.45				
17.25	1.44		1.44				
17.50	1.44		1.44				
17.75	1.44		1.44				
18.00	1.43		1.43				

**Summary for Subcatchment D2-1: D2**

Runoff = 0.99 cfs @ 12.86 hrs, Volume= 0.710 af, Depth&gt; 0.14"

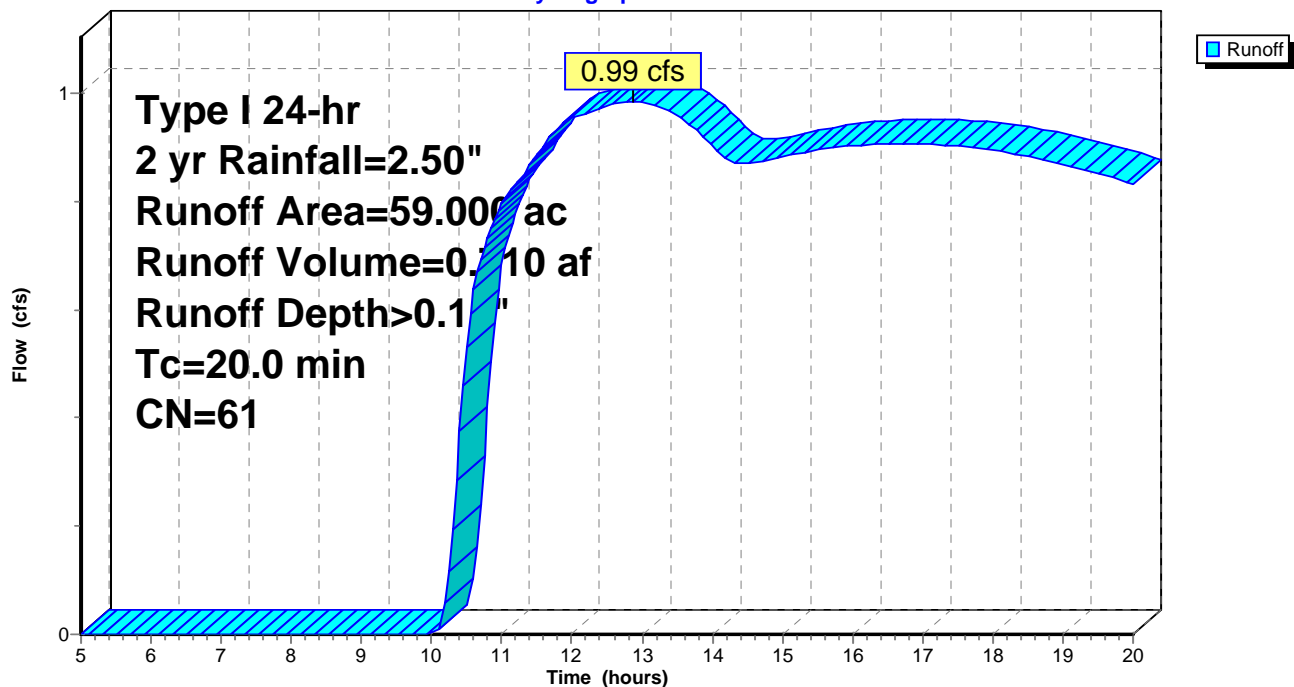
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type I 24-hr 2 yr Rainfall=2.50"

Area (ac)	CN	Description
59.000	61	>75% Grass cover, Good, HSG B
59.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry, My own Tc

**Subcatchment D2-1: D2**

Hydrograph





## Hydrograph for Subcatchment D2-1: D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.25	0.00	0.00	10.30	1.40	0.00	0.20	15.60	2.05	0.08	0.90
5.10	0.26	0.00	0.00	10.40	1.43	0.00	0.38	15.70	2.06	0.08	0.90
5.20	0.26	0.00	0.00	10.50	1.46	0.00	0.53	15.80	2.07	0.09	0.90
5.30	0.27	0.00	0.00	10.60	1.48	0.01	0.64	15.90	2.07	0.09	0.90
5.40	0.27	0.00	0.00	10.70	1.50	0.01	0.70	16.00	2.08	0.09	0.90
5.50	0.28	0.00	0.00	10.80	1.52	0.01	0.73	16.10	2.09	0.09	0.91
5.60	0.29	0.00	0.00	10.90	1.54	0.01	0.77	16.20	2.09	0.09	0.91
5.70	0.29	0.00	0.00	11.00	1.56	0.01	0.80	16.30	2.10	0.09	0.91
5.80	0.30	0.00	0.00	11.10	1.57	0.01	0.82	16.40	2.11	0.10	0.91
5.90	0.31	0.00	0.00	11.20	1.59	0.01	0.83	16.50	2.12	0.10	0.91
6.00	0.31	0.00	0.00	11.30	1.61	0.02	0.85	16.60	2.12	0.10	0.91
6.10	0.32	0.00	0.00	11.40	1.62	0.02	0.87	16.70	2.13	0.10	0.91
6.20	0.33	0.00	0.00	11.50	1.64	0.02	0.89	16.80	2.14	0.10	0.91
6.30	0.33	0.00	0.00	11.60	1.65	0.02	0.91	16.90	2.14	0.10	0.91
6.40	0.34	0.00	0.00	11.70	1.67	0.02	0.92	17.00	2.15	0.10	0.91
6.50	0.35	0.00	0.00	11.80	1.68	0.02	0.94	17.10	2.16	0.11	0.91
6.60	0.36	0.00	0.00	11.90	1.70	0.03	0.95	17.20	2.16	0.11	0.91
6.70	0.36	0.00	0.00	12.00	1.71	0.03	0.96	17.30	2.17	0.11	0.91
6.80	0.37	0.00	0.00	12.10	1.72	0.03	0.96	17.40	2.18	0.11	0.90
6.90	0.38	0.00	0.00	12.20	1.74	0.03	0.96	17.50	2.18	0.11	0.90
7.00	0.39	0.00	0.00	12.30	1.75	0.03	0.97	17.60	2.19	0.11	0.90
7.10	0.40	0.00	0.00	12.40	1.76	0.03	0.97	17.70	2.20	0.12	0.90
7.20	0.41	0.00	0.00	12.50	1.77	0.04	0.98	17.80	2.20	0.12	0.90
7.30	0.42	0.00	0.00	12.60	1.78	0.04	0.98	17.90	2.21	0.12	0.90
7.40	0.43	0.00	0.00	12.70	1.80	0.04	0.98	18.00	2.21	0.12	0.90
7.50	0.44	0.00	0.00	12.80	1.81	0.04	<b>0.99</b>	18.10	2.22	0.12	0.89
7.60	0.45	0.00	0.00	12.90	1.82	0.04	<b>0.99</b>	18.20	2.23	0.12	0.89
7.70	0.46	0.00	0.00	13.00	1.83	0.04	0.99	18.30	2.23	0.12	0.89
7.80	0.47	0.00	0.00	13.10	1.84	0.05	0.98	18.40	2.24	0.13	0.89
7.90	0.48	0.00	0.00	13.20	1.85	0.05	0.98	18.50	2.25	0.13	0.88
8.00	0.48	0.00	0.00	13.30	1.86	0.05	0.97	18.60	2.25	0.13	0.88
8.10	0.50	0.00	0.00	13.40	1.87	0.05	0.97	18.70	2.26	0.13	0.88
8.20	0.51	0.00	0.00	13.50	1.88	0.05	0.96	18.80	2.26	0.13	0.88
8.30	0.52	0.00	0.00	13.60	1.89	0.05	0.95	18.90	2.27	0.13	0.87
8.40	0.53	0.00	0.00	13.70	1.90	0.05	0.94	19.00	2.27	0.13	0.87
8.50	0.55	0.00	0.00	13.80	1.91	0.06	0.93	19.10	2.28	0.14	0.87
8.60	0.56	0.00	0.00	13.90	1.92	0.06	0.92	19.20	2.29	0.14	0.86
8.70	0.58	0.00	0.00	14.00	1.92	0.06	0.91	19.30	2.29	0.14	0.86
8.80	0.60	0.00	0.00	14.10	1.93	0.06	0.89	19.40	2.30	0.14	0.86
8.90	0.62	0.00	0.00	14.20	1.94	0.06	0.88	19.50	2.30	0.14	0.85
9.00	0.63	0.00	0.00	14.30	1.95	0.06	0.87	19.60	2.31	0.14	0.85
9.10	0.66	0.00	0.00	14.40	1.96	0.07	0.87	19.70	2.31	0.14	0.85
9.20	0.68	0.00	0.00	14.50	1.97	0.07	0.87	19.80	2.32	0.15	0.84
9.30	0.70	0.00	0.00	14.60	1.97	0.07	0.87	19.90	2.32	0.15	0.84
9.40	0.73	0.00	0.00	14.70	1.98	0.07	0.88	20.00	<b>2.33</b>	<b>0.15</b>	0.83
9.50	0.76	0.00	0.00	14.80	1.99	0.07	0.88				
9.60	0.80	0.00	0.00	14.90	2.00	0.07	0.88				
9.70	0.86	0.00	0.00	15.00	2.00	0.07	0.88				
9.80	0.97	0.00	0.00	15.10	2.01	0.08	0.89				
9.90	1.16	0.00	0.00	15.20	2.02	0.08	0.89				
10.00	1.29	0.00	0.00	15.30	2.03	0.08	0.89				
10.10	1.33	0.00	0.01	15.40	2.04	0.08	0.89				
10.20	1.37	0.00	0.06	15.50	2.04	0.08	0.90				

**Summary for Subcatchment D2-2: D2**

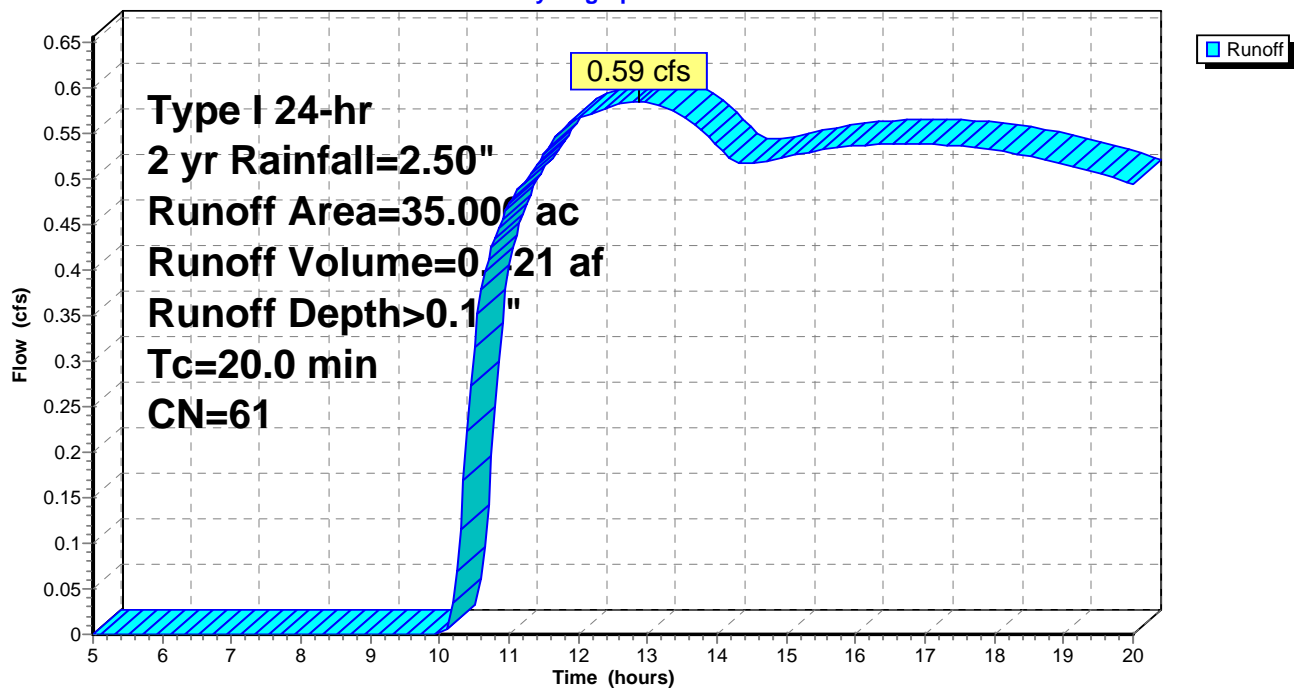
Runoff = 0.59 cfs @ 12.86 hrs, Volume= 0.421 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type I 24-hr 2 yr Rainfall=2.50"

Area (ac)	CN	Description
35.000	61	>75% Grass cover, Good, HSG B
35.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry, My own Tc

**Subcatchment D2-2: D2****Hydrograph**

## Hydrograph for Subcatchment D2-2: D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.25	0.00	0.00	10.30	1.40	0.00	0.12	15.60	2.05	0.08	0.53
5.10	0.26	0.00	0.00	10.40	1.43	0.00	0.22	15.70	2.06	0.08	0.53
5.20	0.26	0.00	0.00	10.50	1.46	0.00	0.32	15.80	2.07	0.09	0.53
5.30	0.27	0.00	0.00	10.60	1.48	0.01	0.38	15.90	2.07	0.09	0.54
5.40	0.27	0.00	0.00	10.70	1.50	0.01	0.41	16.00	2.08	0.09	0.54
5.50	0.28	0.00	0.00	10.80	1.52	0.01	0.43	16.10	2.09	0.09	0.54
5.60	0.29	0.00	0.00	10.90	1.54	0.01	0.46	16.20	2.09	0.09	0.54
5.70	0.29	0.00	0.00	11.00	1.56	0.01	0.47	16.30	2.10	0.09	0.54
5.80	0.30	0.00	0.00	11.10	1.57	0.01	0.49	16.40	2.11	0.10	0.54
5.90	0.31	0.00	0.00	11.20	1.59	0.01	0.49	16.50	2.12	0.10	0.54
6.00	0.31	0.00	0.00	11.30	1.61	0.02	0.50	16.60	2.12	0.10	0.54
6.10	0.32	0.00	0.00	11.40	1.62	0.02	0.51	16.70	2.13	0.10	0.54
6.20	0.33	0.00	0.00	11.50	1.64	0.02	0.53	16.80	2.14	0.10	0.54
6.30	0.33	0.00	0.00	11.60	1.65	0.02	0.54	16.90	2.14	0.10	0.54
6.40	0.34	0.00	0.00	11.70	1.67	0.02	0.55	17.00	2.15	0.10	0.54
6.50	0.35	0.00	0.00	11.80	1.68	0.02	0.56	17.10	2.16	0.11	0.54
6.60	0.36	0.00	0.00	11.90	1.70	0.03	0.56	17.20	2.16	0.11	0.54
6.70	0.36	0.00	0.00	12.00	1.71	0.03	0.57	17.30	2.17	0.11	0.54
6.80	0.37	0.00	0.00	12.10	1.72	0.03	0.57	17.40	2.18	0.11	0.54
6.90	0.38	0.00	0.00	12.20	1.74	0.03	0.57	17.50	2.18	0.11	0.54
7.00	0.39	0.00	0.00	12.30	1.75	0.03	0.57	17.60	2.19	0.11	0.54
7.10	0.40	0.00	0.00	12.40	1.76	0.03	0.58	17.70	2.20	0.12	0.53
7.20	0.41	0.00	0.00	12.50	1.77	0.04	0.58	17.80	2.20	0.12	0.53
7.30	0.42	0.00	0.00	12.60	1.78	0.04	0.58	17.90	2.21	0.12	0.53
7.40	0.43	0.00	0.00	12.70	1.80	0.04	0.58	18.00	2.21	0.12	0.53
7.50	0.44	0.00	0.00	12.80	1.81	0.04	0.59	18.10	2.22	0.12	0.53
7.60	0.45	0.00	0.00	12.90	1.82	0.04	0.59	18.20	2.23	0.12	0.53
7.70	0.46	0.00	0.00	13.00	1.83	0.04	0.58	18.30	2.23	0.12	0.53
7.80	0.47	0.00	0.00	13.10	1.84	0.05	0.58	18.40	2.24	0.13	0.53
7.90	0.48	0.00	0.00	13.20	1.85	0.05	0.58	18.50	2.25	0.13	0.52
8.00	0.48	0.00	0.00	13.30	1.86	0.05	0.58	18.60	2.25	0.13	0.52
8.10	0.50	0.00	0.00	13.40	1.87	0.05	0.57	18.70	2.26	0.13	0.52
8.20	0.51	0.00	0.00	13.50	1.88	0.05	0.57	18.80	2.26	0.13	0.52
8.30	0.52	0.00	0.00	13.60	1.89	0.05	0.56	18.90	2.27	0.13	0.52
8.40	0.53	0.00	0.00	13.70	1.90	0.05	0.56	19.00	2.27	0.13	0.52
8.50	0.55	0.00	0.00	13.80	1.91	0.06	0.55	19.10	2.28	0.14	0.51
8.60	0.56	0.00	0.00	13.90	1.92	0.06	0.54	19.20	2.29	0.14	0.51
8.70	0.58	0.00	0.00	14.00	1.92	0.06	0.54	19.30	2.29	0.14	0.51
8.80	0.60	0.00	0.00	14.10	1.93	0.06	0.53	19.40	2.30	0.14	0.51
8.90	0.62	0.00	0.00	14.20	1.94	0.06	0.52	19.50	2.30	0.14	0.51
9.00	0.63	0.00	0.00	14.30	1.95	0.06	0.52	19.60	2.31	0.14	0.50
9.10	0.66	0.00	0.00	14.40	1.96	0.07	0.52	19.70	2.31	0.14	0.50
9.20	0.68	0.00	0.00	14.50	1.97	0.07	0.52	19.80	2.32	0.15	0.50
9.30	0.70	0.00	0.00	14.60	1.97	0.07	0.52	19.90	2.32	0.15	0.50
9.40	0.73	0.00	0.00	14.70	1.98	0.07	0.52	20.00	2.33	0.15	0.49
9.50	0.76	0.00	0.00	14.80	1.99	0.07	0.52				
9.60	0.80	0.00	0.00	14.90	2.00	0.07	0.52				
9.70	0.86	0.00	0.00	15.00	2.00	0.07	0.52				
9.80	0.97	0.00	0.00	15.10	2.01	0.08	0.53				
9.90	1.16	0.00	0.00	15.20	2.02	0.08	0.53				
10.00	1.29	0.00	0.00	15.30	2.03	0.08	0.53				
10.10	1.33	0.00	0.00	15.40	2.04	0.08	0.53				
10.20	1.37	0.00	0.03	15.50	2.04	0.08	0.53				



**Summary for Reach C-2: confluence**

Inflow Area = 94.000 ac, 0.00% Impervious, Inflow Depth > 0.90" for 5 yr event  
 Inflow = 38.67 cfs @ 10.16 hrs, Volume= 7.039 af  
 Outflow = 38.11 cfs @ 10.19 hrs, Volume= 7.023 af, Atten= 1%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 9.08 fps, Min. Travel Time= 0.9 min

Avg. Velocity= 5.65 fps, Avg. Travel Time= 1.4 min

Peak Storage= 1,997 cf @ 10.17 hrs

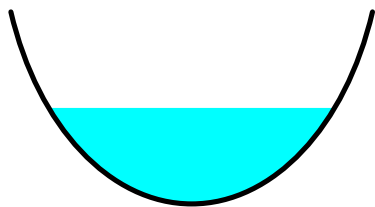
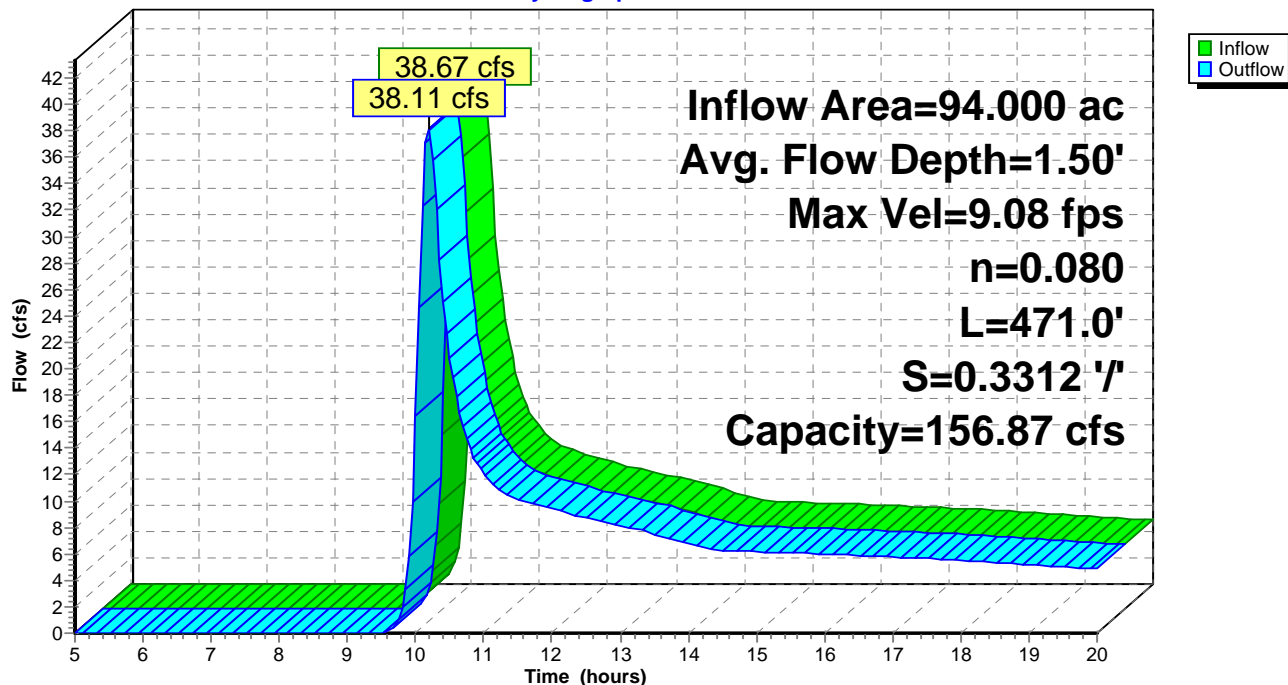
Average Depth at Peak Storage= 1.50' , Surface Width= 4.24'

Bank-Full Depth= 3.00' Flow Area= 12.0 sf, Capacity= 156.87 cfs

6.00' x 3.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

Length= 471.0' Slope= 0.3312 '/'

Inlet Invert= 1,641.00', Outlet Invert= 1,485.00'

**Reach C-2: confluence****Hydrograph**

**Hydrograph for Reach C-2: confluence**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	1,641.00	0.00	18.25	5.42	483	1,641.58	5.43
5.25	0.00	0	1,641.00	0.00	18.50	5.34	479	1,641.58	5.35
5.50	0.00	0	1,641.00	0.00	18.75	5.26	474	1,641.57	5.27
5.75	0.00	0	1,641.00	0.00	19.00	5.18	469	1,641.57	5.19
6.00	0.00	0	1,641.00	0.00	19.25	5.10	463	1,641.57	5.11
6.25	0.00	0	1,641.00	0.00	19.50	5.02	458	1,641.56	5.03
6.50	0.00	0	1,641.00	0.00	19.75	4.93	452	1,641.56	4.94
6.75	0.00	0	1,641.00	0.00	20.00	4.84	446	1,641.55	4.85
7.00	0.00	0	1,641.00	0.00					
7.25	0.00	0	1,641.00	0.00					
7.50	0.00	0	1,641.00	0.00					
7.75	0.00	0	1,641.00	0.00					
8.00	0.00	0	1,641.00	0.00					
8.25	0.00	0	1,641.00	0.00					
8.50	0.00	0	1,641.00	0.00					
8.75	0.00	0	1,641.00	0.00					
9.00	0.00	0	1,641.00	0.00					
9.25	0.00	0	1,641.00	0.00					
9.50	0.04	5	1,641.03	0.01					
9.75	1.66	172	1,641.29	1.09					
10.00	<b>20.69</b>	<b>1,171</b>	<b>1,642.05</b>	<b>16.49</b>					
10.25	<b>34.03</b>	<b>1,854</b>	<b>1,642.43</b>	<b>35.77</b>					
10.50	19.95	1,252	1,642.10	20.85					
10.75	14.23	977	1,641.93	14.70					
11.00	11.85	851	1,641.85	12.04					
11.25	10.64	786	1,641.81	10.75					
11.50	10.10	756	1,641.78	10.14					
11.75	9.74	736	1,641.77	9.78					
12.00	9.37	716	1,641.76	9.41					
12.25	8.97	694	1,641.74	9.01					
12.50	8.67	677	1,641.73	8.70					
12.75	8.41	662	1,641.72	8.44					
13.00	8.12	646	1,641.71	8.16					
13.25	7.81	629	1,641.69	7.85					
13.50	7.48	609	1,641.68	7.52					
13.75	7.12	589	1,641.66	7.17					
14.00	6.75	566	1,641.65	6.79					
14.25	6.39	545	1,641.63	6.43					
14.50	6.26	536	1,641.62	6.27					
14.75	6.21	532	1,641.62	6.21					
15.00	6.17	530	1,641.62	6.17					
15.25	6.13	528	1,641.62	6.14					
15.50	6.09	525	1,641.62	6.09					
15.75	6.04	522	1,641.61	6.05					
16.00	5.99	519	1,641.61	6.00					
16.25	5.94	516	1,641.61	5.95					
16.50	5.88	513	1,641.61	5.89					
16.75	5.83	509	1,641.60	5.83					
17.00	5.76	505	1,641.60	5.77					
17.25	5.70	501	1,641.60	5.71					
17.50	5.63	497	1,641.59	5.64					
17.75	5.56	493	1,641.59	5.57					
18.00	5.49	488	1,641.59	5.50					

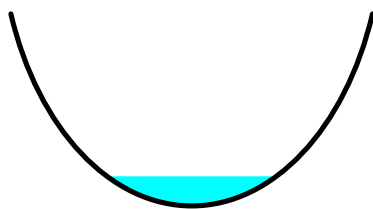
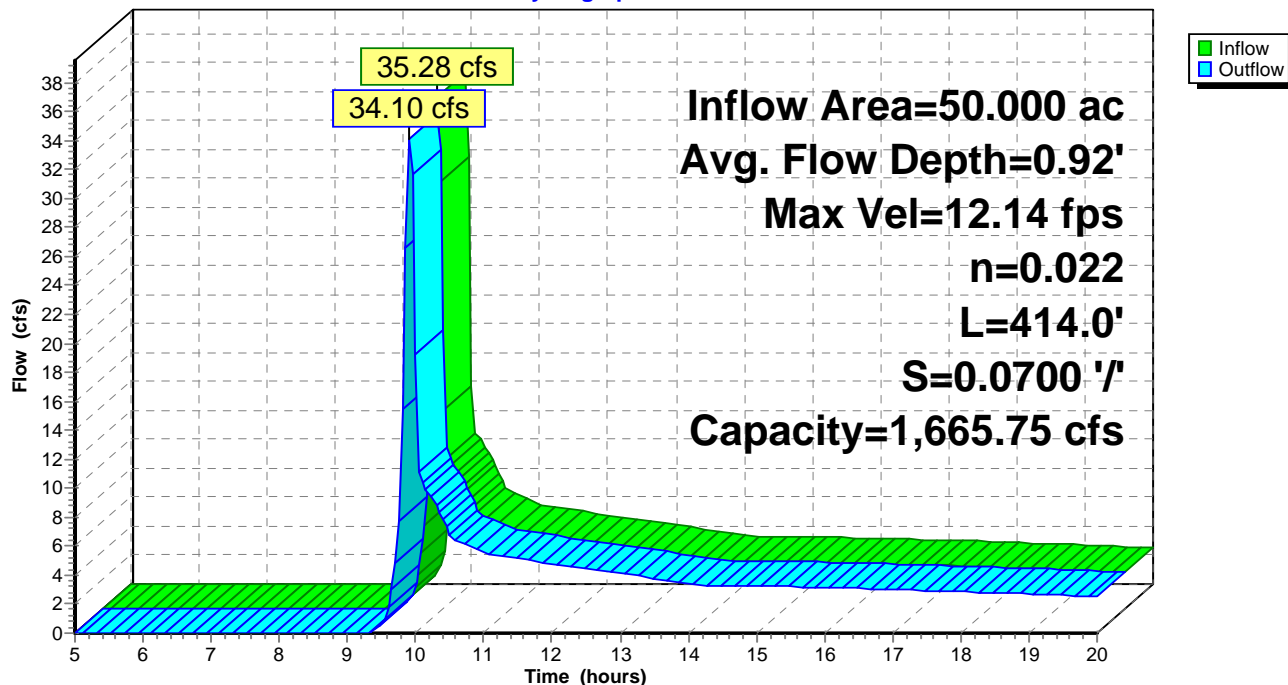
**Summary for Reach D-1 checkdams: Drainage**

Inflow Area = 50.000 ac, 0.00% Impervious, Inflow Depth > 0.91" for 5 yr event  
 Inflow = 35.28 cfs @ 9.90 hrs, Volume= 3.809 af  
 Outflow = 34.10 cfs @ 9.91 hrs, Volume= 3.803 af, Atten= 3%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.14 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 6.31 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,191 cf @ 9.91 hrs  
 Average Depth at Peak Storage= 0.92' , Surface Width= 4.70'  
 Bank-Full Depth= 6.00' Flow Area= 48.0 sf, Capacity= 1,665.75 cfs

12.00' x 6.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight  
 Length= 414.0' Slope= 0.0700 '/'  
 Inlet Invert= 1,513.00', Outlet Invert= 1,484.00'

**Reach D-1 checkdams: Drainage****Hydrograph**



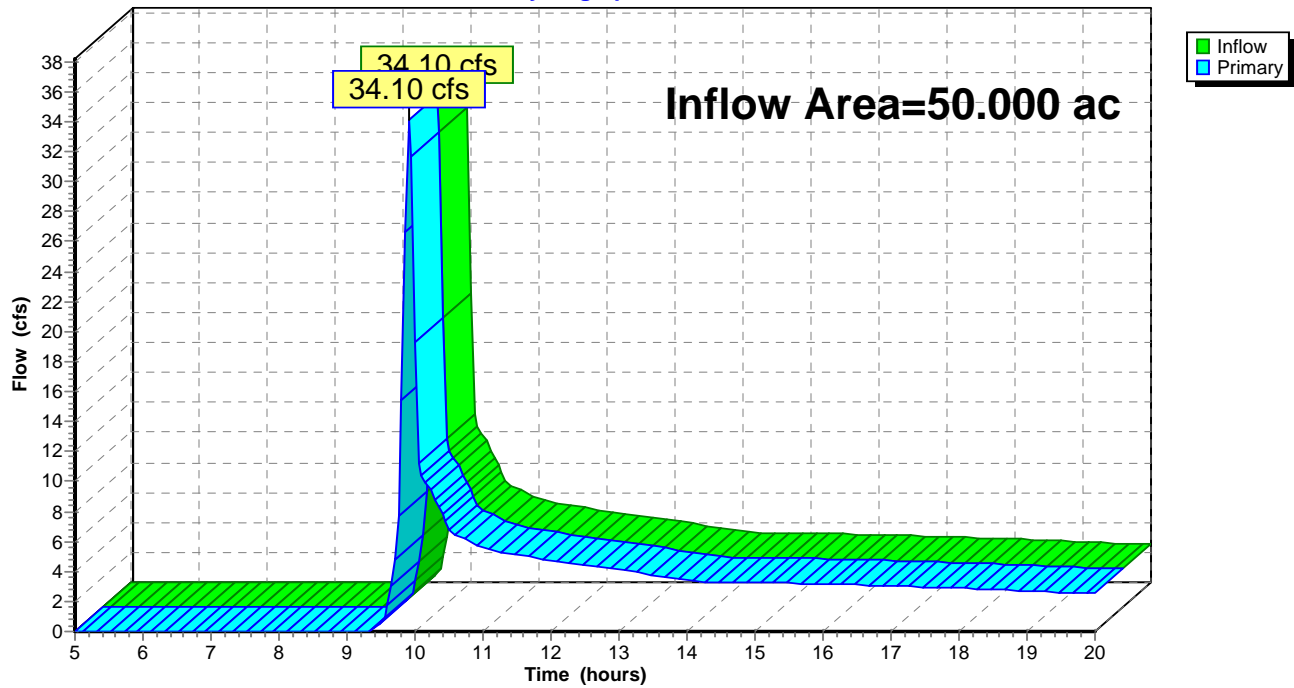
## Hydrograph for Reach D-1 checkdams: Drainage

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	1,513.00	0.00	18.25	2.83	203	1,513.28	2.84
5.25	0.00	0	1,513.00	0.00	18.50	2.79	201	1,513.28	2.79
5.50	0.00	0	1,513.00	0.00	18.75	2.75	198	1,513.28	2.75
5.75	0.00	0	1,513.00	0.00	19.00	2.70	196	1,513.28	2.71
6.00	0.00	0	1,513.00	0.00	19.25	2.66	194	1,513.27	2.66
6.25	0.00	0	1,513.00	0.00	19.50	2.61	191	1,513.27	2.62
6.50	0.00	0	1,513.00	0.00	19.75	2.56	189	1,513.27	2.57
6.75	0.00	0	1,513.00	0.00	20.00	2.52	186	1,513.27	2.52
7.00	0.00	0	1,513.00	0.00					
7.25	0.00	0	1,513.00	0.00					
7.50	0.00	0	1,513.00	0.00					
7.75	0.00	0	1,513.00	0.00					
8.00	0.00	0	1,513.00	0.00					
8.25	0.00	0	1,513.00	0.00					
8.50	0.00	0	1,513.00	0.00					
8.75	0.00	0	1,513.00	0.00					
9.00	0.00	0	1,513.00	0.00					
9.25	0.00	0	1,513.00	0.00					
9.50	0.73	68	1,513.13	0.55					
9.75	<b>9.16</b>	<b>432</b>	<b>1,513.47</b>	<b>7.71</b>					
10.00	<b>13.64</b>	<b>701</b>	<b>1,513.65</b>	<b>19.26</b>					
10.25	9.08	462	1,513.49	9.23					
10.50	6.61	372	1,513.42	6.81					
10.75	6.06	347	1,513.40	6.11					
11.00	5.46	322	1,513.38	5.51					
11.25	5.31	315	1,513.38	5.33					
11.50	5.14	308	1,513.37	5.16					
11.75	4.94	300	1,513.37	4.95					
12.00	4.70	291	1,513.36	4.72					
12.25	4.58	285	1,513.35	4.59					
12.50	4.44	278	1,513.35	4.45					
12.75	4.28	271	1,513.34	4.30					
13.00	4.12	264	1,513.34	4.13					
13.25	3.94	255	1,513.33	3.95					
13.50	3.74	247	1,513.32	3.76					
13.75	3.54	238	1,513.31	3.56					
14.00	3.33	228	1,513.31	3.35					
14.25	3.31	227	1,513.30	3.32					
14.50	3.30	226	1,513.30	3.30					
14.75	3.28	225	1,513.30	3.28					
15.00	3.26	224	1,513.30	3.26					
15.25	3.23	223	1,513.30	3.23					
15.50	3.21	222	1,513.30	3.21					
15.75	3.18	221	1,513.30	3.18					
16.00	3.15	219	1,513.30	3.16					
16.25	3.12	218	1,513.30	3.13					
16.50	3.09	216	1,513.29	3.09					
16.75	3.06	214	1,513.29	3.06					
17.00	3.02	213	1,513.29	3.03					
17.25	2.99	211	1,513.29	2.99					
17.50	2.95	209	1,513.29	2.95					
17.75	2.91	207	1,513.29	2.92					
18.00	2.87	205	1,513.28	2.88					

**Summary for Pond D-1 Street: Free Flow**

Inflow Area = 50.000 ac, 0.00% Impervious, Inflow Depth > 0.91" for 5 yr event  
Inflow = 34.10 cfs @ 9.91 hrs, Volume= 3.803 af  
Primary = 34.10 cfs @ 9.91 hrs, Volume= 3.803 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Pond D-1 Street: Free Flow****Hydrograph**

## Hydrograph for Pond D-1 Street: Free Flow

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00		0.00	18.25	2.84		2.84
5.25	0.00		0.00	18.50	2.79		2.79
5.50	0.00		0.00	18.75	2.75		2.75
5.75	0.00		0.00	19.00	2.71		2.71
6.00	0.00		0.00	19.25	2.66		2.66
6.25	0.00		0.00	19.50	2.62		2.62
6.50	0.00		0.00	19.75	2.57		2.57
6.75	0.00		0.00	20.00	2.52		2.52
7.00	0.00		0.00				
7.25	0.00		0.00				
7.50	0.00		0.00				
7.75	0.00		0.00				
8.00	0.00		0.00				
8.25	0.00		0.00				
8.50	0.00		0.00				
8.75	0.00		0.00				
9.00	0.00		0.00				
9.25	0.00		0.00				
9.50	0.55		0.55				
9.75	<b>7.71</b>		<b>7.71</b>				
10.00	<b>19.26</b>		<b>19.26</b>				
10.25	9.23		9.23				
10.50	6.81		6.81				
10.75	6.11		6.11				
11.00	5.51		5.51				
11.25	5.33		5.33				
11.50	5.16		5.16				
11.75	4.95		4.95				
12.00	4.72		4.72				
12.25	4.59		4.59				
12.50	4.45		4.45				
12.75	4.30		4.30				
13.00	4.13		4.13				
13.25	3.95		3.95				
13.50	3.76		3.76				
13.75	3.56		3.56				
14.00	3.35		3.35				
14.25	3.32		3.32				
14.50	3.30		3.30				
14.75	3.28		3.28				
15.00	3.26		3.26				
15.25	3.23		3.23				
15.50	3.21		3.21				
15.75	3.18		3.18				
16.00	3.16		3.16				
16.25	3.13		3.13				
16.50	3.09		3.09				
16.75	3.06		3.06				
17.00	3.03		3.03				
17.25	2.99		2.99				
17.50	2.95		2.95				
17.75	2.92		2.92				
18.00	2.88		2.88				



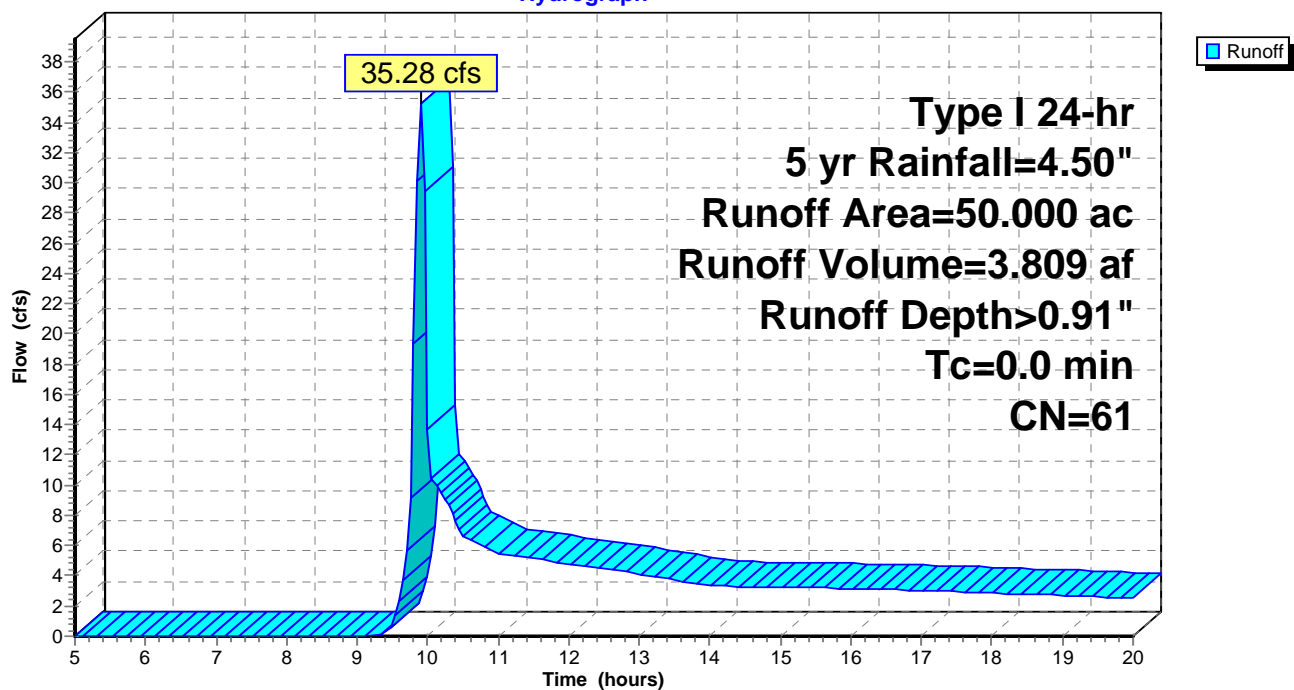
**Summary for Subcatchment D1: D-1**

Runoff = 35.28 cfs @ 9.90 hrs, Volume= 3.809 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type I 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
50.000	61	>75% Grass cover, Good, HSG B
50.000		100.00% Pervious Area

**Subcatchment D1: D-1****Hydrograph**

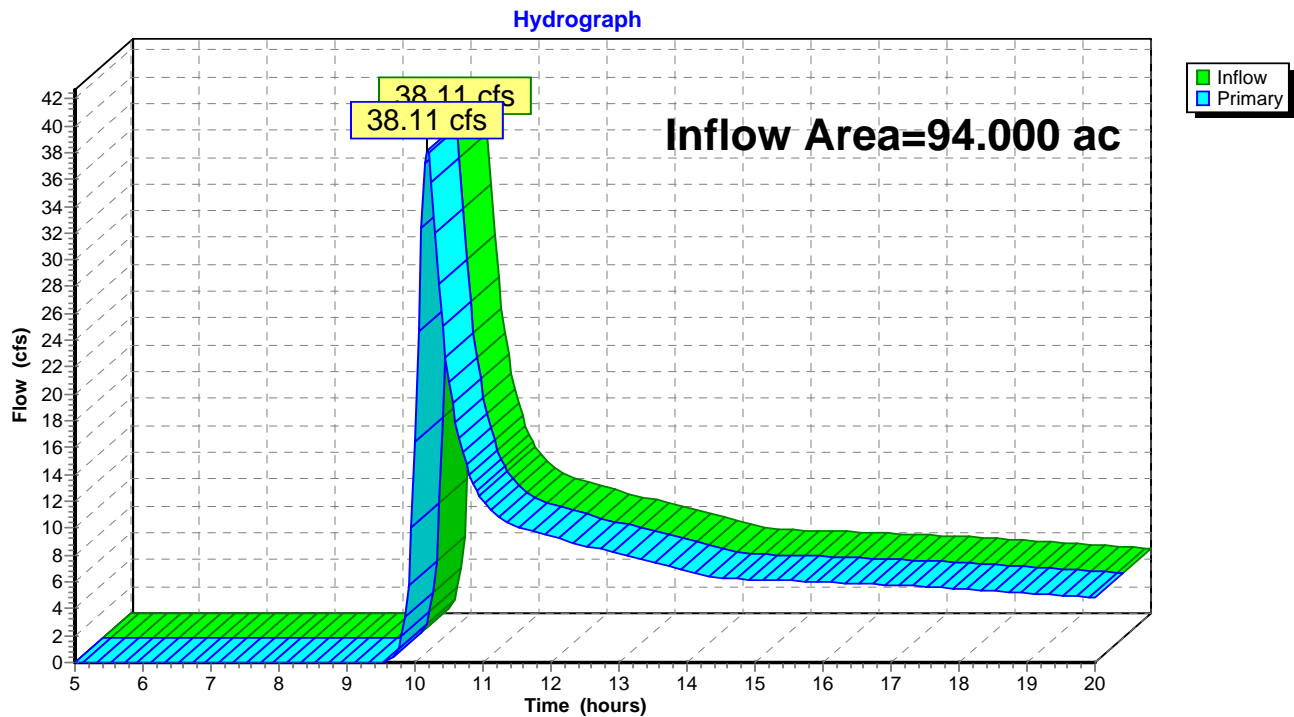
## Hydrograph for Subcatchment D1: D-1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.45	0.00	0.00	10.30	2.53	0.20	8.63	15.60	3.69	0.66	3.20
5.10	0.46	0.00	0.00	10.40	2.58	0.22	7.65	15.70	3.70	0.67	3.19
5.20	0.47	0.00	0.00	10.50	2.62	0.23	6.61	15.80	3.72	0.67	3.18
5.30	0.48	0.00	0.00	10.60	2.66	0.25	6.37	15.90	3.73	0.68	3.16
5.40	0.49	0.00	0.00	10.70	2.70	0.26	6.17	16.00	3.74	0.69	3.15
5.50	0.51	0.00	0.00	10.80	2.74	0.27	5.95	16.10	3.76	0.69	3.14
5.60	0.52	0.00	0.00	10.90	2.77	0.28	5.71	16.20	3.77	0.70	3.13
5.70	0.53	0.00	0.00	11.00	2.80	0.29	5.46	16.30	3.78	0.70	3.12
5.80	0.54	0.00	0.00	11.10	2.83	0.30	5.40	16.40	3.80	0.71	3.10
5.90	0.55	0.00	0.00	11.20	2.86	0.32	5.34	16.50	3.81	0.72	3.09
6.00	0.56	0.00	0.00	11.30	2.89	0.33	5.28	16.60	3.82	0.72	3.08
6.10	0.57	0.00	0.00	11.40	2.92	0.34	5.21	16.70	3.83	0.73	3.06
6.20	0.59	0.00	0.00	11.50	2.95	0.35	5.14	16.80	3.85	0.74	3.05
6.30	0.60	0.00	0.00	11.60	2.98	0.36	5.06	16.90	3.86	0.74	3.04
6.40	0.61	0.00	0.00	11.70	3.00	0.37	4.98	17.00	3.87	0.75	3.02
6.50	0.63	0.00	0.00	11.80	3.03	0.38	4.89	17.10	3.88	0.75	3.01
6.60	0.64	0.00	0.00	11.90	3.05	0.39	4.80	17.20	3.89	0.76	3.00
6.70	0.66	0.00	0.00	12.00	3.08	0.40	4.70	17.30	3.91	0.77	2.98
6.80	0.67	0.00	0.00	12.10	3.10	0.40	4.65	17.40	3.92	0.77	2.97
6.90	0.69	0.00	0.00	12.20	3.12	0.41	4.60	17.50	3.93	0.78	2.95
7.00	0.70	0.00	0.00	12.30	3.15	0.42	4.55	17.60	3.94	0.78	2.94
7.10	0.72	0.00	0.00	12.40	3.17	0.43	4.50	17.70	3.95	0.79	2.92
7.20	0.74	0.00	0.00	12.50	3.19	0.44	4.44	17.80	3.96	0.79	2.90
7.30	0.75	0.00	0.00	12.60	3.21	0.45	4.38	17.90	3.98	0.80	2.89
7.40	0.77	0.00	0.00	12.70	3.23	0.46	4.32	18.00	3.99	0.81	2.87
7.50	0.79	0.00	0.00	12.80	3.25	0.47	4.25	18.10	4.00	0.81	2.86
7.60	0.80	0.00	0.00	12.90	3.27	0.47	4.18	18.20	4.01	0.82	2.84
7.70	0.82	0.00	0.00	13.00	3.29	0.48	4.12	18.30	4.02	0.82	2.82
7.80	0.84	0.00	0.00	13.10	3.31	0.49	4.05	18.40	4.03	0.83	2.81
7.90	0.86	0.00	0.00	13.20	3.33	0.50	3.97	18.50	4.04	0.83	2.79
8.00	0.87	0.00	0.00	13.30	3.35	0.51	3.90	18.60	4.05	0.84	2.77
8.10	0.89	0.00	0.00	13.40	3.37	0.51	3.82	18.70	4.06	0.84	2.76
8.20	0.91	0.00	0.00	13.50	3.39	0.52	3.74	18.80	4.07	0.85	2.74
8.30	0.93	0.00	0.00	13.60	3.40	0.53	3.66	18.90	4.08	0.86	2.72
8.40	0.96	0.00	0.00	13.70	3.42	0.54	3.58	19.00	4.09	0.86	2.70
8.50	0.99	0.00	0.00	13.80	3.43	0.54	3.50	19.10	4.11	0.87	2.69
8.60	1.01	0.00	0.00	13.90	3.45	0.55	3.42	19.20	4.12	0.87	2.67
8.70	1.04	0.00	0.00	14.00	3.46	0.56	3.33	19.30	4.13	0.88	2.65
8.80	1.07	0.00	0.00	14.10	3.48	0.56	3.32	19.40	4.14	0.88	2.63
8.90	1.11	0.00	0.00	14.20	3.49	0.57	3.32	19.50	4.15	0.89	2.61
9.00	1.14	0.00	0.00	14.30	3.51	0.58	3.31	19.60	4.16	0.89	2.59
9.10	1.18	0.00	0.00	14.40	3.52	0.58	3.30	19.70	4.17	0.90	2.57
9.20	1.22	0.00	0.00	14.50	3.54	0.59	3.30	19.80	4.17	0.90	2.56
9.30	1.27	0.00	0.00	14.60	3.55	0.60	3.29	19.90	4.18	0.91	2.54
9.40	1.31	0.00	0.26	14.70	3.57	0.60	3.28	20.00	<b>4.19</b>	<b>0.91</b>	2.52
9.50	1.36	0.00	0.73	14.80	3.58	0.61	3.27				
9.60	1.44	0.00	2.32	14.90	3.60	0.62	3.26				
9.70	1.55	0.01	5.68	15.00	3.61	0.62	3.26				
9.80	1.75	0.03	19.40	15.10	3.62	0.63	3.25				
9.90	2.08	0.09	<b>35.28</b>	15.20	3.64	0.64	3.24				
10.00	2.32	0.15	13.64	15.30	3.65	0.64	3.23				
10.10	2.39	0.17	10.17	15.40	3.66	0.65	3.22				
10.20	2.46	0.19	9.48	15.50	3.68	0.65	3.21				

**Summary for Pond D2 exit: Free flow stormdrain**

Inflow Area = 94.000 ac, 0.00% Impervious, Inflow Depth > 0.90" for 5 yr event  
Inflow = 38.11 cfs @ 10.19 hrs, Volume= 7.023 af  
Primary = 38.11 cfs @ 10.19 hrs, Volume= 7.023 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Pond D2 exit: Free flow stormdrain**



**Hydrograph for Pond D2 exit: Free flow stormdrain**

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00		0.00	18.25	5.43		5.43
5.25	0.00		0.00	18.50	5.35		5.35
5.50	0.00		0.00	18.75	5.27		5.27
5.75	0.00		0.00	19.00	5.19		5.19
6.00	0.00		0.00	19.25	5.11		5.11
6.25	0.00		0.00	19.50	5.03		5.03
6.50	0.00		0.00	19.75	4.94		4.94
6.75	0.00		0.00	20.00	4.85		4.85
7.00	0.00		0.00				
7.25	0.00		0.00				
7.50	0.00		0.00				
7.75	0.00		0.00				
8.00	0.00		0.00				
8.25	0.00		0.00				
8.50	0.00		0.00				
8.75	0.00		0.00				
9.00	0.00		0.00				
9.25	0.00		0.00				
9.50	0.01		0.01				
9.75	1.09		1.09				
10.00	<b>16.49</b>		<b>16.49</b>				
10.25	<b>35.77</b>		<b>35.77</b>				
10.50	20.85		20.85				
10.75	14.70		14.70				
11.00	12.04		12.04				
11.25	10.75		10.75				
11.50	10.14		10.14				
11.75	9.78		9.78				
12.00	9.41		9.41				
12.25	9.01		9.01				
12.50	8.70		8.70				
12.75	8.44		8.44				
13.00	8.16		8.16				
13.25	7.85		7.85				
13.50	7.52		7.52				
13.75	7.17		7.17				
14.00	6.79		6.79				
14.25	6.43		6.43				
14.50	6.27		6.27				
14.75	6.21		6.21				
15.00	6.17		6.17				
15.25	6.14		6.14				
15.50	6.09		6.09				
15.75	6.05		6.05				
16.00	6.00		6.00				
16.25	5.95		5.95				
16.50	5.89		5.89				
16.75	5.83		5.83				
17.00	5.77		5.77				
17.25	5.71		5.71				
17.50	5.64		5.64				
17.75	5.57		5.57				
18.00	5.50		5.50				

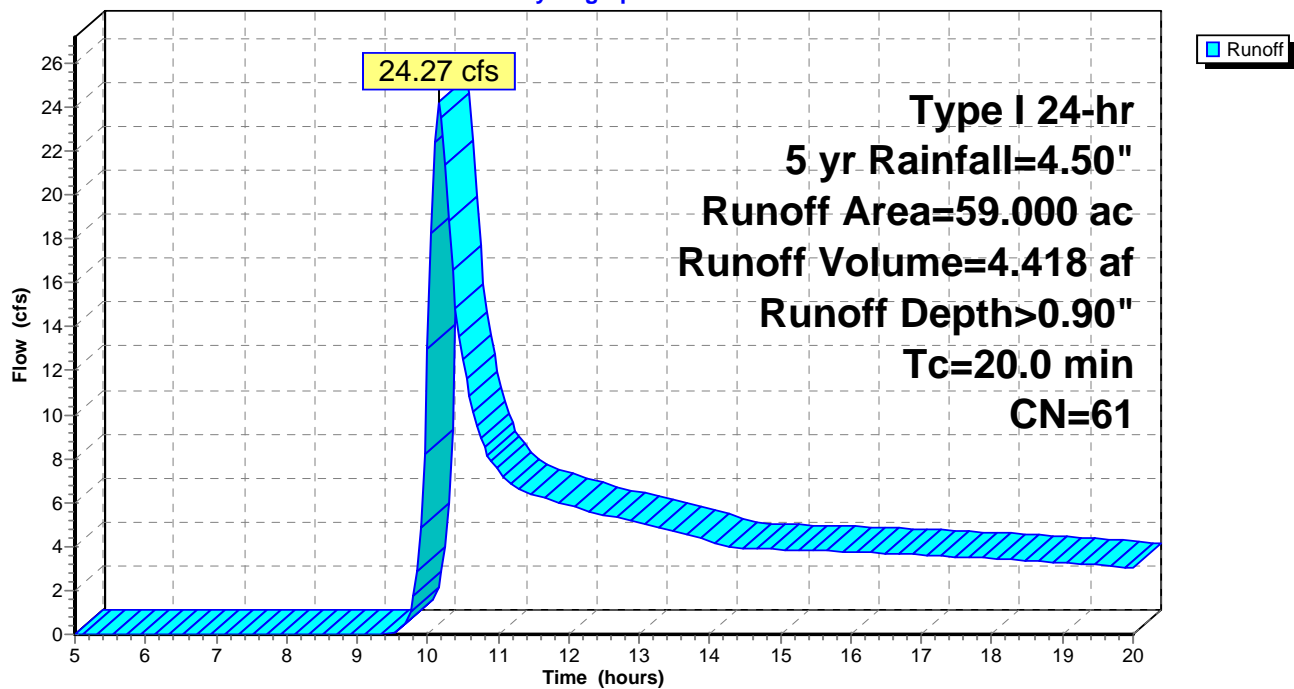
**Summary for Subcatchment D2-1: D2**

Runoff = 24.27 cfs @ 10.16 hrs, Volume= 4.418 af, Depth&gt; 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type I 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
59.000	61	>75% Grass cover, Good, HSG B
59.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry, My own Tc

**Subcatchment D2-1: D2****Hydrograph**

## Hydrograph for Subcatchment D2-1: D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.45	0.00	0.00	10.30	2.53	0.20	18.79	15.60	3.69	0.66	3.81
5.10	0.46	0.00	0.00	10.40	2.58	0.22	14.86	15.70	3.70	0.67	3.80
5.20	0.47	0.00	0.00	10.50	2.62	0.23	12.52	15.80	3.72	0.67	3.79
5.30	0.48	0.00	0.00	10.60	2.66	0.25	10.81	15.90	3.73	0.68	3.77
5.40	0.49	0.00	0.00	10.70	2.70	0.26	9.46	16.00	3.74	0.69	3.76
5.50	0.51	0.00	0.00	10.80	2.74	0.27	8.50	16.10	3.76	0.69	3.75
5.60	0.52	0.00	0.00	10.90	2.77	0.28	7.88	16.20	3.77	0.70	3.73
5.70	0.53	0.00	0.00	11.00	2.80	0.29	7.44	16.30	3.78	0.70	3.72
5.80	0.54	0.00	0.00	11.10	2.83	0.30	7.08	16.40	3.80	0.71	3.71
5.90	0.55	0.00	0.00	11.20	2.86	0.32	6.80	16.50	3.81	0.72	3.69
6.00	0.56	0.00	0.00	11.30	2.89	0.33	6.58	16.60	3.82	0.72	3.68
6.10	0.57	0.00	0.00	11.40	2.92	0.34	6.44	16.70	3.83	0.73	3.66
6.20	0.59	0.00	0.00	11.50	2.95	0.35	6.34	16.80	3.85	0.74	3.65
6.30	0.60	0.00	0.00	11.60	2.98	0.36	6.25	16.90	3.86	0.74	3.63
6.40	0.61	0.00	0.00	11.70	3.00	0.37	6.16	17.00	3.87	0.75	3.62
6.50	0.63	0.00	0.00	11.80	3.03	0.38	6.07	17.10	3.88	0.75	3.60
6.60	0.64	0.00	0.00	11.90	3.05	0.39	5.98	17.20	3.89	0.76	3.59
6.70	0.66	0.00	0.00	12.00	3.08	0.40	5.88	17.30	3.91	0.77	3.57
6.80	0.67	0.00	0.00	12.10	3.10	0.40	5.78	17.40	3.92	0.77	3.55
6.90	0.69	0.00	0.00	12.20	3.12	0.41	5.67	17.50	3.93	0.78	3.54
7.00	0.70	0.00	0.00	12.30	3.15	0.42	5.59	17.60	3.94	0.78	3.52
7.10	0.72	0.00	0.00	12.40	3.17	0.43	5.51	17.70	3.95	0.79	3.50
7.20	0.74	0.00	0.00	12.50	3.19	0.44	5.44	17.80	3.96	0.79	3.48
7.30	0.75	0.00	0.00	12.60	3.21	0.45	5.38	17.90	3.98	0.80	3.47
7.40	0.77	0.00	0.00	12.70	3.23	0.46	5.31	18.00	3.99	0.81	3.45
7.50	0.79	0.00	0.00	12.80	3.25	0.47	5.24	18.10	4.00	0.81	3.43
7.60	0.80	0.00	0.00	12.90	3.27	0.47	5.17	18.20	4.01	0.82	3.41
7.70	0.82	0.00	0.00	13.00	3.29	0.48	5.10	18.30	4.02	0.82	3.39
7.80	0.84	0.00	0.00	13.10	3.31	0.49	5.02	18.40	4.03	0.83	3.37
7.90	0.86	0.00	0.00	13.20	3.33	0.50	4.94	18.50	4.04	0.83	3.35
8.00	0.87	0.00	0.00	13.30	3.35	0.51	4.86	18.60	4.05	0.84	3.33
8.10	0.89	0.00	0.00	13.40	3.37	0.51	4.78	18.70	4.06	0.84	3.31
8.20	0.91	0.00	0.00	13.50	3.39	0.52	4.69	18.80	4.07	0.85	3.29
8.30	0.93	0.00	0.00	13.60	3.40	0.53	4.61	18.90	4.08	0.86	3.27
8.40	0.96	0.00	0.00	13.70	3.42	0.54	4.52	19.00	4.09	0.86	3.25
8.50	0.99	0.00	0.00	13.80	3.43	0.54	4.42	19.10	4.11	0.87	3.23
8.60	1.01	0.00	0.00	13.90	3.45	0.55	4.33	19.20	4.12	0.87	3.21
8.70	1.04	0.00	0.00	14.00	3.46	0.56	4.23	19.30	4.13	0.88	3.19
8.80	1.07	0.00	0.00	14.10	3.48	0.56	4.14	19.40	4.14	0.88	3.17
8.90	1.11	0.00	0.00	14.20	3.49	0.57	4.05	19.50	4.15	0.89	3.15
9.00	1.14	0.00	0.00	14.30	3.51	0.58	3.99	19.60	4.16	0.89	3.13
9.10	1.18	0.00	0.00	14.40	3.52	0.58	3.95	19.70	4.17	0.90	3.11
9.20	1.22	0.00	0.00	14.50	3.54	0.59	3.93	19.80	4.17	0.90	3.08
9.30	1.27	0.00	0.00	14.60	3.55	0.60	3.91	19.90	4.18	0.91	3.06
9.40	1.31	0.00	0.00	14.70	3.57	0.60	3.90	20.00	<b>4.19</b>	<b>0.91</b>	3.04
9.50	1.36	0.00	0.03	14.80	3.58	0.61	3.89				
9.60	1.44	0.00	0.17	14.90	3.60	0.62	3.88				
9.70	1.55	0.01	0.60	15.00	3.61	0.62	3.87				
9.80	1.75	0.03	1.75	15.10	3.62	0.63	3.86				
9.90	2.08	0.09	4.90	15.20	3.64	0.64	3.85				
10.00	2.32	0.15	12.99	15.30	3.65	0.64	3.84				
10.10	2.39	0.17	<b>22.43</b>	15.40	3.66	0.65	3.83				
10.20	2.46	0.19	<b>23.53</b>	15.50	3.68	0.65	3.82				

**Summary for Subcatchment D2-2: D2**

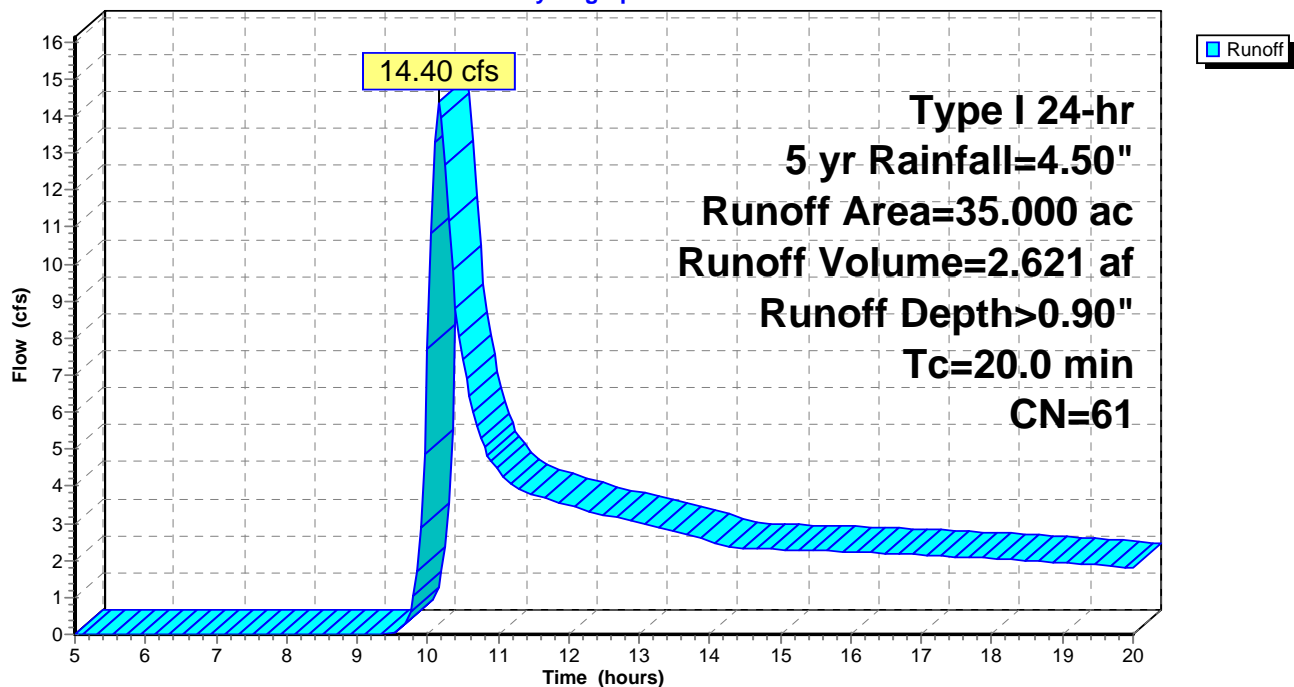
Runoff = 14.40 cfs @ 10.16 hrs, Volume= 2.621 af, Depth> 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type I 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
35.000	61	>75% Grass cover, Good, HSG B
35.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry, My own Tc

**Subcatchment D2-2: D2****Hydrograph**



## Hydrograph for Subcatchment D2-2: D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.45	0.00	0.00	10.30	2.53	0.20	11.15	15.60	3.69	0.66	2.26
5.10	0.46	0.00	0.00	10.40	2.58	0.22	8.82	15.70	3.70	0.67	2.25
5.20	0.47	0.00	0.00	10.50	2.62	0.23	7.43	15.80	3.72	0.67	2.25
5.30	0.48	0.00	0.00	10.60	2.66	0.25	6.41	15.90	3.73	0.68	2.24
5.40	0.49	0.00	0.00	10.70	2.70	0.26	5.61	16.00	3.74	0.69	2.23
5.50	0.51	0.00	0.00	10.80	2.74	0.27	5.04	16.10	3.76	0.69	2.22
5.60	0.52	0.00	0.00	10.90	2.77	0.28	4.68	16.20	3.77	0.70	2.22
5.70	0.53	0.00	0.00	11.00	2.80	0.29	4.41	16.30	3.78	0.70	2.21
5.80	0.54	0.00	0.00	11.10	2.83	0.30	4.20	16.40	3.80	0.71	2.20
5.90	0.55	0.00	0.00	11.20	2.86	0.32	4.03	16.50	3.81	0.72	2.19
6.00	0.56	0.00	0.00	11.30	2.89	0.33	3.91	16.60	3.82	0.72	2.18
6.10	0.57	0.00	0.00	11.40	2.92	0.34	3.82	16.70	3.83	0.73	2.17
6.20	0.59	0.00	0.00	11.50	2.95	0.35	3.76	16.80	3.85	0.74	2.16
6.30	0.60	0.00	0.00	11.60	2.98	0.36	3.71	16.90	3.86	0.74	2.16
6.40	0.61	0.00	0.00	11.70	3.00	0.37	3.65	17.00	3.87	0.75	2.15
6.50	0.63	0.00	0.00	11.80	3.03	0.38	3.60	17.10	3.88	0.75	2.14
6.60	0.64	0.00	0.00	11.90	3.05	0.39	3.55	17.20	3.89	0.76	2.13
6.70	0.66	0.00	0.00	12.00	3.08	0.40	3.49	17.30	3.91	0.77	2.12
6.80	0.67	0.00	0.00	12.10	3.10	0.40	3.43	17.40	3.92	0.77	2.11
6.90	0.69	0.00	0.00	12.20	3.12	0.41	3.37	17.50	3.93	0.78	2.10
7.00	0.70	0.00	0.00	12.30	3.15	0.42	3.31	17.60	3.94	0.78	2.09
7.10	0.72	0.00	0.00	12.40	3.17	0.43	3.27	17.70	3.95	0.79	2.08
7.20	0.74	0.00	0.00	12.50	3.19	0.44	3.23	17.80	3.96	0.79	2.07
7.30	0.75	0.00	0.00	12.60	3.21	0.45	3.19	17.90	3.98	0.80	2.06
7.40	0.77	0.00	0.00	12.70	3.23	0.46	3.15	18.00	3.99	0.81	2.05
7.50	0.79	0.00	0.00	12.80	3.25	0.47	3.11	18.10	4.00	0.81	2.03
7.60	0.80	0.00	0.00	12.90	3.27	0.47	3.07	18.20	4.01	0.82	2.02
7.70	0.82	0.00	0.00	13.00	3.29	0.48	3.02	18.30	4.02	0.82	2.01
7.80	0.84	0.00	0.00	13.10	3.31	0.49	2.98	18.40	4.03	0.83	2.00
7.90	0.86	0.00	0.00	13.20	3.33	0.50	2.93	18.50	4.04	0.83	1.99
8.00	0.87	0.00	0.00	13.30	3.35	0.51	2.88	18.60	4.05	0.84	1.98
8.10	0.89	0.00	0.00	13.40	3.37	0.51	2.83	18.70	4.06	0.84	1.97
8.20	0.91	0.00	0.00	13.50	3.39	0.52	2.78	18.80	4.07	0.85	1.95
8.30	0.93	0.00	0.00	13.60	3.40	0.53	2.73	18.90	4.08	0.86	1.94
8.40	0.96	0.00	0.00	13.70	3.42	0.54	2.68	19.00	4.09	0.86	1.93
8.50	0.99	0.00	0.00	13.80	3.43	0.54	2.62	19.10	4.11	0.87	1.92
8.60	1.01	0.00	0.00	13.90	3.45	0.55	2.57	19.20	4.12	0.87	1.91
8.70	1.04	0.00	0.00	14.00	3.46	0.56	2.51	19.30	4.13	0.88	1.89
8.80	1.07	0.00	0.00	14.10	3.48	0.56	2.45	19.40	4.14	0.88	1.88
8.90	1.11	0.00	0.00	14.20	3.49	0.57	2.40	19.50	4.15	0.89	1.87
9.00	1.14	0.00	0.00	14.30	3.51	0.58	2.36	19.60	4.16	0.89	1.86
9.10	1.18	0.00	0.00	14.40	3.52	0.58	2.34	19.70	4.17	0.90	1.84
9.20	1.22	0.00	0.00	14.50	3.54	0.59	2.33	19.80	4.17	0.90	1.83
9.30	1.27	0.00	0.00	14.60	3.55	0.60	2.32	19.90	4.18	0.91	1.82
9.40	1.31	0.00	0.00	14.70	3.57	0.60	2.31	20.00	<b>4.19</b>	<b>0.91</b>	1.80
9.50	1.36	0.00	0.02	14.80	3.58	0.61	2.31				
9.60	1.44	0.00	0.10	14.90	3.60	0.62	2.30				
9.70	1.55	0.01	0.36	15.00	3.61	0.62	2.30				
9.80	1.75	0.03	1.04	15.10	3.62	0.63	2.29				
9.90	2.08	0.09	2.91	15.20	3.64	0.64	2.29				
10.00	2.32	0.15	7.70	15.30	3.65	0.64	2.28				
10.10	2.39	0.17	<b>13.30</b>	15.40	3.66	0.65	2.27				
10.20	2.46	0.19	<b>13.96</b>	15.50	3.68	0.65	2.27				

**Summary for Reach C-2: confluence**

Inflow Area = 94.000 ac, 0.00% Impervious, Inflow Depth > 2.02" for 100 yr event  
 Inflow = 107.98 cfs @ 10.14 hrs, Volume= 15.807 af  
 Outflow = 107.06 cfs @ 10.16 hrs, Volume= 15.783 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 11.90 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 6.66 fps, Avg. Travel Time= 1.2 min

Peak Storage= 4,272 cf @ 10.15 hrs

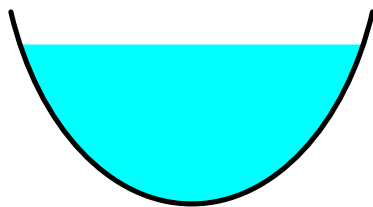
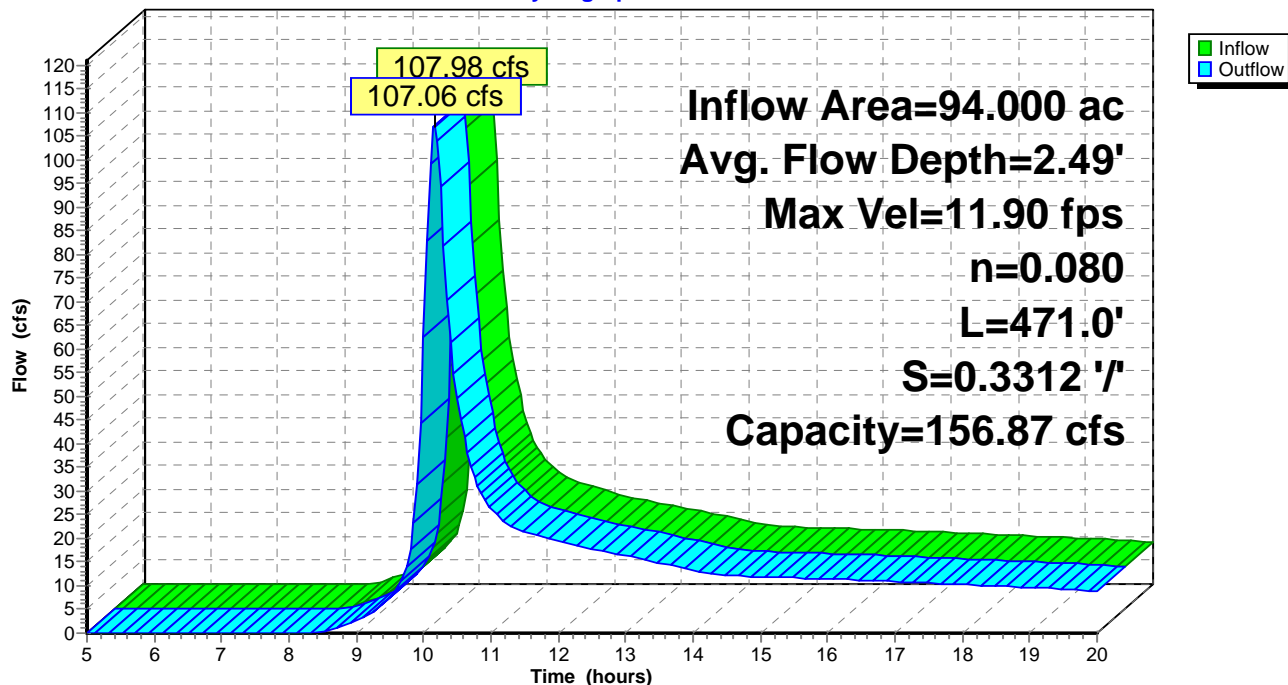
Average Depth at Peak Storage= 2.49' , Surface Width= 5.47'

Bank-Full Depth= 3.00' Flow Area= 12.0 sf, Capacity= 156.87 cfs

6.00' x 3.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

Length= 471.0' Slope= 0.3312 '/'

Inlet Invert= 1,641.00', Outlet Invert= 1,485.00'

**Reach C-2: confluence****Hydrograph**

**Hydrograph for Reach C-2: confluence**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	1,641.00	0.00	18.25	10.11	756	1,641.78	10.13
5.25	0.00	0	1,641.00	0.00	18.50	9.95	747	1,641.78	9.97
5.50	0.00	0	1,641.00	0.00	18.75	9.79	738	1,641.77	9.81
5.75	0.00	0	1,641.00	0.00	19.00	9.62	729	1,641.77	9.64
6.00	0.00	0	1,641.00	0.00	19.25	9.45	720	1,641.76	9.47
6.25	0.00	0	1,641.00	0.00	19.50	9.28	710	1,641.75	9.29
6.50	0.00	0	1,641.00	0.00	19.75	9.10	701	1,641.75	9.12
6.75	0.00	0	1,641.00	0.00	20.00	8.92	691	1,641.74	8.94
7.00	0.00	0	1,641.00	0.00					
7.25	0.00	0	1,641.00	0.00					
7.50	0.00	0	1,641.00	0.00					
7.75	0.00	0	1,641.00	0.00					
8.00	0.00	0	1,641.00	0.00					
8.25	0.02	2	1,641.01	0.00					
8.50	0.44	67	1,641.16	0.30					
8.75	1.41	174	1,641.29	1.23					
9.00	2.87	296	1,641.42	2.65					
9.25	4.88	437	1,641.54	4.60					
9.50	7.99	624	1,641.69	7.60					
9.75	15.60	991	1,641.94	14.16					
10.00	<b>70.59</b>	<b>2,986</b>	<b>1,642.96</b>	<b>62.45</b>					
10.25	<b>89.50</b>	<b>3,783</b>	<b>1,643.30</b>	<b>94.16</b>					
10.50	47.41	2,354	1,642.67	49.42					
10.75	31.97	1,757	1,642.38	32.92					
11.00	25.81	1,496	1,642.24	26.20					
11.25	22.77	1,363	1,642.16	22.99					
11.50	21.31	1,296	1,642.12	21.41					
11.75	20.32	1,253	1,642.10	20.41					
12.00	19.34	1,209	1,642.07	19.44					
12.25	18.35	1,163	1,642.05	18.44					
12.50	17.61	1,128	1,642.02	17.67					
12.75	16.95	1,098	1,642.01	17.01					
13.00	16.26	1,066	1,641.99	16.33					
13.25	15.55	1,032	1,641.97	15.62					
13.50	14.81	996	1,641.94	14.88					
13.75	14.03	958	1,641.92	14.11					
14.00	13.23	919	1,641.89	13.31					
14.25	12.49	881	1,641.87	12.55					
14.50	12.18	864	1,641.86	12.20					
14.75	12.04	856	1,641.85	12.05					
15.00	11.92	850	1,641.85	11.93					
15.25	11.81	845	1,641.84	11.82					
15.50	11.69	839	1,641.84	11.70					
15.75	11.56	832	1,641.84	11.58					
16.00	11.44	825	1,641.83	11.45					
16.25	11.30	818	1,641.83	11.32					
16.50	11.17	811	1,641.82	11.18					
16.75	11.03	804	1,641.82	11.04					
17.00	10.88	797	1,641.81	10.90					
17.25	10.74	789	1,641.81	10.75					
17.50	10.59	781	1,641.80	10.60					
17.75	10.43	773	1,641.80	10.45					
18.00	10.28	764	1,641.79	10.29					

**Summary for Reach D-1 checkdams: Drainage**

Inflow Area = 50.000 ac, 0.00% Impervious, Inflow Depth > 2.05" for 100 yr event  
 Inflow = 92.97 cfs @ 9.89 hrs, Volume= 8.528 af  
 Outflow = 90.90 cfs @ 9.90 hrs, Volume= 8.519 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 16.02 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 7.51 fps, Avg. Travel Time= 0.9 min

Peak Storage= 2,382 cf @ 9.89 hrs

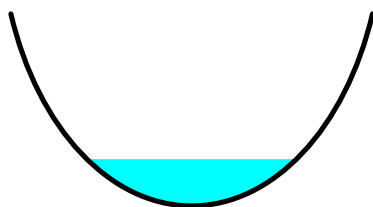
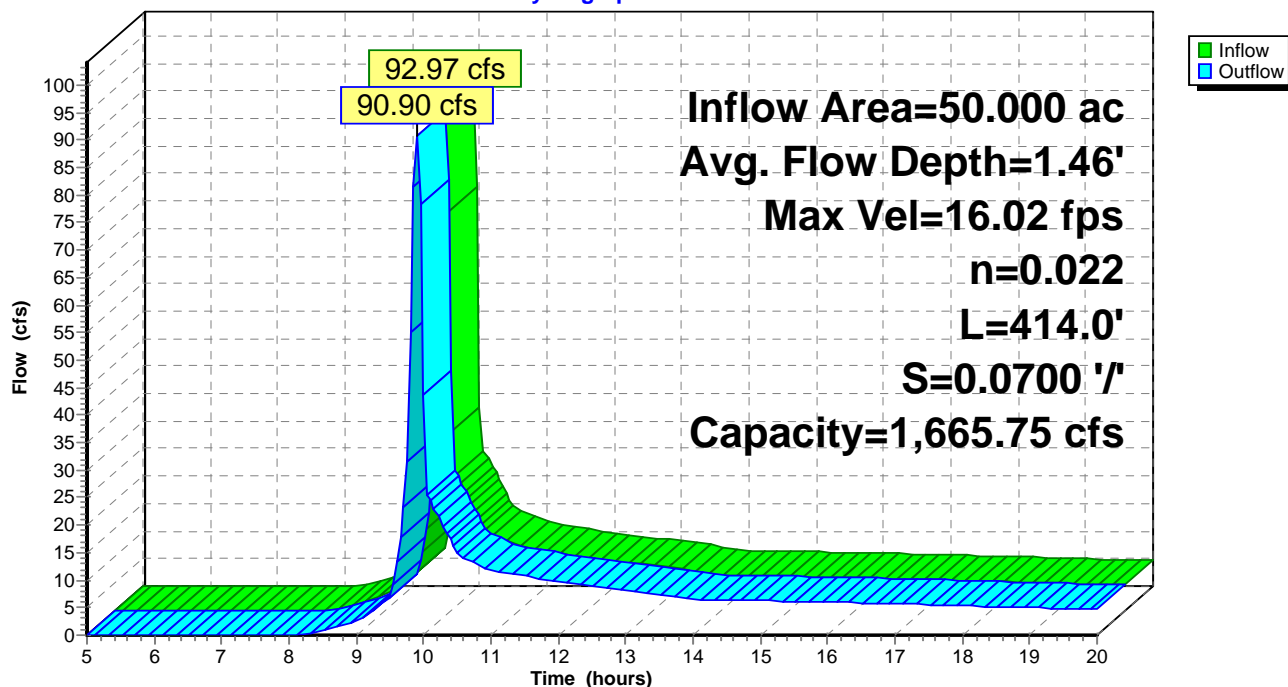
Average Depth at Peak Storage= 1.46' , Surface Width= 5.92'

Bank-Full Depth= 6.00' Flow Area= 48.0 sf, Capacity= 1,665.75 cfs

12.00' x 6.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight

Length= 414.0' Slope= 0.0700 '/'

Inlet Invert= 1,513.00', Outlet Invert= 1,484.00'

**Reach D-1 checkdams: Drainage****Hydrograph**



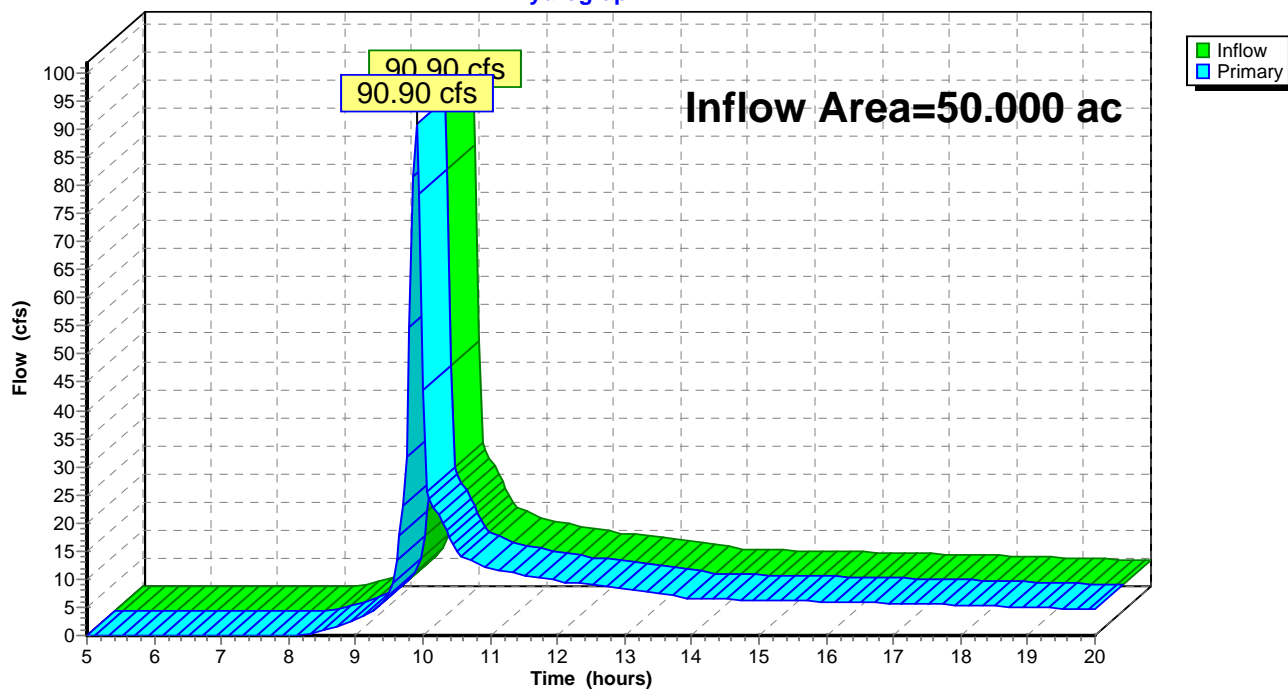
**Hydrograph for Reach D-1 checkdams: Drainage**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	1,513.00	0.00	18.25	5.27	314	1,513.38	5.28
5.25	0.00	0	1,513.00	0.00	18.50	5.19	310	1,513.37	5.19
5.50	0.00	0	1,513.00	0.00	18.75	5.10	306	1,513.37	5.10
5.75	0.00	0	1,513.00	0.00	19.00	5.00	303	1,513.37	5.01
6.00	0.00	0	1,513.00	0.00	19.25	4.91	299	1,513.37	4.92
6.25	0.00	0	1,513.00	0.00	19.50	4.82	295	1,513.36	4.83
6.50	0.00	0	1,513.00	0.00	19.75	4.72	291	1,513.36	4.73
6.75	0.00	0	1,513.00	0.00	20.00	4.63	287	1,513.36	4.64
7.00	0.00	0	1,513.00	0.00					
7.25	0.00	0	1,513.00	0.00					
7.50	0.00	0	1,513.00	0.00					
7.75	0.00	0	1,513.00	0.00					
8.00	0.00	0	1,513.00	0.00					
8.25	0.28	33	1,513.08	0.21					
8.50	0.87	84	1,513.15	0.79					
8.75	1.70	138	1,513.22	1.61					
9.00	2.80	197	1,513.28	2.69					
9.25	4.62	282	1,513.35	4.46					
9.50	7.42	390	1,513.44	7.09					
9.75	<b>34.62</b>	<b>1,142</b>	<b>1,513.89</b>	<b>31.62</b>					
10.00	<b>32.59</b>	<b>1,265</b>	<b>1,513.96</b>	<b>43.49</b>					
10.25	20.61	821	1,513.72	20.86					
10.50	14.58	648	1,513.61	14.94					
10.75	13.11	597	1,513.58	13.20					
11.00	11.64	549	1,513.55	11.73					
11.25	11.18	533	1,513.54	11.21					
11.50	10.69	516	1,513.53	10.73					
11.75	10.17	498	1,513.51	10.20					
12.00	9.61	479	1,513.50	9.64					
12.25	9.28	467	1,513.49	9.30					
12.50	8.93	455	1,513.48	8.96					
12.75	8.57	442	1,513.47	8.59					
13.00	8.18	428	1,513.46	8.21					
13.25	7.78	413	1,513.45	7.81					
13.50	7.37	397	1,513.44	7.40					
13.75	6.94	381	1,513.43	6.97					
14.00	6.51	365	1,513.42	6.54					
14.25	6.44	362	1,513.41	6.45					
14.50	6.39	359	1,513.41	6.39					
14.75	6.33	357	1,513.41	6.33					
15.00	6.27	354	1,513.41	6.27					
15.25	6.20	352	1,513.41	6.21					
15.50	6.13	349	1,513.40	6.14					
15.75	6.07	346	1,513.40	6.07					
16.00	6.00	343	1,513.40	6.00					
16.25	5.92	340	1,513.40	5.93					
16.50	5.85	337	1,513.40	5.85					
16.75	5.77	334	1,513.39	5.78					
17.00	5.69	331	1,513.39	5.70					
17.25	5.61	328	1,513.39	5.62					
17.50	5.53	324	1,513.39	5.54					
17.75	5.45	321	1,513.38	5.45					
18.00	5.36	317	1,513.38	5.37					

**Summary for Pond D-1 Street: Free Flow**

Inflow Area = 50.000 ac, 0.00% Impervious, Inflow Depth > 2.04" for 100 yr event  
Inflow = 90.90 cfs @ 9.90 hrs, Volume= 8.519 af  
Primary = 90.90 cfs @ 9.90 hrs, Volume= 8.519 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Pond D-1 Street: Free Flow****Hydrograph**

## Hydrograph for Pond D-1 Street: Free Flow

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00		0.00	18.25	5.28		5.28
5.25	0.00		0.00	18.50	5.19		5.19
5.50	0.00		0.00	18.75	5.10		5.10
5.75	0.00		0.00	19.00	5.01		5.01
6.00	0.00		0.00	19.25	4.92		4.92
6.25	0.00		0.00	19.50	4.83		4.83
6.50	0.00		0.00	19.75	4.73		4.73
6.75	0.00		0.00	20.00	4.64		4.64
7.00	0.00		0.00				
7.25	0.00		0.00				
7.50	0.00		0.00				
7.75	0.00		0.00				
8.00	0.00		0.00				
8.25	0.21		0.21				
8.50	0.79		0.79				
8.75	1.61		1.61				
9.00	2.69		2.69				
9.25	4.46		4.46				
9.50	7.09		7.09				
9.75	<b>31.62</b>		<b>31.62</b>				
10.00	<b>43.49</b>		<b>43.49</b>				
10.25	20.86		20.86				
10.50	14.94		14.94				
10.75	13.20		13.20				
11.00	11.73		11.73				
11.25	11.21		11.21				
11.50	10.73		10.73				
11.75	10.20		10.20				
12.00	9.64		9.64				
12.25	9.30		9.30				
12.50	8.96		8.96				
12.75	8.59		8.59				
13.00	8.21		8.21				
13.25	7.81		7.81				
13.50	7.40		7.40				
13.75	6.97		6.97				
14.00	6.54		6.54				
14.25	6.45		6.45				
14.50	6.39		6.39				
14.75	6.33		6.33				
15.00	6.27		6.27				
15.25	6.21		6.21				
15.50	6.14		6.14				
15.75	6.07		6.07				
16.00	6.00		6.00				
16.25	5.93		5.93				
16.50	5.85		5.85				
16.75	5.78		5.78				
17.00	5.70		5.70				
17.25	5.62		5.62				
17.50	5.54		5.54				
17.75	5.45		5.45				
18.00	5.37		5.37				

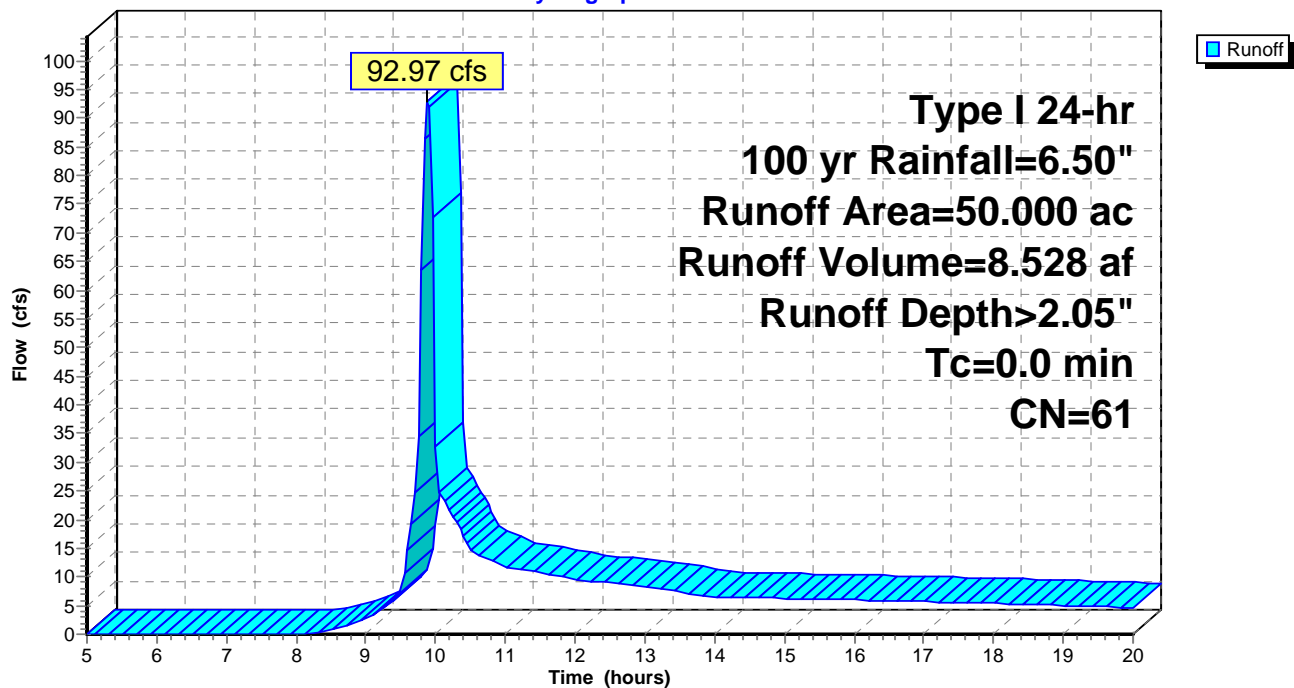
**Summary for Subcatchment D1: D-1**

Runoff = 92.97 cfs @ 9.89 hrs, Volume= 8.528 af, Depth&gt; 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type I 24-hr 100 yr Rainfall=6.50"

Area (ac)	CN	Description
50.000	61	>75% Grass cover, Good, HSG B
50.000		100.00% Pervious Area

**Subcatchment D1: D-1****Hydrograph**



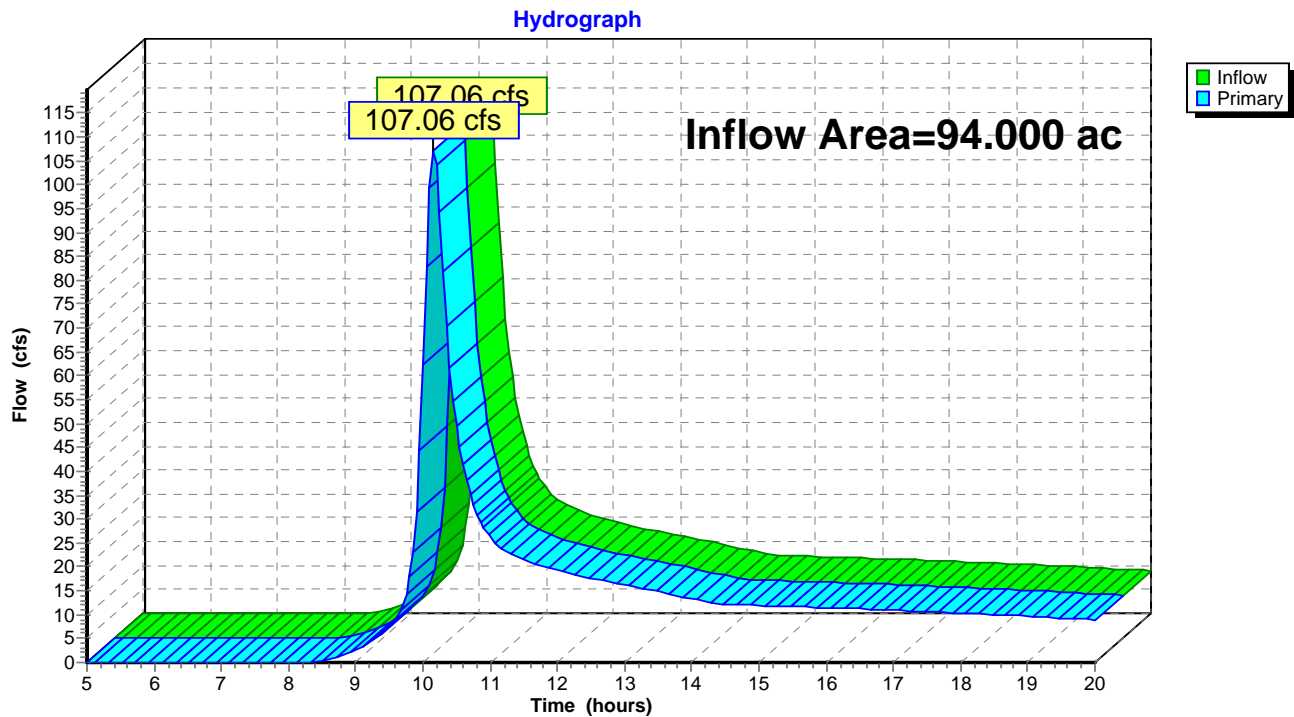
## Hydrograph for Subcatchment D1: D-1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.65	0.00	0.00	10.30	3.65	0.64	19.46	15.60	5.33	1.57	6.11
5.10	0.67	0.00	0.00	10.40	3.72	0.68	17.03	15.70	5.35	1.58	6.08
5.20	0.68	0.00	0.00	10.50	3.79	0.71	14.58	15.80	5.37	1.60	6.05
5.30	0.70	0.00	0.00	10.60	3.85	0.74	13.94	15.90	5.39	1.61	6.02
5.40	0.71	0.00	0.00	10.70	3.90	0.76	13.39	16.00	5.41	1.62	6.00
5.50	0.73	0.00	0.00	10.80	3.95	0.79	12.82	16.10	5.43	1.63	5.97
5.60	0.75	0.00	0.00	10.90	4.00	0.81	12.23	16.20	5.45	1.64	5.94
5.70	0.76	0.00	0.00	11.00	4.05	0.84	11.64	16.30	5.46	1.66	5.91
5.80	0.78	0.00	0.00	11.10	4.09	0.86	11.44	16.40	5.48	1.67	5.88
5.90	0.80	0.00	0.00	11.20	4.14	0.88	11.27	16.50	5.50	1.68	5.85
6.00	0.81	0.00	0.00	11.30	4.18	0.91	11.08	16.60	5.52	1.69	5.82
6.10	0.83	0.00	0.00	11.40	4.22	0.93	10.89	16.70	5.54	1.70	5.79
6.20	0.85	0.00	0.00	11.50	4.26	0.95	10.69	16.80	5.55	1.71	5.75
6.30	0.87	0.00	0.00	11.60	4.30	0.97	10.49	16.90	5.57	1.73	5.72
6.40	0.88	0.00	0.00	11.70	4.34	0.99	10.28	17.00	5.59	1.74	5.69
6.50	0.90	0.00	0.00	11.80	4.38	1.01	10.06	17.10	5.61	1.75	5.66
6.60	0.92	0.00	0.00	11.90	4.41	1.03	9.83	17.20	5.62	1.76	5.63
6.70	0.95	0.00	0.00	12.00	4.45	1.05	9.61	17.30	5.64	1.77	5.60
6.80	0.97	0.00	0.00	12.10	4.48	1.07	9.47	17.40	5.66	1.78	5.56
6.90	0.99	0.00	0.00	12.20	4.51	1.09	9.34	17.50	5.68	1.79	5.53
7.00	1.01	0.00	0.00	12.30	4.55	1.11	9.21	17.60	5.69	1.80	5.50
7.10	1.04	0.00	0.00	12.40	4.58	1.12	9.07	17.70	5.71	1.81	5.46
7.20	1.06	0.00	0.00	12.50	4.61	1.14	8.93	17.80	5.73	1.82	5.43
7.30	1.09	0.00	0.00	12.60	4.64	1.16	8.79	17.90	5.74	1.84	5.39
7.40	1.11	0.00	0.00	12.70	4.67	1.18	8.64	18.00	5.76	1.85	5.36
7.50	1.13	0.00	0.00	12.80	4.70	1.19	8.49	18.10	5.78	1.86	5.33
7.60	1.16	0.00	0.00	12.90	4.73	1.21	8.34	18.20	5.79	1.87	5.29
7.70	1.18	0.00	0.00	13.00	4.76	1.23	8.18	18.30	5.81	1.88	5.26
7.80	1.21	0.00	0.00	13.10	4.79	1.24	8.02	18.40	5.82	1.89	5.22
7.90	1.24	0.00	0.00	13.20	4.81	1.26	7.86	18.50	5.84	1.90	5.19
8.00	1.26	0.00	0.00	13.30	4.84	1.27	7.70	18.60	5.85	1.91	5.15
8.10	1.29	0.00	0.04	13.40	4.86	1.29	7.53	18.70	5.87	1.92	5.11
8.20	1.32	0.00	0.19	13.50	4.89	1.30	7.37	18.80	5.88	1.93	5.08
8.30	1.35	0.00	0.38	13.60	4.91	1.32	7.20	18.90	5.90	1.94	5.04
8.40	1.39	0.00	0.60	13.70	4.94	1.33	7.03	19.00	5.92	1.95	5.00
8.50	1.42	0.00	0.87	13.80	4.96	1.35	6.85	19.10	5.93	1.96	4.97
8.60	1.46	0.01	1.17	13.90	4.98	1.36	6.68	19.20	5.94	1.97	4.93
8.70	1.51	0.01	1.51	14.00	5.01	1.37	6.51	19.30	5.96	1.98	4.89
8.80	1.55	0.01	1.90	14.10	5.03	1.38	6.48	19.40	5.97	1.99	4.86
8.90	1.60	0.02	2.32	14.20	5.05	1.40	6.45	19.50	5.99	2.00	4.82
9.00	1.65	0.02	2.80	14.30	5.07	1.41	6.43	19.60	6.00	2.01	4.78
9.10	1.71	0.03	3.45	14.40	5.09	1.42	6.41	19.70	6.02	2.02	4.74
9.20	1.76	0.03	4.21	14.50	5.11	1.44	6.39	19.80	6.03	2.03	4.71
9.30	1.83	0.04	5.06	14.60	5.13	1.45	6.36	19.90	6.04	2.04	4.67
9.40	1.90	0.05	6.02	14.70	5.15	1.46	6.34	20.00	<b>6.06</b>	<b>2.04</b>	4.63
9.50	1.97	0.07	7.42	14.80	5.17	1.47	6.32				
9.60	2.08	0.09	14.59	14.90	5.19	1.49	6.29				
9.70	2.25	0.13	24.79	15.00	5.21	1.50	6.27				
9.80	2.52	0.20	63.37	15.10	5.23	1.51	6.24				
9.90	3.01	0.37	<b>92.01</b>	15.20	5.25	1.52	6.21				
10.00	3.35	0.51	32.59	15.30	5.27	1.54	6.19				
10.10	3.46	0.55	23.71	15.40	5.29	1.55	6.16				
10.20	3.56	0.60	21.70	15.50	5.31	1.56	6.13				

**Summary for Pond D2 exit: Free flow stormdrain**

Inflow Area = 94.000 ac, 0.00% Impervious, Inflow Depth > 2.01" for 100 yr event  
Inflow = 107.06 cfs @ 10.16 hrs, Volume= 15.783 af  
Primary = 107.06 cfs @ 10.16 hrs, Volume= 15.783 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Pond D2 exit: Free flow stormdrain**

**Hydrograph for Pond D2 exit: Free flow stormdrain**

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00		0.00	18.25	10.13		10.13
5.25	0.00		0.00	18.50	9.97		9.97
5.50	0.00		0.00	18.75	9.81		9.81
5.75	0.00		0.00	19.00	9.64		9.64
6.00	0.00		0.00	19.25	9.47		9.47
6.25	0.00		0.00	19.50	9.29		9.29
6.50	0.00		0.00	19.75	9.12		9.12
6.75	0.00		0.00	20.00	8.94		8.94
7.00	0.00		0.00				
7.25	0.00		0.00				
7.50	0.00		0.00				
7.75	0.00		0.00				
8.00	0.00		0.00				
8.25	0.00		0.00				
8.50	0.30		0.30				
8.75	1.23		1.23				
9.00	2.65		2.65				
9.25	4.60		4.60				
9.50	7.60		7.60				
9.75	14.16		14.16				
10.00	<b>62.45</b>		<b>62.45</b>				
10.25	<b>94.16</b>		<b>94.16</b>				
10.50	49.42		49.42				
10.75	32.92		32.92				
11.00	26.20		26.20				
11.25	22.99		22.99				
11.50	21.41		21.41				
11.75	20.41		20.41				
12.00	19.44		19.44				
12.25	18.44		18.44				
12.50	17.67		17.67				
12.75	17.01		17.01				
13.00	16.33		16.33				
13.25	15.62		15.62				
13.50	14.88		14.88				
13.75	14.11		14.11				
14.00	13.31		13.31				
14.25	12.55		12.55				
14.50	12.20		12.20				
14.75	12.05		12.05				
15.00	11.93		11.93				
15.25	11.82		11.82				
15.50	11.70		11.70				
15.75	11.58		11.58				
16.00	11.45		11.45				
16.25	11.32		11.32				
16.50	11.18		11.18				
16.75	11.04		11.04				
17.00	10.90		10.90				
17.25	10.75		10.75				
17.50	10.60		10.60				
17.75	10.45		10.45				
18.00	10.29		10.29				

**Summary for Subcatchment D2-1: D2**

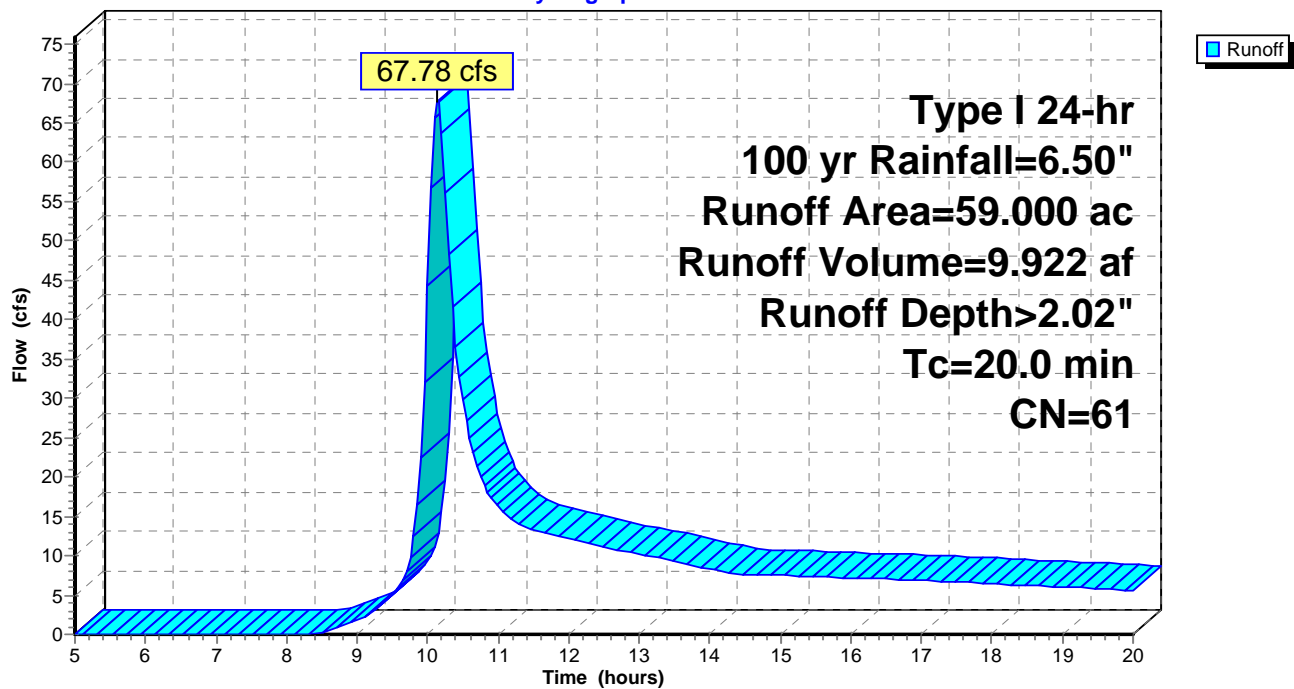
Runoff = 67.78 cfs @ 10.14 hrs, Volume= 9.922 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type I 24-hr 100 yr Rainfall=6.50"

Area (ac)	CN	Description
59.000	61	>75% Grass cover, Good, HSG B
59.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry, My own Tc

**Subcatchment D2-1: D2****Hydrograph**



## Hydrograph for Subcatchment D2-1: D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.65	0.00	0.00	10.30	3.65	0.64	48.25	15.60	5.33	1.57	7.31
5.10	0.67	0.00	0.00	10.40	3.72	0.68	36.58	15.70	5.35	1.58	7.27
5.20	0.68	0.00	0.00	10.50	3.79	0.71	29.76	15.80	5.37	1.60	7.24
5.30	0.70	0.00	0.00	10.60	3.85	0.74	25.00	15.90	5.39	1.61	7.21
5.40	0.71	0.00	0.00	10.70	3.90	0.76	21.44	16.00	5.41	1.62	7.18
5.50	0.73	0.00	0.00	10.80	3.95	0.79	18.96	16.10	5.43	1.63	7.14
5.60	0.75	0.00	0.00	10.90	4.00	0.81	17.35	16.20	5.45	1.64	7.11
5.70	0.76	0.00	0.00	11.00	4.05	0.84	16.20	16.30	5.46	1.66	7.08
5.80	0.78	0.00	0.00	11.10	4.09	0.86	15.31	16.40	5.48	1.67	7.04
5.90	0.80	0.00	0.00	11.20	4.14	0.88	14.59	16.50	5.50	1.68	7.01
6.00	0.81	0.00	0.00	11.30	4.18	0.91	14.05	16.60	5.52	1.69	6.97
6.10	0.83	0.00	0.00	11.40	4.22	0.93	13.66	16.70	5.54	1.70	6.94
6.20	0.85	0.00	0.00	11.50	4.26	0.95	13.37	16.80	5.55	1.71	6.90
6.30	0.87	0.00	0.00	11.60	4.30	0.97	13.12	16.90	5.57	1.73	6.87
6.40	0.88	0.00	0.00	11.70	4.34	0.99	12.88	17.00	5.59	1.74	6.83
6.50	0.90	0.00	0.00	11.80	4.38	1.01	12.64	17.10	5.61	1.75	6.79
6.60	0.92	0.00	0.00	11.90	4.41	1.03	12.39	17.20	5.62	1.76	6.76
6.70	0.95	0.00	0.00	12.00	4.45	1.05	12.14	17.30	5.64	1.77	6.72
6.80	0.97	0.00	0.00	12.10	4.48	1.07	11.88	17.40	5.66	1.78	6.68
6.90	0.99	0.00	0.00	12.20	4.51	1.09	11.63	17.50	5.68	1.79	6.64
7.00	1.01	0.00	0.00	12.30	4.55	1.11	11.41	17.60	5.69	1.80	6.61
7.10	1.04	0.00	0.00	12.40	4.58	1.12	11.23	17.70	5.71	1.81	6.57
7.20	1.06	0.00	0.00	12.50	4.61	1.14	11.05	17.80	5.73	1.82	6.53
7.30	1.09	0.00	0.00	12.60	4.64	1.16	10.88	17.90	5.74	1.84	6.49
7.40	1.11	0.00	0.00	12.70	4.67	1.18	10.72	18.00	5.76	1.85	6.45
7.50	1.13	0.00	0.00	12.80	4.70	1.19	10.55	18.10	5.78	1.86	6.41
7.60	1.16	0.00	0.00	12.90	4.73	1.21	10.38	18.20	5.79	1.87	6.37
7.70	1.18	0.00	0.00	13.00	4.76	1.23	10.21	18.30	5.81	1.88	6.33
7.80	1.21	0.00	0.00	13.10	4.79	1.24	10.03	18.40	5.82	1.89	6.29
7.90	1.24	0.00	0.00	13.20	4.81	1.26	9.85	18.50	5.84	1.90	6.25
8.00	1.26	0.00	0.00	13.30	4.84	1.27	9.67	18.60	5.85	1.91	6.21
8.10	1.29	0.00	0.00	13.40	4.86	1.29	9.48	18.70	5.87	1.92	6.16
8.20	1.32	0.00	0.00	13.50	4.89	1.30	9.29	18.80	5.88	1.93	6.12
8.30	1.35	0.00	0.03	13.60	4.91	1.32	9.10	18.90	5.90	1.94	6.08
8.40	1.39	0.00	0.12	13.70	4.94	1.33	8.91	19.00	5.92	1.95	6.04
8.50	1.42	0.00	0.27	13.80	4.96	1.35	8.71	19.10	5.93	1.96	6.00
8.60	1.46	0.01	0.48	13.90	4.98	1.36	8.51	19.20	5.94	1.97	5.95
8.70	1.51	0.01	0.74	14.00	5.01	1.37	8.31	19.30	5.96	1.98	5.91
8.80	1.55	0.01	1.04	14.10	5.03	1.38	8.10	19.40	5.97	1.99	5.87
8.90	1.60	0.02	1.40	14.20	5.05	1.40	7.91	19.50	5.99	2.00	5.82
9.00	1.65	0.02	1.80	14.30	5.07	1.41	7.78	19.60	6.00	2.01	5.78
9.10	1.71	0.03	2.25	14.40	5.09	1.42	7.70	19.70	6.02	2.02	5.73
9.20	1.76	0.03	2.77	14.50	5.11	1.44	7.64	19.80	6.03	2.03	5.69
9.30	1.83	0.04	3.39	14.60	5.13	1.45	7.60	19.90	6.04	2.04	5.65
9.40	1.90	0.05	4.14	14.70	5.15	1.46	7.57	20.00	<b>6.06</b>	<b>2.04</b>	5.60
9.50	1.97	0.07	5.02	14.80	5.17	1.47	7.54				
9.60	2.08	0.09	6.06	14.90	5.19	1.49	7.51				
9.70	2.25	0.13	7.98	15.00	5.21	1.50	7.48				
9.80	2.52	0.20	12.46	15.10	5.23	1.51	7.45				
9.90	3.01	0.37	22.57	15.20	5.25	1.52	7.43				
10.00	3.35	0.51	44.31	15.30	5.27	1.54	7.40				
10.10	3.46	0.55	<b>65.58</b>	15.40	5.29	1.55	7.37				
10.20	3.56	0.60	<b>63.61</b>	15.50	5.31	1.56	7.34				

**Summary for Subcatchment D2-2: D2**

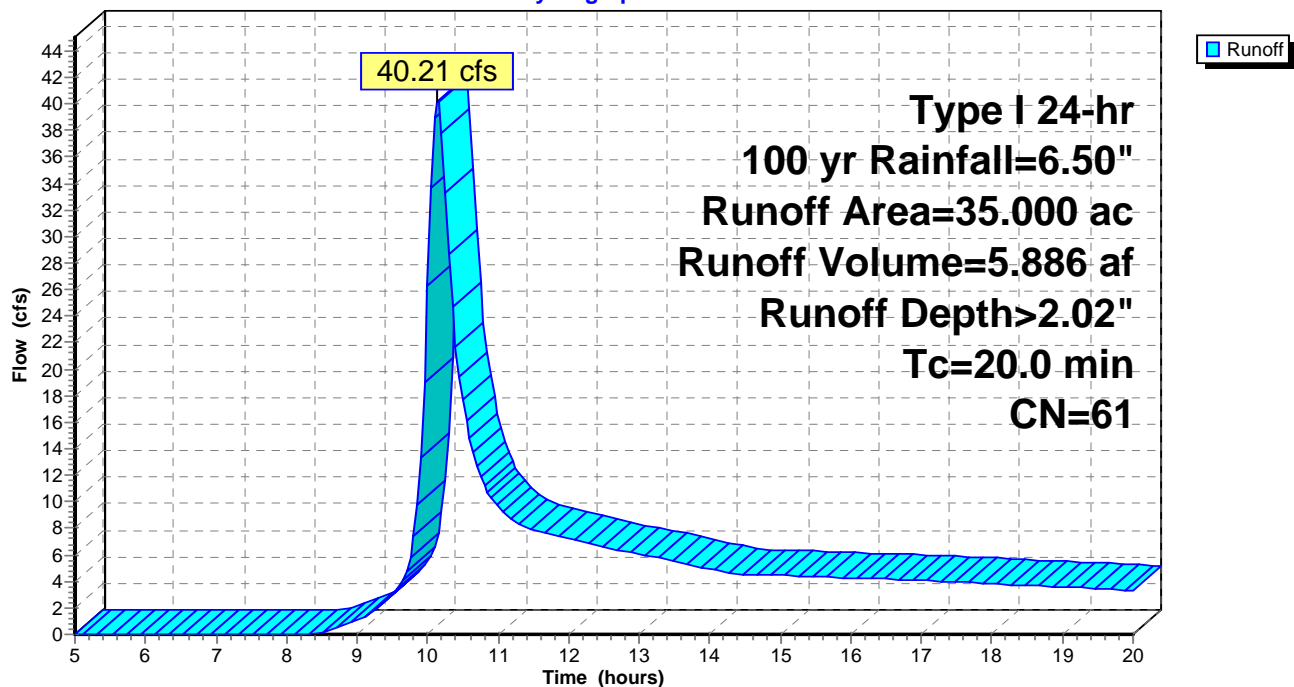
Runoff = 40.21 cfs @ 10.14 hrs, Volume= 5.886 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type I 24-hr 100 yr Rainfall=6.50"

Area (ac)	CN	Description
35.000	61	>75% Grass cover, Good, HSG B
35.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry, My own Tc

**Subcatchment D2-2: D2****Hydrograph**

## Hydrograph for Subcatchment D2-2: D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.65	0.00	0.00	10.30	3.65	0.64	28.62	15.60	5.33	1.57	4.33
5.10	0.67	0.00	0.00	10.40	3.72	0.68	21.70	15.70	5.35	1.58	4.31
5.20	0.68	0.00	0.00	10.50	3.79	0.71	17.65	15.80	5.37	1.60	4.30
5.30	0.70	0.00	0.00	10.60	3.85	0.74	14.83	15.90	5.39	1.61	4.28
5.40	0.71	0.00	0.00	10.70	3.90	0.76	12.72	16.00	5.41	1.62	4.26
5.50	0.73	0.00	0.00	10.80	3.95	0.79	11.25	16.10	5.43	1.63	4.24
5.60	0.75	0.00	0.00	10.90	4.00	0.81	10.29	16.20	5.45	1.64	4.22
5.70	0.76	0.00	0.00	11.00	4.05	0.84	9.61	16.30	5.46	1.66	4.20
5.80	0.78	0.00	0.00	11.10	4.09	0.86	9.08	16.40	5.48	1.67	4.18
5.90	0.80	0.00	0.00	11.20	4.14	0.88	8.65	16.50	5.50	1.68	4.16
6.00	0.81	0.00	0.00	11.30	4.18	0.91	8.33	16.60	5.52	1.69	4.14
6.10	0.83	0.00	0.00	11.40	4.22	0.93	8.11	16.70	5.54	1.70	4.12
6.20	0.85	0.00	0.00	11.50	4.26	0.95	7.93	16.80	5.55	1.71	4.10
6.30	0.87	0.00	0.00	11.60	4.30	0.97	7.78	16.90	5.57	1.73	4.07
6.40	0.88	0.00	0.00	11.70	4.34	0.99	7.64	17.00	5.59	1.74	4.05
6.50	0.90	0.00	0.00	11.80	4.38	1.01	7.50	17.10	5.61	1.75	4.03
6.60	0.92	0.00	0.00	11.90	4.41	1.03	7.35	17.20	5.62	1.76	4.01
6.70	0.95	0.00	0.00	12.00	4.45	1.05	7.20	17.30	5.64	1.77	3.99
6.80	0.97	0.00	0.00	12.10	4.48	1.07	7.05	17.40	5.66	1.78	3.96
6.90	0.99	0.00	0.00	12.20	4.51	1.09	6.90	17.50	5.68	1.79	3.94
7.00	1.01	0.00	0.00	12.30	4.55	1.11	6.77	17.60	5.69	1.80	3.92
7.10	1.04	0.00	0.00	12.40	4.58	1.12	6.66	17.70	5.71	1.81	3.90
7.20	1.06	0.00	0.00	12.50	4.61	1.14	6.56	17.80	5.73	1.82	3.87
7.30	1.09	0.00	0.00	12.60	4.64	1.16	6.46	17.90	5.74	1.84	3.85
7.40	1.11	0.00	0.00	12.70	4.67	1.18	6.36	18.00	5.76	1.85	3.83
7.50	1.13	0.00	0.00	12.80	4.70	1.19	6.26	18.10	5.78	1.86	3.80
7.60	1.16	0.00	0.00	12.90	4.73	1.21	6.16	18.20	5.79	1.87	3.78
7.70	1.18	0.00	0.00	13.00	4.76	1.23	6.05	18.30	5.81	1.88	3.75
7.80	1.21	0.00	0.00	13.10	4.79	1.24	5.95	18.40	5.82	1.89	3.73
7.90	1.24	0.00	0.00	13.20	4.81	1.26	5.84	18.50	5.84	1.90	3.71
8.00	1.26	0.00	0.00	13.30	4.84	1.27	5.74	18.60	5.85	1.91	3.68
8.10	1.29	0.00	0.00	13.40	4.86	1.29	5.62	18.70	5.87	1.92	3.66
8.20	1.32	0.00	0.00	13.50	4.89	1.30	5.51	18.80	5.88	1.93	3.63
8.30	1.35	0.00	0.02	13.60	4.91	1.32	5.40	18.90	5.90	1.94	3.61
8.40	1.39	0.00	0.07	13.70	4.94	1.33	5.28	19.00	5.92	1.95	3.58
8.50	1.42	0.00	0.16	13.80	4.96	1.35	5.17	19.10	5.93	1.96	3.56
8.60	1.46	0.01	0.29	13.90	4.98	1.36	5.05	19.20	5.94	1.97	3.53
8.70	1.51	0.01	0.44	14.00	5.01	1.37	4.93	19.30	5.96	1.98	3.51
8.80	1.55	0.01	0.62	14.10	5.03	1.38	4.81	19.40	5.97	1.99	3.48
8.90	1.60	0.02	0.83	14.20	5.05	1.40	4.70	19.50	5.99	2.00	3.45
9.00	1.65	0.02	1.07	14.30	5.07	1.41	4.62	19.60	6.00	2.01	3.43
9.10	1.71	0.03	1.33	14.40	5.09	1.42	4.57	19.70	6.02	2.02	3.40
9.20	1.76	0.03	1.64	14.50	5.11	1.44	4.53	19.80	6.03	2.03	3.38
9.30	1.83	0.04	2.01	14.60	5.13	1.45	4.51	19.90	6.04	2.04	3.35
9.40	1.90	0.05	2.46	14.70	5.15	1.46	4.49	20.00	<b>6.06</b>	<b>2.04</b>	3.32
9.50	1.97	0.07	2.98	14.80	5.17	1.47	4.47				
9.60	2.08	0.09	3.59	14.90	5.19	1.49	4.46				
9.70	2.25	0.13	4.73	15.00	5.21	1.50	4.44				
9.80	2.52	0.20	7.39	15.10	5.23	1.51	4.42				
9.90	3.01	0.37	13.39	15.20	5.25	1.52	4.41				
10.00	3.35	0.51	26.28	15.30	5.27	1.54	4.39				
10.10	3.46	0.55	<b>38.90</b>	15.40	5.29	1.55	4.37				
10.20	3.56	0.60	<b>37.73</b>	15.50	5.31	1.56	4.35				

# APPENDIX E

## USACE JD FORM



# PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there “*may be*” waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office	Los Angeles District	File/ORM #		PJD Date:	June 16, 2019
State	CA	City/County	Menifee/Riverside	Name/Address of Person Requesting PJD	Gonzales Environmental Consulting, LLC Teresa Gonzales 358 Crystal Drive San Jacinto, CA 92583
Nearest Waterbody:	Unnamed drainage to Canyon Lakes				
Location: TRS, Lat/Long or UTM:	33.720146-N, - 117.213911-W				

Identify (Estimate) Amount of Waters in the Review Area:

Non-Wetland Waters:

Stream Flow:

885 linear ft 0.76 acres

Ephemeral

Wetlands: acre(s) Cowardin Class:

Riverine

Name of Any Water Bodies

Tidal

on the Site Identified as

Section 10 Waters:

Non-Tidal:

- ☐ Office (Desk) Determination  
☐ Field Determination:

Date of Field Trip:

**SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should 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 quad name:  Romoland
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation:  Soil Survey Staff, Natural Resources Conservation
- ☐ National wetlands inventory map(s). Cite name:
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is:
- ☒ Photographs: ☒ Aerial (Name & Date):  Google, 2019  
☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter:
- ☒ Other information (please specify):  Jurisdictional Delineation

**IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.**

Signature and Date of Regulatory Project Manager  
(REQUIRED)

Signature and Date of Person Requesting Preliminary JD  
(REQUIRED, unless obtaining the signature is impracticable)

## EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring “preconstruction notification” (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

## PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

### Appendix A - Sites

District Office	Los Angeles District File/ORM #		PJD Date:	June 16, 2019
State	CA	City/County Menifee/Riverside	Person Requesting PJD	Teresa Gonzales

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
	33.720146N	-117. 213911W	Riverine	0.76 acres	Non-Section 10 non-wetlan

#### Notes:

The existing project waters of unnamed drainages flow off site into unnamed drainage which flows to Canyon Lakes. Please see attached connectivity analysis.

# APPENDIX F

## CONNECTIVITY MAP & ANALYSIS





The JD for the project concerns unnamed drainages[33.720146-N, - 117.213911-W] which are tributary to unnamed drainage to Canyon Lakes which is tributary to San Timoteo Canyon Wash, Santa Ana River and eventually the Pacific Ocean in the City of Menifee of County of Riverside, California.

One of the drainages is a natural channel, the other drainage has been manipulated. The unnamed drainages starts 0.5 miles off of project site, flows 885 feet through the project site where it exits the project where it free flows to storm drain or down Chambers Avenue (0.76 miles) which then hydrologically connects to unnamed golf course drainage (2 miles), which connects to another unnamed drainage to outfall into Canyon Lakes (2.2 miles).

Drainage gradient for the project site is 4%, project site to Canyon Lakes is 10%.

Unnamed drainage OHWM of the 885 foot-long natural channels consists of an incised channel the width of which averages 3-6 feet. The natural channel contains bare ground, grassland and sage scrub species, with the exception of 3 scrubs in catch basins. Downstream the drainages free flow on to Chambers Avenue or into storm drain. The stretch into in to Canyon Lakes consists of a mixed natural channel and lined manipulated soft-bottom channel.

Chemical characteristics of flows within the drainages are dictated by the land use of the 5,040 acre drainage area, which consists of natural and rural-urban landscape. Storm and nuisance water contributes along with non-point source chemicals associated with the urban landscape are found throughout the majority of the drainage area. As a result, non-point-source chemicals associated with the urban landscape including residential uses have the potential to be present within storm and nuisance flows.

Furthermore, Santa Ana River Reach 3 is listed for copper, lead and pathogens on the 303(d) list of impaired waters. With respect to storm flows, the 2-year, 24-hour precipitation is 2.5 inches in the project area. The 100-year, 12-hour precipitation is 6.5 inches in the project area. Unnamed Drainages Q2 is 1.57 cfs. The Q100 is 107 cfs.

In summary the unnamed drainages are: (1) tributary to Canyon Lakes and located in the City of Menifee of County of Riverside, California; (2) conveys flows from the natural and rural/urban landscape; (3) Unnamed drainages Q2 is 1.57 cfs. The Q100 is 107 cfs and (4) supports an OHWM that contains bare ground, grassland and sage scrub species. Based on the above, we conclude that the unnamed drainages are relatively permanent water (RPW) per the Rapanos JD process, and therefore is a water of the United States.

Hydrograph data source:

Riverside County Flood Control and Water Conservation District. 1978. Hydrology Manual. 110 pgs.

Rain Gage Data: USGS 11066460 SANTA ANA R A MWD CROSSING CA

**DRAFT 10-29-04**  
**MSHCP Plan Area Project Review Checklist**

**Documents:**MSHCP Vol I and II, Implementation Agreement, Errata Letter from County, and FWS Permit Conditions

**Location within the MSHCP Plan Area**

PQP Lands: Impacts to PQP Lands require a biologically equivalent or superior finding whereby the Wildlife Agencies have review and concurrence (FWS Permit Condition #17; MSHCP pp 3-16); in addition follow applicable policies and procedures.

Outside Criteria Area and PQP lands: [Outside of PQP lands](#)

1) See below for Riparian/Riverine and Vernal Pools policy, Narrow Endemic Survey Area, Additional Species Survey Areas

2) If Adjacent to Conservation Area see fuel management and Urban Wildlands Interface below

Within Criteria Area :

1) Follow conservation strategy (MSHCP chapter 3.0) and applicable policies and procedures. [yes](#)

In Tule Peak Quino Area? **yes** (see FWS Permit Condition #12) **XX** [no](#)

In "blue" cells" (areas targeted for conservation but not captured in FWS conceptual reserve design map)? **yes**  
**XX**[no](#)

**"Policies and Procedures" (need to check if project occurs within a special survey area)**

Narrow Endemic Plant Species Survey Area ("NEPSSA") (MSHCP 6.1.3 pp 6-28; see also Errata Correspondence from County dated 5-21-04):

1 2 3 3a 4 5 6 7 8 9 [Out](#) **XX**

Criteria Area Species Survey Area("CASSA") (MSHCP 6.3.2 pp 6-63; see also Errata Correspondence from County dated 5-21-04):

1 2 3 3a 4 5 6 7 8 [Out](#) **XX**

Amphibian Species Survey Area (6.3.2 pp 6-65):

**ARTO RLFR YLFR YLFR+ARTO** [Out](#) **XX**

Mammal Species Survey Area (6.3.2 pp 6-65):

**AKR+LAPM LAPM SBKR+LAPM** [Out](#) **XX**

Burrowing Owl Survey Area (MSHCP 6.3.2 pp 6-65; also species-specific objective #5 MSHCP Vol II pp B-65) :  
**XX** [In](#) **Out**

For those projects that occur within a special survey area (e.g. NEPSSA/CASSA/Amphibian/Mammal/Burrowing Owl survey area):

1) Have appropriate surveys been conducted? [YES](#)

Riparian/Riverine and Vernal Pools Policy **Applies Plan Area Wide** (MSCHP 6.1.2 pp 6-20; FWS Permit Condition #18)

If Riparian, Riverine, Vernal Pool and/or Fairy Shrimp Habitat occur on the site:

- 1) Can project proponents avoid the habitat, if so ensure long term conservation of avoided areas.[Project designed to minimize impacts to greatest extent possible](#)
- 2) If these habitats cannot be avoided then a biological equivalency or superior determination will be necessary.
- 3) In addition, areas that cannot be avoided will need to be surveyed for fairy shrimp, least Bell's vireo, southwestern willow flycatcher and yellow-billed cuckoo if suitable habitat is on site. (Note protocol surveys for fairy shrimp will be necessary; see FWS permit condition 14) [Not applicable](#)

Guidelines Pertaining to the Urban Wildlands Interface (6.1.4 pp 6-42) for actions adjacent to, or that may otherwise affect, the conservation area

- 1) Quantity and quality of runoff not altered?
- 2) Night lighting directed away?

- 3) Noise generating land uses incorporate setbacks/walls?
- 4) Landscape plan considers MSHCP non-native plant table 6-2?
- 5) Barriers/fencing incorporated?
- 6) Manufactured slopes do not extend into Conservation Area?

Fuels Management (6.4 pp 6-72):

Is brush management incorporated into development boundaries (For new development adjacent to Conservation Area)?

Covered Activity within/adjacent to Conservation Area (road, utilities, flood control, agriculture, single family home, reserve management, etc.) (7.0):

Consistent with requirements of MSHCP and FWS Permit (species specific objectives, survey areas, policies, guidelines - siting and design of roads (7.5.1 pp 7-80), general construction (7.5.3 pp 7-87), construction of wildlife crossings (7.5.2 pp 7-81), BMPs (Appendix C), etc.)? [Yes](#)

**Migratory Bird Treaty Act**

see FWS Permit Condition #5 (e.g. take of non-listed Migratory Birds is not authorized) [Yes](#)

# PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there “may be” waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office Los Angeles District File/ORM # PJD Date: June 16, 2019

State CA City/County Menifee/Riverside

Nearest Waterbody: Unnamed drainage to Canyon Lakes

Location: TRS, LatLong or UTM: 33.720146-N, - 117.213911-W

Name/ Address of Person Requesting PJD  
Gonzales Environmental Consulting, LLC  
Teresa Gonzales  
358 Crystal Drive  
San Jacinto, CA92583

Identify (Estimate) Amount of Waters in the Review Area:

Non-Wetland Waters:

Stream Flow:

885 linear ft 0.76 acres

Ephemeral

Wetlands: acre(s) Cowardin Class:

Riverine

Name of Any Water Bodies

Tidal

on the Site Identified as

Section 10 Waters:

Non-Tidal:

Office (Desk) Determination

Field Determination:

Date of Field Trip:

**SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should 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 quad name: Romoland
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Soil Survey Staff, Natural Resources Conservation
- ☐ National wetlands inventory map(s). Cite name:
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is:
- ☒ Photographs:
  - ☒ Aerial (Name & Date): Google, 2019
  - ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter:
- ☒ Other information (please specify): Jurisdictional Delineation

**IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.**

Signature and Date of Regulatory Project Manager  
(REQUIRED)

Signature and Date of Person Requesting Preliminary JD  
(REQUIRED, unless obtaining the signature is impracticable)

## EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring “preconstruction notification” (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.



## PRELIMINARY JURISDICTIONAL DETERMINATION FORM

**This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:**

### Appendix A - Sites

District Office   PJD Date:

State   Person Requesting PJD

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
<input type="text" value=""/>	<input type="text" value="33.720146N"/>	<input type="text" value="-117. 213911W"/>	<input type="text" value="Riverine"/>	<input type="text" value="0.76 acres"/>	<input type="text" value="Non-Section 10 non-wetlan"/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>

#### Notes:

The existing project waters of unnamed drainages flow off site into unnamed drainage which flows to Canyon Lakes. Please see attached connectivity analysis.