Subject: Annual Notification for Sonoma County Water Agency's 2016 Stream Maintenance Projects

Dear Participating Agency,

Enclosed is the Sonoma County Water Agency's (Water Agency) Stream Maintenance Program's (SMP) Annual Notification Report (ANR) for 2016 activities. This ANR represents the Water Agency's work plan for the coming season. The following information is provided in this notification packet:

Section 1

- Ground disturbing project list, site locations and triggers for work
- Vegetation management activity list and triggers for work
- List of best management practices (impact avoidance measures) to be implemented

Section 2

- Summary of maintenance project sizes, extents and activities on restriction imposed creeks

Section 3

- Project settings and resources potentially affected
- Results of biological and cultural resources surveys
- Wildlife surveys planned for the upcoming field season

Section 4

- Annual mitigation plan
- Overall program impacts and mitigation accounting

Section 5

- Annual sediment sampling, testing and disposal plans

The following supporting documents to supplement the 2016 ANR and to meet the individual program permit terms are included as appendices:

- Project Specific Notifications (PSNs);
- Sediment removal designs with pre-maintenance cross sections;
- Site photographs depicting pre-maintenance conditions;
- Maps identifying locations of planned maintenance work in relation to known sensitive species/habitat as represented on the California Natural Diversity Database (CNDDB);
- Maps showing the 2016 project sites in relation to known California Tiger Salamander occurrences;
- Cultural resource survey reports;
- Watershed Partnership Program (Tier 3) mitigation project proposals;
- CDFW application materials and permits fees; North Coast RWQCB permit fees (Appendix I)
- Copies of sediment sampling, disposal and Monitoring and Reporting Program (MRP) correspondences.

The enclosed packet should fulfill the Annual Notification reporting requirements outlined in the following permits for the SMP:

- California Regional Water Quality Control Board, San Francisco Region (SFRWQCB) Order No. R2-2016-020
- CDFW Notification Number 1600-2006-0254-3
- CDFW Consistency Determination Number 2080-2010-029-03, 8/6/10
- California Regional Water Quality Control Board, North Coast Region (NCRWQCB) Order No. R1-2009-0049
- National Marine Fisheries Service (NMFS), Russian River Biological Opinion, Zone 1A BO, Tracking No. F/SWR/2006/07316
- NMFS, Petaluma River and Sonoma Creek Watersheds Biological Opinion, Zones 2A, 3A. Tracking No. 2009/03082, Corps File No. 2009-00136N
- US Army Corps of Engineers, Permit No. 2009-00079N, Zone 1A
- US Army Corps of Engineers, Permit No. 2009-00136N, Zones 2A, 3A
- US Fish and Wildlife Service (USFWS), Programmatic Biological Opinion for SMP, USFWS PBO Reference No. 81420-2009-F-0788-1

Overview of 2016 Maintenance Projects

For the 2016 maintenance season, twenty-one ground disturbing projects are proposed in Flood Control Zone (Zone) 1A. In Zone 2A, three ground-disturbing projects are proposed. In Zones 3A, 5A and 8A, one ground-disturbing project is planned for each. These maintenance projects are necessary to restore conveyance capacity and maintain proper function of Water Agency facilities. All of the projects will be conducted in accordance with the impact avoidance and minimization approaches described in the SMP Manual (Chapter 5) and with the application of program BMPs as described in Chapter 7 of the SMP Manual. The 2016 routine maintenance projects include the following:

<u>Zone 1A</u>

1. Cook 1 Localized Scale
2. Ducker 1 and 2A Localized Scale
3. LaBath 2 Localized Scale
4. Laguna 3 Localized Scale
5. Paulin 6A Localized Scale
6. Copeland 2 Reach Scale
7. Laguna 4 Reach Scale
8. Russell 2 Reach Scale
9. Brush 2A Sediment Basin Clearing
10. Cook 2 Basin Sediment Basin Clearing
11. Copeland 3/4 Sediment Basin Clearing
12. Copeland 4/5 Sediment Basin Clearing
13. Five 1 Sediment Basin Clearing
14. Santa Rosa 2 Sediment Basin Clearing
15. Wilfred 1C Sediment Basin Clearing
16. Brush Creek Reservoir Outlet Clearing
17. Matanzas Creek Reservoir Outlet Clearing
18. Piner Creek Reservoir Outlet Clearing
19. Santa Rosa Creek Reservoir Outlet Clearing
20. Peterson 1 Bank Repair
21. Russell 1A Bank Repair

Zone 2A

22. E. Fork McDowell 1 Localized Scale
23. Corona 1 Reach Scale
24. Adobe 1 and 2 Sediment Basin Clearing

Zone 3A

25. Fryer 3 Reach Scale

Zone 5A

26. Fife 3 and 4 Sediment Basin Clearing

Zone 8A

27. Bloomfield 1 Culvert Replacement

For project sites with recurring sediment removal needs, sediment basins, concrete stream segments, in-stream basins and reservoir inlets, the Water Agency mitigates (area affected is added to Tier 3 and California tiger salamander mitigation needs) for the initial establishment of the basin but not for following removals. For the 2016 field season, reservoir outlets that are cleared annually include Brush, Matanzas, Piner and Santa Rosa (Spring Lake) Creek Reservoirs. Recurring, already established, in-stream basins that will be maintained this season are Adobe Creek 1 and 2; Brush 2A, Cook 2, Copeland Creek 3/4 and 4/5; Five 1, Santa Rosa 2 and Wilfred 1C. Newly designated in-stream basins include Fife 3 and 4 in the section that parallels Armstrong Wood Road and at the Laughlin Street crossing.

On-Site and Off-Site Mitigation for Maintenance Projects

Section 4 and Appendix G of the Annual Notification Packet includes detailed information for both on-site (Tier 1) and off-site (Tier 3) mitigation actions. Details of the on-site (Tier 1) restoration approaches and methods are provided in Chapters 5 and 8 of the SMP Manual. Baseline conditions at the maintenance project sites are described in the channel characterizations (Reach Sheets) of Chapter 4 of the SMP Manual and current conditions are illustrated in Appendix C: *Site Specific Photographs*.

Watershed Partnership Program Projects

Two stream restoration projects in Zone 2A and one project in Zone 3A have been identified to provide off-site mitigation for temporal impacts for the 2016 maintenance activities. These restoration projects are being conducted by Point Blue [Students and Teachers Restoring a Watershed (STRAW)] and Sonoma Ecology Center. The off-site mitigation projects for 2016 include ecologic enhancement and restoration activities at Washington Creek (Davis Ranch), Ellis Creek (Hellman Ranch) and Nathanson Creek, Phase II at the Preserve. More detail describing these projects is included in Section 4 and Appendix G in this Notification. These off-site, watershed-based restoration projects are consistent with the expressed goals of the off-site mitigation program to restore impacted habitats, but to also address larger watershed factors related to stream maintenance such as controlling upstream and upland erosion and sediment sources.

California Tiger Salamander Mitigation Needs

In addition to the Tier 1 and Tier 3 mitigation efforts, the Water Agency purchases compensatory mitigation credits for California tiger salamander (CTS) to offset impacts to habitat that may be affected by planned 2016 maintenance projects. Mitigation banking standards for the SMP follow the guidelines in the SMP Biological Opinion with the USFWS and Section 2080.1 Consistency Determination by CDFW for the SMP. The 2016 field season is anticipated to require 0.027 acres of mitigation credit. This will be subtracted from the 0.119 acres of purchased mitigation credit remaining after the 2015 (previous) season.

Notes or Changes to Notification Format

Additionally, for this submittal, we identified the site conditions triggering the need for maintenance work for planned ground disturbing and vegetation management projects (Section 1). The Water Agency believes that this information is useful for the participating agencies in their evaluation of proposed projects. Furthermore, we included a table (Table 4-8, Section 4) indicating the Tier 3 mitigation accounting since program inception 2008-2015. The table details

annual Tier 3 mitigation area requirements, annual SMP contributions through Watershed Partnership Program funded restoration projects and calculations used to determine banked Tier 3 mitigation credits to-date.

Addendums for Previous Submittals

Generally, most SMP submittals include all the required elements needed for the Inter-agency Working Group (IAWG) to review and approve, monitor, and modify ongoing flood control activities. Occasionally, individual elements are not completed in time to include in a current submittal. In these cases, the missing elements are noted and addendums are provided with the next submittal. Please find as Appendix J an SMP Addendum which includes information on follow-up native tree mitigation plantings conducted for the 2015 work season on Abramson 1, Bellevue Wilfred 1A, Hunter 1, Piner 1, Roseland 4, Todd 5A and Wilfred 1B and 1C in Zone 1A as well as Capri 3 and 4, and Corona 7 in Zone 2A.

Grant Funded Projects

The Water Agency and Sonoma Ecology Center will be partnering on the implementation of a Prop 1E grant (City Watersheds, Phase 1) project on Fryer Creek reach 3. The project involves habitat enhancement through exotic weed control and native plant installation. Impacts for the planned reach scale sediment removal project on Fryer 3 will be applied to Tier 3 mitigation projects funded this season.

Closing

On behalf of the Water Agency, we appreciate your participation and support of our stream maintenance effort. Next steps include an Inter-Agency Working Group (IAWG) tour of some of the 2016 work sites. This will be a valuable opportunity for the IAWG members to get a field-based perspective on the projects, ask questions, and confirm conditions in the field. The Water Agency invites each agency to comment on planned maintenance activities, confirm activities, and/or provide a notice to proceed with the 2016 maintenance projects (per permit time frames) before work activities are planned to begin in June 2016. The Water Agency will be setting this tour in early June.

If you have any questions regarding the information provided in this Annual Notification Report, do not hesitate to contact me at kfoster@scwa.ca.gov, 707-547-1941, or Jon Niehaus (Stream Maintenance Coordinator) at 707-521-1845 or jon.niehaus@scwa.ca.gov.

Sincerely,

Keenan Foster
Principal Environmental Specialist

Enclosed: Annual Notification for 2016 Maintenance Projects (electonic copy on flashdrive)

Cc: Jessica Martini Lamb, Candace Messner, Jon Niehaus, Chase Takajo, Mike Thompson - Water Agency
Tim Dodson and Lori Hammerli - Department of Fish and Wildlife
Gil Falcone and Stephen Bargsten - North Coast Regional Water Quality Control Board
Amanda Morrison and Rick Rogers -National Marine Fisheries Service
Ben Livsey - San Francisco Bay Regional Water Quality Control Board
James Mazza - U.S. Army Corps of Engineers
Stephanie Jentsch - U.S. Fish and Wildlife Service

Stream Maintenance Program Annual Notification Report for 2016 Maintenance Projects

Prepared for: The SMP Inter-Agency Working Group

East Fork McDowell Creek, Petaluma, CA – Spring 2016

April 30, 2016

SONOMA COUNTY WATER AGENCY

sonomacountywater.org

Stream Maintenance Program Annual Notification Report for 2016 Maintenance Projects

April 30, 2016

Prepared by: Sonoma County Water Agency

Contact: Keenan Foster

Phone: 707-547-1941

404 Aviation Boulevard

Santa Rosa, CA 95406

Table of Contents

	Page
Section 1. Project List, Locations and Best Management Practices	**1**
1.1. Ground Disturbing Project List and Type	1
1.2. Ground Disturbing Project Site Locations and Other Information	2
1.3. Vegetation Management Activity List	5
1.4. List of Best Management Practices by Program Activity	14
Section 2. Project Sizes, Extents and Activites on Retriction Imposed Creeks	**17**
2.1. Sediment Removal Projects	17
2.2. Bank Repair Projects	19
2.3. Activities on Restriction Imposed Creeks	20
2.4. Project Designs	23
Section 3. Project Settings and Resources	**24**
3.1. Project Settings and Resources	24
3.2. Potential Habitat for Listed and Special-Status Species	24
3.3. Biological Surveys and Species-Specific Information	26
California Tiger Salamander	26
California Red-legged Frog	29
Site Surveys for Special-Status Plant Species	31
Additional Wildlife Surveys Planned for the 2016 Field Season	34
3.4. Cultural Resources	36
Results of Site Surveys for Cultural Resources	36
Section 4. Annual Mitigation Plan	**37**
4.1. On-Site Mitigation Activities (Tier 1)	37
Channel Form Planting Exhibits	40
Sediment Basins, Reservoir Outlets and Concrete-lined Structures	46
4.2. Off-Site Mitigation Activities and Funding (Tiers 2 and 3)	47
4.3. Overall Project Impacts and Mitigation Accounting	51
Section 5. Annual Sediment Testing and Disposal Plans	**56**
5.1. Sediment Sampling and Testing	56
5.2. Sediment Disposal and Reuse Plan	56

Table of Contents (continued)

Appendices

A. Project Specific Notifications
B. Ground Disturbing Project Designs
C. Site Specific Photographs
D. Project Maps with California Natural Diversity Database (CNDDB) Overlay
E. Project Maps with California Tiger Salamander (CTS) Occurrence Overlay
F. Cultural Resource Reports
G. Watershed Partnership Program (WPP) Tier 3 Mitigation Project Proposals
H. Sediment Sampling and Disposal Memorandums
I. Permit Fees and Application Materials
J. Program Addendum

Section 1
Project List, Locations and Best Management Practices

1.1. Ground Disturbing Project List and Type

The following sediment removal and bank stabilization projects are anticipated for the 2016 maintenance season:

Zone 1A

1. Cook 1 Localized Scale
2. Ducker 1 and 2A Localized Scale
3. LaBath 2 Localized Scale
4. Laguna 3 Localized Scale
5. Paulin 6A Localized Scale
6. Copeland 2 Reach Scale
7. Laguna 4 Reach Scale
8. Russell 2 Reach Scale
9. Brush 2A Sediment Basin Clearing
10. Cook 2 Sediment Basin Clearing
11. Copeland 3/4 Sediment Basin Clearing
12. Copeland 4/5 Sediment Basin Clearing
13. Five 1 Sediment Basin Clearing
14. Santa Rosa 2 Sediment Basin Clearing
15. Wilfred 1C Sediment Basin Clearing
16. Brush Creek Reservoir Outlet Clearing
17. Matanzas Creek Reservoir Outlet Clearing
18. Piner Creek Reservoir Outlet Clearing
19. Santa Rosa Creek Reservoir Outlet Clearing
20. Peterson 1 Bank Repair
21. Russell 1A Bank Repair

Zone 2A

22. E. Fork McDowell 1 Localized Scale
23. Corona 1 Reach Scale
24. Adobe 1 and 2 Sediment Basin Clearing

Zone 3A

25. Fryer 3 Reach Scale

Zone 5A

26. Fife 3 and 4 Sediment Basin Clearing

Zone 8A

27. Bloomfield 1 Culvert Replacement

1.2. Ground Disturbing Project Site Locations and Other Information

The following presents location and geographic information for each of the 2016 project sites:

Project Name	Location Description	Creek	Tributary to	USGS Quad, Township, Range, Section	Latitude/ Longitude	Sediment Management Trigger(s)
Zone 1A						
Localized Scale Projects						
Cook 1	Culvert at Graymill Court	Cook Creek	Coleman Creek	Cotati Quad, T6N, R7W, Section 18	38.368 N, -122.682 W	Sediment causing hydraulic constriction
Ducker 1 and 2A	Non-contiguous gravel bars between Middle Rincon Road and Acacia Lane	Ducker Creek	Austin Creek	Santa Rosa Quad, T7N, R7W, Section 07	38.470 N, -122.672 W	Gravel bar surface above OHWM; sediment forming alternating bars
LaBath 2	At the confluence with Hinebaugh Creek	Labath Creek	Hinebaugh Creek	Cotati Quad, T6N, R8W, Section 22	38.354 N, -122.727 W	Sediment causing hydraulic constriction
Laguna 3	Above confluences with Copeland and Washoe Creek	Laguna de Santa Rosa	Mark West Creek	Cotati Quad, T6N, R8W, Section 22	38.343 N, -122.723 W	Sediment forming island in the center of channel; sediment forming alternating Bars
Paulin 6A	at Mcbride Lane and Range Avenue crossings	Paulin Creek	Piner Creek	Santa Rosa Quad, T7N, R8W, Section 10	38.463 N, -122.733 W	Sediment forming alternating bars
Reach Scale Projects						
Copeland 2	From Seed Farm Drive to Commerce Boulevard	Copeland Creek	Laguna de Santa Rosa	Cotati Quad, T6N, R8W, Section 26	38.343 N, -122.707 W	Channel is systemically aggrading such that channel capacity is at risk
Laguna 4	From Gravenstein Way to Commerce Boulevard	Laguna de Santa Rosa	Mark West Creek	Cotati Quad, T6N, R8W, Section 26	38.334 N, -122.709 W	Sediment blocking outfalls; sediment accumulating in a way that supports excessive vegetation growth, threatening channel capacity and creating undue roughness

Project Name	Location Description	Creek	Tributary to	USGS Quad, Township, Range, Section	Latitude/ Longitude	Sediment Management Trigger(s)
Russell 2	From Mendocino Avenue to Highway 101	Russell Creek	Piner Creek	Santa Rosa Quad, T7N, R8W, Section 10	38.472 N, -122.728 W	Sediment forming alternating bars
In-stream Sediment Basin Clearing						
Brush 2A	Basin at the confluence with Austin Creek	Brush Creek	Santa Rosa Creek	Santa Rosa Quad, T7N, R7W, Section 07	38.463 N, -122.676 W	Sediment filled in-stream sediment basin
Cook 2 Basin	Basin at Petaluma Hill Road	Cook Creek	Coleman Creek	Cotati Quad, T6N, R7W, Section 18	38.364 N, -122.675 W	Sediment filled in-stream sediment basin
Copeland 3/4	Basin above and below Country Club Drive	Copeland Creek	Laguna de Santa Rosa	Cotati Quad, T6N, R8W, Section 25	38.343 N, -122.69 W	Sediment filled in-stream sediment basin
Copeland 4/5	Basin above and below Snyder Lane	Copeland Creek	Laguna de Santa Rosa	Cotati Quad, T6N, R8W, Section 25	38.343 N, -122.685 W	Sediment filled in-stream sediment basin
Five 1	Basin below Snyder Lane	Five Creek	Crane Creek	Cotati Quad, T6N, R8W, Section 13	38.361 N, -122.685 W	Sediment filled in-stream sediment basin
Santa Rosa 2	Two gravel bars downstream of Peterson Creek confluence	Santa Rosa Creek	Laguna de Santa Rosa	Sebastopol Quad, T7N, R9W, Section 14	38.445 N, -122.816 W	Gravel bar surface above ordinary high water mark
Wilfred 1C	Basin at Snyder Road	Wilfred Creek	Bellvue Wilfred Creek	Santa Rosa Quad, T6N, R8W, Section 12	38.372 N, -122.686 W	Sediment filled in-stream sediment basin
Reservoir Outlet Clearing Projects						
Brush Creek Reservoir	n/a	Brush Creek	Santa Rosa Creek	Santa Rosa Quad, T7N, R7W, Section 6	38.487 N, -122.671 W	Sediment accumulated around reservoir outlet
Matanzas Creek Reservoir	n/a	Matanzas Creek	Santa Rosa Creek	Santa Rosa Quad, T7N, R7W, Section 32	38.405 N, -122.652 W	Sediment accumulated around reservoir outlet
Piner Creek Reservoir	n/a	Piner Creek	Santa Rosa Creek	Santa Rosa Quad, T7N, R8W, Section 11	38.466 N, -122.706 W	Sediment accumulated around reservoir outlet

Project Name	Location Description	Creek	Tributary to	USGS Quad, Township, Range, Section	Latitude/ Longitude	Sediment Management Trigger(s)
Santa Rosa Creek Reservoir	n/a	Santa Rosa Creek	N/A	Santa Rosa Quad, T7N, R7W, Section 17	38.46 N, -122.654 W	Sediment accumulated around reservoir outlet
Bank Stabilization Projects						
Peterson 1	Approximately 900 feet upstream from the confluence with Santa Rosa Creek, STA 516+00	Peterson Creek	Santa Rosa Creek	Sebastopol Quad, T7N, R8W, Section 18	38.349 N, -122.732 W	Levee side bank slumping into channel
Russell 1A	Approximately 75 feet downstream from the top of the reach	Russell Creek	Piner Creek	Santa Rosa Quad, T7N, R8W, Section 10	38.471 N, -122.734	Levee side bank slumping into channel
Zone 2A						
Localized Scale Project						
E. Fork McDowell 1	At the uppermost culvert	East Fork McDowell Creek	McDowell Creek	Petaluma River Quad, T5N, R7W, Section 34	38.237 N, -122.614 W	Sediment forming islands in the center of channel; sediment forming alternating bars
Reach Scale Project						
Corona 1*	Section parallel to Highway 101	Corona Creek	Capri Creek	Cotati Quad, T5N, R7W, Section 22	38.260 N, -122.652 W	Sediment accumulating in a way that supports excessive vegetation growth, threatening channel capacity
In-stream Sediment Basin Clearing Project						
Adobe 1 and 2	Basin below Highway 116 and basin above/ below South Fork McDowell Boulevard	Adobe Creek	Petaluma River	Petaluma River Quad, T5N, R7W, Section 35	38.232 N, -122.599 W	Sediment filled in-stream sediment basin
Zone 3A						
Reach Scale Project						
Fryer 3*	4th Street West to Arroyo Way	Fryer Creek	Sonoma Creek	Sonoma Quad T5N, R5W Section 7	38.287 N, -122.465 W	Sediment to forming alternating bars

Project Name	Location Description	Creek	Tributary to	USGS Quad, Township, Range, Section	Latitude/ Longitude	Sediment Management Trigger(s)
Zone 5A						
In-stream Sediment Basin Clearing						
Fife 3 and 4 (previously named Reach 0B):	Establish new basin within section that parallels Armstrong Woods Road and clear basin at Laughlin Road	Fife Creek	Russian River	Guerneville Quad, T8N, R10W, Section 29	38.510 N, -122.995 W	Sediment filled in-stream sediment basin
Zone 8A						
Culvert Replacement						
Bloomfield 1	Two culvert replacements on upper and lower end of reach	Bloomfield Creek	Estero Americano	Two Rock Quad, T6N, R9W, Section 33	38.311 N, -122.853 W	Damaged culvert replacement

*Project Specific Notifications, as per San Francisco Bay Regional Water Quality Control Board Waste Discharge Requirements and Water Quality Certification (Order No. R2-2016-0020), are provided in Appendix A.

1.3. Vegetation Management Activity List

During the 2016 maintenance season, vegetation maintenance will include tree and brush thinning, and removal of exotic species and other vegetation blockages to improve hydraulic capacity and retain or enhance appropriate habitat. Vegetation maintenance will be completed according to Appendix E of the SMP Manual (*Vegetation Management Plan*) as well as the associated terms and conditions of all programmatic permits and biological opinions.

For 2016, vegetation maintenance will be completed in the locations listed below in Table 1-1. All proposed vegetation management activities involve less than 100 contiguous feet of vegetation removal per reach. Proposed activities—including exotic management, blackberry management and willow or tree pruning—will occur in only a portion of the identified reach, not the entire reach length. An accounting of the total (non-contiguous) length worked per reach will be included in the 2016 Annual Post-Maintenance Summary Report.

An addendum will be sent out in August to supplement this list if any subsequent requests for vegetation management are made for areas not shown below. The submission and approval of such an addendum is specified in the CDFW Streambed Alteration Agreement (No. 1600-2009-0399-R3) for the SMP.

Table 1-1. Vegetation Management Activity List.

Reach[1]	Vegetation Management Action(s)[2]			Vegetation Management Trigger(s)
	Blackberry Management	*Exotics Management*	*Willow Pruning*	
Zone 1A				
Austin1		X	X	Invasive non-native plant cover greater than 20% throughout reach
Austin2		X	X	Invasive non-native plant cover greater than 20% throughout reach
Austin3		X		Invasive non-native plant cover greater than 20% throughout reach
BellWil1	X			Invasive non-native plant cover greater than 20% throughout reach
BellWil2	X			invasive non-native plant cover greater than 20% throughout reach
BellWil3	X	X	X	Dead or Dying Trees; Recruits greater than 6' tall within treeless buffers around channel hardscaping, culverts or bridgeheads; >20% of willows have trunk sprouts over 6' tall; Invasive non-native plant cover greater than 20% throughout reach
BellWil4	X	X	X	>20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present in-channel >3'; Homeless encampments present; Urban channel, sight lines obstructed by vegetation
Brush1	X	X	X	Invasive non-native plant cover greater than 20% throughout reach; Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Brush2A	X			Invasive non-native plant cover greater than 20% throughout reach
Brush2B			X	Seral or Temporary Toe tree density greater than allowed; Recruits between established temporary tree spacing larger than 6’ tall; Invasive non-native plant cover greater than 20% throughout reach; Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Brush2C	X	X	X	Invasive non-native plant cover greater than 20% throughout reach
Coleman1		X	X	Invasive non-native plant cover greater than 20% throughout reach; Recruits between established temporary tree spacing larger than 6’ tall
Coleman2			X	Seral or Temporary Toe tree density greater than allowed; Permanent toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present in-channel >3'

Reach[1]	Vegetation Management Action(s)[2]			Vegetation Management Trigger(s)
	Blackberry Management	*Exotics Management*	*Willow Pruning*	
Colgan2		X	X	Dead or Dying Trees; >20% of willows have trunk sprouts over 6' tall
Colgan5A			X	Dead or Dying Trees; Invasive non-native plant cover greater than 20% throughout reach; Vegetation obstructing vehicle access road(s); Dead or damaged vegetation presenting hazard; Urban channel, sight lines obstructed by vegetation; Urban channel prone to delinquent activity
Colgan6	X	X	X	Tree and/or woody shrub recruits greater than 6' tall covering >20% of side banks; Invasive non-native plant cover greater than 20% throughout reach; Downed trees or localized woody debris present in-channel >3'; Downed trees or localized woody debris
Cook1	X	X	X	Recruits between established permanent tree spacing larger than 6'; Recruits greater than 6' tall within treeless buffers around channel hardscaping, culverts or bridgeheads; Invasive non-native plant cover greater than 20% throughout reach
Copeland1		X	X	Seral or Temporary Toe tree density greater than allowed; Recruits between established temporary tree spacing larger than 6’ tall; Permanent toe tree density greater than allowed; Urban channel, sight lines obstructed by vegetation
Copeland2		X	X	Seral or Temporary Toe tree density greater than allowed; Permanent toe tree density greater than allowed; Recruits between established permanent tree spacing larger than 6'; Vegetation obstructing vehicle access road(s); Vegetation obstructing fence line
Copeland3		X	X	Seral or Temporary Toe tree density greater than allowed; Permanent toe tree density greater than allowed; Recruits between established permanent tree spacing larger than 6'; Tree recruits larger than 15' tall between established upper bank tree spacing
Copeland4			X	Seral or Temporary Toe tree density greater than allowed; Permanent toe tree density greater than allowed; Vegetation obstructing vehicle access road(s); Vegetation obstructing fence line
Copeland5	X		X	Dead or Dying Trees; Seral or Temporary Toe tree density greater than allowed; Recruits between established temporary tree spacing larger than 6’ tall; Permanent toe tree density greater than allowed
Cotati1		X	X	Invasive non-native plant cover greater than 20% throughout reach
Cotati2A	X	X	X	Invasive non-native plant cover greater than 20% throughout reach

Reach[1]	Vegetation Management Action(s)[2]			Vegetation Management Trigger(s)
	Blackberry Management	*Exotics Management*	*Willow Pruning*	
Cotati2B	X	X	X	Invasive non-native plant cover greater than 20% throughout reach
Crane1	X	X	X	Dead or Dying Trees; Seral or Temporary Toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Crane2		X		Dead or Dying Trees; Seral or Temporary Toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Five1			X	Seral or Temporary Toe tree density greater than allowed; Vegetation obstructing vehicle access road(s); Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Gossage1			X	Dead or Dying Trees; >20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present in-channel >3'
Gossage3		X	X	>20% of willows have trunk sprouts over 6' tall
Golf1		X	X	Recruits between established temporary tree spacing larger than 6’ tall; Recruits between established permanent tree spacing larger than 6'; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Hinebaugh1	X	X	X	Seral or Temporary Toe tree density greater than allowed; Recruits between established temporary tree spacing larger than 6’ tall; Permanent toe tree density greater than allowed; Recruits between established permanent tree spacing larger than 6'
Hinebaugh2		X	X	Recruits between established temporary tree spacing larger than 6’ tall; Recruits between established permanent tree spacing larger than 6'; >20% of willows have trunk sprouts over 6' tall; Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Hinebaugh3B			X	>20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Hinebaugh4			X	Recruits greater than 6' tall within treeless buffers around channel hardscaping, culverts or bridgeheads; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation; Urban channel prone to delinquent activity

Reach[1]	Vegetation Management Action(s)[2]			Vegetation Management Trigger(s)
	Blackberry Management	*Exotics Management*	*Willow Pruning*	
Hinebaugh6		X		Seral or Temporary Toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Hinebaugh6			X	Seral or Temporary Toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Hinebaugh7A		X	X	Invasive non-native plant cover greater than 20% throughout reach
Hinebaugh7B		X	X	Invasive non-native plant cover greater than 20% throughout reach
Hunter1			X	Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation; >20% of willows have trunk sprouts over 6' tall
Hunter2			X	Urban channel, sight lines obstructed by vegetation; Urban channel prone to delinquent activity
Hunter3			X	>20% of willows have trunk sprouts over 6' tall; Vegetation obstructing vehicle access road(s); Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Laguna1		X	X	Dead or Dying Trees; Recruits between established temporary tree spacing larger than 6’ tall; >20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present in-channel >3'
Laguna2		X	X	Seral or Temporary Toe tree density greater than allowed; Tree and/or woody shrub recruits greater than 6' tall covering >20% of side banks; Invasive non-native plant cover greater than 20% throughout reach; Homeless encampments present; Urban channel sight lines obstructed by vegetation
Laguna3	X			Invasive non-native plant cover greater than 20% throughout reach
Laguna4	X		X	Urban channel, sight lines obstructed by vegetation
MiddleBrush1		X		Dead or Dying Trees; Downed trees or localized woody debris present in-channel >3'; Downed trees or localized woody debris present on side/ upper banks >3'
Moorland1A			X	Tree recruits larger than 15' tall between established upper bank tree spacing; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Paulin4		X		Invasive non-native plant cover greater than 20% throughout reach

Reach[1]	Vegetation Management Action(s)[2]			Vegetation Management Trigger(s)
	Blackberry Management	*Exotics Management*	*Willow Pruning*	
Paulin5		X		Invasive non-native plant cover greater than 20% throughout reach
Peterson1		X	X	Downed trees or localized woody debris present in-channel >3'
Piner1			x	Downed trees or localized woody debris present in-channel >3'
Piner4		X		Invasive non-native plant cover greater than 20% throughout reach
Piner5		X		Invasive non-native plant cover greater than 20% throughout reach
Piner6			X	Localized vegetation causing significant bank scour; Urban channel, sight lines obstructed by vegetation
Roseland1			X	>20% of willows have trunk sprouts over 6' tall; Invasive non-native plant cover greater than 20% throughout reach
Roseland1A			X	Dead or Dying Trees; Invasive non-native plant cover greater than 20% throughout reach; Vegetation obstructing fence line
Roseland2			X	>20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Santa Rosa1	X	X	X	Seral or Temporary Toe tree density greater than allowed; Permanent toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present in-channel >3'
Santa Rosa2		X	X	Seral or Temporary Toe tree density greater than allowed; Recruits between established temporary tree spacing larger than 6’ tall; >20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present in-channel >3'
Santa Rosa4		X		Invasive non-native plant cover greater than 20% throughout reach
Santa Rosa5		X	X	Seral or Temporary Toe tree density greater than allowed; Permanent toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present in-channel >3'
Santa Rosa6		X	X	Permanent toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Seral or Temporary Toe tree density greater than allowed
Santa Rosa Div1	X	X	X	Seral or Temporary Toe tree density greater than allowed; Tree and/or woody shrub recruits greater than 6' tall covering >20% of side banks; Invasive non-native plant cover greater than 20% throughout reach

Reach[1]	Vegetation Management Action(s)[2]			Vegetation Management Trigger(s)
	Blackberry Management	*Exotics Management*	*Willow Pruning*	
Steele1A		X	X	Invasive non-native plant cover greater than 20% throughout reach
Todd2	X	X		Invasive non-native plant cover greater than 20% throughout reach
Todd3			X	Urban channel, sight lines obstructed by vegetation; Homeless encampments present; >20% of willows have trunk sprouts over 6' tall
Todd4A		X	X	>20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation; Urban channel prone to delinquent activity
Todd4B		X	X	Dead or Dying Trees; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation; Urban channel prone to delinquent activity
Todd5A	X		X	Urban channel, sight lines obstructed by vegetation; Permanent toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Urban channel prone to delinquent activity
Todd5B	X		X	Invasive non-native plant cover greater than 20% throughout reach
Wilfred Ext.1		X	X	Seral or Temporary Toe tree density greater than allowed; Permanent toe tree density greater than allowed; Tree recruits larger than 15' tall between established upper bank tree spacing; Tree and/or woody shrub recruits greater than 6' tall covering >20% of reach
Wilfred1A	X		X	Recruits between established temporary tree spacing larger than 6’ tall; Recruits between established permanent tree spacing larger than 6'; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Wilfred1B	X		X	Recruits between established temporary tree spacing larger than 6’ tall; Recruits between established permanent tree spacing larger than 6'; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Wilfred1C	X		X	Recruits between established temporary tree spacing larger than 6’ tall; Recruits between established permanent tree spacing larger than 6'; >20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Windsor1A	X	X	X	Dead or Dying Trees; >20% of willows have trunk sprouts over 6' tall; Invasive non-native plant cover greater than 20% throughout reach; Vegetation obstructing fence line

Reach[1]	Vegetation Management Action(s)[2]			Vegetation Management Trigger(s)
	Blackberry Management	*Exotics Management*	*Willow Pruning*	
Windsor1B		X	X	Invasive non-native plant cover greater than 20% throughout reach
Wndsor3		X	X	Tree and/or woody shrub recruits greater than 6' tall covering >20% of side banks; >20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present in-channel >3'; Localized vegetation causing significant bank scour
Windsor4		X		Invasive non-native plant cover greater than 20% throughout reach
Zone 2A				
Adobe1			X	Dead or Dying Trees
Adobe2			X	Dead or Dying Trees
Capri2B		X	X	Dead or Dying Trees; Seral or Temporary Toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Downed trees or localized woody debris present on side/ upper banks >3'; Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Corona6		X (cattails)		Invasive non-native plant cover greater than 20% throughout reach; Urban channel, sight lines obstructed by vegetation
Corona7		X (cattails)		Invasive non-native plant cover greater than 20% throughout reach; Urban channel, sight lines obstructed by vegetation
East Fork McDowell1		X		Invasive non-native plant cover greater than 20% throughout reach
Jessie Lane1	X	X		Invasive non-native plant cover greater than 20% throughout reach
Lichau1			X	>20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Lichau2			X	>20% of willows have trunk sprouts over 6' tall; Urban channel, sight lines obstructed by vegetation
Lichau3	X	X		Invasive non-native plant cover greater than 20% throughout reach
Washington3			X	Dead or Dying Trees; >20% of willows have trunk sprouts over 6' tall; Dead or damaged vegetation presenting hazard; Urban channel, sight lines obstructed by vegetation

Reach[1]	Vegetation Management Action(s)[2]			Vegetation Management Trigger(s)
	Blackberry Management	***Exotics Management***	***Willow Pruning***	
Washington4		X	X	Seral or Temporary Toe tree density greater than allowed; >20% of willows have trunk sprouts over 6' tall; Invasive non-native plant cover greater than 20% throughout reach; Vegetation obstructing fence line; Urban channel, sight lines obstructed by vegetation
Zone 6A				
West Slough1	X	X	X	Seral or Temporary Toe tree density greater than allowed; Invasive non-native plant cover greater than 20% throughout reach; Homeless encampments present; Tree and/or woody shrub recruits greater than 6' tall covering >20% of side banks

[1]Reach is engineered unless otherwise noted in parentheses.

[2]All proposed vegetation management work involves less than 100 feet of contiguous vegetation removal per reach. An accounting of the total (non-contiguous) length worked per reach will be included in the 2016 Annual Post-Maintenance Summary Report.

1.4. List of Best Management Practices by Program Activity

Table 1-2 below lists the Best Management Practices (BMPs) that shall be implemented during the 2016 field season according to program activities. For a complete description of each BMP, please refer to Table 7-1 (*Stream Maintenance Program Best Management Practices)* in the program Manual.

Table 1-2. Best Management Practices by Program Activity

		Ground Disturbing Activities					Vegetation Management Activities				
BMP	**Name**	**Sediment Removal**	**Bank Stabilization**	**Culvert Repair and Installation**	**Reservoir Outlet Clearing**	**Sediment Disposal**	**Willow Removal**	**Blackberry Removal**	**Cattail Removal**	**Tree Pruning and Exotics Removal**	**Nursery Stock Tree Planting**
General Impact Avoidance and Minimization											
GEN-1	Work Window	X	X	X	X	X	X		X	X	
GEN-2	Staging and Stockpiling of Materials	X	X	X	X	X	X	X	X	X	X
GEN-3	Channel Access	X	X	X	X		X	X	X	X	X
Air Quality Protection											
AQ-1	Dust Management	X	X	X	X	X	X	X	X	X	X
AQ-2	Enhanced Dust Management	X	X	X	X	X	X	X	X	X	X
Biological Resources Protection											
BR-1	Area of Disturbance	X	X	X	X		X	X	X	X	X
BR-2	Pre-maintenance Educational Training	X	X	X	X		X	X	X	X	X
BR-3	Biotechnical Bank Stabilization		X	X							
BR-4	Impact Avoidance and Minimization During Dewatering	X	X	X	X						
BR-5	Fish and Amphibian Species Relocation Plan	X	X	X	X						
BR-6	On-Call Wildlife Biologist	X	X	X	X	X	X	X	X	X	X
BR-7	Special Status Plant Survey	X	X	X	X	X	X	X	X	X	X
BR-8	Nesting Migratory Bird and Raptor Pre-maintenance Surveys	X	X	X	X	X	X	X	X	X	X
BR-9[1]	California Freshwater Shrimp Avoidance and Impact Minimization for Vegetation Management	X	X	X		X	X	X	X	X	
BR-10	California Red-legged Frog Avoidance and Impact Minimization Measures for Ground-Disturbing Activities	X	X	X	X		X	X	X	X	X
BR-11	California Red-legged Frog Avoidance and Impact Minimization Measures for Vegetation Management				X		X	X	X	X	X
BR-12	California Tiger Salamander Avoidance and Impact Minimization	X		X	X	X	X		X		

		Ground Disturbing Activities					Vegetation Management Activities				
BMP	Name	Sediment Removal	Bank Stabilization	Culvert Repair and Installation	Reservoir Outlet Clearing	Sediment Disposal	Willow Removal	Blackberry Removal	Cattail Removal	Tree Pruning and Exotics Removal	Nursery Stock Tree Planting
	Measures for Sediment and Debris Removal										
BR-13	California Tiger Salamander Avoidance and Impact Minimization Measures for Bank Stabilization		X	X							
BR-14	California Tiger Salamander Avoidance and Impact Minimization Measures for Vegetation Management				X		X	X		X	X
BR-15	Foothill Yellow-legged Frog Avoidance and Impact Minimization Measures for Ground-Disturbing Activities	X	X	X	X		X	X	X		
BR-16	Foothill Yellow-legged Frog Avoidance and Impact Minimization Measures for Vegetation Management				X		X	X	X		
BR-17	Western Pond Turtle Pre-maintenance Surveys for Ground-Disturbing Activities	X	X	X	X		X	X	X	X	X
BR-18	Zone 1A Salmonid Avoidance and Impact Minimization Measures	X	X	X			X	X	X	X	
BR-19[2]	Zones 2A and 3A Salmonid Avoidance and Impact Minimization Measures	X	X	X			X	X	X	X	
Cultural Resources Protection											
CR-1	Phase I Cultural Investigation and Report		X	X	X	X					
CR-2	Previously Undiscovered Cultural Resources	X	X	X	X	X	X	X	X	X	X
CR-3	Previously Undiscovered Palentological Resources	X	X	X	X	X	X	X	X	X	X
	Hazardous Materials Safety										
HAZ-1	Spill Prevention and Response	X	X	X	X	X	X	X	X	X	X
HAZ-2	Equipment and Vehicle Maintenance	X	X	X	X	X	X	X	X	X	X
HAZ-3	Equipment and Vehicle Cleaning	X	X	X	X	X	X	X	X	X	X
HAZ-4	Refueling	X	X	X	X	X	X	X	X	X	X
HAZ-5	On-Site Hazardous Materials Management	X	X	X	X	X	X	X	X	X	X
HAZ-6	Existing Hazardous Sites or Waste	X	X	X	X	X	X	X	X	X	X
HAZ-7	Fire Prevention	X	X	X	X	X	X	X	X	X	X
HAZ-8	Testing and Disposal of Spoils	X	X	X	X	X					
Vegetation Management											
VEG-1	Removal of Existing Vegetation	X	X	X	X		X			X	X

		Ground Disturbing Activities					Vegetation Management Activities				
BMP	Name	Sediment Removal	Bank Stabilization	Culvert Repair and Installation	Reservoir Outlet Clearing	Sediment Disposal	Willow Removal	Blackberry Removal	Cattail Removal	Tree Pruning and Exotics Removal	Nursery Stock Tree Planting
VEG-2	Use of Herbicides				X		X	X	X	X	
VEG-3	Planting and Revegetation After Soil Disturbance	X	X	X	X					X	X
Water Quality and Channel Protection											
WQ-1	Apply Erosion Control Fabric to or Hydroseeding of Exposed Soils	X	X	X	X	X	X	X	X	X	
WQ-2	Prevent Scour Downstream of Sediment Removal	X			X						
WQ-3	In-Channel Grading	X	X	X							
Good Neighbor Policies											
GN-1	Work Site Housekeeping	X	X	X	X	X	X	X	X	X	X
GN-2	Public Outreach	X	X	X	X	X	X	X	X	X	X
GN-3	Noise Control	X	X	X	X	X	X	X	X	X	X
GN-4	Traffic Flow, Pedestrians, and Safety Measures	X	X	X	X	X	X	X	X	X	X
GN-5	Odors	X	X	X	X	X					

[1]For activities in Zones 2A and 3A, this includes implementation of the impact avoidance, minimization and mitigation measures as described in the *California Freshwater Shrimp Management Plan for Sonoma County Water Agency's Stream Maintenance Program, Zones 2A and 3A (Plan)*. The Plan fulfills the requirements for the Water Agency's SMP Waste Discharge and Water Quality Certification (Order No. R2-2011-0020, provision 51, c (page 17)) and is consistent with the SMP Manual, programmatic permits and programmatic Biological Opinion.

[2]This includes implementation of the impact avoidance, minimization and mitigation measures as described in the *Steelhead Management Plan for Sonoma County Water Agency's Stream Maintenance Program, Zones 2A and 3A (Plan)*. The Plan fulfills the requirements for the Water Agency's SMP Waste Discharge and Water Quality Certification (Order No. R2-2011-0020, provision 51, c (page 17)) and is consistent with the SMP Manual, programmatic permits and programmatic Biological Opinion.

Section 2
Project Sizes, Extents, and Activities on Restriction Imposed Creeks

The following two tables provide the estimated length, volume of sediment to be removed/fill, and area disturbed above/below the ordinary high water mark (OHWM) for proposed 2016 ground-disturbing projects. For details relating to the program's sediment removal approach, including: reach scale sediment removal, localized scale sediment removal (including at culverts and crossings), intermediate scale sediment management (including bar grading and geomorphic shaping), sediment management at reservoirs and sediment basins, mechanical equipment used, access and staging, vegetation thinning for sediment removal and dewatering techniques, please refer to Section 6.3 of the SMP Manual. For details on the program's approach to bank stabilization, please refer to Manual Section 6.4.

2.1. Sediment Removal Projects

Project Site	Length (linear feet)	Volume Removed (cu. yds.)	Acres Disturbed		
			Waters of the U.S. (below OHWM*)	Waters of the State (Below TOB*)	Total
Zone 1A					
Localized Scale					
Cook 1	65	54	0.022	N/A	0.022
Ducker 1 and 2A	1,495	1,531	0.754	N/A	0.754
LaBath 2	146	104	0.026	0.023	0.049
Laguna 3	1,452	560	0.867	N/A	0.867
Paulin 6A	655	469	0.165	0.023	0.188
Reach Scale					
Copeland 2	3,850	7,327	2.995	0.099	3.094

Project Site	Length (linear feet)	Volume Removed (cu. yds.)	Acres Disturbed		
			Waters of the U.S. (below OHWM*)	Waters of the State (Below TOB*)	Total
Laguna 4	1,969	1,149	0.407	N/A	0.407
Russell 2	1,155	684	0.420	N/A	0.420
In-stream Sediment Basin Clearing					
Brush 2A	100	230	0.046	N/A	0.046
Cook 2 Basin	200	150	0.184	N/A	0.184
Copeland 3/4	200	400	0.207	N/A	0.207
Copeland 4/5	205	750	0.212	N/A	0.212
Five 1	120	100	0.110	N/A	0.110
Santa Rosa 2	2,050	10,412	2.581	N/A	2.581
Wilfred 1C	200	100	0.046	N/A	0.046
Reservoir Outlet Clearing					
Brush Creek Reservoir	N/A	250	0.052	N/A	0.052
Matanzas Creek Reservoir	N/A	250	0.052	N/A	0.052
Piner Creek Reservoir	N/A	250	0.052	N/A	0.052
Santa Rosa Creek Reservoir	N/A	100	0.062	N/A	0.062
Zone 1A Totals	**13,862**	**24,870**	**9.260**	**0.145**	**9.405**
Zone 2A					
Localized Scale					
E. Fork McDowell 1	103	46	0.035	N/A	0.035
Reach Scale					
Corona 1	3,167	939	1.163	N/A	1.163

Project Site	Length (linear feet)	Volume Removed (cu. yds.)	Acres Disturbed		
			Waters of the U.S. (below OHWM*)	Waters of the State (Below TOB*)	Total
In-stream Sediment Basin Clearing					
Adobe 1 and 2	401	1,144	0.350	N/A	0.350
Zone 3A					
Reach Scale					
Fryer 3	650	289	0.199	0.025	0.224
Zones 2A and 3A Totals	**4,321**	**2,418**	**1.747**	**0.025**	**1.772**
Zone 5A					
In-stream Sediment Basin Clearing					
Fife 3 and 4	1,380	1,667	0.479	N/A	0.479
Zone 8A					
Culvert Replacement					
Bloomfield 1	120	100	0.001	0.017	0.018
Combined 2016 Project Totals (All Zones)	**19,683**	**29,055**	**11.487**	**0.187**	**11.674**

*OHWM is an abbreviation for Ordinary High Water Mark. TOB is an abbreviation for Top of Bank.

2.2. Bank Repair Projects

Project Site	Length (linear feet)	Acres Disturbed			Volume of Fill (cu.yds, net)	Treatment Approach (SMP Manual Figures 5-5, 5-6, or 5-7)
		Waters of the U.S. (below OHWM)	Waters of the State (below Top of Bank)	Total		
ZONE 1A						
Peterson 1	40	0.008	0.012	0.020	43	5-6
Russell 1A	75	0.005	0.026	0.031	60	5-6
Totals	**115**	**0.013**	**0.038**	**0.051**	**103**	

2.3. Activities on Restriction-Imposed Creeks

The Stream Maintenance Program tracks maintenance in creeks that have annual or cumulative maintenance limits (for the term of the permit). Multi-year tracking of cumulative program activities is important to demonstrate compliance with the SMP's own programmatic permits, as well as related conditions (such as the Russian River Biological Opinion conditions). These permit conditions are intended to reduce the overall level of impacts and the associated frequency of disturbance. Previous SMP Annual Summary Reports (2010-15) discuss the purpose and approach behind the Water Agency's philosophy and implementation of vegetation management. In general, Vegetation Management involves a "frequent but light" approach and results in removing only between 10-20 percent of canopy contributing to hydraulic constrictions.

Proposed 2016 SMP maintenance activities on creeks with restrictions are documented below in Table 2-1.

Table 2-1. Cumulative Activities on Creeks with Maintenance Limits

Creek Name	Permitting Conditions from Russian River Biological Opinion or developed for SMP Manual (NMFS 2008)			Proposed 2016 SMP Activities			Remaining Maintenance Activities Available on Creek
	Reach Scale Sediment Removal Limits	Localized Sediment Removal Limits	Vegetation Removal Limits	Reach Scale Sediment Removal/Extent (linear feet)	Localized Scale Sediment Removal/Extent (linear feet)	Vegetation Removal Reach(es)/ Total Extent***	Reach Scale Sediment Removal
	Zone 1A						
Laguna de Santa Rosa	2,400 feet of sediment removal 3 times for the next 15 years*	No more than 3 projects annually	12,000 feet of vegetation removed annually	One/ 1,969 feet	One/ 1,452 feet	Laguna 1, 2, 3 and 4/ 21,633 feet	Reached limits established in BO for sediment removals, requesting authorization with NMFS to proceed with sediment removal above limit of salmonid anadromy
Copeland Creek	3,270 feet of sediment removal 6 times for the next 15 years*	No more than 3 projects annually	9,625 feet of vegetation removed annually	One/ 3,850 feet	Two (In-stream Sediment Basin Clearings)/ 405 feet	Copeland 1, 2, 3, 4 and 5/ 11,686 feet	4 projects
Windsor Creek	500 feet of sediment 2 times for the next 15 years*	No more than 3 projects annually	3,000 feet of vegetation removed annually	0	0	Windsor 1A, 1B, 3 and 4/ 6,545 feet	1 project
Santa Rosa Creek	4,000 feet three times for the next 15 years*	No more than 3 projects annually	12,100 feet of vegetation removed annually	0	one (In-stream Sediment Basin Clearing)/ 2,050 feet	Santa Rosa 1, 2, 4, 5 and 6/ 29,152 feet	1 project (2,513 feet remaining)

Table 2-1 continued.

Creek Name	Permitting Conditions from Russian River Biological Opinion or developed for SMP Manual (NMFS, 2008)			Proposed 2016 SMP Activities			Remaining Maintenance Activities Available on Creek
	Reach Scale Sediment Removal Limits	Localized Sediment Removal Limits	Vegetation Removal Limits	Reach Scale Sediment Removal/ Extent (linear feet)	Localized Scale Sediment Removal/ Extent (linear feet)	Vegetation Removal Reach(es)/ Total Extent***	Reach Scale Sediment Removal
Zones 2A and 3A							
Adobe Creek	4,153 feet, 3 times over 4 reaches for next 10 years**	n/a	5 projects, no more than 25% wood removed from any 1 reach, for next 10 years**	0	two (in-stream sediment basin clearing)/ 401 feet	Adobe 1 and 2/ 2,310 feet	2 projects (10,313 feet remaining over 4 reaches)
Lichau Creek	2,919 feet, 6 times over 3 reaches for 10 years**		5 projects, no more than 25% wood removed from any 1 reach, for next 10 years**	0	0	Lichau 1, 2 and 3/ 2,919 feet	2 projects (5,063 feet remaining)
Lynch Creek	1,277 feet, 2 times in 1 reach, for next 10 years**	--	1 project annually with no more than 25% wood removed, over next 10 years**	0	0	0	1 project (1,264 feet remaining)
Thompson Creek	1,856 feet, 2 times in 1 reach for next 10 years**	--	5 projects, no more than 25% wood removed, over next 10 years**	0	0	0	2 projects
Fryer Creek	4,009 feet 3 times over 4 reaches for next 10 years**		5 projects in each reach, no more than 25% wood removed from any 1 reach, for next 10 years**	650	0	0	1 project
Lower East Fork Fryer	--	683 feet, 1 time, in 1 reach, for next 10 years**	5 projects, no more than 25% of wood removed for next 10 years**	0	0	0	0 projects (reached limit in 2012)

*= limits for the next 15 years through 2023
**=limits for the next 10 years through 2020
***Actual vegetation removal may only occur within sub-portions of the total extent of the reach(es)

2.4. Project Designs

Design drawings for each project are presented in Appendix B. These drawings display the following information for each 2016 project:

- Longitudinal profiles comparing the existing grade and the project design
- Plan views showing existing conditions, Ordinary High Water Mark (OHWM), and maintenance locations
- Channel cross-sections showing existing conditions and the project design

The project designs have been arranged in the following order:

Zone	Project	Appendix B, Page(s)
1A	Cook 1 Localized Scale	1-3
	Ducker 1 and 2A Localized Scale	4-9
	LaBath 2 Localized Scale	10-11
	Laguna 3 Localized Scale	12-14
	Paulin 6A Localized Scale	15-18
	Copeland 2 Reach Scale	19-25
	Laguna 4 Reach Scale	26-29
	Russell 2 Reach Scale	30-32
	Brush 2A Sediment Basin Clearing	33-35
	Cook 2 Basin Sediment Basin Clearing	36-37
	Copeland 3/4 Sediment Basin Clearing	38-39
	Copeland 4/5 Sediment Basin Clearing	40-41
	Five 1 Sediment Basin Clearing	42-43
	Santa Rosa 2 Sediment Basin Clearing	44-48
	Wilfred 1C Sediment Basin Clearing	49-50
	Brush-Matanzas-Piner-Santa Rosa Reservoir Outlet Clearings	51-59
	Peterson 1 Bank Repair	60*
	Russell 1A Bank Repair	61*
2A	E. Fork McDowell 1 Localized Scale	62-63
	Corona 1 Reach Scale	64-68
	Adobe 1 and 2 Sediment Basin Clearing	69-72
3A	Fryer 3 Reach Scale	73-76
5A	Fife 3 and 4 Sediment Basin Clearing	77-79
8A	Bloomfield 1 Culvert Replacement[2]	80**

*Please also refer to SMP Manual Figure 5-6 (*Bank Stabilization Treatment Design—Rip-rap at Toe of Slope*) for design details
**Please also refer to SMP Manual Figure 5-7 (*Bank Stabilization Treatment Design—Culvert Repair*) for design details

Section 3
Project Settings and Resources

The following section describes the setting and resources for proposed 2016 ground-disturbing projects. This section also provides results of on-site biological (wildlife and plant) and cultural resource surveys and identifies surveys that will be conducted during the maintenance year.

3.1. Project Settings and Resources

Reach characterization sheets for the 2016 project sites were developed for, and included in, Chapter 4 of the Stream Maintenance Program (SMP) Manual. The channel characterization sheets contained within the Manual provide baseline information on the maintenance reach's setting, physical processes, geomorphic conditions, biologic conditions, and management considerations. The channel characterization sheets also include photographs depicting typical conditions of the reach. Program reviewers are directed to view the reach characterization sheets in the Manual (Chapter 4) to provide an overview of reach conditions. Updated reach characterization sheets for 2016 ground-disturbing project sites will be developed following work completion and provided in the 2016 Annual Post-Maintenance Summary Report.

Photos depicting current, pre-construction, site conditions are provided in Appendix C. Maps identifying the location of ground-disturbing projects in relation to known biological resources (California Natural Diversity Database (CNDDB)) maps are provided in Appendix D.

3.2. Potential Habitat for Listed and Special-Status Species

Overview of Listed Species with the Potential to Occur in 2016 Ground-Disturbing Project Areas[1, 2]

Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
Zone 1A									
Brush 2A	U	P	U	U	P	O(M/R)	U	U	U
Brush Creek Reservoir	U	U	U	U	P	U	U	U	U
Cook 1	U	U	U	U	U	U	U	U	U
Cook 2 (Basin)	U	P	U	P	P	U	U	U	U

Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
Copeland 2	U	U	3(3,772)	U	P	O (M)	U	U	U
Copeland 3	U	U	3(926)	U	P	O (M/R)	U	U	U
Copeland 4	U	U	3(2,769)	U	P	O (M)	U	U	U
Copeland 5	U	U	3(1,368)	P	P	O (M/R)	U	U	U
Ducker 1	U	P	U	U	P	U	U	U	U
Ducker 2A	U	P	U	U	P	U	U	U	U
Five 1	U	U	U	U	P	U	U	U	U
LaBath 2	U	U	3(221)	U	P	U	U	U	U
Laguna 3	U	U	2(4,281); 3(2,295)	U	P	O (M)	U	U	P
Laguna 4	U	U	2(2,048)	U	P	O (M)	U	U	P
Matanzas Creek Reservoir	U	U	U	U	P	U	U	U	U
Paulin 6A	U	U	U	U	P	P	U	U	U
Peterson 1	U	U	3(2,697)	U	P	U	U	O*	U
Piner Creek Reservoir	U	U	U	U	P	U	U	U	U
Russell 1A	U	U	U	U	P	U	U	U	U
Russell 2	U	U	U	U	P	U	U	U	U
Santa Rosa 2	U	U	2(1,781); 2(621); 3(9,300)	U	P	O (M/R)	U	U	P
Santa Rosa Creek Reservoir	U	U	U	U	P	U	U	U	U
Wilfred 1C	U	U	3(2,586)	U	P	U	U	U	P
Zone 2A									
Adobe 1	U	P	U	U	P	O (M)	U	U	U
Adobe 2	U	P	U	U	P	O (M)	U	U	U
Corona 1	U	U	U	U	P	U	U	U	U
E. Fork McDowell 1	U	U	U	U	P	U	U	U	U
Zone 3A									
Fryer 3	U	U	U	U	P	U	U	U	U
Zone 5A									
Fife 3	U	P	U	U	P	M/R	U	U	U
Fife 4	U	P	U	U	P	M/R	U	U	U
Zone 8A									
Bloomfield 1	U	P	U	U	U	U	U	U	U

Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants

[1]Based on Manual Table 7-3, the lasted version of which was included in the 2015 Annual Post Maintenance Summary Report (Appendix G).

[2]**Legend**

O Known occurrence in reach
O* Presence documented within adjacent reach or tributary; not applicable for fish if known barrier or reach goes dry
P Potential habitat (includes areas rated potential or marginal)
M Migration corridor (fish only)
S Known or potential spawning habitat (fish only)
R Known or potential rearing habitat (fish only)
U Unsuitable habitat, unlikely to occur and/or no known occurrence

CTS Habitat Rankings*

1 - Within 500 feet of a known occurrence
2 - Between 500 feet and 2,200 feet of a known occurrence
3 - Between 2,200 feet and 1.3 mi of a known occurrence

*Parentheses following CTS habitat ranks notate distance (in feet) of each rank for reaches with more than one CTS ranking

3.3. Biological Surveys and Species-Specific Information

California Tiger Salamander

Compensatory Mitigation

Eleven proposed sediment removal and bank stabilization projects occur on reaches that may potentially support upland aestivation habitat for California tiger salamander (CTS), as listed in Table 2-2 below. Per guidance of the Programmatic Biological Opinion (BO) of United States Fish and Wildlife Service (USFWS) and a Consistency Determination provided by the California Department of Fish and Wildlife (CDFW) (Aug 6, 2010), the Water Agency compensates for potential effects to California tiger salamander (CTS) habitat through the purchase of credits from a USFWS- and CDFW-approved conservation bank. Specifically, preservation bank compensation for maintenance activities resulting in ground disturbing effects located above the ordinary high water mark (OHWM) and within potential upland CTS habitat must be purchased based on the following criteria:

1. Actions less than 500 ft from a known salamander occurrence would be compensated for at a ratio of 2:1 (Rank 1)

2. Actions greater than 500 ft and less than 2,200 ft from a known salamander occurrence would be compensated for at a ratio of 1:1 (Rank 2)

3. Actions greater than 2,200 ft and less than 1.3 miles from a known salamander occurrence would be compensated for at a ratio of 0.2:1 (Rank 3)

Table 3-1 (below) lists the 2016 stream maintenance ground-disturbing projects that are within potential upland CTS habitat and provides the area (in square feet) disturbed above the OHWM. Maps used to calculate CTS distance rankings to determine compensatory mitigation requirements for 2016 program activities are provided in Appendix E. A current accounting of available CTS mitigation credits is provided below in Table 3-2.

Table 3-1. List of proposed projects with the potential to impact California tiger salamander, estimated area of disturbance and compensatory mitigation requirements.

Proposed Projects with the Potential to Impact CTS[1]	Rank/Estimated Area Disturbed Above OHWM (sq.ft.)	Compensatory Mitigation Required (as per USFWS BO)	
		Ratio	Total required (sq.ft.)
ZONE 1A			
Localized Scale			
Labath 2	3/1,020	0.2:1	204
Laguna 3	2/0	1:1	0
Reach Scale			
Copeland 2	3/4,295	0.2:1	859
Laguna 4	2/0	1:1	0
Bank Repair			
Peterson 1	3/504	0.2:1	101
In-stream Sediment Basin Clearing			
Copeland 3/4	3/0	0.2:1	0
Copeland 4/5	3/0	0.2:1	0
Santa Rosa 2	3/0	0.2:1	0
Wilfred 1C	3/0	0.2:1	0
Project Totals	**5,819 sq. ft. (0.134 acres)**		**1,164 sq. ft. (0.027 acres)**

[1]As per SMP Manual Table 7-3, which indicates presence of suitable habitat for special status species within programmatic reaches.

Table 3-2. Current CTS Mitigation Accounting (in acres).

Year	CTS Credits Purchased	CTS Credits Used	Running Balance
2010	0.07	0.034	0.036
2011	0.07	0.05	0.056
2012	0	0.049	0.007
2013	0.28	0.237	0.05
2014	0	0.24	-0.19
2015	**0.33**	**0.021**	**0.119**
Credit available to cover 2016 field season:			**0.119**

As shown in Table 3-1 (above), the estimated CTS compensatory mitigation requirement for the 2016 field season is 0.027 acres. This would leave 0.092 acre credits (0.119 minus 0.027) available for the 2017 season and beyond. It is important to note that the compensatory credits purchased for potential CTS habitat disturbance is in addition to the required program on-site and off-site mitigation actives (described in Section 4 of the report) as well as associated BMPs (as described in Section 1 of this report) which will implemented in 2016.

Planned Pre-Construction Surveys

As per program BMPs BR-12, BR-13 and BR-14 (Table 7-1, SMP Manual), qualified staff will conduct pre-maintenance surveys of upland habitats and identify areas with small mammal burrows at the ground-disturbing and vegetation management project sites listed in Table 3-3 below. The results of these surveys will be provided in the 2016 Annual Post-Maintenance Summary Report. It is significant to note that, to date, no CTS have been encountered during implementation of any program project activities.

Table 3-3. List of planned California tiger salamander pre-Maintenance survey sites as per BMPs BR-12, BR-13 and BR-14.

Project Sites to be surveyed
Ground-Disturbing Project Sites
ZONE 1A
Labath 2 (Localized); Laguna 3 (Localized); Copeland 2 (Reach Scale); Laguna 4 (Reach Scale); Peterson 1 (Bank Repair); Copeland 3/4 and 4/5 (In-stream Sediment Basin Clearings); Santa Rosa 2 (In-stream Sediment Basin Clearing); Wilfred 1C (In-stream Sediment Basin Clearing)
Vegetation Management Project Sites
ZONE 1A
BellWill 1, 2, 3, and 4; Coleman 2; Colgan 2, 5A, and 6; Copeland 1, 2, 3, 4, and 5; Cotati 1, 2A, and 2B; Gossage 1 and 3; Golf 1; Hinebaugh 1, 2, 3B, 4, 6, 7A, and 7B; Hunter 1, 2 and 3; Laguna 1, 2, 3, and 4; Moorland 1A; Paulin 4 and 5; Peterson 1; Piner 1; Roseland 1, 1A, and 2; Santa Rosa 1, 2, and 4; Todd 2, 3, 4A, 4B, 5A and 5B; Wilfred Ext. 1; Wilfred 1A, 1B, 1C

California Red-legged Frog

Planned Pre-Construction Surveys

As per program BMPs BR-10 and BR-11 (Table 7-1, SMP Manual), focused CRLF surveys and aquatic habitat assessments for potential breeding and foraging areas will be conducted ahead of any work in project areas where CRLF have been identified as potentially occurring. Table 3-4 below notes the proposed ground-disturbing and vegetation management project reaches to be surveyed for CRLF May-July, and includes findings from any previous surveys. The results of surveys conducted after submission of this Notification will be included in the 2016 Annual Post-Maintenance Summary Report. It is significant to note that, to date, no CRLF have been observed within any program reaches.

Table 3-4. List of planned California red-legged frog pre-maintenance surveys and results of previous surveys conducted.

2016 Planned Surveys		Previous Survey Information	
Project Site	**Survey Type, Expected Date**	**Survey Type(s), Year(s) Conducted[2]**	**Recent Findings**
Ground Disturbing Project Sites			
ZONE 1A			
Brush 2A	None. Previous survey valid.	Truncated protocol-level survey, 2015; full protocol-level survey, 2013; habitat assessment, 2007	No CRLF observations to date. Unsuitable habitat. Engineered channel with grouted riprap and shallow water. Fish present.
Cook 2 (Basin)	Single-pass habitat assessment, May 5th[1]	Full protocol-level survey, 2013 and 2010; habitat assessment survey, 2007	No CRLF observations to date. Marginal habitat due to frequent disturbance and presence of exotic predators.
Ducker 1 and 2A	Single-pass habitat assessment, May 5th[1]	Full protocol-level survey 2010; single pass habitat assessment 2013; habitat assessment survey, 2007	No CRLF observations to date. Unsuitable habitat due to high level of disturbance, isolation from known CRLF populations due to high density development and presence of exotic predators. Water intermittent, typically dry before field season
ZONE 2A			
Adobe 1 and 2	None. Previous survey valid.	Truncated protocol-level survey, 2015; full protocol-level survey 2010 and 2013; habitat assessment survey, 2007	No CRLF observations to date. Unsuitable habitat. Mature riparian canopy with sparse understory. Shallow water. Lower reach tidal. Predators present. Water intermittent, typically dry before field season
ZONE 5A			
Fife 3 and 4	Single-pass habitat assessment, May 5th[1]	Habitat assessment survey, 2013 and 2007	Marginal Habitat. Frogs may use project area for dispersal

2016 Planned Surveys		Previous Survey Information	
Project Site	**Survey Type, Expected Date**	**Survey Type(s), Year(s) Conducted[2]**	**Recent Findings**
ZONE 8A			
Bloomfield 1	None. Previous survey valid.	Full protocol-level survey, 2015 and 2011; habitat assessment survey, 2007	No CRLF observations to date. Predators present. Marginal habitat due to channelization. More suitable CRLF habitat occurred in the vicinity.
Vegetation Management Project Sites			
ZONE 1A			
Austin 1, 2 and 3	Habitat assessment as per BMP BR-11, to be conducted prior to any vegetation work	Austin 3: full protocol-level survey, 2011 Austin 1: habitat assessment, 2015	No CRLF observations to date. Unsuitable habitat due to high level of disturbance, isolation from known CRLF populations due to high density development and presence of exotic predators. Water intermittent, typically dry before field season.
Brush 1, 2A, 2B and 2C		Habitat assessment, 2015; full protocol-level survey, 2013; habitat assessment, 2007	No CRLF observations to date. Unsuitable habitat. Engineered channel with grouted riprap and shallow water. Fish present.
Middle Brush 1		Habitat assessment, 2007	Unsuitable habitat. Isolated from known CRLF populations. Predators and fish present. Reach lacking escape cover.
Santa Rosa 6		Habitat assessment, 2007	Unsuitable habitat. Degraded channel, multiple predators likely, isolated by distance and urban development
Todd 5A and 5B		Todd 5B: truncated protocol-level survey, 2015 Todd 5A and 5B: habitat assessment, 2015 and 2007	No CRLF observations to date. Intermittent water. Reaches lack significant aquatic habitat features. Unsuitable breeding habitat, but may be used by adult frogs for foraging. Intermittent water, majority of site dry by summer.
Windsor 3 and 4		Full protocol-level survey, 2013	No CRLF observations to date. Marginal habitat due to lack of emergent vegetative cover. Predators present.
ZONE 2A			
Adobe 1 and 2	Habitat assessment as per BMP BR-11, to be conducted prior to any vegetation work	Truncated protocol-level survey, 2015; full protocol-level survey 2010 and 2013; habitat assessment survey, 2007	No CRLF observations to date. Unsuitable habitat. Mature riparian canopy with sparse understory. Shallow water. Lower reach tidal. Predators present. Water intermittent, typically dry before field season
Capri 2B		Habitat assessment survey, 2007	Unsuitable Habitat. Degraded channel, isolated from known CRLF populations by distance and urban development.

2016 Planned Surveys		Previous Survey Information	
Project Site	**Survey Type, Expected Date**	**Survey Type(s), Year(s) Conducted[2]**	**Recent Findings**
ZONE 6A			
West Slough 1	Habitat assessment as per BMP BR-11, to be conducted prior to any vegetation work	Habitat assessment, 2015	No CRLF observations to date. Marginal habitat. Long sections of flatwater with patches of cattail and bulrush. Open riparian canopy.

[1]Single-pass habitat assessments are planned for May 5, 2016 to determine the potential for project sites to support CRLF. Sites requiring protocol-level surveys will be determined based on these assessments. Protocol-level surveys will be conducted May-July.
[2]Protocol-level surveys are USFWS-approved and include *truncated* (3 visits) and *full* (8 visits) survey types. Protocol-level surveys are valid for three years.

Site Surveys for Special-Status Plant Species

The following six listed plants are known to occur within the SMP Program: Sonoma alopecurus (*Alopecurus aequalis sonomensis*), Sonoma sunshine (*Blennosperma bakeri*), Sonoma white sedge (*Carex albida*), Burke's goldfields (*Lasthenia burkei*), Sebastopol meadowfoam (*Limnanthes vinculans*), and many-flowered navarretia (*Navarretia leucocephalis plieantha*). As per the SMP USFWS BO, Sonoma white sedge, many-flowered navarretia, and Sonoma alopecurus are not likely to be adversely affected by the SMP Program. If either of these species are discovered during floristic surveys, no further SMP activities will occur within the reach, USFWS and CDFW will be notified of their discovery within 48 hours, and the Water Agency will not continue any maintenance activities within the reach without USFWS and CDFW approval.

The SMP BO finds that program activities could result in adverse effects to Sonoma sunshine, Burke's goldfields and Sebastopol meadowfoam. To address potential stream maintenance effects on these special status plant species, qualified Water Agency staff (according to BMP BR-7 *Special-Status Plants*) conduct appropriately-timed botanical surveys for these species in areas where they have been identified as potentially occurring. The recommended blooming season for the target plant species in the Program Area is April-June. The 2011-2015 Water Agency reference site surveys have shown Sonoma sunshine, Burke's goldfields and Sebastopol meadowfoam to be blooming in mid to late April. This year (2016), Sonoma sunshine was observed at the early blooming stage at the Alton Lane Preserve on March 3rd (pictured below, left). Sebastopol meadowfoam appeared to near peak bloom at Todd Wells Preserve on April 5th (pictured below, middle). Burke's goldfields was near bud break April 5th and then in bloom April 13th (pictured below, right).

Of the 2016 ground-disturbing project sites, four reaches have the potential to provide habitat for Burke's goldfields, Sonoma sunshine, and Sebastopol meadowfoam specifically: Laguna 3 and 4; Santa Rosa 2, and Wilfred 1C. Between March 21 and April 14, 2016, these reaches, as well as others with the potential to support listed plants (as per Manual Table 7-3), were surveyed for the presence of Burke's goldfields, Sonoma sunshine and Sebastopol meadowfoam as well as potential habitat that could support these plant species. The results of these surveys are summarized below in Table 2-5.

Table 3-5. Results of 2016 Special Status Plant Species Surveys

Reach	Target Plant Species[1] Observed	Notes	Potential for Special Status Species Based on Observations
2016 Ground Disturbing Project Sites (Required Surveys)			
Zone 1A			
Laguna 3	None	Roadside V-ditch contains dense non-native grasses, very few depressional areas simulating vernal pool habitat; seed source may be in vicinity.	Low
Laguna 4	None	Urban environment, no areas of depressional topography to support wetlands or simulated vernal pool habitat. Lack of nearby seed sources	None
Santa Rosa 2	None	Dense canopy, rapid (flood) flows, density of non-natives in the herbaceous layer, and lack of pronounced depressional areas reduces the probability of colonization and almost certainly precludes establishment.	None to Unlikely
Wilfred 1C	None	Roadside V-ditch contains dense non-native grasses, few small/short runs of depressions within ditch that may offer low quality simulated vernal pool habitat. CNDDB maps indicate possible seed sources in adjacent fields north of easement.	Unlikely

Reach	Target Plant Species[1] Observed	Notes	Potential for Special Status Species Based on Observations
Additional Surveys			
Zone 1A			
Abramson 2	None	A V-ditch wetland parallels the access road with sufficient hydrology to support wetland plants; the vegetation within this ditch is overwhelmingly dominated (70% or greater) by dense, tall Italian rye grass (*Festuca perennis*), and the soil surface contains a thick mat of accumulated thatch.	Low
Bellevue Wilfred 1, 2 and 3	None	Roadside V-ditch contains dense non-native grasses, very few depressional areas simulating vernal pool habitat; seed source may be in vicinity.	Low
Colgan 1	None	Some small depressions that pond, but grasses are dense and tall	None to Unlikely
Colgan 2	None	V-ditch with suitable substrate, except some cobble from the adjacent access road in some places; the road contains several depressions, but underlain by gravel substrate; dense non-native grasses throughout ditch and road depressions; adjacent property contains vernal pools and documented Sebastopol meadowfoam	Low to Moderate
Laguna 1	None	V-ditch along access road and restoration area contains depressions; dense non-native grasses and thatch in ditch; depressions in restoration area similar to vernal pools, but no vernal pool species observed except for hyssop loosestrife *(Lythrum hyssopifolia*). CNDDB maps indicate possible Sonoma sunshine seed source in fields north of easement.	Low to Moderate
Peterson 2	None	V-ditch functions as a seasonal wetland swale and/or depression depending on precipitation and overland flow inputs; due to the presence of vernal pools and other seasonal wetlands within a mosaic of valley oak savannah situated immediately north of the site, as well as several areas within the ditch with suitable substrate and what appears to be suitable hydrology, the site has the potential to support vernal pool species. CNDDB indicates Sonoma sunshine occurrences in surrounding fields	Low to Moderate
Santa Rosa 1	None	Small depression along road mimicking vernal pool conditions and depressions in and around restoration areas may offer some low-quality habitat.	Low to Moderate
Roseland 1, 1A, 2, 3	None	No V-ditch and access road slopes towards stream creating good overland drainage; no depressions but one small swale crossing access road; seasonal wetlands in adjacent properties. CNDDB maps indicate seed sources in surrounding fields.	None to Unlikely
Todd 4A and 4B	None	Roadside V-ditch appears to drain less rapidly than in reach above, some depressional areas that may simulate vernal pool habitat. CNDDB maps indicate possible seed sources in field east of Reach 4B	Low

Reach	Target Plant Species[1] Observed	Notes	Potential for Special Status Species Based on Observations
Todd 5A and 5B	None	Roadside V-ditch appears to be well drained and dense non-native grasses; no pronounced depressions in ditch simulating vernal pool habitat	Unlikely
Wilfred 1A and 1B	None	Roadside V-ditch contains dense non-native grasses, few small/short runs of depressions within ditch that may offer low quality simulated vernal pool habitat. CNDDB maps indicate possible seed sources in adjacent fields north of easement.	Unlikely
Windsor 1A and 1B	None	No apparent vernal pools or seasonal wetlands in the easements with the exception of depressions (inundated, 03/22/2016) on the access road; due to substrate (mixed roadbase), repeated disturbance, episodic high flows, density of non-native herbs, and an apparent lack of seed source, vernal pool species are highly unlikely to occur and/or maintain viable populations within this reach	None to Unlikely

[1]Target plant species include Burke's goldfields, Sonoma sunshine, and Sebastopol meadowfoam.

As shown in Table 3-5 above, no special-status plant species were observed during the 2016 site surveys. It is important to note that, to date, no special status plant species have been observed within program easements. Furthermore, during the 2016 surveys, all observed wetland features or depressional areas with the potential to support vernal pools and special status plants were located outside of the channel, within v-ditches or low lying areas on channel access roads. All of the 2016 ground-disturbing projects are focused in-channel, below the OHWM, where the hydrologic and vegetative conditions preclude vernal-pool obligates including Burke's goldfields, Sonoma sunshine and Sebastopol meadowfoam. Consturction equipment and materials will be staged on access roads or disturbed areas that are already compacted and only support ruderal vegetation to the extent feasible (as per BMP GEN-2). Finally, all vegetative management and ground-disturbing project activities will be conducted outside of the typical blooming periods, after June 15th.

Additional Wildlife Surveys Planned for the 2016 Field Season

Table 2-6 below indicates the additional listed and special status wildlife surveys not covered in the sections above that are planned for the 2016 field season. Results of these surveys and related efforts will be provided in the 2016 Annual Post-Maintenance Summary Report. The table is organized by species. Please note, no ground disturbing or vegetation management projects are proposed in reaches with the potential to support California freshwater shrimp, California Central Coast Coho salmon or California Central Coast Chinook salmon (SMP Manual, Table 7-3).

Species	Project Sites	Survey Type/ Timing	Additional Notes
Foothill Yellow-Legged Frog (FHYLF)	Ground-disturbing project sites: Cook 2 basin, Copeland 5	Focused frog survey as per BMP BR-15, to be conducted ahead of any project activities	To date, only one FHYLF has been observed within program easements: on Adobe 2 in 2010
	Vegetation Management Sites: Crane 3, Hunter 3	Habitat assessment and aquatic features survey, as per BMP BR-16, to be conducted ahead of any vegetation work	
Western Pond Turtle (WPT)	All ground-disturbing project sites where water is present	Focused turtle surveys as per BMP BR-17, conducted daily before the start of work in areas potentially supporting WPT	
	All vegetation management project sites where water is present	Biologist will note any turtles observed during pre-maintenance site assessments/surveys. Disturbance to open water and areas with WPT will be avoided and minimized to the extent feasible	
Listed Salmonids and Native Fish Species	Ground-disturbing projects: Brush 2A, Copeland 2, 3, 4 and 5; Laguna 3 and 4; Paulin 6A, Santa Rosa 2, Adobe 1 and 2; Fife 3 and 4	Fish and aquatic species surveys, rescue and relocation as per BMPs BR-4, BR-5, BR-18/19, conducted at ground-disturbing project sites during dewatering events.	Work will be conducted after channel goes dry, as feasible. Shade trees and aquatic habitat features will be retained or replaced, as feasible. Erosion control and on-site restoration BMPs will be implemented to mitigate for general construction impacts as required. Activities in Zones 2A and 3A will also include implementation of the impact avoidance, minimization and mitigation measures as described in the *Steelhead Management Plan for Sonoma County Water Agency's Stream Maintenance Program, Zones 2A and 3A*.
	All vegetation management sites potentially supporting salmonid species (SMP Manual Table 7-3)	Biologist will survey sites for salmonid aquatic habitat features and flag those areas to be avoided by vegetation crews. Large woody debris and vegetation providing canopy/shade over the active channel will be retained to the extent feasible. Vegetation management work in Zones 2A and 3A, will also include implementation of the impact avoidance, minimization and mitigation measures as described in the *Steelhead Management Plan for Sonoma County Water Agency's Stream Maintenance Program, Zones 2A and 3A.*	
Nesting Birds	All ground-disturbing project and vegetation management sites	Nesting bird surveys as per BMP BR-8, prior to the start of any program activities during the active nesting season	Active nest season for most birds in Sonoma County is Feb 15-August 15. 50-foot and 500-foot non-disturbance buffers will be observed for active song bird and raptor nests, respectively

3.4. Cultural Resources

Results of Site Surveys for Cultural Resources

Three of the proposed 2016 projects may involve excavation into native soils, specifically: the bank repair projects on Peterson Creek, Reach 1 and Russel Creek, Reach 1A (both in Zone 1A) as well as the culvert replacement project on Bloomfield Creek, Reach 1 (Zone 8A). Please note, the Peterson 1 bank repair project was included in the 2015 Notification Report, however the project was not initiated that season.

As identified in the SMP Manual, and more specifically in the BMPs for Cultural Resources (SMP Table 7-1), a cultural resources investigation is required prior to performing any activity that will require excavation into soils beyond the as-built design. As specified in the Cultural Resources BMPs, this investigation must include background research and Native American consultation, a pedestrian survey, documentation, and application of management requirements (as required). A hired consulting firm qualified and experienced in providing cultural resource surveys conducted the required background research, and Native American consultation for the three 2016 projects requiring such efforts. Furthermore, the consulting firm completed pedestrian surveys on April 15, 2015 and April 13, 2016 for the Peterson 1 and Russell 1A project sites, respectively. These investigations concluded that there are no known cultural resources within the area of potential effect (APE) of the project sites. Complete reports for the cultural resource research conducted for the Peterson 1 and Russell 1A bank repair projects are provided in Appendix F. The pedestrian survey for the Bloomfield 1 culvert repair in scheduled for May 2016, the results of which will be included in the 2016 Annual Post-Maintenance Summary Report.

Prior to the commencement of ground-disturbing activities, all Water Agency personnel will be alerted to the archeological sensitivity of the 2016 project vicinities and on the importance of protecting cultural resources (as per BMP CR-5: *Staff Cultural Resources Training Program*). The 2016 training, to be led by a qualified archeologist hired by the Water Agency, is scheduled for June 21, 2016. If buried resources are discovered during ground-disturbing activities, appropriate measures will be implemented. These measures (BMPs CR-3: *Previously Undiscovered Cultural Resources* and CR-4: *Previously Undiscovered Paleontological Resources*) are described in detail in Chapter 7 of the SMP Manual.

Section 4
Annual Mitigation Plan

This section describes the mitigation activities proposed for the 2016 maintenance projects. Sections A and B below describe on-site (Tier 1) and off-site (Tier 2 and 3) mitigation activities, respectively. Tables 4-4, 4-5, 4-6 and 4-7 provide mitigation accounting information for the 2016 field season, by Flood Control Zone.

4.1. On-Site Mitigation Activities (Tier 1)

On-site impact mitigation will be implemented at the specific project reach where the maintenance work was conducted. SMP Chapter 8 provides details on how on-site mitigation is evaluated and designed to address impacts in the immediate maintenance project area, considering restoration and enhancement opportunities in the reach. On-site mitigation activities will restore or improve habitat that is affected by the sediment removal or bank stabilization activities within the general reach footprint in which the disturbance has occurred. On-site restoration typically restores and enhances a larger area than is impacted by maintenance activities. However, for simplicity in accounting, the on-site mitigation is calculated as a 1:1 ratio (acres disturbed to acres restored). As described in Chapter 8 of the SMP Manual, Tier 1 on-site mitigation activities include a robust planting program to develop a fuller riparian corridor and the removal of exotic and invasive species to enhance instream habitat and remove migration barriers.

More detailed descriptions of Tier 1 mitigation is provided in the Annual Summary Report (provided by January 31st) following completion of the restoration planting. In general mitigation aims to add to existing vegetation and replace habitat that was disturbed during sediment removal or bank repairs. Furthermore, mitigation treatments are designed and managed to shepherd the riparian zone through a successional process that incorporates transitioning the vegetation from an early seral state to a climax canopy. The seral to climax shift primarily involves going from higher to lower density of trees as each matures. Specific treatments are selected to restore the type of habitat lost and enhance the existing vegetation. In other words, if a given reach currently supports an extensive riparian corridor, restoration efforts focus on creating complexity in canopy layers (adding native herbaceous perennial and grass understory) along with re-establishing instream graminoids (aquatic sedges, rushes and grasses). If a given reach has few trees, then restoration focuses on establishing riparian canopy as per the appropriate Channel Form Planting Plan Exhibit. The preliminary planting approach for each project and type is identified in the Table 4-1 below. Copies of the Channel Form Planting Plan Exhibits are provided following the table.

Table 4-1. On-site Mitigation Summary.

SMP Reach	Channel Form Planting Plan Exhibit	On-Site Restoration Activity[1, 2]
Zone 1A		
Localized Scale		
Cook 1 (conduit)	1A	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes
Ducker 1 and 2A	1A	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes
LaBath 2	1A	-Erosion control BMPs; -Establishing native herbaceous perennials, in-stream graminoids and upland graminoids
Laguna 3	1D	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes; -Establishing native upland trees, grasses and herbaceous perennials on upper and side banks
Paulin 6A	1B	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes; -Establishing native upland trees, grasses and herbaceous perennials on upper and side banks
Reach Scale		
Copeland 2	1D	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes; -Establishing native upland trees, grasses and herbaceous perennials on upper and side banks
Laguna 4	1D	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes; -Establishing native upland trees, grasses and herbaceous perennials on upper and side banks
Russell 2	1A	-Erosion control BMPs; Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes
In-stream Sediment Basin Clearing		
Brush 2A	n/a	-Erosion control BMPs
Cook 2 Basin	n/a	-Erosion control BMPs
Copeland 3/4	n/a	-Erosion control BMPs

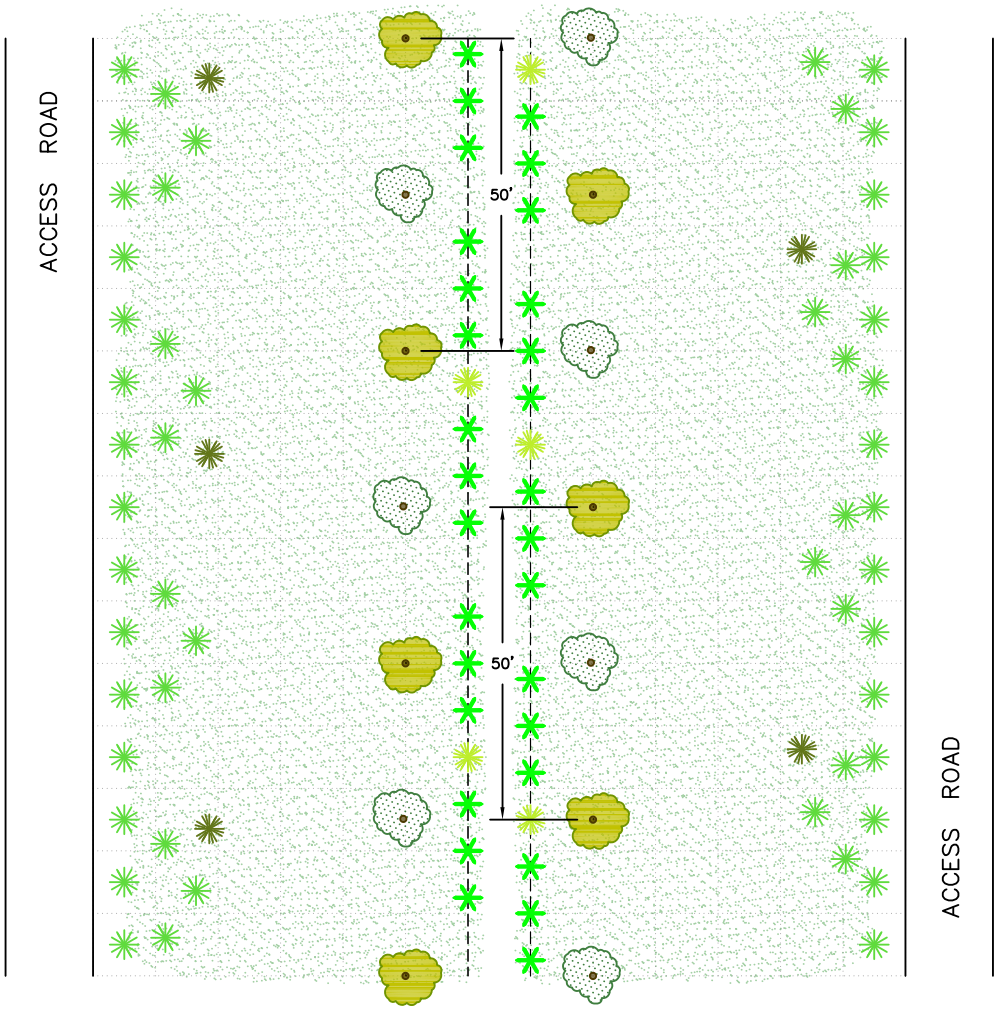
SMP Reach	Channel Form Planting Plan Exhibit	On-Site Restoration Activity[1, 2]
Copeland 4/5	n/a	-Erosion control BMPs
Five 1	n/a	-Erosion control BMPs
Santa Rosa 2	n/a	-Erosion control BMPs
Reservoir Outlet Clearing		
Brush Creek Reservoir	n/a	-Erosion control BMPs
Matanzas Creek Reservoir	n/a	-Erosion control BMPs
Piner Creek Reservoir	n/a	-Erosion control BMPs
Santa Rosa Creek Reservoir	n/a	-Erosion control BMPs
Bank Repair		
Peterson 1	1B	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on the toe; -Establishing native grasses and herbaceous perennials on the upper/side bank
Russell 1A	1B	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on the toe; -Establishing native trees, grasses and herbaceous perennials on the upper/side bank
Zone 2A		
Localized Scale		
E. Fork McDowell 1	1B	-Erosion control BMPs; -Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes; -Establishing native trees, grasses and herbaceous perennials on upper and side banks
Reach Scale		
Corona 1	1C	·Erosion control BMPs; ·Establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes; ·Establishing native trees, grasses and herbaceous perennials on upper and side banks
In-stream Sediment Basin Clearing		
Adobe 1 and 2	1C	·Erosion control BMPs

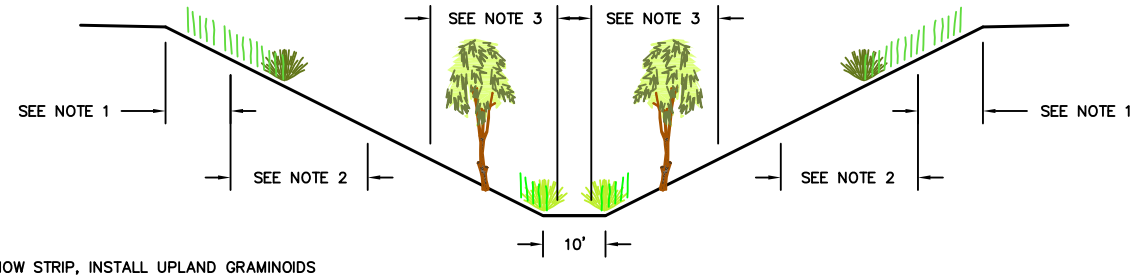
SMP Reach	Channel Form Planting Plan Exhibit	On-Site Restoration Activity[1, 2]
Zone 3A		
Reach Scale		
Fryer 3	2A	-Erosion control BMPs; -Impacts assigned to Tier 3 -Note: on-site mitigation will be occurring through a City Watersheds Project that will include establishing native riparian trees, herbaceous perennials and in-stream graminoids on both toes; and establishing native upland trees, grasses and herbaceous perennials on upper and side banks
Zone 5A		
In-stream Sediment Basin Clearing		
Fife 3 and 4	n/a (modified channel)	-Erosion control BMPs
Zone 8A		
Culvert Replacement		
Bloomfield 1	1B	-Erosion control BMPs; -Establish appropriate native grass, graminoid and herbaceous perennials

[1]Restoration activities (i.e. plant categories installed and spacings) will be in accordance with the SMP Channel Form Planting Plans
[2]On-site native plantings will be monitored for a total of 5-years after installation, as per SMP Manual Chapter 8. On-site mitigation activities will be implemented in fall 2016/early winter 2017 and monitoring will occur annually fall 2017-fall 2021.

Channel Form Planting Exhibits

As described above, following completion of ground-disturbing activities, sites will be installed with native plant species following the appropriate template for each channel form. As shown in Table 4-1 above, Channel Form Planting Exhibits to be utilized in 2016 include 1A (Option 1), 1B, 1C, 1D and 2A. Copies of these exhibits are provided below in Figures 4-1, 4-2, 4-3, 4-4 and 4-5 (respectively). Installation details, including species and quantities installed, will be included in the 2016 Annual Post-Maintenance Summary Report.





NOTES:

1. 3'–4' MOW STRIP, INSTALL UPLAND GRAMINOIDS
2. UPPER BANK PLANTING ZONE. INSTALL UPLAND GRAMINOIDS AND HERBACEOUS PERENNIALS.
3. LOWER BANK PLANTING ZONE. INSTALL RIPARIAN NURSERY STOCK TREES AND/OR CUTTINGS, AS WELL AS IN–STREAM GRAMINOIDS AND HERBACEOUS PERENNIALS.
4. TREES WILL NOT BE INSTALLED WITHIN 15' OF ANY CHANNEL HARDSCAPING, CULVERTS OR BRIDGEHEADS.

- ALTER TREE SPACING AND LOCATION BASED ON THE SLOPE OF BANKS, EXISTING RIPARIAN HABITAT, OR SITE CONDITIONS.
- IF SITE IS NOT SUITABLE FOR TOE TREES, THEN INSTALL UPPER BANK TREES AT 40–FOOT SPACING, OR PLANT TOE TREES ON ONE SIDE OF THE CHANNEL AT INCREASED SPACING.
- HYDROSEED APPLIED TO AREA DISTURBED.

LEGEND

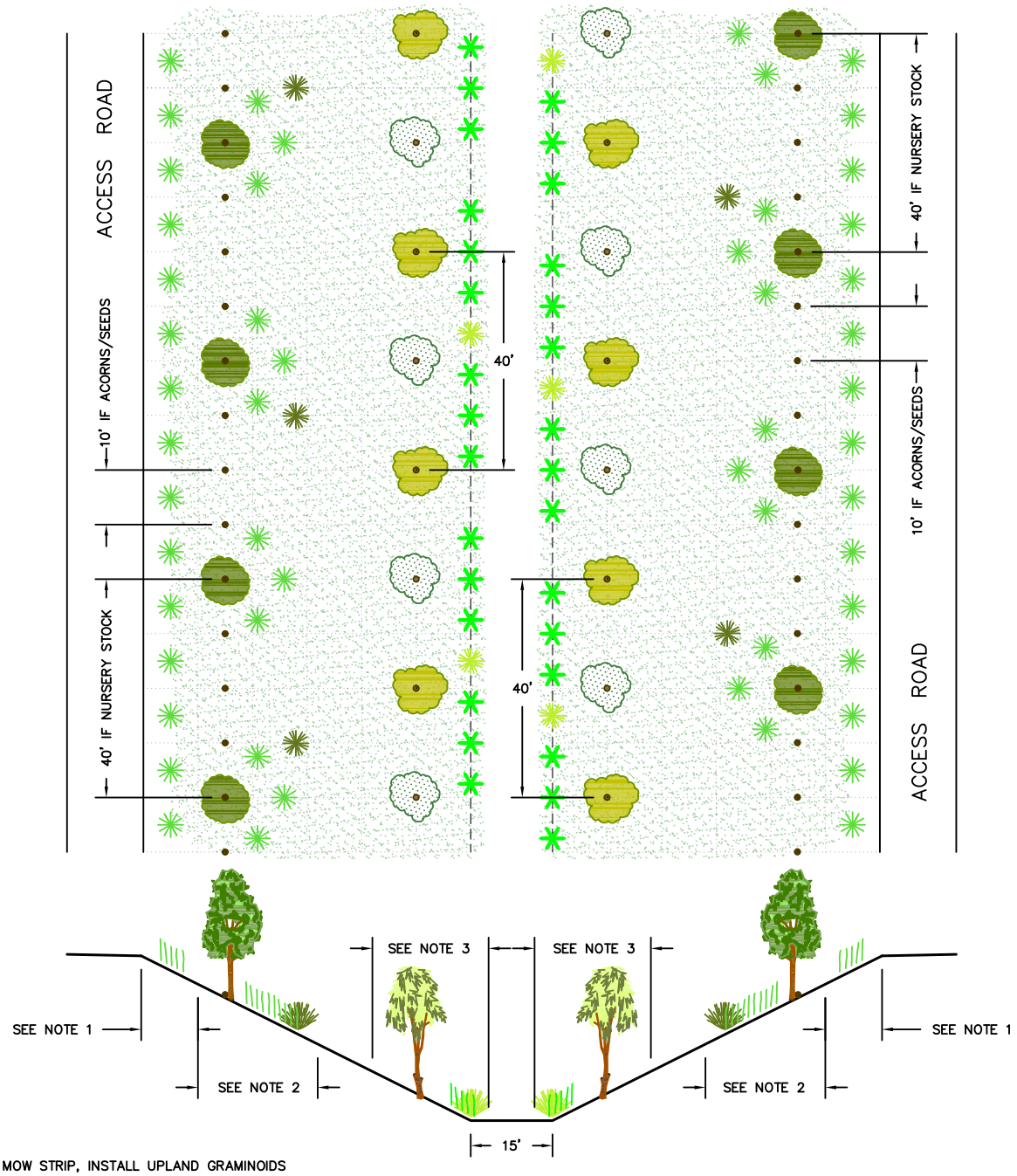
- ACORNS/SEEDS
- TOB TREES
- TOE TREES (PERMANENT)
- TOE TREES (TEMPORAL)
- IN–STREAM HERBACEOUS PERENNIAL
- UPLAND HERBACEOUS PERENNIAL
- IN–STREAM GRAMINOIDS
- UPLAND GRAMINOIDS
- HYDROSEED

CHANNEL FORM 1A – OPTION 1						
FORM IDENTIFIER	BOTTOM WIDTH	INSTALL SPACING				
		TOE TREES	TOB TREES	HERBACEOUS PERENNIAL*	UPLAND GRAMINOIDS*	IN–STREAM GRAMINOIDS*
1A	10' OR LESS	25'	–	30'	5'	10'

*NOTE: MAY NOT BE EVENLY SPACED OUT, TEND TO INSTALL IN GROUPINGS.

Figure 4-1. Channel Form 1A Planting Plan Exhibit - Option 1

T:\flood control\4060_SMP\Channel_Form\DWG\4060_SMP–Year–01
Plot Jul 20, 2015 at 4:00pm



NOTES:

1. 3'–4' MOW STRIP, INSTALL UPLAND GRAMINOIDS
2. UPPER BANK PLANTING ZONE. INSTALL UPLAND NURSERY TREE STOCK OR ACORNS/SEEDS, AND UPLAND GRAMINOIDS AND HERBACEOUS PERENNIALS.
3. LOWER BANK PLANTING ZONE. INSTALL RIPARIAN NURSERY STOCK TREES AND/OR CUTTINGS, AS WELL AS IN–STREAM GRAMINOIDS AND HERBACEOUS PERENNIALS.
4. TREES WILL NOT BE INSTALLED WITHIN 15' OF ANY CHANNEL HARDSCAPING, CULVERTS OR BRIDGEHEADS.

- ALTER TREE SPACING AND LOCATION BASED ON THE SLOPE OF BANKS, EXISTING RIPARIAN HABITAT, OR SITE CONDITIONS.
- LOCATE UPPER BANK TREES 3' TO 4' BELOW TOP OF BANK FOR MOWING.
- HYDROSEED APPLIED TO AREA DISTURBED.

CHANNEL FORM 1B						
FORM IDENTIFIER	BOTTOM WIDTH	INSTALL SPACING				
		TOE TREES	TOB TREES**	HERBACEOUS PERENNIAL*	UPLAND GRAMINOIDS*	IN–STREAM GRAMINOIDS*
1B	15' OR LESS	20'	40'/10'	30'	5'	10'

*MAY NOT BE EVENLY SPACED OUT, TEND TO INSTALL IN GROUPINGS.

**NURSERY TREE STOCK AT 40' SPACING OR ACORNS/SEEDS AT 10' SPACING.

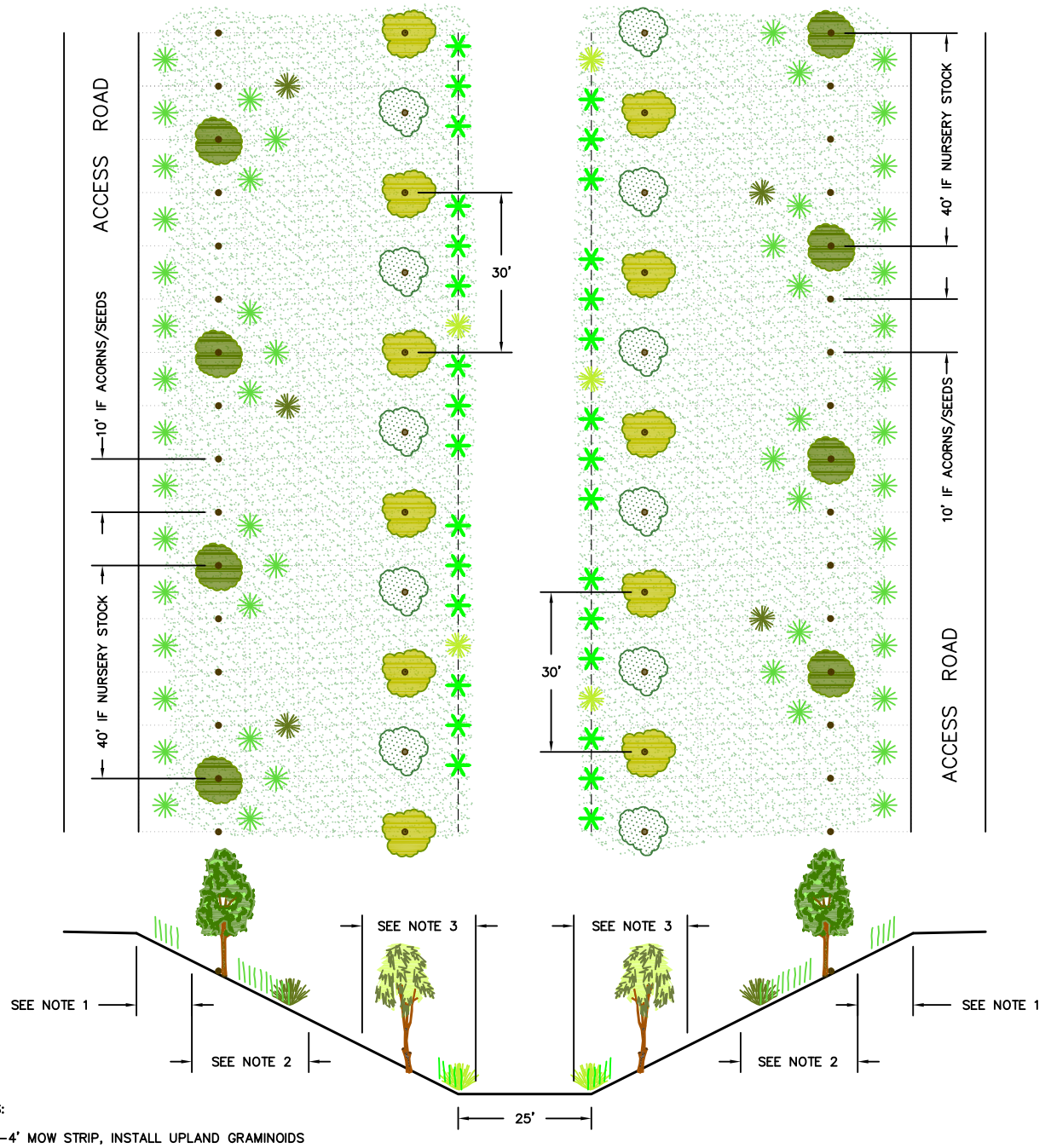
LEGEND

- ACORNS/SEEDS
- TOB TREES
- TOE TREES (PERMANENT)
- TOE TREES (TEMPORAL)
- IN–STREAM HERBACEOUS PERENNIAL
- UPLAND HERBACEOUS PERENNIAL
- IN–STREAM GRAMINOIDS
- UPLAND GRAMINOIDS
- HYDROSEED

Figure 4-2. Channel Form 1B Planting Plan Exhibit

\\SD-DATA\Proj\flood control\4060_SMP\Channel_Form\DWG\4060_SMP-Year-01

Plot Jul 16, 2015 at 3:37pm



NOTES:

1. 3'–4' MOW STRIP, INSTALL UPLAND GRAMINOIDS
2. UPPER BANK PLANTING ZONE. INSTALL UPLAND NURSERY TREE STOCK OR ACORNS/SEEDS, AND UPLAND GRAMINOIDS AND HERBACEOUS PERENNIALS.
3. LOWER BANK PLANTING ZONE. INSTALL RIPARIAN NURSERY STOCK TREES AND/OR CUTTINGS, AS WELL AS IN–STREAM GRAMINOIDS AND HERBACEOUS PERENNIALS.
4. TREES WILL NOT BE INSTALLED WITHIN 15' OF ANY CHANNEL HARDSCAPING, CULVERTS OR BRIDGEHEADS.

- ALTER TREE SPACING AND LOCATION BASED ON THE SLOPE OF BANKS, EXISTING RIPARIAN HABITAT, OR SITE CONDITIONS.
- LOCATE UPPER BANK TREES 3' TO 4' BELOW TOP OF BANK FOR MOWING.
- HYDROSEED APPLIED TO AREA DISTURBED.

CHANNEL FORM 1C						
FORM IDENTIFIER	BOTTOM WIDTH	INSTALL SPACING				
		TOE TREES	TOB TREES**	HERBACEOUS PERENNIAL*	UPLAND GRAMINOIDS*	IN–STREAM GRAMINOIDS*
1C	25' OR LESS	15'	40'/10'	30'	5'	10'

*MAY NOT BE EVENLY SPACED OUT, TEND TO INSTALL IN GROUPINGS.

**NURSERY TREE STOCK AT 40' SPACING OR ACORNS/SEEDS AT 10' SPACING.

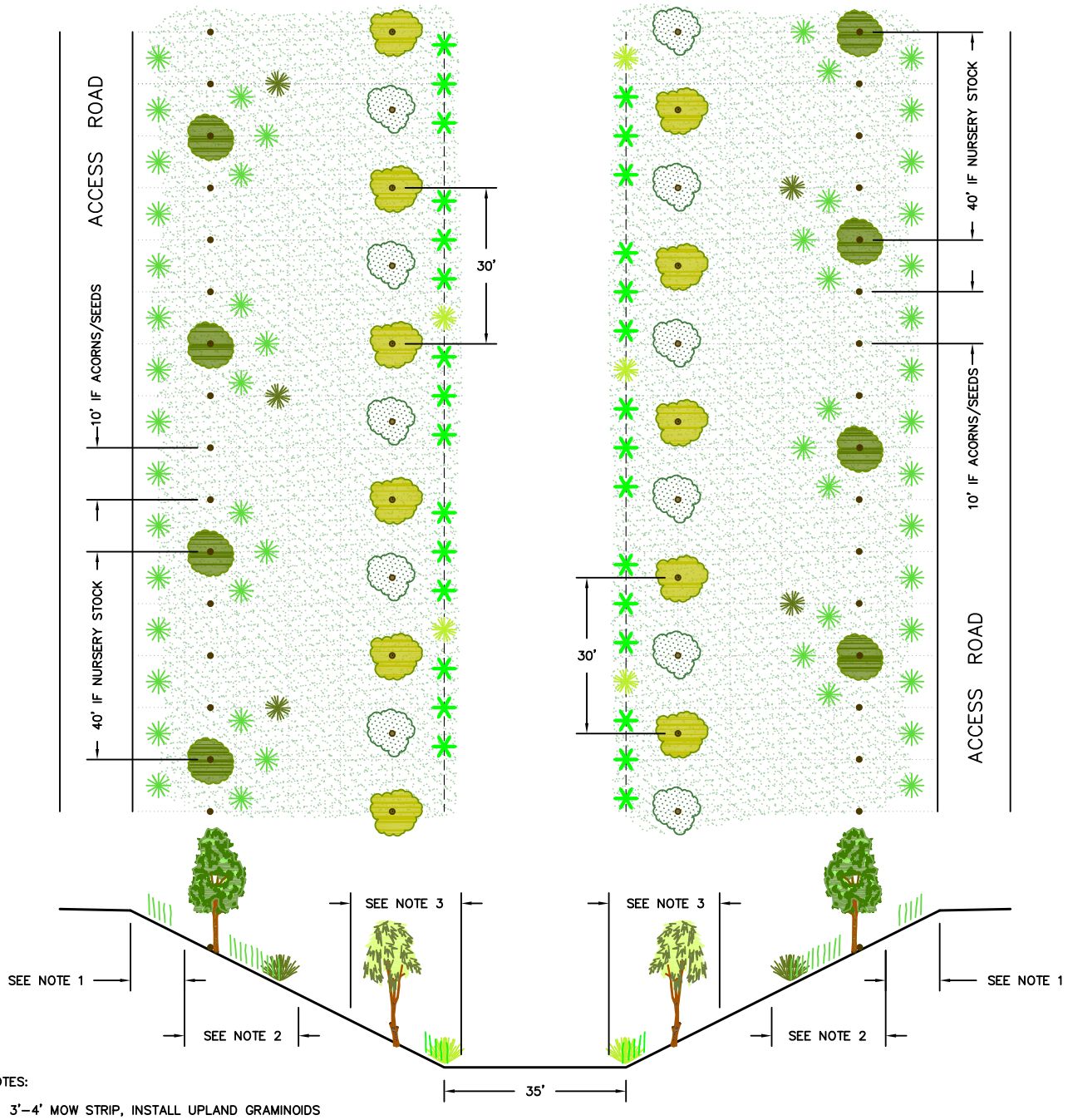
LEGEND

- ACORNS/SEEDS
- TOB TREES
- TOE TREES (PERMANENT)
- TOE TREES (TEMPORAL)
- IN–STREAM HERBACEOUS PERENNIAL
- UPLAND HERBACEOUS PERENNIAL
- IN–STREAM GRAMINOIDS
- UPLAND GRAMINOIDS
- HYDROSEED

Figure 4-3. Channel Form 1C Planting Plan Exhibit

T:\flood control\4060_SMP\Channel_Form\DWG\4060_SMP-Year-01

Plot Jul 20, 2015 at 8:11am



NOTES:

1. 3'–4' MOW STRIP, INSTALL UPLAND GRAMINOIDS
2. UPPER BANK PLANTING ZONE. INSTALL UPLAND NURSERY TREE STOCK OR ACORNS/SEEDS, AND UPLAND GRAMINOIDS AND HERBACEOUS PERENNIALS.
3. LOWER BANK PLANTING ZONE. INSTALL RIPARIAN NURSERY STOCK TREES AND/OR CUTTINGS, AS WELL AS IN–STREAM GRAMINOIDS AND HERBACEOUS PERENNIALS.
4. TREES WILL NOT BE INSTALLED WITHIN 15' OF ANY CHANNEL HARDSCAPING, CULVERTS OR BRIDGEHEADS.

- ALTER TREE SPACING AND LOCATION BASED ON THE SLOPE OF BANKS, EXISTING RIPARIAN HABITAT, OR SITE CONDITIONS.
- LOCATE UPPER BANK TREES 3' TO 4' BELOW TOP OF BANK FOR MOWING.
- IF BANK FULL ALLOWS, AN ADDITIONAL LINE OF TREES MAY BE INSTALLED.
- HYDROSEED APPLIED TO AREA DISTURBED.

CHANNEL FORM 1D

FORM IDENTIFIER	BOTTOM WIDTH	INSTALL SPACING				
		TOE TREES	TOB TREES**	HERBACEOUS PERENNIAL*	UPLAND GRAMINOIDS*	IN–STREAM GRAMINOIDS*
1D	25' OR GREATER	15'	40'/10'	30'	5'	10'

*MAY NOT BE EVENLY SPACED OUT, TEND TO INSTALL IN GROUPINGS.

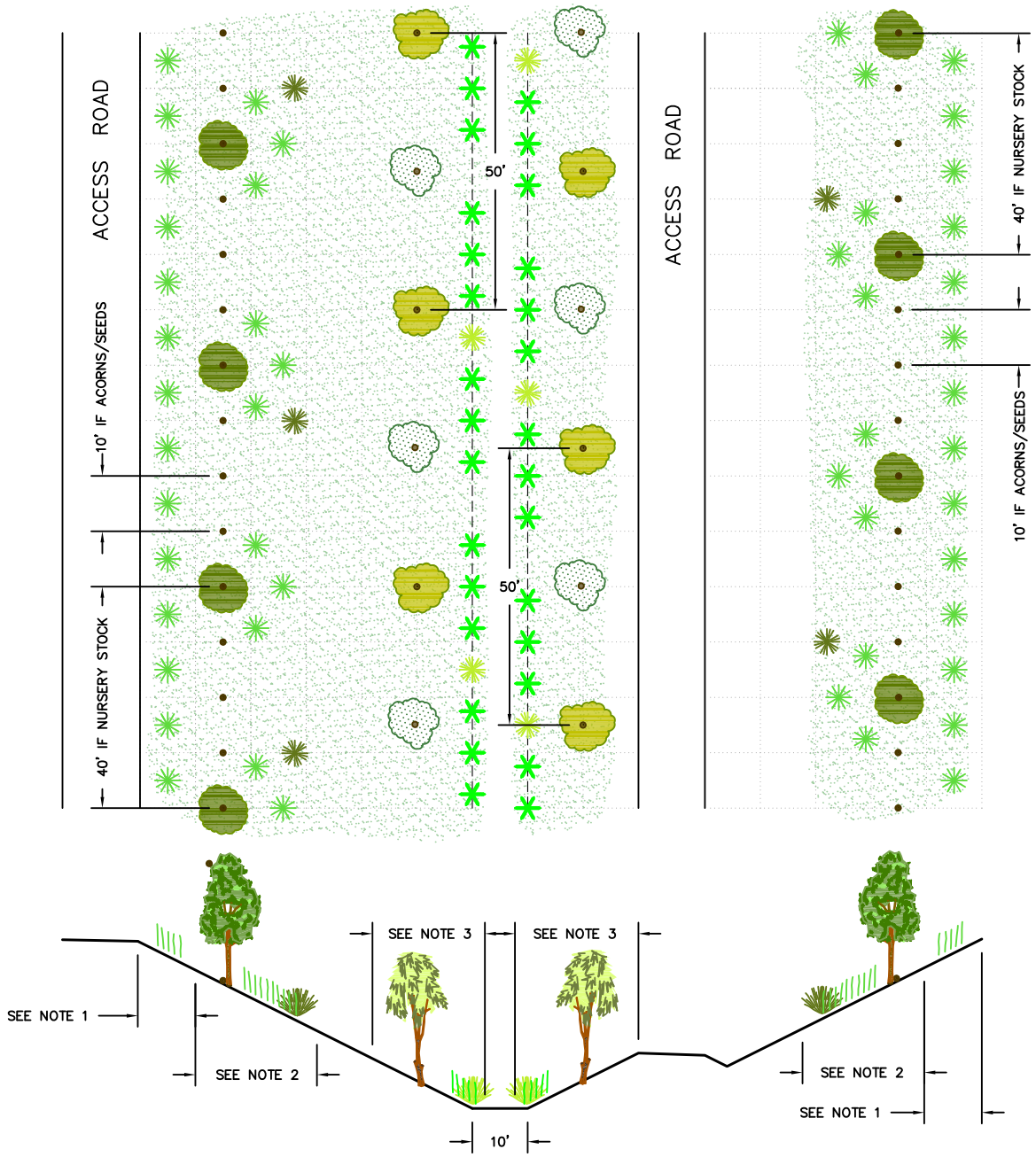
**NURSERY TREE STOCK AT 40' SPACING OR ACORNS/SEEDS AT 10' SPACING.

LEGEND

- ACORNS/SEEDS
- TOB TREES
- TOE TREES (PERMANENT)
- TOE TREES (TEMPORAL)
- IN–STREAM HERBACEOUS PERENNIAL
- UPLAND HERBACEOUS PERENNIAL
- IN–STREAM GRAMINOIDS
- UPLAND GRAMINOIDS
- HYDROSEED

Figure 4-4. Channel Form 1D Planting Plan Exhibit

T:\flood control\4060_SMP\Channel_Form\DWG\4060_SMP-Year-01
Plot Jul 20, 2015 at 8:12am



NOTES:

1. 3'–4' MOW STRIP, INSTALL UPLAND GRAMINOIDS
2. UPPER BANK PLANTING ZONE. INSTALL UPLAND NURSERY TREE STOCK OR ACORNS/SEEDS, AND UPLAND GRAMINOIDS AND HERBACEOUS PERENNIALS.
3. LOWER BANK PLANTING ZONE. INSTALL RIPARIAN NURSERY STOCK TREES AND/OR CUTTINGS, AS WELL AS IN–STREAM GRAMINOIDS AND HERBACEOUS PERENNIALS.
4. TREES WILL NOT BE INSTALLED WITHIN 15' OF ANY CHANNEL HARDSCAPING, CULVERTS OR BRIDGEHEADS.

- ALTER TREE SPACING AND LOCATION BASED ON THE SLOPE OF BANKS, EXISTING RIPARIAN HABITAT, OR SITE CONDITIONS.
- LOCATE UPPER BANK TREES 3' TO 4' BELOW TOP OF BANK FOR MOWING.
- HYDROSEED APPLIED TO AREA DISTURBED.

CHANNEL FORM 2A						
FORM IDENTIFIER	BOTTOM WIDTH	INSTALL SPACING				
		TOE TREES	TOB TREES**	HERBACEOUS PERENNIAL*	UPLAND GRAMINOIDS*	IN–STREAM GRAMINOIDS*
2A	10' OR LESS	25'	40'/10'	30'	5'	10'

*MAY NOT BE EVENLY SPACED OUT, TEND TO INSTALL IN GROUPINGS.

**NURSERY TREE STOCK AT 40' SPACING OR ACORNS/SEEDS AT 10' SPACING.

LEGEND

- ACORNS/SEEDS
- TOB TREES
- TOE TREES (PERMANENT)
- TOE TREES (TEMPORAL)
- IN–STREAM HERBACEOUS PERENNIAL
- UPLAND HERBACEOUS PERENNIAL
- IN–STREAM GRAMINOIDS
- UPLAND GRAMINOIDS
- HYDROSEED

Figure 4-5. Channel Form 2A Planting Plan Exhibit

\\SD-DATA\Proj\flood control\4060_SMP\Channel_Form\DWG\4060_SMP-Year-01

Plot Jul 16, 2015 at 3:38pm

Sediment Basins, Reservoir Outlets and Concrete-lined Structures

The SMP treats sediment basins, reservoir outlets, concrete-lined channels and fish ladders as in-stream focused sediment removal areas. Utilizing these areas frequently significantly reduces sediment loads downstream. The SMP assumes that initial impacts for re-establishing design grade for in-stream sediment basins, reservoir outlets and concrete-lined structures will be mitigated through Tier 3 (off-site) mitigation at a ratio of 1:1.1 (area disturbed: area restored). On-site mitigation will not be required as these areas will be disturbed regularly and permanent plant establishment would be impossible. For follow-up (often annual) maintenance activities within these same areas/structures, ten percent the impact will be mitigated through Tier 3.

For the 2016 maintenance year, projects at sites previously established as in-stream sediment basins; at sites of regular (i.e. occurring every one to three years) disturbance (including reservoir outlets, concrete-lined channels and fish ladders); or that are intended to serve as sediment basin clearing areas in the future are listed below in Table 4-2. Dates indicate the year of establishment as a sediment basin/area of regular disturbance and subsequent completion of a one-time Tier 3 mitigation.

Table 4-2. 2016 Sediment Basin, Reservoir Inlet and Concrete-lined Structure Clearing Projects.

SMP Reach	Project Type	Date of Establishment (Year Initially Mitigated through Tier 3)
Zone 1A		
Brush 2A	Sediment basin clearing to design grade	2013 (Tier 1)
Cook 2 Sediment Basin	Sediment basin clearing to design grade	2008
Copeland 3/4	Sediment removal in cement-lined structure	2009
Copeland 4/5	Sediment basin clearing to design grade	2009
Five 1	Sediment basin clearing to design grade	2011
Santa Rosa 2	Sediment basin clearing (skimming off existing gravel bars G and H)	2012 (Tier 1)
Wilfred 1C	Sediment basin clearing to design grade	2010
Brush Creek Reservoir	Reservoir outlet clearing	2010
Matanzas Creek Reservoir	Reservoir outlet clearing	2010
Piner Creek Reservoir	Reservoir outlet clearing	2010
Santa Rosa Creek Reservoir	Reservoir outlet clearing	2010

SMP Reach	Project Type	Date of Establishment (Year Initially Mitigated through Tier 3)
Zone 2A		
Adobe 1 and 2	Sediment basin clearing to design grade	2008
Zone 5A		
Fife 3 and 4	Sediment basin establishment (sediment removal occurred in new basin area as part of 2015 reach scale project)	2015

4.2. Off-Site Mitigation Activities and Funding (Tiers 2 and 3)

As described in the SMP Manual, off-site mitigation is provided to address the temporal gap between when on-site impacts occur and when on-site mitigation is provided. Tier 2 mitigation provides in-kind mitigation at neighboring SMP reaches that afford an opportunity for mitigation. Tier 3 mitigation projects provide restorative and mitigating watershed solutions that address SMP impacts at an off-site location. Tier 3 mitigation is implemented through a 10% matching contribution of SMP maintenance costs for sediment removal and bank repairs. SMP off-site watershed mitigation is led and funded by the Water Agency through a Watershed Partnerships Program (WPP) grant program to distribute funding to partnering agencies. These projects are implemented collaboratively with local non-profit agencies and Resource Conservation Districts (RCDs).

WPP partners are required to meet SMP permit requirements during development and implementation of their projects. Taken together with Tier 1 onsite mitigation these projects address the impacts of 2015 maintenance activities by conducting in-kind riparian and stream restoration in geographic proximity to this year's SMP activities. The success criteria and commitments described in Chapter 8 of the SMP Manual regarding implementation of off-site restoration projects apply to all of the 2016 WPP projects. These criteria and commitments include describing planting success rates (75%), a five-year monitoring period with annual reporting, and a description of what happens in the event of unsuccessful projects.

Construction costs and the quantity of WPP projects needed each year to meet the temporal mitigation need vary. On average the Water Agency's 10% matching contributions provide between $50,000 and $120,000 to the WPP project fund. Generally, while this funding is adequate to meet the minimum need of 10% of the area affected for each given year, specific partners propose projects of a larger scale than the mitigation needed. For this reason the Water Agency has contributed between $150,000 and $250,000 to the WPP each year since 2008. This approach has provided for watershed restoration to be accomplished in advance of the impacts associated with stream maintenance, and has provided vitally needed support for local restoration nonprofits. Additionally, this approach has vastly increased program flexibility and has provided a way to bank temporal mitigation in advance of the actual work. The banked

mitigation accounts can then be assigned as needed to appropriate impacts dependent on regulatory approval.

For 2016, three projects are being brought forward as Tier 3 Mitigation. Two projects are in Zone 2A: (1) Point Blue Conservation Science STRAW Ellis Creek Restoration Project at Hellman Ranch; and (2) Point Blue Conservation Science STRAW Washington Creek Restoration Project at Davis Ranch. The third Tier 3 project, in Zone 3A, is the Sonoma Ecology Center Restoration Project on Nathanson Creek, Phase II. The projects will be focused on riparian restoration and enhancement and erosion reduction. Copies of the 2016 WPP project proposals are provided in Appendix G of this Notification. A summary of the WPP projects, including project size (area to be restored/enhanced), cost, and description/purpose, is provided below in Table 4-3. Tables 4-5, 4-6, 4-7 and 4-8 (below) provide 2016 Tier 3 mitigation requirements (costs and area) and accounting information. A map showing the general 2016 WPP project locations is provided below in Figure 4- .

Table 4-3. Summary of 2016 Tier 3 (Off-site) Mitigation Projects.

Project Name	Project Size	Project Cost	Year to Be Completed*	Project Purpose
ZONE 2A				
Point Blue Conservation Science: STRAW Ellis Creek Restoration Project at Hellman Ranch	0.8 acres	$50,000	2021	Habitat enhancement through the establishment of native riparian plant species
Point Blue Conservation Science: STRAW Washington Creek Restoration Project at Davis Ranch	0.39 acres	$50,000	2021	Habitat enhancement through the establishment of native riparian plant species
ZONE 3A				
Sonoma Ecology Center: Nathanson Creek Restoration Project, Phase II	0.23 acres	$50,000	2021	Habitat enhancement and erosion control through the removal of exotic/invasive plant species, the establishment of native riparian plants and the installation of biological revetments to stabilize eroding creek bank. This project continues downstream from Phase I, implemented in 2015
Totals	**1.42 acres**	**$150,000**		

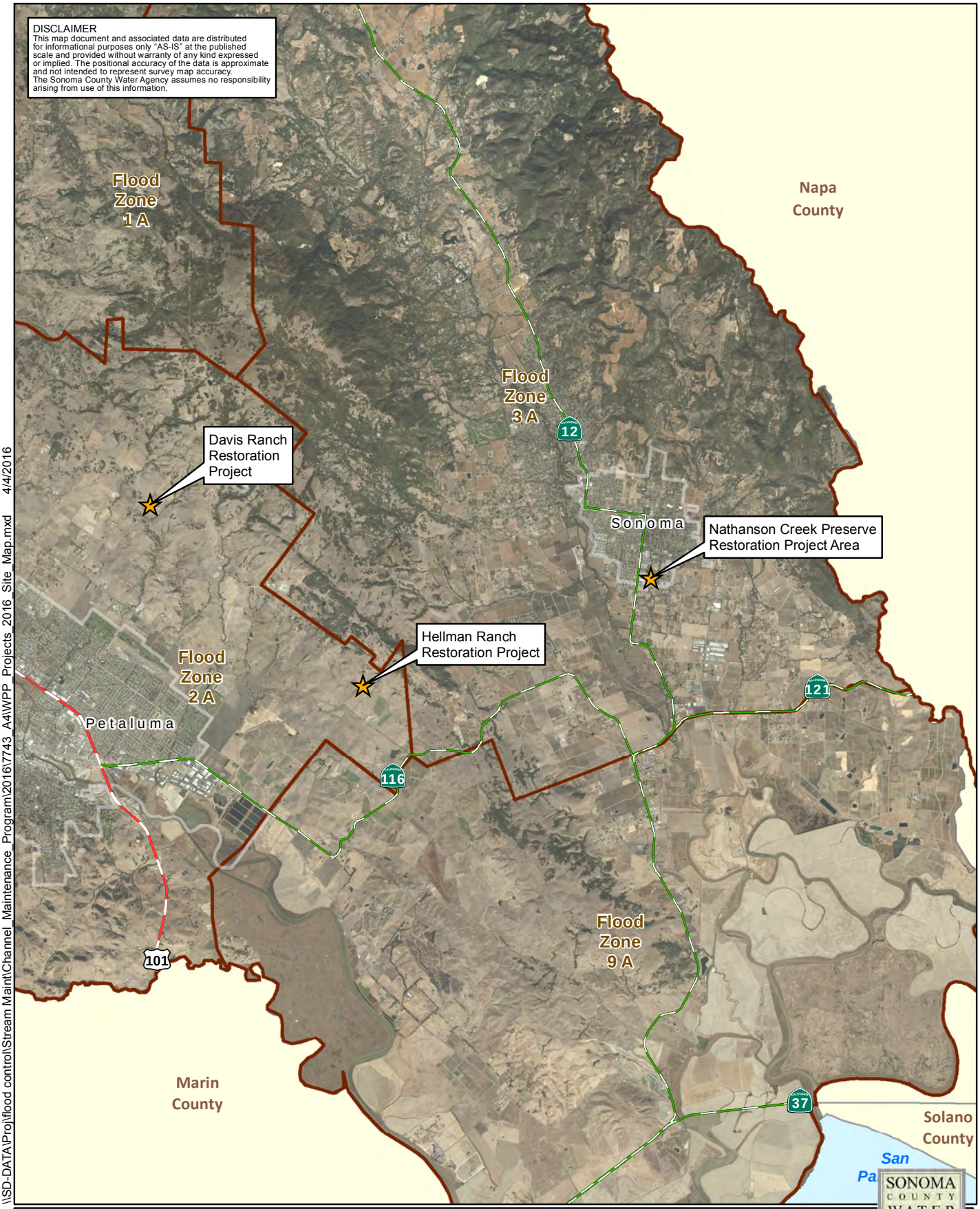


Figure 4-6. General Location Map for the 2016 WPP (Tier 3) Mitigation Projects

Table 4-4. Summary of Estimated Maintenance Costs and Tier 3 Mitigation Contributions

2016 Project	Estimated Cost	Tier 3 Mitigation Contribution
Zone 1A		
Cook 1 - Localized Scale	$8,000	$800
Ducker 1 and 2A - Localized Scale	$8,000	$800
LaBath 2 - Localized Scale	$8,000	$800
Laguna 3 - Localized Scale	$13,550	$1,355
Paulin 6A - Localized Scale	$13,000	$1,300
Copeland 2 - Reach Scale	$157,078	$15,708
Laguna 4 - Reach Scale	$100,078	$10,008
Russell Creek 2 - Reach Scale	$27,577	$2,758
Brush 2A - Sediment Basin Clearing	$22,020	$2,202
Cook - Sediment Basin Clearing	$8,031	$803
Copeland 3/4 - Sediment Basin Clearing	$17,829	$1,783
Copeland 4/5 - Sediment Basin Clearing	$42,877	$4,288
Five 1 - Sediment Basin Clearing	$5,401	$540
Wilfred 1C - Sediment Basin Clearing	$5,401	$540
Santa Rosa 2 - Sediment Basin Clearing	$75,000	$7,500
Brush Creek Reservoir - Outlet Clearing	$4,801	$480
Matanzas Creek Reservoir - Outlet Clearing	$12,003	$1,200
Piner Creek Reservoir - Outlet Clearing	$4,801	$480
Santa Rosa Creek Reservoir - Outlet Clearing	$5,982	$598
Russell 1A - Bank repair	$22,826	$2,283
Peterson 1 - Bank Repair	$22,826	$2,283
Zone 1A Totals	**$585,081**	**$58,508**
Zone 2A		
E Fork McDowell 1 - Localized Scale	$17,998	$1,800
Corona 1 - Reach Scale	$67,631	$6,763
Adobe 1/2 - Sediment Basin Clearing	$40,510	$4,051
Zone 2A Totals	**$126,139**	**$12,614**
Zone 3A		
Fryer 3 - Reach Scale	$25,442	$2,544
Zone 3A Totals	**$25,442**	**$2,544**
Zone 5A		
Fife 3, 4 - Sediment Basin Clearing	$90,175	$9,018
Zone 5A Totals	**$90,175**	**$9,018**
Zone 8A		
Bloomfield 1 - Culvert replacement	$14,000	$1,400
Zone 8A Totals	**$14,000**	**$1,400**
Combined 2016 Project Totals	**$840,837**	**$84,084**

Table 4-5. 2016 Proposed Tier 3 (Off-site) Mitigation project Costs.

Watershed Partnership Program (Tier 3) Projects	Cost
Point Blue Conservation Science: STRAW Ellis Creek Restoration Project at Hellman Ranch (Zone 2A)	$50,000
Point Blue Conservation Science: STRAW Washington Creek Restoration Project at Davis Ranch (Zone 2A)	$50,000
Sonoma Ecology Center: Nathanson Creek Restoration Project, Phase II (Zone 3A)	$50,000
2016 Total Proposed WPP Project Costs	**$150,000**
2016 Tier 3 Mitigation Funding Provided by Water Agency	**$150,000**
2016 Tier 3 Mitigation Funding Requirement (All Zones)	**$84,084**
2016 Banked Mitigation Credit (All Zones)	**$65,916**
Previously Funded and Banked Off-Site Credits (All Zones)	
Previous Tier 3 Funding Requirements 2009-2015	**$558,263**
Total Tier 3 Funding Provided by the Water Agency 2009-2015	**$886,866**
Banked Mitigation Funding Credit from 2009-2015	**$328,243**
2016 Banked Mitigation Funding Credit	**$65,916**
Total Banked Mitigation Funding Credit Available to Apply to Subsequent Seasons	**$394,159**

4.3. Overall Project Impacts and Mitigation Accounting

Table 4-6. 2016 Impact and Mitigation Area Accounting Zones 1A, 5A and 8A

SMP Project	Total Impact (acres)	Tier 1 Mitigation Requirement (Acres)	Tier 3 Mitigation Requirement (Acres)	Ratio of Impact to Total Mitigation (Tier 1 + Tier 3) (Area Disturbed: Area Restored)
Zones 1A, 5A and 8A				
Culvert replacement				
Bloomfield 1 (Zone 8A)	0.018	0.018	0.002	1:1.1
Localized Scale				
Cook 1	0.022	0.022	0.002	1:1.1
Ducker 1 and 2A	0.754	0.754	0.075	1:1.1
LaBath 2	0.049	0.049	0.005	1:1.1
Laguna 3	0.867	0.867	0.087	1:1.1
Paulin 6A	0.188	0.188	0.019	1:1.1
Reach Scale				
Copeland 2	3.094	3.094	0.309	1:1.1
Laguna 4	0.407	0.407	0.041	1:1.1
Russell 2	0.420	0.420	0.042	1:1.1
Sediment Basin Clearing				
Brush 2A	0.046	Tier 1 (2013)*	0.005	1:1.1
Cook 2 Basin	0.184	Tier 3 (2008)*	0.018	1:1.1
Copeland 3/4	0.207	Tier 3 (2009)*	0.021	1:1.1

SMP Project	Total Impact (acres)	Tier 1 Mitigation Requirement (Acres)	Tier 3 Mitigation Requirement (Acres)	Ratio of Impact to Total Mitigation (Tier 1 + Tier 3) (Area Disturbed: Area Restored)
Copeland 4/5	0.212	Tier 3 (2009)*	0.021	1:1.1
Fife 3 and 4 (Zone 5A)	0.479	Tier 1 (2015)*	0.048	1:1.1
Five 1	0.110	Tier 3 (2011)*	0.011	1:1.1
Santa Rosa 2	2.581	Tier 1 (2012)*	0.258	1:1.1
Wilfred 1C	0.046	Tier 3 (2010)*	0.005	1:1.1
Reservoir Outlet Clearing				
Brush Creek Reservoir	0.052	Tier 3 (2010)*	0.005	1:1.1
Matanzas Creek Reservoir	0.052	Tier 3 (2010)*	0.005	1:1.1
Piner Creek Reservoir	0.052	Tier 3 (2010)*	0.005	1:1.1
Santa Rosa Creek Reservoir	0.062	Tier 3 (2010)*	0.006	1:1.1
Bank Repair				
Peterson 1	0.020	0.020	0.002	1:1.1
Russell 1A	0.031	0.031	0.003	1:1.1
Zones 1A, 5A and 8A Totals	**9.953**	**5.87**	**0.995**	

2016 Zone 1A, 5A, and 8A Impact to Mitigation Accounting	
Total Impact:	**9.953 acres**
Total Tier 1 Impact (minus previously mitigated areas)	**5.87 acres**
Required *Temporal Mitigation* (10% of 9.953 acres):	**0.995 acres**
Total Required Mitigation Area for 2016 (Tier 1 Impacts +10% for Temporal Impacts) (5.87 + 0.995):	**6.865 acres**
2016 *Temporal Mitigation* (Tier 3) Contribution Total:	**0.00 acres****
2016 Tier 3 Requirement:	**0.995 acres**
2016 Tier 3 Contribution Total Less the Required Area:	**-0.995 acres**
Banked Tier 3 Mitigation Area Credit 2009-2015:	**8.490 acres*****
Banked Tier 3 Mitigation Credit, Less 2016 Requirement (8.490-0.995)	**7.495 acres**
Total Banked Mitigation Area Credit Available to Apply to Subsequent Seasons:	**7.495 acres**

*The SMP treats sediment basins, reservoir outlets, concrete-lined channels and fish ladders as in-stream focused sediment removal areas. Utilizing these areas frequently significantly reduces sediment loads downstream. The SMP assumes that initial impacts for re-establishing design grade for in-stream sediment basins, reservoir outlets and concrete-lined structures will be mitigated through Tier 3 (off-site) mitigation at a ratio of 1:1.1 (area disturbed: area restored). On-site mitigation will not be required as these areas will be disturbed regularly and permanent plant establishment would be impossible. For follow-up (often annual) maintenance activities within these same areas/structures, ten percent the impact will be mitigated through Tier 3. Dates in parentheses indicate the year of establishment and subsequent completion of a one-time Tier 3 mitigation.

**There are no proposed Tier 3 (WPP) projects in Zone 1A for 2016. To cover the 2016 Tier 3 mitigation area requirements, the program will draw from previously banked Tier 3 mitigation area credits.

***See Table 4-8 (below) for Tier 3 Mitigation Area Accounting details.

Table 4-7. 2016 Impact and Mitigation Area Accounting Zones 2A and 3A.

SMP Project	Total Impact (acres)	Tier 1 Mitigation Requirement (Acres)	Tier 3 Mitigation Requirement (Acres)	Ratio of Impact to Total Mitigation (Tier 1 + Tier 3) (Area Disturbed: Area Restored)
Zones 2A and 3A				
Localized Scale				
East Fork McDowell 1	0.035	0.035	0.004	1:1.1
Reach Scale				
Corona 1	1.163	1.163	0.116	1:1.1
Fryer 1	0.224	Tier 3 (2016)*	0.246	1:1.1
Sediment Basin Clearing				
Adobe 1/2	0.350	Tier 3 (2008)**	0.035	1:1.1
Zone 2A and 3A Totals	**1.772**	**1.198**	**0.401**	

2016 Zone 2A and 3A Impact to Mitigation Accounting	
Total Project Impacts:	**1.772 acres**
Total Tier 1 Impact (minus previously mitigated areas)	**1.198 acres**
Required Tier 3:	**0.401 acres**
Total Required Mitigation Area for 2016 (1.198+ 0.401):	**1.60 acres**
2016 Tier 3 Water Agency Contribution Total:	**1.42 acres**
2016 Tier 3 Requirement:	**0.401 acres**
2016 Tier 3 Contribution Total, Less the Required Area (1.42-0.401):	**1.019 acres**
Banked Tier 3 Mitigation Area Credit 2009-2015:	**0.299 acres*** **
Banked Tier 3 Mitigation Area Credit 2016:	**1.019 acres**
Total Banked Mitigation Area Credit Available to Apply to Subsequent Seasons:	**1.318**

*On-site restoration will occur through a City Watersheds Project. Mitigation for the SMP sediment removal activities will be provided through Tier 3 (off-site) mitigation

**The SMP treats sediment basins, reservoir outlets, concrete-lined channels and fish ladders as in-stream focused sediment removal areas. Utilizing these areas frequently significantly reduces sediment loads downstream. The SMP assumes that initial impacts for re-establishing design grade for in-stream sediment basins, reservoir outlets and concrete-lined structures will be mitigated through Tier 3 (off-site) mitigation at a ratio of 1:1.1 (area disturbed: area restored). On-site mitigation will not be required as these areas will be disturbed regularly and permanent plant establishment would be impossible. For follow-up (often annual) maintenance activities within these same areas/structures, ten percent the impact will be mitigated through Tier 3. Dates in parentheses indicate the year of establishment and subsequent completion of a one-time Tier 3 mitigation.

***See Table 4-8 (below) for current Tier 3 Mitigation Area Accounting details.

Table 4-8. Tier 3 Mitigation Area Accounting Details, 2009-2015.

Year	Consultant	Tier 3 (WPP) project name	Area to be restored (acres)	Project year [1]	Success rate	Area claimed (acres)[2]	Tier 3 requirement	SMP contribution (acres)[2]	Annual area surplus/ deficit (acres)
Zone 1A									
2008	Sonoma RCD	Cook Creek Headwaters	Project Discontinued				1.671	0.00	-1.671
	Cotati Creek Critters	Cotati Creek Critters-Upper Laguna	Project Discontinued						
2009	Point Blue	Copeland Creek (San Giacomo) Phase V	0.24	year 5 (2014)	37%	0.09	1.199	0.10	-1.099
	Point Blue	Matanzas Creek Phase VI (Doyle Park)	Project Discontinued						
	Point Blue	Spirit Creek Restoration Project	0.05	year 5 (2014)	13%	0.01			
2010	Point Blue	Roseland Phase II	0.39	year 5 (2014)	76%	0.39	2.823	0.85	-1.971
	Point Blue	Copeland Creek (San Giacomo) Phase VI	0.57	year 5 (2014)	59%	0.34			
	Point Blue	Matanzas Creek (Hoen) Phase I	0.21	year 5 (2014)	60%	0.13			
2011	Laguna Foundation	Laguna Reach 4 Phase I	1.45	year 4	77%	1.45	0.993	5.29	4.298
	Sonoma RCD	Copeland Creek Phase I	3.60	year 4	55%	3.60			
	Point Blue	Roseland Creek Phase III	0.16	year 4	27%	0.16			
	Point Blue	Copeland Creek (San Giacomo) Phase VII	0.23	year 5 (2015)	35%	0.08			
2012	Laguna Foundation	Gravenstein Creek Restoration	0.63	year 3	84%	0.63	1.320	10.43	9.110
	Sonoma RCD	Crane Creek	9.80	year 2	72%	9.80			
2013	The Center	Starr Creek	1.00	year 2	93%	1.00	0.775	1.00	0.225
2014	The Center	Pool Creek	1.25	year 1	89%	1.25	2.116	1.73	-0.386
	Point Blue	Washoe Creek (at Stony Point Quarry)	0.48	year 1	100%	0.48			
2015	Point Blue	Washoe Creek Phase II	0.83	year 0	n/a	0.83	0.846	0.83	-0.016
		Zone 1A Subtotal	**20.89**			**20.23**	**11.743**	**20.23**	**8.490**

Year	Consultant	Tier 3 (WPP) project name	Area to be restored (acres)	Project year [1]	Success rate	Area claimed (acres)[2]	Tier 3 requirement	SMP contribution (acres)[2]	Annual area surplus/ deficit (acres)
Zones 2A and 3A									
2008							0.440	0.00	-0.440
2009	Point Blue	Adobe Creek (Lower Cherbero) Restoration	0.97	year 5 (2014)	80%	0.97			
	Point Blue	Corona Creek Phase II Restoration Project	0.26	year 5 (2014)	45%	0.12	0.015	1.09	1.072
2010	Point Blue	Petaluma River (Denman Reach)	0.60	year 5 (2014)	43%	0.26	0.008	0.26	0.250
2011							0.400	0.00	-0.400
2012	Point Blue	Ellis Creek (Flocchini Ranch)	0.69	year 3	35%	0.69	0.279	0.69	0.411
2013							0.440	0.00	-0.44
2014	Point Blue	Corona Creek (Poppy Hill Farm)	0.81	year 1	62%	0.81	0.071	0.81	0.74
2015	Point Blue	Adobe Creek (at Mota Ranch)	0.17	year 0	n/a	0.17			
	Sonoma Ecology Center	Nathanson Creek	0.18	year 0	n/a	0.18	1.243	0.35	-0.893
		Zones 2A/3A Subtotal	**3.68**			**3.20**	**2.896**	**3.20**	**0.299**

[1] On-going projects = years 0-4; completed projects = year 5. If project is complete, year of completion is included in parentheses.

[2] Calculated using the following assumption: if a *completed* project is below the required 75% success rate at the end of the final year (year 5), then the SMP will only claim a percentage of the original area to be restored. The percentage claimed will be equivalent to the final project success rate (i.e. If the original area to be restored was 1.00 acre, and the final project success rate was 45%, then the SMP will only claim 0.45 acres (1.00 x 0.45)). For accounting purposes, the SMP claims the full area while projects are still on-going.

Section 5
Annual Sediment Testing and Disposal Plans

5.1. Sediment Sampling and Testing

2016 Monitoring and Reporting Program Amendment

On February 22, 2016, the Water Agency requested an amendment to the North Coast RWQCB Monitoring and Reporting Program (MRP No. R1-2009-0049) as authorized under WDR No. R1-2009-0049 and Section 401 Water Quality Certification WDID No. 1B09026WNSO. The objective of the amendment request is to streamline sediment sampling requirements based on the history of sediment quality data gathered from creek sites maintained under the Water Agency's Stream Maintenance Program (SMP). Additionally, the Water Agency seeks consistency with the permit conditions for the same program under the jurisdiction of the San Francisco Bay RWQCB. A copy of the amendment, which was approved on April 29, 2016 is provided in Appendix H.

2016 Sediment Sampling Plan

On April 26, 2016 the Water Agency submitted proposed sediment sampling plans to the North Coast and San Francisco Bay RWQCBs. At the time of publication of this Notification (May 9, 2016), approvals of the proposed plans are still pending. Copies of the proposed sediment sampling plan submissions are provided in Appendix H.

5.2. Sediment Disposal and Reuse Plan

The following sites are proposed for sediment disposal and reuse during the 2016 field season. These are the same sites approved and used for past maintenance seasons with all sediment disposal occurring in the Zone 1A Santa Rosa area, under the authority of the North Coast RWQCB. Each of these sites are upland and would not directly discharge water or sediment to surface waterbodies. Figure 5-1 (below) shows the general location of these disposal sites. A brief description of each site is provided below.

The Water Agency will proceed with the use of the proposed sediment removal sites (below) upon approval from the North Coast RWQCB.

1. **Grab N' Grow**
   Grab N' Grow Products processes and sells soil products for farmers, gardeners, and landscapers. The company is located at 2759 Llano Road in Santa Rosa. The facility

recycles over 80,000 cubic yards of organic materials including green waste (tree trimmings and landscaping waste) and agricultural waste each year. Grab N' Grow produces soil mixes, compost, and groundcover materials.

This facility has the potential capacity to receive the entirety of the sediment removed as part of 2014 maintenance activities. Grab N' Grow is primarily interested in material that can be used to augment other materials for use as fill. The Water Agency and Grab N' Grow have a written agreement for soil disposal.

2. **Wheeler Zamaroni**

Wheeler Zamaroni is a local company that sells landscape and building materials, and custom fabricated stone. The company operates at a 30-acre facility located at 3500 Petaluma Hill Road in south Santa Rosa. The Water Agency has established an agreement with this company for soil disposal.

No SMP sediments would be resold as soil products, such as for gardening or soil amendments, due to the potential for redistribution of anthropogenic bioaccumulative materials present in the stream sediments. Wheeler Zamaroni is primarily interested in material that they can sort into sand and gravels for reuse.

3. **Grossi Site**

Mr. Ed Grossi's property is located at 6652 Petaluma Hill Road in Rohnert Park. On this property, Mr. Grossi operates a landscaping nursery and grows feed grains for dairy cattle. He also maintains an open area to process soil material for potting and resale. Mr. Grossi has an existing agreement with the Water Agency to accept sediment from stream channels in the SMP area. As approved in past maintenance seasons, the Grossi property has received and reused sediment from stream maintenance activities for the past two years. The memorandum of agreement between Mr. Grossi and the Water Agency for soil disposal does not expire until 2023.

Sediment excavated from the Rohnert Park and Cotati areas would be taken to Grossi's property to reduce transportation costs. SMP sediment would not be used for agricultural purposes, such as growing feed grasses or reuse as potting soils. The sediment will be reused as fill material only.

4. **Sonoma County Central Landfill, Petaluma**

Soil that is not suitable for reuse at the sites listed above based on testing results will be taken to the Sonoma County Central Landfill in Petaluma for use as cover material. The soil must conform to the County's testing and material quality requirements. Review and approval from the Regional Board will be requested if this option will be pursued for sediment disposal.

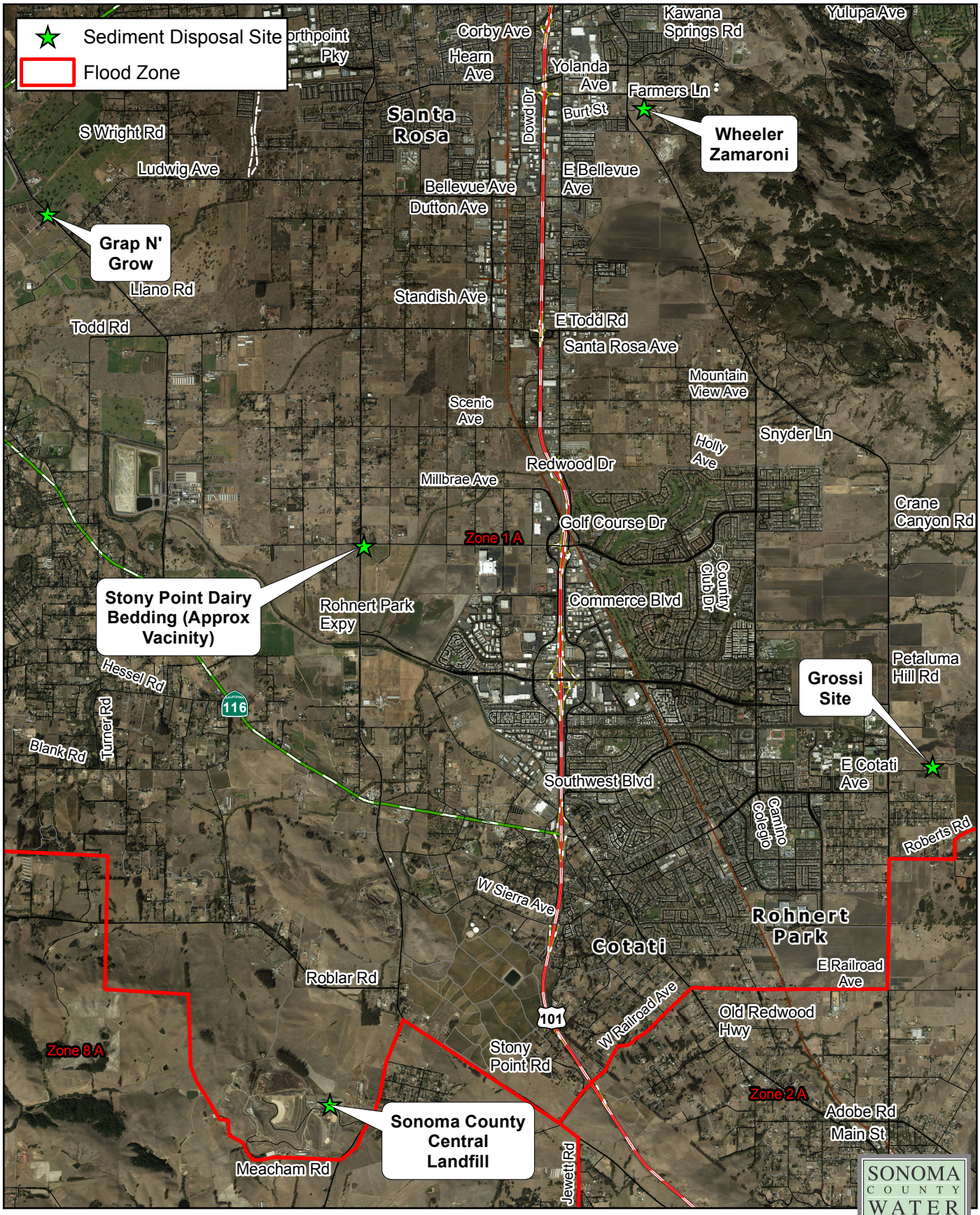
5. **Dairy Bedding**

The Water Agency has received inquiries from several local dairies in the Stony Point Rd vicinity about the use of SMP sediment for use as bedding material. Any agreement with local dairies would require that material be placed in preapproved locations upon

evaluation by Water Agency staff and could not be used as fill in wetlands or sensitive areas. The Water Agency obtained approval for this type of sediment reuse from North Coast RWQCB staff in 2011.

6. **Gravel Access Roads**

SCWA will use gravel excavated from sediment removal sites on access roads in various locations on SCWA-owned property. These access roads are existing gravel, non-paved access roads located on upland areas, not within wetlands or water bodies. This gravel reuse activity was conducted in 2015 under approval of the North Coast RWQCB. Gravel reuse may occur at SCWA's Geyserville Treatment Plant, the Mirabel Yard, Spring Lake Park, and creek maintenance access roads (not pictured in Figure 5-1, below).



S:\Erpad\NRS\ChannelMaint\Stream Maintenance Program\Updated GIS maps\Misc. SMP Maps\Sediment Disposal Sites.mxd

Figure 5-1. Proposed 2016 Sediment Disposal Sites

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

0 2,500 5,000 Feet

Appendix A

Project Specific Notifications

1. Corona 1 Reach Scale Sediment Removal Project (Zone 2A)
2. Fryer 3 Reach Scale Sediment Removal Project (Zone 3A)

2016 Corona 1 Reach Scale Sediment Removal Project

INTRODUCTION

The Sonoma County Water Agency (Water Agency) Stream Maintenance Program (SMP) is proposing a flood control project on Adobe Creek in Petaluma, California. The project involves reach scale sediment removal as well as on-site installation of appropriate native riparian trees, herbaceous perennials and grasses to restore and enhance habitat within the impacted area.

The Water Agency has prepared this Project Specific Notification (PSN) to fulfill the San Francisco Bay Regional Water Quality Control Board (Board) Waste Discharge Requirements and Water Quality Certification (Order No. R2-2016-0020) (WDR) for sediment removal *greater than 500 linear feet of channel length*. Additionally, PSNs are intended to replace information originally presented in Chapter 3 of the SMP Manual Channel Characterization (Reach Sheets) and will be utilized as a mechanism to keep reach level data current. Included herein are the following:

- A discussion of the project purpose and need,
- A project description by activity (including project location and sediment removal designs),
- A discussion of the affected environment and potential impacts to special status species,
- Impact avoidance and minimization measures to be implemented, and
- A description of the project monitoring and reporting measures

PROJECT PURPOSE AND NEED FOR ACTION

The proposed project is necessary to clear impediments to flow, to restore channel capacity, and to enhance the in-stream and riparian corridor habitat for fish and wildlife within the project area. The project is pursuant to the SMP Manual and fall under routine maintenance for engineered channels as per WDR Finding No. 1 (Order No. R2-2016-0020).

For details regarding the conditions (management triggers) necessitating sediment removal, please refer to the 2016 SMP Annual Notification Report (Notification). Specifically:

- Section 1.2 (page 4) discusses the conditions (management triggers) necessitating sediment removal
- Appendix B (*Ground Disturbing Project Designs*) (pages 64-68) provides cross sections detailing current sediment conditions
- Appendix C (*Site Specific Photographs*)(pages 19-20) provides photographs depicting current site conditions

PROJECT DESCRIPTION AND LOCATION

The proposed project on Corona Creek includes the following two activities: (1) reach scale sediment removal and (2) on-site restoration through the installation of native plants. This work will take place within engineered reach Corona 1. Further project location information is provided in Section 1.2 of the Notification (page 4), including project latitude/longitude; USGS quad, township, range, and section. General project location maps are provided on the cover page of the project design in Notification Appendix B (page 64) as well as the attached Corona 1 Reach Characterization sheet.

2016 Corona 1 Reach Scale Sediment Removal Project

The following provides a detailed description of the sediment removal and on-site restoration activities:

Reach Scale Sediment Removal

The proposed project involves the removal of approximately 939 cubic yards of sediment in the streambed along 3,167 feet of channel and will impact approximately 1.163 acres of riparian habitat. Full project disturbance details are listed in Notification Section 2.1 (page 18). Sediment will be removed to restore channel design grade. There are no proposed geomorphic shaping activities involved with this project.

Sediment removal will be conducted with an excavator positioned on the top of the creek bank along the existing access road. Where riparian trees limit bank access a bulldozer and/or skidsteer (Bobcat) will be used in the channel to move sediment to sites accessible to the excavator. Sediment will be placed directly into a dump truck and hauled off-site to an approved upland disposal area. A smaller excavator will be used to shape the channel and dig backwater pools and hydraulic shelves. Equipment staging and access to the channel will occur along the access road paralleling the west (right) upper bank. Sediment removal will occur between June 15 and October 31, 2016. Estimated construction period is two weeks. All sediment removal activities will be in accordance with the techniques and BMPs described in the SMP Manual (Section 6.3), the 2016 Notification and herein. Pre-construction project site photos are provided in the Notification, Appendix C (pages 19-20).

On-site Native Plant Installation

Native plant installation will occur on-site after completion of all construction activities. Details regarding the planting approach are provided in Section 4.1 of the Notification, specifically Table 4-1 (*On-site Mitigation Summary*) (page 39) and Figure 4-3 (*Channel Form 1C Planting Plan Exhibit*) (page 43).

The estimated quantities of native plants to be installed and the formulas used to calculate them are summarized in Tables 1a and 1b below (respectively). All planting and re-vegetation activities will be in accordance with the techniques and BMPs described in the SMP Manual, the Notification and herein.

Table 1a. Corona 1 Estimated Planting Needs

Project Information			Estimated Installation Quantities				
Project Reach	**Channel Form**	**Length (linear feet)**	**Upper Bank Trees***	**Toe Trees***	**Upland Graminoids**	**In-stream Graminoids**	**Herbaceous Perennials**
Corona 1	1C	3,167	158	422	633	633	190

*Upper Bank Tree and Toe Tree installation estimates do not account for desirable trees retained on-site. Instead, these estimates reflect the maximum numbers that would be required if the project site completely lacked desirable trees. Precise planting needs will be determined in the field following completion of sediment removal activities by the appropriate staff.

Table 1b. Formulas used to calculated planting needs based on Channel Form 1C

Plant Category	Formulas used to calculate Estimated Tier 1 Planting Requirements
Upper Bank Trees	Total project linear feet, divided by 40 (for 40-foot center per tree); multiplied by the number of planting lines. Due to water truck accessibility, upper bank nursery tree planting on Corona 1 is only feasible on the right (west) upper bank. However, the left upper bank may be direct seeded with acorns.
Toe Trees	Total project linear feet, divided by 15 (for 15-foot center per tree); multiplied by the number of planting lines
Herbaceous Perennials	30% of the total linear feet, divided by 10 (for 10-foot center per planting); multiplied by 2
Graminoids (both Upland and In-stream categories)	Total project linear feet, divided by 10 (for 10-foot center per planting), multiplied by the number of planting lines

AFFECTED HABITAT

Please refer to the attached Corona 1 Reach Characterization Sheet (updated February 2016) for details regarding project physical setting, biological/habitat conditions, species with the potential to occur and site management considerations. Additional information related to wildlife that may potentially occur within the project area, as well as project resource (plant and wildlife) surveys planned during the field season are provided in Section 3 of the Notification. A map with California Natural Diversity Database (CNDDB) overlay is provided in Appendix D (page 13).

PROJECT IMPACT AVOIDANCE AND MINIMIZATION MEASURES

Stream Maintenance Best Management Practices (BMPs)

Please refer to Table 1-2 (Section 1) (pages 14-16) in the Notification report for a list of BMPs that will be implemented ahead of, during and after completion of Corona 1 project activities. Site surveys conducted in February 2016 revealed that the project reach continues to lack sensitive habitat or habitat that could potentially support listed species (as detailed in the attached Reach Characterization Sheet). After consideration of current site conditions and proposed project activities, it has been determined that implementation of the BMPs as described in the SMP Manual will effectively avoid, minimize and/or mitigate for any potential project impacts. No additional BMPs to those included in the SMP Manual are proposed.

PROJECT MONITORING AND REPORTING

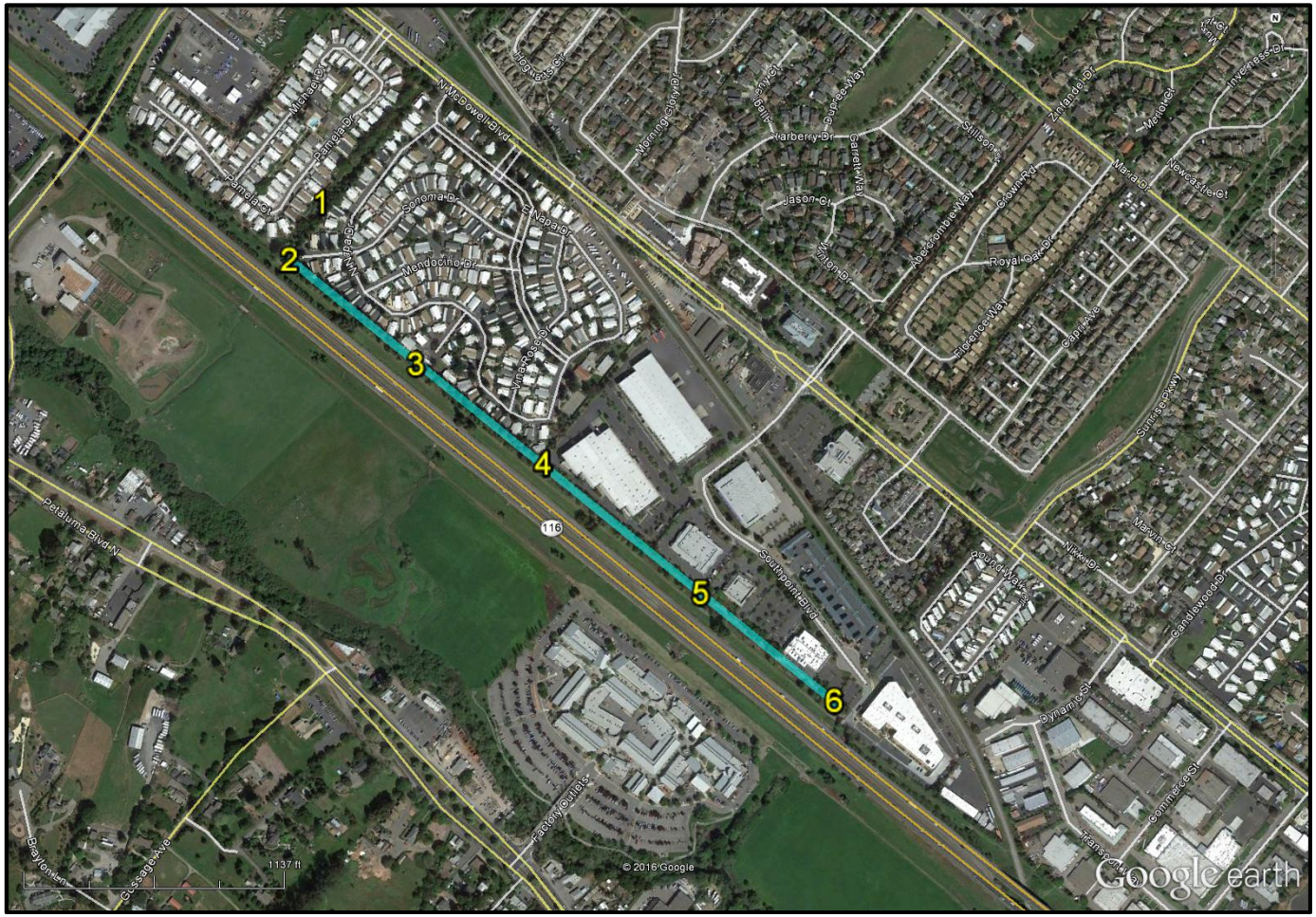
Project monitoring and reporting, including BMP documentation, shall be in accordance with WDR provisions D 54 and 55. Specifically, post-maintenance photo documentation will be provided and a minimum of six photo-documentation points will be established on-site. These photo-documentation

sites will be selected to document channel and bank conditions immediately upstream and downstream of each project site, as well as the project reach. A general location map of the proposed six photo monitoring points for the Corona 1 project are provided below in Figure 1.

A Project Specific Notification Summary Report (PSN Report) will be provided by April 30th of 2017. The PSN Report will describe activities conducted, mitigation measures implemented, and monitoring results including post project photos to document BMP success. The PSN Report will also include a description of any corrective actions planned to ensure success of BMPs and the results of any threatened or endangered species surveys conducted.

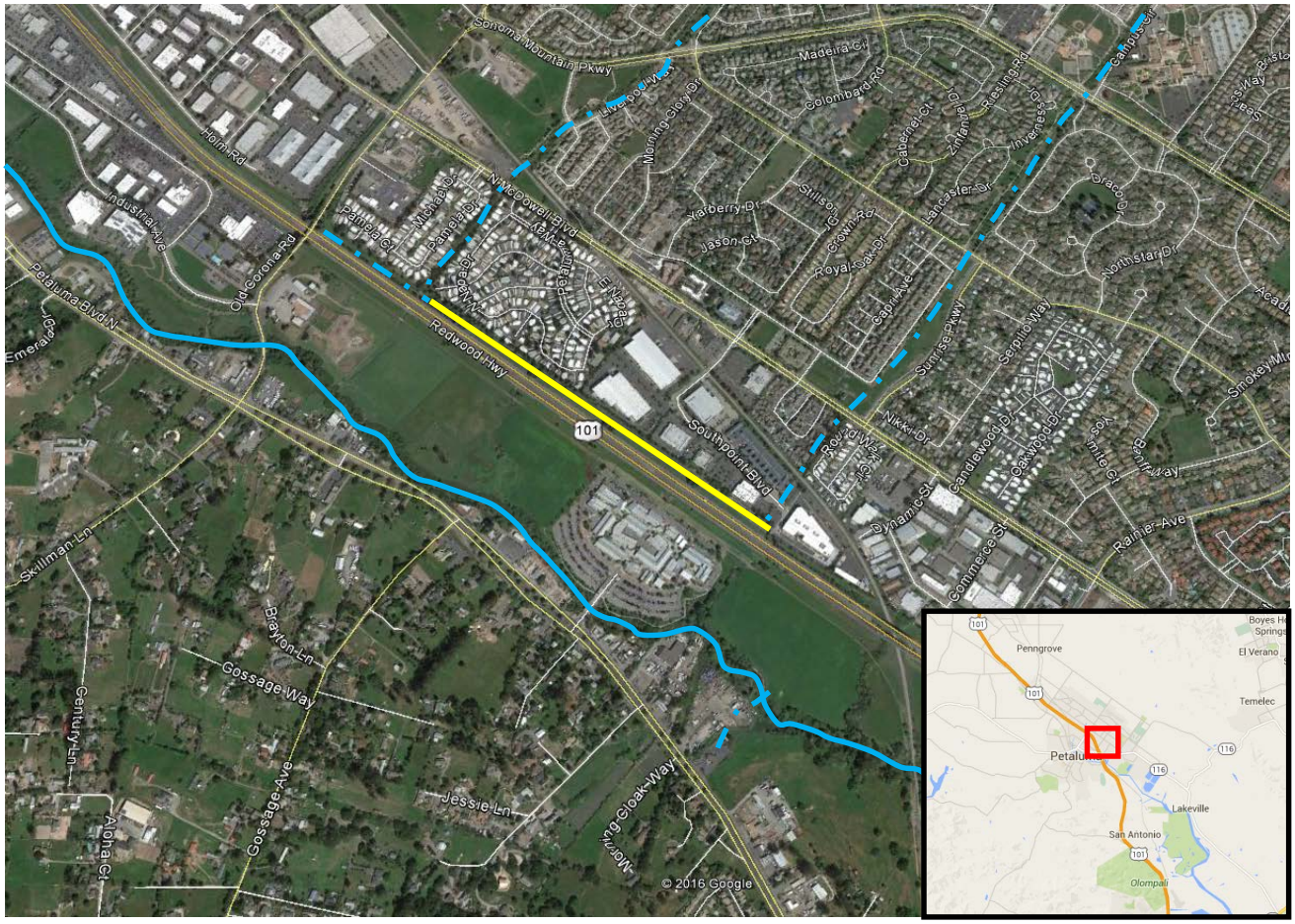
2016 Corona 1 Reach Scale Sediment Removal Project

Figure 1. Proposed photo monitoring locations for the 2016 Corona 1 reach scale sediment removal project.
Please note, immediately downstream of the project is a conduit that passes under Hwy 101 and monitoring *immediately downstream of the project site* as per WDR Order No. R2-2016-0020 (Provision 54) is not possible.



Corona Creek- Reach 1

DATE OF SURVEY: 2/22/2016
JURISDICTION: Engineered Channel Easement held by the Water Agency
LOCATION: Petaluma, adjacent to highway 101 near the Petaluma DMV
LOCATION MAP:



Reach	*Length*	*Average Top of Bank Width*
Corona 1	3240 ft.	60 ft.

ADJACENT LAND USE: Urban, industrial, highway

Corona Creek- Reach 1

PHYSICAL CONDITIONS

Reach setting: Corona 1 is located in Northeast Petaluma, paralleling highway 101 between Sonoma Court and the Petaluma DMV. The reach is 3,240 feet in length and meets Capri 2B at its confluence, forming a backwater effect before flowing beneath highway 101 and transporting waters to the Petaluma River and San Pablo Bay. This backwatering effect causes a high level of sedimentation throughout this reach.

Active channel: The active channel is approximately 25' from toe to toe and is a depositional system. The aggradation of sediment actively fills in the channel, reducing capacity and encouraging the growth of cattails (*Typha* spp.) instream.

Bed sediments/texture: The substrate consists of fine silts, sand, and clay. The lower portion of the reach is cement-lined where Capri 2B and Corona 1 meet, diverting flow under the highway toward Capri 1 and the Petaluma River.

Bank structure: Banks are sloped at 2:1 and are earthen for nearly the entire reach. Cement lines the confluence of Capri 2B and Corona 1 and some outfalls are secured with rip rap.

Water quality: The invasive growth of cattails instream impedes flow and increases water temperature thereby decreasing amounts of dissolved oxygen available to aquatic organisms. Additionally runoff from nearby highway 101 and industrial area are likely to contribute phosphates and nitrates to the water.

Channel processes: Channel accumulates sediments in the form of sediment bars and uniform side bars. Limited incision at either toe line was noted during February 2016 surveys.

Debris Accumulations and Blockages to be Adressed: The major blockages in Corona 1 are due to accumulated sediment and the prevalence of invasive cattails instream. Conveyance capacity will be restored by reducing the amount of sediment and cattails instream through reach scale sediment removal.

BIOLOGICAL CONDITIONS

Vegetation composition: Upper bank cover is argely comprised of coast live oaks (*Quercus aagrifolia*), valley oaks (*Quercus lobata*), western sycamore (*Platanus racemosa),* cottonwood (*Populus* sp.) and ornamental ash species (*Fraxinus* spp).. Instream conditions are dominated by cattail, which compose 95% on cover instream, based on 2/22/2016 surveys. Side banks are dominated by mixed non-native grasses and forbs including harding grass (*Phalaris aquatica*) and Himalayan blackberry (*Rubus armeniacus*), punctuated by scattered, expanding populations of native sedges including (*Juncus effussus)* and spreading rush *(Juncus patens*). The native sedges and rushes were installed following sediment removal conducted in this reach in 2011.

Corona Creek- Reach 1

Riparian corridor and canopy closure: Based on 2013 LIDAR data, canopy cover throughout the reach averages 40%, largely comprised by coast live and valley oaks and ornamental ash.

In-stream habitat: The habitat instream largely lacks diversity due to patterns of sediment accumulation, tendency to flood, and increased cover by cattails.

Special-status species with potential to occur: Corona 1 is noted as potential habitat for Western Pond Turtle (*Actinemys mamorata)* though the presence of turtles is currently unlikely due to lack of basking locations, deep pools, and constant sediment deposition.

Significant Habitat Features:

Wildlife: Due to the creek's proximity to industrial developments and highway 101, use by native mammals is likely low. The creek may provide some benefit as a habitat corridor for animals as they migrate throughout the county. Nesting birds can utilize trees throughout this site and the cattail may be used as nesting sites for red-winged blackbirds (*Agelaius phoeniceus)* and others.The adjacent industrial areas make this reach potential habitat for raccoons (*Procyon lotor)*, opossum (*Didelphis virginiana)*, and birds typical of urban environments.

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES

Corona 1 exhibits a depositional system with instream dominance of cattails that reduce water capacity and quality. The development of a robust upper bank canopy is anticipated to provide the stream with shade, outcompeting the heliophytic (sun-loving) cattails instream and allow for more variety of available habitat.

ANTICIPATED BIOLOGICAL RESOURCES PROTECTION BEST MANAGEMENT PRACTICES TO EMPLOY

BR-1- Area of Disturbance
BR-2- Pre-Maintenance Educational Training
BR-6- On-Call Wildlife Biologist
BR-8- Nesting Migratory Bird and Raptor Pre-maintenance Surveys
BR-17- Western pond Turtle Pre-maintenance Surveys for Ground Disturbing Activities

2016 Fryer 3 Reach Scale Sediment Removal Project

INTRODUCTION

The Sonoma County Water Agency (Water Agency) Stream Maintenance Program (SMP) is proposing a flood control project on Fryer Creek in Sonoma, California. The project includes reach scale sediment removal as well as on-site installation of appropriate native riparian trees, herbaceous perennials and grasses to restore and enhance habitat within the impacted area.

The Water Agency has prepared this Project Specific Notification (PSN) to fulfill the San Francisco Bay Regional Water Quality Control Board (Board) Waste Discharge Requirements and Water Quality Certification (Order No. R2-2016-0020) (WDR) for sediment removal *greater than 500 linear feet of channel length*. Additionally, PSNs are intended to replace information originally presented in Chapter 3 of the SMP Manual Channel Characterization (Reach Sheets) and will be utilized as a mechanism to keep reach level data current. Included herein are the following:

- A discussion of the project purpose and need,
- A project description by activity (including project location and sediment removal designs),
- A discussion of the affected environment and potential impacts to special status species,
- Impact avoidance and minimization measures to be implemented, and
- A description of the project monitoring and reporting measures
-

PROJECT PURPOSE AND NEED FOR ACTION

The proposed project is necessary to clear impediments to flow, to restore channel capacity, and to enhance the in-stream and riparian corridor habitat for fish and wildlife within the project area. The project is pursuant to the SMP Manual and fall under routine maintenance for engineered channels as per WDR Finding No. 1 (Order No. R2-2016-0020).

For details regarding the conditions (management triggers) necessitating sediment removal, please refer to the 2016 SMP Annual Notification Report (Notification). Specifically:

- Section 1.2 (page 4) discusses the conditions (management triggers) necessitating sediment removal
- Appendix B (*Ground Disturbing Project Designs*) (pages 73-76) provides cross sections detailing current sediment conditions
- Appendix C (*Site Specific Photographs*)(pages 22-23) provides photographs depicting current site conditions

PROJECT DESCRIPTION AND LOCATION

The proposed project on Fryer Creek includes the following two activities: (1) reach scale sediment removal and (2) on-site restoration through the installation of native plants. This work will take place within engineered reach Fryer 3. Further project location information is provided in Section 1.2 of the Notification (page 4), including project latitude/longitude; USGS quad, township, range, and section.

2016 Fryer 3 Reach Scale Sediment Removal Project

INTRODUCTION

The Sonoma County Water Agency (Water Agency) Stream Maintenance Program (SMP) is proposing a flood control project on Fryer Creek in Sonoma, California. The project includes reach scale sediment removal as well as on-site installation of appropriate native riparian trees, herbaceous perennials and grasses to restore and enhance habitat within the impacted area.

The Water Agency has prepared this Project Specific Notification (PSN) to fulfill the San Francisco Bay Regional Water Quality Control Board (Board) Waste Discharge Requirements and Water Quality Certification (Order No. R2-2016-0020) (WDR) for sediment removal *greater than 500 linear feet of channel length*. Additionally, PSNs are intended to replace information originally presented in Chapter 3 of the SMP Manual Channel Characterization (Reach Sheets) and will be utilized as a mechanism to keep reach level data current. Included herein are the following:

- A discussion of the project purpose and need,
- A project description by activity (including project location and sediment removal designs),
- A discussion of the affected environment and potential impacts to special status species,
- Impact avoidance and minimization measures to be implemented, and
- A description of the project monitoring and reporting measures
-

PROJECT PURPOSE AND NEED FOR ACTION

The proposed project is necessary to clear impediments to flow, to restore channel capacity, and to enhance the in-stream and riparian corridor habitat for fish and wildlife within the project area. The project is pursuant to the SMP Manual and fall under routine maintenance for engineered channels as per WDR Finding No. 1 (Order No. R2-2016-0020).

For details regarding the conditions (management triggers) necessitating sediment removal, please refer to the 2016 SMP Annual Notification Report (Notification). Specifically:

- Section 1.2 (page 4) discusses the conditions (management triggers) necessitating sediment removal
- Appendix B (*Ground Disturbing Project Designs*) (pages 73-76) provides cross sections detailing current sediment conditions
- Appendix C (*Site Specific Photographs*)(pages 22-23) provides photographs depicting current site conditions

PROJECT DESCRIPTION AND LOCATION

The proposed project on Fryer Creek includes the following two activities: (1) reach scale sediment removal and (2) on-site restoration through the installation of native plants. This work will take place within engineered reach Fryer 3. Further project location information is provided in Section 1.2 of the Notification (page 4), including project latitude/longitude; USGS quad, township, range, and section.

2016 Fryer 3 Reach Scale Sediment Removal Project

General project location maps are provided on the cover page of the project design in Notification Appendix B (page 73) as well as the attached Fryer 3 Reach Characterization sheet.

The following provides a detailed description of the sediment removal and on-site restoration activities:

Reach Scale Sediment Removal

The proposed project involves the removal of approximately 289 cubic yards of sediment in the streambed along 650 feet of channel and will impact approximately 0.224 acres of riparian habitat. Full project disturbance details are listed in Notification Section 2.1 (page 19). Sediment will be removed to restore the channel design grade. There are no proposed geomorphic shaping activities involved with this project.

Sediment removal will be conducted with an excavator positioned on the top of the creek bank along the existing access road. Where riparian trees limit bank access a bulldozer and/or skidsteer (Bobcat) will be used in the channel to move sediment to sites accessible to the excavator. Sediment will be placed directly into a dump truck and hauled off-site to an approved upland disposal area. A smaller excavator will be used to shape the channel and dig backwater pools and hydraulic shelves. Equipment staging and access to the channel will occur along the access road paralleling the west (right) upper bank. Sediment removal will occur between June 15 and October 31, 2016. Estimated construction period is two weeks. All sediment removal activities will be in accordance with the techniques and BMPs described in the SMP Manual (Section 6.3), the 2016 Notification and herein. Pre-construction project site photos are provided in the Notification, Appendix C (pages 22-23).

On-site Native Plant Installation

Native plant installation will occur on-site after completion of all construction activities. Please note that this on-site planting is part of a City Watersheds Project to be implemented by the Water Agency in partnership with the local non-profit Sonoma Ecology Center. Mitigation for the SMP sediment removal activities will be provided through Tier 3 (off-site) mitigation. Details regarding the planting approach are provided in Section 4.1 of the Notification, specifically Table 4-1 (*On-site Mitigation Summary*) (page 40) and Figure 4-5 (*Channel Form 2A Planting Plan Exhibit*) (page 45).

The quantities of plants installed will be in accordance with the grant agreement terms (which, as of April 30, 2016, are still being negotiated). At minimum, the site will be installed as per the Channel Form Planting Exhibit and calculator, though the grant agreement will most likely require higher quantities (similar to the 2015 Adobe Creek Environmental Enhancement and Mitigation Project (EEMP) completed last year). Minimum estimated planting quantities of native plants to be installed and the formulas used to calculate them are summarized in Tables 1a and 1b below (respectively). All planting and re-vegetation activities will be in accordance with the techniques and BMPs described in the SMP Manual, the Notification and herein.

Table 1a. Corona 1 Estimated Planting Needs

Project Information			Estimated Installation Quantities				
Project Reach	**Channel Form**	**Length (linear feet)**	**Upper Bank Trees***	**Toe Trees***	**Upland Graminoids**	**In-stream Graminoids**	**Herbaceous Perennials**
Fryer 3	2A	650	0-16	0-52	130	130	39

*Upper Bank Tree and Toe Tree installation estimates do not account for desirable trees retained on-site. Instead, these estimates reflect the maximum numbers that would be required if the project site completely lacked desirable trees. Precise planting needs will be determined in the field following completion of sediment removal activities by the appropriate staff.

Table 1b. Formulas used to calculated planting needs based on Channel Form 2A.

Plant Category	Formulas used to calculate Estimated Tier 1 Planting Requirements
Upper Bank Trees*	Total project linear feet, divided by 40 (for 40-foot center per tree); multiplied by the number of planting lines. Due to water truck accessibility, nursery stock upper bank tree planting is only feasible on the left (north) upper bank. However, the right upper bank may be direct seeded with acorns.
Toe Trees*	Total project linear feet, divided by 25 (for 25-foot center per tree); multiplied by the number of planting lines
Herbaceous Perennials	30% of the total linear feet, divided by 10 (for 10-foot center per planting); multiplied by 2
Graminoids (both Upland and In-stream categories)	Total project linear feet, divided by 10 (for 10-foot center per planting), multiplied by the number of planting lines

*The narrow form and limited capacity of Channel Form 2A reaches allows for either established upper bank trees OR established toe trees. Site assessments will be performed to determine which tree category is most appropriate. If feasible, both tree categories will be initially installed to provide faster overall re-vegetation/shading of the channel and to increase diversity and habitat structure available on-site during the interim before the maturing installed trees must be thinned.

AFFECTED HABITAT

Please refer to the attached Fryer 3 Reach Characterization Sheet (updated February 2016) for details regarding project physical setting, biological/habitat conditions, species with the potential to occur and site management considerations. Additional information related to wildlife that may potentially occur within the project area, as well as project resource (plant and wildlife) surveys planned during the field season are provided in Section 3 of the Notification. A map with California Natural Diversity Database (CNDDB) overlay is provided in Appendix D (page 15).

PROJECT IMPACT AVOIDANCE AND MINIMIZATION MEASURES

Stream Maintenance Best Management Practices (BMPs)

Please refer to Table 1-2 (Section 1, pages 14-16) in the Notification report for a list of BMPs that will be implemented ahead of, during and after completion of Fryer 3 project activities. Site surveys conducted in February 2016 revealed that the project reach largely lacks sensitive habitat and/or habitat that could potentially support listed species (as detailed in the attached Reach Characterization Sheet). After consideration of current site conditions and proposed project activities, it has been determined that implementation of the BMPs as described in the SMP Manual will effectively avoid, minimize or mitigate for any potential project impacts. No additional BMPs to those included in the SMP Manual are proposed.

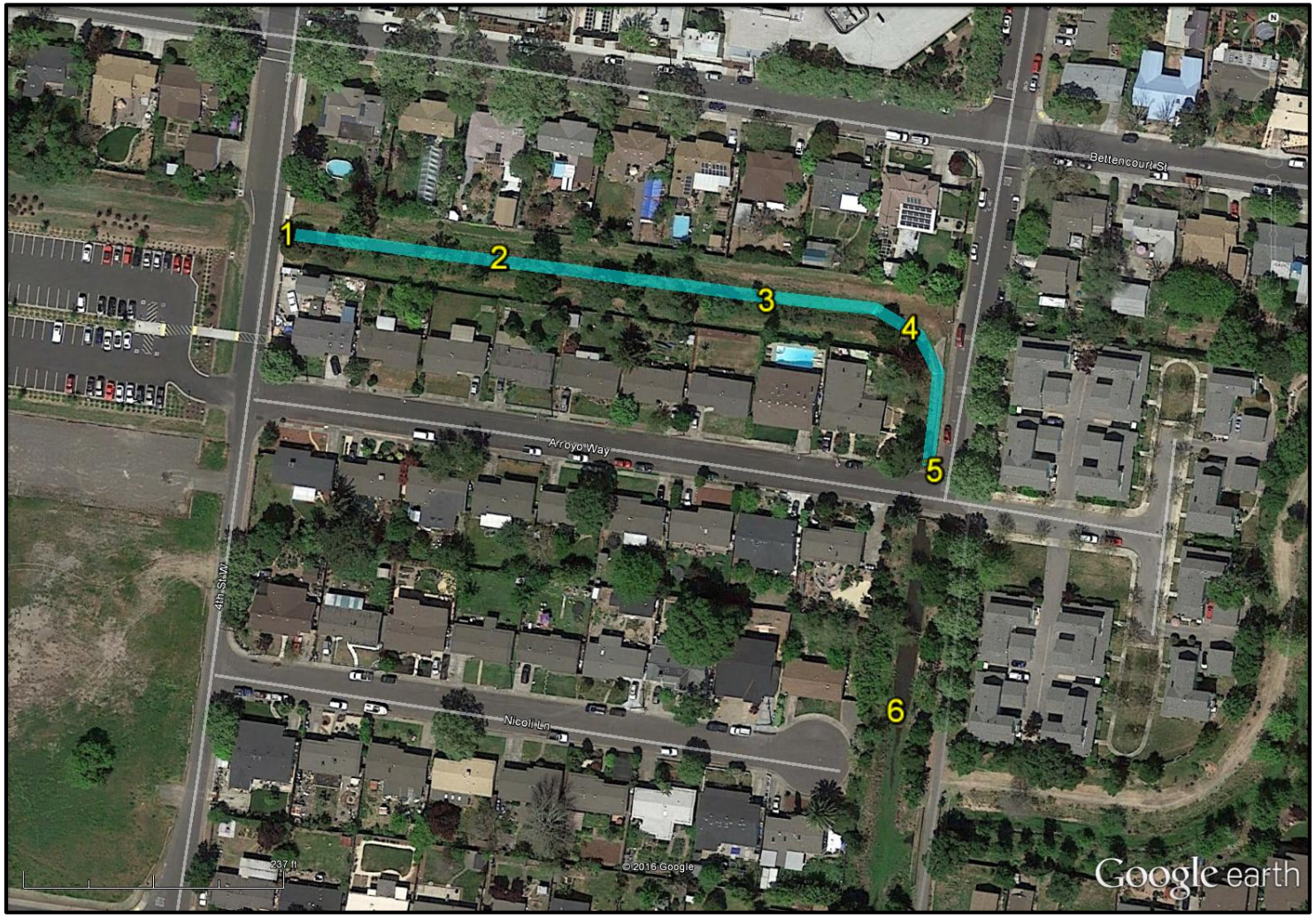
PROJECT MONITORING AND REPORTING

Project monitoring and reporting, including BMP documentation, shall be in accordance with WDR provisions D-(54) and -(55). Specifically, post-maintenance photo documentation will be provided and a minimum of six photo-documentation points will be established on-site. These photo-documentation sites will be selected to document channel and bank conditions immediately upstream and downstream of each project site, as well as the project reach. A general location map of the proposed six photo monitoring points for the Fryer 3 project are provided below in Figure 1.

A Project Specific Notification Summary Report (PSN Report) will be provided by April 30th of 2017. The PSN Report will describe activities conducted, mitigation measures implemented, and monitoring results including post project photos to document BMP success. The PSN Report will also include a description of any corrective actions planned to ensure success of BMPs and the results of any threatened or endangered species surveys conducted.

2016 Fryer 3 Reach Scale Sediment Removal Project

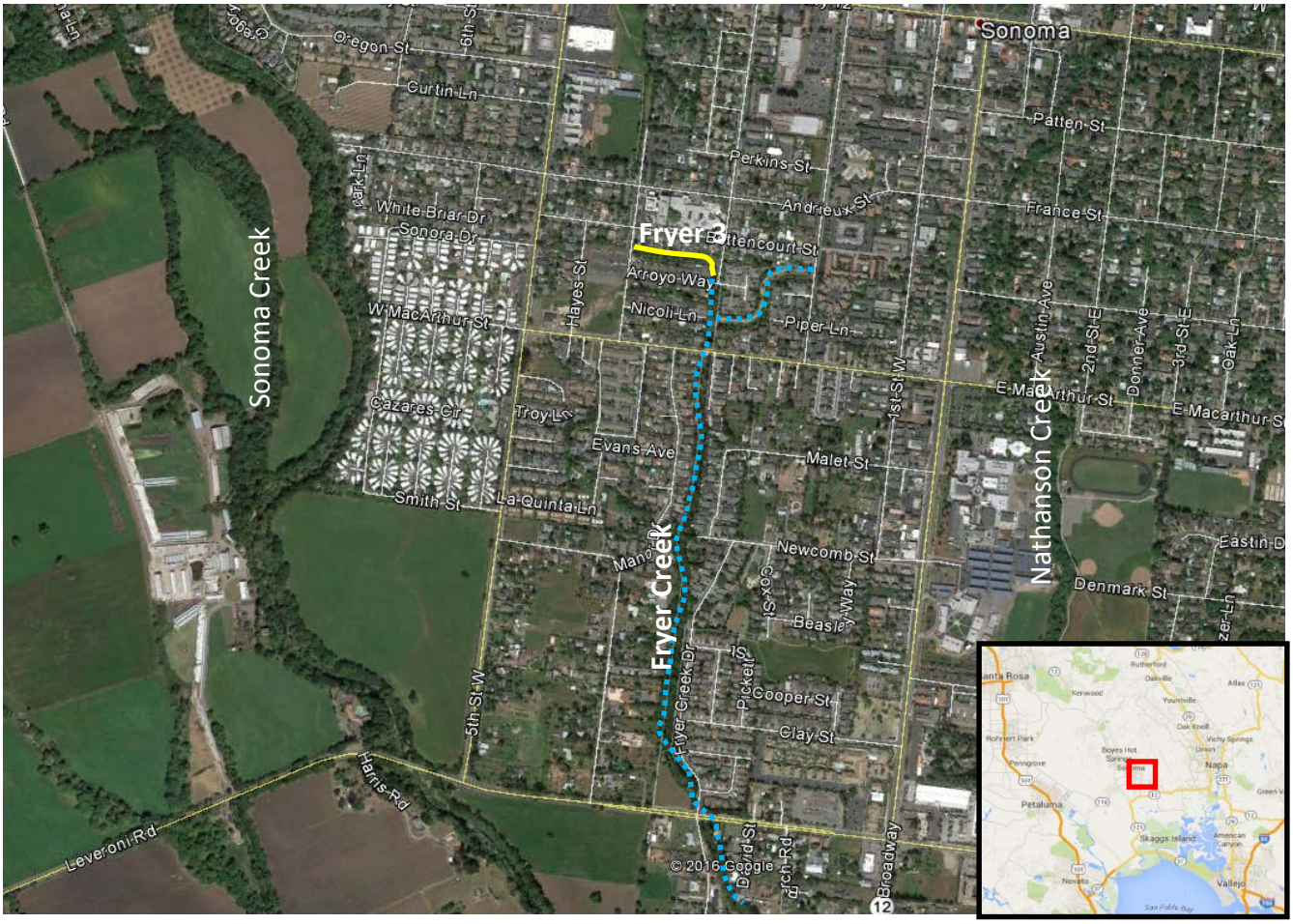
Figure 1. Proposed photo monitoring locations for the 2016 Fryer 3 reach scale sediment removal project.
Please note, immediately upstream of the project is a conduit that passes under 4th Street West and monitoring *immediately upstream of the project site* as per WDR Order No. R2-2016-0020 (Provision 54) is not possible.



Fryer Creek- Reach 3

DATE OF SURVEY: 2/22/2016
JURISDICTION: Engineered Channel Easement
LOCATION: Sonoma, reach begins at the intersection of highway 12 and Fisher Lane and ends at the confluence with Nathanson 0A/0B

LOCATION MAP



Reach	*Length*	*Average Top of Bank Width*
Fryer 3	655 ft.	40 ft.

ADJACENT LAND USE: Residential

Fryer Creek- Reach 3

PHYSICAL CONDITIONS

Reach setting: Fryer Creek is located in the city of Sonoma in the south-central section of the town. The channel is largely earthen with a cement wall from the the curve in the creek, paralleling 3rd Street West.

Active channel: The active channel is approximately 10' from toe to toe. Flow is impeded by the growth of invasive water primrose (*Ludwigia hexapetala*), cattail (*Typha* spp.) and umbrella sedge (*Cyperus involucratus*) instream. A few mature trees provide armoring roots along the south toe line.

Bed sediments/texture: The substrate consists of clay and silt in additional to limited rip rap and a concrete wall.

Bank structure: Banks are sloped at 2:1 and are earthen for approximately 500' of reach length. A cement wall lines the barrier between the creek and 3rd Street West though the opposite side of this wall is earthen. Two small areas are armored with 9" drain rock at culvert inlets.

Water quality: Water was present during February 2016 surveys and appeared to be relatively clear, with low levels of turbidity.

Channel processes: Fryer 3 is slightly depositional, accumulating sediment in the form of alternating bars and central sediment slugs.

Debris Accumulations and Blockages to be Addressed: Accumulated sediment has encouraged the growth of problematic instream species including cattail, water primrose, and umbrella sedge. Reducing sediment through reach scale sediment removal will reset the channel form and increase conveyance capacity.

BIOLOGICAL CONDITIONS

Vegetation composition: Overstory canopy is sparsely scattered with coast live oaks (*Quercus agrifolia*), pines (*Pinus* spp.), and weeping willow (*Salix babylonica*). Side banks are dominated by mixed non-native grasses and forbs including mustard (*Brassica* spp.) and field marigold (*Calendula arvensis*) while instream conditions are dominated by cattail, water primrose, and umbrella sedge.

Riparian corridor and canopy closure: Based on 2013 LIDAR data, canopy cover averages 40% percent throughout the reach, mainly dominated by coast live oak and pines.

In-stream habitat: Instream habitat is limited to armored roots provided by a few toe trees growing on the southern toe.

Fryer Creek- Reach 3

Special-status species with potential to occur: Western pond turtle (*Actinemys mamorata)* (WPT) is the only special status species with the potential to occur onsite. However, WPT are unlikely to be found due to habitat fragmentation and lack of pools and basking sites. CNDDB maps show that occurrences/possible seed sources for Sonoma Sunshine (*Blennosperma bakeri*) may be present in the fields immediately west of the project site. However, Fryer 3 does not support vernal pool/swale features and thus this plant species is precluded from occurring here.

Significant Habitat Features:

Wildlife: The proximity of this site to large agricultural fields and mountainous regions makes it a potential resource for California native wildlife including deer (*Odocoileus hemionus columbianus)*, coyote (*Canas latrans*), and fox (*Urocyon cinereoargenteus)*. However, due to the presence of neighboring homes and house pets, the most likely wildlife to utilize Fryer 3 are those adapted to urban wildlife such as raccoons (*Procyon lotor)*, opossum (Famly: Didelphidae), and birds (Class: Aves).

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES

Fryer 3 exhibits a depositional system with instream dominance of cattails that reduce water capacity and quality. The development of a robust upper bank canopy will provide the channel with shade, outcompeting the heliophytic (sun-loving) cattails, umbrella sedge, and water primrose instream. Tree placement locations may be limited due to extensive hardscaping associated with the original design.

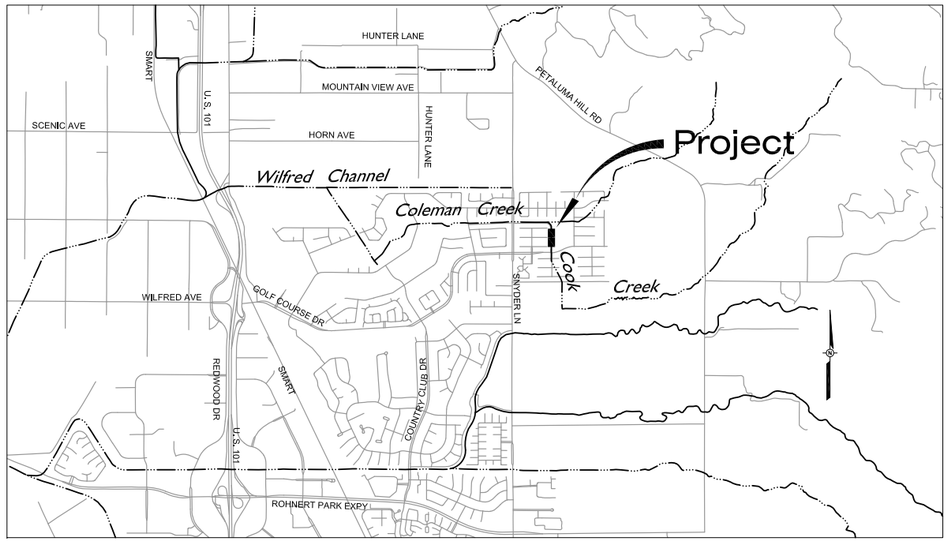
ANTICIPATED BIOLOGICAL RESOURCES PROTECTION BEST MANAGEMENT PRACTICES TO EMPLOY

BR-1- Area of Disturbance
BR-2- Pre-Maintenance Educational Training
BR-6- On-Call Wildlife Biologist
BR-8- Nesting Migratory Bird and Raptor Pre-maintenance Surveys
BR-17- Western Pond Turtle Pre-maintenance Surveys for Ground Disturbing Activities

Appendix B

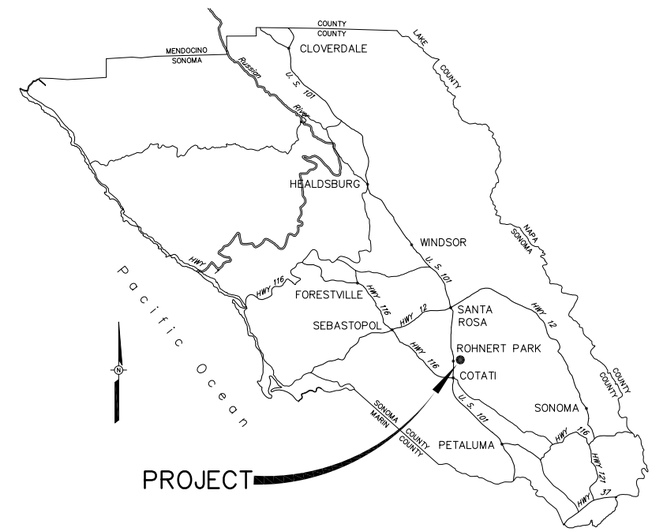
Ground Disturbing Project Designs

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COOK CREEK - REACH 1 (2016)
SEDIMENT BASIN CLEARING



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

COOK CREEK – REACH 1 (2016)						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR AND/OR FRONT END LOADER OPERATING IN DEWATERED CHANNEL	STA 19+34 TO STA 19+99	65	15	975	1.5	54

INDEX TO DRAWINGS		
SHEET NUMBER	DRAWING NUMBER	TITLE
1	G-1	INDEX TO DAWINGS, TABLE, VICINITY AND LOCATION MAPS
2	C-1	PLAN AND PROFILE
3	C-2	SECTIONS

T:\Flood control\zone 1a\Cook Creek\Cook1_2016\2016_COOK_CRK-G

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

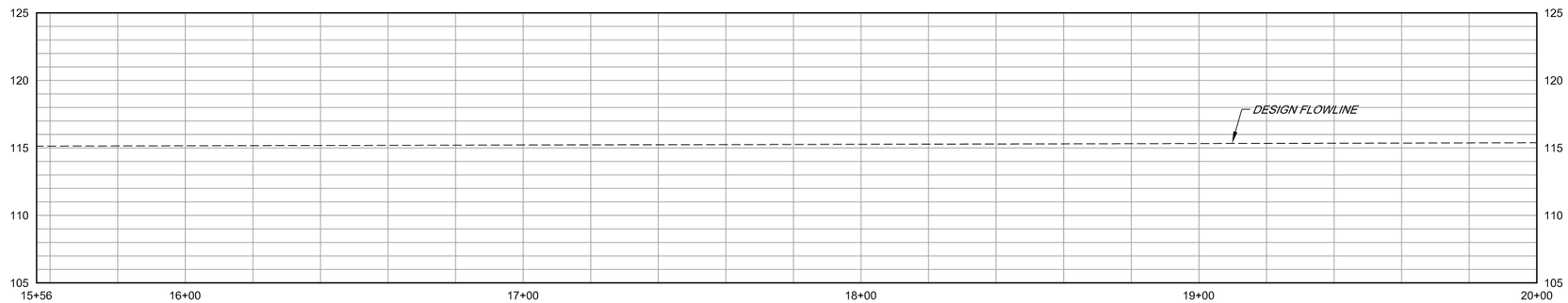
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN | DATE: 4/26/16
DRAWN: BJA
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COOK CREEK - REACH 1 (2016)
INDEX TO DAWINGS, TABLE, VICINITY AND LOCATION MAPS

FILE NAME: 2016_COOK_CRK-G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 3



PROFILE

SCALE HORIZ 1" = 20'
VERT 1" = 5'

PLAN

SCALE 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

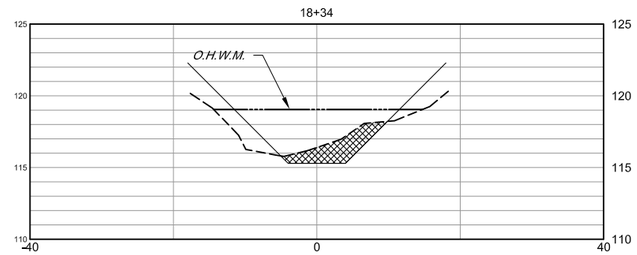
SCALE: AS SHOWN
DATE: 4/19/16
DRAWN: BJA
REVIEWED:

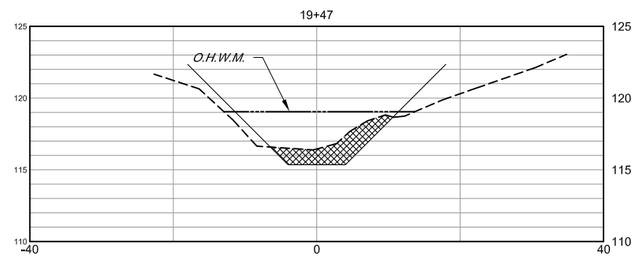
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

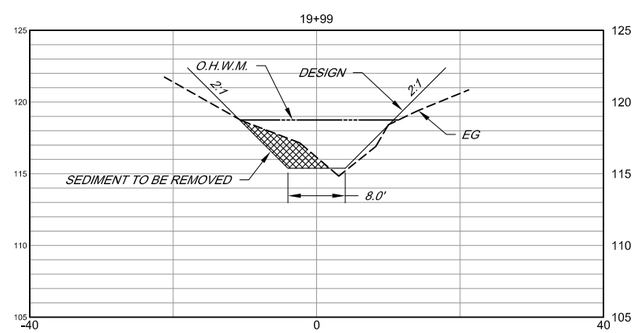
COOK CREEK - REACH 1 (2016)
PLAN AND PROFILE

FILE NAME: 2016_COOK_CRK-Civil
CONTRACT NUMBER: ####
DRAWING NUMBER: C-1
SHEET 2 OF 3

T:\flood control\zone 1a\Cook Creek\Cook1_2016







SECTIONS

SCALE: HORIZ 1" = 10'
VERT 1" = 5'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/19/16
DRAWN: BJA
REVIEWED:

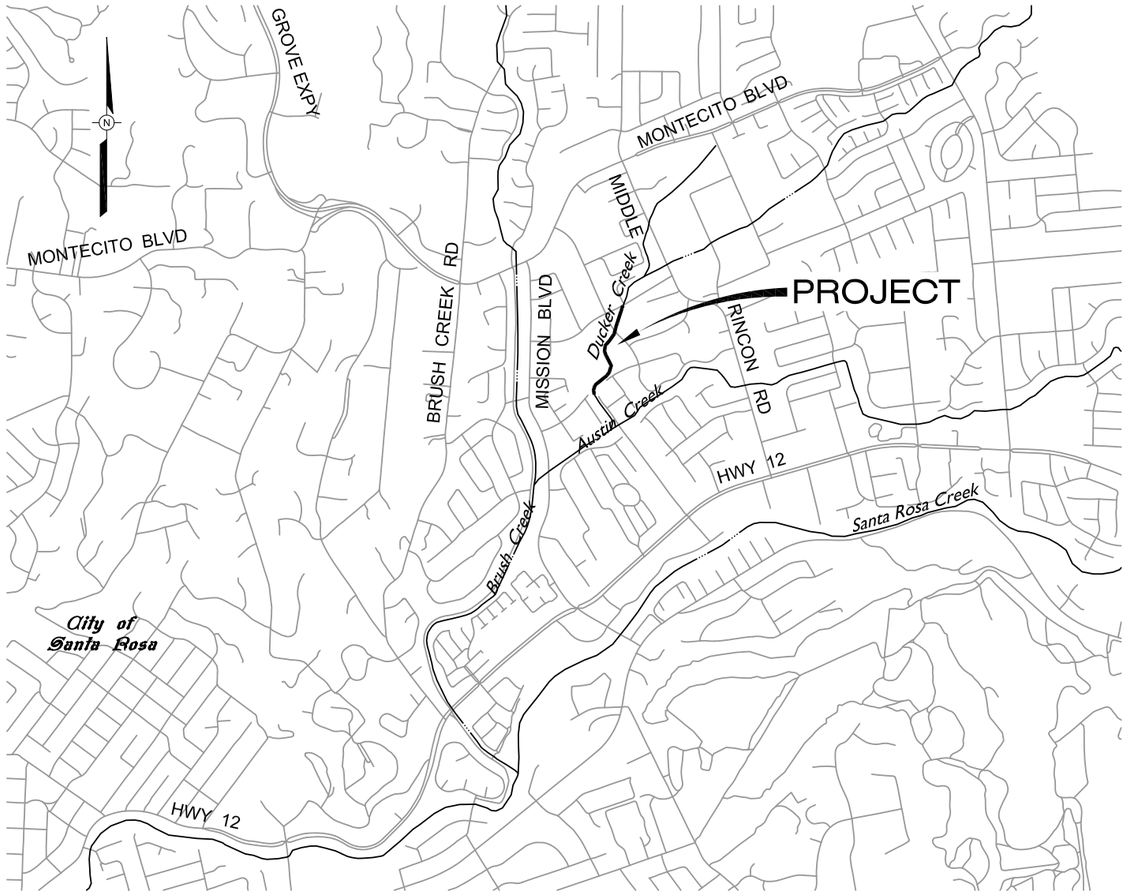
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COOK CREEK - REACH 1 (2016)
SECTIONS

FILE NAME: 2016_COOK_CRK-Civil
CONTRACT NUMBER: ####
DRAWING NUMBER: C-2
SHEET 3 OF 3

T:\flood controlzone 1a\Cook Creek\Cook1_2016

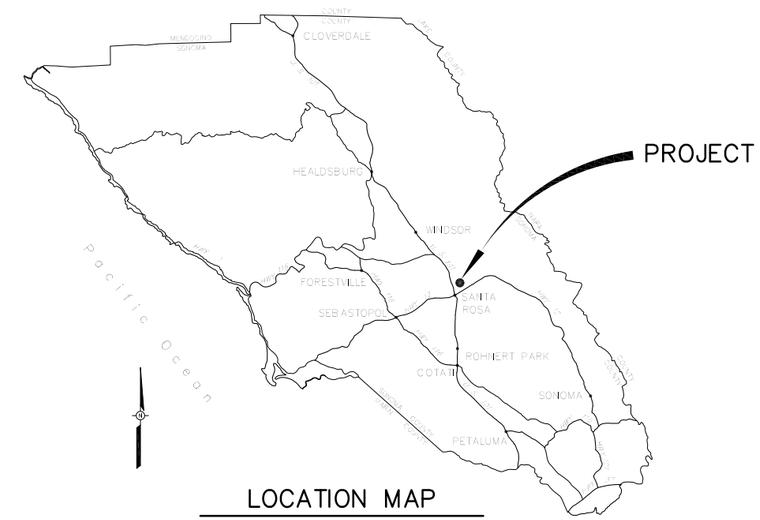
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

DUCKER CREEK - REACH 1 (2016) LOCALIZED SCALE



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

DUCKER CREEK REACH 1						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	AVERAGE DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR FROM SERVICE ROAR OR FRONT END LOADER OPERATING IN CHANNEL	STA 975+05 TO STA 985+89	1,084	24.9	ABOVE O.H.W. 0 BELOW O.H.W. 0 TOTAL = 26,991	1.3	ABOVE O.H.W 0 BELOW O.H.W. 0 TOTAL = 1,299
	STA 985+89 TO STA989+50	361	14.7	ABOVE O.H.W. BELOW O.H.W.0 TOTAL = 5,307	1	ABOVE O.H.W. 0 BELOW O.H.W. 0 TOTAL = 196
TOTAL:		1,445	N/A	ABOVE O.H.W. BELOW O.H.W. TOTAL =32,298	N/A	ABOVE O.H.W. BELOW O.H.W. TOTAL =1,495

INDEX TO DRAWINGS

SHEET No	SHEET TITLE	SHEET DESCRIPTION
1	G-1	INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS
2	C-1	PLAN AND PROFILE STA 975+00 TO STA 896+00
3	C-2	PLAN AND PROFILE STA 896+00 TO STA 990+00
4	C-3	SECTIONS

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

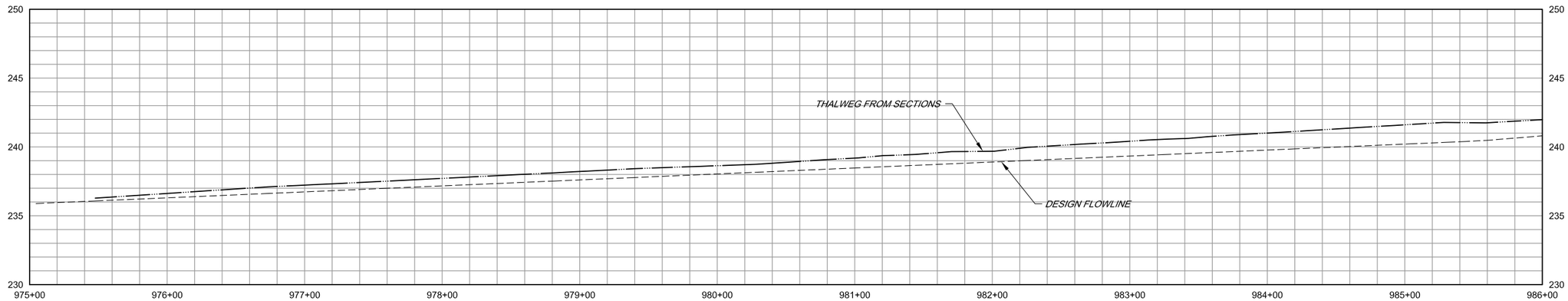
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
DUCKER CREEK - REACH 1 (2016)
INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS

FILE NAME: 2016-DUCKER_Reach1_G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 4

T:\flood control\zone 1a\DUCKER_CRK\2016_Ducker



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 4'

PLAN

SCALE 1" = 40'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: SMP
REVIEWED:

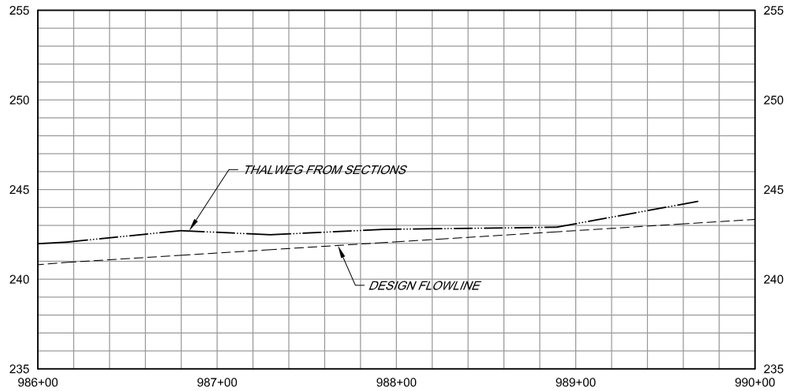
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

DUCKER CREEK - REACH 1 (2016)

PLAN AND PROFILE STA 975+00 TO STA 896+00

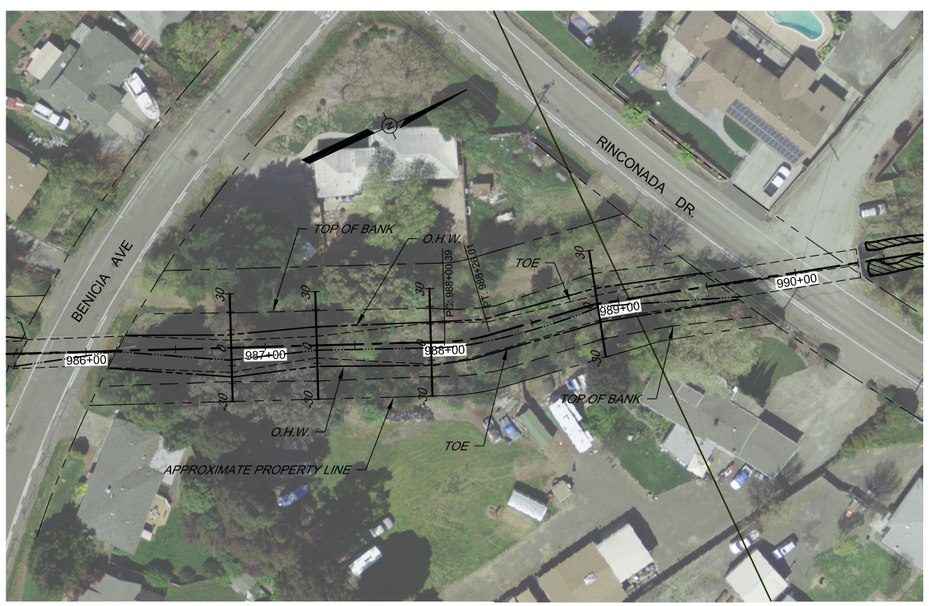
FILE NAME: 2016_Ducker_Reach1_C
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 4

T:\flood control\zone 1a\DUCKER_CRK\2016_Ducker



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 4'



PLAN

SCALE 1" = 40'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: SMP
REVIEWED:

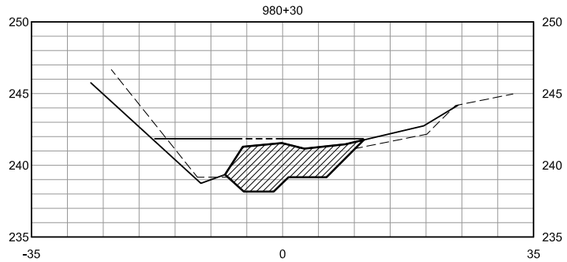
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

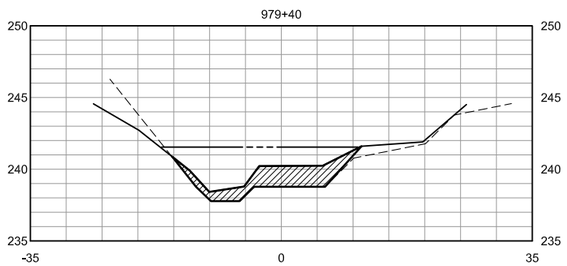
DUCKER CREEK - REACH 1 (2016)

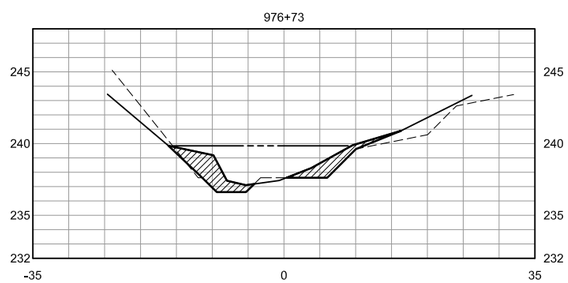
PLAN AND PROFILE STA 896+00 TO STA 990+00

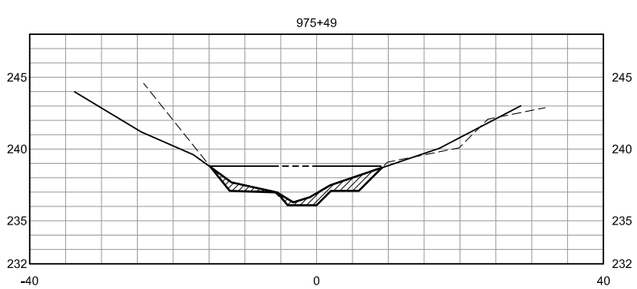
FILE NAME: 2016_Ducker_Reach1_C
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 3 OF 4

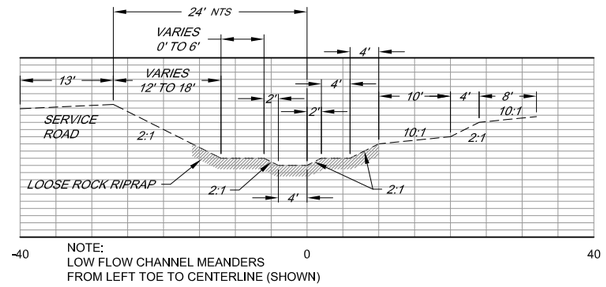
T:\flood control\zone 1a\DUCKER_CRK\2016_Ducker



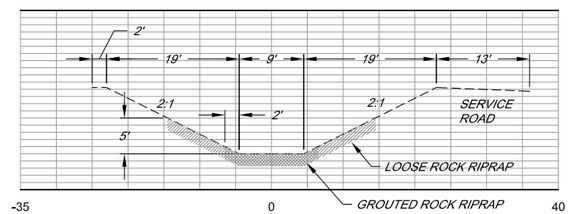




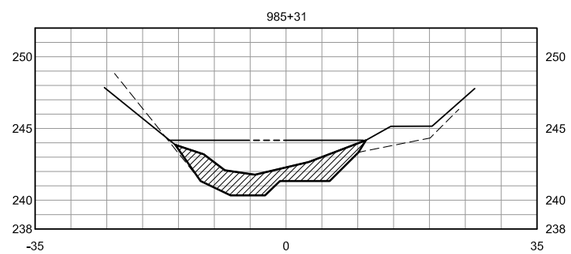


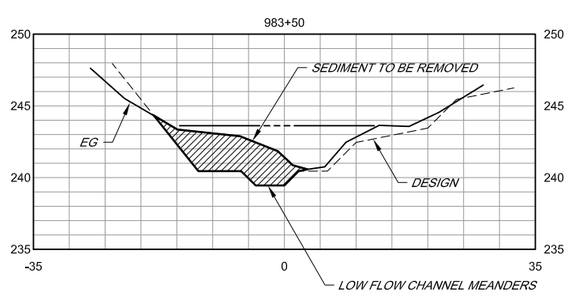


TYPICAL DESIGN SECTION
STA 975+55 TO STA 985+15 .
SCALE: 1" = 10'

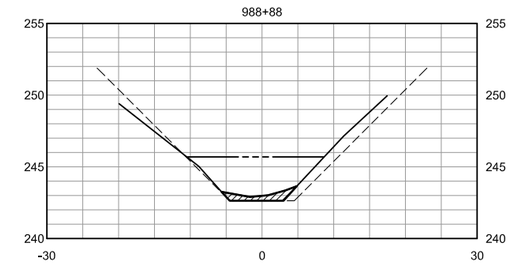


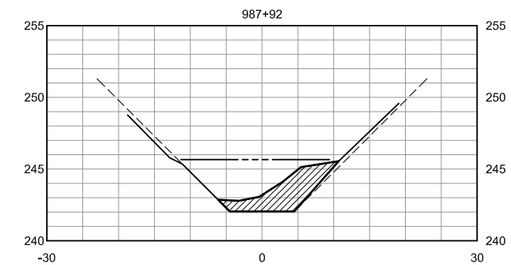
TYPICAL DESIGN SECTION
STA 986+65 TO STA 989+39 .
SCALE: 1" = 10'

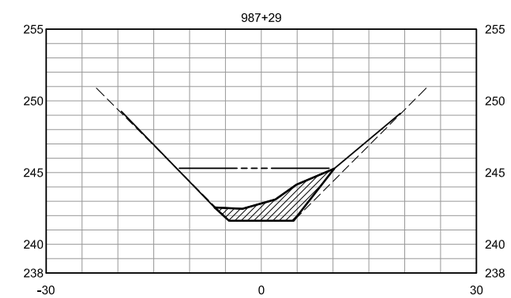


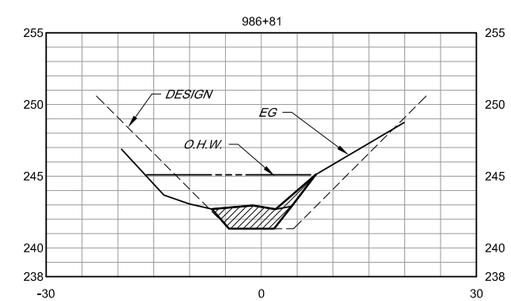


SECTIONS .
SCALE HORIZ 1" = 10'
VERT 1" = 5'









SECTIONS .
SCALE HORIZ 1" = 10'
VERT 1" = 5'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: SMP
REVIEWED:

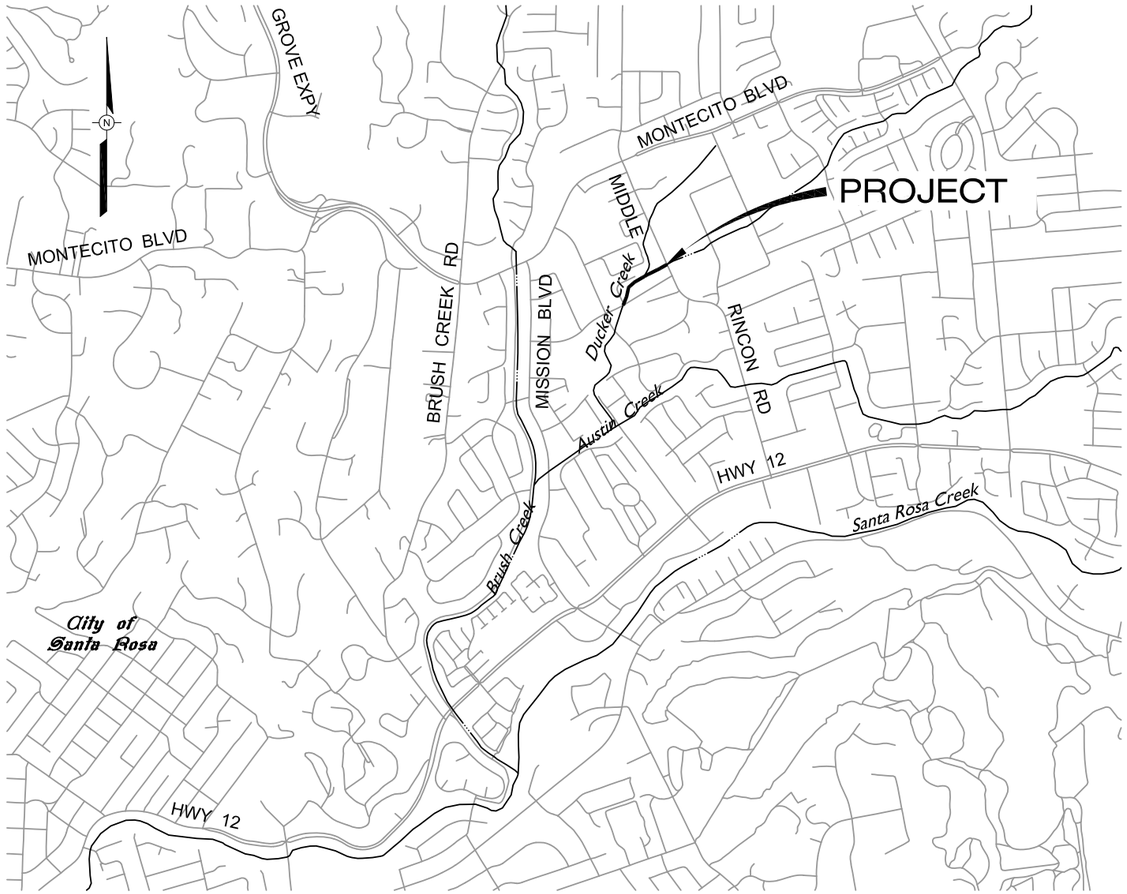
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
DUCKER CREEK - REACH 1 (2016)
SECTIONS

FILE NAME: 2016_Ducker_Reach1_C
CONTRACT NUMBER:
DRAWING NUMBER: C-3
SHEET 4 OF 4

T:\flood control\zone 1a\DUCKER_CRK\2016_Ducker

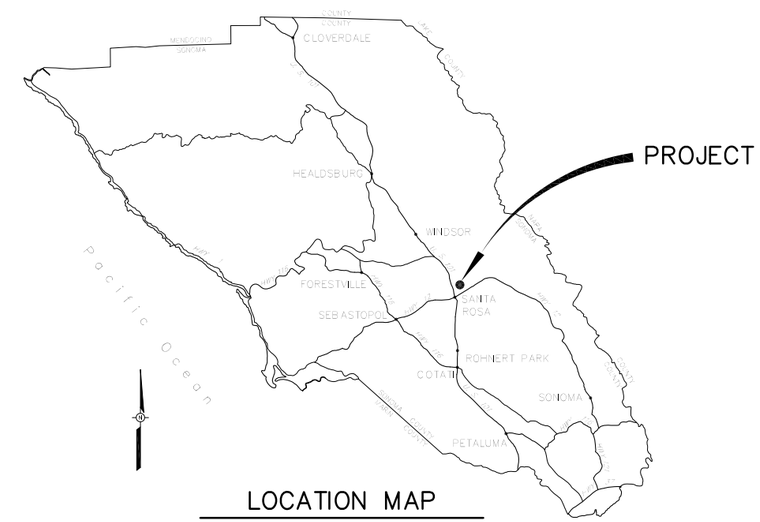
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

DUCKER CREEK - REACH 2A (2016) LOCALIZED SCALE



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

INDEX TO DRAWINGS

SHEET No	SHEET TITLE	SHEET DESCRIPTION
1	G–1	INDEX TO DRAWINGS, LOCATION AND VICINITY MAPS
2	C–1	SEDIMENT PLUG REMOVAL – PLAN, SECTION, AND TABLE

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

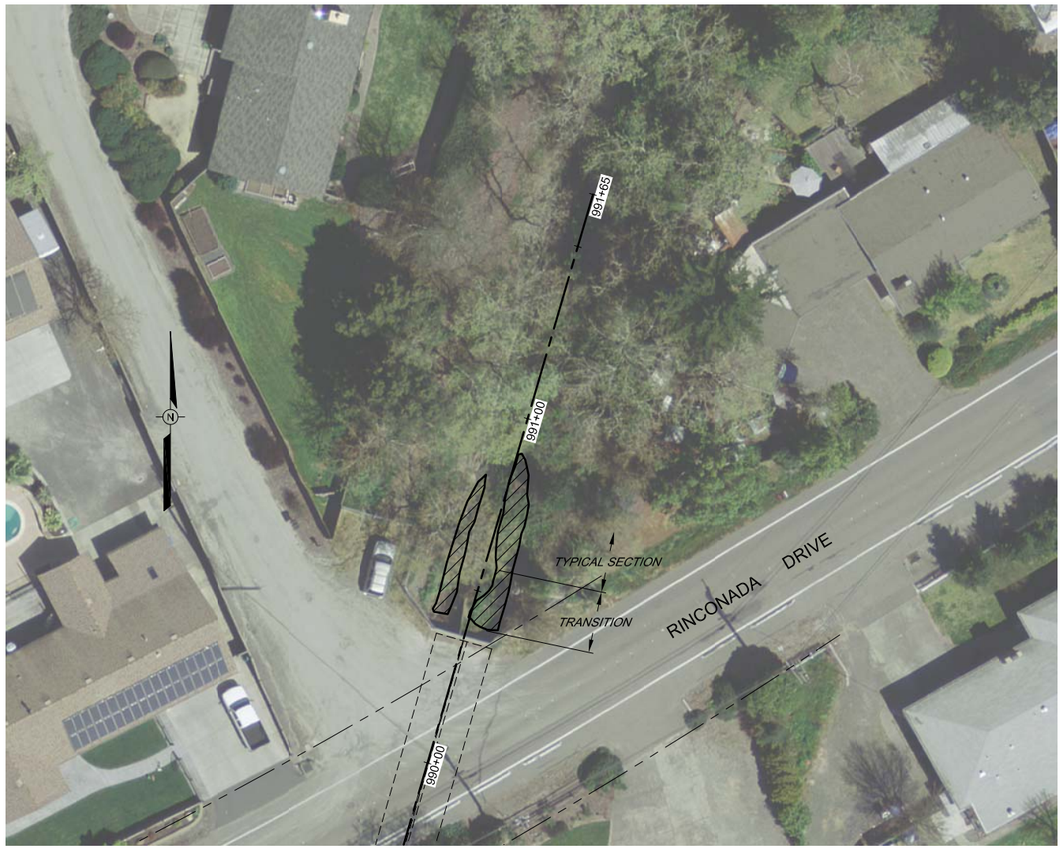
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
DUCKER CREEK - REACH 2A (2016)
INDEX TO DRAWINGS, LOCATION AND VICINITY MAPS

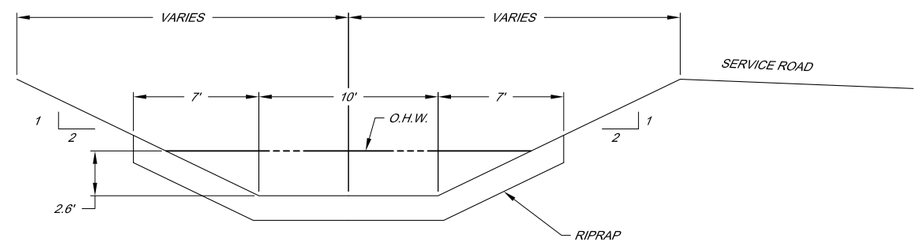
FILE NAME: 2016-DUCKER_Reach2A_G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 2

T:\flood control\zone 1a\DUCKER_CRK\2016_Ducker



PLAN

SCALE 1" = 40'



TYPICAL SECTION

SCALE 1" = 4'

DUCKER CREEK REACH 2A (BRUSH CREEK CHANNEL 42)						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OPERATING FROM SERVICE ROAD	WEST SIDE CHANNEL STA 990+38 TO STA 990+78	40	4	BELOW O.H.W. 160	1	BELOW O.H.W. 6
	EAST SIDE CHANNEL STA 990+38 TO STA 990+88	50	8	BELOW O.H.W. 400	2	BELOW O.H.W. 30

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\DUCKER_CRK\2016_Ducker

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

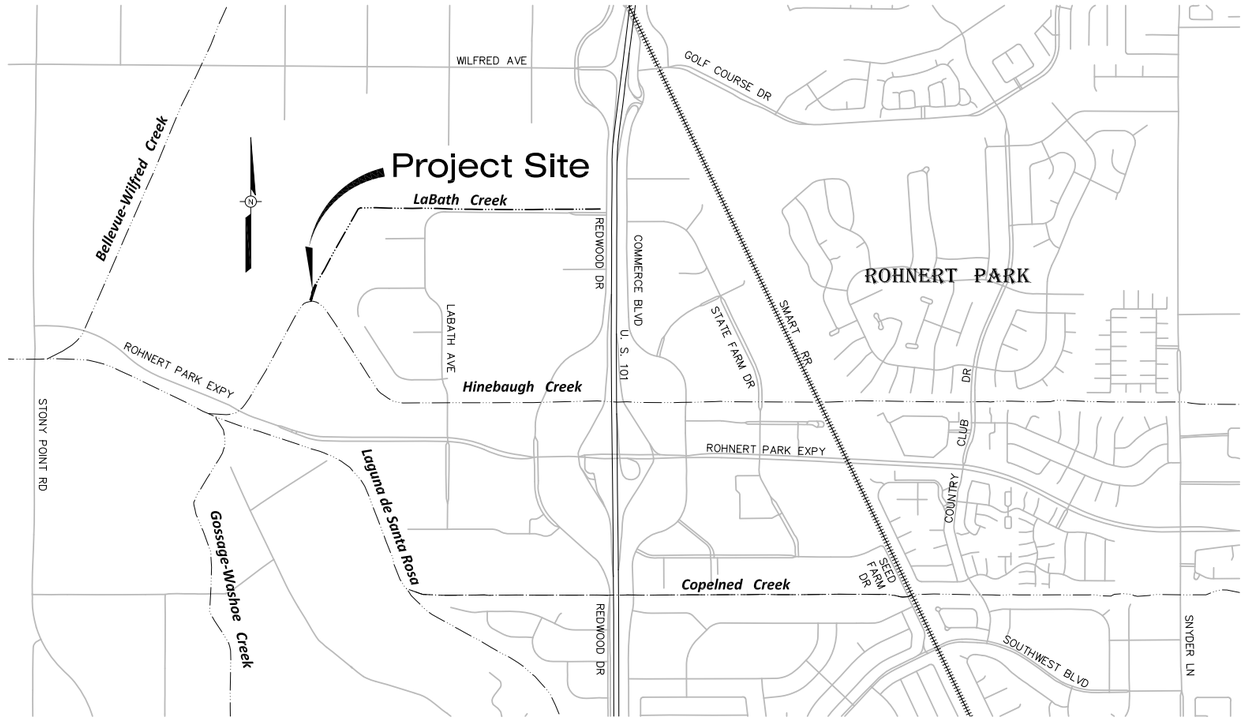
SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

DUCKER CREEK - REACH 2A (2016)

SEDIMENT PLUG REMOVAL - PLAN, SECTION, AND TABLE

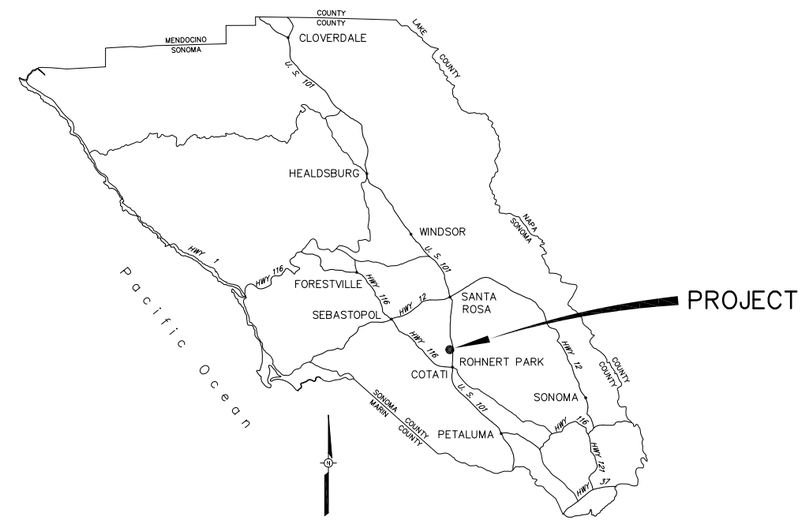
FILE NAME: 2016_Ducker_Reach2A_C
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 2



VICINITY MAP
SCALE 1" = 1000'

SMP - LAGUNA DE SANTA ROSA WATERSHED ZONE 1A

LABATH CREEK - REACH 2 (2016) LOCALIZED SEDIMENT REMOVAL



LOCATION MAP
N.T.S.

LABATH CREEK - REACH 2 (2016)						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	AVERAGE DEPTH (FT.)	C.Y. (TO REMOVE)
	STA 0+75 TO STA 2+21	146	15	ABOVE O.H.W. 1,020 BELOW O.H.W. 1,140 TOTAL = 2,160	1.3	ABOVE O.H.W. 42 BELOW O.H.W. 62 TOTAL = 104

INDEX TO DRAWINGS		
SHEET NUMBER	DRAWING NUMBER	TITLE
1	G–1	INDEX TO DRAWINGS, TABLE, VICINITY, AND LOCATION MAPS
2	C–1	SITE PLAN

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\LABATH

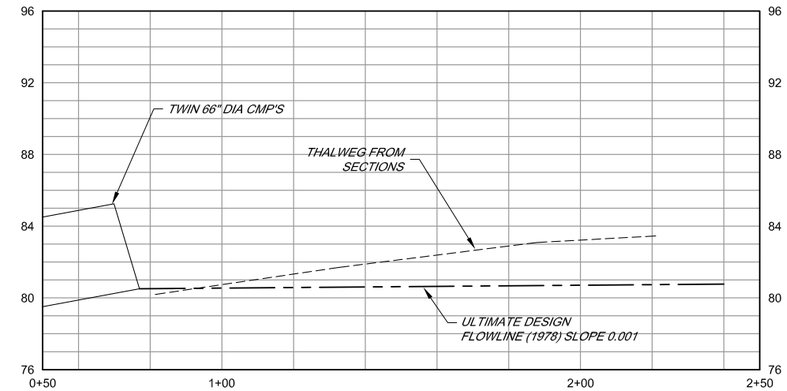
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/12/2016
DRAWN: ADF
REVIEWED:

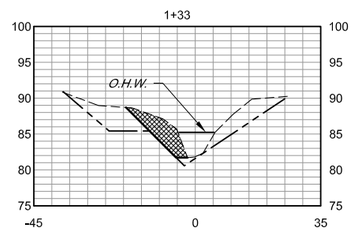
SMP - LAGUNA DE SANTA ROSA WATERSHED ZONE 1A
LABATH CREEK - REACH 2 (2016)
INDEX TO DRAWINGS, TABLE, VICINITY, AND LOCATION MAPS

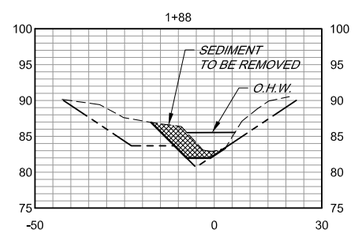
FILE NAME: 2016-LaBath2_G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 2

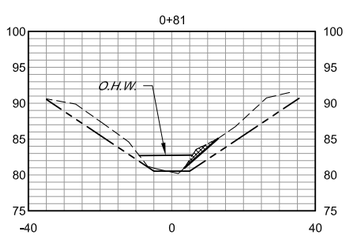


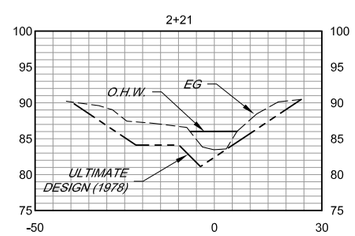
PROFILE

SCALE: HORIZ 1" = 20'
VERT 1"= 4'



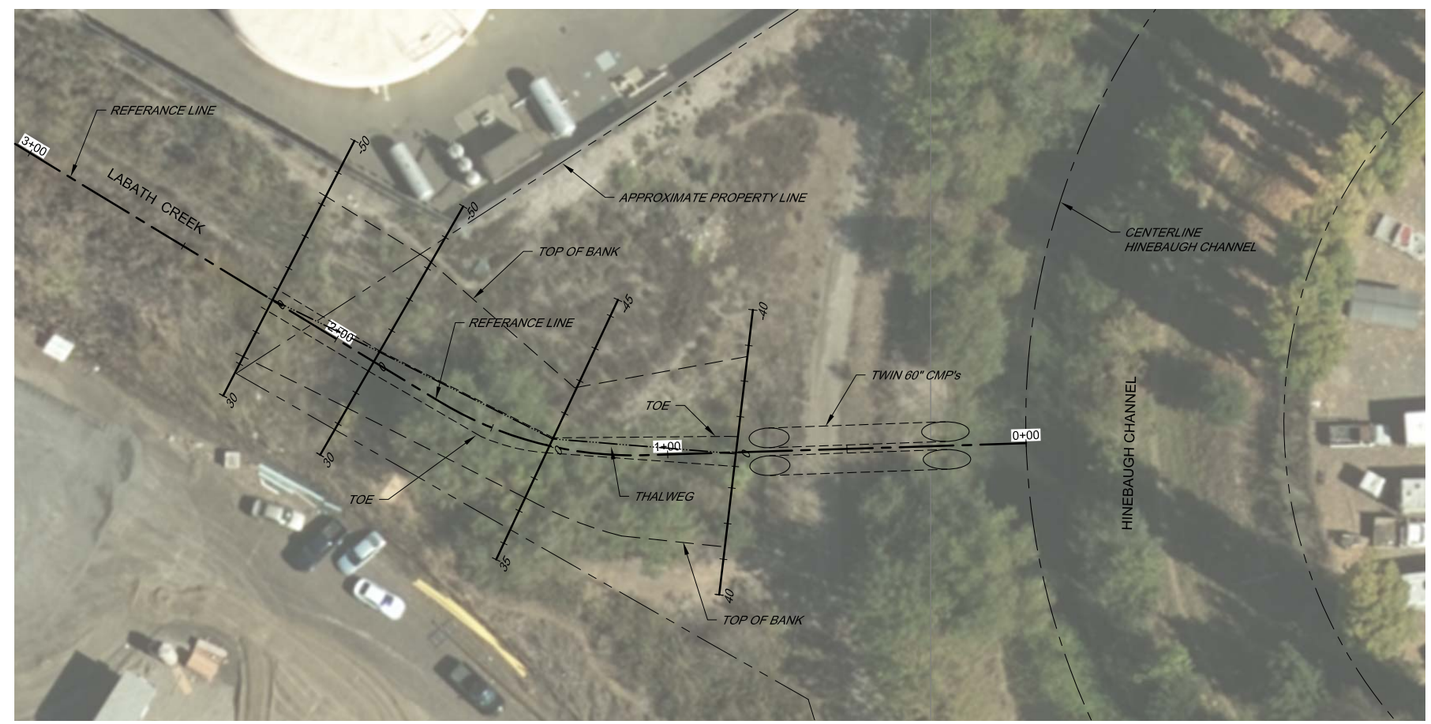






SECTIONS

SCALE: HORIZ 1" = 20'
VERT 1"= 10'



PLAN

SCALE 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/12/2016
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

LABATH CREEK - REACH 2 (2016)

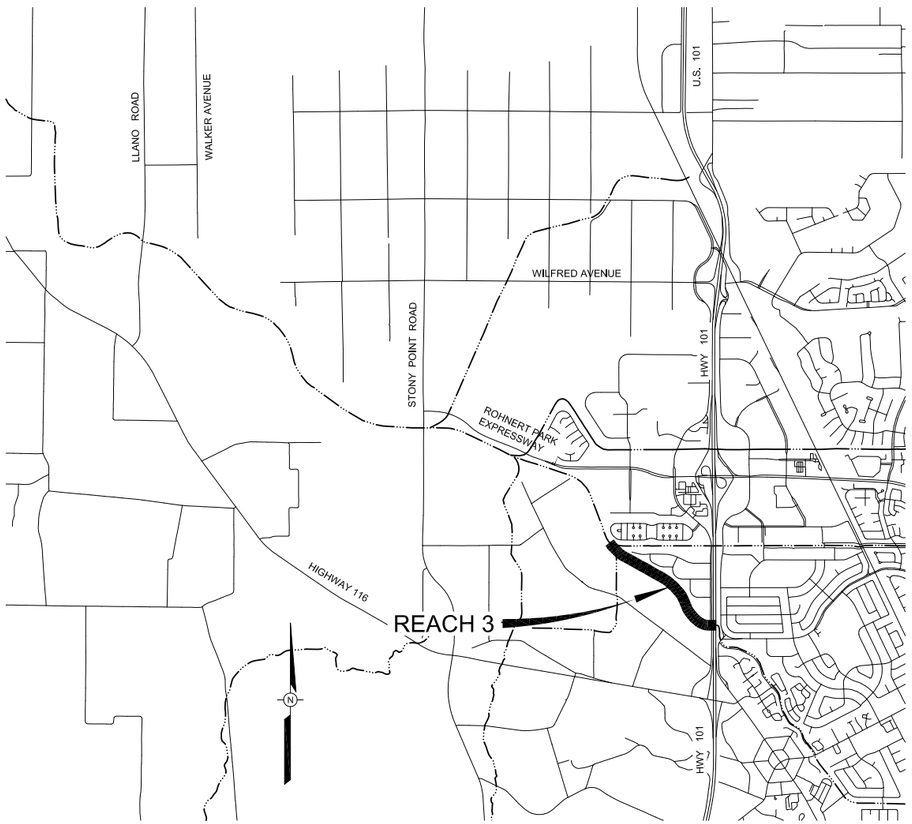
SITE PLAN

FILE NAME: 2016-LaBath_Civil
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 2

T:\flood control\zone 1\LABATH

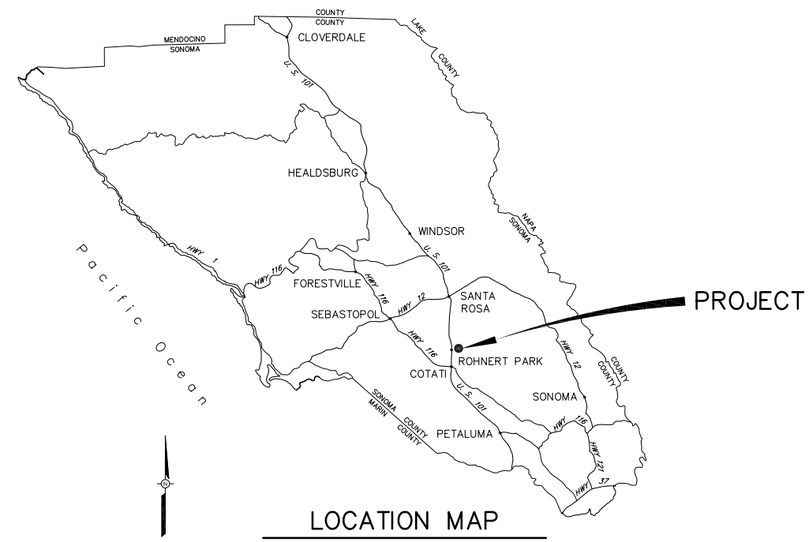
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

LAGUNA DE SANTA ROSA - REACH 3 (2016) LOCALIZED REMOVAL



VICINITY MAP

NTS



LOCATION MAP

NTS

INDEX TO DRAWINGS

SHEET No	SHEET TITLE	SHEET DESCRIPTION
1	G-1	INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS
2	G-2	TYPICAL CROSS SECTION AND EXCAVATION TABLE
3	C-1	PLAN AND PROFILE STA 165+00 TO STA 188+00
4	C-2	PLAN AND PROFILE STA 188+00 TO STA 202+00
5	C-3	SECTIONS STA 168+58 TO STA 201+88

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\LAGUNA\2016\LAGUNA

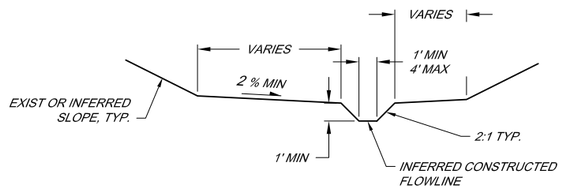
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN | DATE: 4/19/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
LAGUNA DE SANTA ROSA - REACH 3 (2016)
INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS

FILE NAME: 2016_LAGUNA_Reach3_GEN
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 3



SEDIMENT REMOVAL LOW FLOW CHANNEL SECTION .

NOT TO SCALE

LAGUNA DE SANTA ROSA SMP REACH 3						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE OR FILL)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN CHANNEL				BELOW O.H.W.		TO REMOVE BELOW O.H.W.
	LAGUNA SMP-3 STA 165+48 TO STA 180+00	1,452	26	37,750	0.4	TOTAL = 560

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\LAGUNA\2016-LAGUNA

NO.	DATE	REVISION	BY

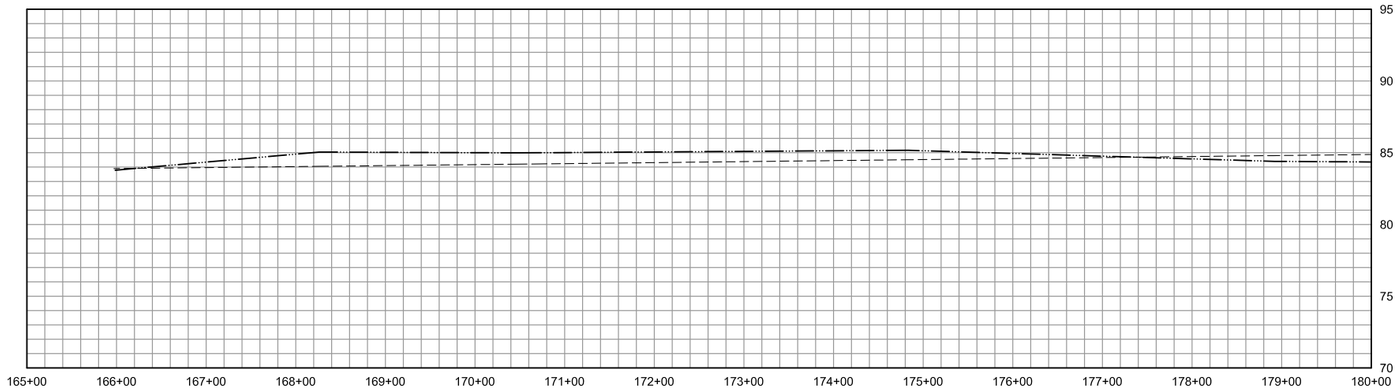
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

LAGUNA DE SANTA ROSA - REACH 3 (2016)
TYPICAL CROSS SECTION AND EXCAVATION TABLE

FILE NAME: 2016-LAGUNA_Reach3_CIVIL
CONTRACT NUMBER:
DRAWING NUMBER: G-2
SHEET 2 OF 3

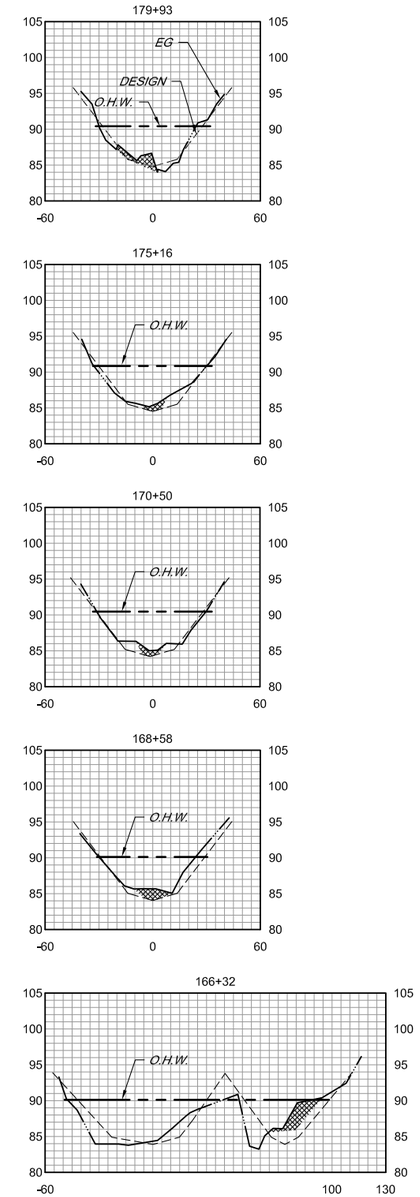


PROFILE

SCALE: HORIZ, 1" = 80'
VERT 1" = 5'

PLAN

SCALE: 1" = 80'



SECTIONS

SCALE: HORIZ 1" = 40'
VERT 1" = 10'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\LAGUNA\2016-LAGUNA\2016-LAGUNA_Reach3_CIVIL

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

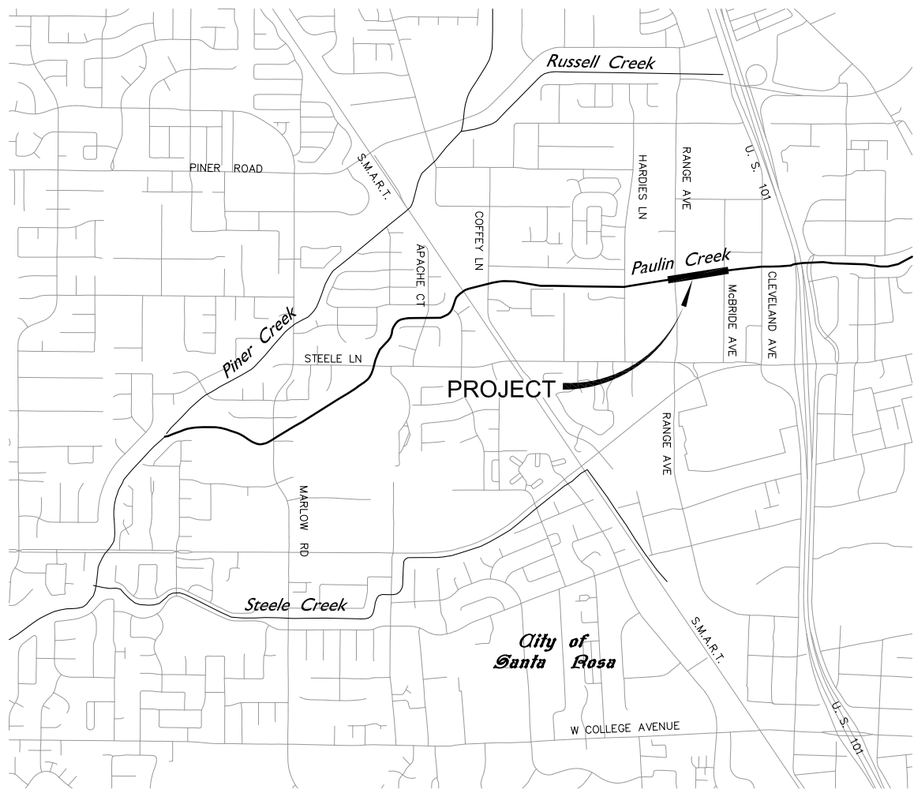
LAGUNA DE SANTA ROSA - REACH 3 (2016)

PLAN AND PROFILE STA 165+00 TO STA 180+00 AND CROSS SECTIONS

FILE NAME: 2016-LAGUNA_Reach3_CIVIL
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 3 OF 3

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

PAULIN CREEK - REACH 6A (2016) LOCALIZED SEDIMENT REMOVAL



VICINITY MAP

SCALE: 1"= 1000'

LOCATION MAP

NOT TO SCALE

PAULIN CREEK (PINER CHANNEL 6C)						
EXCAVATION (BELOW OHW UNLESS OTHERWISE NOTED)						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
	STA 687+40 TO STA 689+50	210	11.5	790 ABOVE OHW 1,355 BELOW OHW TOTAL = 2,145	2.0	30 ABOVE OHW 70 BELOW OHW TOTAL = 100
	STA 692+90 TO STA 693+35	45	7	315	1.4	16
	STA 694+60 TO STA 696+60	200	10	200 ABOVE OHW 1800 BELOW OHW TOTAL = 2000	2.0	15 ABOVE OHW 133 BELOW OHW TOTAL = 148
	STA 701+40 TO STA 703+60	220	16.8	3696	1.5	205
TOTALS		655		990 ABOVE O.H.W. 7,166 BELOW O.H.W. TOTAL: 8,156		45 ABOVE O.H.W. 424 BELOW O.H.W. TOTAL: 469

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	TITLE
1	G-1	TABLE, INDEX TO DRAWINGS, LOCATION AND VICNITY MAPS
2	C-1	PLAN AND PROFILE STA 686+00 TO STA 690+00 AND SECTIONS
3	C-2	PLAN AND PROFILE STA 692+50 TO STA 696+80
4	C-3	PLAN AND PROFILE STA 701+20 TO STA 703+60
5	C-4	SECTIONS - STA 692+50 TO STA 696+80
6	C-5	SECTIONS - STA 701+20 TO STA 703+60

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\PAULIN\2016_Paulin_SMP-6A\2016_Paulin_6A_G

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN | DATE: 04/20/2016

DRAWN: SMP

REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

PAULIN CREEK - REACH 6A (2016)

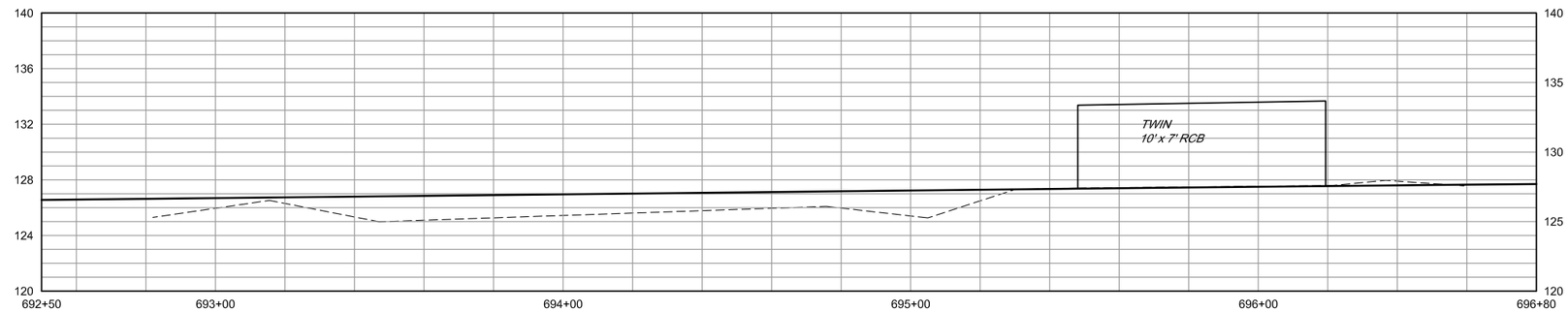
INDEX TO DRAWINGS, TABLE, AND LOCATION AND VICINITY MAPS

FILE NAME: 2016_Paulin_6A_G

CONTRACT NUMBER:

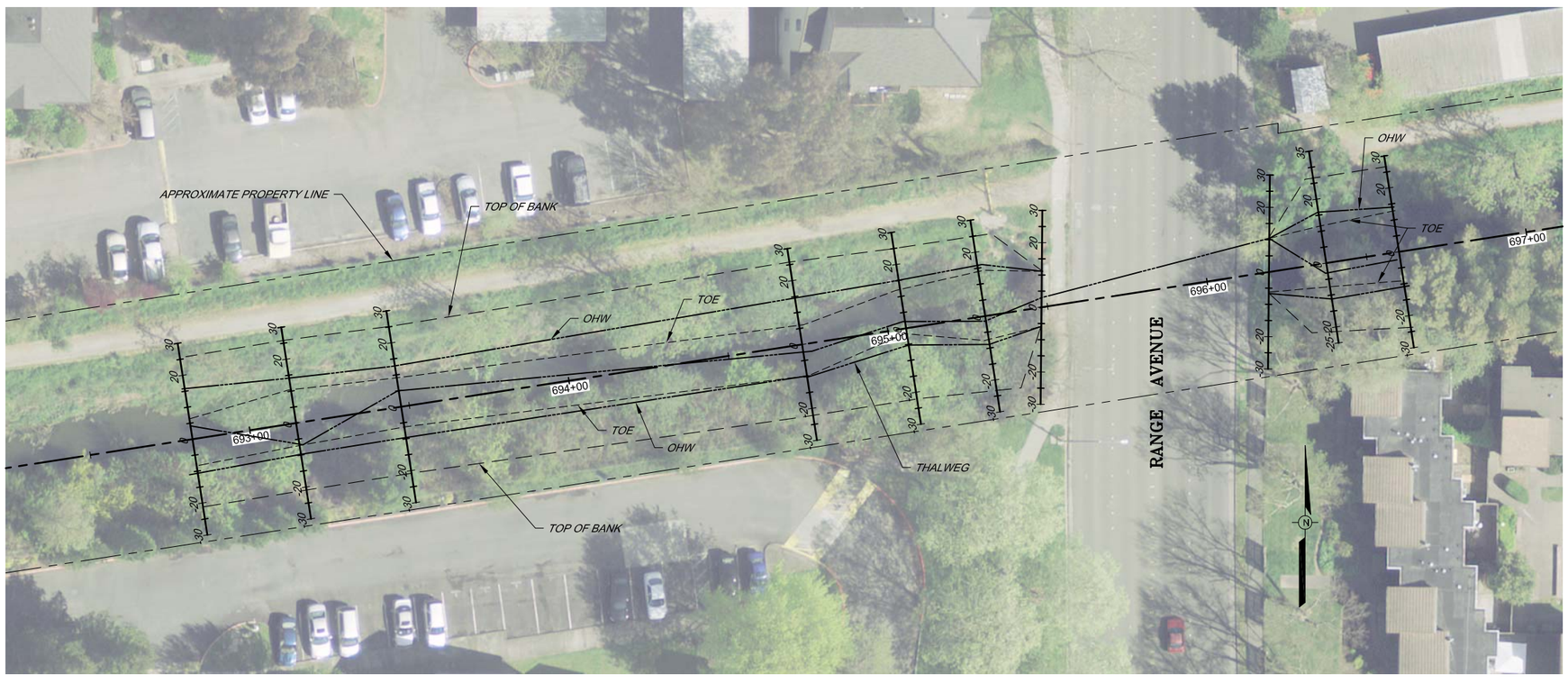
DRAWING NUMBER: G-1

SHEET 1 OF 4



PROFILE

SCALE: HORIZ 1" = 20'
VERT 1" = 5'



PLAN

SCALE: 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

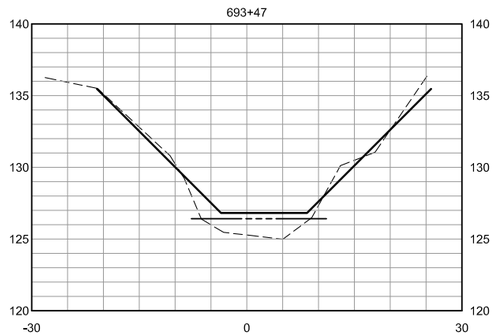
SCALE: AS SHOWN
DATE: 04/20/2016
DRAWN: SMP
REVIEWED:

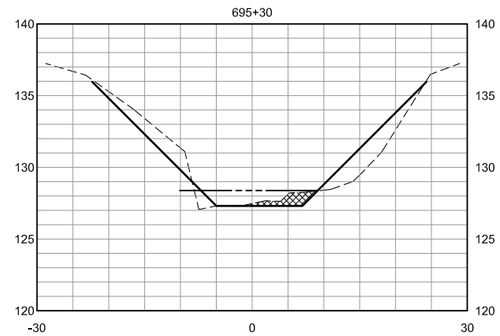
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

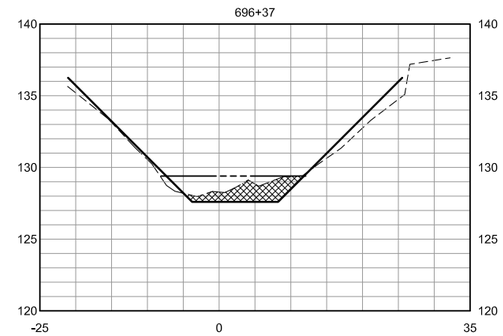
PAULIN CREEK - REACH 6A (2016)
PLAN AND PROFILE STA 692+50 TO STA 696+80

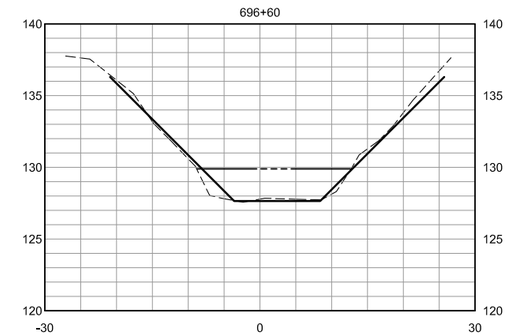
FILE NAME: 2016_Paulin_6A_C
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 4

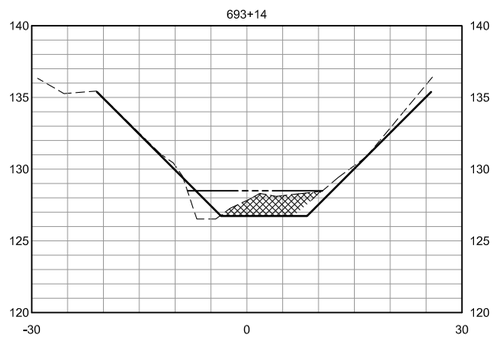
T:\flood control\zone 1a\PAULIN\2016_Paulin_SMP-6A\2016_Paulin_6A_C

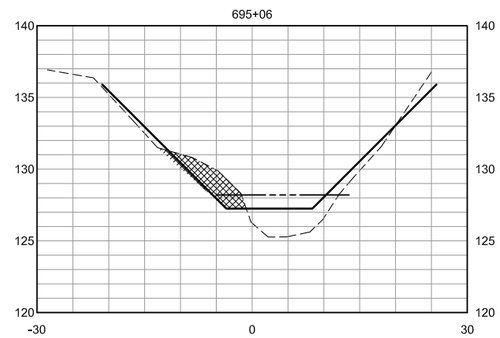


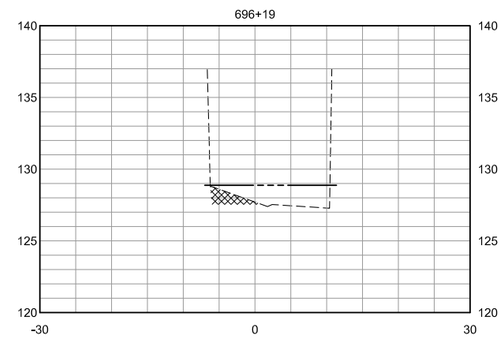


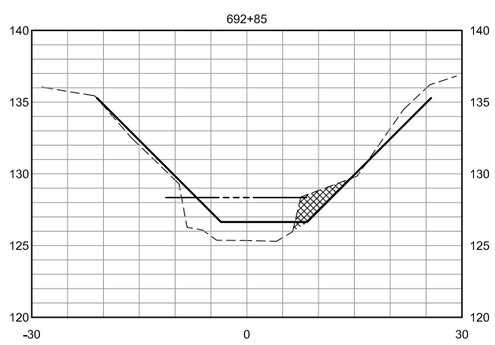


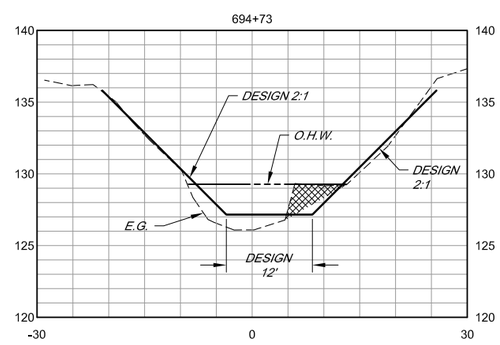


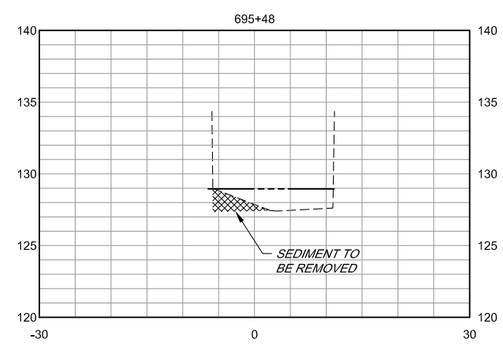






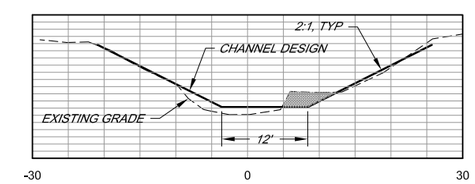






CROSS SECTIONS

SCALE: HORIZ 1" = 10'
VERT 1" = 5'



TYPICAL CROSS SECTION

SCALE: HORIZ 1" = 10'
VERT 1" = 10'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\PAULIN\2016_Paulin_SMP-6A\2016_Paulin_6A_C

NO.	DATE	REVISION	BY

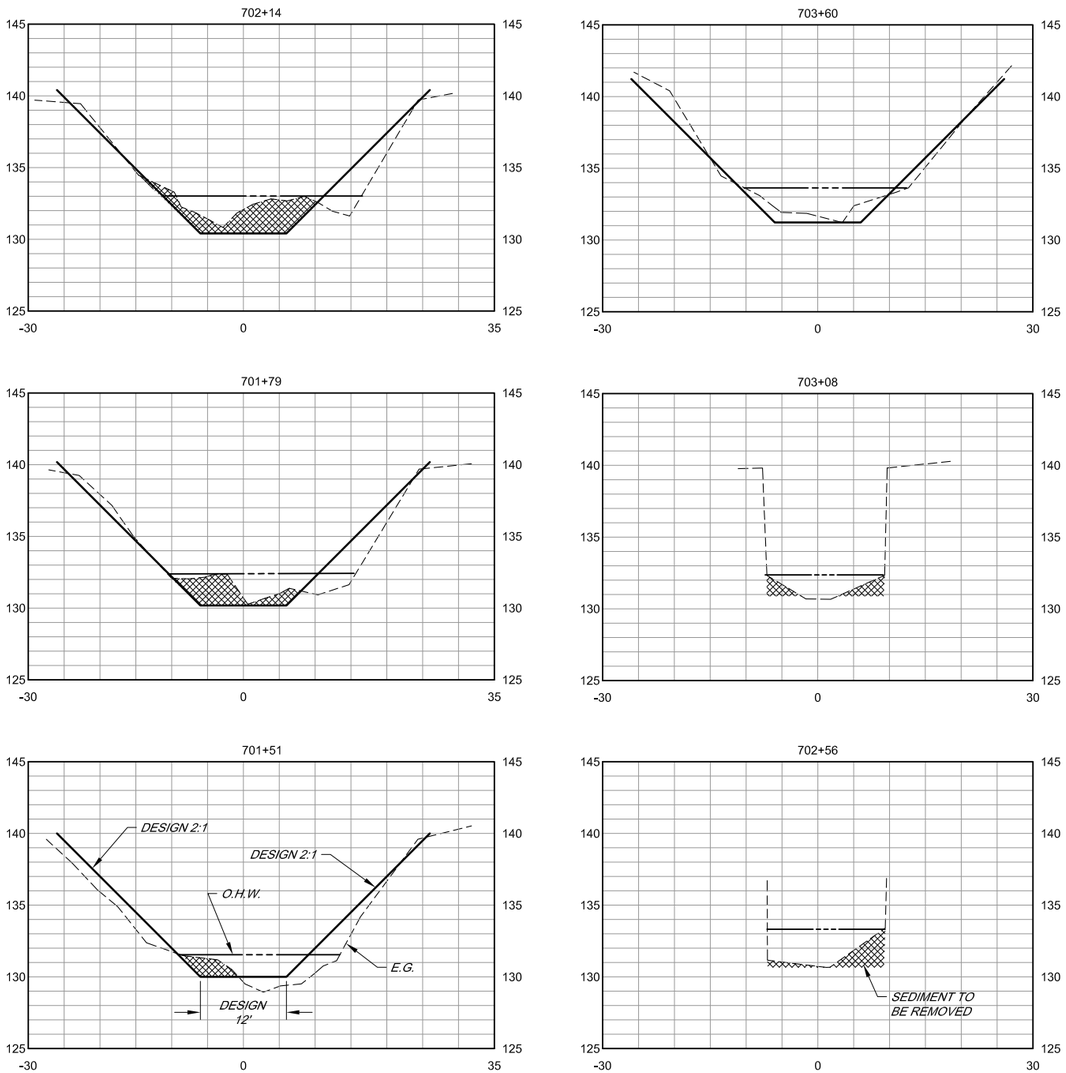
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 04/20/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

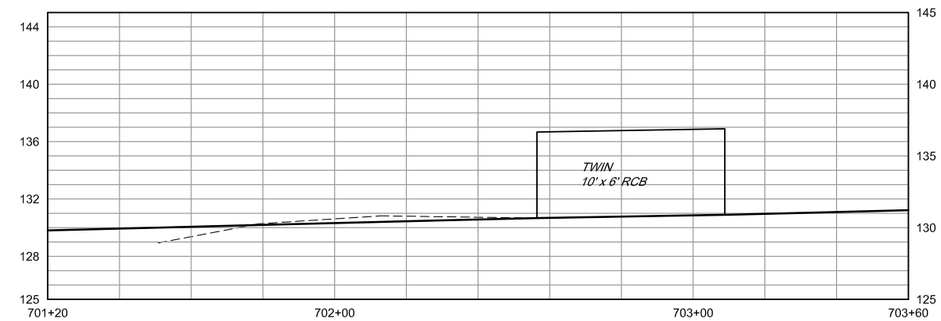
PAULIN CREEK - REACH 6A (2016)
SECTIONS STA 696+50 TO STA 696+80

FILE NAME: 2016_Paulin_6A_C
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 3 OF 4



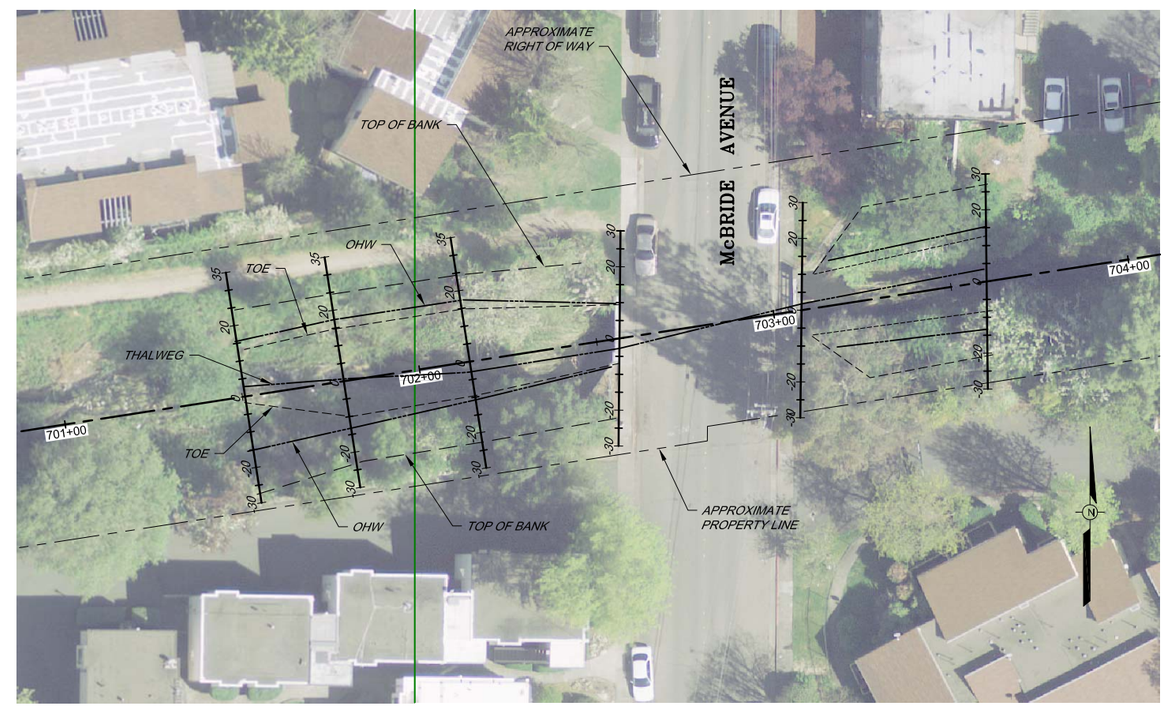
CROSS SECTIONS

SCALE: HORIZ 1" = 10'
VERT 1" = 5'



PROFILE

SCALE: HORIZ 1" = 20'
VERT 1" = 5'



PLAN

SCALE: 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\PAULIN\2016_Paulin_SMP-6A\2016_Paulin_6A_C

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

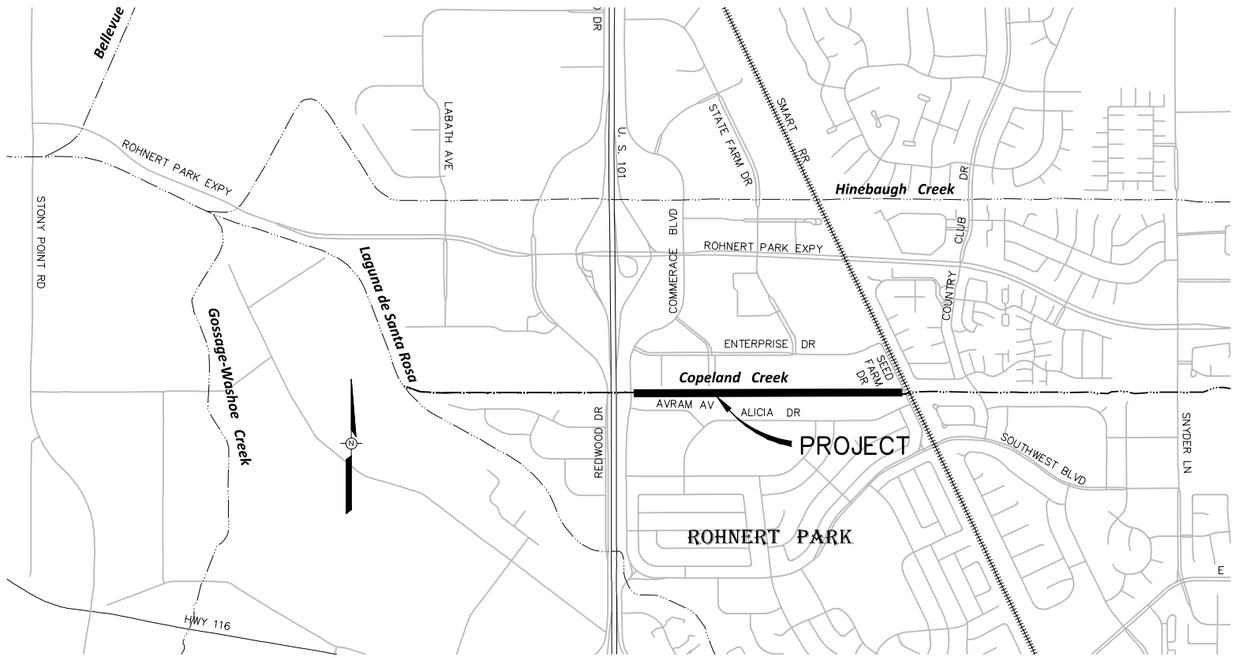
SCALE: AS SHOWN
DATE: 04/20/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
PAULIN CREEK - REACH 6A (2016)
PLAN AND PROFILE STA 701+20 TO STA 703+60

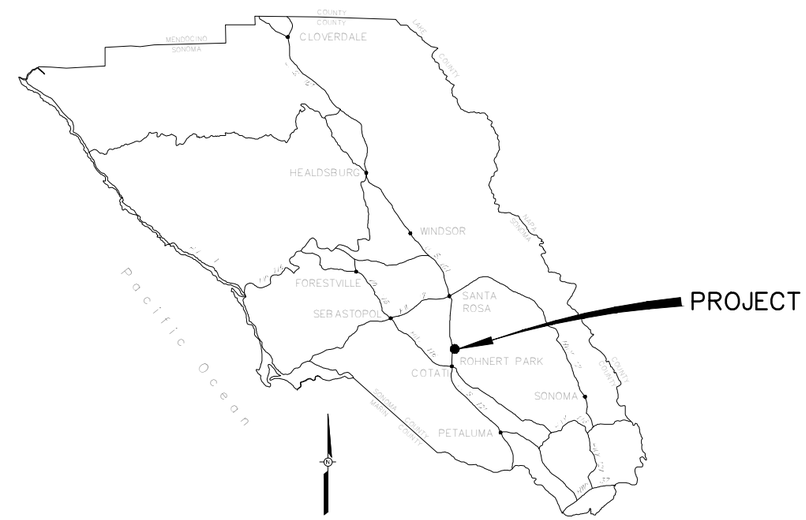
FILE NAME: 2016_Paulin_6A_C
CONTRACT NUMBER:
DRAWING NUMBER: C-3
SHEET 4 OF 4

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

COPELAND CREEK - REACH 2 (2016) REACH SCALE SEDIMENT REMOVAL



VICINITY MAP
SCALE 1" = 1000'



COPELAND CREEK - REACH 2 (2016)						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	AVERAGE DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR FROM SERVICE ROAR OR FRONT END LOADER OPERATING IN CHANNEL	STA 2+50 TO STA 40+00	3,850	23.5	ABOVE O.H.W. 4,295 BELOW O.H.W 130,455. TOTAL = 134,750	2.2	ABOVE O.H.W. 350 BELOW O.H.W. 7,022 TOTAL = 7,372

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	SHEET DESCRIPTION
1	G-1	INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS
2	C-1	PLAN AND PROFILE STA 2+00 TO STA 12+50
3	C-2	PLAN AND PROFILE STA 12+50 TO STA 24+50
4	C-3	PLAN AND PROFILE STA 24+50 TO STA 35+50
5	C-4	PLAN AND PROFILE STA 35+50 TO STA 40+00
6	C-5	SECTIONS
7	C-6	SECTIONS

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

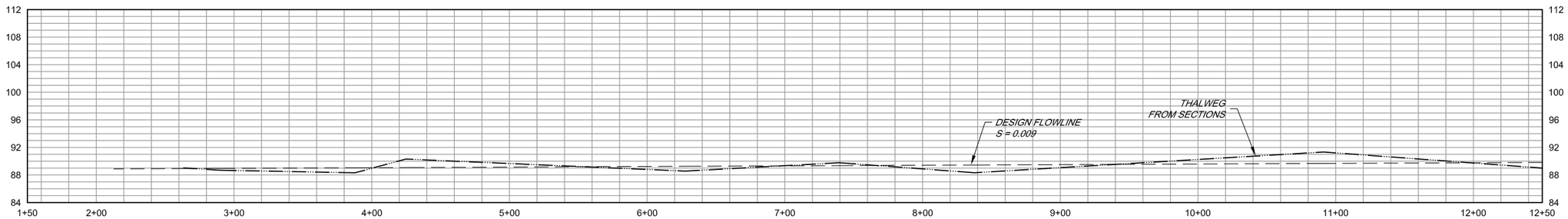
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/19/16
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COPELAND CREEK - REACH 2 (2016)
INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS

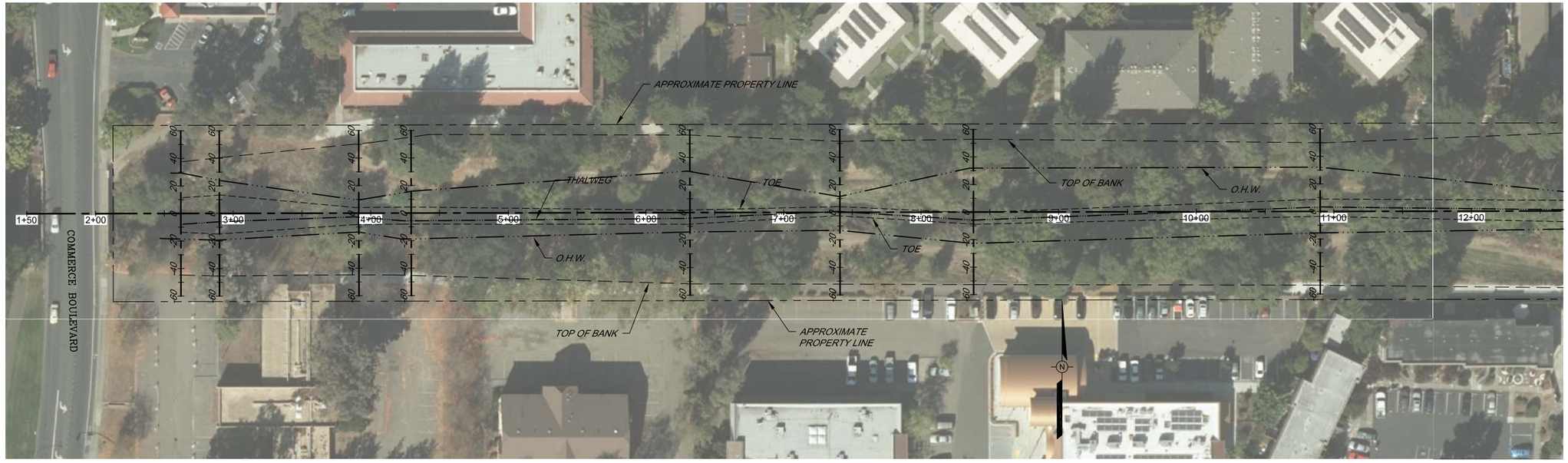
FILE NAME: 2016-COPELAND_SMP2-G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 7

\\Sd-data\Proj\flood control\zone 1a\copeland\sediment_removal\2016-COPELAND_SMP2



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 8'



PLAN

SCALE 1" = 40'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

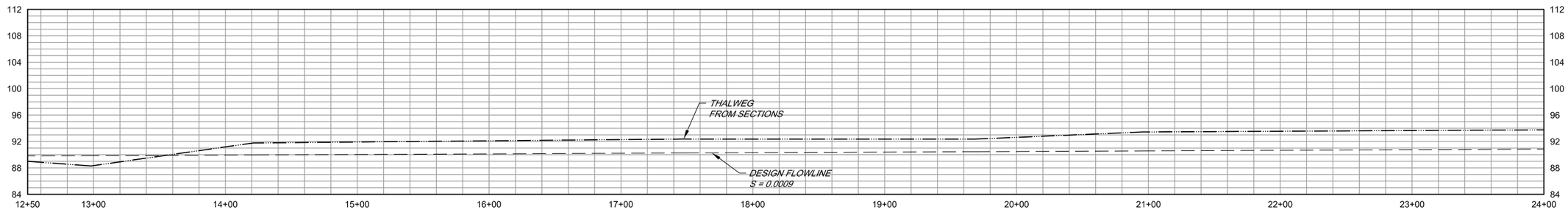
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COPELAND CREEK - REACH 2 (2016)
PLAN AND PROFILE STA 2+00 TO STA 12+50

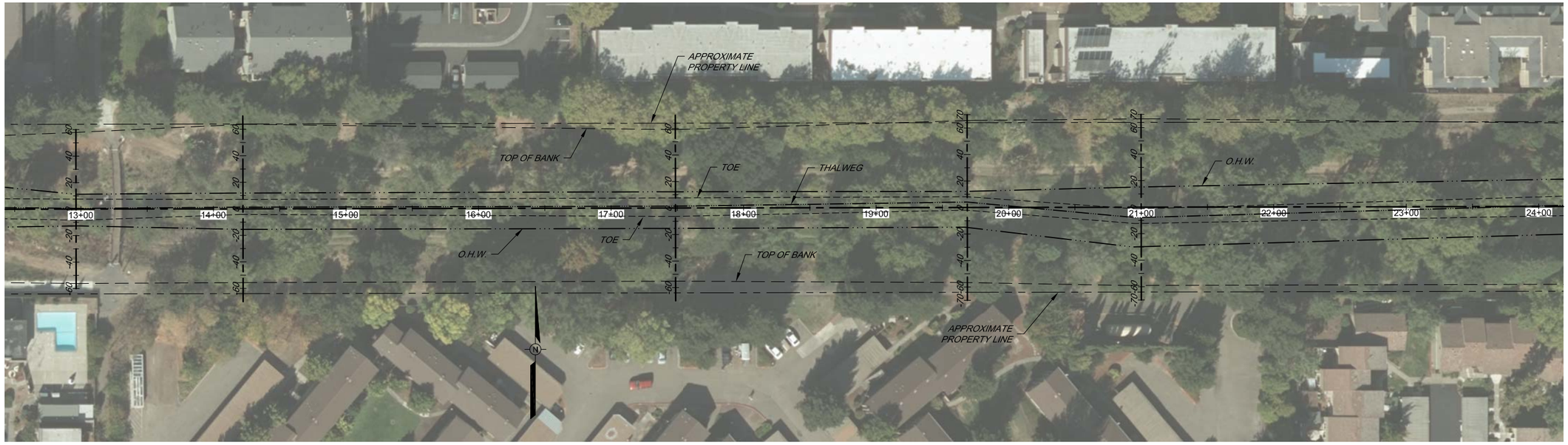
FILE NAME: 2016-COPELAND_SMP2-C
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 7

\\sd-data\proj\flood control\zone 1a\copeland\sediment_removal\2016-COPELAND_SMP2



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 8'



PLAN

SCALE 1" = 40'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

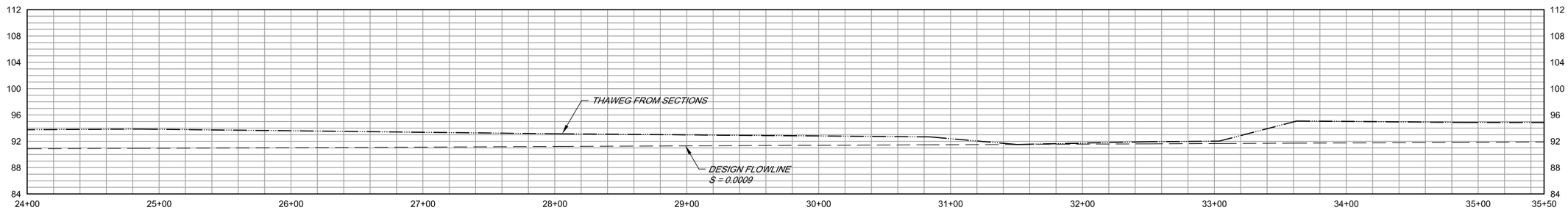
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COPELAND CREEK - REACH 2 (2016)
PLAN AND PROFILE STA 12+50 TO STA 24+50

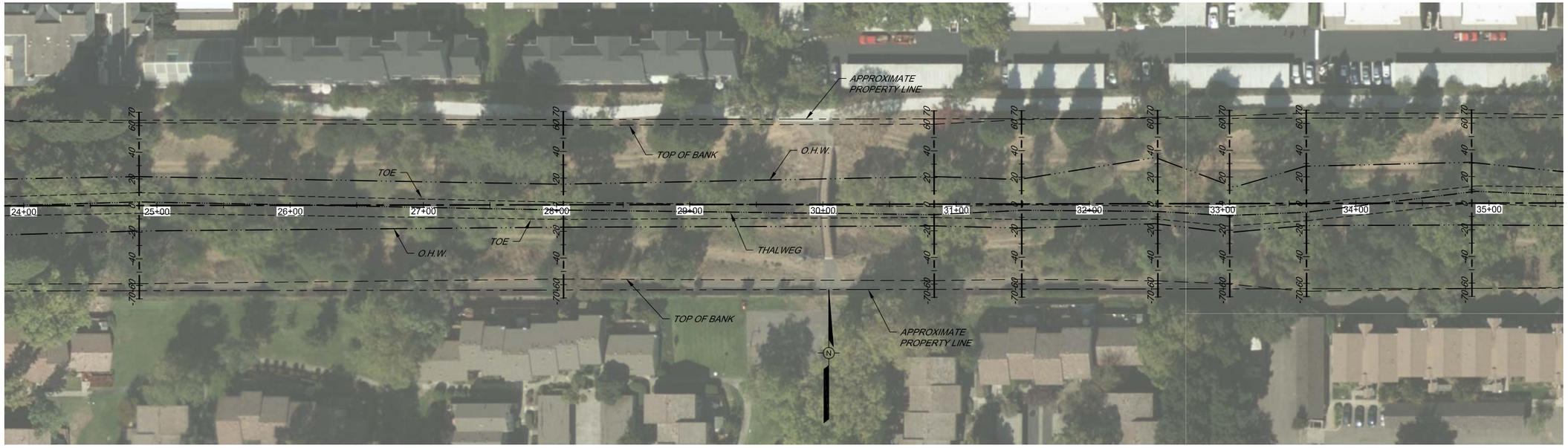
FILE NAME: 2016-COPELAND_SMP2-C
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 3 OF 7

\\sd-data\proj\flood control\zone 1a\copeland\sediment_removal\2016-COPELAND_SMP2



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 8'



PLAN

SCALE 1" = 40'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: ADF
REVIEWED:

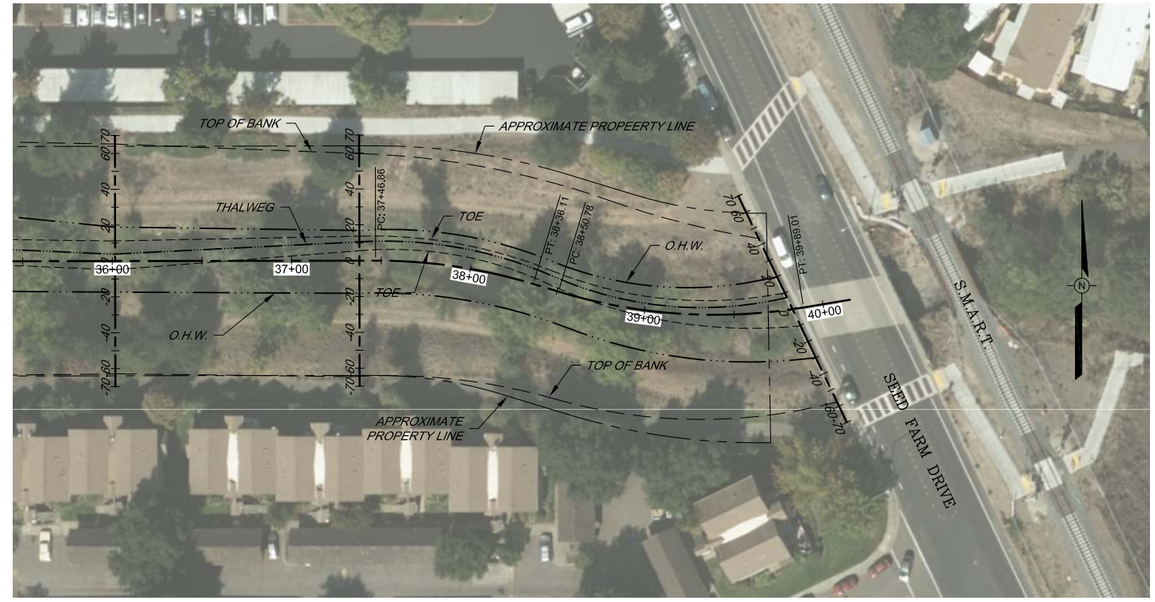
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COPELAND CREEK - REACH 2 (2016)
PLAN AND PROFILE STA 24+50 TO STA 35+50

FILE NAME: 2016-COPELAND_SMP2-C
CONTRACT NUMBER:
DRAWING NUMBER: C-3
SHEET 4 OF 7

\\sd-data\proj\flood control\zone 1a\copeland\sediment_removal\2016-COPELAND_SMP2

PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 8'



PLAN

SCALE 1" = 40'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

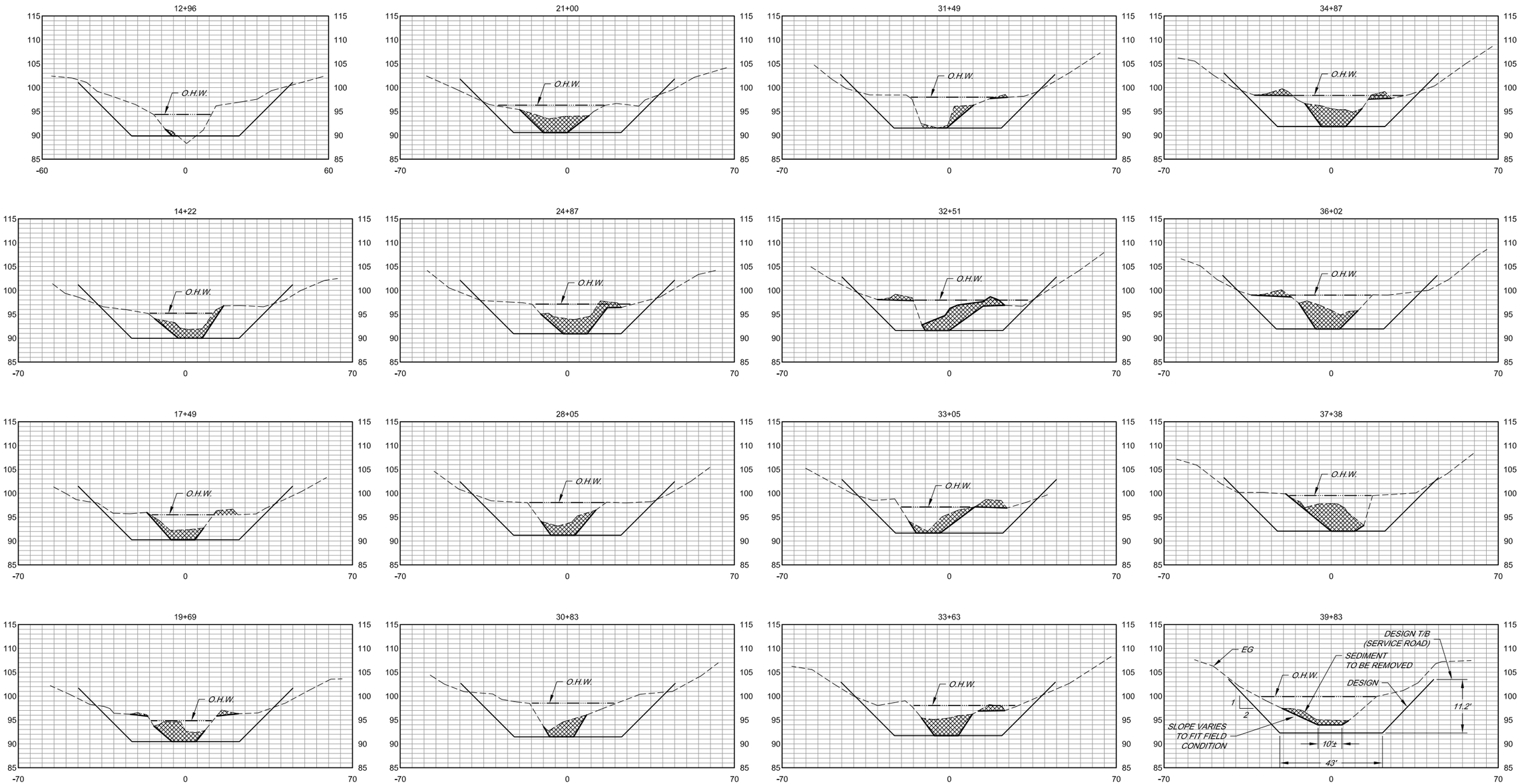
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COPELAND CREEK - REACH 2 (2016)
PLAN AND PROFILE STA 35+50 TO STA 40+00

FILE NAME: 2016-COPELAND_SMP2-C
CONTRACT NUMBER:
DRAWING NUMBER: C-4
SHEET 5 OF 7

\\sd-data\proj\flood control\zone 1a\copeland\sediment_removal\2016-COPELAND_SMP2



NOTE:
CHANNEL DESIGN PRIOR TO THE CONSTRUCTION
OF SUBDIVISIONS

SECTIONS (LOOKING DOWNSTREAM)

SCALE HORIZ 1" = 20'
VERT 1" = 10'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

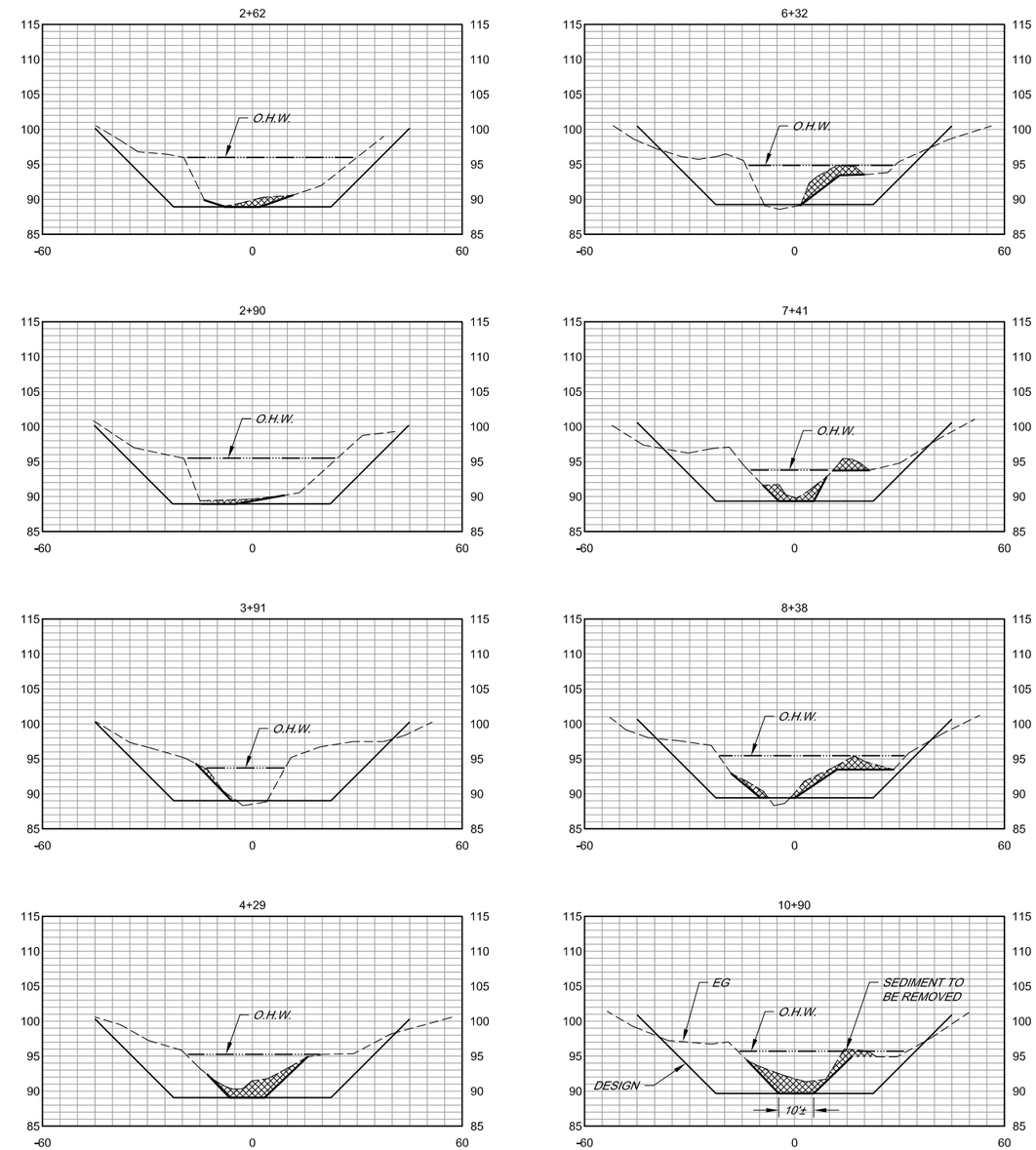
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COPELAND CREEK - REACH 2 (2016)
SECTIONS

FILE NAME: 2016-COPELAND_SMP2-C
CONTRACT NUMBER:
DRAWING NUMBER: C-5
SHEET 6 OF 7

\\sd-data\proj\flood control\zone 1a\copeland\sediment_removal\2016-COPELAND_SMP2



SECTIONS (LOOKING DOWNSTREAM)

SCALE HORIZ 1" = 20'
VERT 1" = 10'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: ADF
REVIEWED:

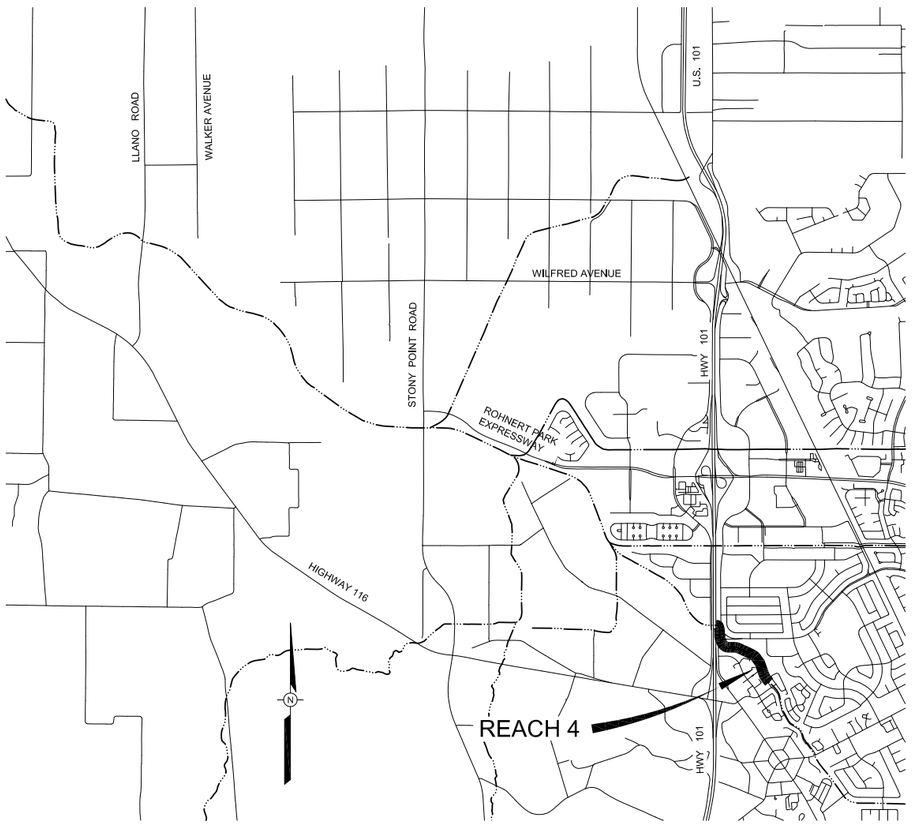
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COPELAND CREEK - REACH 2 (2016)
SECTIONS

FILE NAME: 2016-COPELAND_SMP2-C
CONTRACT NUMBER:
DRAWING NUMBER: C-6
SHEET 7 OF 7

\\sd-data\proj\flood control\zone 1a\copeland\sediment_removal\2016-COPELAND_SMP2

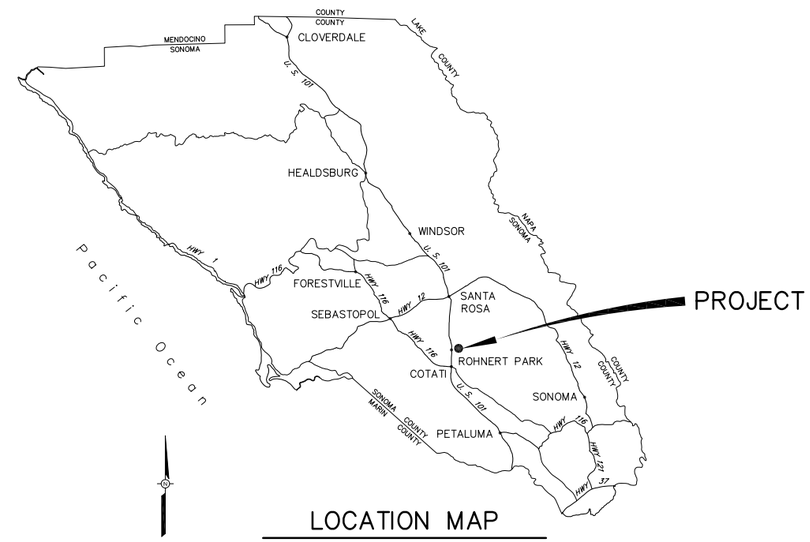
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

LAGUNA DE SANTA ROSA - REACH 4 (2016) REACH SCALE



VICINITY MAP

NTS



LOCATION MAP

NTS

INDEX TO DRAWINGS

Sheet Number	Sheet Title	Sheet Description
1	G-1	INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS
2	G-2	TYPICAL CROSS SECTION AND EXCAVATION TABLE
3	C-1	PLAN AND PROFILE STA 7+00+/- TO STA 26+00
4	C-2	SECTIONS STA 7+00 +/- TO STA 26+00

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\LAGUNA\2016\LAGUNA

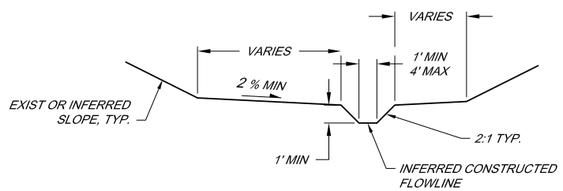
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN | DATE: 4/19/2016
DRAWN: BJA
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
LAGUNA DE SANTA ROSA - REACH 4 (2016)
INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS

FILE NAME: 2016_LAGUNA_Reach4_GEN
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 4



SEDIMENT REMOVAL LOW FLOW CHANNEL SECTION .

NOT TO SCALE

LAGUNA DE SANTA ROSA SMP REACH 4						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE OR FILL)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN CHANNEL				ABOVE O.H.W. BELOW O.H.W.		TO REMOVE ABOVE O.H.W. BELOW O.H.W.
	LAGUNA SMP-4 STA 6+31 TO STA 26+00	1969	9	3,702 14,019	1.75	TOTAL = 240 TOTAL = 909

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\LAGUNA\2016-LAGUNA

NO.	DATE	REVISION	BY

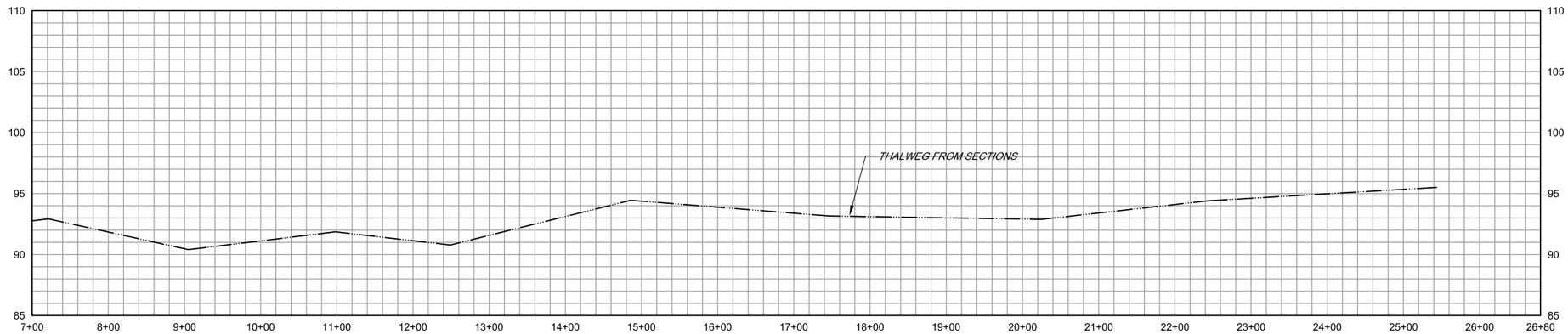
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: BJA
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

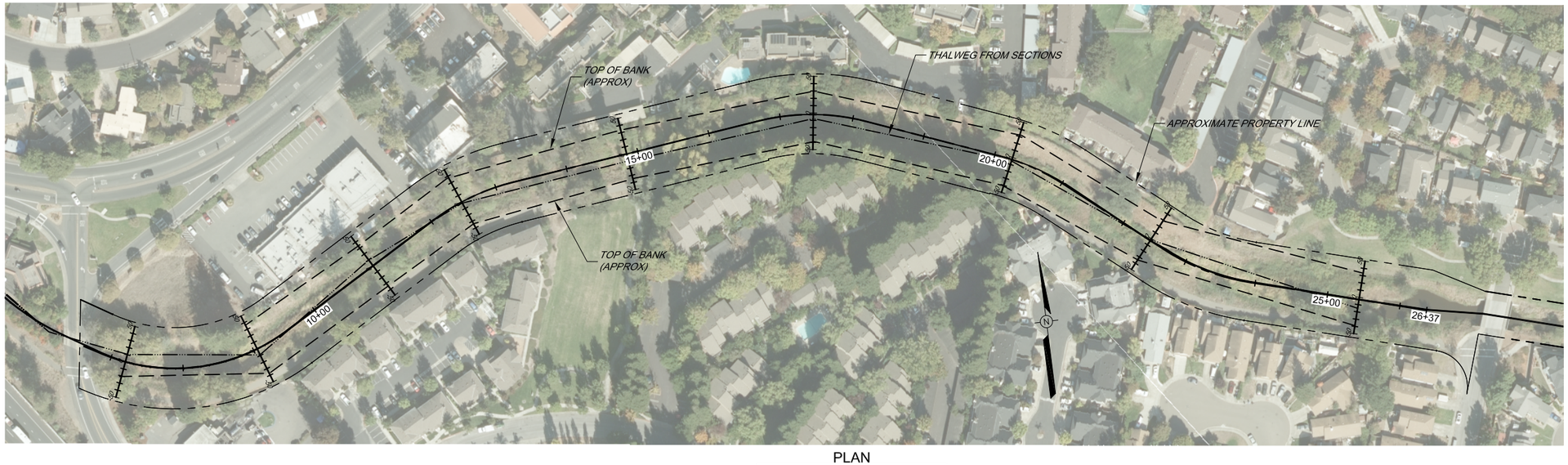
LAGUNA DE SANTA ROSA - REACH 4 (2016)
TYPICAL CROSS SECTION AND EXCAVATION TABLE

FILE NAME: 2016-LAGUNA_Reach4_CIVIL
CONTRACT NUMBER:
DRAWING NUMBER: G-2
SHEET 2 OF 4



PROFILE

SCALE: HORIZ. 1" = 80'
VERT 1" = 5'



PLAN

SCALE: 1" = 80'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\LAGUNA\2016-LAGUNA\2016-LAGUNA_Reach4_CIVIL

NO.	DATE	REVISION	BY

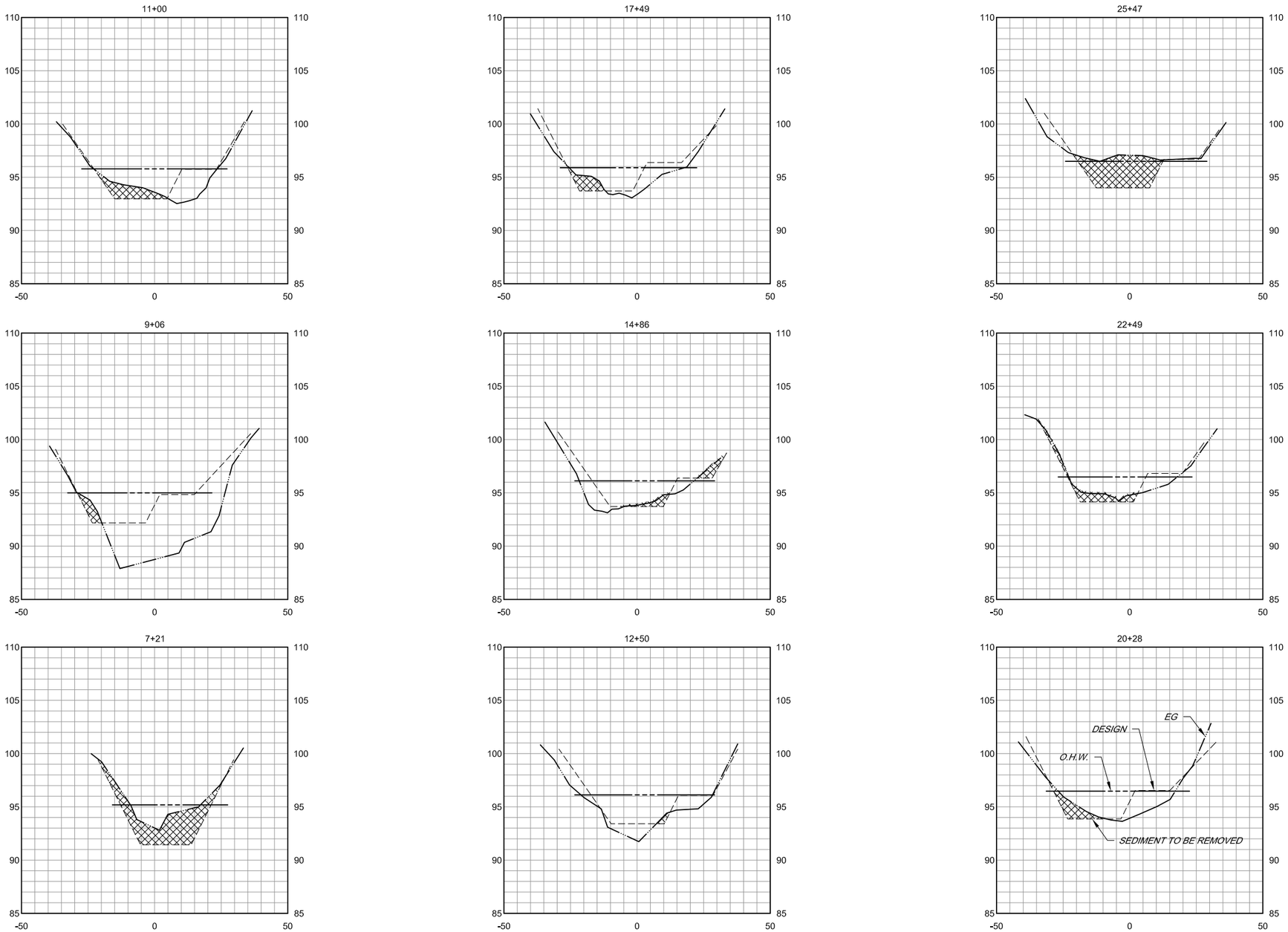
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/19/2016
DRAWN: BJA
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

LAGUNA DE SANTA ROSA - REACH 4 (2016)
PLAN AND PROFILE STA 7+00+/- TO STA 26+00

FILE NAME: 2016-LAGUNA_Reach4_CIVIL
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 3 OF 4



SECTIONS

SCALE: HORIZ 1" = 20'
VERT 1" = 5'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\LAGUNA\2016-LAGUNA\2016-LAGUNA_Reach4_CIVIL

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/21/2016
DRAWN: BJA
REVIEWED:

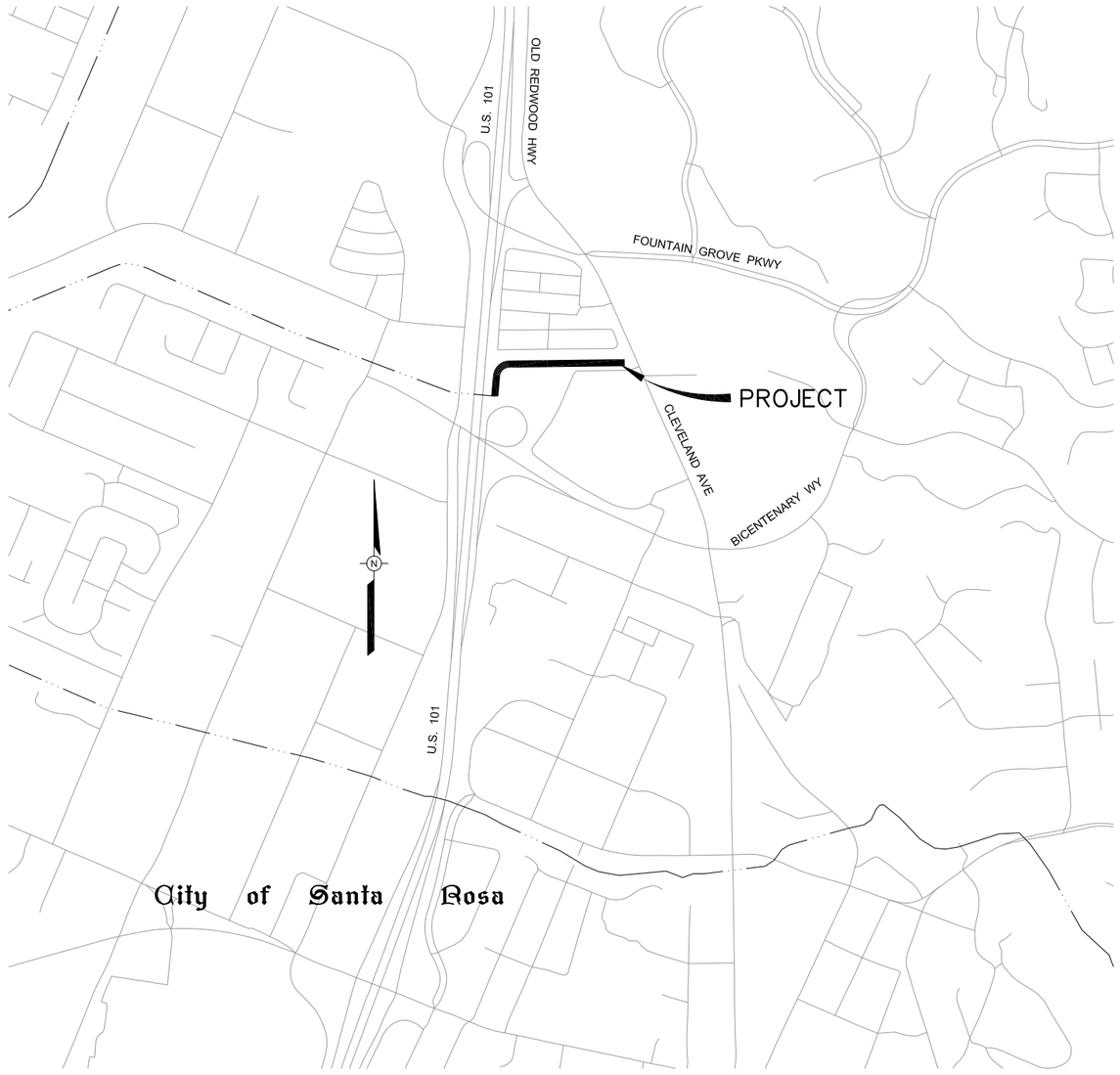
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

LAGUNA DE SANTA ROSA - REACH 4 (2016)
SECTIONS STA 7+00 +/- TO STA 26+00

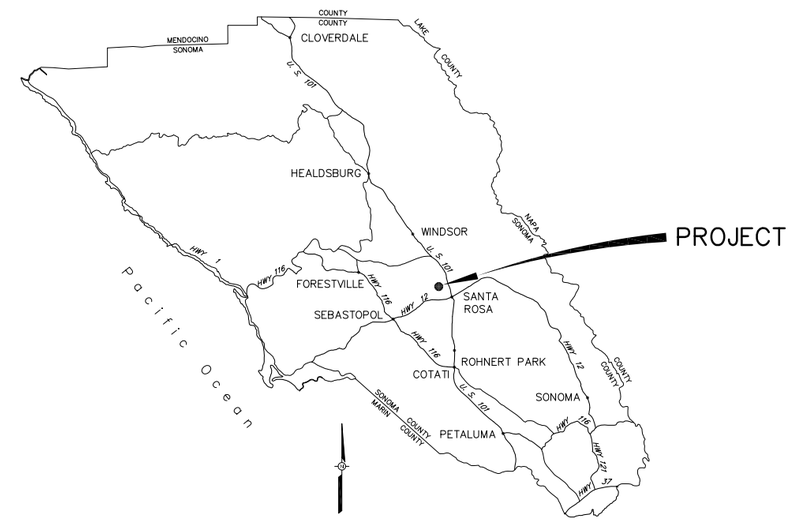
FILE NAME: 2016-LAGUNA_Reach4_CIVIL
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 4 OF 4

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

RUSSELL CREEK - REACH 2 (2016) REACH SCALE



VICINITY MAP
SCALE 1" = 500'



LOCATION MAP
N.T.S.

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	SHEET TITLE
G-1	G-1	INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS
C-1	C-1	PLAN AND PROFILE STA 716+20 TO STA 728+00
C-2	C-2	SECTIONS

RUSSELL CREEK SMP REACH 2

EXCAVATION

PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR FROM SERVICE ROAR OR FRONT END LOADER OPERATING IN CHANNEL	STA 716+35 TO STA 727+90	1,155	16	18,480	1	684

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

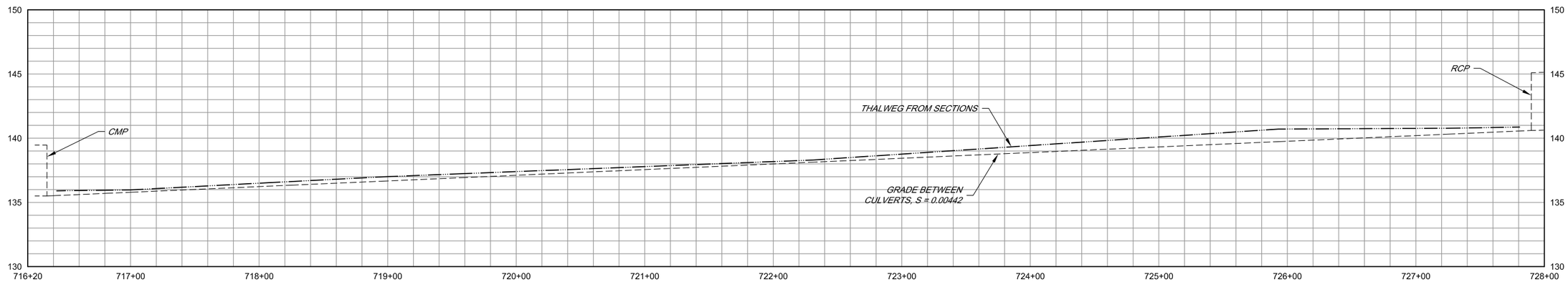
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 04/20/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
RUSSELL CREEK - REACH 2 (2016)
INDEX TO DRAWINGS, TABLE, LOCATION AND VICINITY MAPS

FILE NAME: 2016_RUSSELL_G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 3

\\sd-data\proj\flood control\zone 1a\RUSSELL\2016_RUSSELL-CRK



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 4'

PLAN

SCALE 1" = 40'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 04/20/2016
DRAWN: SMP
REVIEWED:

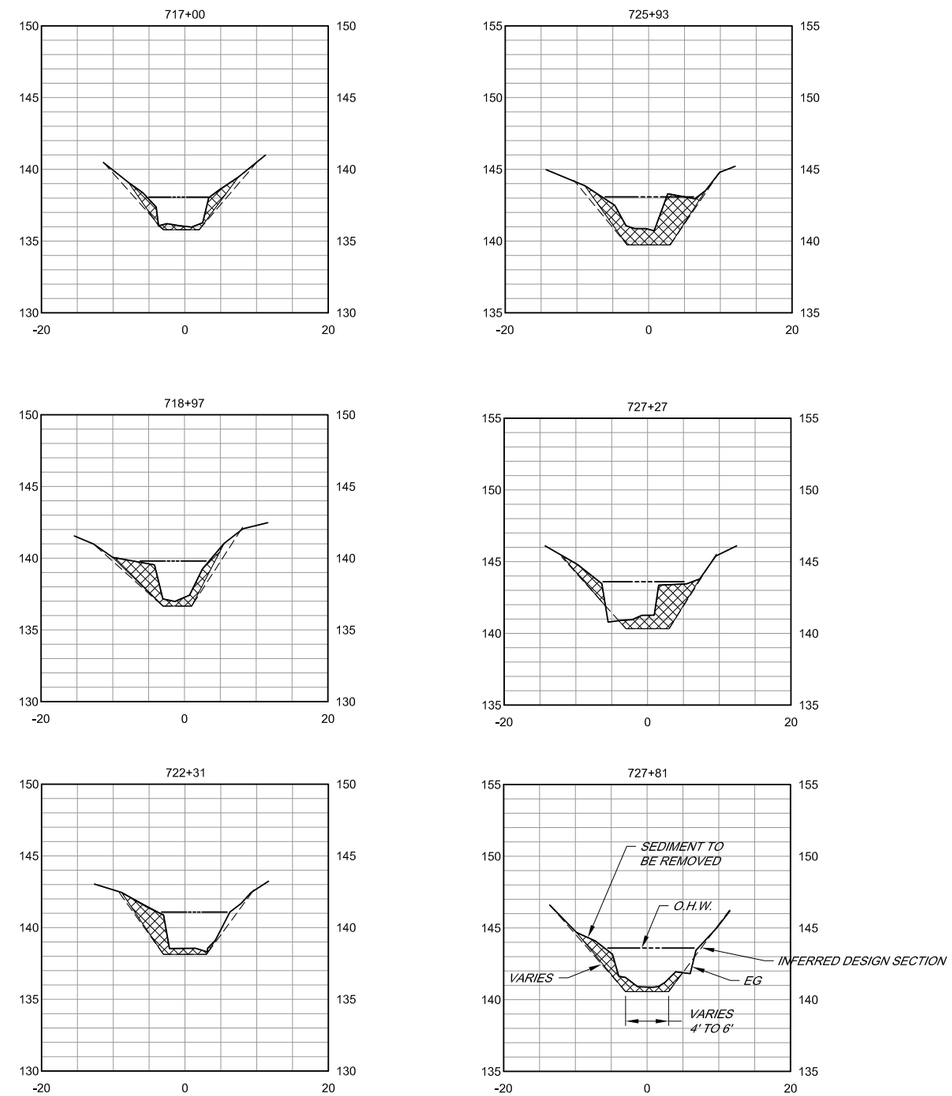
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

RUSSELL CREEK - REACH 2 (2016)

PLAN AND PROFILE STA 716+20 TO STA 728+00

FILE NAME: 2016_RUSSELL_C
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 3

\\sd-data\proj\flood control\zone 1a\RUSSELL\2016_RUSSELL-CRK



SECTIONS

SCALE HORIZ 1" = 10'
VERT 1" = 5'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 04/20/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

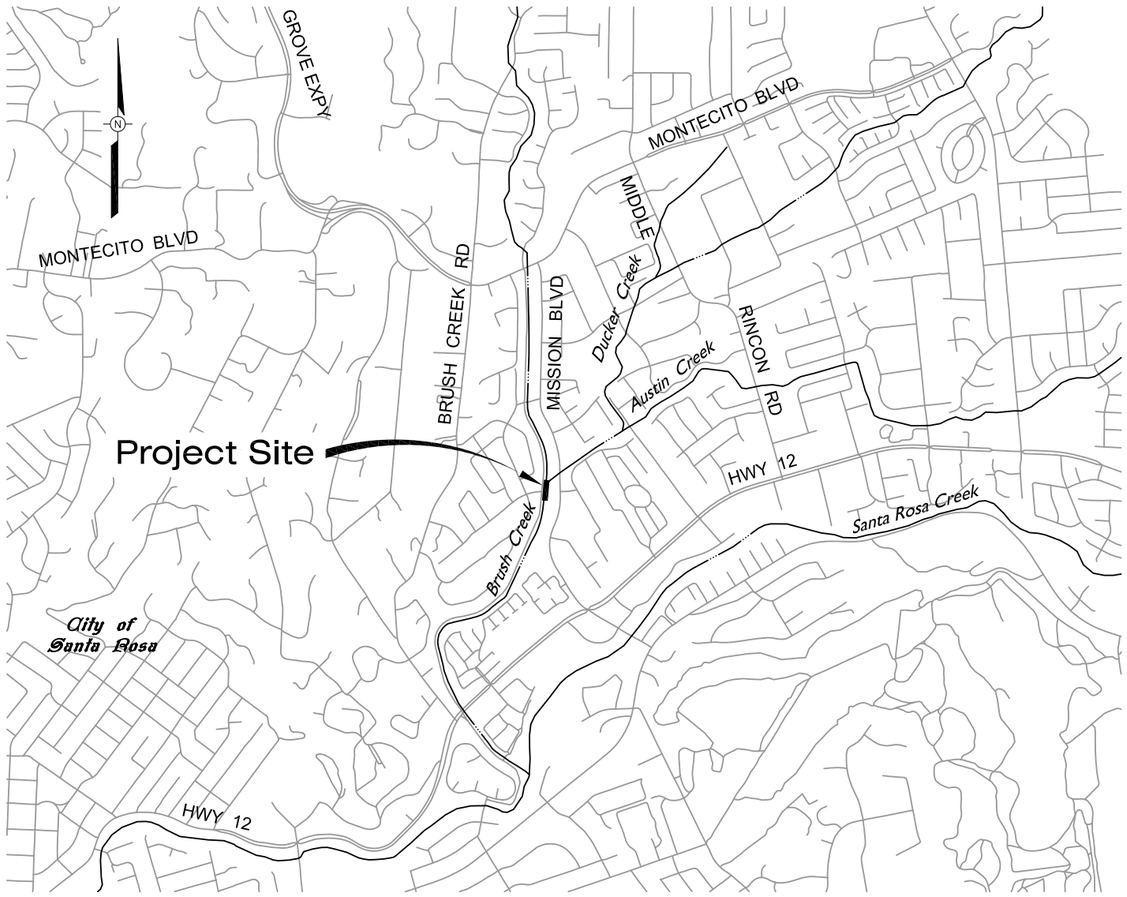
RUSSELL CREEK - REACH 2 (2016)

SECTIONS

FILE NAME: 2016_RUSSELL_C
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 3 OF 3

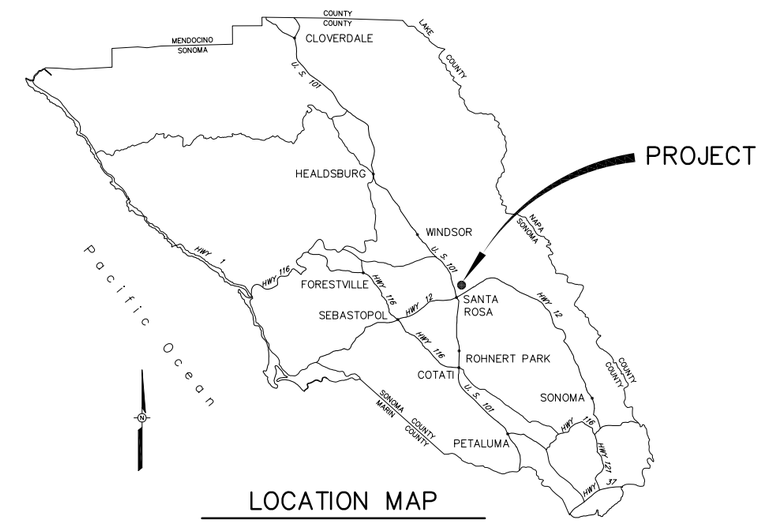
\\scd-data\proj\flood control\zone 1a\RUSSELL\2016_RUSSELL-CRK

SMP - LAGUNA DE SANTA ROSA WATERSHED ZONE 1A
BRUSH CREEK - REACH 2B (2016)
SEDIMENT BASIN CLEARING



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

INDEX TO DRAWINGS		
SHEET NUMBER	DRAWING NUMBER	DRAWING TITLE
1	G-1	INDEX TO DRAWINGS, LOCATION AND VICINITY MAPS
1	C-1	PLAN
3	C-2	TABLE AND TYPICAL SECTION

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/12/2016
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED ZONE 1A
BRUSH CREEK REACH 2B (2016)
INDEX TO DRAWINGS, LOCATION AND VICINITY MAPS

FILE NAME: 2016_BrushCrk_GeneralA.dwg
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 3

T:\flood control\zone 1a\Brush Creek\2016-brush_crk-bash

PLAN

SCALE 1" =20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN

DATE: 4/12/2016

DRAWN: ADF

REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

BRUSH CREEK REACH 2B (2016) SEDIMENT BASIN

PLAN

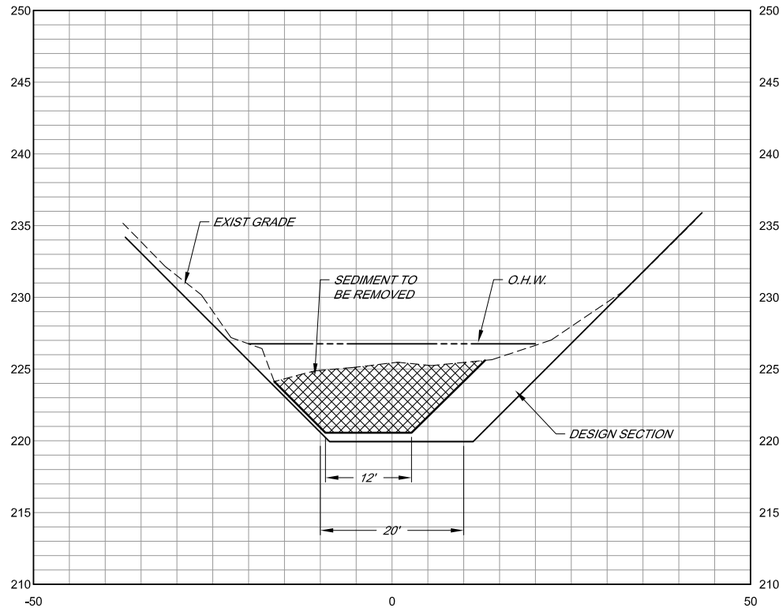
FILE NAME: 2016_brush_crk-c

CONTRACT NUMBER:

DRAWING NUMBER: C-1

SHEET 2 OF 3

T:\flood control\zone 1a\Brush Creek\2016-brush_crk-basin



TYPICAL SECTION .

SCALE HORIZ 1" = 10'
VERT 1" = 5'

BRUSH CREEK REACH 2B (2016)						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR FROM SERVICE ROAD	SEDIMENT BASIN	100	20	2000	3	230

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\Brush Creek\2016-brush_crk-basin

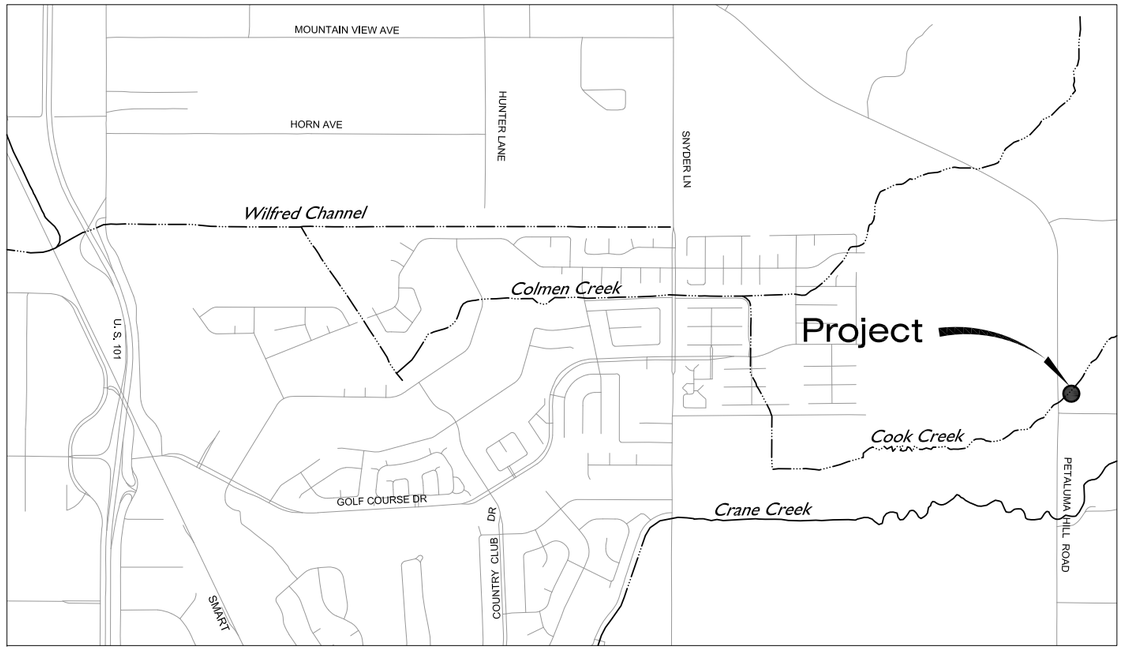
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/12/2016
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED ZONE 1A
BRUSH CREEK REACH 2B (2016) SEDIMENT BASIN
TABLE AND TYPICAL SECTION

FILE NAME: 2016_brush_crk-c
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 3 OF 3



VICINITY MAP

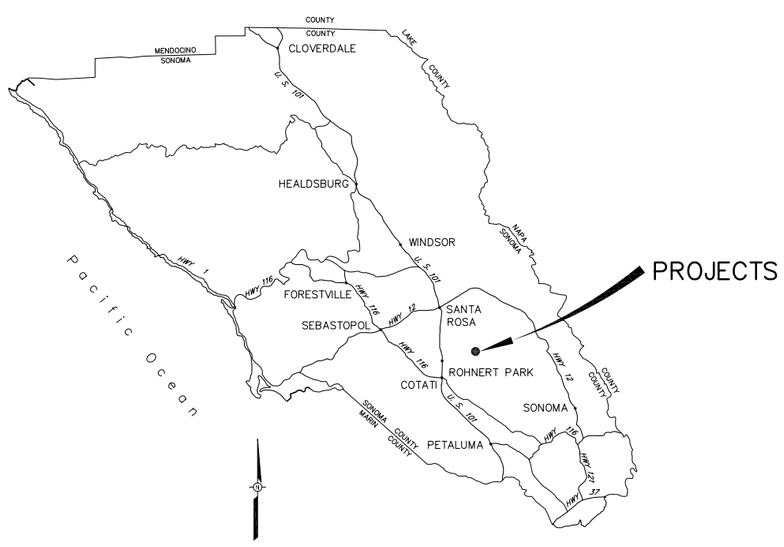
NOT TO SCALE

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

COOK CREEK - REACH 2 (2016) LOCALIZED SEDIMENT REMOVAL

AERIAL

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

INDEX TO DRAWINGS

SHEET No	DRAWING No	DESCRIPTION
1	G-1	INDEX TO DRAWINGS AND VICINITY AND LOCATION MAPS
2	C-1	GRADNG PLAN

SEDIMENT REMOVAL:
AREA = 10,000 Square Feet
VOLUME = 100 Cubic Yards

90% SUBMITTAL

NO.	DATE	REVISION	BY

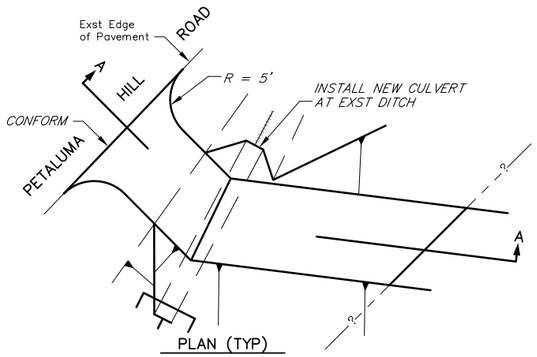
SONOMA COUNTY WATER AGENCY

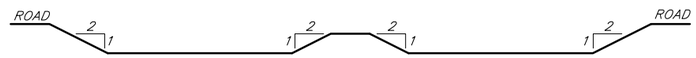
SCALE: AS SHOWN | DATE: 4/28/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COOK CREEK - REACH 2 (2016)
INDEX TO DRAWINGS AND VICINITY AND LOCATION MAPS

FILE NAME: 2016_Cook_G-1
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 2

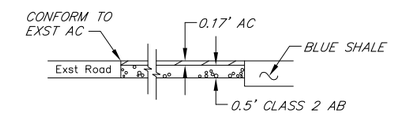
T:\flood control\zone 1a\cook crk basin\sed-removal\2016_Cook\Basin\2016_Cook_G-1





SECTION B
NOT TO SCALE

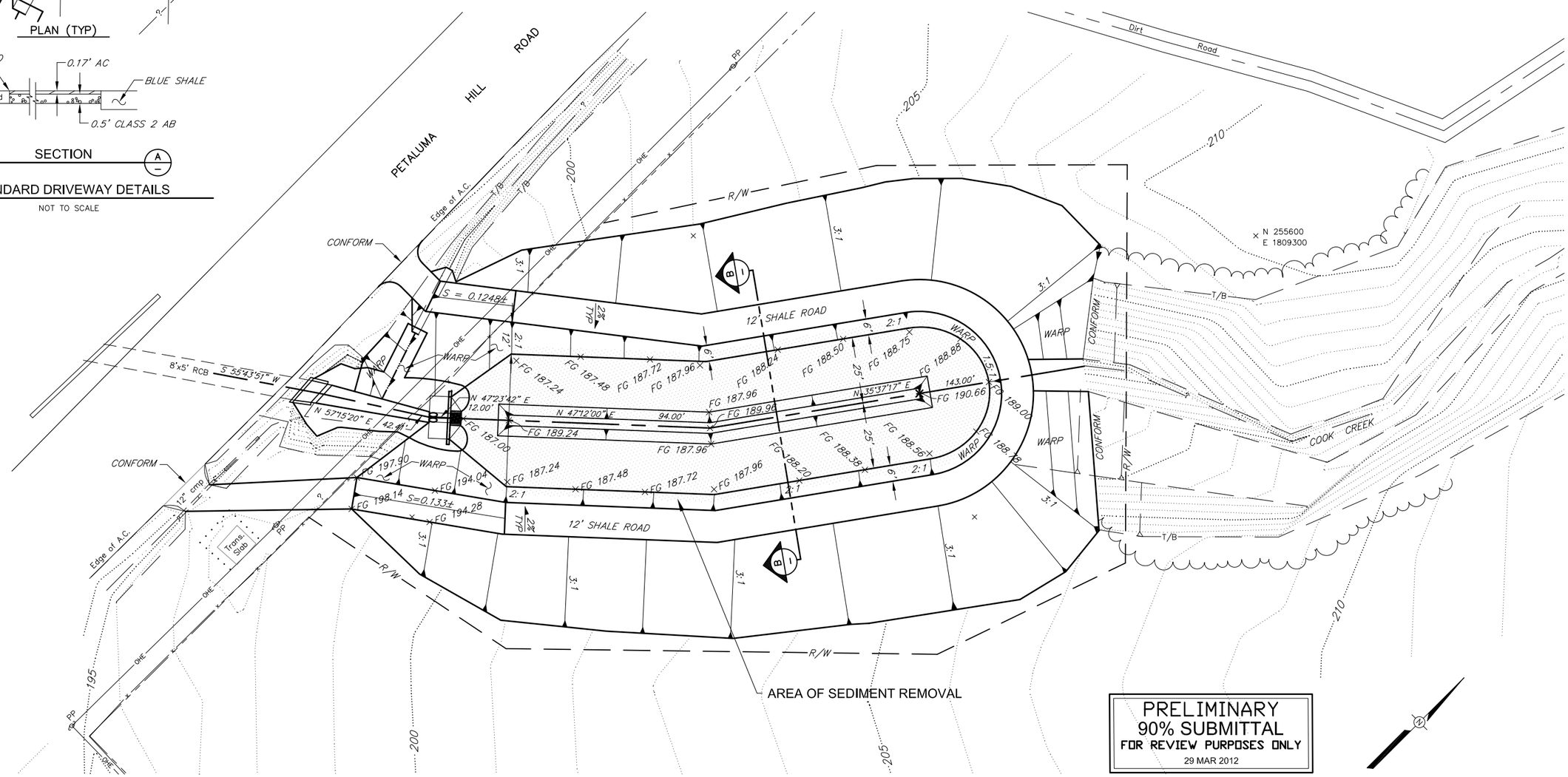
COOK CREEK						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y(TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR FROM SERVICE ROAD AND DOZER IN CHANNEL	NA	200	40	8,000	0.5	150
	TOTAL = 200		TOTAL = 8,000		TOTAL = 150	



SECTION A

STANDARD DRIVEWAY DETAILS

NOT TO SCALE



BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\cook crk basin\sed-removal\2016_CookBasin\2016_Cook_GradingPlan_C-1

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/28/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

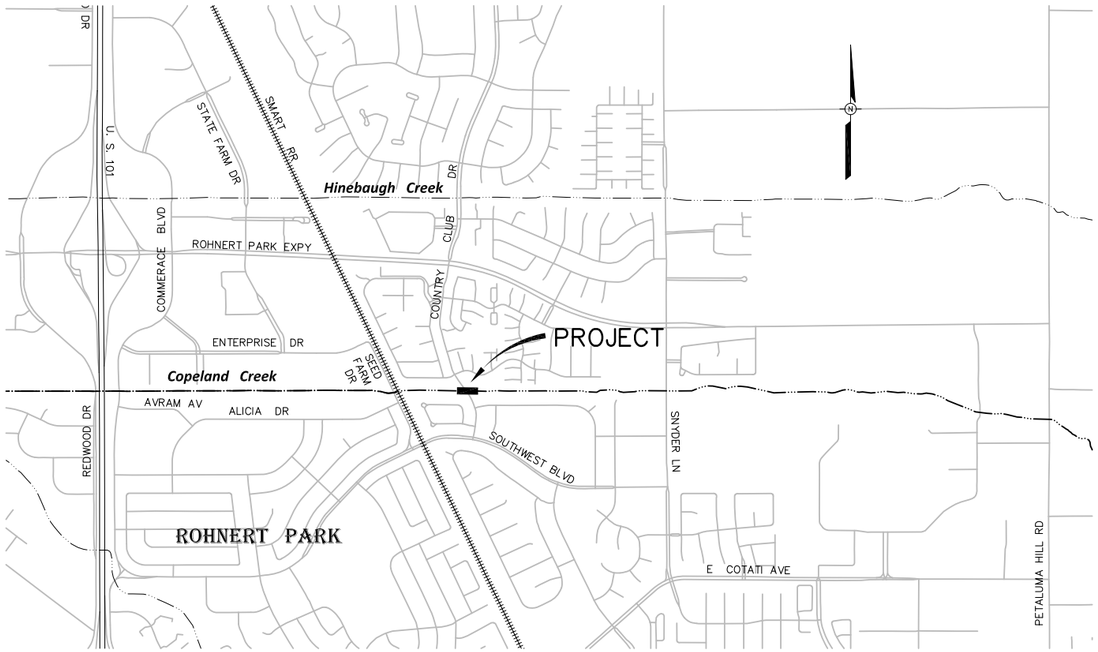
COOK CREEK - REACH 2 (2016)

GRADNG PLAN

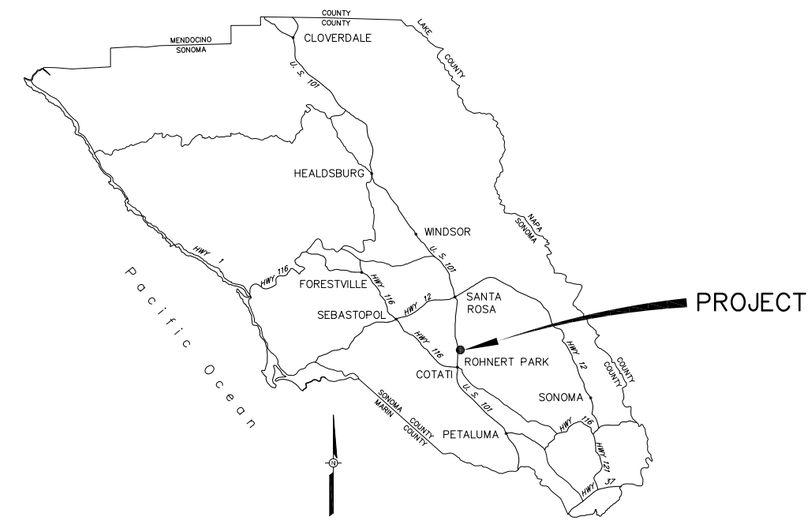
FILE NAME: 2016_Cook_GradingPlan_C-1
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 2

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

COPELAND CREEK - REACH 3 AND REACH 4 (2016) SEDIMENT BASIN CLEARING



VICINITY MAP
SCALE 1" = 1000'



INDEX TO DRAWINGS

SHEET No	DRAWING No	SHEET DESCRIPTION
1	G-1	INDEX TO DRAWINGS AND LOCATION AND VICINITY MAPS
2	C-1	COPELAND CREEK AT COUNTY CLUB SEDIMENT REMOVAL PLAN AND CROSS SECTIONS

PRELIMINARY
80% SUBMITTAL
FOR REVIEW PURPOSES ONLY
4/27/2016

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

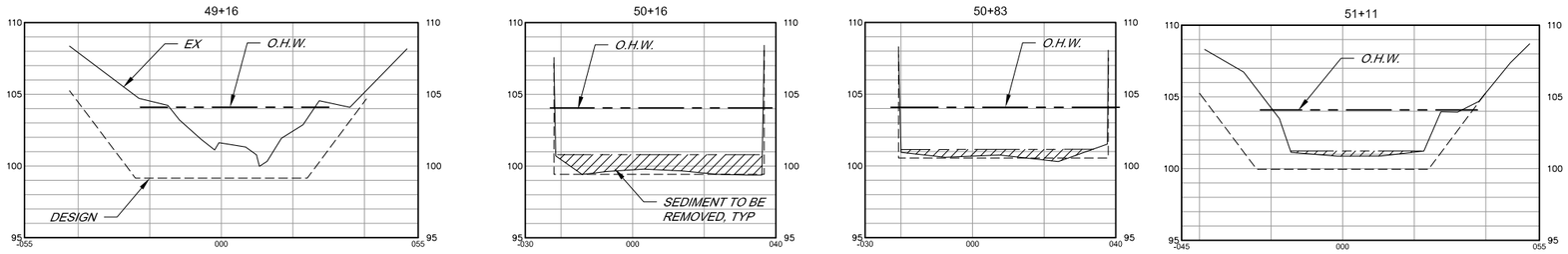
SCALE: AS SHOWN
DATE: 4/27/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

INDEX TO DRAWINGS AND LOCATION AND VICINITY MAPS

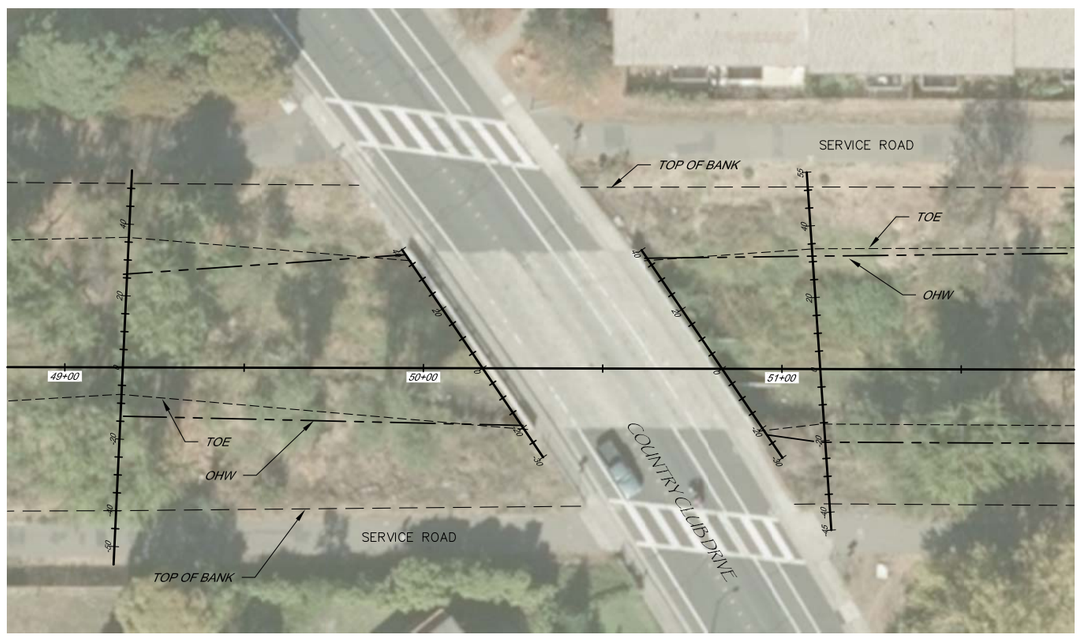
FILE NAME: 2016_Copeland_Reach3and4_SedBasin_G-1
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 2

T:\flood control\zone 1a\copeland\sediment_removal\2016-Copeland



SECTIONS

SCALE: HORIZ 1" = 20'
VERT 1"= 4'



PLAN

SCALE: 1"= 20'

COPELAND CREEK REACH 3 AND REACH 4						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED CHANNEL.	STA 49+60 TO STA 51+60	200	45	9000	1.2	400

90% SUBMITTAL
80% SUBMITTAL

4/28/2016

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\Flood control\zone 1a\copeland\sediment_removal\2016-Copeland\2016_Copeland_R3andR4_SedBasin_C-1

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/27/2016
DRAWN: SMP
REVIEWED:

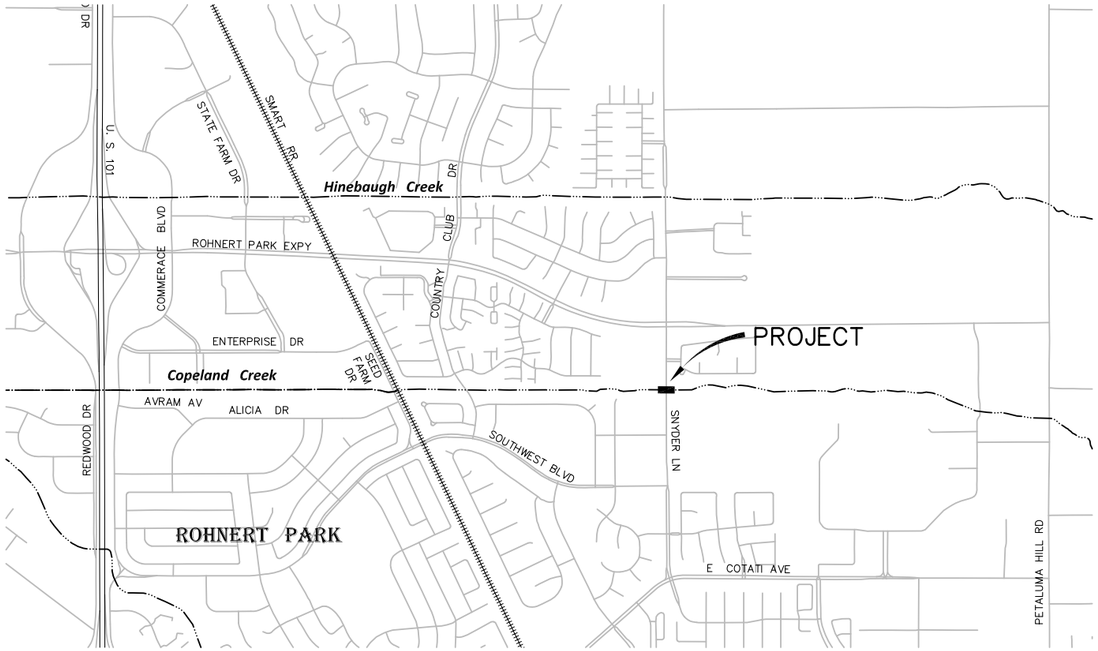
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

COPELAND CREEK AT COUNTY CLUB SEDIMENT REMOVAL
PLAN AND CROSS SECTIONS

FILE NAME: 2016_Copeland_R3andR4_SedBasin_C-1
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 2

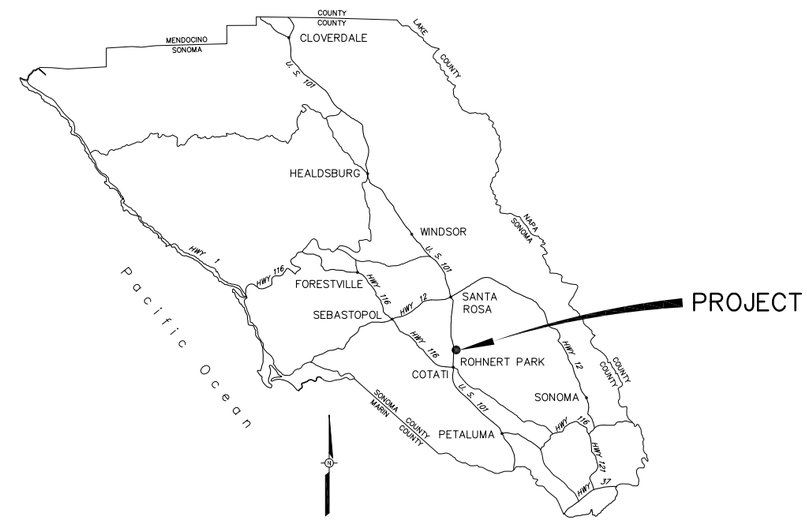
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

COPELAND CREEK - REACH 4 AND REACH 5 (2016) SEDIMENT BASIN CLEARING



VICINITY MAP

SCALE 1" = 1000'



INDEX TO DRAWINGS		
SHEET No	SHEET TITLE	SHEET DESCRIPTION
1	G-1	INDEX TO DRAWINGS AND VICINITY AND LOCATION MAPS
2	C-1	COPELAND CREEK AT SNYDER SEDIMENT REMOVAL PLAN AND CROSS SECTIONS

PRELIMINARY
80% SUBMITTAL
FOR REVIEW PURPOSES ONLY
4/27/2016

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\copeland\sed\main_removal\2016\C-Copeland

NO.	DATE	REVISION	BY

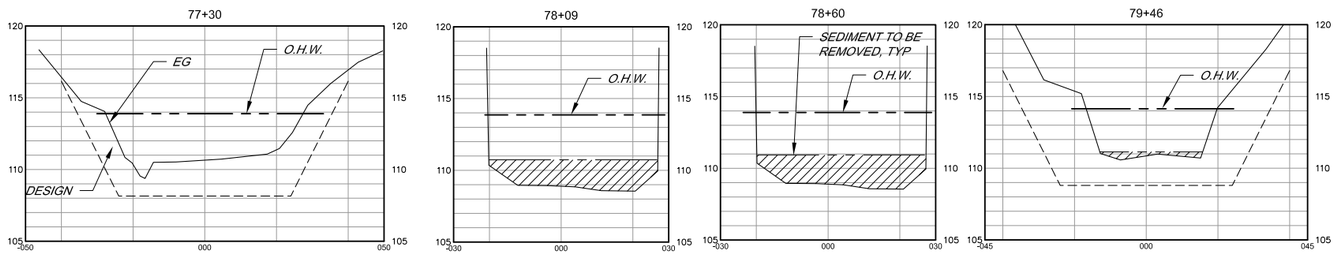
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/27/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

INDEX TO DRAWINGS AND VICINITY AND LOCATION MAPS

FILE NAME: 2016_Copeland_Reach4and5_SedBasin_G-1
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 2



SECTIONS

SCALE: HORIZ 1" = 20'
VERT 1" = 4'

PLAN

SCALE: 1" = 20'

COPELAND CREEK REACH 4 AND REACH 5						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED CHANNEL.	STA 77+50 TO STA 79+55	205	45	9,225	2.2	750

PRELIMINARY
90% SUBMITTAL
27 APRIL 2016

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\copeland\sediment_removal\2016-Copeland\2016_Copeland_R4andR5_SedBasin_C-1

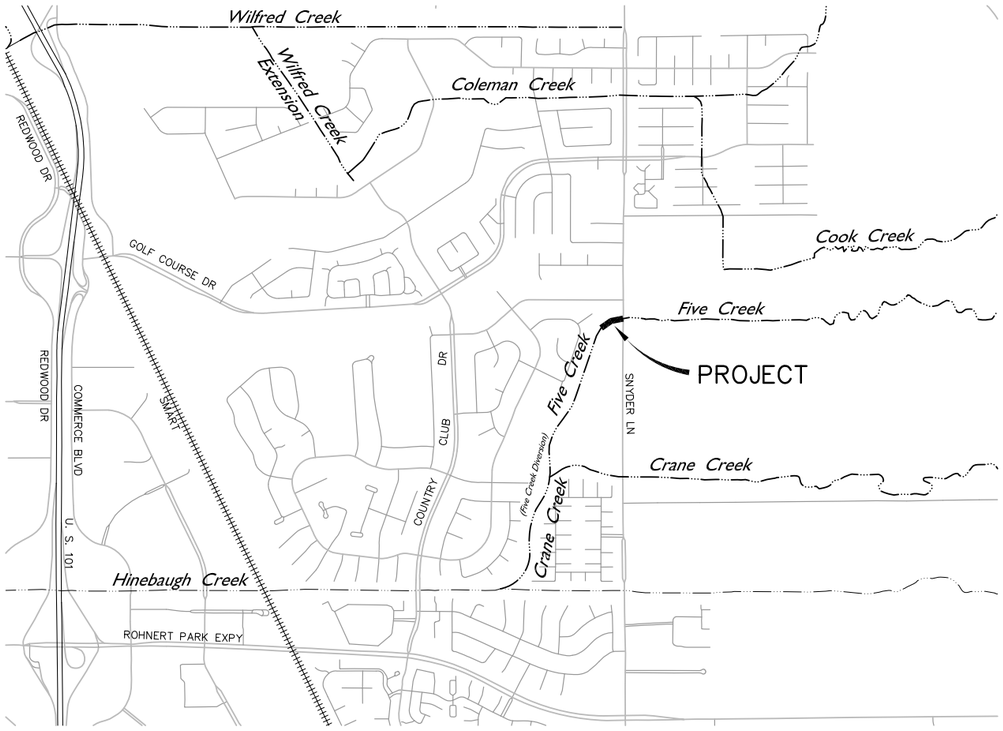
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/27/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
COPELAND CREEK AT SNYDER SEDIMENT REMOVAL PLAN AND CROSS SECTIONS

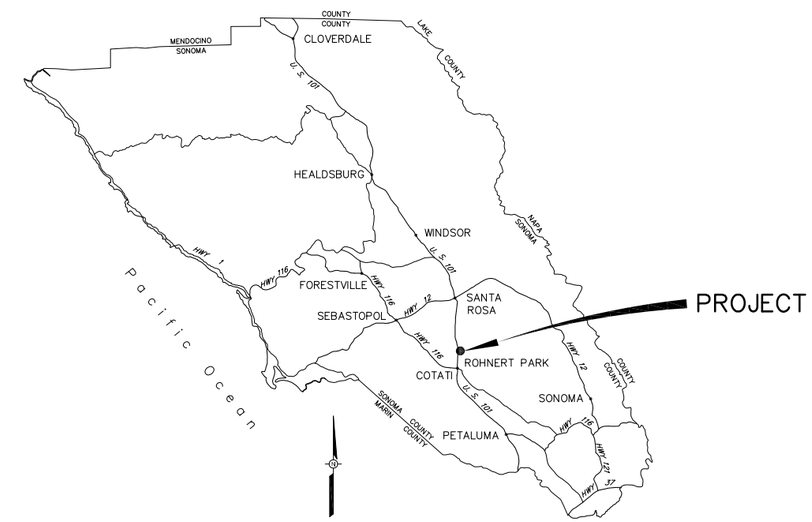
FILE NAME: 2016_Copeland_R4andR5_SedBasin_C-1
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 2



VICINITY MAP
SCALE 1" = 1000'

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

FIVE CREEK - REACH 1 (2016) SEDIMENT BASIN CLEARING



INDEX TO DRAWINGS

SHEET No	SHEET TITLE	DESCRIPTION
1	G-1	INDEX TO DRAWINGS AND VICINITY AND LOCATION MAPS
2	C-2	FIVE CREEK SEDIMENT REMOVAL PLAN, PROFILE, AND CROSS SECTIONS

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\FIVE_CRK-diversion\2015_Five Creek_R1

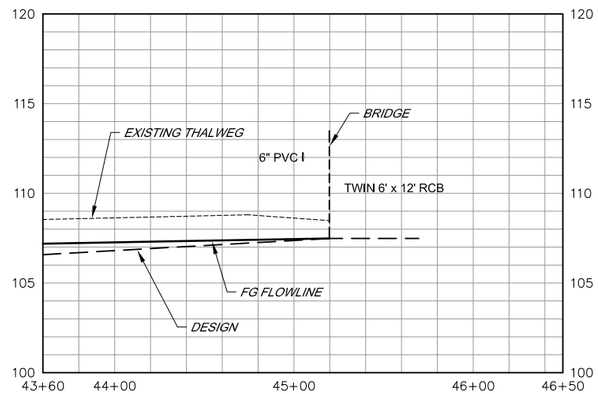
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/27/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
FIVE CREEK - REACH 1 (2016)
INDEX TO DRAWINGS AND VICINITY AND LOCATION MAPS

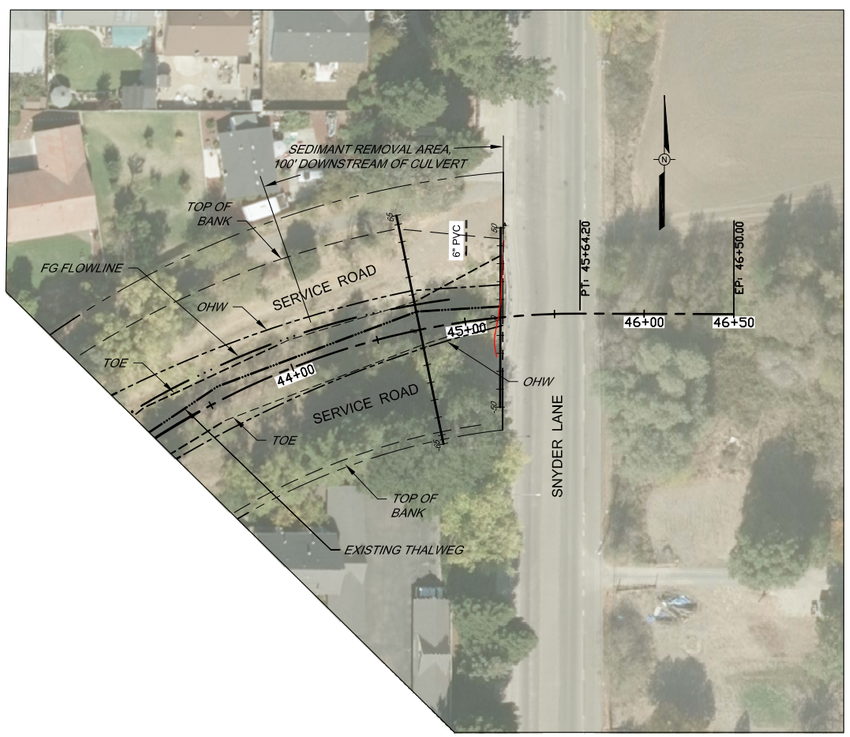
FILE NAME: 2016_FiveCreek_SedBasIn_G-1
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 2



PROFILE

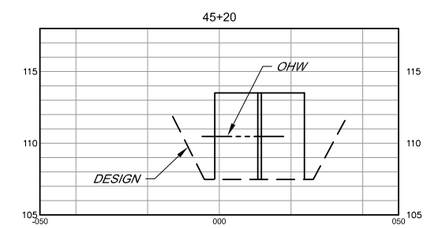
SCALE: HORIZ 1" = 40'
VERT 1"= 4'

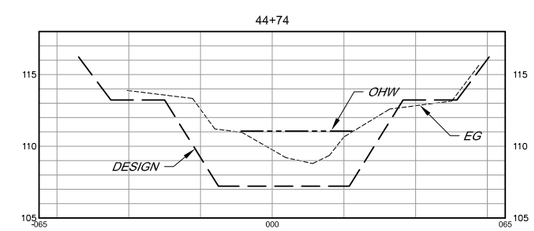
FIVE CREEK						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR FROM SERVICE ROAD AND DOZER IN CHANNEL	STA 44+00 TO STA 45+20	120	40	4,800	.6	100
	TOTAL = 120		TOTAL = 4,800		TOTAL = 100	



PLAN

SCALE: 1"= 40'





BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\Flood control\zone 1a\FIVE_CRK-deversion\2016_Five Creek_R1\2016_FiveCreek_SedBasin_C-1

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/27/2016
DRAWN: SMP
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

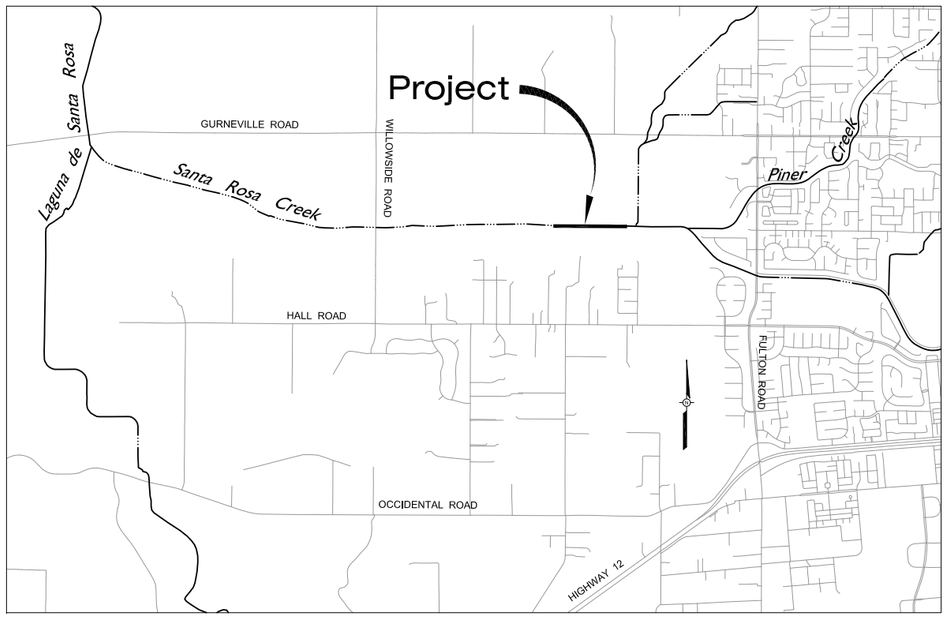
FIVE CREEK - REACH 1 (2016)

FIVE CREEK SEDIMENT REMOVAL PLAN, PROFILE, AND CROSS SECTIONS

FILE NAME: 2016_FIveCreek_SedBasin_C-1
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 2 OF 2

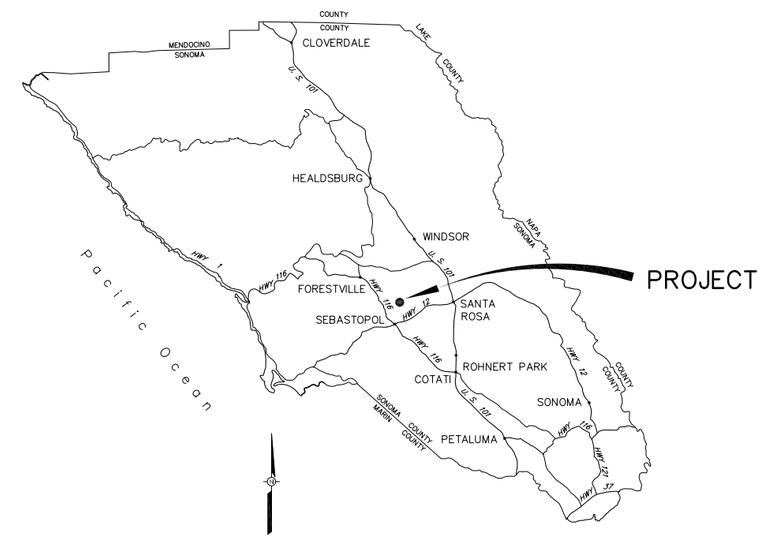
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

SANTA ROSA CREEK - REACH 2 (2016)
SEDIMENT BASIN CLEARING



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

SANTA ROSA CREEK SMP REACH 1						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR FROM SERVICE ROAR OR FRONT END LOADER OPERATING IN CHANNEL	STA 481+76 TO STA 493+46	1,170	60	70,200	2.5	6,500
	STA 494+62 TO STA 503+42	880	48	42,240	2.5	3,912
	TOTALS:	2,050	54.9	112,440	2.5	10,412

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	TITLE
1	G-1	INDEX TO DRAWINGS, TABLE, LOCATION AND VICINITY MAPS
2	C-1	PLAN AND PROFILE STA 480+00 TO STA 502+00
3	C-2	PLAN AND PROFILE STA 502+00 TO STA 510+00
4	C-3	TYPICAL DETAILS
5	C-4	SECTIONS

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH, ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\SantaRosa\2016_S-R_creek-smp2

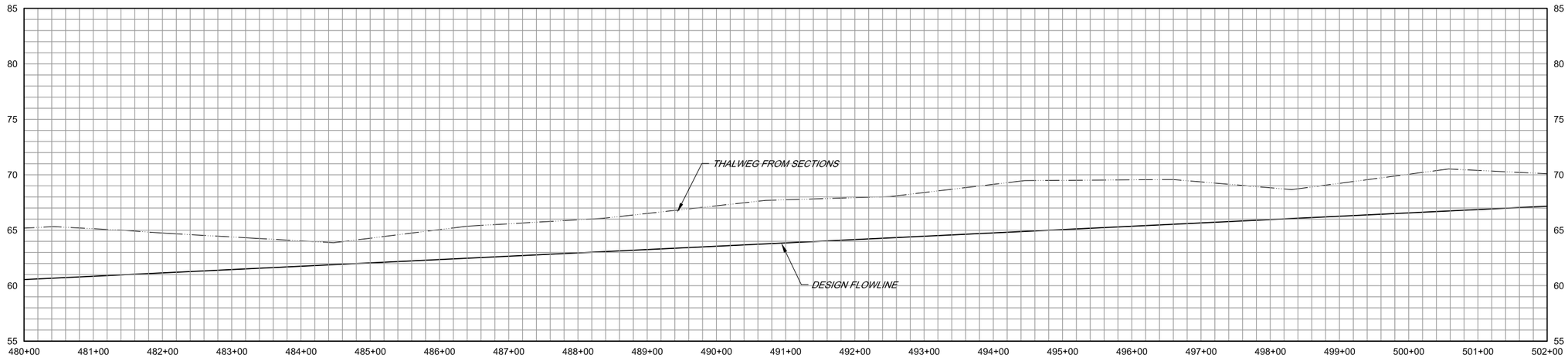
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN | DATE: 4/20/16
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
SANTA ROSA CREEK - REACH 2 (2016)
INDEX TO DRAWINGS, TABLE, LOCATION AND VICINITY MAPS

FILE NAME: 2016_S_R_Crk-smp2_G
CONTRACT NUMBER: ####
DRAWING NUMBER: G-1
SHEET 1 OF 5



PROFILE

SCALE HORIZ 1" = 80'
VERT 1" = 5'

PLAN

SCALE 1" = 80'

NOTES:
SEDIMENT REMOVAL WILL BE BELOW O.H.W. AND OUTSIDE OF EXISTING SUMMER STREAM FLOW. SEE DRAWING NO. C-4 FOR DETAILS.

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

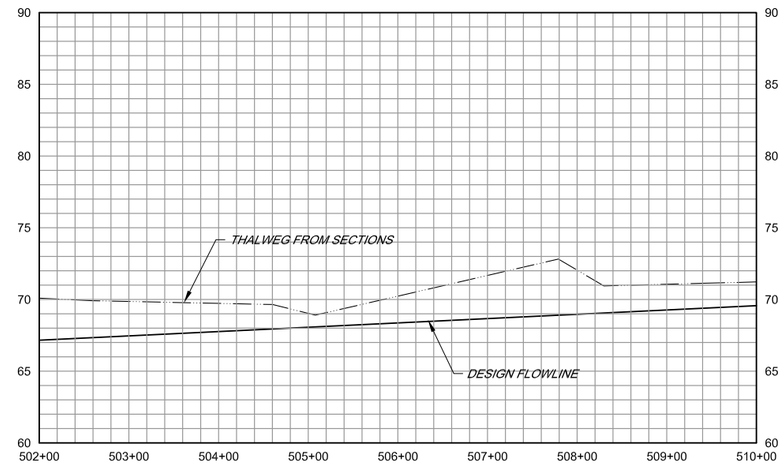
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/20/16
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
SANTA ROSA CREEK - REACH 2 (2016)
PLAN AND PROFILE STA 480+00 TO STA 502+00

FILE NAME: 2016_S_R_Crk-smp2_C
CONTRACT NUMBER: ####
DRAWING NUMBER: C-1
SHEET 2 OF 5

Tz:flood control\zone 1a\SantaRosa\2016_S-R_creek-smp2



PROFILE

SCALE HORIZ 1" = 80'
VERT 1" = 5'

PLAN

SCALE 1" = 80'

NOTES:
SEDIMENT REMOVAL WILL BE BELOW O.H.W. AND OUTSIDE OF EXISTING SUMMER STREAM FLOW. SEE DRAWING NO. C-3 FOR DETAILS.

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\SantaRosa\2016_S_R_creek-smp2

NO.	DATE	REVISION	BY

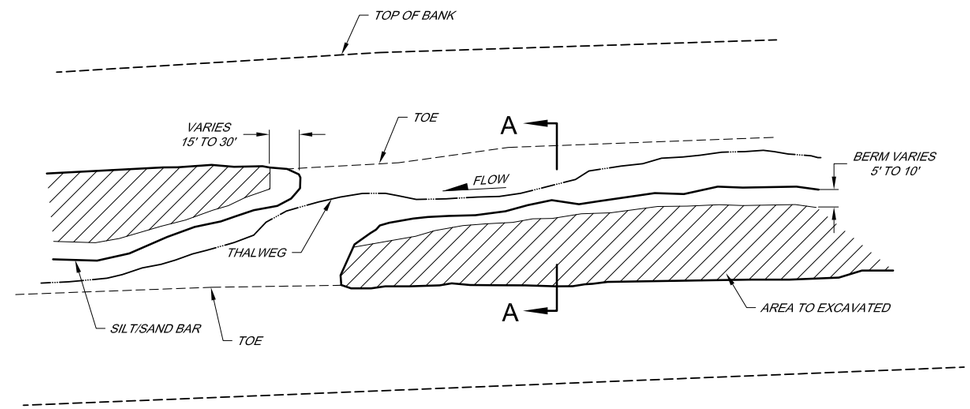
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/20/16
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

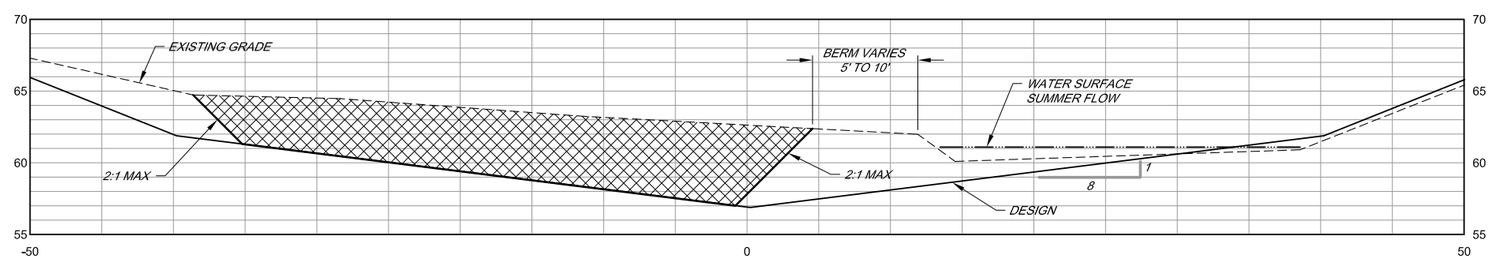
SANTA ROSA CREEK - REACH 2 (2016)
PLAN AND PROFILE STA 502+00 TO STA 510+00

FILE NAME: 2016_S_R_Crk-smp2_C
CONTRACT NUMBER: ####
DRAWING NUMBER: C-2
SHEET 3 OF 5



TYPICAL PLAN

NOT TO SCALE



TYPICAL SECTION A-A

NOT TO SCALE

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN | DATE: 4/20/16

DRAWN: ADF

REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

SANTA ROSA CREEK - REACH 2 (2016)

TYPICAL DETAILS

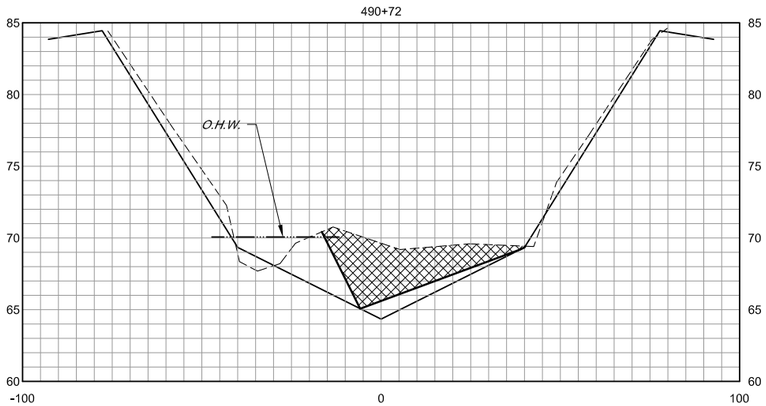
FILE NAME: 2016_S_R_Crk-smp2_C

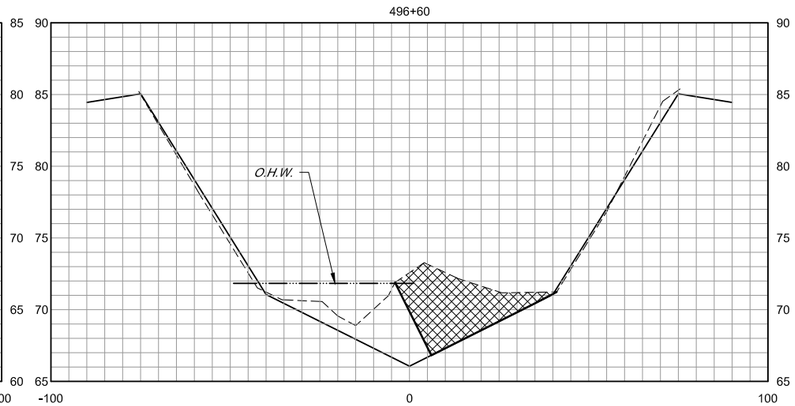
CONTRACT NUMBER: ####

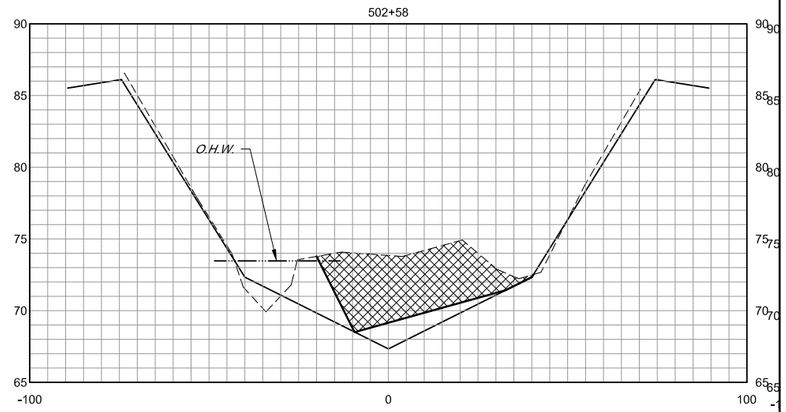
DRAWING NUMBER: C-3

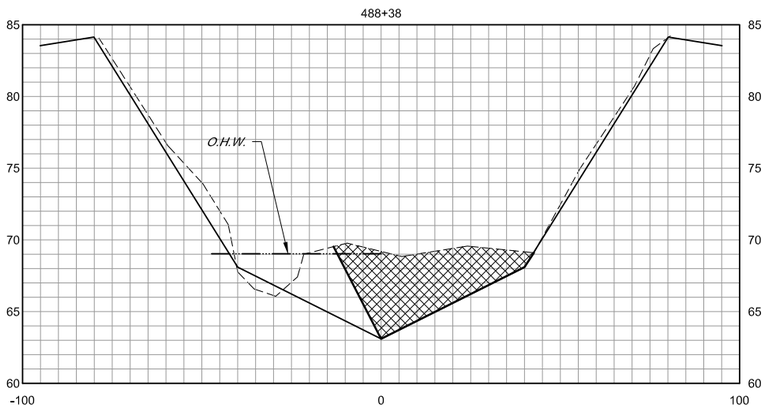
SHEET 4 OF 5

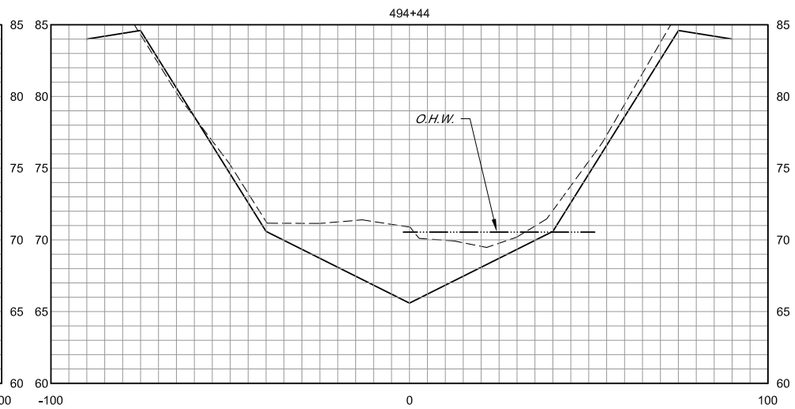
T:\flood control\zone 1\s\SantaRosa\2016_S-R_creek-smp2

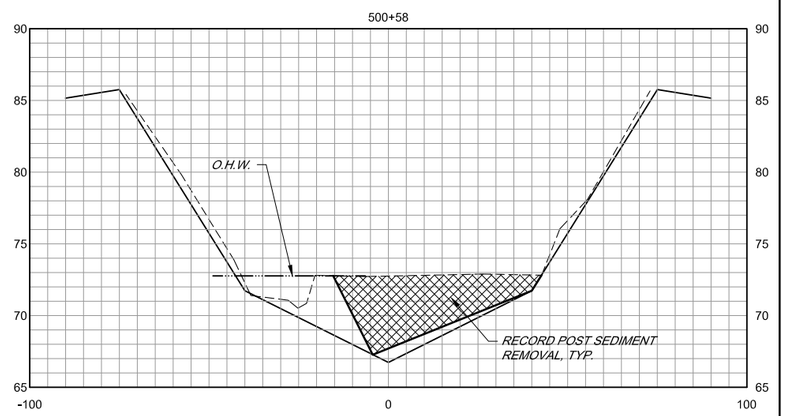


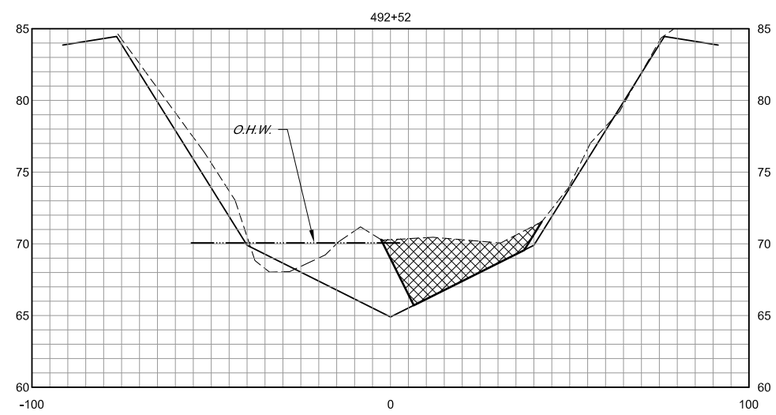


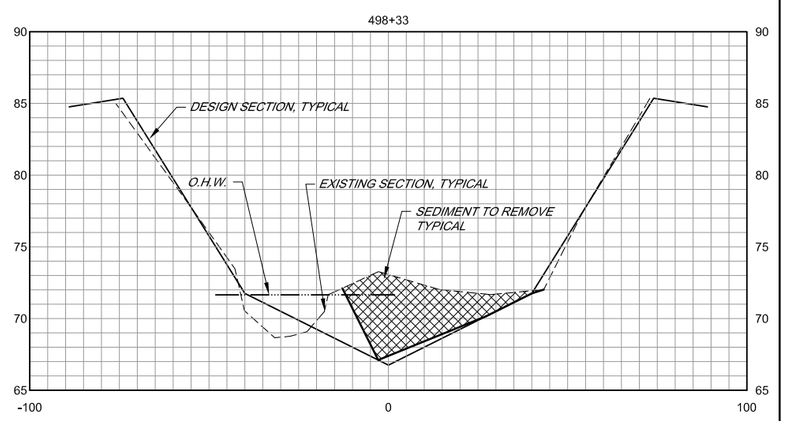












SECTIONS .

SCALE HORIZ 1" = 20'
VERT 1" = 5'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/20/16
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

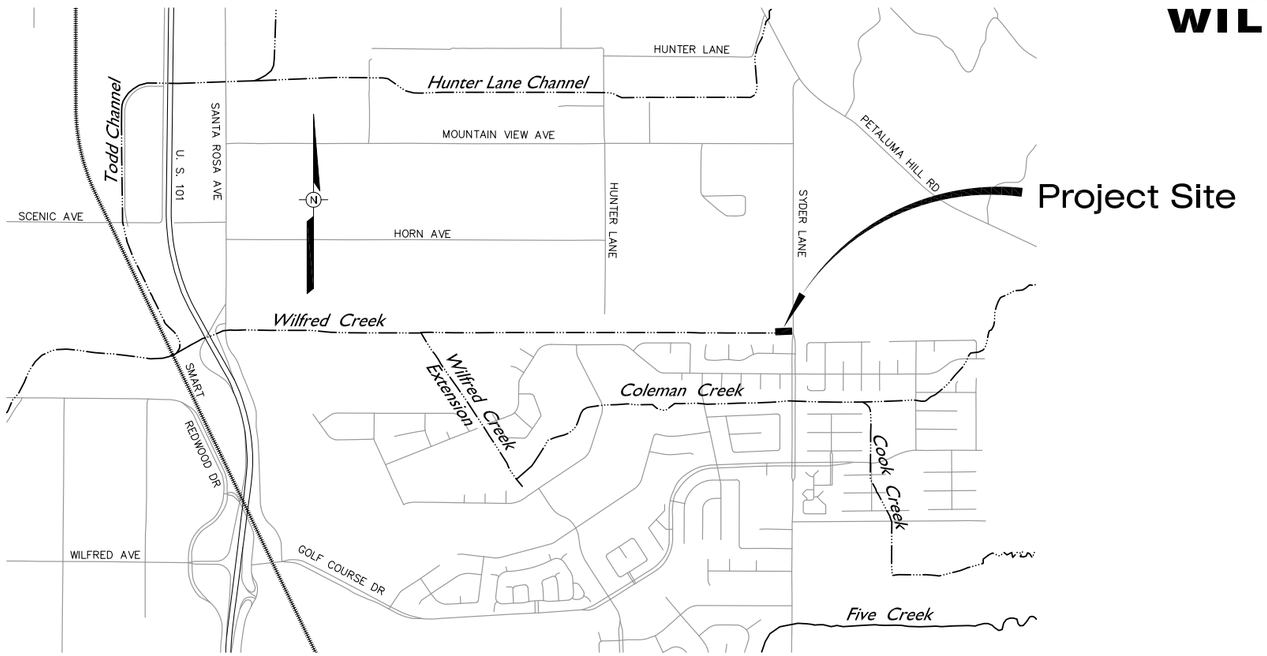
SANTA ROSA CREEK - REACH 2 (2016)
SECTIONS

FILE NAME: 2016_S_R_Crk-smp2_C
CONTRACT NUMBER: ####
DRAWING NUMBER: C-4
SHEET 5 OF 5

T:\flood control\zone 1\a\SantaRosa\2016_S-R_creek-smp2

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A

WILFRED CHANNEL - REACH 1C (2016) SEDIMENT BASIN CLEARING



VICINITY MAP

NOT TO SCALE

LOCATION MAP

NOT TO SCALE

WILFRED CREEK						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OPERATING FROM SERVICE ROAD	STA 76+14± TO STA 78+14	200	10	2000	1.35	100

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	DRAWING DESCRIPTION
1	G-1	INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS
2	C-1	PLAN, PROFILE AND SECTIONS

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\WILFRED\2016-SED_BASIN\WILFRED

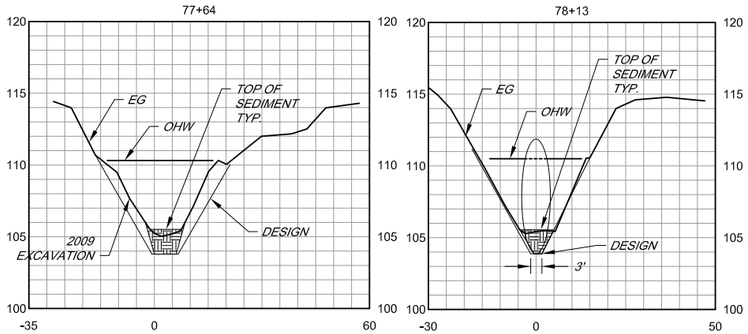
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN | DATE: 4/20/2016
DRAWN: ADF
REVIEWED:

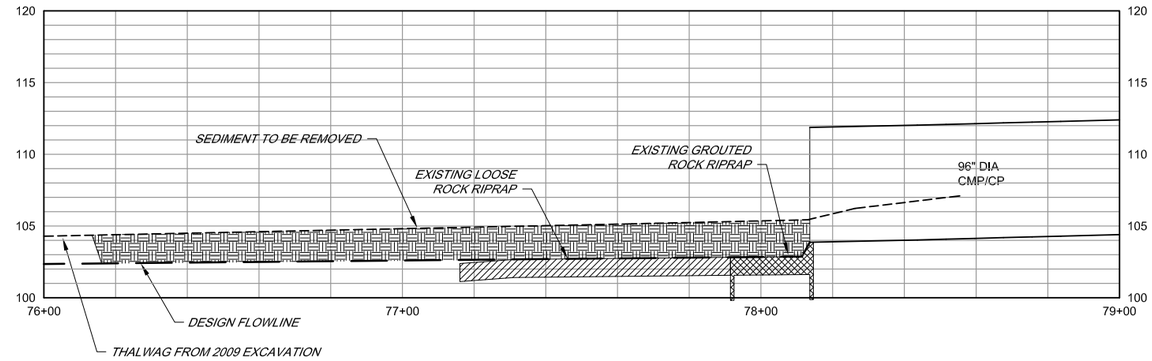
SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
WILFRED CHANNEL REACH 1C (2016) SEDIMENT BASIN
INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS

FILE NAME: 2016-WILFRED_SED_BASIN-G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 2



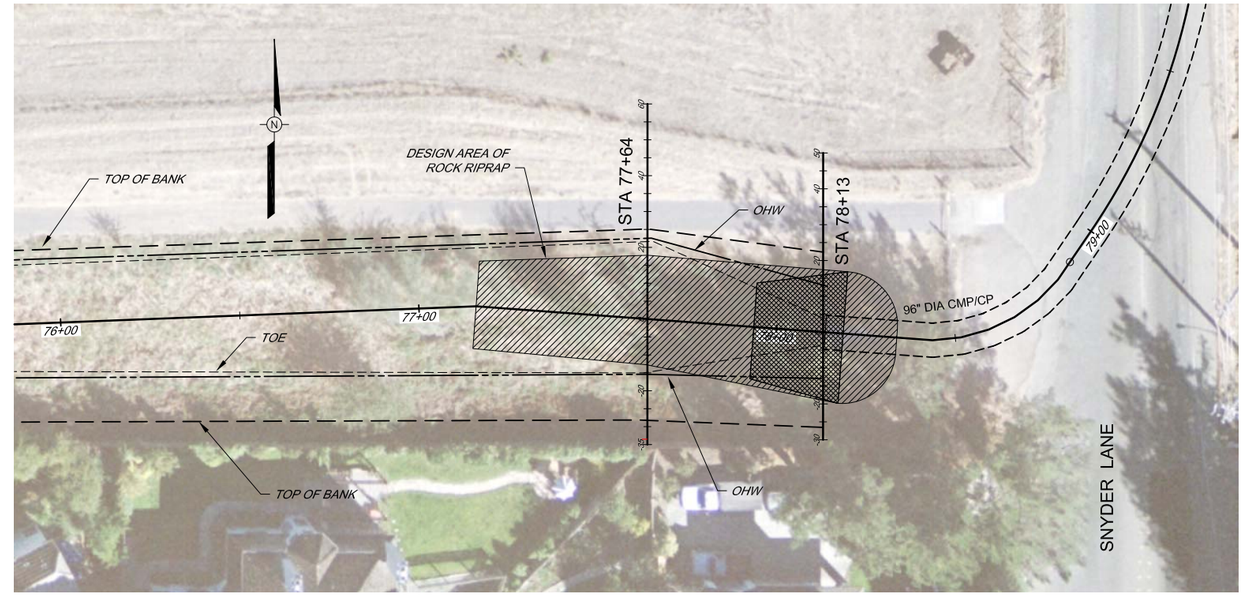
SECTIONS

SCALE: HORIZ 1" = 20'
VERT 1"= 5'



PROFILE

SCALE: HORIZ 1" = 20'
VERT 1"= 5'



PLAN

SCALE: 1"= 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\WILFRED\2016-SED_BASIN-WILFRED\2016-WILFRED_SED_BASIN-C

NO.	DATE	REVISION	BY

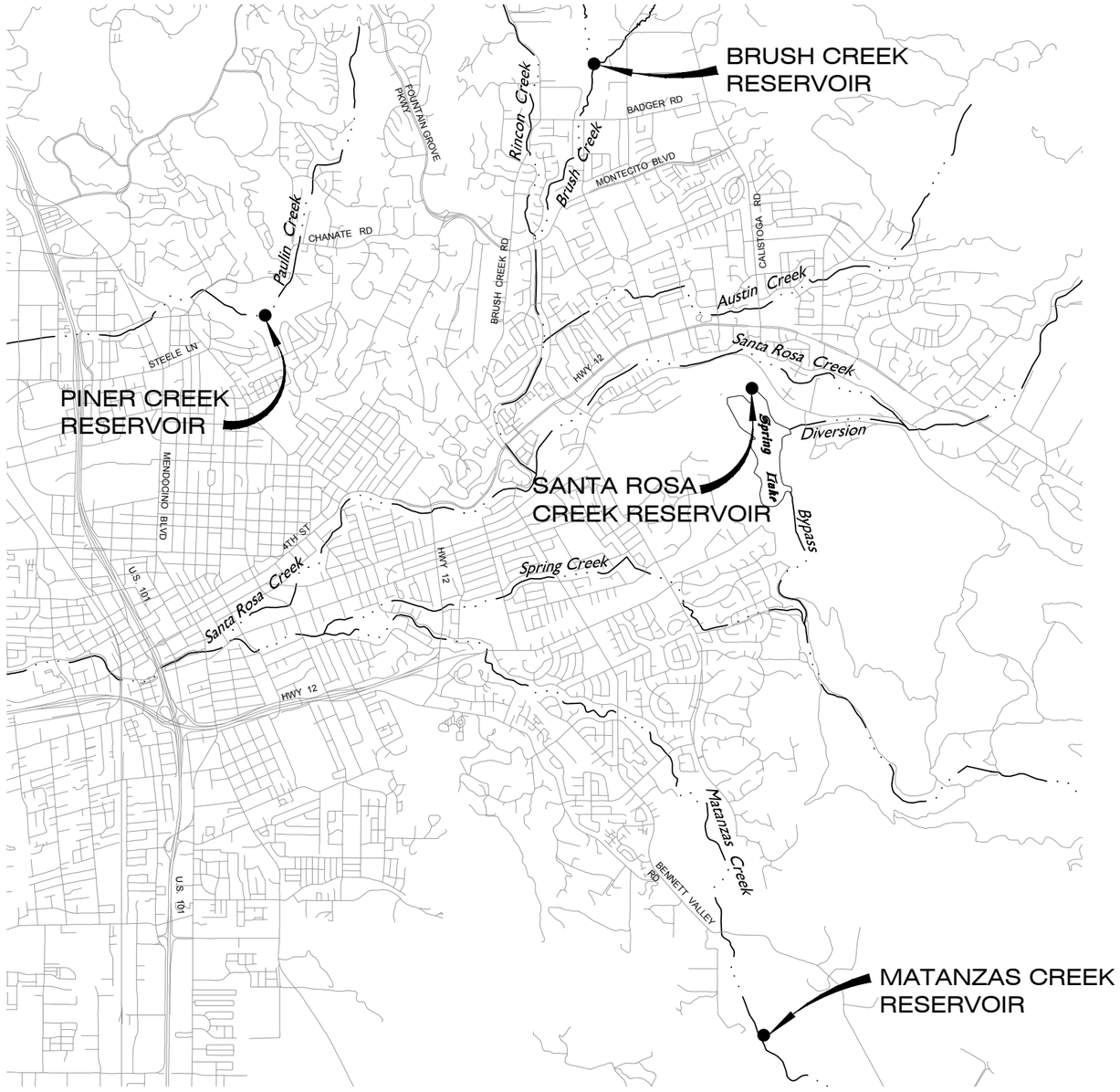
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/20/2016
DRAWN: ADF
REVIEWED:

SMP - LAGUNA DE SANTA ROSA WATERSHED - ZONE 1A
WILFRED CHANNEL - REACH 1C (2016)
PLAN, PROFILE AND SECTIONS

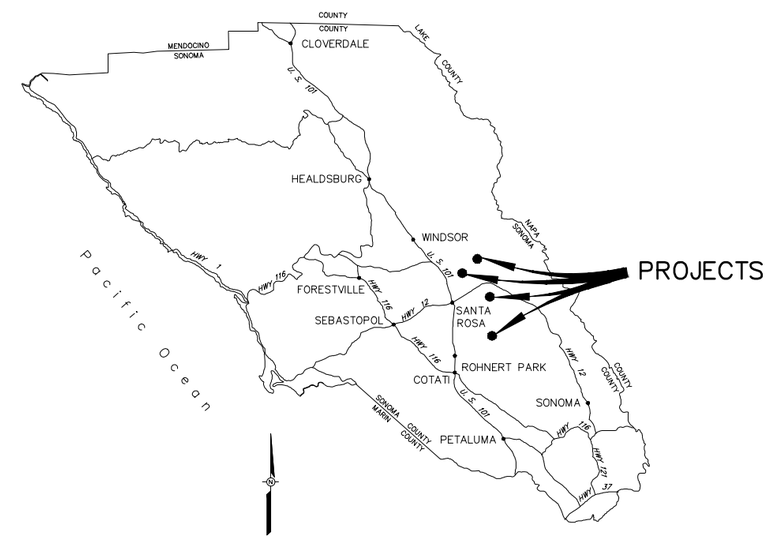
FILE NAME: 2016-WILFRED_SED_BASIN-C
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 2

LAGUNA DE SANTA ROSA WATERSHED ZONE 1A
RESERVOIR OUTLET SEDIMENT REMOVAL (2016)
BRUSH CREEK RESERVOIR
PINER CREEK RESERVOIR (Paulin Creek)
MATANZAS CREEK RESERVOIR
SANTA ROSA CREEK RESERVOIR (Spring Lake)



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	TITLE
1	G-1	INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS
BRUSH CREEK RESERVOIR		
2	C-1	BRUSH CREEK RESERVOIR OUTLET SITE PLAN
3	D56-7	AS-BUILT BRUSH CREEK MIDDLE FORK OUTLET DETAILS
PINER CREEK RESERVOIR		
4	C-2	PINER RESERVOIR OUTLET SITE PLAN
5	1-0545-102.17	AS-BUILT SEWER ENCASMENT & PRINCIPAL SPILLWAY PROFILE
		MATANZAS CREEK RESERVOIR
6	C-3	MATANZAS CREEK RESERVIOR OUTLET SITE PLAN
7	D57-4	AS-BUILT MAYANZAS CREEK PRINCIPAL SPILLWAY GENERAL PLAN
SANTA ROSA CREEK RESERVOIR (SPRING LAKE)		
8	C-4	SATA ROSA RESERVOIR OUTLET SITE PLAN
9	1-9130-102.13	AS-BUILT - PRINCIPAL SPILLWAY DETAILS

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\Brush_Crk-reservoir\2016_BRUSH-CRK-RESERVOIR

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE : AS SHOWN
DATE : 20 April 2016
DRAWN : SMP
REVIEWED :

LAGUNA DE SANTA ROSA WATERSHED ZONE 1A
RESERVOIR OUTLET SEDIMENT REMOVAL (2016)
INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS

FILE NAME: 2016_G_RESERVOIRS.dwg
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 9

PLAN

1"=40'

EXCAVATION				
PROJECT ACTIVITY DESCRIPTION	LOCATION	AREA (SQUARE FT.)	AVERAGE DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED AREA IN RESERVOIR	AROUND OUTLET STRUCTURE	2,250	3	250

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\Brush_Crk-reservoir\2016_BRUSH-CRK-RESERVOIR

NO.	DATE	REVISION	BY

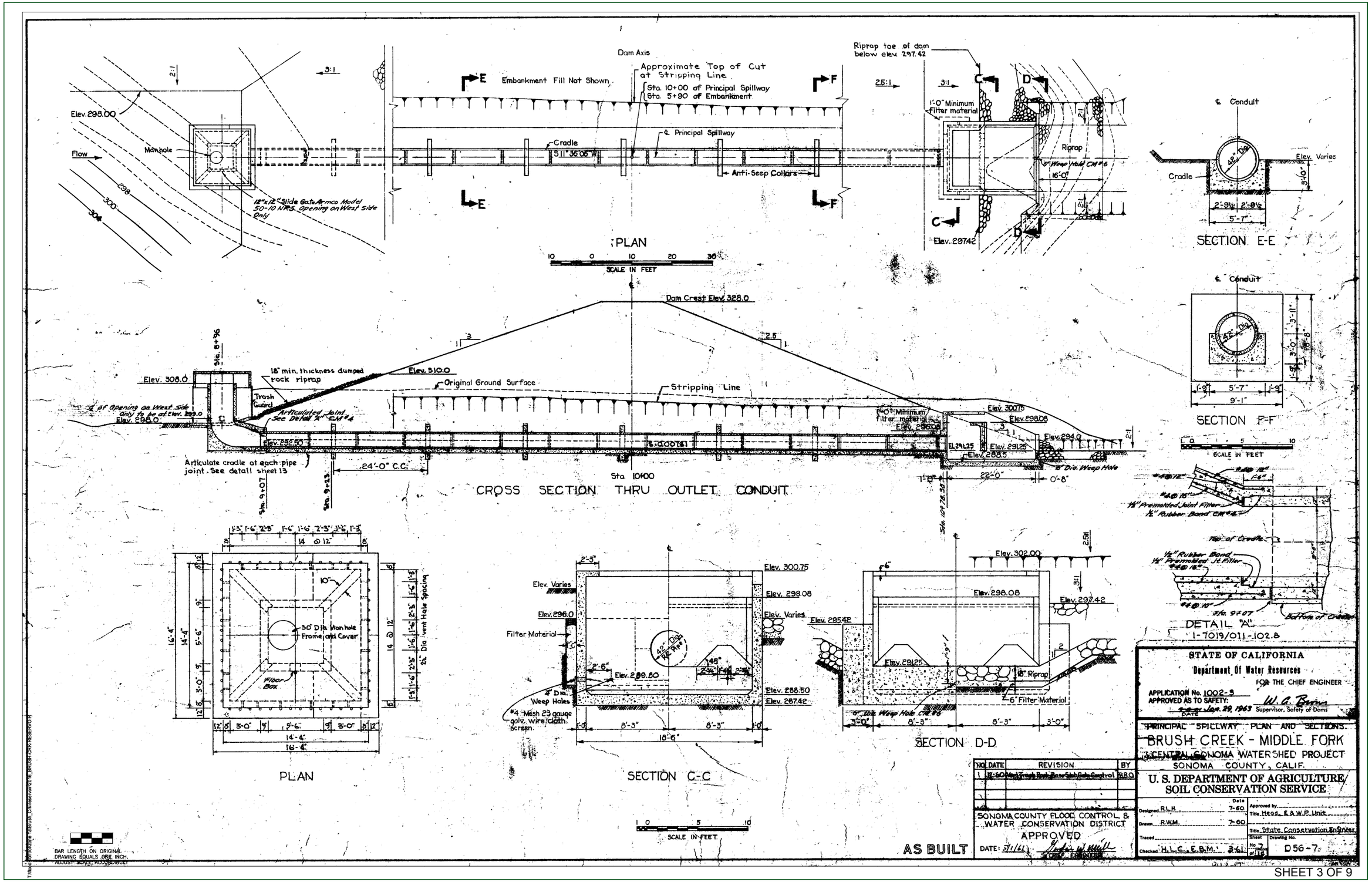
SONOMA COUNTY WATER AGENCY

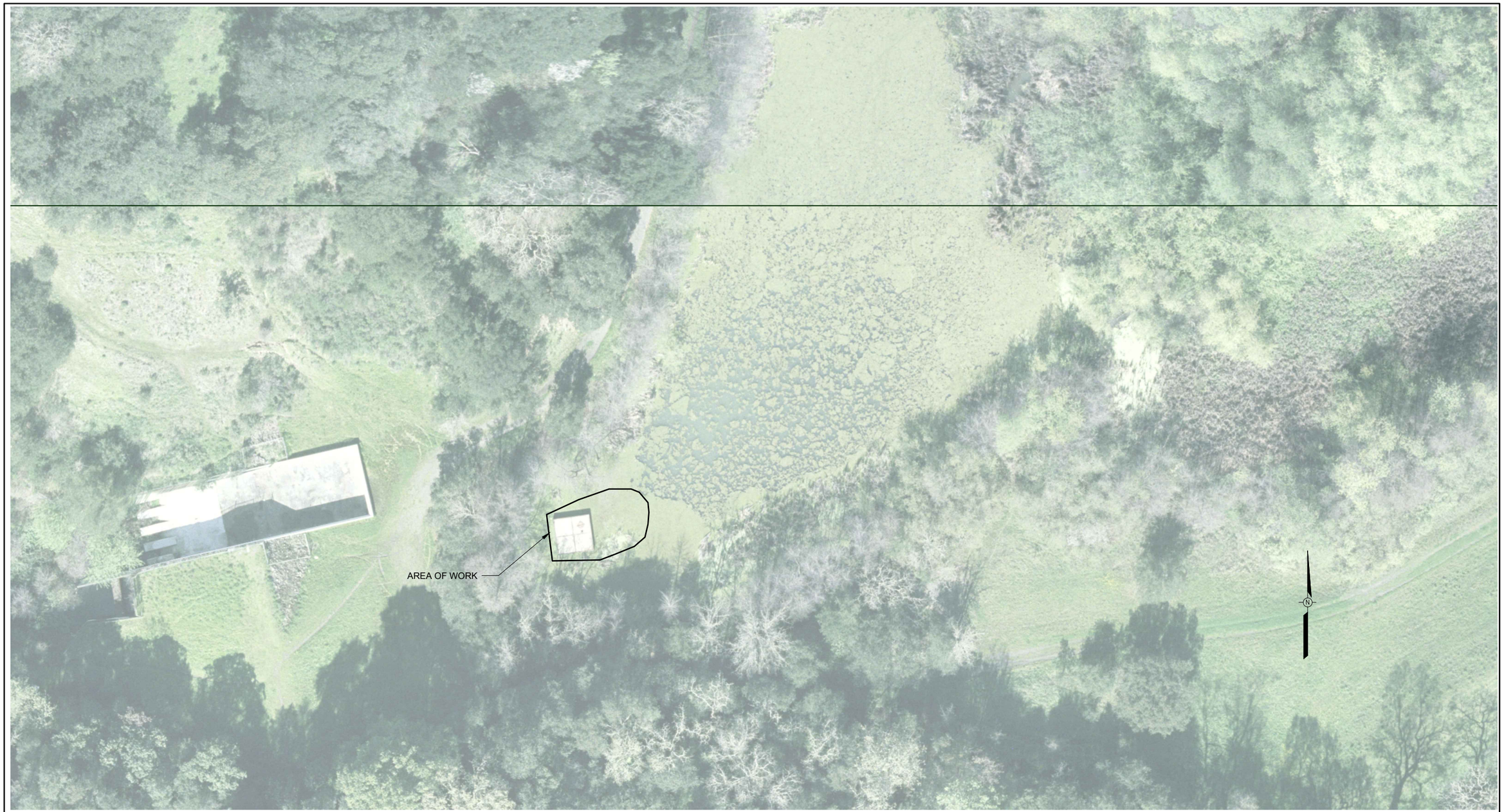
SCALE: AS SHOWN
DATE: 20 April 2016
DRAWN: SMP
REVIEWED:

LAGUNA DE SANTA ROSA WATERSHED ZONE 1A

RESERVOIR OULET SEDIMENT REMOVAL (2016)BRUSH CREEK RESERVOIR OUTLET SITE PLAN

FILE NAME: 2016-BRUSH-CRK_RES_C.dwg
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 9


PLAN
Dam Axis
Approximate Top of Cut at Stripping Line
Sta. 10+00 of Principal Spillway
Sta. 5+90 of Embankment
Embankment Fill Not Shown
Riprap toe of dam below elev. 297.42
Elev. 298.00
Manhole
Flow
Cradle
℄ Principal Spillway
Anti-Seep Collars
1'-0" Minimum filter material
Riprap
5" Weep Hole CM #6
16'-0"
Elev. 297.42
12"x12" Slide Gate Armco Model 50-10 NRS. Opening on West side Only
SCALE IN FEET
℄ Conduit
Elev. Varies
Cradle
SECTION E-E
SECTION F-F
Dam Crest Elev. 328.0
Elev. 310.0
Original Ground Surface
Stripping Line
Elev. 308.0
18" min. thickness dumped rock riprap
Trash Guard
Articulated Joint See Detail "A" CM #4
Articulate cradle at each pipe joint. See detail sheet 13
24'-0" C.C.
Sta. 10+00
CROSS SECTION THRU OUTLET CONDUIT
Elev. 300.76
Elev. 298.08
Elev. 294.0
Elev. 291.25
Elev. 288.5
22'-0"
0'-8"
8" Dia. Weep Hole
DETAIL "A"
1-7019/011-102.8
PLAN
30" Dia Manhole Frame and Cover
Floor Box
Elev. 300.75
Elev. 298.08
Elev. 296.0
Filter Material
Elev. 289.50
Elev. 288.50
Elev. 287.42
4" Dia. Weep Holes
#4 Mesh 23 gauge galv. wire cloth screen.
8'-3"
6'-3"
18'-6"
SECTION C-C
Elev. 302.00
Elev. 298.08
Elev. 297.42
Elev. 295.42
Elev. 291.25
18" Riprap
6" Filter Material
5" Dia. Weep Hole CM #6
SECTION D-D
STATE OF CALIFORNIA
Department Of Water Resources
FOR THE CHIEF ENGINEER
APPLICATION No. 1002-3
APPROVED AS TO SAFETY:
W. G. Bevin
Supervisor, Safety of Dams
PRINCIPAL SPILLWAY PLAN AND SECTIONS
BRUSH CREEK - MIDDLE FORK
CENTRAL SONOMA WATERSHED PROJECT
SONOMA COUNTY, CALIF.
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
REVISION
SONOMA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
APPROVED
AS BUILT
BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY
SHEET 3 OF 9



PLAN

SCALE: 1" = 20'

EXCAVATION				
PROJECT ACTIVITY DESCRIPTION	LOCATION	AREA (SQUARE FT.)	AVERAGE DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED AREA IN RESERVOIR	AROUND OUTLET STRUCTURE	2,250	3	250

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 20 April 2016
DRAWN: SMP
REVIEWED:

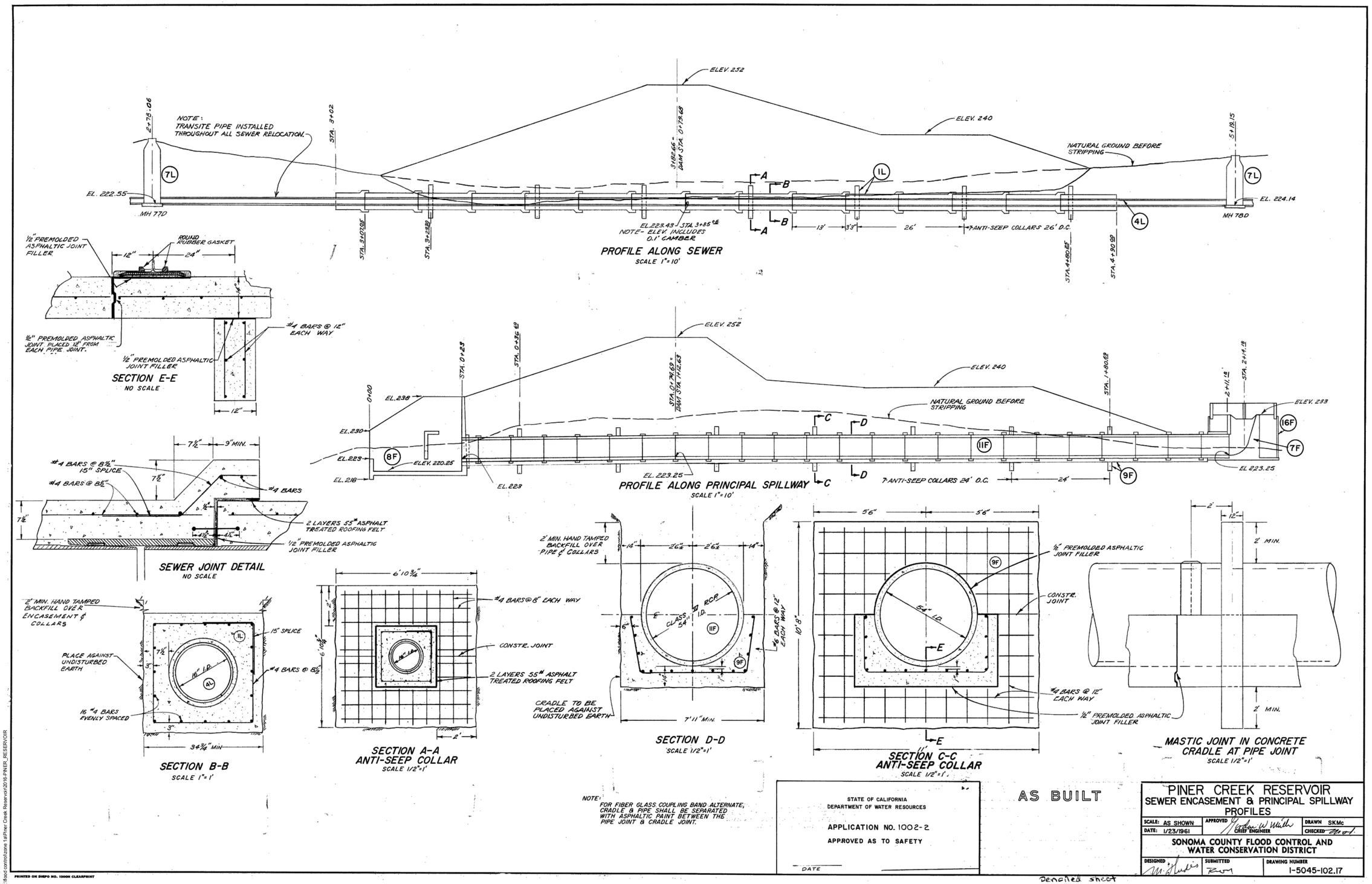
LAGUNA DE SANTA ROSA WATERSHED ZONE 1A

RESERVOIR OULET SEDIMENT REMOVAL (2016)

PINER RESERVOIR OUTLET SITE PLAN

FILE NAME: 2016_PINER_RES-C.dwg
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 4 OF 9

T:\flood control\zone 1a\Piner Creek Reservoir\2016-PINER_RESERVOIR


PROFILE ALONG SEWER
SCALE 1"=10'
NOTE: TRANSITE PIPE INSTALLED THROUGHOUT ALL SEWER RELOCATION.
ELEV. 252
ELEV. 240
NATURAL GROUND BEFORE STRIPPING
EL. 222.55
MH 77D
EL. 224.14
MH 78D
EL. 223.43 STA. 3+85.56
NOTE- ELEV. INCLUDES 0.1' CAMBER
7 ANTI-SEEP COLLARS 26' D.C.
SECTION E-E
NO SCALE
½" PREMOLDED ASPHALTIC JOINT FILLER
ROUND RUBBER GASKET
#4 BARS @ 12" EACH WAY
½" PREMOLDED ASPHALTIC JOINT PLACED 12" FROM EACH PIPE JOINT.
PROFILE ALONG PRINCIPAL SPILLWAY
SCALE 1"=10'
EL. 238
EL. 230
EL. 228
EL. 218
EL. 223
EL. 223.25
ELEV. 220.25
ELEV. 233
7 ANTI-SEEP COLLARS 24' D.C.
SEWER JOINT DETAIL
NO SCALE
#4 BARS @ 8½" 15" SPLICE
#4 BARS
2 LAYERS 55# ASPHALT TREATED ROOFING FELT
½" PREMOLDED ASPHALTIC JOINT FILLER
2' MIN. HAND TAMPED BACKFILL OVER ENCASEMENT & COLLARS
15" SPLICE
PLACE AGAINST UNDISTURBED EARTH
16 #4 BARS EVENLY SPACED
SECTION B-B
SCALE 1"=1'
#4 BARS @ 8" EACH WAY
CONSTR. JOINT
2 LAYERS 55# ASPHALT TREATED ROOFING FELT
SECTION A-A
ANTI-SEEP COLLAR
SCALE 1/2"=1'
2' MIN. HAND TAMPED BACKFILL OVER PIPE & COLLARS
CLASS V RCP 54" I.D.
#6 BARS @ 12" EACH WAY
CRADLE TO BE PLACED AGAINST UNDISTURBED EARTH
SECTION D-D
SCALE 1/2"=1'
½" PREMOLDED ASPHALTIC JOINT FILLER
CONSTR. JOINT
#4 BARS @ 12" EACH WAY
SECTION C-C
ANTI-SEEP COLLAR
SCALE 1/2"=1'
2' MIN.
MASTIC JOINT IN CONCRETE CRADLE AT PIPE JOINT
SCALE 1/2"=1'
NOTE: FOR FIBER GLASS COUPLING BAND ALTERNATE, CRADLE & PIPE SHALL BE SEPARATED WITH ASPHALTIC PAINT BETWEEN THE PIPE JOINT & CRADLE JOINT.
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
APPLICATION NO. 1002-2
APPROVED AS TO SAFETY
DATE
AS BUILT
PINER CREEK RESERVOIR
SEWER ENCASEMENT & PRINCIPAL SPILLWAY PROFILES
SCALE: AS SHOWN
DATE: 1/23/1961
APPROVED
CHIEF ENGINEER
DRAWN SKMc
CHECKED
SONOMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
DESIGNED
SUBMITTED
DRAWING NUMBER
1-5045-102.17
Detailed sheet

SHEET 5 OF 9

PLAN

SCALE: 1" = 20'

EXCAVATION

PROJECT ACTIVITY DESCRIPTION	LOCATION	AREA (SQUARE FT.)	AVERAGE DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED AREA IN RESERVOIR	AROUND OUTLET STRUCTURE	2,250	3	250

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

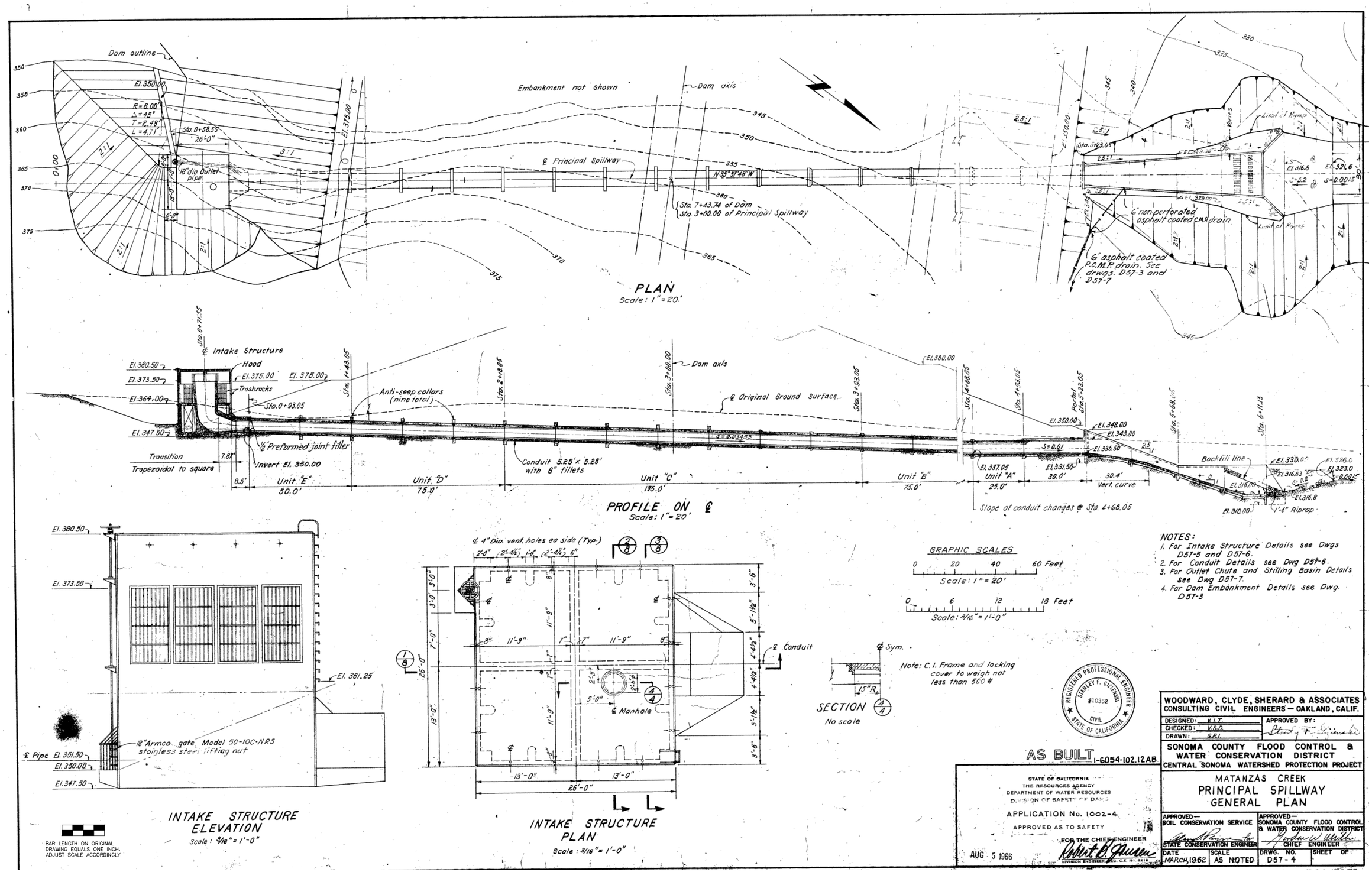
SCALE: AS SHOWN
DATE: 4/20/2016
DRAWN: ----
REVIEWED:

LAGUNA DE SANTA ROSA WATERSHED ZONE 1A

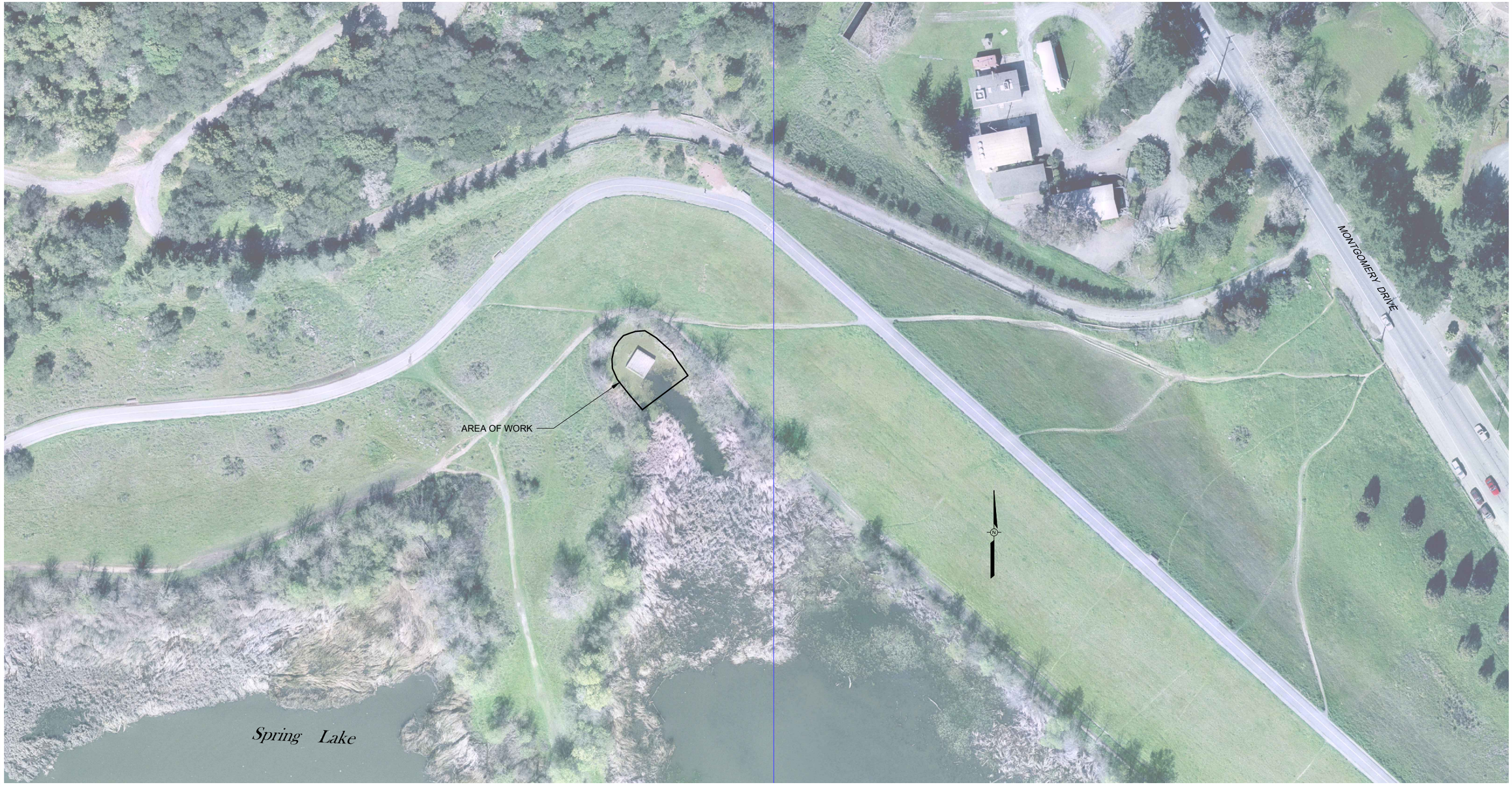
RESERVOIR OULET SEDIMENT REMOVAL (2016)
MATANZAS CREEK RESERVIOR OUTLET SITE PLAN

FILE NAME: 2016_MATANZAS_RES-C
CONTRACT NUMBER:
DRAWING NUMBER: C-3
SHEET 6 OF 9

T:\flood control\zone 1a\matanzas_crk_reservoir\outlet\2016_MATANZAS_CRK-RES


PLAN
Scale: 1" = 20'
Dam outline
Embankment not shown
Dam axis
℄ Principal Spillway
N 35° 51' 48" W
Sta. 7+43.74 of Dam
Sta. 3+00.00 of Principal Spillway
18" dia Outlet pipe
6" non perforated asphalt coated CMP drain
6" asphalt coated P.C.M.P. drain. See drwgs. D57-3 and D57-7
PROFILE ON ℄
Scale: 1" = 20'
℄ Intake Structure
Hood
Trashracks
Anti-seep collars (nine total)
℄ Original Ground Surface
½" Preformed joint filler
Invert El. 350.00
Conduit 5.25' x 5.25' with 6" fillets
Transition
Trapezoidal to square
Unit "E" 50.0'
Unit "D" 75.0'
Unit "C" 175.0'
Unit "B" 75.0'
Unit "A" 25.0'
30.4' vert. curve
Backfill line
1'-6" Riprap
Slope of conduit changes @ Sta. 4+68.05
INTAKE STRUCTURE ELEVATION
Scale: 3/16" = 1'-0"
18" Armco gate Model 50-100-NRS stainless steel lifting nut
℄ Pipe El. 351.50
INTAKE STRUCTURE PLAN
Scale: 3/16" = 1'-0"
℄ 4" Dia. vent. holes ea side (Typ.)
℄ Conduit
℄ Manhole
SECTION
No scale
Note: C.I. Frame and locking cover to weigh not less than 500 #
GRAPHIC SCALES
Scale: 1" = 20'
Scale: 3/16" = 1'-0"
BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY
NOTES:
1. For Intake Structure Details see Dwgs D57-5 and D57-6.
2. For Conduit Details see Dwg D57-6.
3. For Outlet Chute and Stilling Basin Details see Dwg D57-7.
4. For Dam Embankment Details see Dwg. D57-3
REGISTERED PROFESSIONAL ENGINEER STANLEY F. GUZENSKI #10352 CIVIL STATE OF CALIFORNIA
AS BUILT 1-6054-102.12AB
STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES DIVISION OF SAFETY OF DAMS
APPLICATION No. 1002-4
APPROVED AS TO SAFETY
FOR THE CHIEF ENGINEER
AUG 5 1966
DIVISION ENGINEER
WOODWARD, CLYDE, SHERARD & ASSOCIATES
CONSULTING CIVIL ENGINEERS — OAKLAND, CALIF.
DESIGNED: V.L.T.
CHECKED: V.S.D.
DRAWN: G.R.L.
APPROVED BY:
SONOMA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
CENTRAL SONOMA WATERSHED PROTECTION PROJECT
MATANZAS CREEK
PRINCIPAL SPILLWAY
GENERAL PLAN
APPROVED— SOIL CONSERVATION SERVICE
STATE CONSERVATION ENGINEER
APPROVED— SONOMA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
CHIEF ENGINEER
DATE MARCH, 1962
SCALE AS NOTED
DRWG. NO. D57-4
SHEET OF

SHEET 7 OF 9



SITE PLAN

SCALE: 1" = 40'

EXCAVATION				
PROJECT ACTIVITY DESCRIPTION	LOCATION	AREA (SQUARE FT.)	AVERAGE DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED AREA IN RESERVOIR	AROUND OUTLET STRUCTURE	2,700	1	100

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 1a\SPRING-LAKE\OUTLET\2016_SR_CRK_RESEVOIR

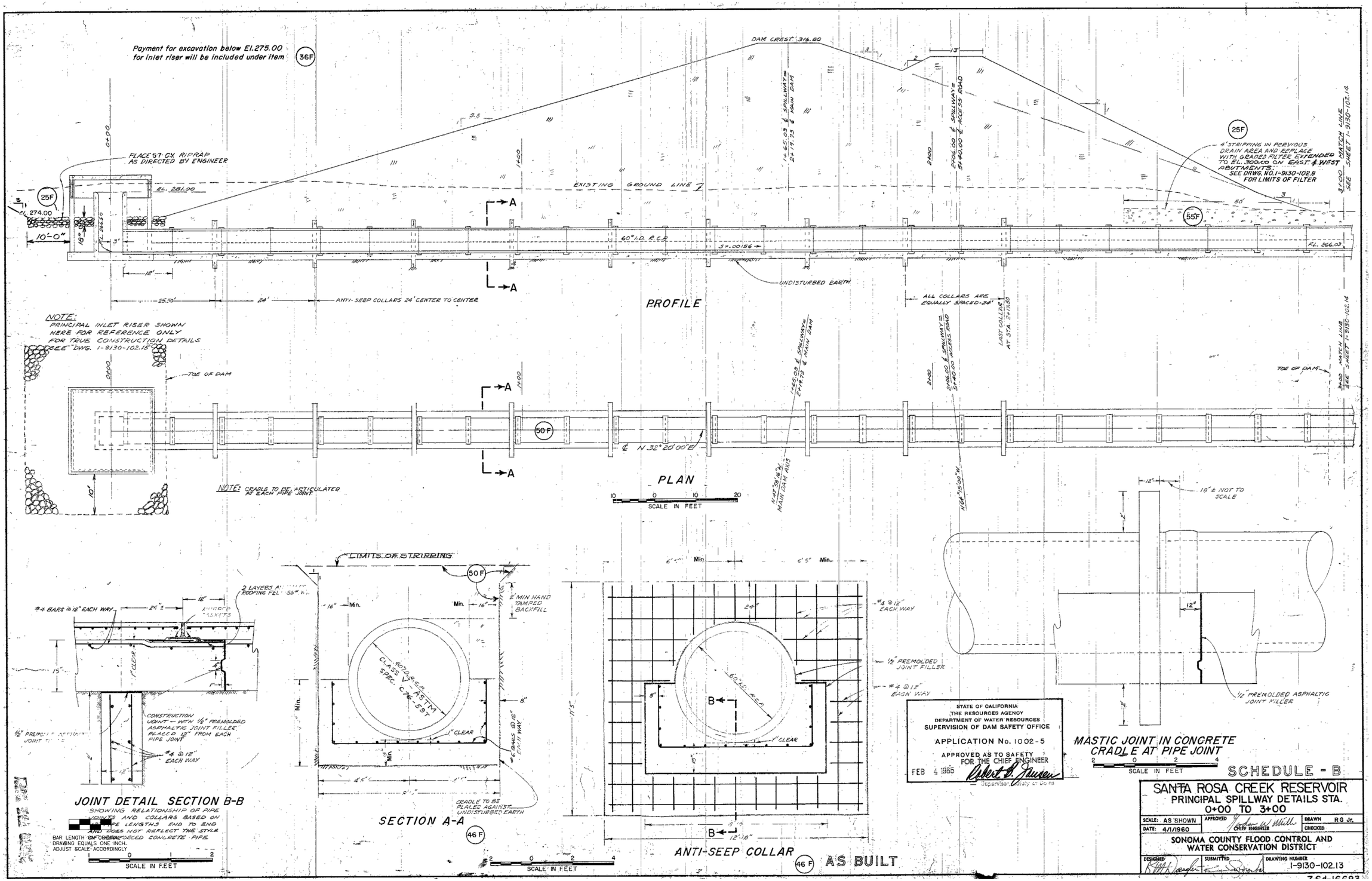
NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/20/2016
DRAWN: ----
REVIEWED:

LAGUNA DE SANTA ROSA WATERSHED ZONE 1A
RESERVOIR OULET SEDIMENT REMOVAL (2016)
SATA ROSA RESERVOIR OUTLET SITE PLAN

FILE NAME: 2016_SR_CRK_RES-C
CONTRACT NUMBER:
DRAWING NUMBER: C-4
SHEET 8 OF 9


Payment for excavation below El. 275.00 for inlet riser will be included under item 36F
DAM CREST 316.60
PLACE 57 CY. RIPRAP AS DIRECTED BY ENGINEER
EXISTING GROUND LINE
60" I.D. R.C.P.
UNDISTURBED EARTH
ANTI-SEEP COLLARS 24' CENTER TO CENTER
ALL COLLARS ARE EQUALLY SPACED-24'
4' STRIPPING IN PREVIOUS DRAIN AREA AND REPLACE WITH GRADED FILTER EXTENDED TO EL. 300.00 ON EAST & WEST ABUTMENTS. SEE DRWG. NO. 1-9130-102.8 FOR LIMITS OF FILTER
MATCH LINE SEE SHEET 1-9130-102.14
PROFILE
NOTE: PRINCIPAL INLET RISER SHOWN HERE FOR REFERENCE ONLY FOR TRUE CONSTRUCTION DETAILS SEE DWG. 1-9130-102.15
TOE OF DAM
NOTE: CRADLE TO BE ARTICULATED AT EACH PIPE JOINT
PLAN
SCALE IN FEET
LIMITS OF STRIPPING
2' MIN HAND TAMPED BACKFILL
CRADLE TO BE PLACED AGAINST UNDISTURBED EARTH
SECTION A-A
JOINT DETAIL SECTION B-B
SHOWING RELATIONSHIP OF PIPE JOINTS AND COLLARS BASED ON PIPE LENGTHS END TO END AND DOES NOT REFLECT THE STYLE OF REINFORCED CONCRETE PIPE
BAR LENGTH CONFORMS TO DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY
CONSTRUCTION JOINT - WITH 1/2" PREMOLDED ASPHALTIC JOINT FILLER PLACED 12" FROM EACH PIPE JOINT
1/2" PREMOLDED ASPHALTIC JOINT FILLER
ANTI-SEEP COLLAR
STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
SUPERVISION OF DAM SAFETY OFFICE
APPLICATION No. 1002-5
APPROVED AS TO SAFETY FOR THE CHIEF ENGINEER
FEB 4 1965
MASTIC JOINT IN CONCRETE CRADLE AT PIPE JOINT
SCHEDULE - B
SANTA ROSA CREEK RESERVOIR
PRINCIPAL SPILLWAY DETAILS STA. 0+00 TO 3+00
SCALE: AS SHOWN
DATE: 4/1/1960
APPROVED
CHIEF ENGINEER
DRAWN R.G. Jr.
CHECKED
SONOMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
DESIGNED
SUBMITTED
DRAWING NUMBER 1-9130-102.13
AS BUILT

SHEET 9 OF 9

Stream Maintenance Program
Bank Repair Peterson Creek
Santa Rosa

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

0 350 700 Feet

N W E S

SONOMA COUNTY WATER AGENCY

Stream Maintenance Program
Bank Repair Russell Creek
Santa Rosa

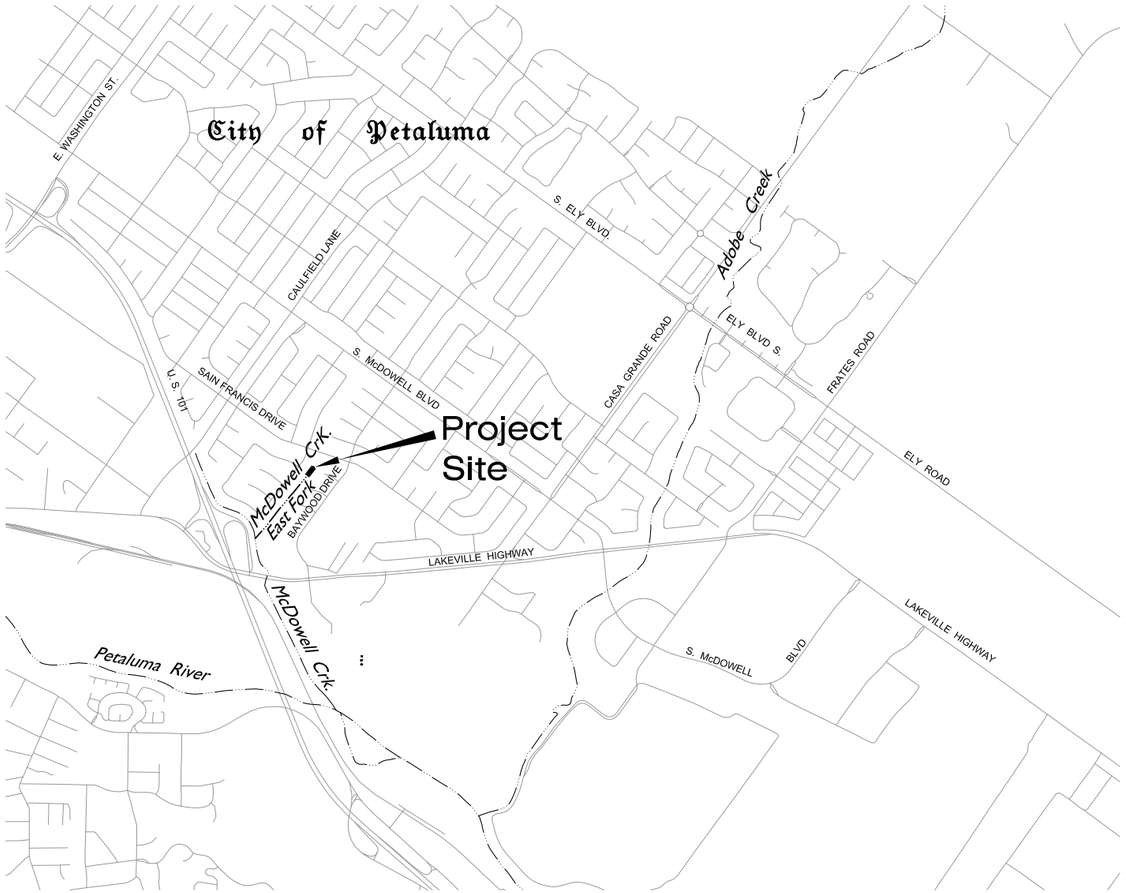
DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

0 200 400 Feet

N W E S

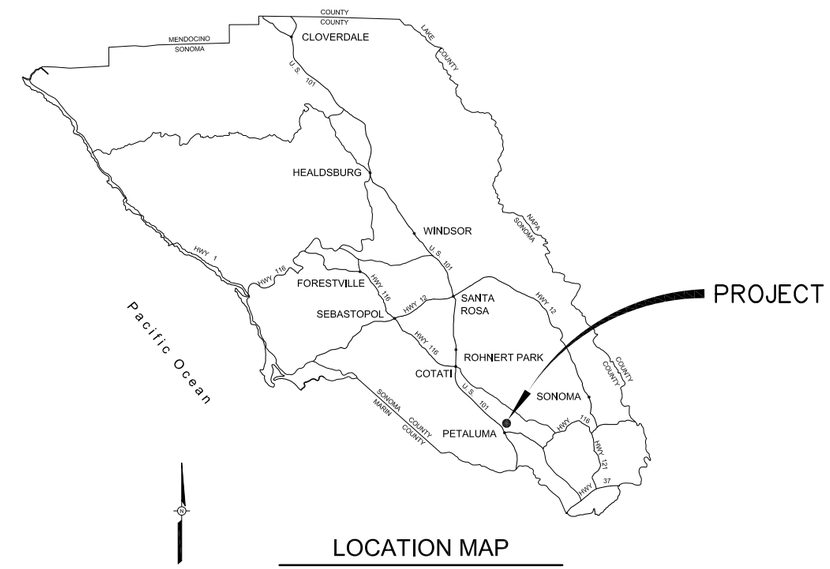
SONOMA COUNTY WATER AGENCY

SMP - PETALUMA RIVER BASIN - ZONE 2A
MCDOWELL CREEK EAST FORK - REACH 1 (2016) LOCALIZED SEDIMENT REMOVAL



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

McDOWELL CREEK EAST FORK SMP REACH 1						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	AVERAGE DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR FROM SERVICE ROAR OR FRONT END LOADER OPERATING IN CHANNEL	STA 12+00 TO STA 13+03	103	15'	BELOW O.H.W. 1,545	0.8	BELOW O.H.W. 46

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	TITLE
1	G-1	INDEX TO DRAWINGS, TABLE, LOCATION AND VICINITY MAPS
2	C-1	PLAN AND SECTIONS

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

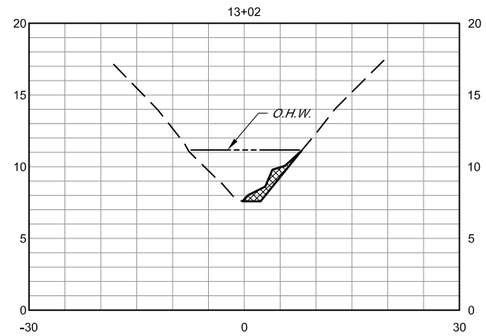
SONOMA COUNTY WATER AGENCY

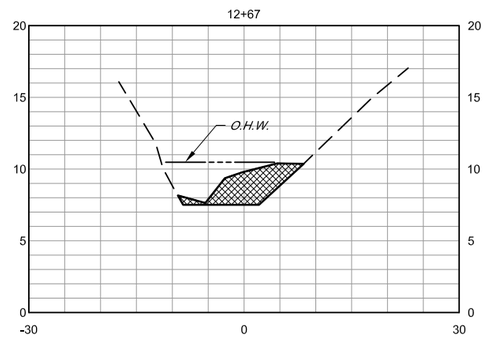
SCALE: AS SHOWN
DATE: 04/20/2016
DRAWN: SMP
REVIEWED:

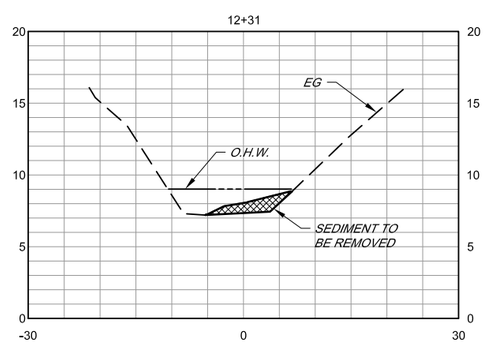
SMP - PETALUMA RIVER BASIN - ZONE 2A
MCDOWELL CREEK EAST FORK - REACH 1 (2016)
INDEX TO DRAWINGS, TABLE, LOCATION AND VICINITY MAPS

FILE NAME: 2016_McDOWELL_E-FORK
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 2

\\scd-data\prj\flood control\zone 2a\McDowell\2016_E_FORK McDOWELL







SECTIONS (LOOKING DOWNSTREAM)

SCALE HORIZ 1" = 10'
VERT 1" = 5'

PLAN

SCALE 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 04/20/2016
DRAWN: SMP
REVIEWED:

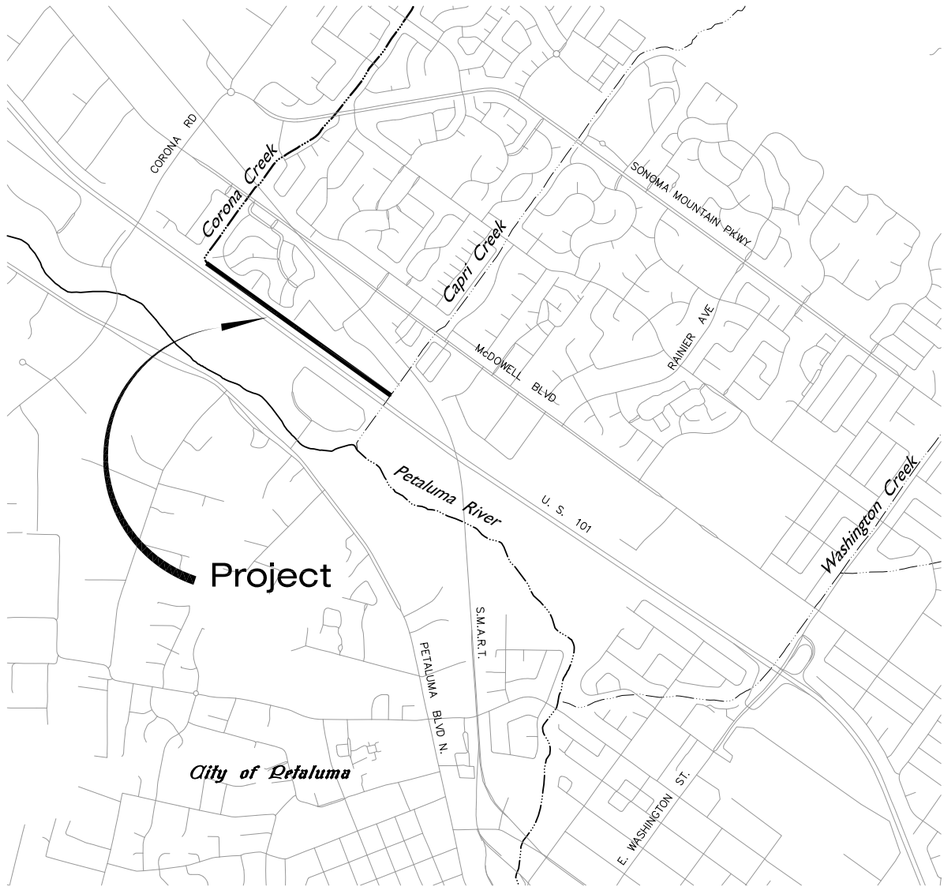
SMP - PETALUMA RIVER BASIN - ZONE 2A

MCDOWELL CREEK EAST FORK - REACH 1 (2016)
SITE PLAN AND CROSS SECTIONS

FILE NAME: 2016_McDOWELL_E-FORK
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 2

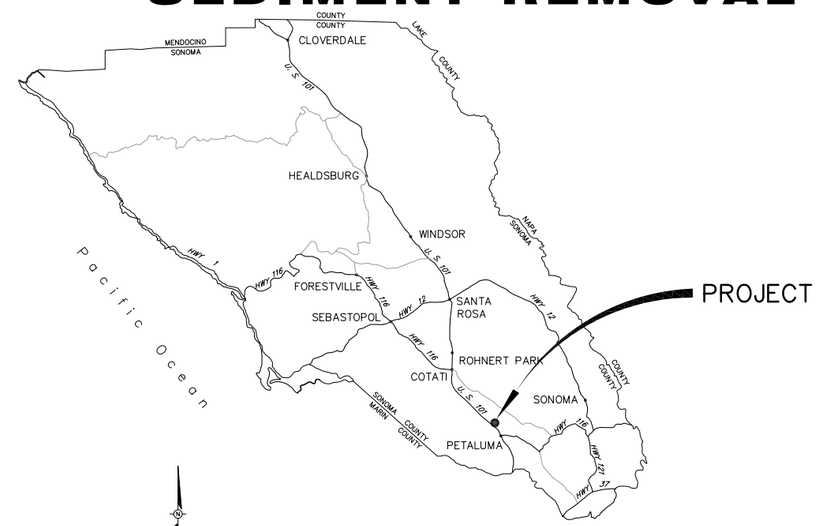
\\sd-data\proj\flood control\zone 2a\McDowell\2016_E_FORK McDOWELL

SMP - PETALUMA RIVER BASIN - ZONE 2A
CORONA CREEK SMP-1 (2016)
REACH SCALE
SEDIMENT REMOVAL



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

CORONA CREEK SMP-1 (2016)							
EXCAVATION							
DESIGNATION	PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
REACH 1	ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OPERATING FROM BANKS OR IN CHANNEL	STA 0+33 TO STA 32+00	3,167	16'	BELOW O.H.W. 50,672	.5	BELOW O.H.W. 939

INDEX TO DRAWINGS		
SHEET NUMBER	DRAWING NUMBER	SHEET TITLE
1	G-1	INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS
2	C-01	PLAN AND PROFILE STA 0+00 TO STA 10+00
3	C-02	PLAN AND PROFILE STA 10+00 TO STA 22+00
4	C-03	PLAN AND PROFILE STA 22+00 TO STA 33+00
5	C-04	SECTIONS

PRELIMINARY
80% SUBMITTAL
FOR REVIEW PURPOSES ONLY
4/12/2016

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

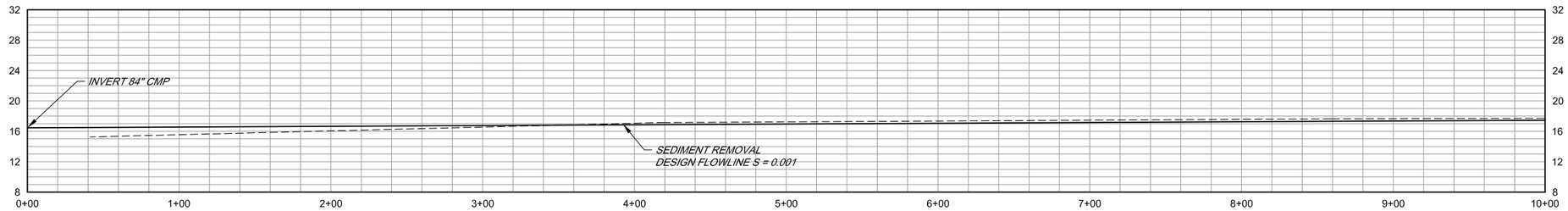
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: April 22, 2016
DRAWN: ADF
REVIEWED:

SMP - PETALUMA RIVER BASIN - ZONE 2A
CORONA CREEK SMP-1 (2016)
INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS

FILE NAME: 2016_CORONA_CRK_SMP-1_G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 5

\\sd-data\proj\flood control\zone 2a\Corona\2016_Corona_SMP-1\2016_CORONA_CRK_SMP-1_G



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 4'

PLAN

SCALE 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

\\sd-data\proj\flood control\zone 2a\Corona\2016_Corona_SMP-1

NO.	DATE	REVISION	BY

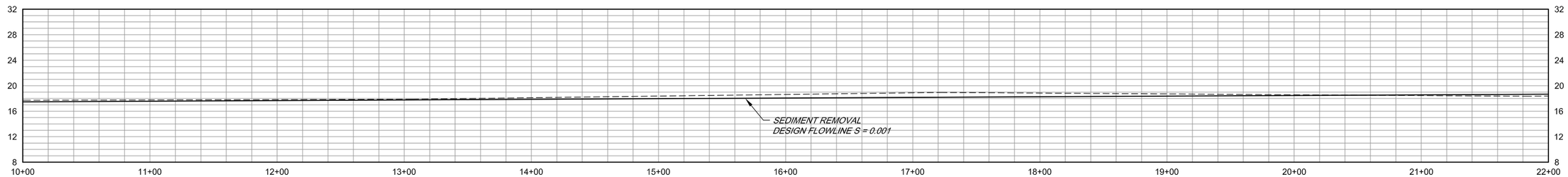
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/22/2016
DRAWN: ADF
REVIEWED:

SMP - PETALUMA RIVER BASIN - ZONE 2A

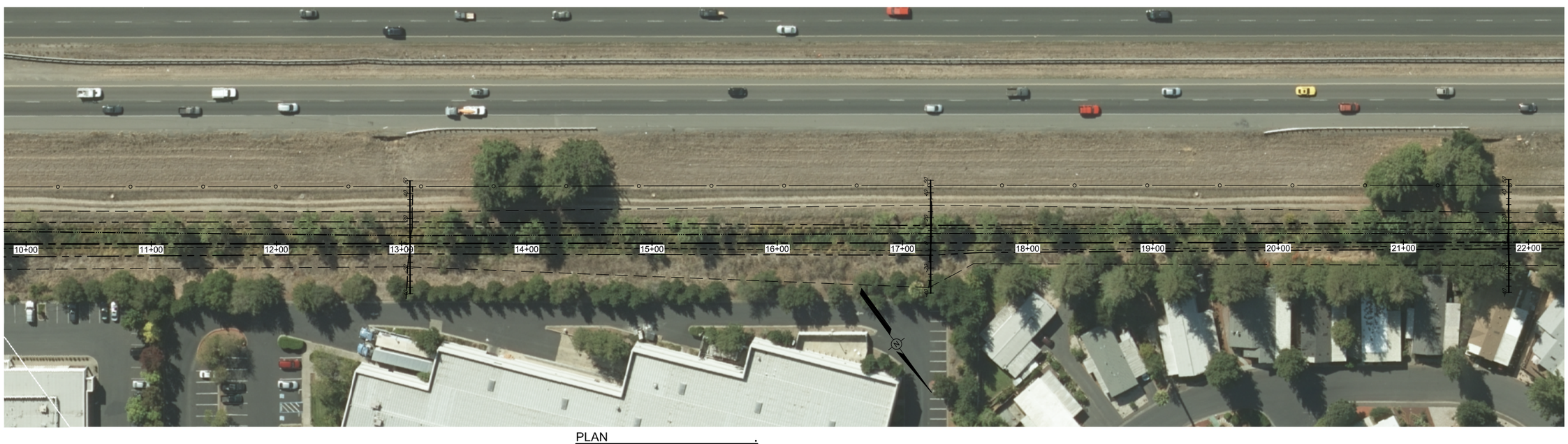
CORONA CREEK SMP-1 (2016)
PLAN AND PROFILE STA 0+00 TO STA 10+00

FILE NAME: 2016_CORONA_CRK_SMP-1_C
CONTRACT NUMBER:
DRAWING NUMBER: C-01
SHEET 2 OF 5



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 4'



PLAN

SCALE 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

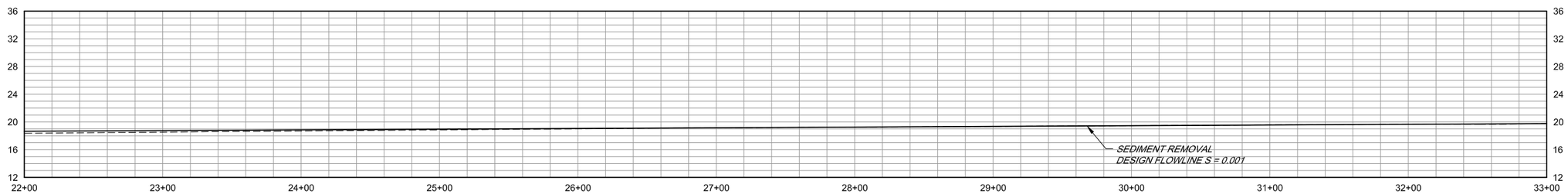
SCALE: AS SHOWN
DATE: 4/22/2016
DRAWN: ADF
REVIEWED:

SMP - PETALUMA RIVER BASIN - ZONE 2A

CORONA CREEK SMP-1 (2016)
PLAN AND PROFILE STA 10+00 TO STA 22+00

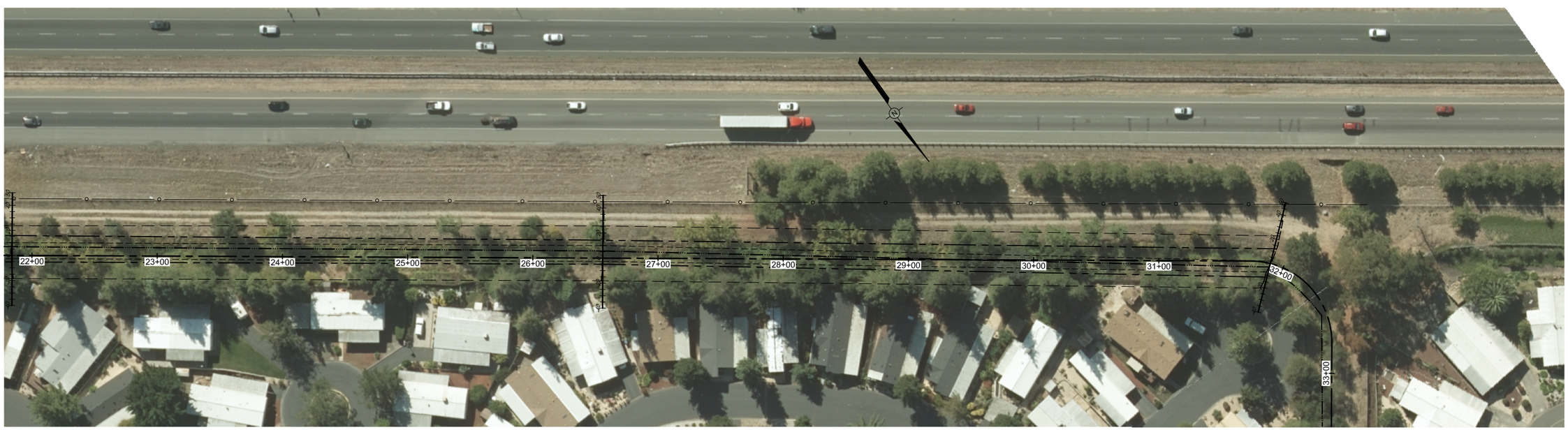
FILE NAME: 2016_CORONA_CRK_SMP-1_C
CONTRACT NUMBER:
DRAWING NUMBER: C-02
SHEET 3 OF 5

\\sd-data\proj\flood control\zone 2a\Corona\2016_Corona_SMP-1



PROFILE

SCALE HORIZ 1" = 40'
VERT 1" = 4'



PLAN

SCALE 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

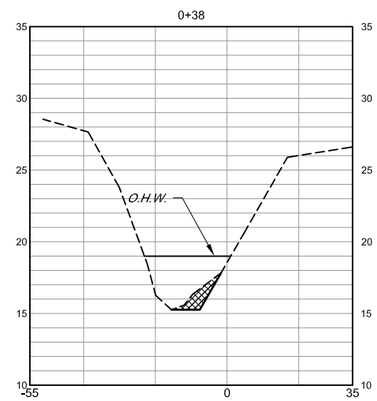
SCALE: AS SHOWN
DATE: 4/22/2016
DRAWN: ADF
REVIEWED:

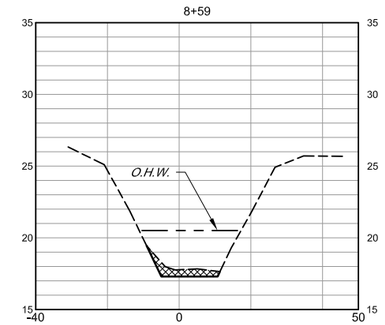
SMP - PETALUMA RIVER BASIN - ZONE 2A

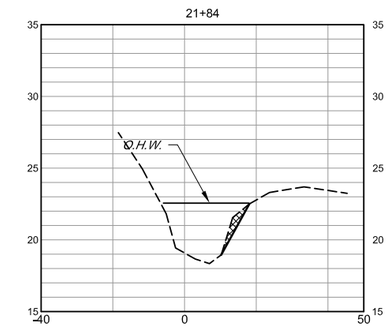
CORONA CREEK SMP-1 (2016)
PLAN AND PROFILE STA 22+00 TO STA 33+00

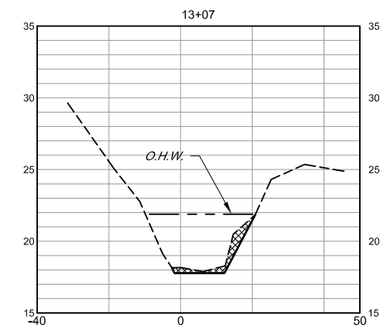
FILE NAME: 2016_CORONA_CRK_SMP-1_C
CONTRACT NUMBER:
DRAWING NUMBER: C-03
SHEET 4 OF 5

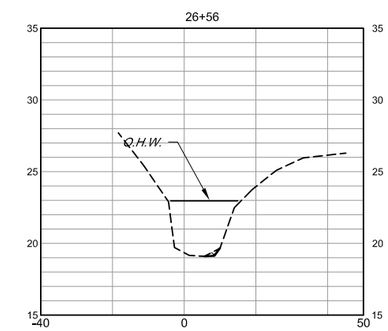
\\sci-data\proj\flood control\zone 2a\Corona\2016_Corona_SMP-1

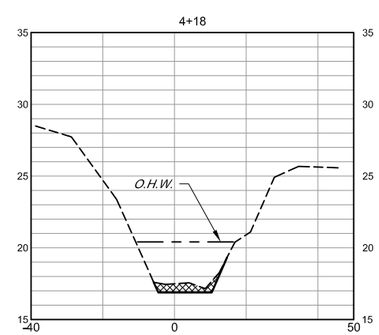


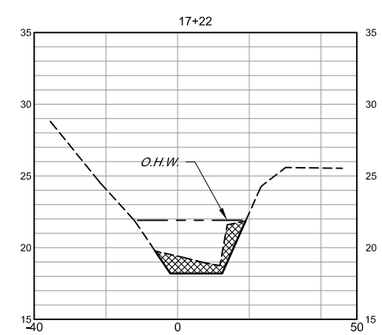


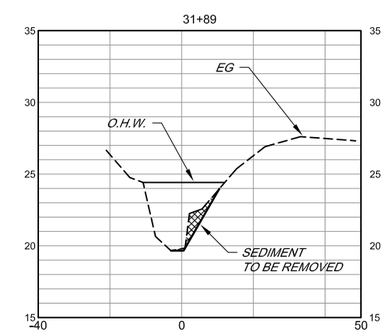












SECTIONS

SCALE HORIZ 1" = 10'
VERT 1" = 5'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/22/2016
DRAWN: ADF
REVIEWED:

SMP - PETALUMA RIVER BASIN - ZONE 2A

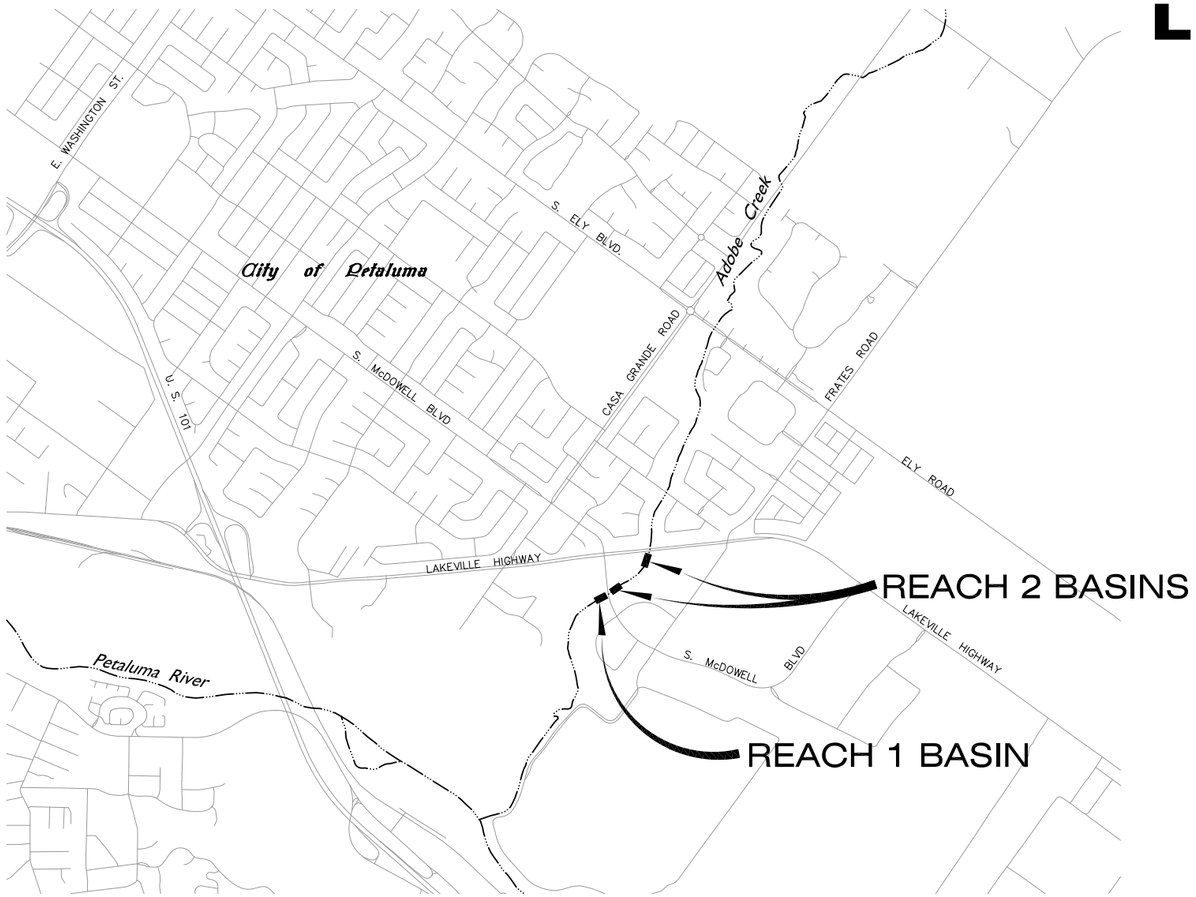
CORONA CREEK SMP-1 (2016)
SECTIONS

FILE NAME: 2016_CORONA_CRK_SMP-1_C
CONTRACT NUMBER:
DRAWING NUMBER: C-04
SHEET 5 OF 5

\\sd-data\proj\flood control\zone 2a\Corona\2016_Corona_SMP-1

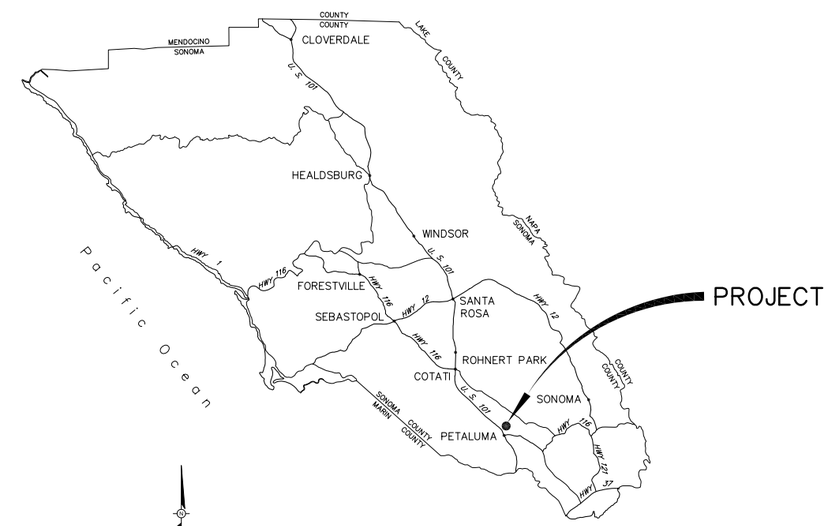
SMP - PETALUMA RIVER BASIN - ZONE 2A

ADOBE CREEK - REACH 1 AND 2 (2016) LOCALIZED SEDIMENT REMOVAL



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

INDEX TO DRAWINGS		
SHEET NUMBER	DRAWING NUMBER	TITLE
ADOBE CREEK SEDIMENT BASINS		
1	G-1	INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS
REACH 1 SEDIMENT BASIN		
2	C-1	PLAN , PROFILE AND TABLE
REACH 2 SEDIMENT BASINS		
3	C-2	PLAN , PROFILE AND TABLE
4	C-3	PLAN , PROFILE AND TABLE

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 2a\adobe creek\SED-BASIN_adobe\2016_adobe-basins

NO.	DATE	REVISION	BY

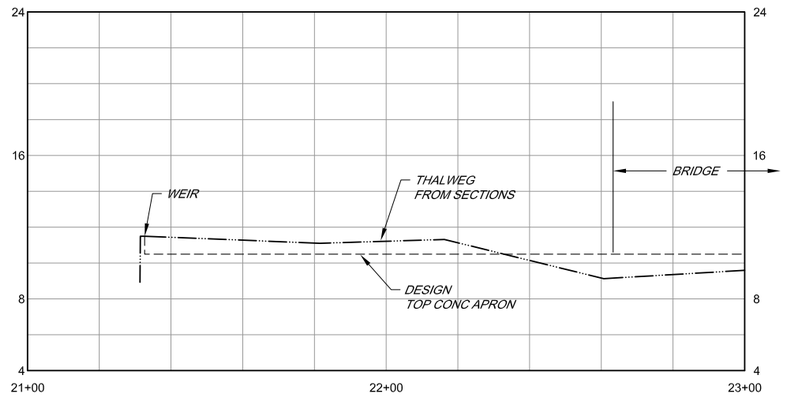
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 7/15/2015
DRAWN: ADF
REVIEWED:

SMP - PETALUMA RIVER BASIN - ZONE 2A

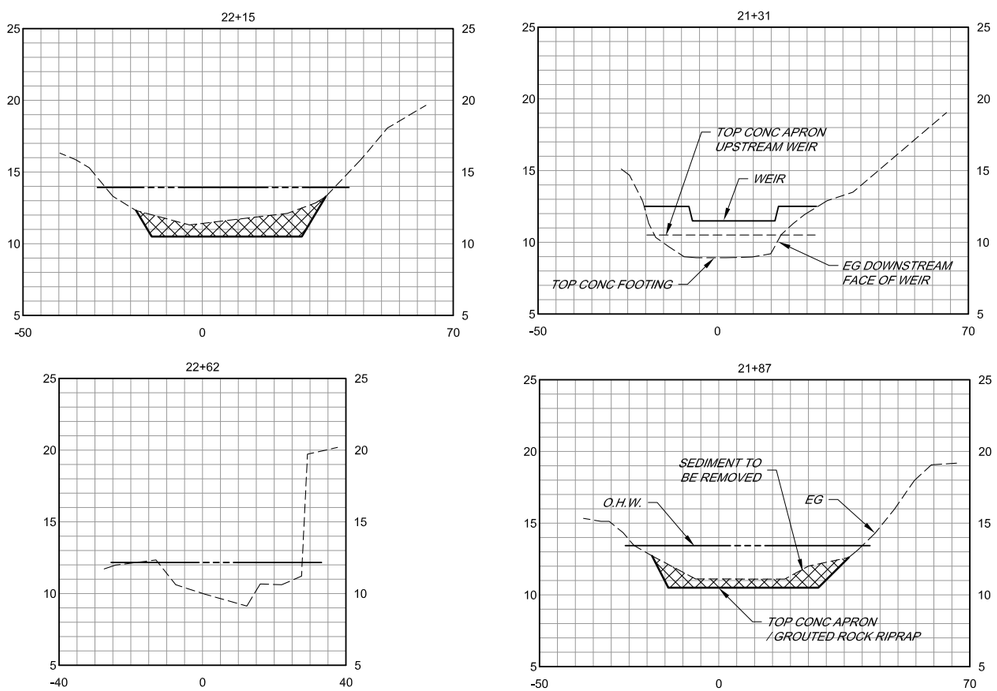
ADOBE CREEK - REACH 1 AND 2 (2016) LOCALIZED SEDIMENT REMOVAL
INDEX TO DRAWINGS, VICINITY AND LOCATION MAPS

FILE NAME: 2016-adobe-basin_G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 4



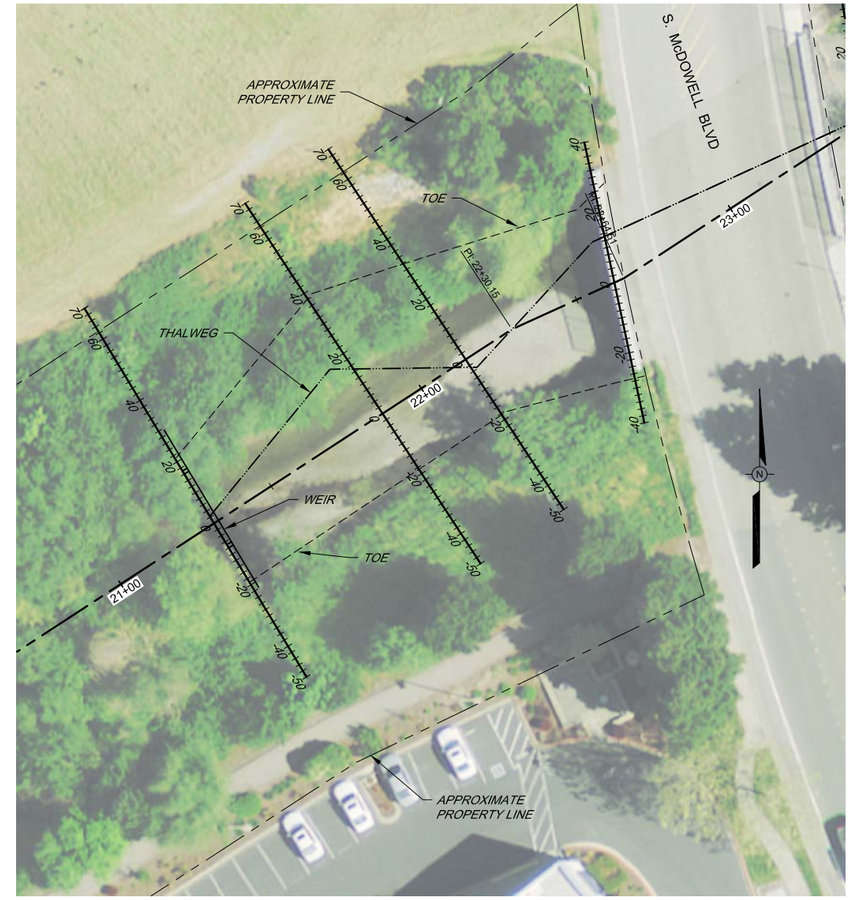
PROFILE

SCALE HORIZ 1" = 20'
VERT 1" = 4'



SECTIONS

SCALE HORIZ 1" = 20'
VERT 1" = 5'



PLAN

SCALE 1" = 20'

ADOBE CREEK SMP–1 SEDIMENT BASIN						
EXCAVATION (BELOW OHW)						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED CHANNEL.	STA 21+31 TO STA 22+62	131	54	7,074	1.2	314

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

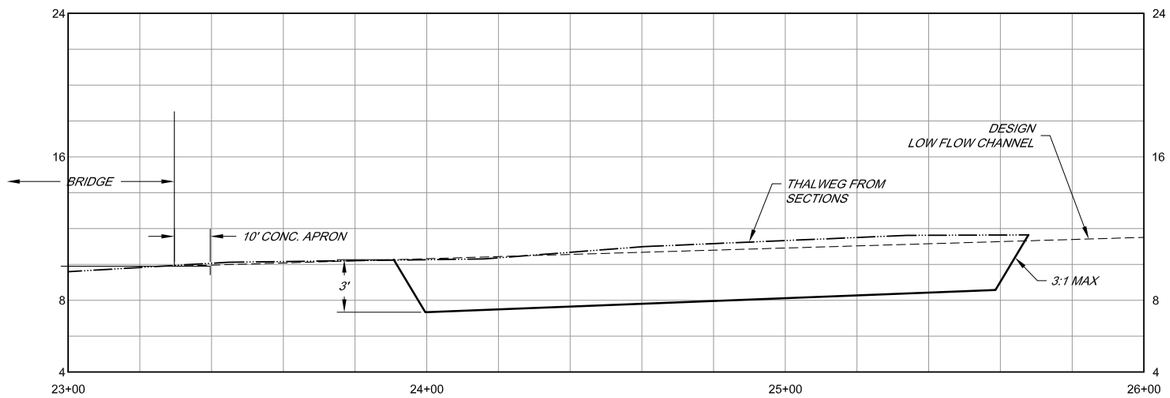
SCALE: AS SHOWN
DATE: 4/19/2016
DRAWN: ADF
REVIEWED:

SMP - PETALUMA RIVER BASIN - ZONE 2A

ADOBE CREEK - REACH 1 (2016) SEDIMENT BASIN
PLAN , PROFILE AND TABLE

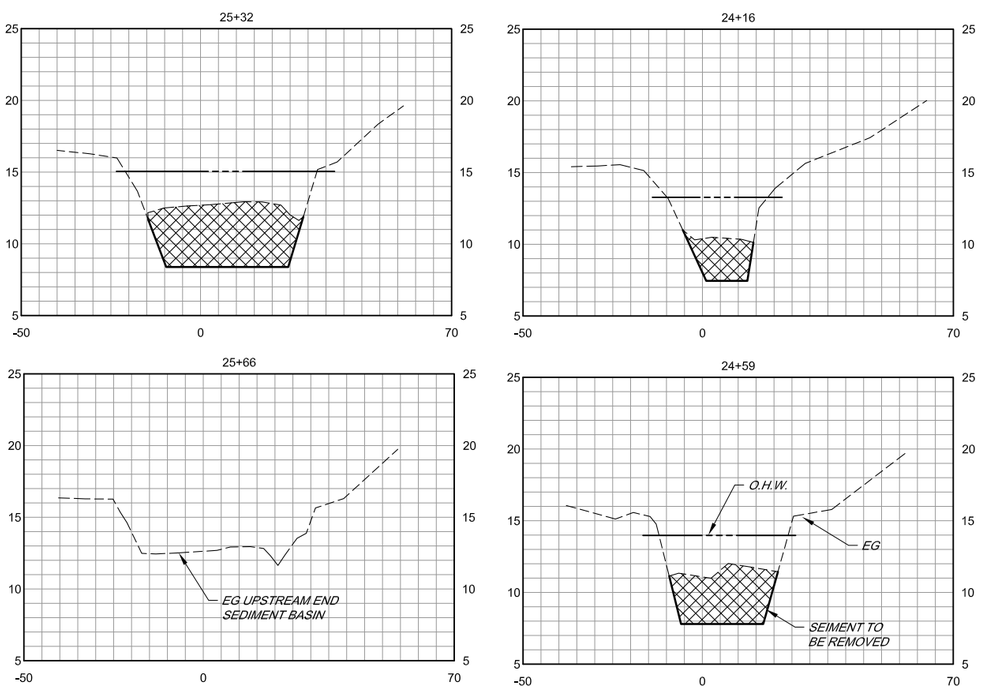
FILE NAME: 2016-adobe-basin_C
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 4

T:\flood control\zone 2a\adobe creek\SED-BASIN_adobe\2016_adobe-basins



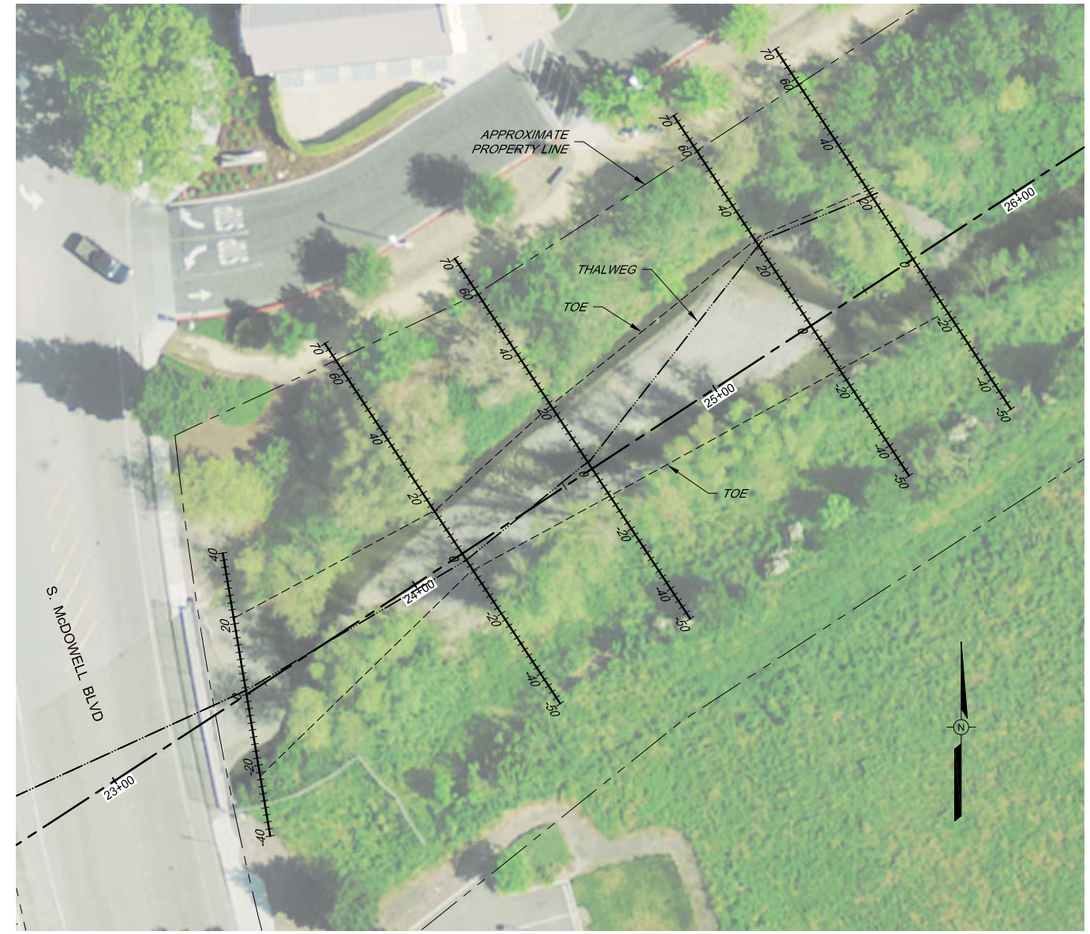
PROFILE

SCALE HORIZ 1" = 20'
VERT 1" = 4'



SECTIONS

SCALE HORIZ 1" = 20'
VERT 1" = 5'



PLAN

SCALE 1" = 20'

ADOBE CREEK SMP–2 SEDIMENT BASIN NO.1						
EXCAVATION (BELOW OHW)						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED CHANNEL.	STA 23+90 TO STA 25+68	178	32	5,696	3.5	738

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

T:\flood control\zone 2a\adobe creek\SED-BASIN_adobe\2016_adobe-basins

NO.	DATE	REVISION	BY

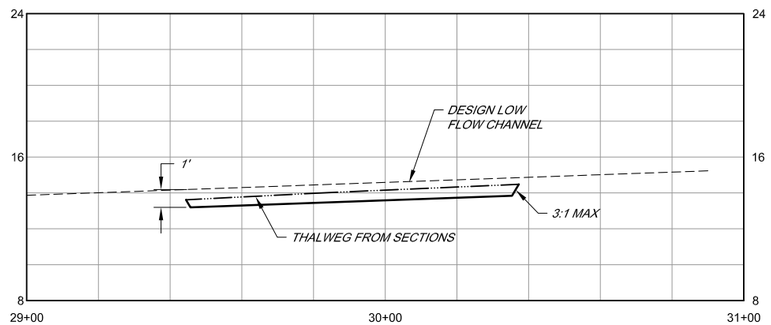
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/19/2016
DRAWN: ADF
REVIEWED:

SMP - PETALUMA RIVER BASIN - ZONE 2A

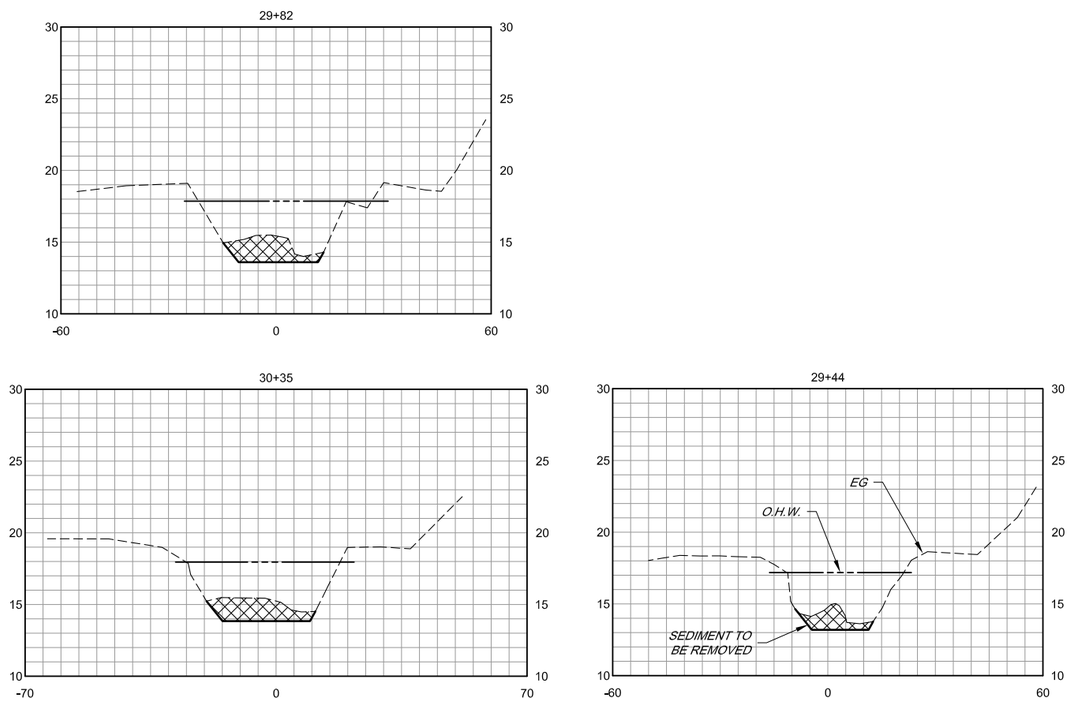
ADOBE CREEK - REACH 2 (2016) SEDIMENT BASIN NO.1
PLAN , PROFILE AND TABLE

FILE NAME: 2016-adobe-basin_C
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 3 OF 4



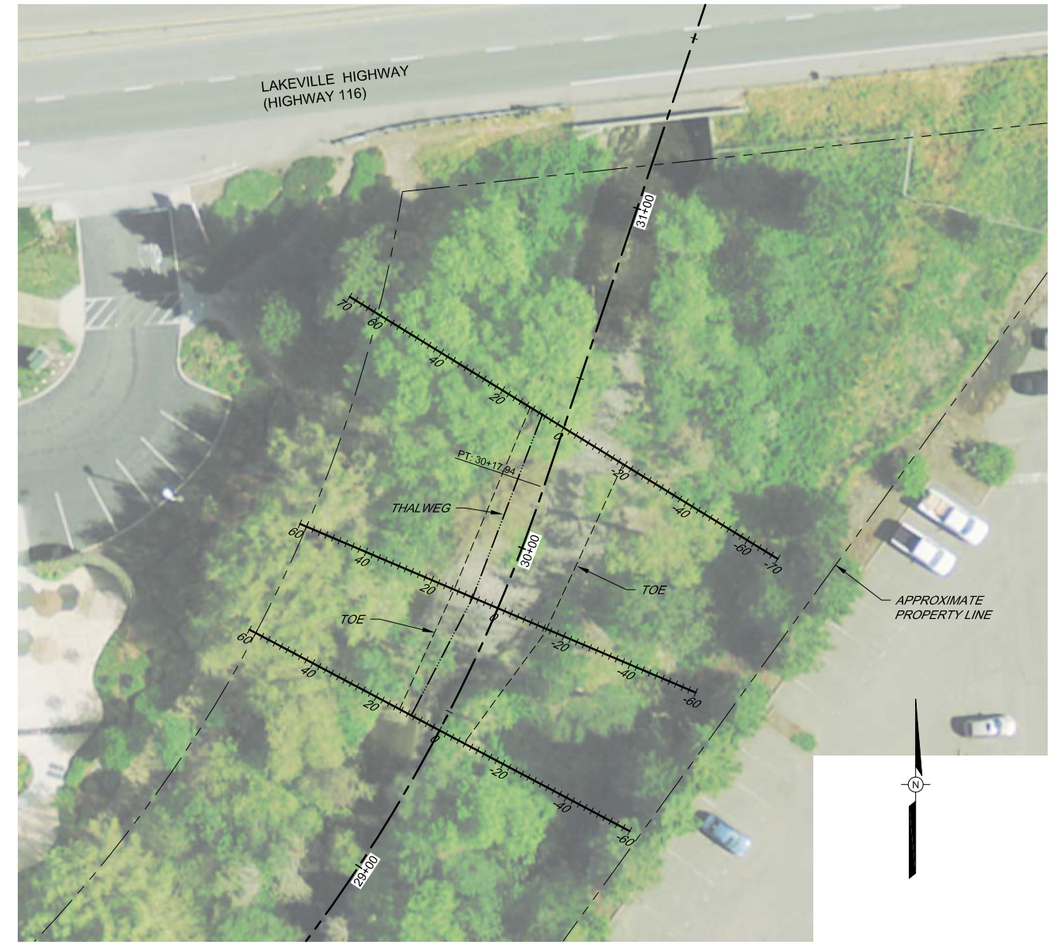
PROFILE

SCALE HORIZ 1" = 20'
VERT 1" = 5'



SECTIONS

SCALE HORIZ 1" = 20'
VERT 1" = 5'



PLAN

SCALE 1" = 20'

ADOBE CREEK SMP–2 SEDIMENT BASIN NO.2						
EXCAVATION (BELOW OHW)						
PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED CHANNEL.	STA 29+44 TO STA 30+36	92	27	2,484	1.0	92

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

PRELIMINARY
80% SUBMITTAL
FOR REVIEW PURPOSES ONLY
4/12/2016

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/19/2016
DRAWN: ADF
REVIEWED:

SMP - PETALUMA RIVER BASIN - ZONE 2A

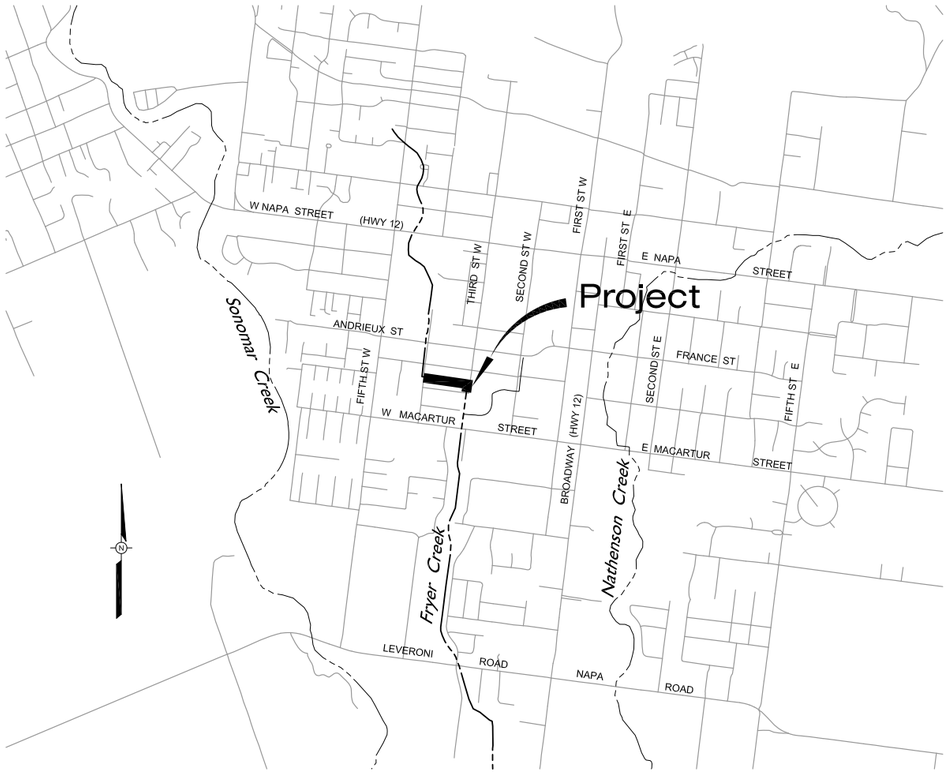
ADOBE CREEK - REACH 2 (2016) SEDIMENT BASIN NO. 2
PLAN , PROFILE AND TABLE

FILE NAME: 2016-adobe-basin_C
CONTRACT NUMBER:
DRAWING NUMBER: C-3
SHEET 4 OF 4

T:\flood control\zone 2a\adobe creek\SED-BASIN_\adobe\2016_adobe-basins

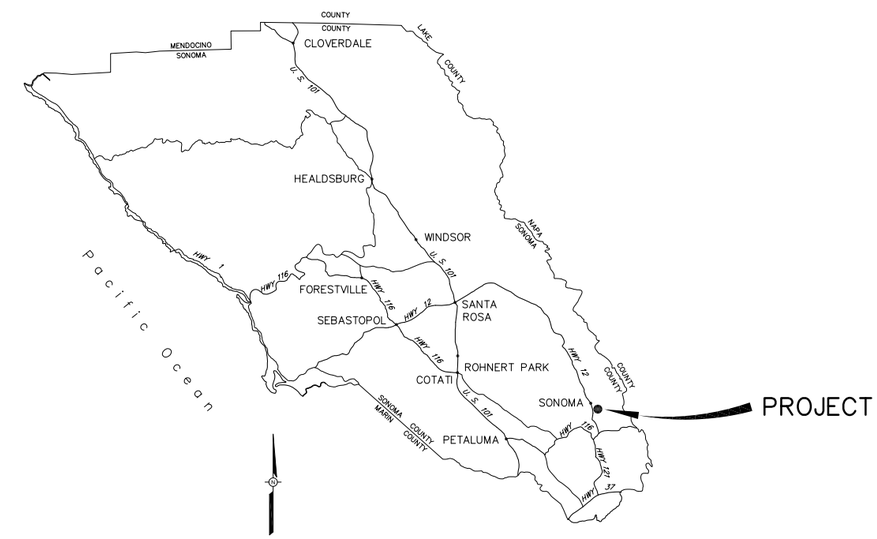
SMP - VALLEY OF THE MOON ZONE 3A

FRYER CREEK - REACH 3 (2016)
REACH SCALE
SEDIMENT REMOVAL



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	SHEET DISCRIPTION
1	G-1	INDEX TO DRAWINGA, TABLE, VICINITY AND LOCATION MAPS
2	C-1	PLAN AND PROFILE STA 51+50 TO 56+50
3	C-2	PLAN AND PROFILE STA 56+50 TO STA 59+50
4	C-3	SECTIONS

FRYER CREEK SMP-3

VALLEY OF THE MOON ZONE 3A

PROJECT ACTIVITY DESCRIPTION	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE/FILL)
ACCUMULATED SEDIMENT REMOVAL USING EXCAVATOR OR FRONT END LOADER OPERATING IN THE DEWATERED CHANNEL.	STATION 52+50 TO STATION 59+00	650	15	ABOVE O.H.W. 1,073 BELOW O.H.W. 8,677 TOTAL: 9.750	0.8	ABOVE O.H.W. 35 BELOW O.H.W. 254 TOTAL: 289

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

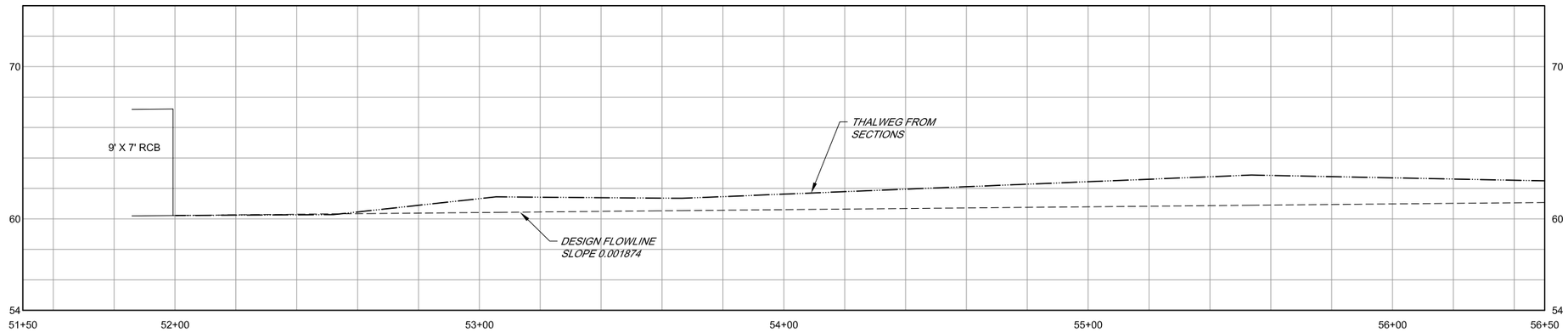
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/22/2016
DRAWN: ADF
REVIEWED:

SMP - VALLEY OF THE MOON ZONE 3A
FRYER CREEK - REACH 3 (2016)
INDEX TO DRAWINGA, TABLE, VICINITY AND LOCATION MAPS

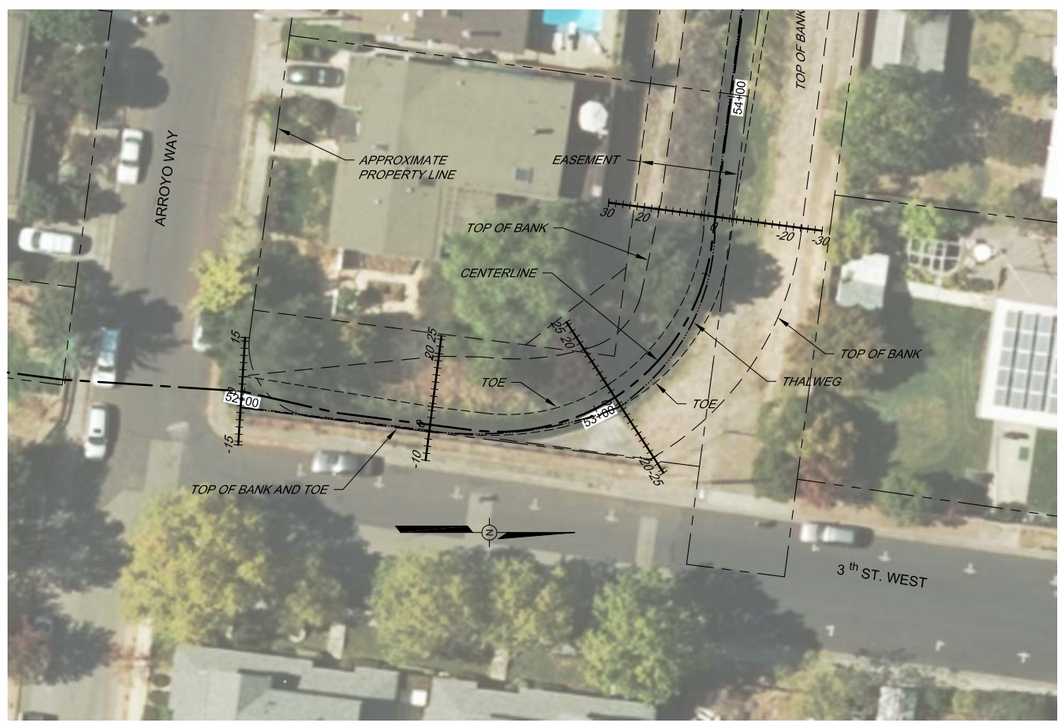
FILE NAME: 2016-FRYER_CRK_G
CONTRACT NUMBER:
DRAWING NUMBER: G-1
SHEET 1 OF 4

\\scd-data\proj\flood control\zone 3a\Fryer_Creek\2016_FRYER_CRK_SMP-3



PROFILE

SCALE HORIZ 1" = 20'
VERT 1" = 4'



PLAN

SCALE 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

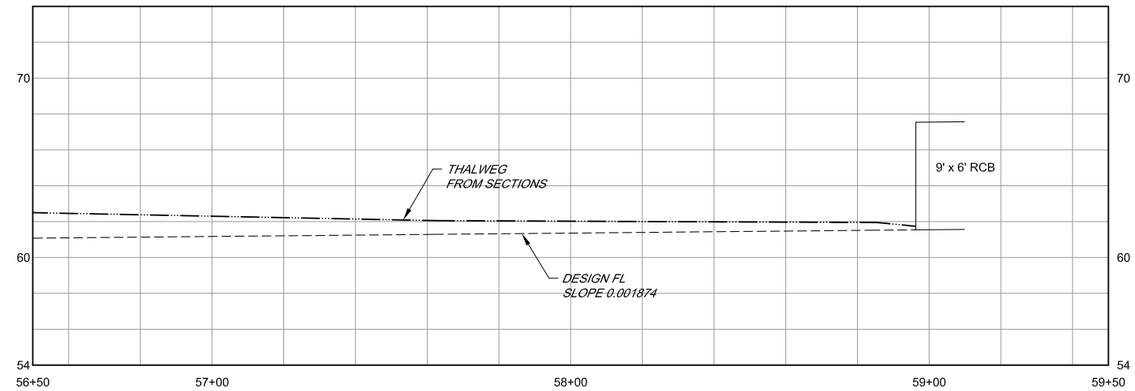
SCALE: AS SHOWN
DATE: 4/22/2016
DRAWN: ADF
REVIEWED:

SMP - VALLEY OF THE MOON ZONE 3A

FRYER CREEK - REACH 3 (2016)
PLAN AND PROFILE STA 51+50 TO STA 56+50

FILE NAME: 2016-FRYER_CRK_C
CONTRACT NUMBER:
DRAWING NUMBER: C-1
SHEET 2 OF 4

\\sd-data\proj\flood control\zone 3a\Fryer_Creek\2016_FRYER_CRK_SMP-3



PROFILE

SCALE HORIZ 1" = 20'
VERT 1" = 4'

PLAN

SCALE 1" = 20'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

\\sd-data\proj\flood control\zone 3a\Fryer_Creek\2016_FRYER_CRK_SMP-3

NO.	DATE	REVISION	BY

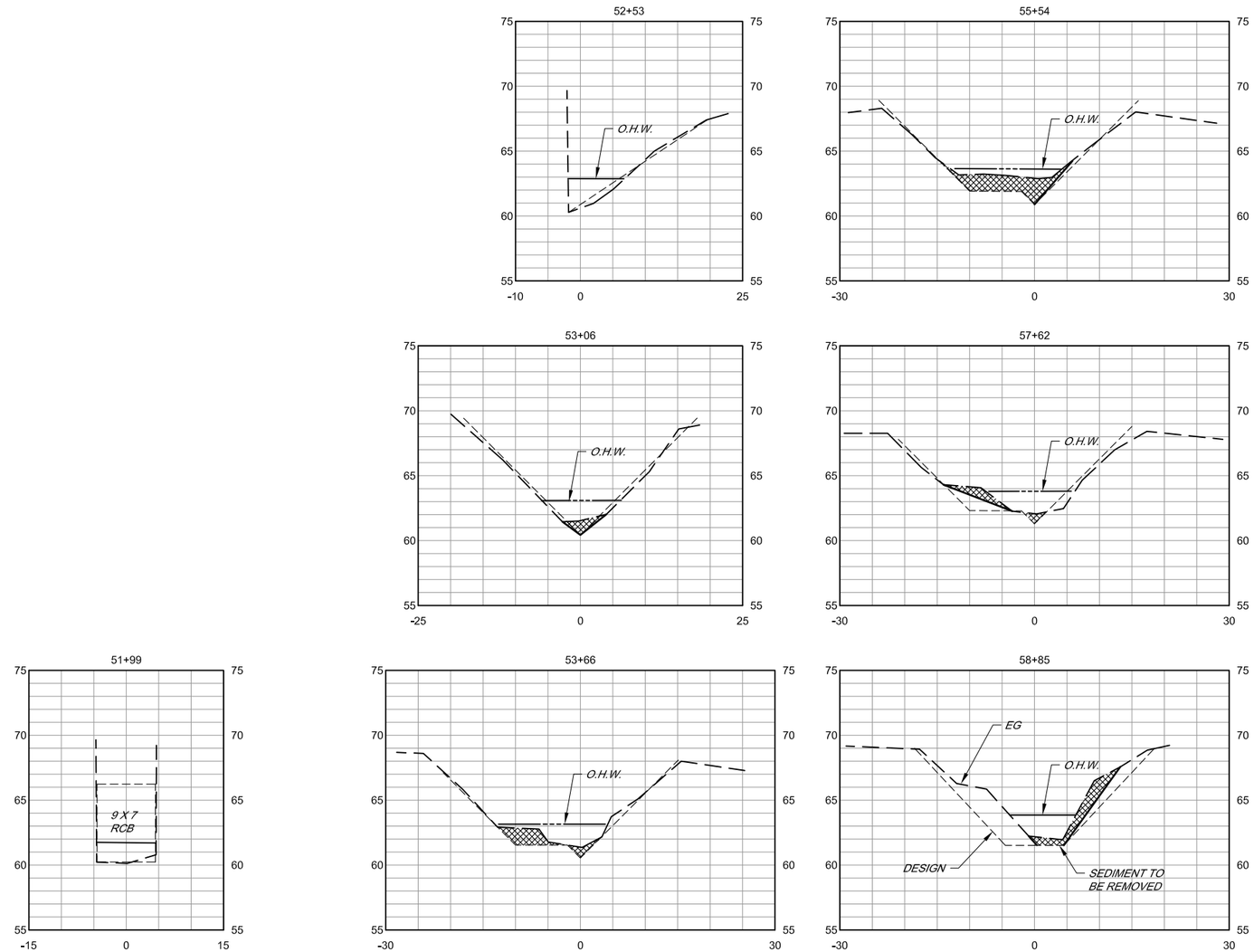
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/22/2016
DRAWN: ADF
REVIEWED:

SMP - VALLEY OF THE MOON ZONE 3A

FRYER CREEK - REACH 3 (2016)
PLAN AND PROFILE STA 56+50 TO STA 59+50

FILE NAME: 2016-FRYER_CRK_C
CONTRACT NUMBER:
DRAWING NUMBER: C-2
SHEET 3 OF 4



SECTIONS (LOOKING DOWNSTREAM)

SCALE HORIZ 1" = 10'
VERT 1" = 5'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

\\sd-data\proj\flood control\zone 3a\Fryer_Creek\2016_FRYER_CRK_SMP-3

NO.	DATE	REVISION	BY

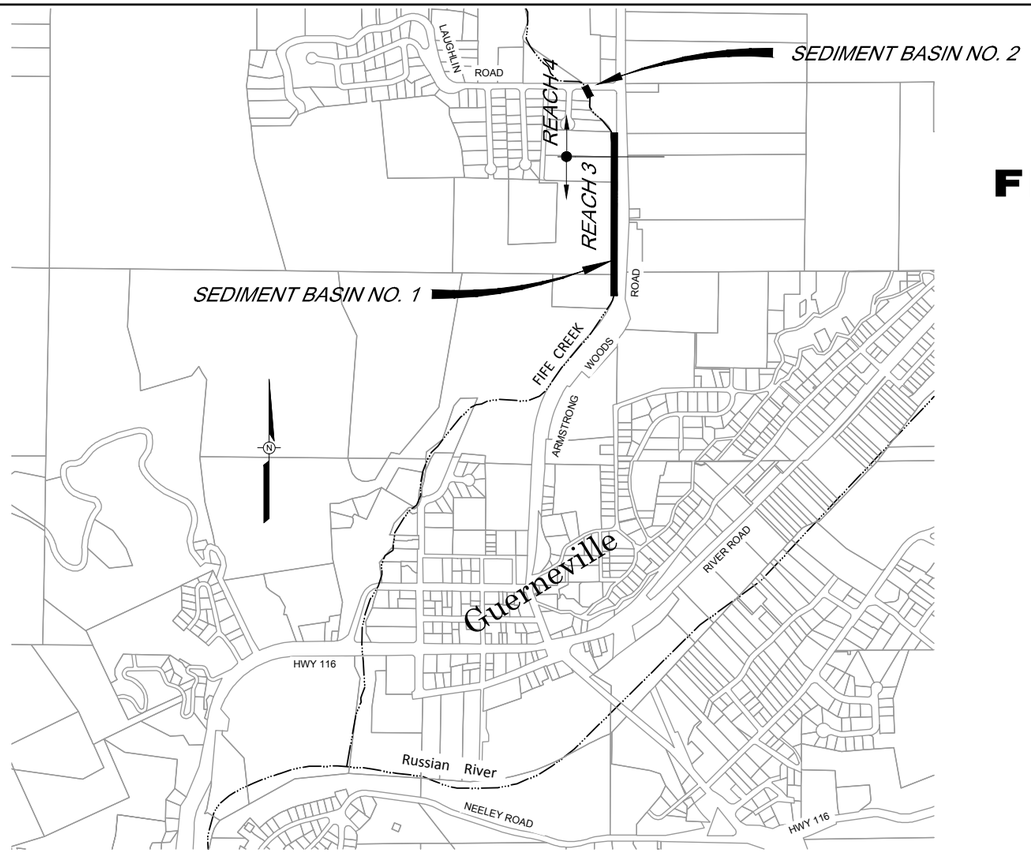
SONOMA COUNTY WATER AGENCY

SCALE: AS SHOWN
DATE: 4/22/2016
DRAWN: ADF
REVIEWED:

SMP - VALLEY OF THE MOON ZONE 3A

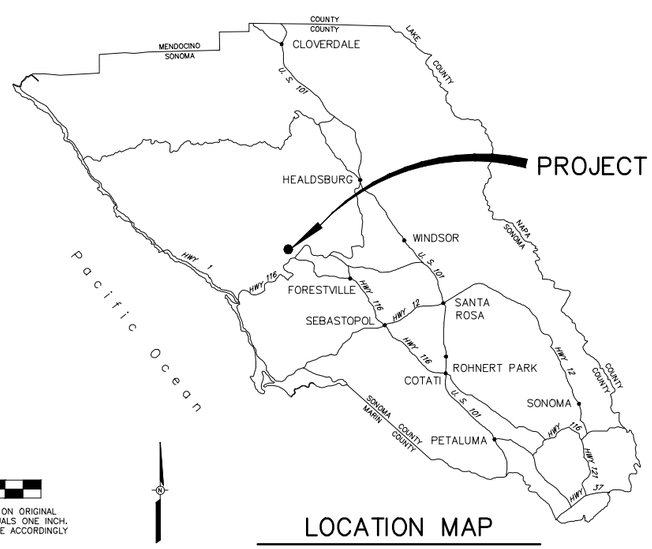
FRYER CREEK - REACH 3 (2016)
SECTIONS

FILE NAME: 2016-FRYER_CRK_C
CONTRACT NUMBER:
DRAWING NUMBER: C-3
SHEET 4 OF 4



VICINITY MAP

NTS



BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH. ADJUST SCALE ACCORDINGLY

LOCATION MAP

NTS

SMP - LOWER RUSSIAN RIVER - ZONE 5A

FIFE CREEK - REACH 3 AND 4 (2016) SEDIMENT REMOVAL

FIFE CREEK SEDIMENT BASINS						
EXCAVATION						
PROJECT ACTIVITY DESCRIPTION REMOVAL USING EXCAVATOR FROM TOP OF BANK	LOCATION AND STATIONING	LENGTH (LINEAR FT.)	AVERAGE WIDTH (LINEAR FT.)	AREA (SQUARE FT.)	DEPTH (FT.)	C.Y. (TO REMOVE)
SEDIMENT BASIN NO.1 REACH 3 AND 4	STA 41+85 TO STA 54+50	1,265	14	BELOW O.H.W. 17,710	2.1	BELOW O.H.W. 1,377
SEDIMENT BASIN NO.2 REACH 4	STA 57+65 TO STA 58+80	115	28	BELOW O.H.W. 3,136	2.5	BELOW O.H.W. 290
					TOTAL:	BELOW O.H.W. 1,667

INDEX TO DRAWINGS

SHEET NUMBER	DRAWING NUMBER	TITLE
FIFE CREEK REACH 3 AND 4		
1	G-01	INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS
REACH 3: SEDIMENT BASIN NO.1		
2	C-01	PAN AND PROFILE STA 41+85 TO STA 51+00 AND SECTIONS
REACH 4: SEDIMENT BASINS NO. 1 AND 2		
3	C-02	PLAN AND PROFILE STA 51+00 TO STA 54+50 AND STA 57+65 TO STA 58+80 AND SECTIONS

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

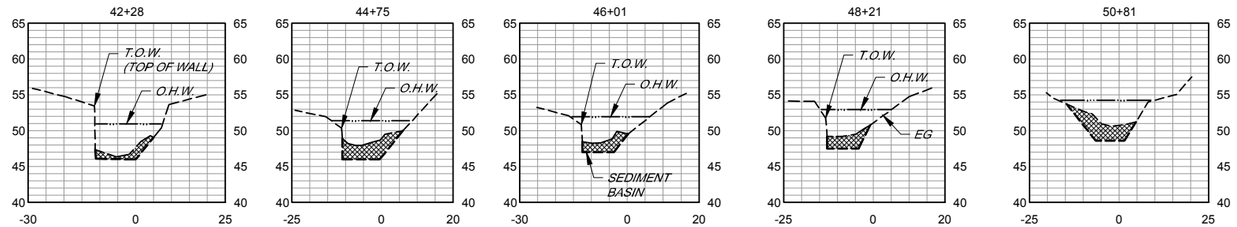
SCALE: AS SHOWN
DATE: 3/07/2015
DRAWN: ADF
REVIEWED:

SMP - LOWER RUSSIAN RIVER - ZONE 5A

FIFE CREEK - REACH 3 AND 5 (2016) SEDIMENT BASIN
INDEX TO DRAWINGS, TABLE, VICINITY AND LOCATION MAPS

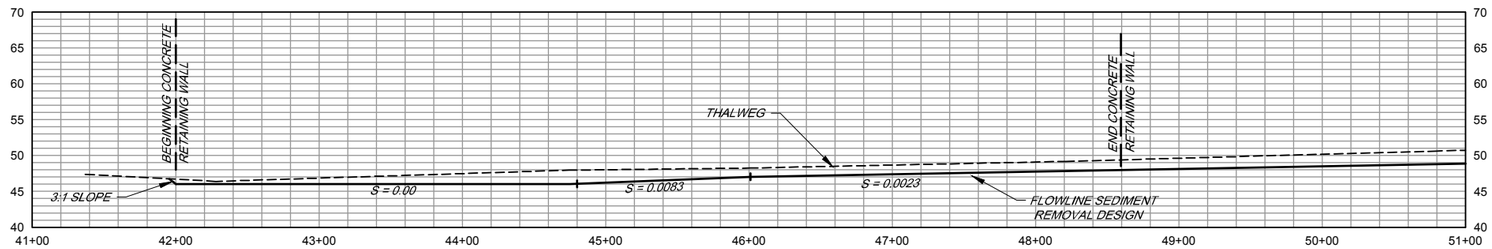
FILE NAME: 2016_Fife-G
CONTRACT NUMBER:
DRAWING NUMBER: G-01
SHEET 1 OF 3

\\sd-data\pro\flood control\zone 5a\Fife_Creek\2016-F-FIFE



SECTION

SCALE HORIZ 1" = 20'
VERT 1" = 10'



PROFILE

SCALE HORIZ 1" = 50'
VERT 1" = 10'

PLAN

SCALE 1" = 50'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH, ADJUST SCALE ACCORDINGLY

NO.	DATE	REVISION	BY

SONOMA COUNTY WATER AGENCY

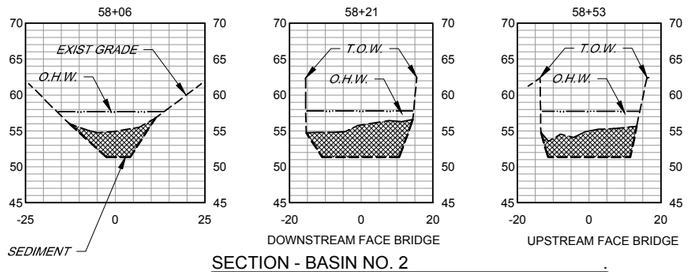
SCALE : AS SHOWN
DATE : April 26, 2016
DRAWN : ADF
REVIEWED :

SMP - LOWER RUSSIAN RIVER - ZONE 5A

FIFE CREEK - REACH 3 AND 4 (2016) SEDIMENT REMOVAL
PAN AND PROFILE STA 41+85 TO STA 51+00 AND SECTIONS

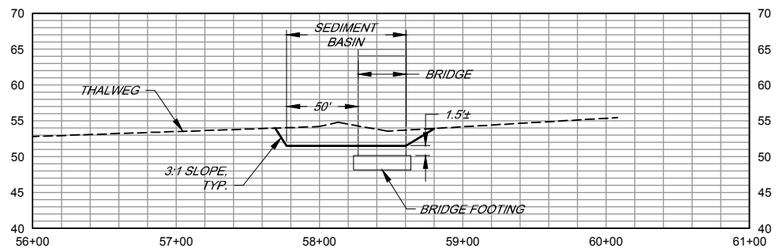
FILE NAME: 2016_Fife-C
CONTRACT NUMBER:
DRAWING NUMBER: C-01
SHEET 2 OF 3

\\sd-data\proj\flood control\zone 5a\Fife_Creek\2016-FIFE



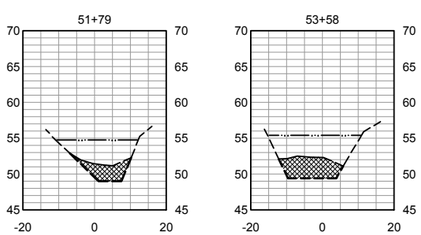
SECTION - BASIN NO. 2

SCALE HORIZ 1" = 20'
VERT 1" = 10'



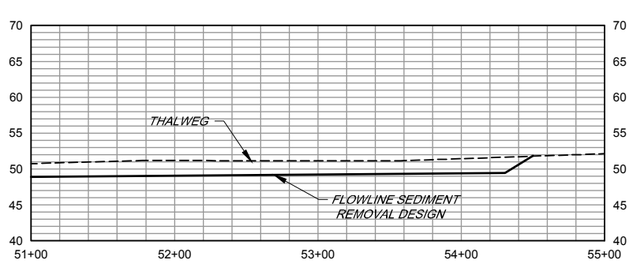
PROFILE - BASIN NO. 2

SCALE HORIZ 1" = 50'
VERT 1" = 10'



SECTION - BASIN NO. 1

SCALE HORIZ 1" = 20'
VERT 1" = 10'



PROFILE - BASIN NO. 1

SCALE HORIZ 1" = 50'
VERT 1" = 10'

BAR LENGTH ON ORIGINAL DRAWING EQUALS ONE INCH, ADJUST SCALE ACCORDINGLY

PLAN

SCALE 1" = 50'

SMP - LOWER RUSSIAN RIVER - ZONE 5A

NO.	DATE	REVISION	BY

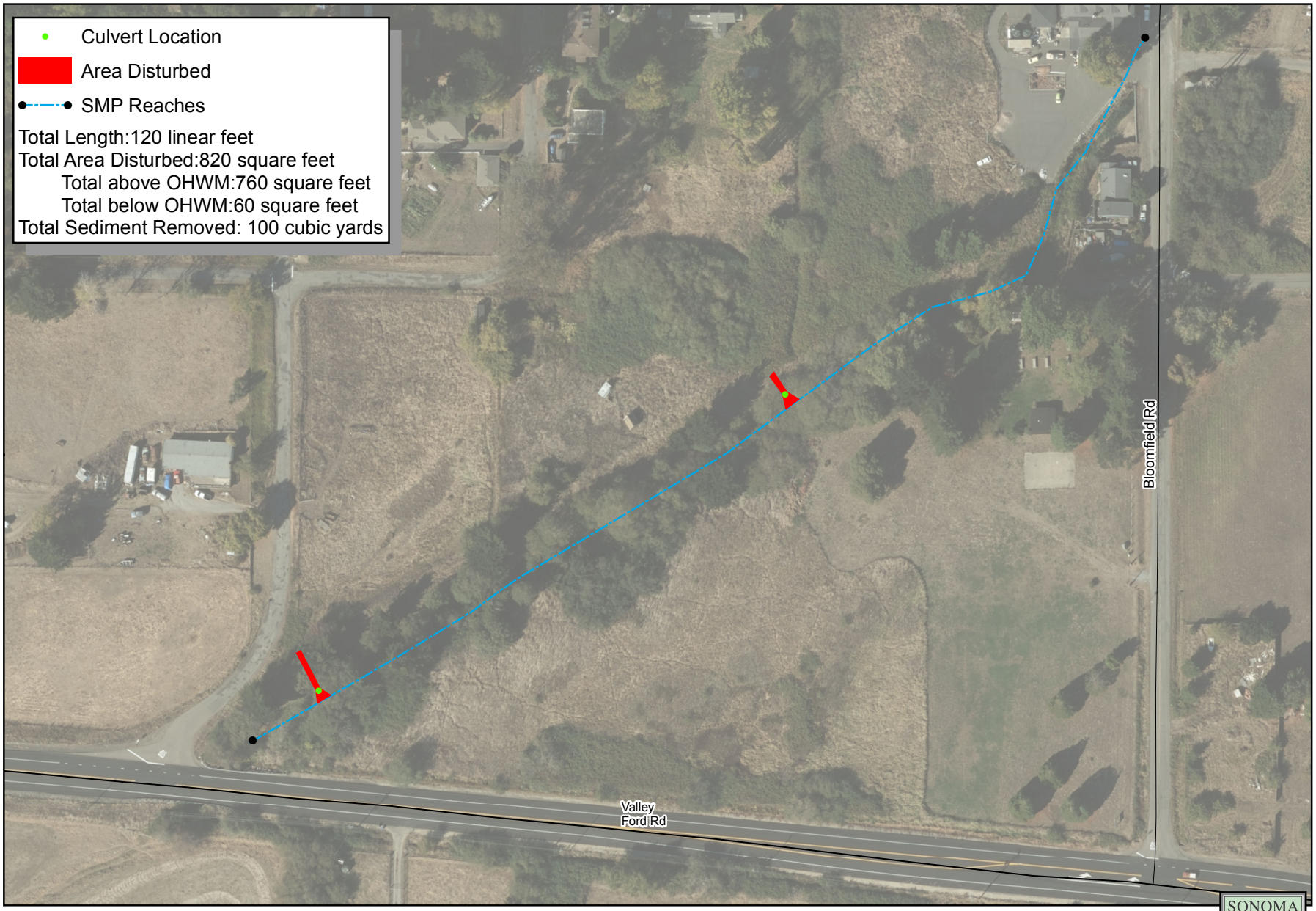
SONOMA COUNTY WATER AGENCY

SCALE : AS SHOWN
DATE : April 26, 2016
DRAWN : ADF
REVIEWED :

FIFE CREEK - REACH 3 AND 4 (2016) SEDIMENT REMOVAL
PLAN AND PROFILE STA 51+00 TO STA 54+50 AND STA 57+65
TO STA 58+80 AND SECTIONS

FILE NAME: 2016_Fife-C
CONTRACT NUMBER:
DRAWING NUMBER: C-02
SHEET 3 OF 3

\\sd-data\proj\flood control\zone 5a\Fife_Creek\2016-FIFE



Stream Maintenance Program
Bloomfield 1
Culvert Replacement

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

0 100 200 Feet

N W E S

SONOMA COUNTY WATER AGENCY

Appendix C

Site Specific Photographs

Zone 1A- Localized Scale Projects

Cook 1 - Localized Scale. Looking downstream from top of reach

Ducker 1 and 2A - Localized Scale (Photo 1 of 2). Double Box culvert above Rinconada Drive.

Ducker 1 and 2A - Localized Scale (Photo 2 of 2). Looking downstream from Rinconada Drive.

LaBath 2 - Localized Scale (Photo 1 of 2). Looking downstream from upper extent of project.

LaBath 2 - Localized Scale (Photo 2 of 2). Double culvert at end of reach.

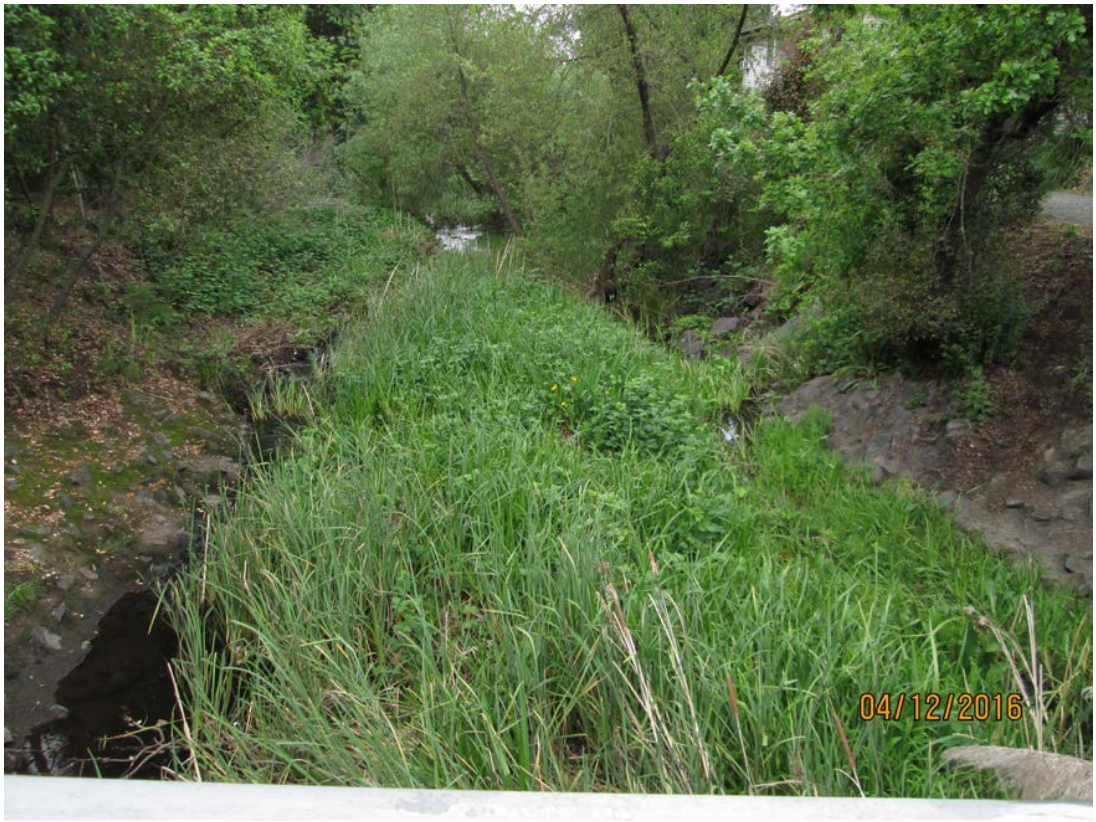
Laguna 3 - Localized Scale (Photo 1 of 3). Looking upstream from confluence with Washoe Creek.

Laguna 3 - Localized Scale (Photo 2 of 3). Looking downstream towards confluence with Washoe and Copeland Creeks

Laguna 3 - Localized Scale (Photo 3 of 3). Looking upstream from mid-reach.

Paulin 6A - Localized Scale (Photo 1 of 4). Looking upstream from McBride Lane.

Paulin 6A - Localized Scale (Photo 2 of 4). Looking downstream from McBride Lane.



Paulin 6A - Localized Scale (Photo 3 of 4). Looking upstream from Range Avenue.

Paulin 6A - Localized Scale (Photo 4 of 4). Looking downstream from Range Avenue.

Zone 1A- Reach Scale Projects

Copeland 2 - Reach Scale (Photo 1 of 4). Looking downstream from top of reach (at Seed Farm Drive).

Copeland 2 - Reach Scale (Photo 2 of 4). Looking downstream from mid-upper reach.

Copeland 2 - Reach Scale (Photo 3 of 4). Looking downstream from mid-upper reach.

Copeland 2 - Reach Scale (Photo 4 of 4). Looking downstream towards lower extent of project.

Laguna 4 - Reach Scale (Photo 1 of 2). Looking downstream from top of reach (at Gravenstein Way).

Laguna 4 - Reach Scale (Photo 2 of 2). Looking upstream from mid-reach.

Russell Creek 2 - Reach Scale (Photo 1 of 2). Looking downstream from top of reach (at Mendocino Avenue).

Russell Creek 2 - Reach Scale (Photo 2 of 2). Looking upstream from lower end of reach.

Zone 1A- In-stream Sediment Basin Clearing Projects

Brush 2A – In-stream Sediment Basin Clearing

Cook 2 - In-stream Sediment Basin Clearing

Copeland 3/4 - In-stream Sediment Basin Clearing (Photo 1 of 2). Looking upstream from Country Club Drive.

Copeland 3/4 - In-stream Sediment Basin Clearing (Photo 2 of 2). Looking downstream from Country Club Drive.

Copeland 4/5 - In-stream Sediment Basin Clearing (Photo 1 of 2). Looking upstream from Snyder Lane.

Copeland 4/5 - In-stream Sediment Basin Clearing (Photo 2 of 2). Looking downstream from Snyder Lane.

Five 1 - In-stream Sediment Basin Clearing. Looking downstream from Snyder Lane.

Wilfred 1C - In-stream Sediment Basin Clearing. Looking downstream from top of basin.

Santa Rosa 2 - In-stream Sediment Basin Clearing (Photo 1 of 2). Looking downstream from upper extent of project.

Santa Rosa 2 - In-stream Sediment Basin Clearing (Photo 2 of 2). Looking upstream from lower extent of project.

Zone 1A – Reservoir Outlet Clearing Projects

Brush Creek Reservoir Outlet Clearing.

Matanzas Creek Reservoir Outlet Clearing.

Piner Creek Reservoir Outlet Clearing.

Santa Rosa Creek Reservoir Outlet Clearing.

Russell 1A - Bank Repair. Looking up from lower project extent.

Peterson 1 - Bank Repair

Zone 2A – Localized Scale

East Fork McDowell 1 - Localized Scale. Looking downstream from top of reach (upper extent of project).

Zone 2A – Reach Scale

Corona 1 - Reach Scale (Photo 1 of 3). At confluence with Capri Creek (lower project extent).

Corona 1 - Reach Scale (Photo 2 of 3). Lower end of reach looking upstream.

Corona 1 - Reach Scale (Photo 3 of 3). Mid- reach looking upstream.

Zone 2A – In-stream Sediment Basin Clearing

Adobe 1 & 2 - Sediment Basin Clearing (Photo 1 of 3). Adobe 1 basin, below South McDowell Boulevard.

Adobe 1 & 2 - Sediment Basin Clearing (Photo 2 of 3). Adobe 2 basin, above South McDowell Boulevard.

Adobe 1 & 2 - Sediment Basin Clearing (Photo 3 of 3). Adobe 2 basin, below HWY 116.

Zone 3A – Reach Scale Sediment Removal

Fryer 3 – Reach Scale (Photo 1 of 3). Looking upstream from Arroyo Way (lower extent of project, cement-lined section).

Fryer 3 – Reach Scale (Photo 2 of 3). Looking upstream, from above the lower cement-lined section.

Fryer 3 – Reach Scale (Photo 3 of 3). Looking upstream to top of reach (West 4th Street).

Zone 5A – In-stream Sediment Basin Clearing

Fife 3 & 4 - Sediment Basin Clearing (Photo 1 of 3). Fife 3 basin, looking upstream along Armstrong Woods Road.

Fife 3 & 4 - Sediment Basin Clearing (Photo 2 of 3). Fife 4 basin below Laughlin Road.

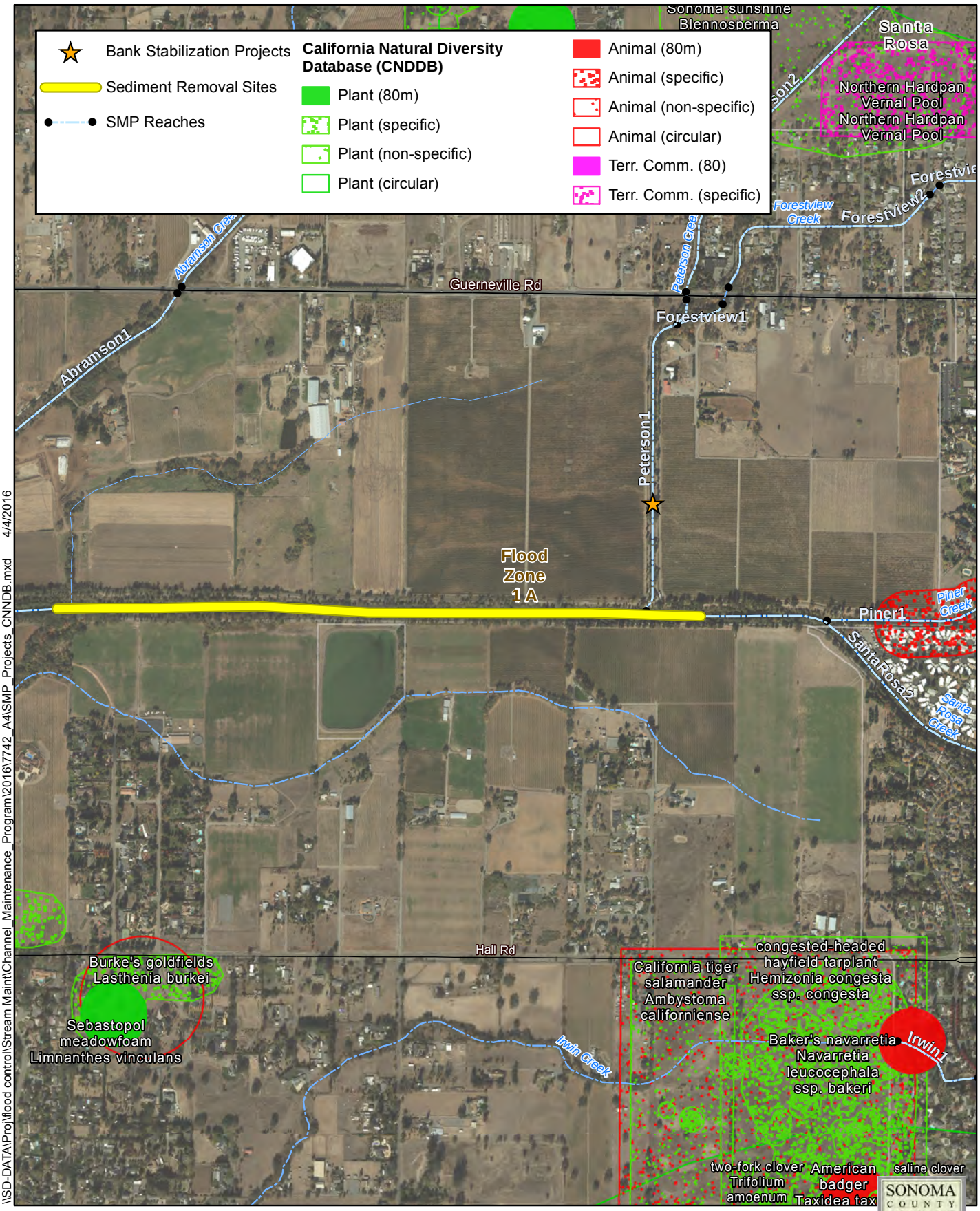
Fife 3 & 4 - Sediment Basin Clearing (Photo 3 of 3). Fife 4 basin at Laughlin Road.

Zone 8A – Culvert Replacement Project

Bloomfield 1 Culvert replacement. Disturbance will be isolated to right side bank and access road (picture left) at two culvert locations.

Appendix D

Project Maps with California Natural Diversity Database (CNDDB) Overlay



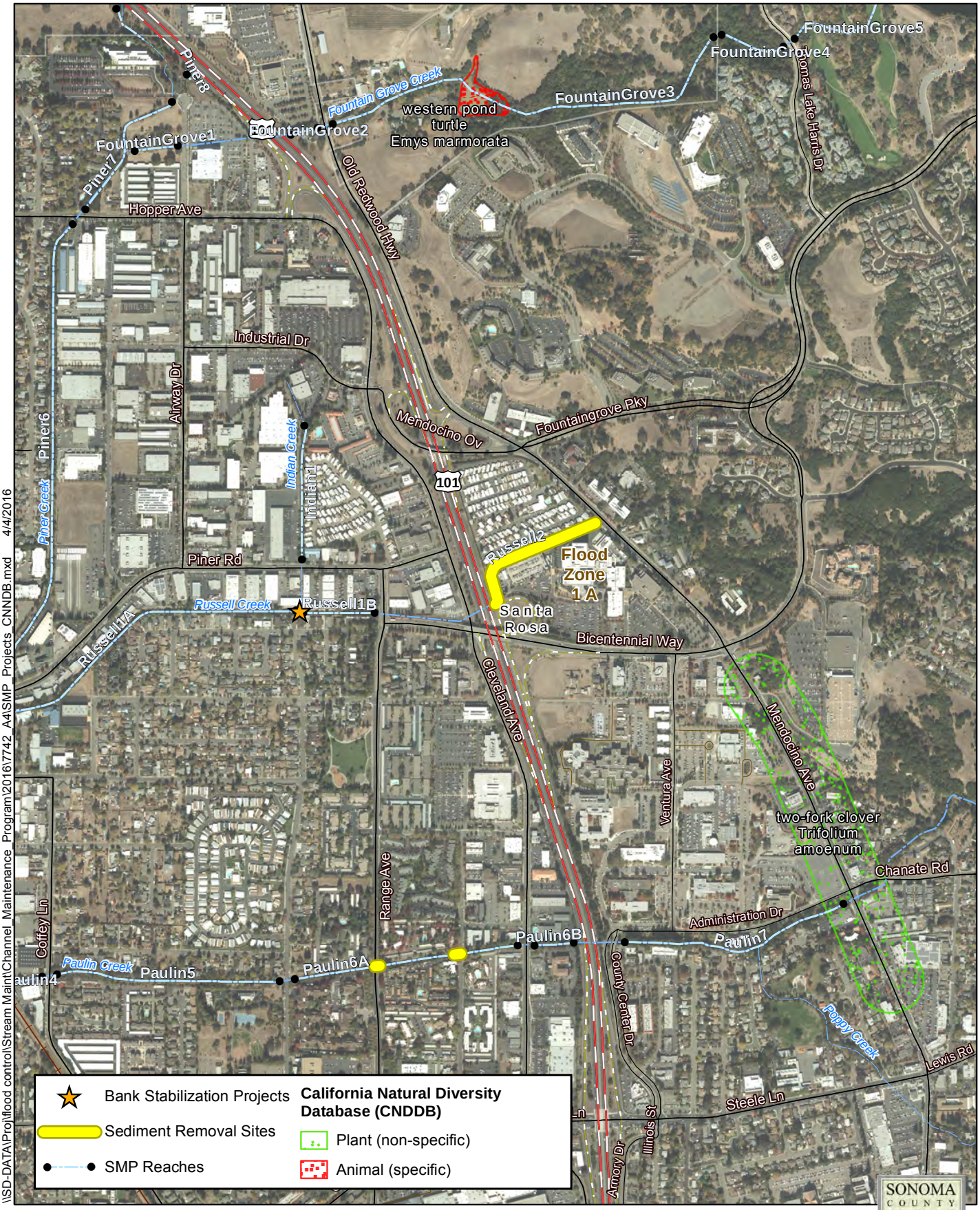
\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/4/2016

2016 Stream Maintenance Program Proposed Projects
Santa Rosa A

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 500 1,000 Feet



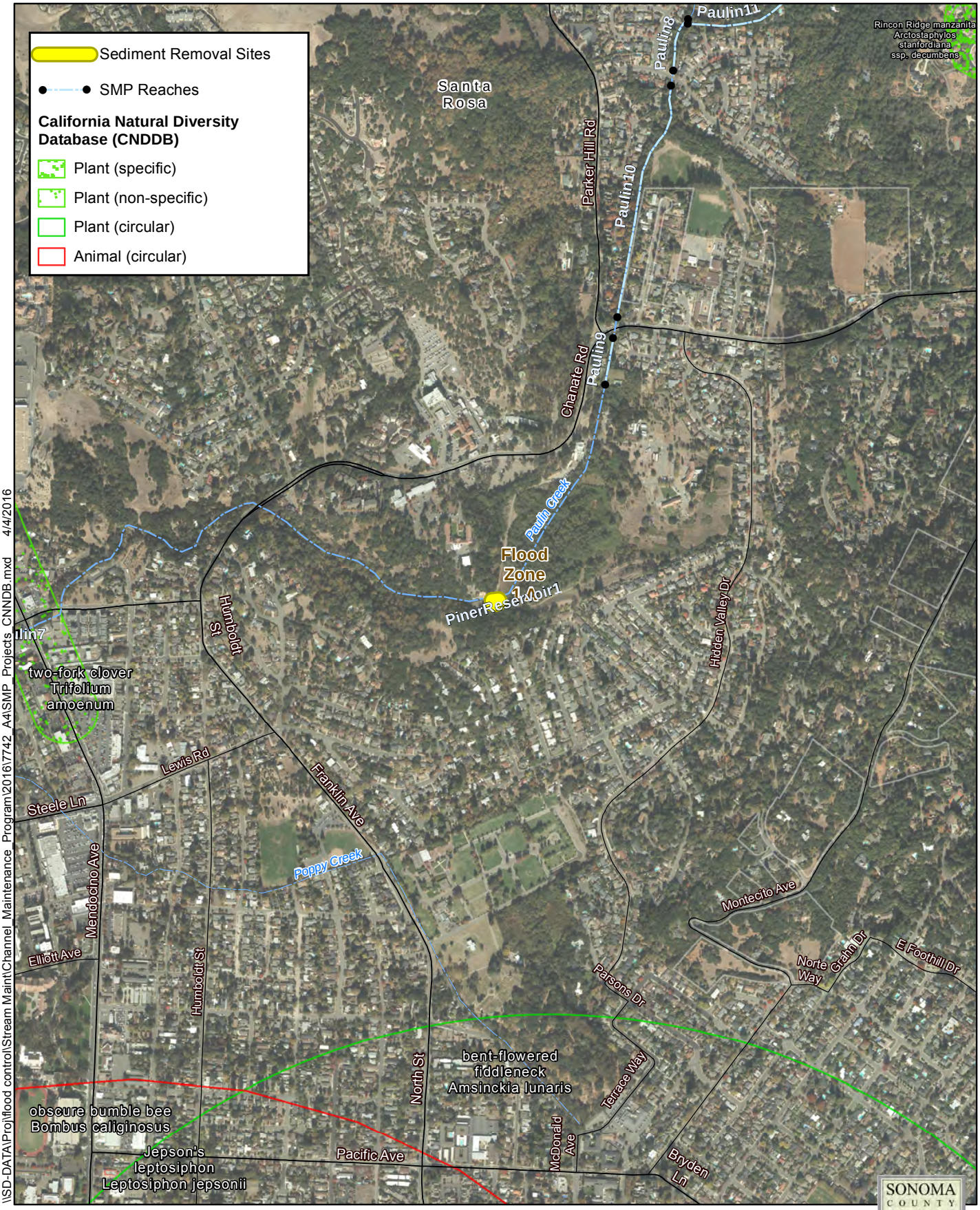
2016 Stream Maintenance Program Proposed Projects
Santa Rosa B

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 500 1,000 Feet

SONOMA COUNTY WATER AGENCY



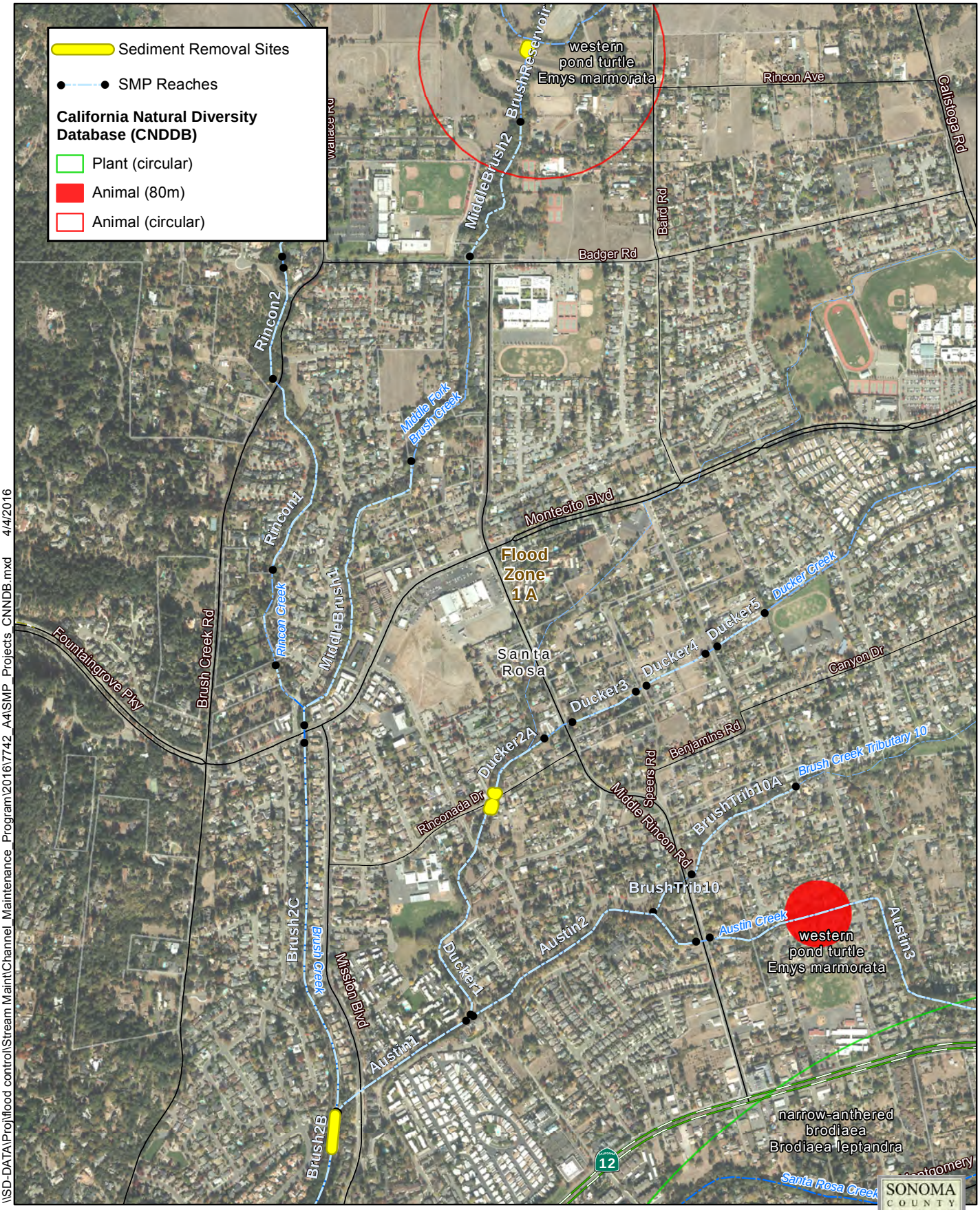
\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/4/2016

2016 Stream Maintenance Program Proposed Projects
Santa Rosa C

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 500 1,000 Feet



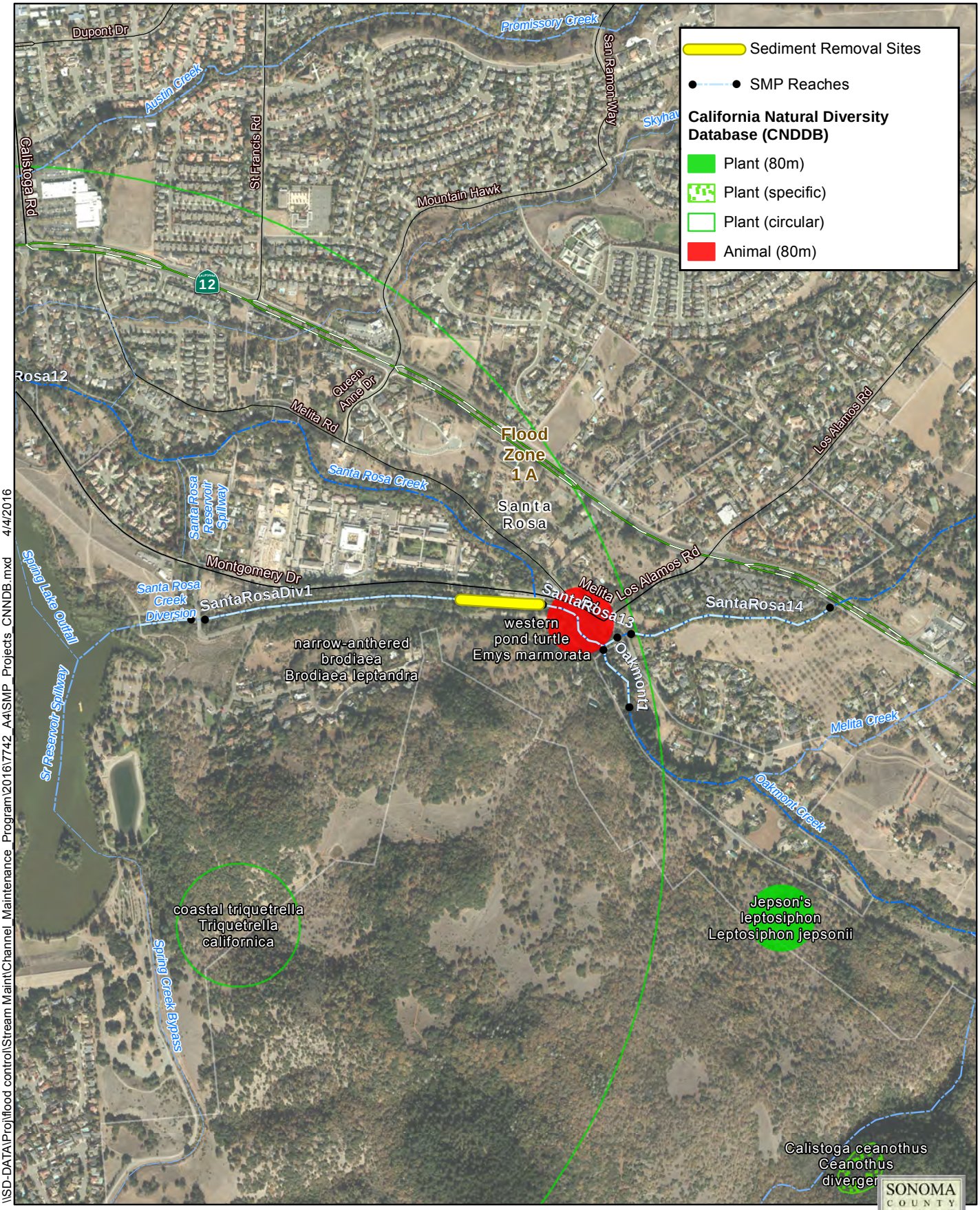
\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/4/2016

2016 Stream Maintenance Program Proposed Projects
Santa Rosa D

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 500 1,000 Feet



\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/4/2016

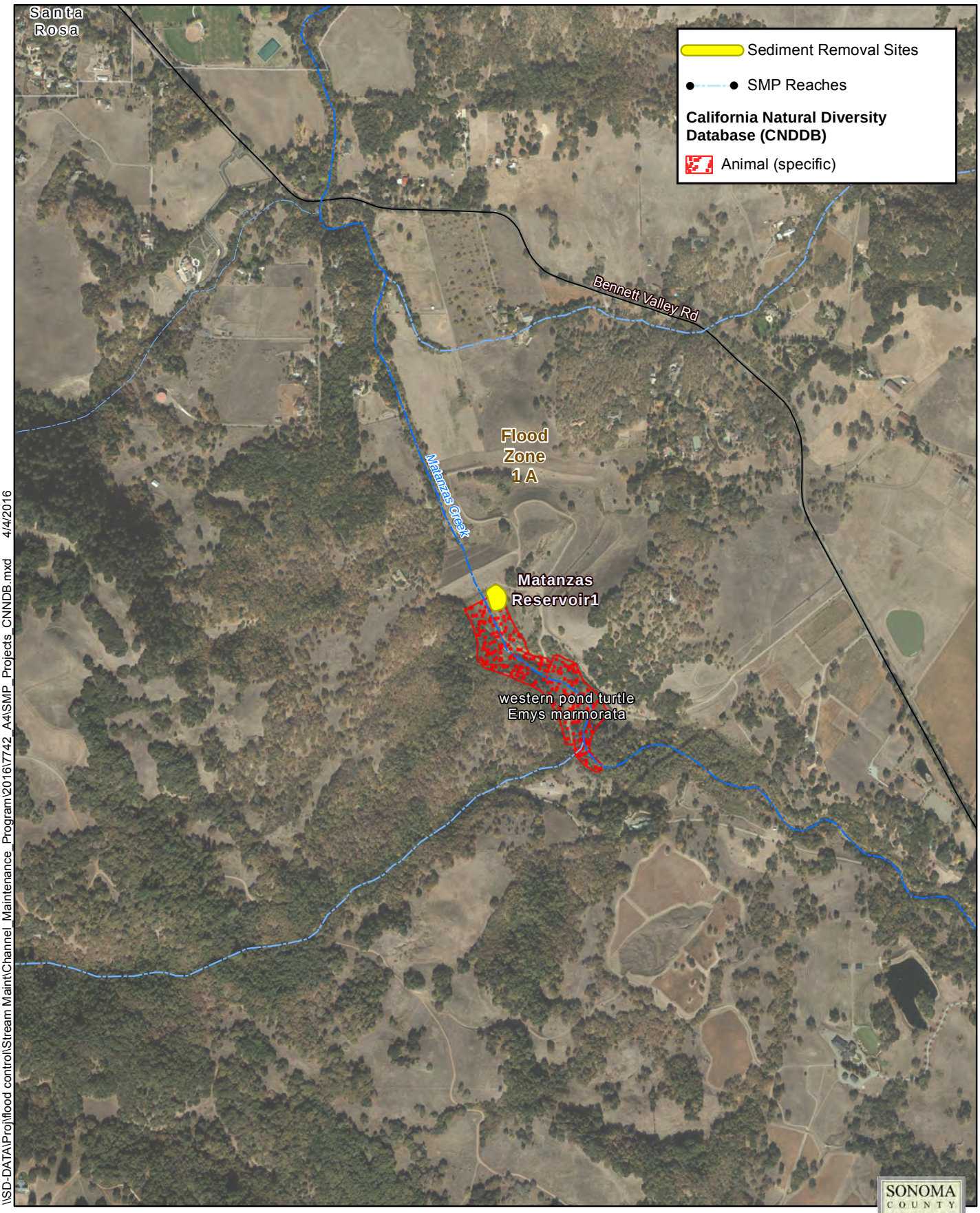
2016 Stream Maintenance Program Proposed Projects
Santa Rosa E

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 500 1,000 Feet

SONOMA COUNTY WATER AGENCY



\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/4/2016

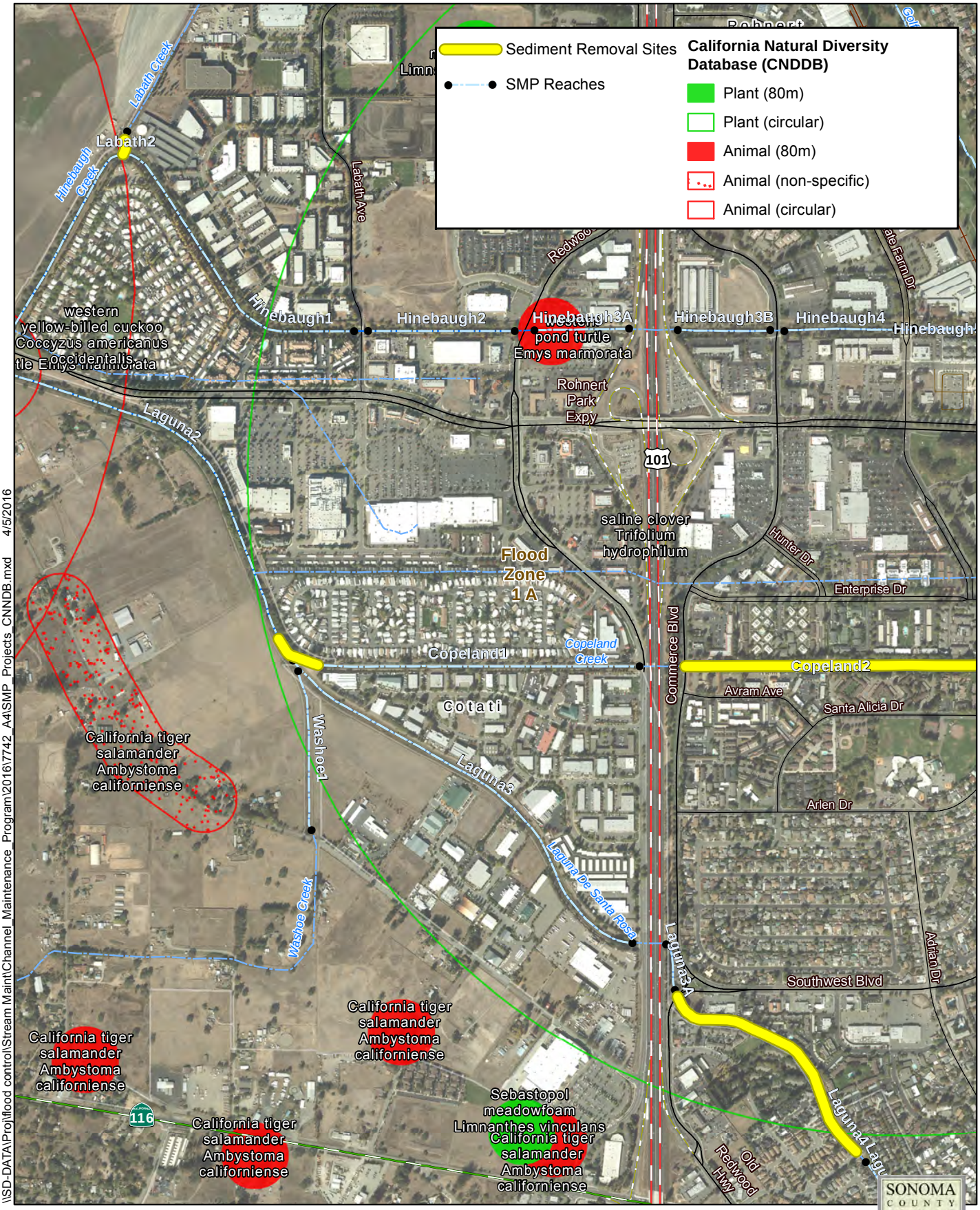
2016 Stream Maintenance Program Proposed Projects
Santa Rosa F

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 500 1,000 Feet

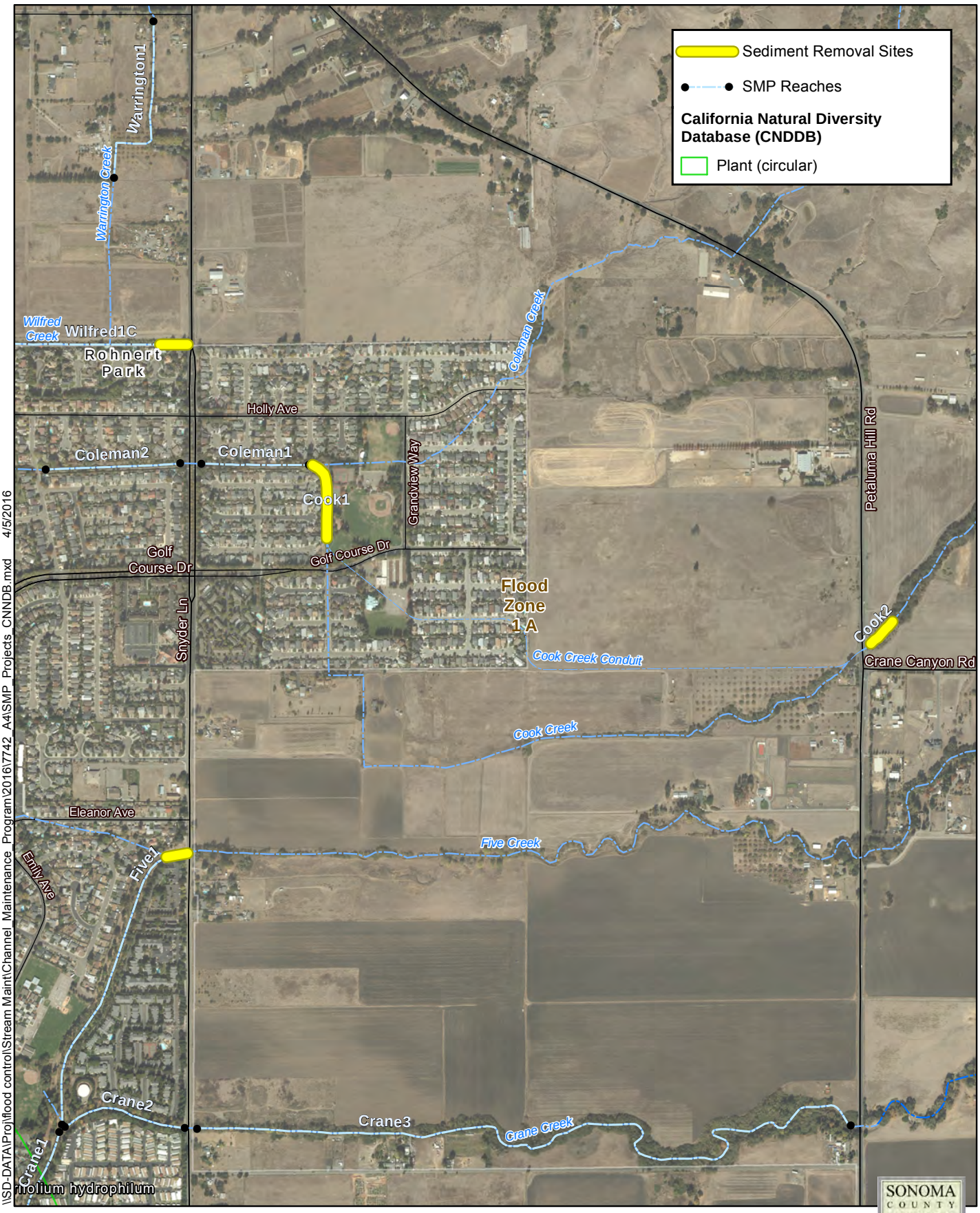
SONOMA COUNTY WATER AGENCY



\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/5/2016

2016 Stream Maintenance Program Proposed Projects
Rohnert Park A

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.



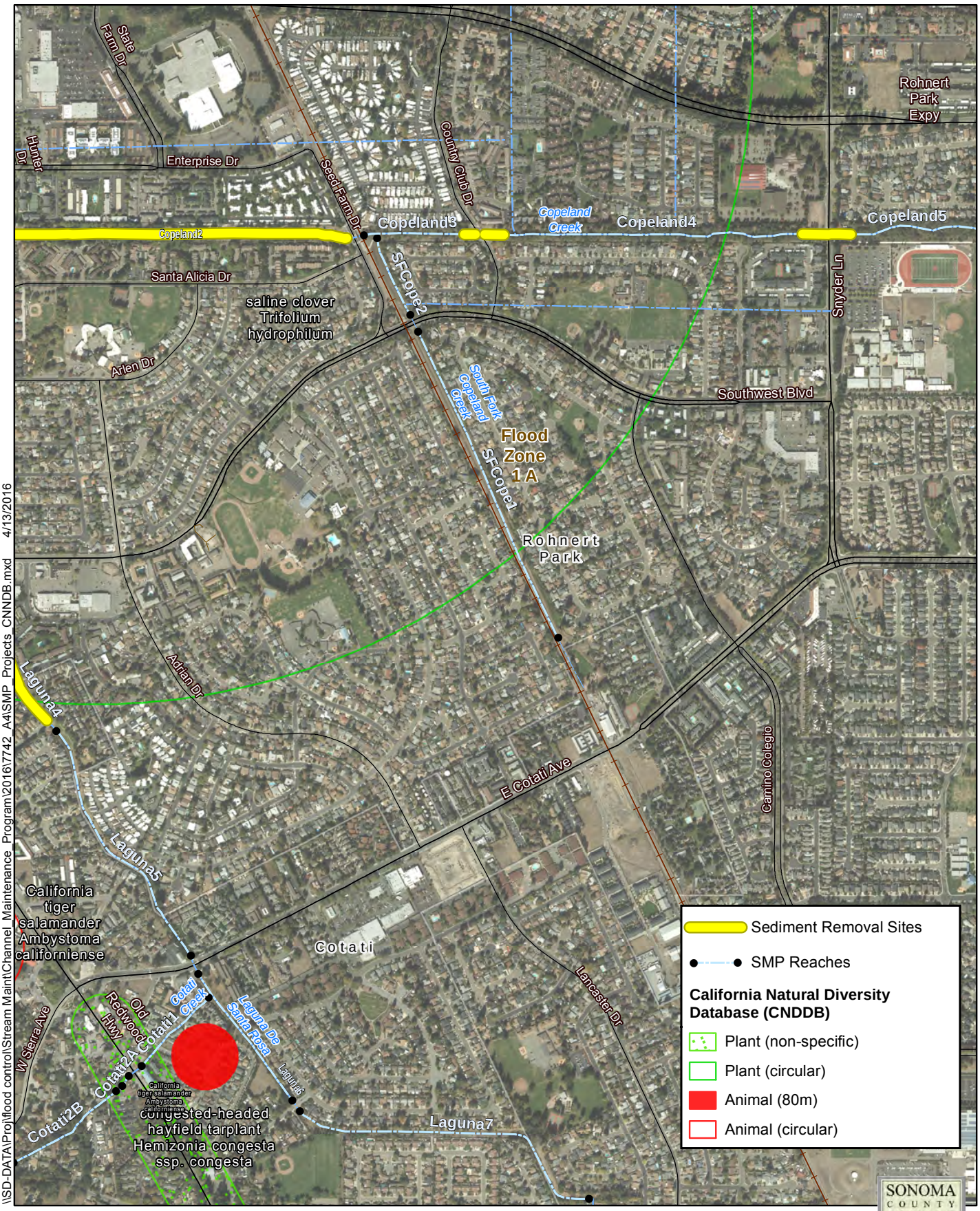
2016 Stream Maintenance Program Proposed Projects
Rohnert Park B

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

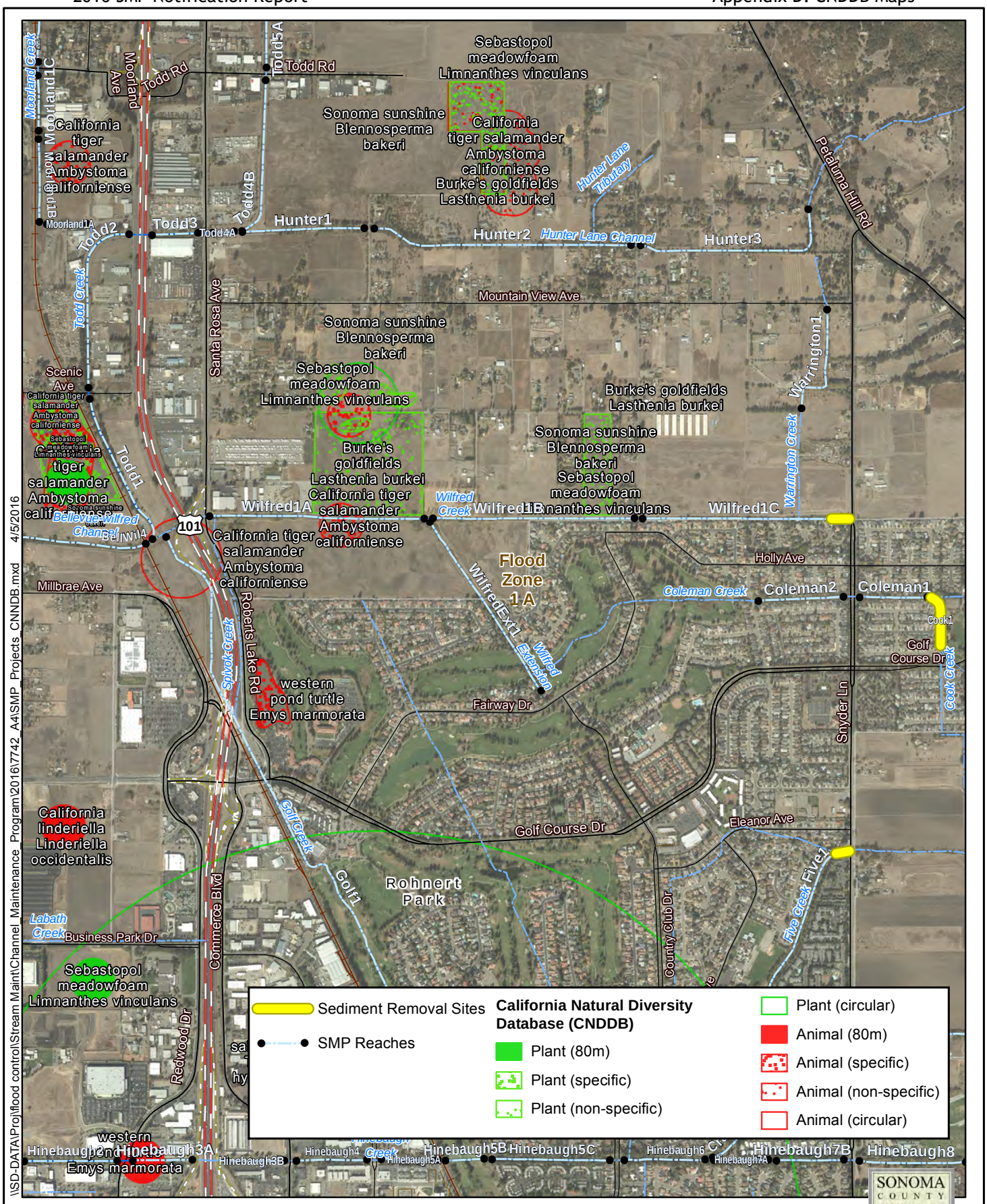
0 500 1,000 Feet

SONOMA COUNTY WATER AGENCY



2016 Stream Maintenance Program Proposed Projects
Rohnert Park C

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.



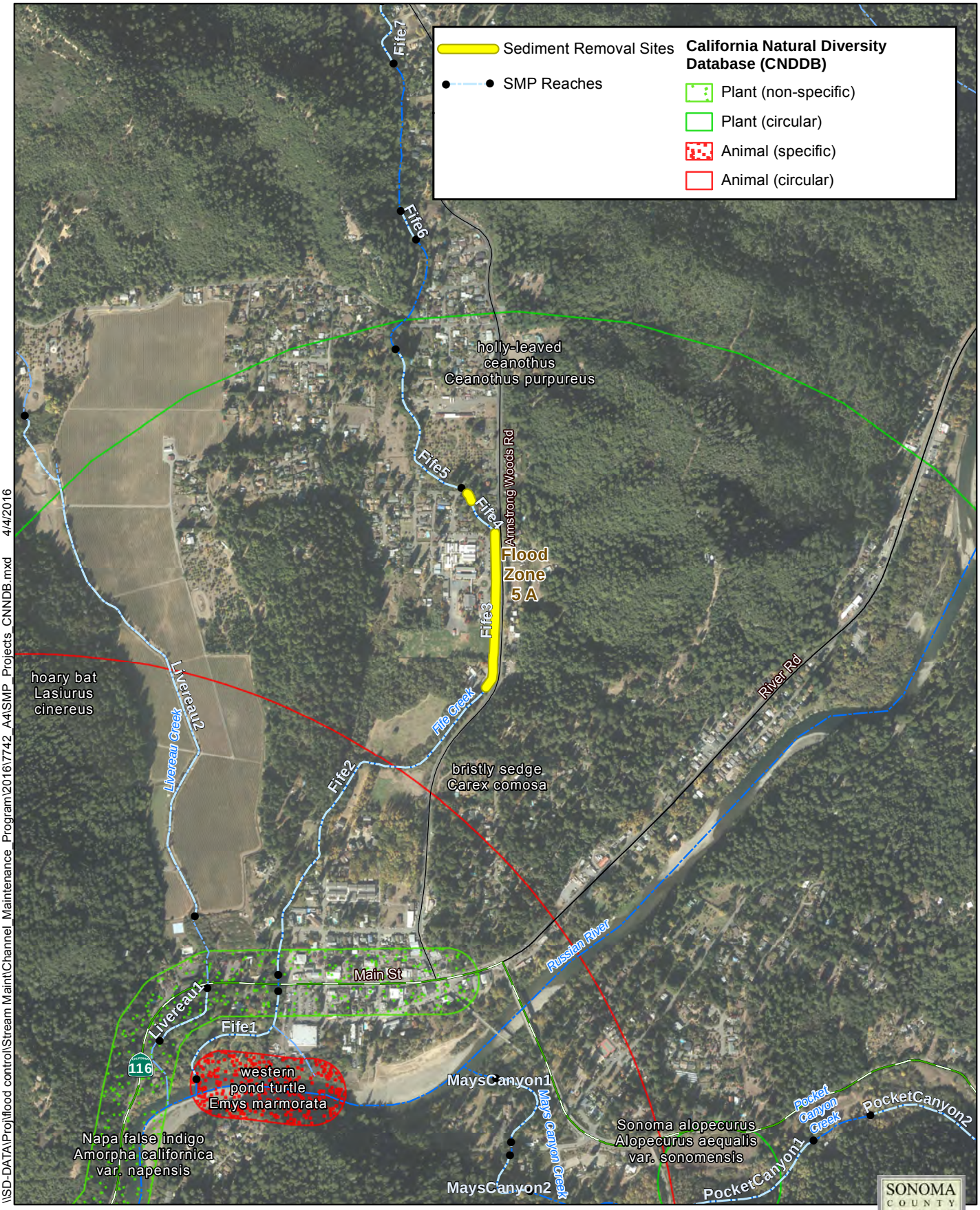
2016 Stream Maintenance Program Proposed Projects
Rohnert Park D

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 750 1,500 Feet

SONOMA COUNTY WATER AGENCY



\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/4/2016

2016 Stream Maintenance Program Proposed Projects
Guerneville A

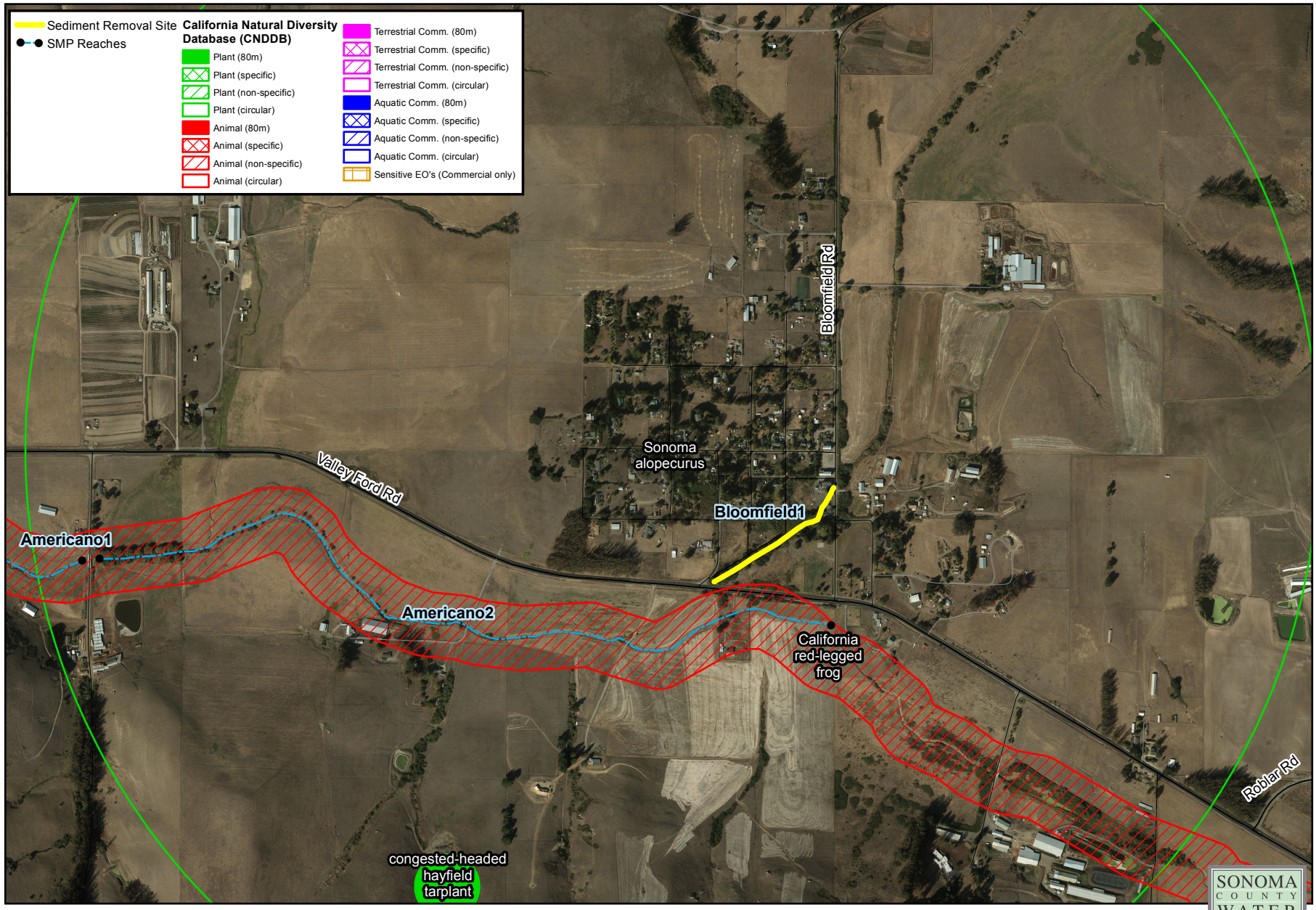
DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 500 1,000 Feet

SONOMA COUNTY WATER AGENCY

S:\Erpad\NRS\ChannelMaint\Stream Maintenance Program\Updated GIS maps\CNDDB maps\Bloomfield_2015_CNDDB.mxd



2016 Stream Maintenance Program Proposed Projects Bloomfield

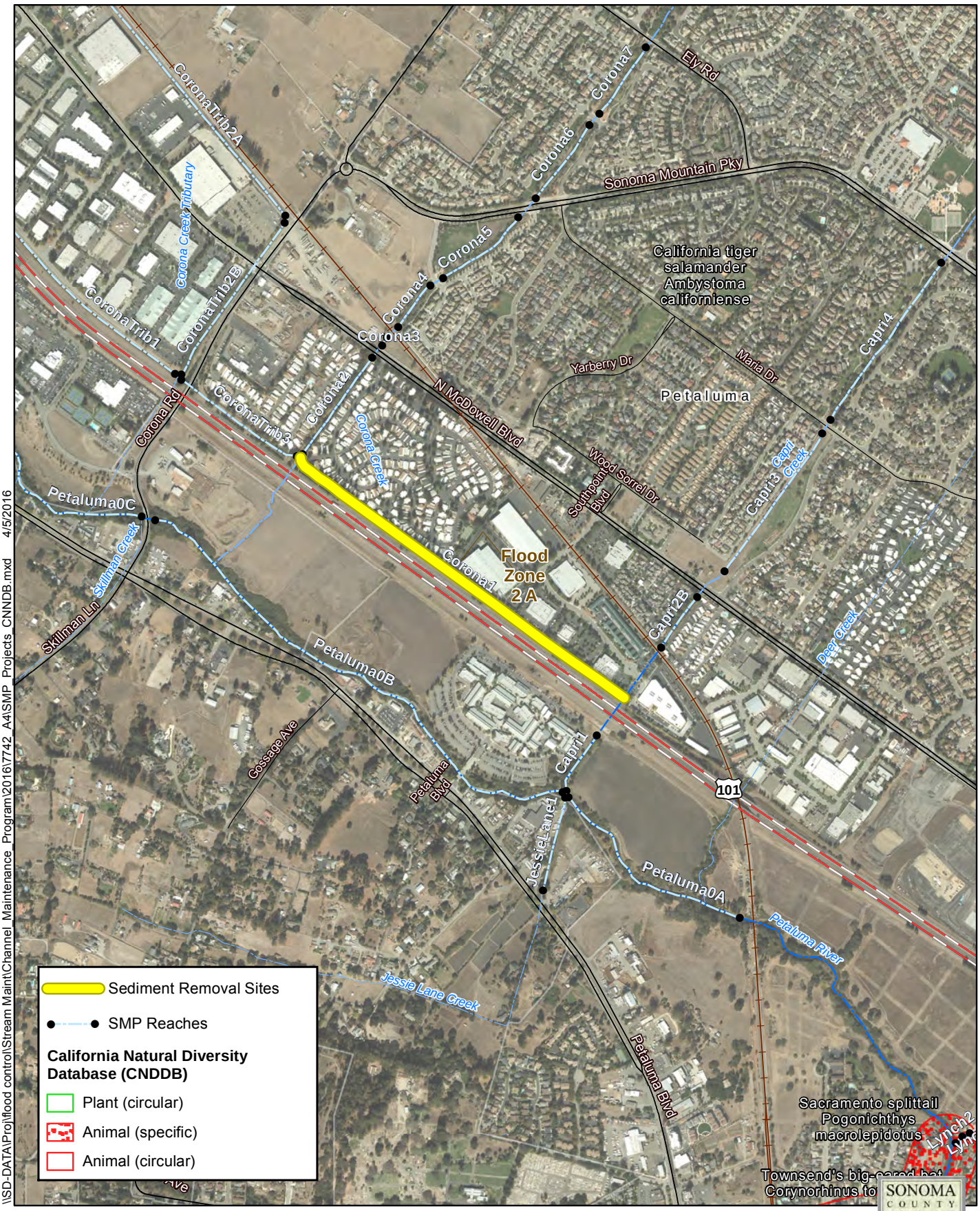
This map document and associated data are distributed for informational purposes **DISCLAIMER:** published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

0 1,250 2,500 Feet

Project Location Map
Printed on 4/15/2015

N W E S

SONOMA COUNTY WATER AGENCY



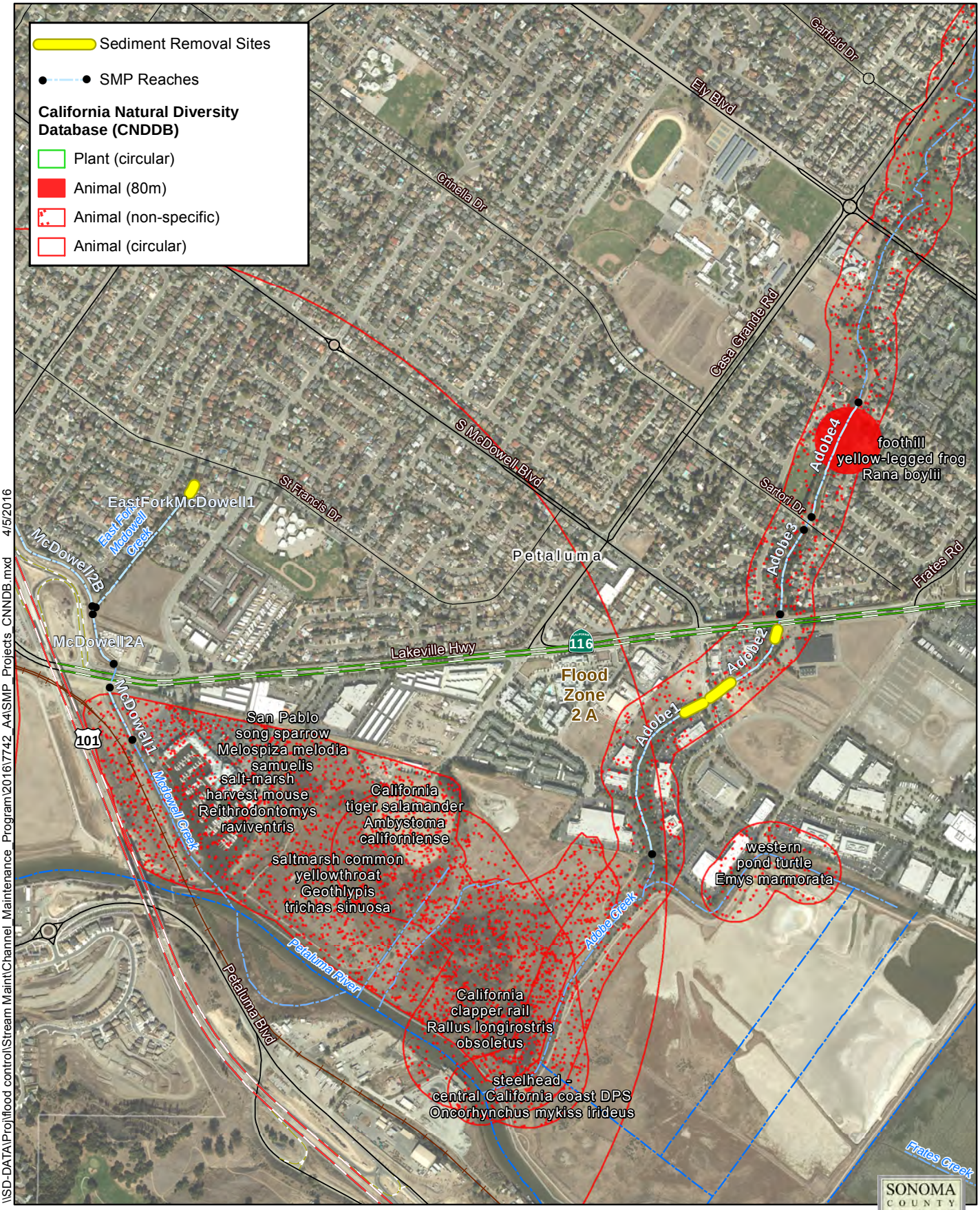
2016 Stream Maintenance Program Proposed Projects
Petaluma A

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

0 500 1,000 Feet

SONOMA COUNTY WATER AGENCY



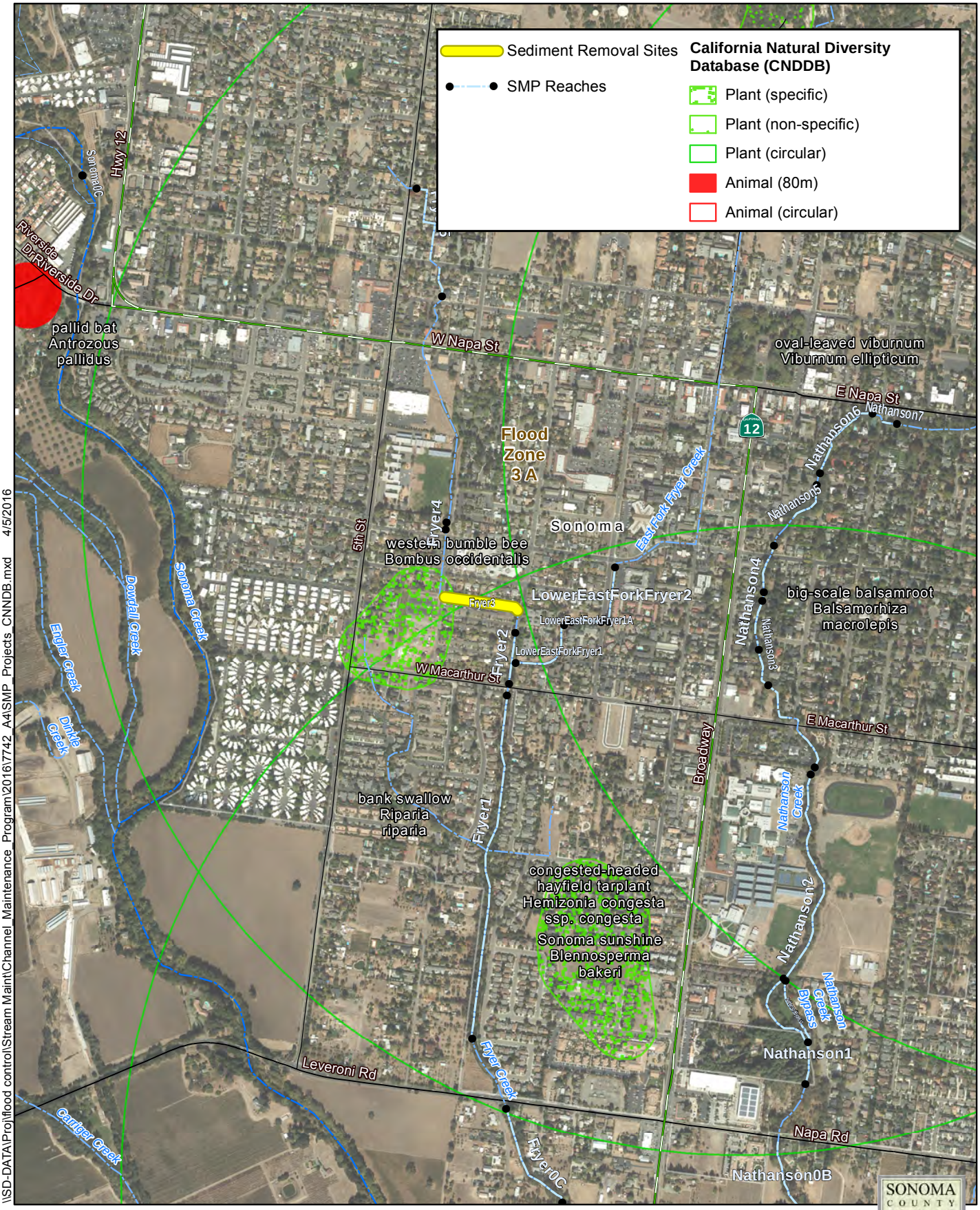
\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/5/2016

2016 Stream Maintenance Program Proposed Projects
Petaluma B

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

N

Feet
0 500 1,000



\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CNNDB.mxd 4/5/2016

2016 Stream Maintenance Program Proposed Projects
Sonoma A

DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.

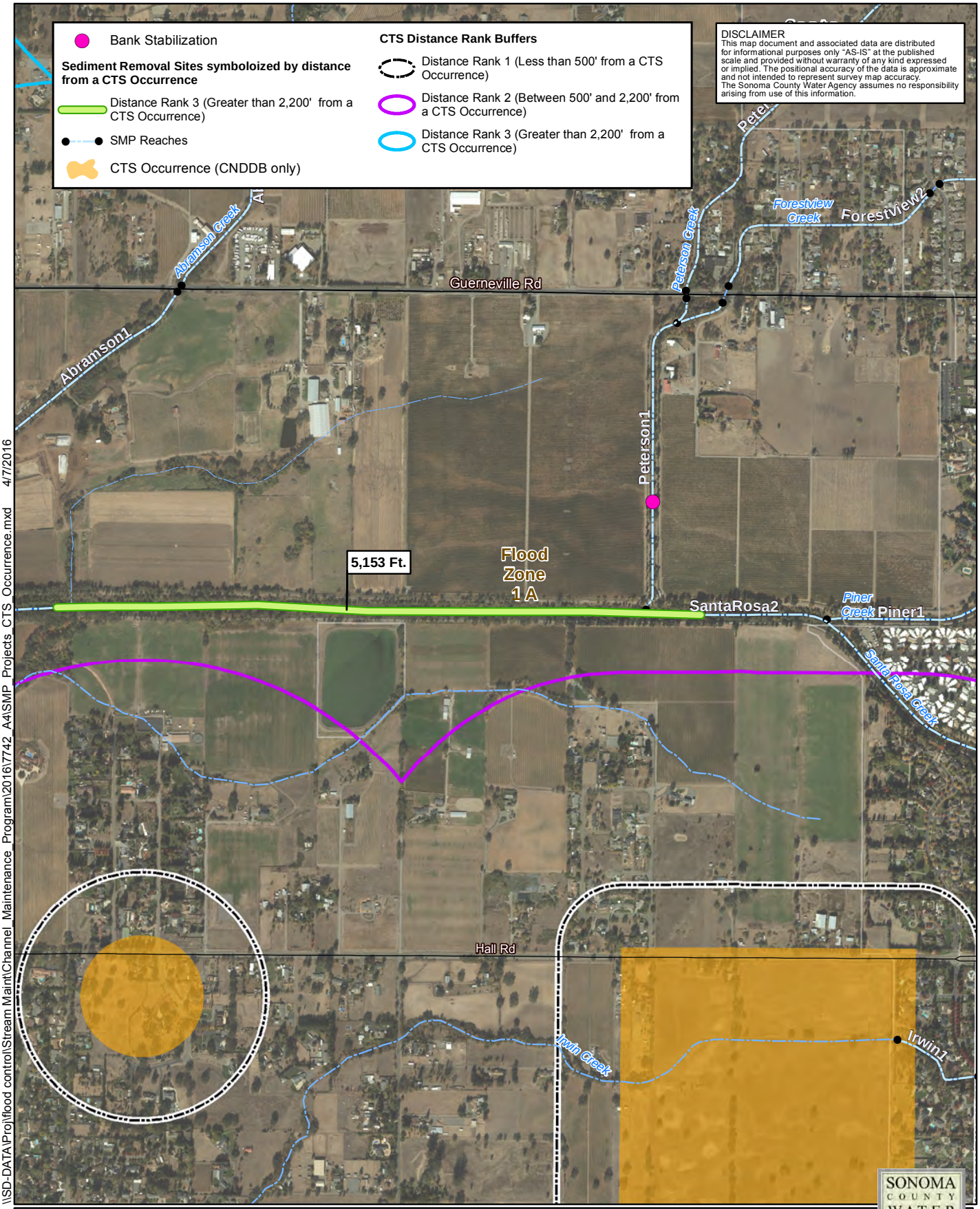
N

0 500 1,000 Feet

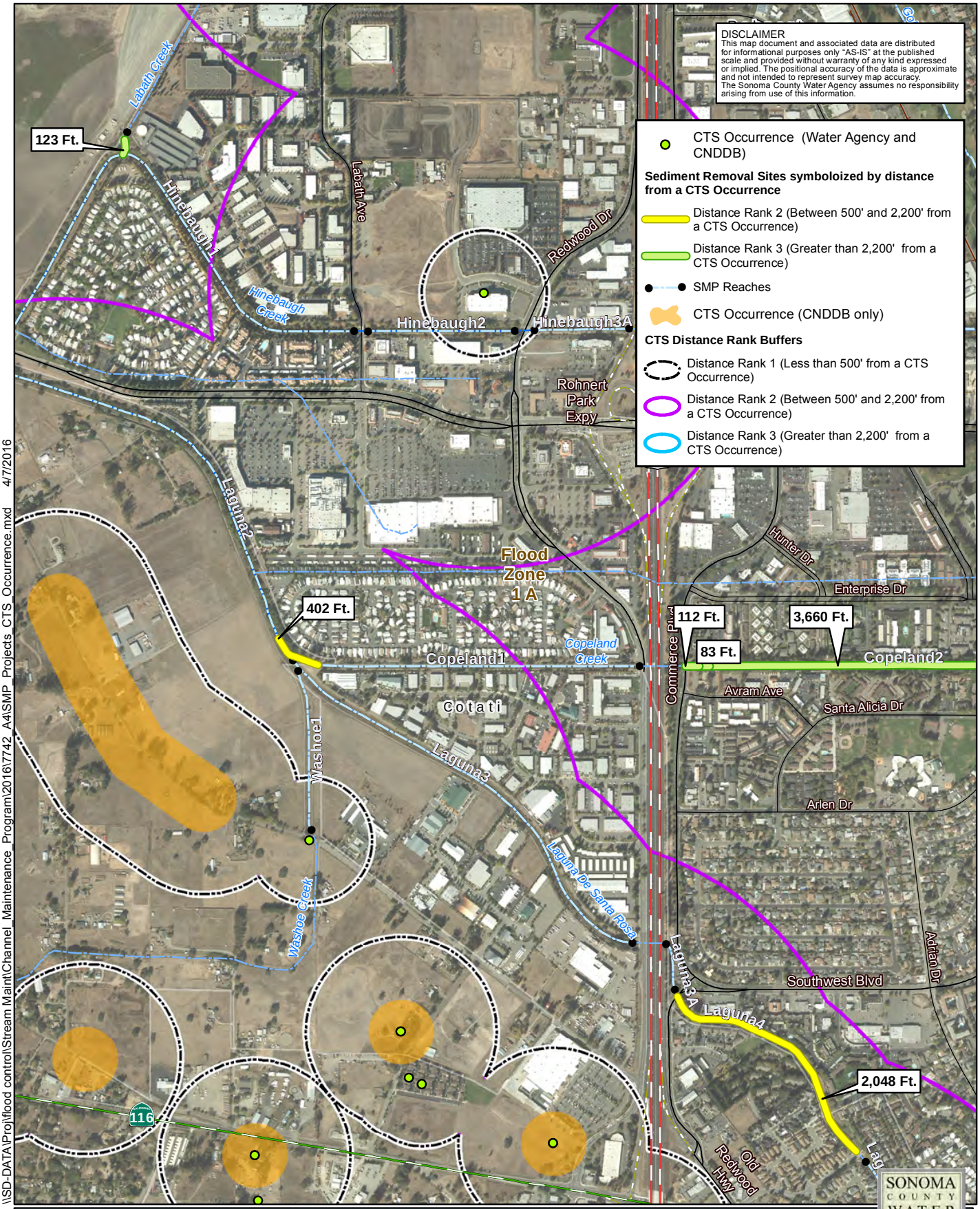
SONOMA COUNTY WATER AGENCY

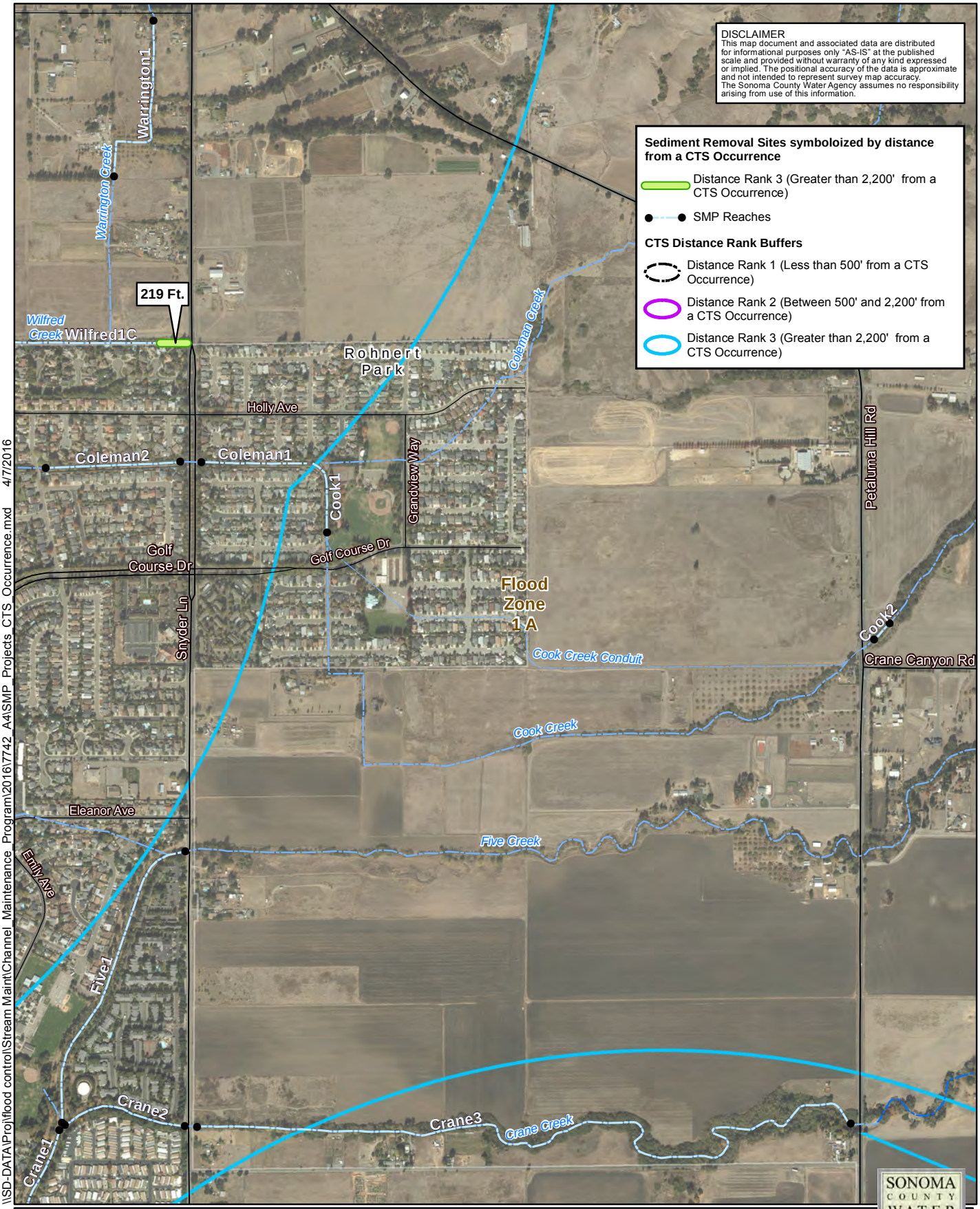
Appendix E

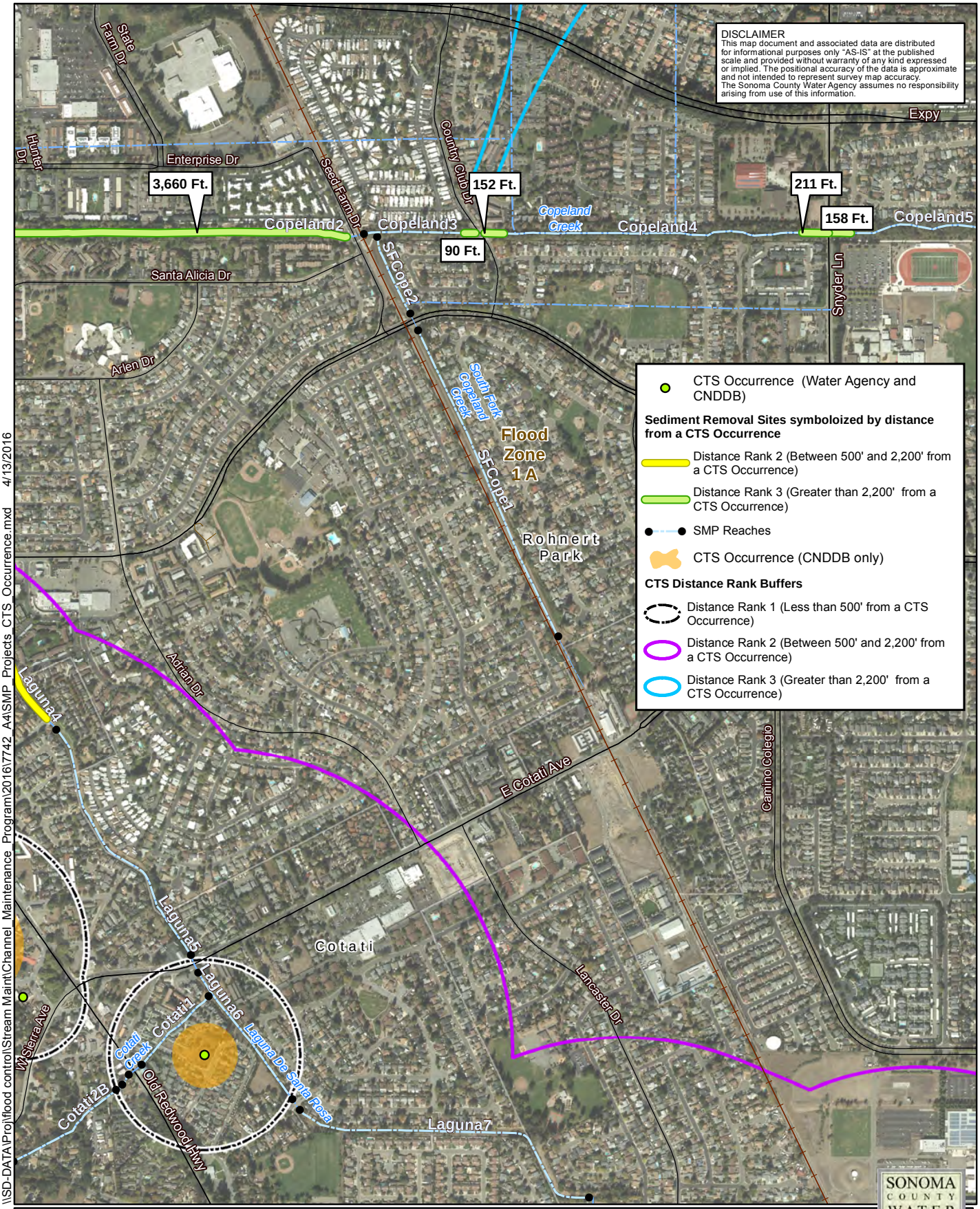
Project Maps with California Tiger Salamander (CTS) Occurrence Overlay



Potential Occurrence and Distance Ranks for California Tiger Salamander
Stream Maintenance Program, Flood Zone 1A
Santa Rosa


DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.
CTS Occurrence (Water Agency and CNDDB)
Sediment Removal Sites symboloized by distance from a CTS Occurrence
Distance Rank 2 (Between 500' and 2,200' from a CTS Occurrence)
Distance Rank 3 (Greater than 2,200' from a CTS Occurrence)
SMP Reaches
CTS Occurrence (CNDDB only)
CTS Distance Rank Buffers
Distance Rank 1 (Less than 500' from a CTS Occurrence)
Distance Rank 2 (Between 500' and 2,200' from a CTS Occurrence)
Distance Rank 3 (Greater than 2,200' from a CTS Occurrence)
123 Ft.
402 Ft.
112 Ft.
83 Ft.
3,660 Ft.
2,048 Ft.
Labath Creek
Hinebaugh1
Hinebaugh Creek
Labath Ave
Redwood Dr
Hinebaugh2
Hinebaugh3A
Rohnert Park Expy
Laguna2
Flood Zone 1 A
Copeland1
Copeland Creek
Cotati
Washoe1
Washoe Creek
Laguna3
Laguna De Santa Rosa
Laguna3A
Laguna4
Commerce Blvd
Hunter Dr
Enterprise Dr
Copeland2
Avram Ave
Santa Alicia Dr
Arlen Dr
Adrian Dr
Southwest Blvd
Old Redwood Hwy
116
Potential Occurrence and Distance Ranks
for California Tiger Salamander
Stream Maintenance Program, Flood Zone 1A
Rohnert Park A
N
Feet
0 500 1,000
SONOMA COUNTY WATER AGENCY
\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CTS_Occurrence.mxd 4/7/2016


DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.
Sediment Removal Sites symboloized by distance from a CTS Occurrence
Distance Rank 3 (Greater than 2,200' from a CTS Occurrence)
SMP Reaches
CTS Distance Rank Buffers
Distance Rank 1 (Less than 500' from a CTS Occurrence)
Distance Rank 2 (Between 500' and 2,200' from a CTS Occurrence)
Distance Rank 3 (Greater than 2,200' from a CTS Occurrence)
219 Ft.
Warrington1
Warrington Creek
Wilfred Creek
Wilfred1C
Rohnert Park
Coleman Creek
Holly Ave
Coleman2
Coleman1
Cook1
Grandview Way
Petaluma Hill Rd
Golf Course Dr
Golf Course Dr
Flood Zone 1 A
Snyder Ln
Cook2
Cook Creek Conduit
Crane Canyon Rd
Cook Creek
Eleanor Ave
Five Creek
Emily Ave
Five1
Crane2
Crane3
Crane Creek
Crane1
SONOMA COUNTY WATER AGENCY
Potential Occurrence and Distance Ranks
for California Tiger Salamander
Stream Maintenance Program, Flood Zone 1A
Rohnert Park B
N
Feet
0 500 1,000
\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CTS_Occurrence.mxd 4/7/2016


DISCLAIMER
This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from use of this information.
Expy
State Farm Dr
Hunter Dr
Enterprise Dr
Seed Farm Dr
Country Club Dr
3,660 Ft.
152 Ft.
211 Ft.
158 Ft.
90 Ft.
Copeland2
Copeland3
Copeland4
Copeland5
Copeland Creek
SFCope2
SFCope1
South Fork Copeland Creek
Santa Alicia Dr
Snyder Ln
Arlen Dr
Flood Zone 1A
Rohnert Park
Adrian Dr
Laguna4
Laguna5
Laguna6
Laguna7
Laguna De Santa Rosa
E Cotati Ave
Camino Colegio
Cotati
Lancaster Dr
W Sierra Ave
Cotati1
Cotati2B
Cotati Creek
Old Redwood Hwy
CTS Occurrence (Water Agency and CNDDB)
Sediment Removal Sites symboloized by distance from a CTS Occurrence
Distance Rank 2 (Between 500' and 2,200' from a CTS Occurrence)
Distance Rank 3 (Greater than 2,200' from a CTS Occurrence)
SMP Reaches
CTS Occurrence (CNDDB only)
CTS Distance Rank Buffers
Distance Rank 1 (Less than 500' from a CTS Occurrence)
Distance Rank 2 (Between 500' and 2,200' from a CTS Occurrence)
Distance Rank 3 (Greater than 2,200' from a CTS Occurrence)
\\SD-DATA\Proj\flood control\Stream Maint\Channel_Maintenance_Program\2016\7742_A4\SMP_Projects_CTS_Occurrence.mxd 4/13/2016
Potential Occurrence and Distance Ranks
for California Tiger Salamander
Stream Maintenance Program, Flood Zone 1A
Rohnert Park C
N
0 500 1,000 Feet
SONOMA COUNTY WATER AGENCY

Appendix F

Cultural Resource Reports

A Cultural Resources Study for the Peterson Bank Repair Project Santa Rosa, Sonoma County, California

Julianne Mercer, B.A.
and
Eileen Barrow, M.A./R.P.A.

April 23, 2015

A Cultural Resources Study for the Peterson Bank Repair Project Santa Rosa, Sonoma County, California

Prepared by:

Julianne Mercer, B.A.
and
Eileen Barrow, M.A./R.P.A.

Tom Origer & Associates
Post Office Box 1531
Rohnert Park, California 94927
(707) 584-8200
(707) 584-8300 (fax)

Prepared for:

Candace Messner
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403

April 23, 2015

ABSTRACT

Tom Origer & Associates conducted a cultural resources study for the Peterson Bank Repair Project, 900 feet north of the confluence of the artificial channels of Peterson Creek and Santa Rosa Creek, Santa Rosa Sonoma County, California. The study was requested by Candace Messner, Sonoma County Water Agency, in compliance with requirements of the California Environmental Quality Act. The study area consists of approximately forty feet of the east bank of Peterson Creek.

This study included archival research at the Northwest Information Center, Sonoma State University (NWIC File No. 14-1396), examination of the library and files of Tom Origer & Associates, field inspection of the project location, and contact with the Native American community. Field survey of the study area found no cultural resources. Documentation pertaining to this study is on file at the offices of Tom Origer & Associates (File No. 15-027).

Synopsis

Project:	Peterson Bank Repair Project
Location:	900 feet north of the confluence of the artificial channels of Peterson Creek and Santa Rosa Creek, Santa Rosa, Sonoma County, California
Quadrangle:	Sebastopol, California 7.5’ series
Study Type:	Intensive survey
Scope:	~40 feet of bank on the east side of Peterson Creek
Finds:	None

Project Personnel

Eileen Barrow co-authored the report, conducted the fieldwork, and provided project oversight. She has been with Tom Origer & Associates since 2005. She holds a Master of Arts in Cultural Resources Management from Sonoma State University. Mrs. Barrow's experience includes work that has been completed in compliance with local ordinances, CEQA, NEPA, and Section 106 (NHPA) requirements. Her professional affiliations include the Society for American Archaeology, the Society for California Archaeology, the Cotati Historical Society, the Sonoma County Historical Society, the Western Obsidian Focus Group, and the Register of Professional Archaeologists.

Julianne Mercer co-authored the report and participated in the fieldwork. She has been with Tom Origer & Associates since 2014. She holds a Bachelor of Arts in History from Sonoma State University.

CONTENTS

Abstract i
Synopsis i
Project Personnel ii

Contents iii

Introduction 1

Regulatory Context 1
Resource Definitions 2
Significance Criteria 2

Project Setting 3
Study Area Location and Description 3
Cultural Setting 5

Study Procedures and Findings 5
Native American Contact 5
Archival Study Procedures 5
Archival Study Findings 5
Field Survey Procedures 6
Field Survey Findings 6

Recommendations 6
Known Resources 6
Accidental Discovery 7

Summary 7

Materials Consulted 8

Appendix A: Native American Contact

FIGURES

Figure 1. Project vicinity 1
Figure 2. Study location 4

INTRODUCTION

This report describes a cultural resources survey for the Peterson Bank Repair Project, Santa Rosa, Sonoma County, California. The study area is 900 feet north of the confluence of the artificial channels of Peterson Creek and Santa Rosa Creek in Sonoma County (Figure 1). An approximately forty foot section of the east bank of Peterson Creek has suffered erosion, and the Sonoma County Water Agency plans to make repairs to the bank to prevent further damage. This study was requested by Candace Messner, Sonoma County Water Agency. Documentation pertaining to this study is on file at Tom Origer & Associates (File No. 2015-027).

REGULATORY CONTEXT

The California Environmental Quality Act (CEQA) requires that cultural resources be considered during the environmental review process. This is accomplished by an inventory of resources within a study area and by assessing the potential that cultural resources could be affected by development.

This cultural resources survey was designed to satisfy environmental issues specified in the CEQA and its guidelines (Title 14 CCR §15064.5) by: (1) identifying all cultural resources within the project area; (2) offering a preliminary significance evaluation of the identified cultural resources; (3) assessing resource vulnerability to effects that could arise from project activities; and (4) offering suggestions designed to protect resource integrity, as warranted.

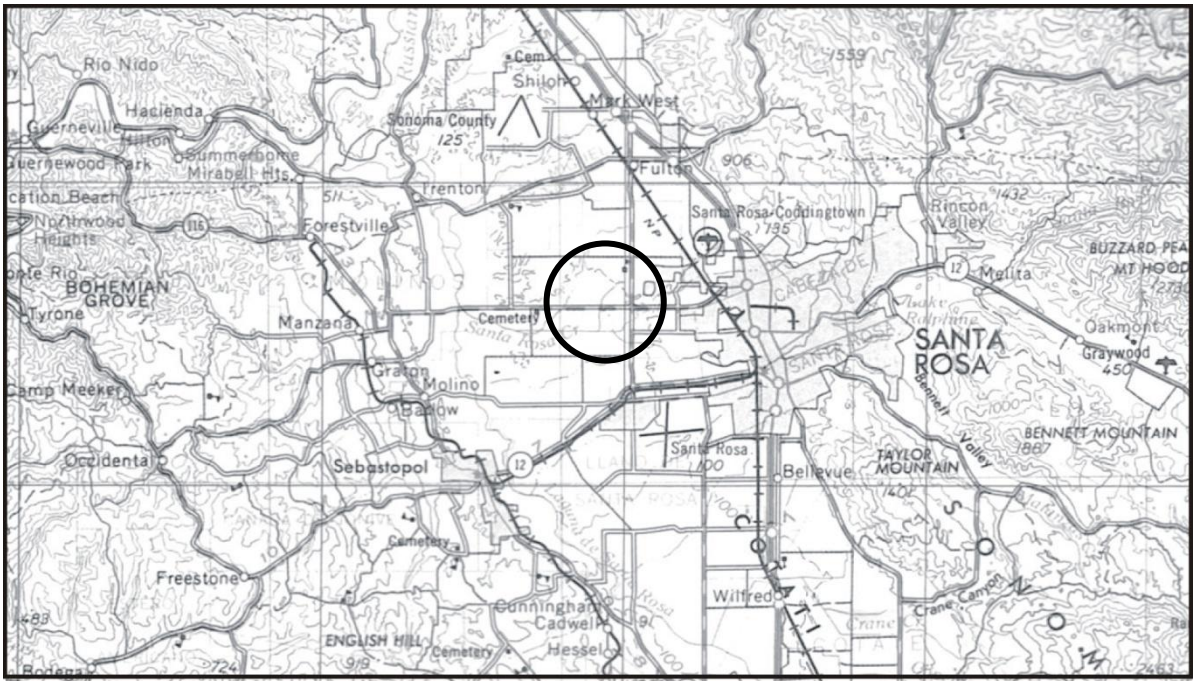


Figure 1. Project vicinity (adapted from the 1970 Santa Rosa 1:250,000-scale USGS map).

Resource Definitions

Cultural resources are classified by the State Office of Historic Preservation (OHP) as sites, buildings, structures, objects and districts, and each is described by OHP (1995) as follows.

> **Site.** A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.
>
> **Building.** A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity. "Building" may also be used to refer to a historically and functionally related unit, such as a courthouse and jail, or a house and barn.
>
> **Structure.** The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.
>
> **Object.** The term "object" is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment.
>
> **District.** A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

Significance Criteria

When a project might affect a cultural resource, the project proponent is required to conduct an assessment to determine whether the effect may be one that is significant. Consequently, it is necessary to determine the importance of resources that could be affected. The importance of a resource is measured in terms of criteria for inclusion on the California Register of Historical Resources (Title 14 CCR, §4852(a)) as listed below. A resource may be important if it meets any one of the criteria below, or if it is already listed on the California Register of Historical Resources or a local register of historical resources.

An important historical resource is one which:

1. Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

2. Is associated with the lives of persons important to local, California, or national history.

3. It embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of a master or possesses high artistic values.

4. It has yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation.

In addition to meeting one or more of the above criteria, eligibility for the California Register requires that a resource retains sufficient integrity to convey a sense of its significance or importance. Seven elements are considered key in considering a property's integrity: design, location, setting, materials, workmanship, feeling, and association.

Additionally, the OHP advocates that all historical resources over 45 years old be recorded for inclusion in the OHP filing system (OHP 1995:2), although the use of professional judgment is urged in determining whether a resource warrants documentation.

PROJECT SETTING

Study Area Location and Description

The study area consists of approximately forty feet of the east bank of the Peterson Creek channel. The study area lies on the Santa Rosa Plain just west of Santa Rosa and is located between Guerneville Road and the Santa Rosa Creek Flood Control Channel, as shown on the Sebastopol, California 7.5' USGS topographic map (Figure 2). Both Peterson Creek and Santa Rosa Creek have been channelized. Prior to the creeks being channelized, the natural confluence of the two streams was north of the current study area. The artificial channels realigned the confluence approximately 875 feet to the south of the study area. In its natural configuration, Santa Rosa Creek was closer to the study area, being approximately 800 feet northeast.

Soils within the study area belong to the Pajaro series (Miller 1972: Sheet 81). These soils are somewhat poorly-draining, nearly level to gently sloping fine sandy loams to clay loams. These soils are found on low terraces and flood plains. Pajaro soils typically support the growth of grasses, forbs, shrubs, and wild berry vines. Historically, these soils were used for dryland and irrigated pasture (Miller 1972:4, 66).

The geology of the study area is Holocene alluvial deposits (Koenig 1963; Delattre and Koehler 2008). The Santa Rosa Plain is relatively flat, especially in the location of the study area. As previously mentioned, Santa Rosa Creek once flowed approximately 800 feet (244 meters) from the study area. Locations within 200 meters (656 feet) of a perennial water source, on relatively flat land (8% slope or less), and on Holocene epoch geologic formations are considered to have the highest sensitivity for buried prehistoric archaeological deposits (Rosenthal and Meyer 2004; Meyer *et al*. 2011). It is generally accepted that buried prehistoric sites are most likely in Holocene formations because human occupation of the Americas began during that period.

The study area has poorly-drained soils, and is 800 feet from the nearest water source. These attributes are not conducive to prehistoric occupation of the study area. However, a variety of plants would have grown in the area that might have served as food and cover for animals. These attributes suggest that the study area would have been marginally suitable to prehistoric occupants as a place to gather resources and hunt.

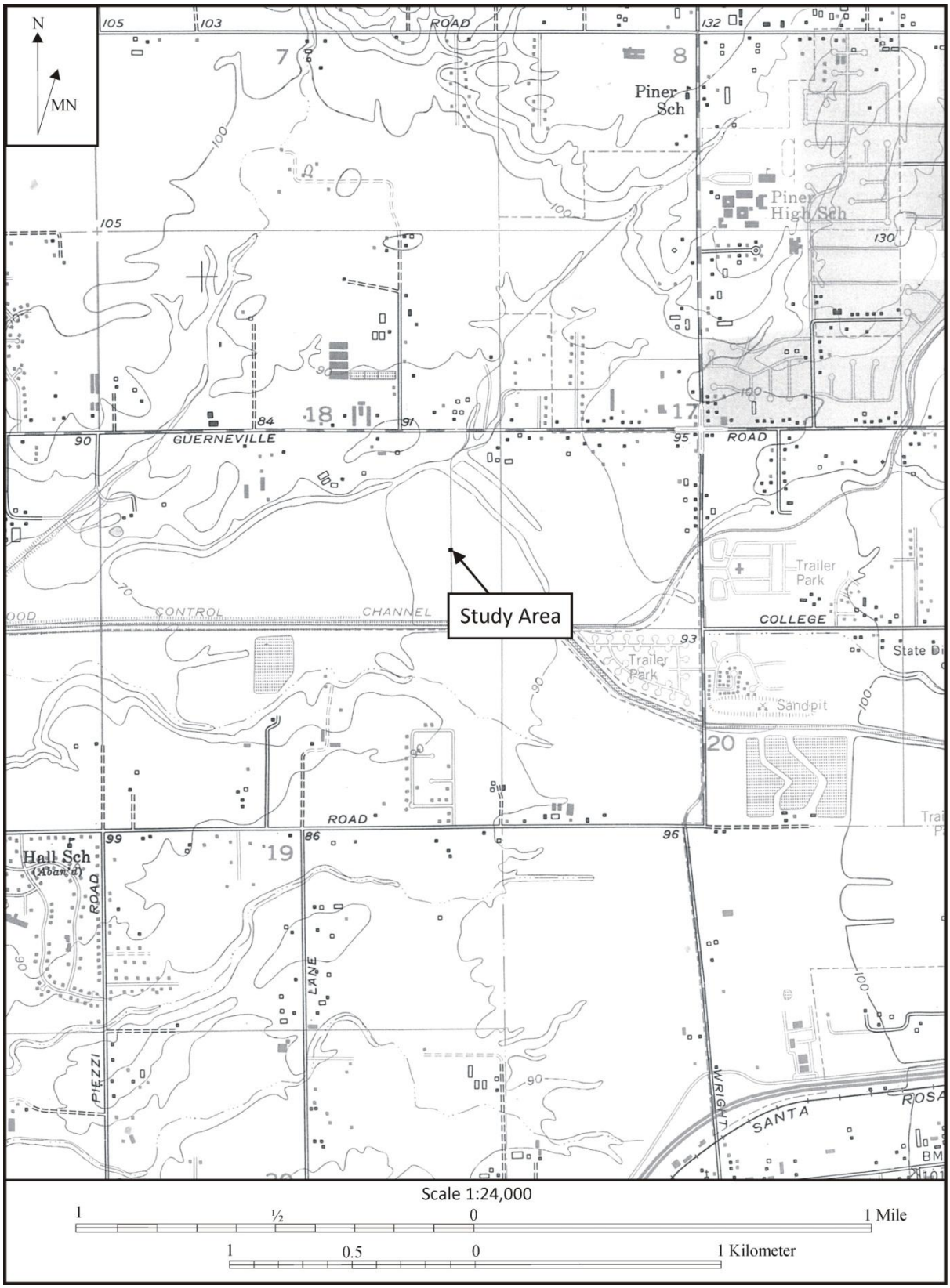


Figure 2. Study location (adapted from the 1980 Sebastopol 7.5' USGS topographic map).

Cultural Setting

Archaeological evidence indicates that human occupation of California began at least 12,000 years ago (Erlandson *et al*. 2007:53). Early occupants appear to have had an economy based largely on hunting, with limited exchange, and social structures based on extended family units. Later, milling technology and an inferred acorn economy were introduced. This diversification of economy appears coeval with the development of sedentism, population growth, and expansion. Sociopolitical complexity and status distinctions based on wealth are also observable in the archaeological record, as evidenced by an increased range and distribution of trade goods (e.g., shell beads, obsidian tool stone), which are possible indicators of both status and increasingly complex exchange systems.

At the time of European settlement, the study area was within the territory of the Southern Pomo (Barrett 1908; McLendon and Oswalt 1978). The Southern Pomo were hunter-gatherers who lived in rich environments that allowed for dense populations with complex social structures (Barrett 1908; Kroeber 1925). They settled in large, permanent villages about which were distributed seasonal camps and task-specific sites. Primary village sites were occupied throughout the year and other sites were visited in order to procure particular resources that were especially abundant or available only during certain seasons. Sites often were situated near fresh water sources and in ecotones where plant life and animal life were diverse and abundant. For more information about Pomo see Barrett (1908), Kniffen (1939), and Stewart (1943).

STUDY PROCEDURES AND FINDINGS

Native American Contact

The State of California's Native American Heritage Commission, the Federated Indians of Graton Rancheria, the Lytton Band of Pomo Indians, the Middletown Rancheria of Pomo Indians, the Stewarts Point Rancheria and Suki Waters were contacted in writing. A log of contact efforts is provided at the end of this report (Appendix A).

Archival Study Procedures

Archival research included examination of the library and project files at Tom Origer & Associates. A review (NWIC File No. 14-1396) was completed of the archaeological site base maps and records, survey reports, and other materials on file at the Northwest Information Center (NWIC), Sonoma State University, Rohnert Park. Sources of information included but were not limited to the current listings of properties on the National Register of Historic Places (National Register), California Historical Landmarks, California Register of Historical Resources (California Register), and California Points of Historical Interest as listed in the Office of Historic Preservation's *Historic Property Directory* (OHP 2012).

The Office of Historic Preservation has determined that structures older than 45 years should be considered potentially important historical resources, and former building and structure locations could be potentially important historic archaeological sites. Archival research included an examination of historical maps to gain insight into the nature and extent of historical development in the general vicinity, and especially within the study area. Maps ranged from hand-drawn maps of the 1800s (e.g., GLO plats) to topographic maps issued by the United States Geological Survey (USGS) and the Army Corps of Engineers (USACE) from the early to the middle 20th century.

In addition, ethnographic literature that describes appropriate Native American groups, county histories, and other primary and secondary sources were reviewed. Sources reviewed are listed in the "Materials Consulted" section of this report.

Archival Study Findings

Archival research found that the project area had not been subject to prior cultural resources study. Nearby studies resulted in the finding of no cultural resources within a half-mile of the project area (Ledebuhr and Origer 2008; Loyd and Origer 1992; LSA Associates, Inc. 2002; Origer 1980, 1991).

There are no reported ethnographic sites in the vicinity (Barrett 1908).

Historical maps show no buildings or structures in the project area. (Bell and Heymans 1888; Bowers 1867; GLO 1865; McIntire and Lewis 1908; Reynolds and Proctor 1898; Thompson 1877; Peugh 1934; USACE 1922; USGS 1935, 1942, 1954a, 1954b, 1968, 1980).

Field Survey Procedures

A field survey was completed by the authors on April 15, 2015. The approximately forty foot long project area was examined intensively by walking along the top and bottom edge of the bank. Because of the erosion along the creek bank the visibility was excellent. We examined the bank for the possibility of buried sites. A hoe was used as needed to clear small patches of vegetation, as needed, so that the ground could be inspected.

Based on the distribution of known cultural resources and their environmental settings, it was anticipated that prehistoric archaeological sites could be found within the study area. Prehistoric archaeological site indicators expected to be found in the region include but are not limited to: obsidian and chert flakes and chipped stone tools; grinding and mashing implements such as slabs and handstones, and mortars and pestles; bedrock outcrops and boulders with mortar cups; and locally darkened midden soils containing some of the previously listed items plus fragments of bone, shellfish, and fire affected stones. Historic period site indicators generally include: fragments of glass, ceramic, and metal objects; milled and split lumber; and structure and feature remains such as building foundations and discrete trash deposits (e.g., wells, privy pits, dumps).

Field Survey Findings

No cultural resources were found within the study area.

RECOMMENDATIONS

Known Resources

No prehistoric or historic-era resources were found within the study area, and no resource-specific recommendations are warranted.

Accidental Discovery

Although the geology of the study area consists of Holocene alluvial deposits, its distance from a water source suggests that there would be a low possibility that buried archaeological deposits could be present, and accidental discovery could occur (Rosenthal and Meyer 2004). In addition, the bank of Peterson Creek was inspected in the field for buried deposits and no archaeological items were found. In keeping with the CEQA guidelines, if archaeological remains are uncovered, work at the place of discovery should be halted immediately until a qualified archaeologist can evaluate the finds (§15064.5 [f]). Prehistoric archaeological site indicators include: obsidian and chert flakes and chipped stone tools; grinding and mashing implements (e.g., slabs and handstones, and mortars and pestles); bedrock outcrops and boulders with mortar cups; and locally darkened midden soils. Midden soils may contain a combination of any of the previously listed items with the possible addition of bone and shell remains, and fire affected stones. Historic period site indicators generally include: fragments of glass, ceramic, and metal objects; milled and split lumber; and structure and feature remains such as building foundations and discrete trash deposits (e.g., wells, privy pits, dumps).

The following actions are promulgated in Public Resources Code 5097.98 and Health and Human Safety Code 7050.5, and pertain to the discovery of human remains. If human remains are encountered, excavation or disturbance of the location must be halted in the vicinity of the find, and the county coroner contacted. If the coroner determines the remains are Native American, the coroner will contact the Native American Heritage Commission. The Native American Heritage Commission will identify the person or persons believed to be most likely descended from the deceased Native American. The most likely descendent makes recommendations regarding the treatment of the remains with appropriate dignity.

SUMMARY

Tom Origer & Associates conducted a cultural resources study for the Peterson Bank Repair Project, located 900 feet north from the confluence of the artificial channels of Peterson Creek and the Santa Rosa Creek, Santa Rosa, Sonoma County. The study was requested by Candace Messner, Sonoma County Water Agency, in compliance with requirements of the California Environmental Quality Act. No cultural resources were found within the study area, and no resource-specific recommendations are warranted. Documentation pertaining to this study is on file at the offices of Tom Origer & Associates (File No. 15-027).

MATERIALS CONSULTED

Barrett, S.
1908 *The Ethno-Geography of the Pomo and Neighboring Indians.* University of California Publications in American Archaeology and Ethnology Vol. 6, No. 1. University of California Press, Berkeley.

Bell and Heymans
1888 *Map of Sonoma County, California*. Bell and Heymans, San Francisco.

Bowers, A.
1867 *Map of Sonoma County*. 2nd ed. A. Bowers.

Delattre, M. and R. Koehler
2008 *Geologic Map of the Sebastopol 7.5' Quadrangle, Sonoma County, California: A Digital Database*. California Geological Survey Digital Database, file ftp://ftp.consrv.ca.gov/ pub/dmg/rgmp/Prelim_geo_pdf/Sebastopol_prelim.pdf, accessed on April 10, 2015.

Fredrickson, D.
1984 The North Coastal Region. In *California Archaeology*, edited by M. Moratto. Academic Press, San Francisco.

General Land Office
1865 *Plat of T7N/R8W*. Department of the Interior, Washington, D.C.

Hoover, M., H. Rensch, E. Rensch, W. Abeloe
1966 *Historic Spots in California.* 3rd edition. Stanford University Press. Stanford.

Hoover, M., H. Rensch, E. Rensch, W. Abeloe, and D. Kyle
1990 *Historic Spots in California.* 4th edition, Stanford University Press. Stanford.

2002 *Historic Spots in California.* 5th edition, Stanford University Press. Stanford.

Kniffen, F.
1939 *Pomo Geography*. University of California Publications in American Archaeology and Ethnology, Vol. 36. Berkeley.

Koenig, J. B.
1963 Geologic Map of California, Santa Rosa Sheet (1:250,000-scale). Olaf P. Jenkins edition. Division of Mines and Geology, William & Heintz Map Corporation, Washington, D.C.

Kroeber, A.
1925 *Handbook of the Indians of California*. Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C.

Ledebuhr, S., and T. Origer
2008 *A Cultural Resources Survey of the Property at 2728 Guerneville Road, Santa Rosa, Sonoma County, California.* Document S-34913 on file at the Northwest Information Center, Rohnert Park.

Loyd, J., and T. Origer
1992 *An Archaeological Survey of the Mauna Kai Property, 2783 Guerneville Road, Santa Rosa, Sonoma County, California.* Document S-14496 on file at the Northwest Information Center, Rohnert Park.

LSA Associates, Inc.
2002 *Supplemental Cultural Resources Survey, Mid-South Segment, Fiber-Optic Line and Delta Pond Blow-Off, Sonoma County, California.* Document S-25215 on file at the Northwest Information Center, Rohnert Park.

McIntire and Lewis
1908 *Official Map of the County of Sonoma, California*. County of Sonoma, California.

McLendon, S. and R. Oswalt
1978 Pomo. In *California*, edited by R. Heizer, pp. 274-288. Handbook of North American Indians, Vol. 8, W. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Menefee, C.
1873 *Historical and Descriptive Sketchbook of Napa, Sonoma, Lake and Mendocino*. Reporter Publishing House. Napa, California.

Meyer, J., P. Kaijankoski, and J. Rosenthal
2001 *A Geoarchaeological Overview and Assessment of Northwest California: Cultural Resources Inventory of Caltrans District 1 Rural Conventional Highways: Del Norte, Humboldt, Mendocino, and Lake Counties.* Document S-38863 on file at the Northwest Information Center, Rohnert Park.

Miller, V.
1972 *Soil Survey of Sonoma County, California*. U.S. Department of Agriculture in cooperation with the University of California Agricultural Experimental Station.

Moratto, M.
1984 *California Archaeology.* Academic Press, San Francisco.

Office of Historic Preservation (OHP)
1995 *Instructions for Recording Historic Resources*. Office of Historic Preservation, Sacramento.

2012 *Historic Property Directory*. Office of Historic Preservation, Sacramento.

Origer, T.
1980 *An Archaeological Survey for the Proposed Northwest Santa Rosa Land Trade and Annexation 10-80, Santa Rosa, Sonoma County, California.* Document S-2220 on file at the Northwest Information Center, Rohnert Park.

1991 *An Archaeological study of revised portions of the AT&T route near Santa Rosa and Sausalito (letter report).* Document S-13399 on file at the Northwest Information Center, Rohnert Park.

Peugh, E.
1934 *Official Map of Sonoma County, California*. County of Sonoma, California.

Reynolds, W. and T. Proctor
1898 *Illustrated Atlas of Sonoma County, California*. Reynolds and Proctor, Santa Rosa.

Rosenthal, J. and J. Meyer
2004 *Landscape Evolution and the Archaeological Record: A Geoarchaeological Study of the Southern Santa Clara Valley and Surrounding Region.* Center for Archaeological Research at Davis, University of California.

State of California Department of Parks and Recreation
1976 *California Inventory of Historic Resources.* Department of Parks and Recreation, Sacramento.

Stewart, O.
1943 *Notes on Pomo Ethnography.* University of California Publications in American Archaeology and Ethnology. Vol. 40. Berkeley.

Thompson, T.H. & Co.
1877 *Historical Atlas of Sonoma County, California*. T.H. Thompson & Co., Oakland, California.

United States Army Corps of Engineers (USACE)
1922 *Sebastopol, California* 15' tactical map. U.S. Army, Washington, D.C.

United States Geological Survey
1935 Sebastopol 1:48,000 quadrangle. Department of the Interior, Washington, D.C.

1942 Sebastopol 15’ quadrangle. Department of the Interior, Washington, D.C.

1954a Sebastopol 7.5’ quadrangle. Department of the Interior, Washington, D.C.

1954b Sebastopol 15’ quadrangle. Department of the Interior, Washington, D.C.

1968 Sebastopol 7.5’ quadrangle. Photorevised from 1954 map. Department of the Interior, Washington, D.C.

1980 Sebastopol 7.5’ quadrangle. Photorevised from 1954 map. Department of the Interior, Washington, D.C.

APPENDIX A:
Native American Contact

Native American Contact Efforts
Peterson Bank Repair, Sonoma County

Organization	Contact	Letters	Results
Native American Heritage Commission		4/9/15	No response received as of the date of this report.
	Suki Waters	4/9/15	No response received as of the date of this report.
Federated Indians of Graton Rancheria	Greg Sarris Gene Buvelot	4/9/15	No response received as of the date of this report.
Lytton Band of Pomo Indians	Margie Mejia	4/9/15	No response received as of the date of this report.
Middletown Rancheria of Pomo Indians	Stephanie Reyes	4/9/15	No response received as of the date of this report.
Stewarts Point Rancheria	Otis Parish	4/9/15	No response received as of the date of this report.

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364
Sacramento, CA 95814
(916) 373-3710
(916) 373-5471 – Fax
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project: Peterson Bank Repair Project
County: Sonoma County

USGS Quadrangles

Name: Sebastopol
Township T7N Range R8W Section 18 MDBM

Date: April 9, 2015
Company/Firm/Agency: Tom Origer & Associates
Contact Person: Julianne Mercer

Street Address: PO Box 1531
City: Rohnert Park Zip: 94927
Phone: (707) 584-8200 Fax: (707) 584-8300
Email: juli@origer.com

Project Description:
The project proponent is proposing a small bank repair along the east side of Peterson Creek, about 900 feet up from the confluence with the Santa Rosa Creek. The project area is approximately 100 feet long.

Tom Origer & Associates
Archaeology / Historical Research

April 9, 2015

Gene Buvelot
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Peterson Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Buvelot:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The Peterson Bank Repair project is a small bank repair along the east side of Peterson Creek, about 900 feet up from its confluence with the Santa Rosa Creek. Sonoma County Permit and Resource Management Department is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sebastopol, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Julianne Mercer
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 9, 2015

Greg Sarris
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

RE: Peterson Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Sarris:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The Peterson Bank Repair project is a small bank repair along the east side of Peterson Creek, about 900 feet up from its confluence with the Santa Rosa Creek. Sonoma County Permit and Resource Management Department is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sebastopol, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Julianne Mercer
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 9, 2015

Stephanie L. Reyes
Middletown Rancheria of Pomo Indians
P.O. Box 1035
Middletown, CA 95461

Re: Peterson Bank Repair Project, Santa Rosa, Sonoma County.

Dear Ms. Reyes:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The Peterson Bank Repair project is a small bank repair along the east side of Peterson Creek, about 900 feet up from its confluence with the Santa Rosa Creek. Sonoma County Permit and Resource Management Department is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sebastopol, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Julianne Mercer
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 9, 2015

Otis Parrish
Stewarts Point Rancheria
1420 Guerneville Road, Suite 1
Santa Rosa, Ca 95403

Re: Peterson Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Parrish:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The Peterson Bank Repair project is a small bank repair along the east side of Peterson Creek, about 900 feet up from its confluence with the Santa Rosa Creek. Sonoma County Permit and Resource Management Department is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sebastopol, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Julianne Mercer
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 9, 2015

Suki Waters
P.O. Box 53
Jenner, CA 95450

Re: Peterson Bank Repair Project, Santa Rosa, Sonoma County.

Dear Ms. Waters:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The Peterson Bank Repair project is a small bank repair along the east side of Peterson Creek, about 900 feet up from its confluence with the Santa Rosa Creek. Sonoma County Permit and Resource Management Department is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sebastopol, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Julianne Mercer
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 9, 2015

Lytton Band of Pomo Indians
Margie Mejia
437 Aviation Blvd
Santa Rosa, CA 95403

Re: Peterson Bank Repair Project, Santa Rosa, Sonoma County.

Dear Ms. Mejia:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The Peterson Bank Repair project is a small bank repair along the east side of Peterson Creek, about 900 feet up from its confluence with the Santa Rosa Creek. Sonoma County Permit and Resource Management Department is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sebastopol, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Julianne Mercer
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 9, 2015

Lytton Band of Pomo Indians
Margie Mejia
437 Aviation Blvd
Santa Rosa, CA 95403

Re: Peterson Bank Repair Project, Santa Rosa, Sonoma County.

Dear Ms. Mejia:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The Peterson Bank Repair project is a small bank repair along the east side of Peterson Creek, about 900 feet up from its confluence with the Santa Rosa Creek. Sonoma County Permit and Resource Management Department is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sebastopol, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Julianne Mercer
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

A Cultural Resources Survey for the Russell Creek Bank Repair Project Santa Rosa, Sonoma County, California

Taylor Alshuth, B.A.
and
Tom Origer, M.A.
Registered Professional Archaeologist (#10333)

April 26, 2016

A Cultural Resources Survey for the Russell Creek Bank Repair Project Santa Rosa, Sonoma County, California

Prepared by:

Taylor Alshuth, B.A.
and
Tom Origer, M.A.
Registered Professional Archaeologist (#10333)

Tom Origer & Associates
Post Office Box 1531
Rohnert Park, California 94927
(707) 584-8200

Prepared for:

Candace Messner
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, California 95406

April 26, 2016

ABSTRACT

Tom Origer & Associates conducted a cultural resources survey for the Sonoma County Water Agency's Russell Creek Bank Repair Project, Santa Rosa, Sonoma County, California. The study was prepared for Candace Messner, an environmental specialist for the Sonoma County Water Agency, and was designed to satisfy requirements of the California Environmental Quality Act. This study included archival research at the Northwest Information Center, Sonoma State University (NWIC File No.15-1481), contact with Native American representatives, examination of the library and files of Tom Origer & Associates, and field inspection of the proposed stream bank repair location. No cultural resources were found. Documentation pertaining to this study is on file at the offices of Tom Origer & Associates (File No. 2016-050S).

Synopsis

Project: Russell Creek Bank Repair Project
Location: Along Russell Creek, Santa Rosa, Sonoma County, California
Quadrangle: Santa Rosa, California 7.5’ series
Study Type: Intensive survey
Scope: ~ 75 linear feet
Finds: None

Project Personnel

Tom Origer participated in the field phase of this study and provided project oversight. Mr. Origer obtained a Master of Arts in Anthropology from San Francisco State University in 1983, after obtaining a Bachelor of Arts degree in Anthropology at Sonoma State University in 1974. He has over forty years of experience in cultural resources management throughout Northern California. His experience includes work that has been completed in compliance with local ordinances, CEQA, NEPA, and Section 106 (NHPA) requirements. Mr. Origer has been teaching archaeological analysis and field archaeology classes at Santa Rosa Junior College since 1979. He is affiliated with the Society for California Archaeology (Presidential duties from April 1998 to April 2001), the International Association for Obsidian Studies (charter member and President from 1990-1992), the Archaeological Institute of America (President of the North Coast Society from 1985 to 1987), the Society for American Archaeology, the Society for Historical Archaeology, and the Register of Professional Archaeologists.

Taylor Alshuth prepared the report and participated in the field phase of this study. Mr. Alshuth obtained a Bachelor of Arts degree in Anthropology from Humboldt State University in 2014, after obtaining a Associate of Arts degree in Anthropology at Santa Rosa Junior College in 2012. He is affiliated with the Society for California Archaeology, the Archaeological Institute of America, and the Archaeological Conservancy.

CONTENTS

Abstract i
Synopsis i
Project Personnel ii

Introduction 1

Regulatory Context 1
Resource Definitions 2
Significance Criteria 2

Project Setting 3
Study Area Location and Description 3
Cultural Setting 3

Study Procedures and Findings 5
Native American Contact Procedures 5
Native American Contact Results 5
Archival Study Procedures 6
Archival Study Findings 6
Field Survey Procedures 7
Field Survey Findings 7

Recommendations 7
Known Resources 7
Accidental Discovery 7

Summary 8

Materials Consulted 8

Appendix A: Native American Contact

FIGURES

Figure 1. Project vicinity 1
Figure 2. Study location 4

INTRODUCTION

Tom Origer & Associates conducted a cultural resources survey for the Russell Creek Bank Repair Project, Santa Rosa, Sonoma County, California (Figure 1). The study was completed at the request of Candace Messner, an environmental specialist for the Sonoma County Water Agency, and was designed to satisfy requirements of the California Environmental Quality Act. The study area consisted of approximately 75 linear feet along Russell Creek, where the Water Agency plans bank repair work. Documentation pertaining to this study is on file at Tom Origer & Associates (File No. 2016-050S).

REGULATORY CONTEXT

The California Environmental Quality Act (CEQA) requires that cultural resources be considered during the environmental review process. This is accomplished by an inventory of resources within a study area and by assessing the potential that cultural resources could be affected by development.

This cultural resources survey was designed to satisfy environmental issues specified in the CEQA and its guidelines (Title 14 CCR §15064.5) by: (1) identifying all cultural resources within the project area; (2) offering a preliminary significance evaluation of the identified cultural resources; (3) assessing resource vulnerability to effects that could arise from project activities; and (4) offering suggestions designed to protect resource integrity, as warranted.

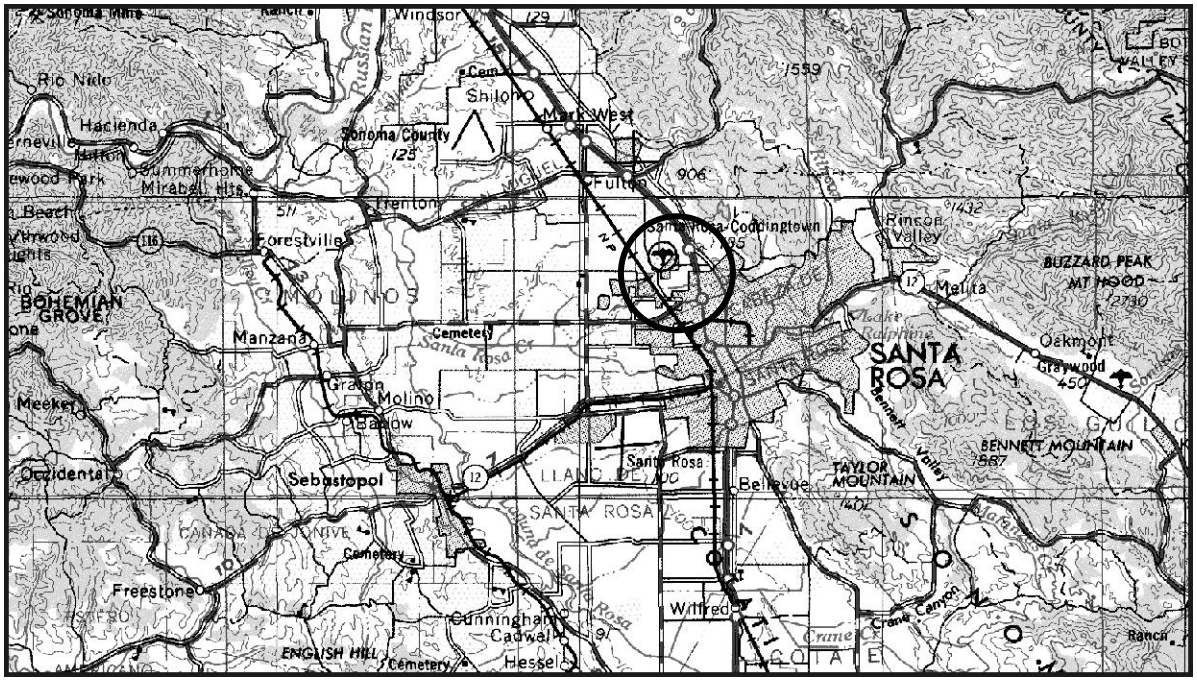


Figure 1. Project vicinity (adapted from the 1980 Santa Rosa 1:250,000-scale USGS map).

Resource Definitions

Cultural resources are classified by the State Office of Historic Preservation (OHP) as sites, buildings, structures, objects and districts, and each is described by OHP (1995) as follows.

Site. A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.

Building. A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity. "Building" may also be used to refer to a historically and functionally related unit, such as a courthouse and jail, or a house and barn.

Structure. The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.

Object. The term "object" is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment.

District. A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

Significance Criteria

When a project might affect a cultural resource, the project proponent is required to conduct an assessment to determine whether the effect may be one that is significant. Consequently, it is necessary to determine the importance of resources that could be affected. The importance of a resource is measured in terms of criteria for inclusion on the California Register of Historical Resources (Title 14 CCR, §4852) as listed below. A resource may be important if it meets any one of the criteria below, or if it is already listed on the California Register of Historical Resources or a local register of historical resources.

An important historical resource is one which:

1. Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

2. Is associated with the lives of persons important to local, California, or national history.

3. It embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of a master or possesses high artistic values.

4. It has yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation.

In addition to meeting one or more of the above criteria, eligibility for the California Register requires that a resource retains sufficient integrity to convey a sense of its significance or importance. Seven elements are considered key in considering a property's integrity: location, design, setting, materials, workmanship, feeling, and association.

Additionally, the OHP advocates that all historical resources over 45 years old be recorded for inclusion in the OHP filing system (OHP 1995:2), although the use of professional judgment is urged in determining whether a resource warrants documentation.

PROJECT SETTING

Study Area Location and Description

The study area is located in central Sonoma County, 2.3 miles northwest of downtown Santa Rosa, at a channelized segment of Russell Creek, as shown on the Santa Rosa, California 7.5' USGS topographic map (Figure 2). It includes a 75-foot-long section along the creek's north bank.

The geology of the study area consists of Holocene epoch (10,000 years ago-present) alluvial deposits (Koenig 1963; Wagner and Bortugno 1982). Soils mapped for the study area are of the Clear Lake series (Miller 1972:Sheet 74). Clear Lake soils are clays that formed under poorly drained conditions and are found primarily on plains and flat basins. Annual and perennial grasses and forbs are the primary vegetation supported by Clear Lake soils. Clear Lake soils are primarily used for growing oat-vetch hay and oat hay for dairy and horse feed (Miller 1972:22-24).

Cultural Setting

Archaeological evidence indicates that human occupation of California began at least 11,000 years ago (Erlandson *et al.* 2007). Early occupants appear to have had an economy based largely on hunting, with limited exchange, and social structures based on the extended family unit. Later, milling technology and an inferred acorn economy were introduced. This diversification of economy appears along with the development of sedentism, and population growth and expansion. Sociopolitical complexity and status distinctions based on wealth are also observable in the archaeological record, as evidenced by an increased range and distribution of trade goods (e.g., shell beads, obsidian tool stone), which are possible indicators of both status and increasingly complex exchange systems.

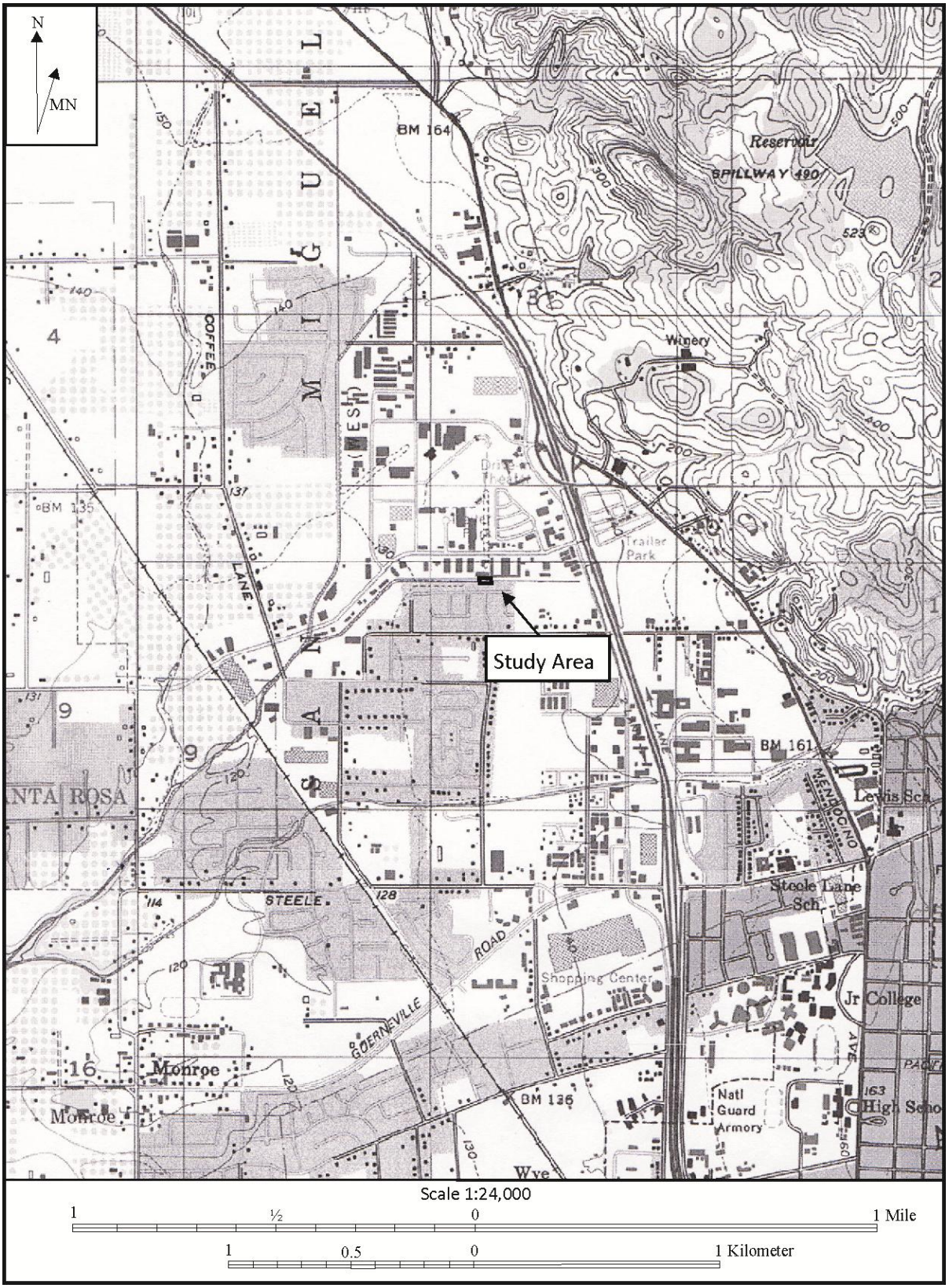


Figure 2. Study location (adapted from the USGS 1994 Santa Rosa 7.5' topographic map).

At the time of European settlement, the study area was situated in an area controlled by the Southern Pomo (Barrett 1908; McLendon and Oswalt 1978). The Southern Pomo were hunter-gatherers who lived in rich environments that allowed for dense populations with complex social structures (Barrett 1908; Kroeber 1925). They settled in large, permanent villages about which were distributed seasonal camps and task-specific sites. Primary village sites were occupied throughout the year, and other sites were visited in order to procure particular resources that were abundant or available only during certain seasons. Sites often were situated near fresh water sources and in ecotones where plant and animal life were diverse and abundant. For more information about the Pomo see Bean and Theodoratus (1978), Kniffen (1939), and Stewart (1943).

Historically, the study area is within the Rancho San Miguel, a Mexican rancho granted to Marcus West in the 1840s. This portion of the rancho was confirmed to West's widow and children in 1852. Later in the 19th century, the study area was part the H.P. Holmes ranch (Bowers 1867; Thompson 1877). Holmes was a farmer and stock raiser from Tennessee who came to the county in 1852 (Thompson 1877:97). After Holmes, the study area was part of an 80-acre property that belonged to C.D. Near (Peugh 1934; Reynolds and Proctor 1898).

STUDY PROCEDURES AND FINDINGS

Native American Contact Procedures

Letters were sent to the State of California's Native American Heritage Commission, members of the Cloverdale Rancheria of Pomo Indians, members of the Dry Creek Rancheria of Pomo Indians, members of the Federated Indians of Graton Rancheria, members of the Lytton Rancheria of California, and members of the Stewarts Point Rancheria. A log of contact efforts and copies of correspondence are provided at the end of this report (Appendix A).

Native American Contact Results

The State of California's Native American Heritage Commission responded on April 18, 2016. Their sacred lands file review was completed with negative results. The NAHC also provided a list of recommended contacts with regards to the project. Reg Elgin, the Tribal Historic Preservation Officer representing the Dry Creek Rancheria, responded on April 21, 2016. He indicated that the tribe was aware of areas of cultural/historic significance on/or adjacent to the project area and that the tribe was interested in the protection of the cultural significance of the area. Lorin Smith, the Tribal Historic Preservation Officer representing the Stewarts Point Rancheria, responded on April 25, 2016. He indicated that the project area was out of the aboriginal territory of the tribe and that the tribe had no comments or concerns at this time.

No further responses have been received as of the date of this report. A log of contact efforts and copies of correspondence are provided at the end of this report (Appendix A).

Archival Study Procedures

Archival research included examination of the library and project files at Tom Origer & Associates. A review (NWIC File No. 15-1481) was completed of the archaeological site base maps and records, survey reports, and other materials on file at the Northwest Information Center (NWIC), Sonoma State University, Rohnert Park. Sources of information included but were not limited to the current listings of properties on the National Register of Historic Places (National Register), California Historical Landmarks, California Register of Historical Resources (California Register), and California Points of Historical Interest as listed in the Office of Historic Preservation's *Historic Property Directory* (OHP 2012).

The Office of Historic Preservation has determined that structures older than 45 years should be considered potentially important historical resources, and former building and structure locations could be potentially important historic archaeological sites. Archival research included an examination of historical maps to gain insight into the nature and extent of historical development in the general vicinity, and especially within the study area. Maps ranged from hand-drawn maps of the 1800s (e.g., GLO plats) to topographic maps issued by the United States Geological Survey (USGS) and the Army Corps of Engineers (USACE) from the early to the middle 20th century.

In addition, ethnographic literature that describes appropriate Native American groups, county histories, and other primary and secondary sources were reviewed. Sources reviewed are listed in the "Materials Consulted" section of this report.

Archival Study Findings

Archival research found that the study area had not been surveyed. There have been four cultural resources surveys within a quarter-mile of the study area (Archaeological Consulting and Resource Services 1975; Beard 2012; Hastings 1975; Offermann and Fredrickson 1977) No cultural resources were found during those surveys.

There are no reported ethnographic sites in the vicinity (Barrett 1908, Kroeber 1925).

Nineteenth century and early 20th century maps show no buildings or structures at this location (Bowers 1867; GLO 1876; Reynolds and Proctor 1898; Thompson 1877; USGS 1916, 1927, 1944, 1954a, 1954b, 1968, 1973, 1980, 1994).

Geology of the study area consists of Alluvium dating to the Holocene epoch (10,000 years ago-present). These dates are contemporaneous with human arrival and occupation of California; therefore, there is a possibility that buried archaeological materials could be present within these geologic deposits. Based on criteria derived from King's analysis of buried sites, the study area is categorized as having a high sensitivity for buried sites (King 2004).

Based on the distribution of known cultural resources and their environmental settings, it was possible that prehistoric archaeological sites could be found within the study area. Prehistoric archaeological site indicators expected to be found in the region include but are not limited to: obsidian and chert flakes and chipped stone tools; grinding and mashing implements such as slabs and handstones, and mortars and pestles; bedrock outcrops and boulders with mortar cups; and locally darkened midden soils containing some of the previously listed items plus fragments of bone, shellfish, and fire affected stones. Historic period site indicators generally include: fragments of glass, ceramic, and metal objects; milled and split lumber; and structure and feature remains such as building foundations and discrete trash deposits (e.g., wells, privy pits, dumps).

Field Survey Procedures

A field survey was completed by the Taylor Alshuth and Tom Origer on April 13, 2016. The north creek bank of Russell Creek was examined intensively. Visibility was good to poor, with vegetation such as grasses and forbs being the chief hindrance. Hoes were used to clear small patches, as needed, so that the soil could be inspected. The bank of the creek was carefully inspected to search for buried archaeological materials.

Field Survey Findings

No cultural resources were found within the study area.

RECOMMENDATIONS

Known Resources

No cultural resources were found within the study area; therefore, no resource-specific recommendations are warranted.

Accidental Discovery

There is the possibility that buried archaeological deposits could be present, and accidental discovery could occur. In keeping with the CEQA guidelines, if archaeological remains are uncovered, work at the place of discovery should be halted immediately until a qualified archaeologist can evaluate the finds (§15064.5 [f]). Prehistoric archaeological site indicators include: obsidian and chert flakes and chipped stone tools; grinding and mashing implements (e.g., slabs and handstones, and mortars and pestles); bedrock outcrops and boulders with mortar cups; and locally darkened midden soils. Midden soils may contain a combination of any of the previously listed items with the possible addition of bone and shell remains, and fire affected stones. Historic period site indicators generally include: fragments of glass,

ceramic, and metal objects; milled and split lumber; and structure and feature remains such as building foundations and discrete trash deposits (e.g., wells, privy pits, dumps).

The following actions are promulgated in Public Resources Code 5097.98 and Health and Human Safety Code 7050.5, and pertain to the discovery of human remains. If human remains are encountered, excavation or disturbance of the location must be halted in the vicinity of the find, and the county coroner contacted. If the coroner determines the remains are Native American, the coroner will contact the Native American Heritage Commission. The Native American Heritage Commission will identify the person or persons believed to be most likely descended from the deceased Native American. The most likely descendent makes recommendations regarding the treatment of the remains with appropriate dignity.

SUMMARY

Tom Origer & Associates conducted a cultural resources survey for the Sonoma County Water Agency's Russell Creek Bank Repair Project, Santa Rosa, Sonoma County. The study was requested by Candace Messner, an environmental specialist for the Sonoma County Water Agency. No cultural resources were found within the study area and no resource-specific recommendations are warranted. Documentation pertaining to this study is on file at the offices of Tom Origer & Associates (File No. 2016-050S).

MATERIALS CONSULTED

Archaeological Consulting and Research Services, Inc.
1975 *Preliminary Archaeological Assessment of the Coddingtown Environmental Impact Report, Santa Rosa, California*. Document S-955 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Barrett, S.
1908 *The Ethno-Geography of the Pomo and Neighboring Indians.* University of California Publications in American Archaeology and Ethnology Vol. 6, No. 1. University of California Press, Berkeley.

Bean, L. and D. Theodoratus
1978 Western Pomo and Northeast Pomo. In *California*, edited by R. Heizer, Handbook of North American Indians, Vol. 8, W. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Beard, V.
2012 *A Cultural Resources Survey for the Stream Maintenance Program-Russell Creek, Santa Rosa, Sonoma County, California.* Document S-38951 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Bell and Heymans
1888 *Map of Sonoma County, California*. Bell and Heymans, San Francisco.

Bowers, A.
1867 *Map of Sonoma County*. 2nd ed. A. Bowers.

Erlandson, J., T. Rick, T. Jones, and J. Porcasi
2007 One if by Land, Two if by Sea: Who Were the First Californians? In*: California Prehistory: Colonization, Culture, and Complexity* (pp 53-62) T. Jones and K. Klar, Editors. AltaMira Press. Lanham, MD.

Fredrickson, D.
1984 The North Coastal Region. In *California Archaeology*, edited by M. Moratto. Academic Press, San Francisco.

General Land Office
1862 *Plat of the Rancho San Miguel.* Department of the Interior, Washington, D.C.

Hastings, R.
1975 *Archaeological and Architectural Survey of the Mendocino Avenue Interchange and the Russell Avenue Interchange, Santa Rosa, Sonoma County, California*. Document S-611 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Hoover, M., H. Rensch, E. Rensch, W. Abeloe
1966 *Historic Spots in California.* 3rd edition. Stanford University Press. Stanford.

Hoover, M., H. Rensch, E. Rensch, W. Abeloe, and D. Kyle
1990 *Historic Spots in California.* 4th edition, Stanford University Press. Stanford.

2002 *Historic Spots in California.* 5th edition, Stanford University Press. Stanford.

King, J.
2004 Surface and Subsurface Archaeological Sensitivity. In: *Landscape Evolution and the Archaeological Record: A Geoarchaeological Study of the Southern Santa Clara Valley and Surrounding Region* (pp 81-94). J. Rosenthal and J. Meyer, Authors. Center for Archaeological Research at Davis, University of California.

Kroeber, A.
1925 *Handbook of the Indians of California.* Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C.

McIntire and Lewis
1908 *Official Map of the County of Sonoma, California*. County of Sonoma, California.

McLendon, S. and R. Oswalt
1978 Pomo. In *California*, edited by R. Heizer, pp. 274-288. Handbook of North American Indians, Vol. 8, W. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Meighan, C.
1955 *Archaeology of the North Coast Ranges, California.* Reports of the University of California Archaeological Survey No. 30. University of California, Berkeley.

Menefee, C.
1873 *Historical and Descriptive Sketchbook of Napa, Sonoma, Lake and Mendocino*. Reporter Publishing House. Napa, California.

Miller, V.
1972 *Soil Survey of Sonoma County, California*. U.S. Department of Agriculture in cooperation with the University of California Agricultural Experimental Station.

Moratto, M.
1984 *California Archaeology.* Academic Press, San Francisco.

Offermann, J. and D. Fredrickson
1977 *The Butte Court Estates Archaeological Survey in Northwestern Santa Rosa, California.* Document S-671 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Office of Historic Preservation
1995 *Instructions for Recording Historic Resources*. Office of Historic Preservation, Sacramento.

2012 *Historic Property Directory*. Office of Historic Preservation, Sacramento.

Peugh, E.
1934 *Official Map of Sonoma County, California*. County of Sonoma, California.

Reynolds, W. and T. Proctor
1898 *Illustrated Atlas of Sonoma County, California*. Reynolds and Proctor, Santa Rosa.

State of California Department of Parks and Recreation
1976 *California Inventory of Historic Resources.* Department of Parks and Recreation, Sacramento.

Thompson, T.H. & Co.
1877 *Historical Atlas of Sonoma County, California*. T.H. Thompson & Co., Oakland, California.

United States Army Corps of Engineers
1944 Santa Rosa 15’ quadrangle. Department of the Interior, Washington, D.C.

United States Geological Survey
1916 Santa Rosa 15’ quadrangle. Department of the Interior, Washington, D.C.

1927 Santa Rosa 15’ quadrangle. Geological Survey, Washington, D.C.

1954a Santa Rosa 15' quadrangle. Geological Survey, Washington, D.C.

1954b Santa Rosa 7.5’ quadrangle. Geological Survey, Washington, D.C.

1968 Santa Rosa 7.5' quadrangle. Geological Survey, Washington, D.C.

1973 Santa Rosa 7.5' quadrangle. Geological Survey, Washington, D.C.

1980 Santa Rosa 7.5' quadrangle. Geological Survey, Washington, D.C.

1994 Santa Rosa 7.5' quadrangle. Geological Survey, Washington, D.C.

Wagner, D. and E. Bortugno
1982 Geologic map of the Santa Rosa quadrangle, California, 1:250,000. California Division of Mines and Geology.

APPENDIX A: Native American Contact

Contact Log
Correspondence and Maps

Native American Contact Efforts
Russell Creek Bank Repair Project
Santa Rosa, Sonoma County

Organization	Contact	Letters	Results
Native American Heritage Commission		4/12/16	The NAHC responded on 4/18/16.Their sacred lands file review was completed with negative results. The NAHC also provided a list of recommended contacts with regards to the project.
Cloverdale Rancheria of Pomo Indians	Mario Hermosillo Patricia Hermosillo	4/12/16	No responses have been received as of the date of this report.
Dry Creek Rancheria of Pomo Indians	Harvey Hopkins	4/12/16	Reg Elgin, the Tribal Historic Preservation Officer representing the Dry Creek Rancheria, responded on 4/21/16. He indicated that the tribe was aware of areas of cultural/historic significance on/or adjacent to the project area and that the tribe was interested in the protection of the cultural significance of the area.
Federated Indians of Graton Rancheria	Buffy McQuillen Peter Nelson Greg Sarris	4/12/16	No responses have been received as of the date of this report.
Lytton Rancheria of California	Margie Mejia Lisa Miller	4/12/16	No responses have been received as of the date of this report.
Stewarts Point Rancheria	Reno Franklin Teresa Romero Lorin Smith	4/12/16	Lorin Smith, the Tribal Historic Preservation Officer representing the Stewarts Point Rancheria, responded on 4/25/16. He indicated that the project area was out of the aboriginal territory of the tribe and that the tribe had no comments or concerns at this time.

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Russell Creek Bank Repair Project
County: Sonoma

USGS Quadrangles
Name: Santa Rosa
Township T7N Range R8W Section(s) Rancho San Miguel MDBM

Date: April 12, 2016
Company/Firm/Agency: Tom Origer & Associates
Contact Person: Taylor Alshuth

Address: PO Box 1531
City: Rohnert Park Zip: 94927
Phone: (707) 584-8200 Fax: (707) 584-8300
Email: Taylor@origer.com

Project Description:
The project area is approximately 75 linear feet. The project consists of a creek bank repair along Russell Creek.

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

April 18, 2016

Taylor Alshuth
Tom Origer & Associates

Sent by Email: Taylor@origer.com
Number of Pages: 3

RE: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Alshuth:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent above reference codes is to mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects.

As of July 1, 2015, Public Resources Code Sections 21080.1, 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and

- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. **A search of the SFL was completed for the USGS quadrangle information provided with negative results.**

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: sharaya.souza@nahc.ca.gov

Sincerely,

Sharaya Souza
Staff Services Analyst

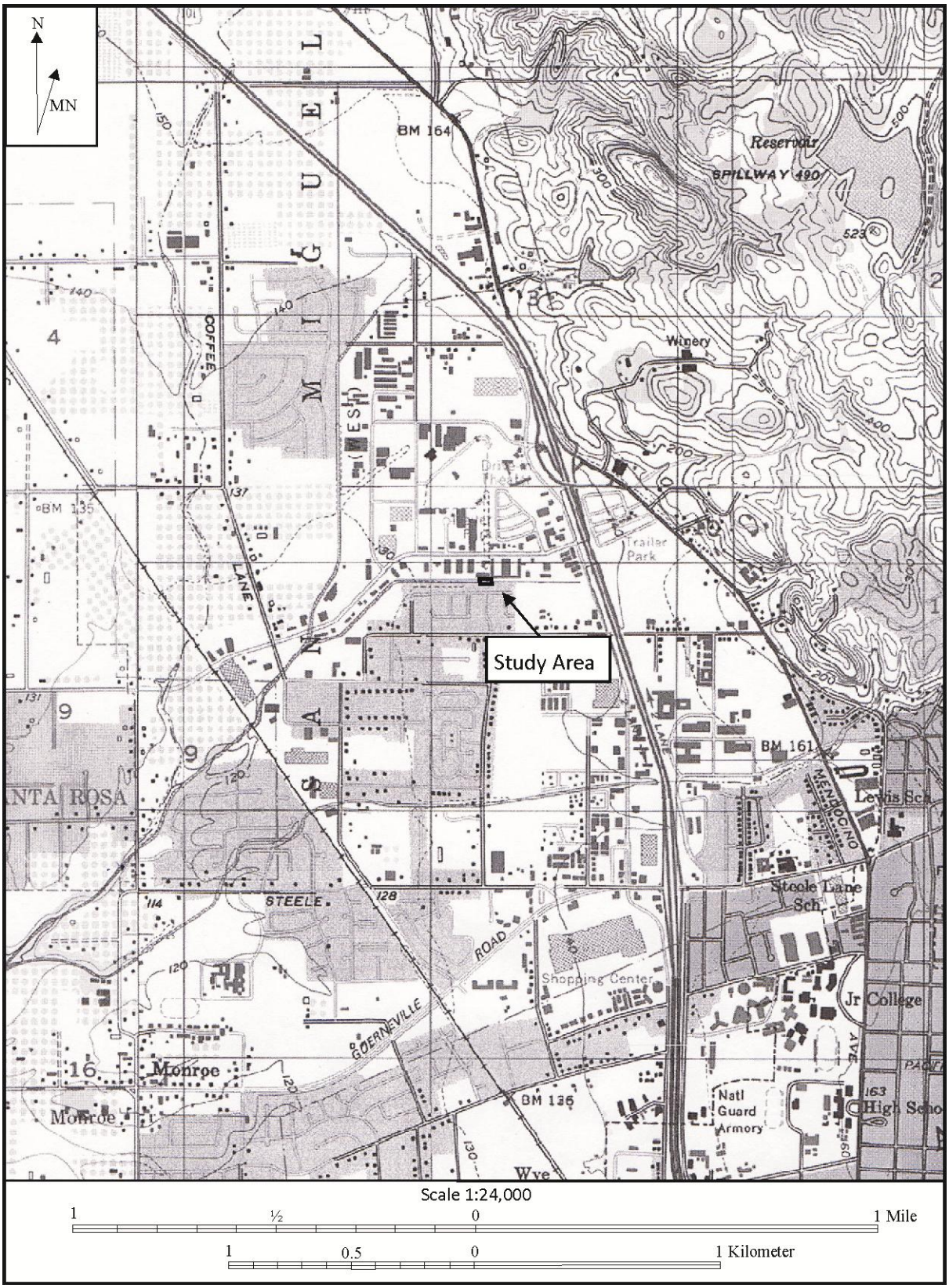
Native American Heritage Commission
Tribal Consultation List
Sonoma County
April 15, 2016

Federated Indians of Graton Rancheria
Greg Sarris, Chairperson
6400 Redwood Drive, Ste 300 Coast Miwok
Rohnert Park , CA 94928 Southern Pomo
(707) 566-2288 Office
(707) 566-2291 Fax

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Russell Creek Bank Repair Project, Santa Rosa, Sonoma County.


N
MN
Study Area
Reservoir
SPILLWAY 490
BM 164
Winery
Trailer Park
COFFEE
LANE
BM 135
BM 161
Lewis Sch
Steele Lane Sch
STEELE
ROAD
Shopping Center
Jr College
GOERNEVILLE
Monroe
BM 136
Natl Guard Armory
High Scho
Wye
Scale 1:24,000
1 ½ 0 1 Mile
1 0.5 0 1 Kilometer

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Mario Hermosillo
Cloverdale Rancheria of Pomo Indians
555 South Cloverdale Blvd. Suite A
Cloverdale, CA 95425

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Hermosillo:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Patricia Hermosillo
Cloverdale Rancheria of Pomo Indians
555 South Cloverdale Blvd. Suite A
Cloverdale, CA 95425

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Ms. Hermosillo:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Harvey Hopkins
Dry Creek Rancheria of Pomo Indians
P.O. Box 607
Geyserville, CA 95441

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Hopkins:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

DRY CREEK RANCHERIA
BAND OF POMO INDIANS

April 21, 2016

Taylor Alshuth, Associate
Tom Origer & Associates
P.O. Box 607
Rohnert Park, CA 95441

Dear Taylor Alshuth,

As the Tribal Historic Preservation Officer of the Dry Creek Rancheria, I am the primary contact on matters involving the protection of Tribal Cultural resources. In your letter of 4/12/16, you have notified the Dry Creek Rancheria of the proposed Russell Creek Bank Repair Project in Santa Rosa, CA.
We have researched your proposed project site and have found that there are areas of cultural/historic significance on/or adjacent to that area.
At this point we would like to open a dialogue with you re: the protection of cultural significance at this site.
Please call at your earliest convenience at (707) 849-1209 or you can email me Regedrycreekrancheria.com.

Thank you

Reg Elgin, Tribal Historic Preservation Officer
Dry Creek Rancheria
P.O. Box 607
Geyserville, CA 95441

Mailing Address: P.O BOX 607, Geyserville, CA 95441
Rancheria Address: 3250 Highway 128 East, Geyserville, CA 95441
Office Address: 3750 Westwind Boulevard, Suite 200A, Santa Rosa, CA 95403

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Buffy McQuillen
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Ms. McQuillen:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Peter Nelson
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Nelson:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Greg Sarris
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Sarris:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Margie Mejia
Lytton Band of Pomo Indians
437 Aviation Blvd
Santa Rosa, CA 95403

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Ms. Mejia:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Lisa Miller
Lytton Band of Pomo Indians
437 Aviation Blvd
Santa Rosa, CA 95403

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Ms. Miller:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Reno Franklin
Stewarts Point Rancheria
1420 Guerneville Road, Suite 1
Santa Rosa, CA 95403

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Franklin:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Teresa Romero
Stewarts Point Rancheria
1420 Guerneville Road, Suite 1
Santa Rosa, CA 95403

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Ms. Romero:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Tom Origer & Associates
Archaeology / Historical Research

April 12, 2016

Lorin Smith
Stewarts Point Rancheria
1420 Guerneville Road, Suite 1
Santa Rosa, CA 95403

Re: Russell Creek Bank Repair Project, Santa Rosa, Sonoma County

Dear Mr. Smith:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. The project consists of a creek bank repair along Russell Creek in Santa Rosa.

Enclosed is a portion of the Santa Rosa, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,

Taylor Alshuth
Associate

P.O. Box 1531, Rohnert Park, California 94927 ♦ www.origer.com Phone (707) 584-8200

Taylor

From: Tom Origer [origer@origer.com]
Sent: Tuesday, April 26, 2016 8:14 AM
To: Taylor@origer.com
Subject: FW: Russell Creek Bank Repair Project

From: lorin@stewartspoint.org [mailto:lorin@stewartspoint.org]
Sent: Monday, April 25, 2016 3:39 PM
To: Tom Origer
Cc: teresa@stewartspoint.org
Subject: Russell Creek Bank Repair Project

Taylor;

The Russell Creek Bank Repair Project in Santa Rosa, Ca. is out of the Aboriginal Territory of the Stewarts Point Rancheria Kashia Band of Pomo Indians.

We do not have any comments or concerns at this time.

Thank You,

Lorin W. Smith, Jr.
Tribal Historic Preservation Officer
1420 Guerneville Road, Suite 1
Santa Rosa CA 95403
Email: lorin@stewartspoint.org

Office: 707-591-0580 x 105
Cell: 707-321-7064

1

Appendix G

Watershed Partnership Program (WPP)
Tier 3 Mitigation Project Proposals

Point Blue
Conservation science
for a healthy planet.

Hellman Ranch Restoration Project

Ellis Creek, Zone 2A

A proposal to the Sonoma County Water Agency

Watershed Partnership Program

Conservation science for a healthy planet

3820 Cypress Drive, #11 Petaluma, CA 94954
T 707.781.2555 | F 707.765.1685
pointblue.org

Table of Contents

COMPANY NAME, CLASSIFICATION, LOCATION 1

STATEMENT OF WORK PREVIOUSLY PERFORMED 1

STATEMENT OF QUALIFICATIONS/PERSONNEL DESCRIPTIONS 1

SUBCONTRACTORS 7

PROJECT DESCRIPTION 8

PROJECT BENEFITS 11

PROJECT PARTNER ROLES 12

5 YEAR MAINTENANCE AND MONITORING PLAN 12

PROJECT SCHEDULE 13

LITERATURE CITED 14

ATTACHMENT A - TAX EXEMPT STATUS

ATTACHMENT B - PROJECT LOCATION AND PLANTING LOCATION MAPS

ATTACHMENT C - HELLMAN SUPPORT LETTER

ATTACHMENT D - PRUNUSKE CHATHAM, INC. SUPPORT LETTER

ATTACHMENT E - PROJECT BUDGET

COMPANY NAME, CLASSIFICATION, LOCATION

Point Reyes Bird Observatory, dba Point Blue Conservation Science

A 501c3 non-profit, incorporated in 1965

3820 Cypress Drive, Suite #11

Petaluma, CA 94954

Please see Attachment A for tax-exempt status and Attachment G for Declaration of Local Business for Service

STATEMENT OF WORK PREVIOUSLY PERFORMED

Point Blue Conservation Science's Students and Teachers Restoring A Watershed (STRAW) Program has been successfully implementing professional habitat restoration projects with schools and community members on public and private lands over the last 24 years throughout the San Francisco Bay area. We have been fortunate to partner with The Sonoma County Water Agency (SCWA) on over 12 project sites over 40 project days, many of which have been funded through previous Watershed Partnership Program (WPP) funding cycles. Many STRAW sites have been featured during tours by SCWA staff for the regulatory community for SCWA's Stream Maintenance Program permit certification process. In addition, STRAW has successfully performed similar mitigation services for multiple federal, state and county agencies throughout the San Francisco Bay area.

STATEMENT OF QUALIFICATIONS / PERSONNEL DESCRIPTIONS

Point Blue Conservation Science's 140 staff and seasonal scientists conserve birds, other wildlife and their ecosystems through scientific research and outreach. At the

core of our work is ecosystem science, studying birds and other indicators of nature's health. Visit Point Blue on the web www.pointblue.org.

STRAW is a collaborative project that connects schools, community members, businesses, government agencies, public land managers, and private landowners to restore local ecosystems. For 24 years, STRAW has been engaging and educating Bay Area students and communities about science, conservation, and water quality through hands-on restoration projects, outreach, and classroom lessons. To date, STRAW has worked with more than 38,000 students to restore over 32 miles of riparian habitat.

STRAW provides full-service project management and implementation to our partners, including site location identification and access, climate-smart project

design, volunteer education and training, implementation, maintenance, monitoring and reporting. We work with students and community members to implement restoration projects through hands-on work days. This increases volunteers' awareness of and experience with stewardship, raises support for our partners from the communities they aim to serve, and reduces labor cost through volunteer assistance.

In addition to hands-on educational work days for students, STRAW educators deliver classroom lessons focused on water quality, macro invertebrates, biodiversity, watershed science, food webs, and more – all aimed at providing students with a greater understanding and appreciation for natural resource conservation. Classroom lessons also help students prepare for hands-on restoration work days, which reinforce stewardship principles learned in the classroom. STRAW also provides extensive professional development opportunities free to participating teachers, including curricula development, education resources, and three annual network events, including Watershed Week, a 3 day intensive training for teachers seeking to gain new teaching skills and material.

A recent independent analysis of STRAW prepared by David Mitchell from MCubed (http://mcubed.nfshost.com/MCubed/Home.html), through the Integrated Regional Water Management (IRWM) grant process, determined our benefit/cost ratio is $14.22:$1, based on creek revegetation and water quality improvement alone. In addition, all restoration projects are designed climate-smart to prepare local ecosystems for a changing climate by sequestering carbon, providing new habitat for wildlife throughout the calendar year, and improving water quality and flood protection in the face of increased storm severity.

The uncertainties of climate change call for innovative and scientifically sound habitat restoration techniques that ensure projects in Bay Area watersheds will be as

resilient as possible. STRAW planting days implemented with community volunteers will be designed using our innovative climate-smart restoration practices for riparian and wetland-upland transition zone habitat projects (Gardali et al. in review). Restoring degraded ecological conditions has been identified as a strategy for preparing for climate change (Millar et al. 2007, U.S. EPA 2012). The restoration of riparian areas has been specifically identified because it can enhance connectivity, provide thermal refugia, and build upon existing resiliency (Seavy et al. 2009).

To date, restoration practitioners have relied on historical conditions to make decisions about restoration design, from engineering to planting palettes. Climate change forces us to reconsider these decisions (Dunwiddie et al. 2009). To be successful, climate-smart restoration designs are needed to protect water quality and enhance wildlife habitat in a manner that effectively responds to the projected consequences of climate change. Specifically, these designs will: (1) increase the capacity of the restoration to rebound from the impacts of extreme weather events such as longer and/or more frequent periods of drought, floods, and, to a lesser extent, fire; and (2) reduce the vulnerability of wildlife to phenological mismatches by increasing the number of months and the amount of resources (cover, food) that are available. The planting tools we have developed allow us to create a planting palette to meet our climate-smart, project-specific restoration goals. We have already tested and implemented these designs on multiple projects in both riparian and wetland-upland transition zone habitat types.

Riparian restoration is also a highly-effective practice for sequestering atmospheric carbon. A recent study or riparian restoration projects, which included multiple STRAW sites, conducted by University of California Cooperative Extension found that a representative site 1 km (0.6 miles) long with a 45 year old revegetation project could contain as much as 748 tonnes (824 short tons) of soil carbon and 3,671

tonnes (4,046 short tons) of woody vegetation carbon above baseline conditions, which equals the energy used by 1,478 homes or emissions from 3,411 passenger cars in one year (Lewis et.al 2015, US EPA 2015).

Each year, STRAW works with about 120 teachers and 4,000 Bay Area students on more than 45 restoration work days, learning about the importance of watershed health, water quality and adapting our landscapes to a rapidly changing climate. For more information about STRAW, please visit www.pointblue.org/straw.

Laurette Rogers, MS

STRAW Program Director

Laurette is the STRAW Program Director, collaborating to provide a restoration science education program for K-12 students and teachers. In 1992, she was teaching fourth grade at Brookside School in San Anselmo, CA, when her students began the Shrimp Project, a project designed to help save an endangered species through restoration and public outreach. The Shrimp Project has now evolved into the STRAW, a project of Point Blue Conservation Science. Laurette is also the author of The California Freshwater Shrimp Project: An Example of Environmental Project-Based Learning. She received her B.A. from University of California, Berkeley, and her M.A. in Education and Teaching Credential from Dominican University.

John Parodi

STRAW Restoration Manager

John Parodi is the Restoration Manager for Point Blue Conservation Science's STRAW Program. As Restoration Manager, he has provided leadership and science expertise to STRAW's habitat restoration projects with students, teachers and community members, completing over 500 projects on public and private landscapes. John received a B.S. in Fermentation Science from the University of

California, Davis in 1996 and a California Single Subject Teaching Credential with CLAD emphasis in Biology from Dominican College in 2000.

Leia Giambastiani

STRAW Project Manager

Leia Giambastiani is a Restoration Project Manager for Point Blue Conservation Science's STRAW Program. She works in a partnership with San Pablo Bay National Wildlife Refuge to plan and implement revegetation efforts in the salt marsh to upland transition zone. In addition to her work with STRAW, Leia has worked in wetland restoration and environmental education for the past 10 years. As Restoration Projects Manager, she has provided technical expertise to STRAW's habitat restoration projects. Leia received a B.S. in Environmental Science from Humboldt State University in 2000 and has extended her education through courses at the Santa Rosa Junior College, conferences and technical workshops.

Emily Allen

STRAW Project Manager

Emily Allen is a Restoration Project Manager for Point Blue Conservation Science's STRAW Program. Emily has served the project for 10 years in a variety of capacities from field technician, environmental educator, events coordinator, and restoration project manager. Emily earned a B.A. in Environmental Studies from Sonoma State University.

Isaiah Thalmayer

STRAW Project Manager

As a STRAW Project Manager at Point Blue his work focuses on organizing and implementing professional habitat restoration projects with K-12 graders throughout

the Bay Area. He oversees STRAW restoration projects in the Tolay Creek watershed in partnership with the Sonoma Land Trust, restorations at TomKat Ranch and other sites. At Warren Wilson College, he received a B.S. in Biology focusing on botany and ecological restoration. As the student manager of the Native Plant Crew he collected seed and propagated more than 75 species of native grasses and flowers for restoration on campus.

Vanessa Wyant

STRAW Project Manager

Vanessa Wyant is a STRAW Project Manager at Point Blue. She works with teachers, landowners, restoration designers and other community members to plan and implement habitat restoration projects and in-class environmental science presentations. Vanessa holds a BA in Biology with a Concentration in Environmental Studies from Kalamazoo College.

SUBCONTRACTORS

STRAW Faculty

The STRAW Faculty is a group of seven former classroom teachers and administrators with over 300 years of collective education experience. The major goal of the STRAW Faculty is to support and enhance our STRAW education capacity, breadth, and depth. In addition to teaching about 60% of our pre-restoration lessons, the STRAW Faculty offer lessons on a wide range of environmental education topics as well as the opportunity for teachers to collaborate and develop new lessons that support curriculum.

Prunuske Chatham, Inc.

Prunuske Chatham, Inc. (PCI) is a full-service environmental restoration firm. Since 1986, we have been planning, designing, and building projects that protect or restore natural processes and habitats. We have civil engineers, scientists, landscape architects, planners, and constructors on our staff. PCI is licensed in California as a General Contractor (A) and Landscape Contractor (C-27) #590735.

Harold Appleton
Forester/Revegetation Specialist
Prunuske Chatham, Inc.

Harold Appleton is a Registered Professional Forester (RPF #1977), Certified Professional in Erosion and Sediment Control (CPESC #271), and Certified Arborist (#WC-5870). He has been active in reforestation, revegetation, and ecological restoration since 1976. As a member of the PCI team since 1988, Harold has helped to design and implement numerous wetland and riparian restoration projects for private and governmental clients, including Sonoma County Water Agency, STRAW (Students and Teachers Restoring a Watershed), County of Marin, PG&E, and the City of Santa Rosa. He was project manager for several Marin County stream channel restoration, erosion control, and revegetation projects, including the Indian Valley Preserve, Cascade Canyon Preserve, Baltimore Canyon Preserve and Saltworks Canal. Harold brings extensive field experience, a very practical perspective, and a commitment to using new scientific and technical information to his restoration designs.

PROJECT DESCRIPTION

Point Blue Conservation Science's STRAW Program proposes to work with students, teachers, community volunteers, and professional restorationists on a professionally-

designed and student implemented riparian habitat restoration project at the Hellman Family Ranch on Ellis Creek. (See Attachment B for project location and planting location maps). The initial project location was selected due to landowner enthusiasm and its proximity to existing work performed by STRAW and PCI at the Flocchini Ranch, some of which was funded by previous WPP programs, directly across Adobe Road.

The overall conditions at the site include sporadic sections of early successional riparian overstory species of willows (*Salix sp.)*, rush/sedge populations, and grass/forb communities dominated by nonnative Eurasian annual grasses. The drainage is experiencing substantial sediment loss, with multiple small head cuts and vertical banks. The site does have periodic bedrock exposures, which makes it a good candidate for vegetation-based erosion control practices as the overall channel structure has some anchor points to minimize excessive channel incision. (See Figure 1 for photos of the project site.)

The Hellman Family is committed to progressive grazing practices which are already reducing cattle pressure on drainages. In addition, the family will construct exclusionary fencing around the reach prior to project implementation.

We propose to establish native riparian vegetation along approximately 700 linear feet of river bank, completing approximately one third of the area in the highest priority drainage on the property. 100 native trees, shrubs and graminoids will be installed over two project days. Additional plants will be included at installation to enhance establishment percentage relative to survival criteria. Plant species will be selected using our climate-smart design tools described above and from studies of reference reaches within the Ellis Creek watershed under the guidance of Prunuske Chatham, Inc. (PCI) staff. No permit is required for revegetation efforts. Access is granted by the landowner and they offer a letter of support (Attachment C).

Figure 1. Photos of proposed Hellman Ranch Restoration Project site. On left: looking upstream at the project reach from near the bottom of the planting location. On right: example of typical erosive features in the project reach.

Students will receive at least one in-class presentation from our program staff or our STRAW Faculty about the project including watershed and restoration science as well as site specific training and details. Through additional matching funds, each of the teachers have the opportunity to attend Watershed Week, a three-day annual professional development workshop in August and two additional STRAW Teacher Network events to support them in providing their classrooms with a rich context for learning about complicated environmental issues.

The project will be installed in the 2016-2017 school year with three years of summer maintenance and five years of annual monitoring performed by STRAW staff.

Minimum Project Dimensions:

700 ft x 50 ft = 35,000 ft^2

PROJECT BENEFITS

This project will accomplish the ecological goals of enhancing riparian habitat and reducing excess sediment inputs into Ellis Creek and the Petaluma River. These will be accomplished by enhancing the riparian corridor by installing native trees, shrubs, grasses and forbs, beginning the connection between high-quality habitat both up- and downstream. The establishment of native woody vegetation will also stabilize soils along this highly erosive section within the Ellis Creek drainage. This site was selected because of its location within the Sonoma County Water Agency's Flood Control Zone 2A where reach scale and localized work is proposed in multiple drainages, along with sediment basin clearing proposed on the adjacent Adobe Creek.

This project will accomplish the educational goal of empowering students and teachers from local schools and other community members to actively contribute to the enhancement of Sonoma County's watersheds. Through Point Blue's STRAW Program, students from Sonoma County will play an active role in restoring the Petaluma River, learn about factors that contribute to the management of their waterways, and help prepare Sonoma's landscape for the uncertain climate ahead.

PROJECT PARTNER ROLES

PCI will provide project design and consultation services.

A minimum of four k-12 school classes (100 students), 4 teachers and 25 parents/community volunteers will participate in the implementation of the revegetation practices determined by final project design. STRAW faculty and staff will provide students with additional in-class and in-field education around restoration science, climate change adaptation, and environmental health. Teachers will receive professional development opportunities through our annual Watershed Week and periodic network events.

The Hellman family will provide access, logistical support, exclusionary fencing and appropriate water source(s). Ranch staff will inspect plantings regularly and on an as needed basis and inform Point Blue of needs as they develop.

5 YEAR MAINTENANCE AND MONITORING PLAN

Plants are maintained for a three year establishment period, and monitored for a five-year period. In addition to indicating project success, monitoring data inform the project team of site specific variables that contribute to plant mortality, allowing for adaptive management of project sites. Final design elements will determine final maintenance/monitoring activities with regards to irrigation strategies/durations and monitoring protocols for specific species.

MAINTENANCE ACTIVITIES 2017-2019

- Regularly inspect plantings from late spring through early fall for three years – as often as once per week, but no less than once per month for the first three years. In addition, Point Blue staff will respond to project needs as reported by landowner.

- Maintain plantings at a minimum by weeding and repairing browse protection cages.
- Irrigate plantings with most efficient and cost-effective means available.

MONITORING ACTIVITIES 2017-2021

- Monitor plant survival by species between August-October each year for five years to inform future planting designs, using University of California Cooperative Extension's Riparian Zone Monitoring Protocols (Lennox et al. 2010)
- Perform annual photomonitoring using the State Water Resources Control Board's SOP 4.2.1.4.

PROJECT SCHEDULE

STRAW uses the following annual timeline for restoration, monitoring, and maintenance activities:

MONTHS	ACTIVITIES
July/August 2016	Site reconnaissance/restoration planning and design Teacher professional development at Watershed Week Begin scheduling classes to restoration sites
September/October 2016	Finalize restoration planning and design Finalize scheduling classes to restoration sites Conduct in-class presentations for restoration Conduct fall teacher professional development seminar

November 2016 – March 2017	Restoration implementation Conduct spring teacher professional development seminar
April-October 2017-2019	On-going maintenance of project site
August-October 2017-2021	Monitoring conducted

PROJECT BUDGET

Please see the attachment E for project budget.

PROPOSED EXCEPTIONS TO SAMPLE SCWA AGREEMENT

Please see the attachment F for highlighted proposed exceptions.

DECLARATION OF LOCAL BUSINESS FOR SERVICES

Please see the attachment G for declaration of local business for service.

LITERATURE CITED

Dunwiddie, P.W., S.A. Hall, M.W. Ingraham, J.D. Bakker, K.S. Nelson, R. Ruller, and E. Gray. 2009. Rethinking conservation practice in light of climate change. *Ecological Restoration* 27:320-329.

Gardali, T., N.E. Seavy, J.J. Parodi, L. Giambastiani, and S.C. Nelson. In review. Climate-smart ecological restoration: framework and lessons learned from a coastal California stream. *Restoration Ecology.*

Lennox, M., N. Scolari, and D. Lewis. 2010. Riparian Zone Monitoring Plan. Prepared by University of California Cooperative Extension for Marin Resource Conservation District, Point Reyes Station CA. 75 p

Lewis, D.J., M. Lennox, A. O'Geen, J. Creque, V. Eviner, S. Larson, J. Harper, M. Doran, and K.W. Tate. 2015. Creek carbon: Mitigating greenhouse gas emissions through riparian restoration. University of California Cooperative Extension in Marin County. Novato, California. 26 pgs.

Millar, C. I., N. L. Stephenson, and S. L. Stephens. 2007. Climate change and forests of the future: Managing in the face of uncertainty. *Ecological Applications* 17:2145-2151.

Seavy, N. E., T. Gardali, G. H. Golet, F. T. Griggs, et al. 2009. Why climate change makes riparian restoration more important than ever. *Ecological Restoration* 27:330-338.

U.S. EPA. 2012. Vulnerability Assessments in Support of the Climate Ready Estuaries Program, Volume I: Results for the San Francisco Estuary Partnership. EPA/600/R-11/058Fa.

US EPA. 2015. Greenhouse gas equivalence calculator. http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results

Internal Revenue Service

Date: August 29, 2006

POINT REYES BIRD OBSERVATORY
3820 CYPRESS DR STE 11
PETALUMA CA 94954-6964

Department of the Treasury
P. O. Box 2508
Cincinnati, OH 45201

Person to Contact:
Kathy Masters ID# 31-04015
Customer Service Representative
Toll Free Telephone Number:
877-829-5500
Federal Identification Number:
94-1594250

Dear Sir or Madam:

This is in response to your request of August 29, 2006, regarding your organization's tax-exempt status.

In May 1965 we issued a determination letter that recognized your organization as exempt from federal income tax. Our records indicate that your organization is currently exempt under section 501(c)(3) of the Internal Revenue Code.

Our records indicate that your organization is also classified as a public charity under sections 509(a)(1) and 170(b)(1)(A)(vi) of the Internal Revenue Code.

Our records indicate that contributions to your organization are deductible under section 170 of the Code, and that you are qualified to receive tax deductible bequests, devises, transfers or gifts under section 2055, 2106 or 2522 of the Internal Revenue Code.

If you have any questions, please call us at the telephone number shown in the heading of this letter.

Sincerely,

Janna K. Skufca

Janna K. Skufca, Director, TE/GE
Customer Account Services

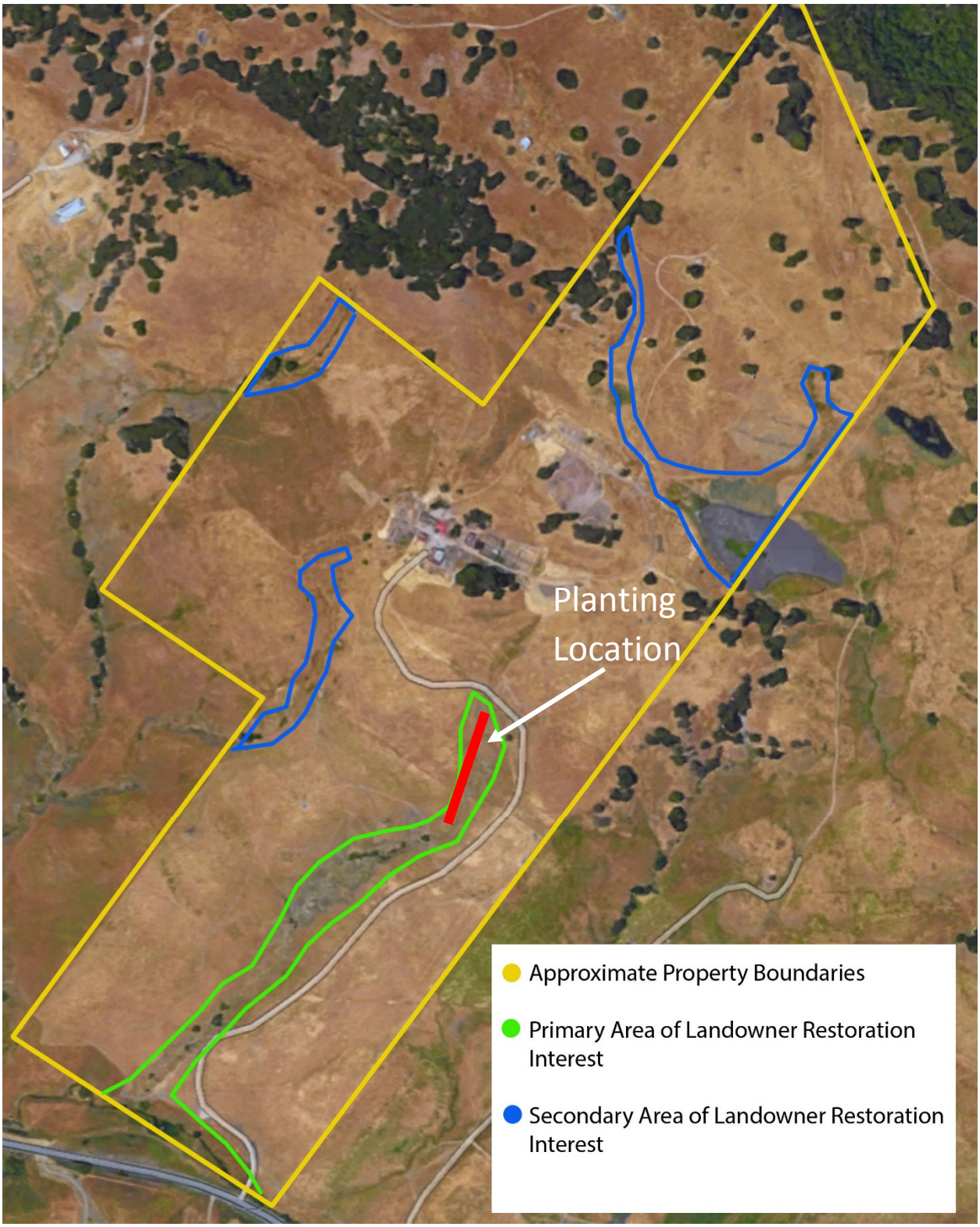
ATTACHMENT B

Hellman Ranch Restoration Project

Project Location Map

Hellman Ranch Restoration Project

Planting Location Map



January 27th, 2015

Grant Davis

Sonoma County Water Agency

404 Aviation Blvd

Santa Rosa, CA 94503

Dear Mr. Davis,

I am writing to express my support for Point Blue Conservation Science's Students and Teachers restoring A Watershed (STRAW) Program and their application to the Sonoma County Water Agency Watershed Partnership Program for Ellis Creek. For the past 23 years, STRAW has provided excellent watershed science education, including teaching thousands of North Bay students and teachers professional quality habitat restoration practices.

Since its inception in 1993, STRAW has provided over 40,000 students with opportunities to participate in over 500 completed restorations on both rural and urban creeks and wetlands. Together they have planted over 40,000 native plants and restored over 35 miles of habitat. STRAW is directly responsible for connecting schools, businesses, government agencies and ranches to restore local ecosystems. Many partners depend on STRAW to help facilitate their education and land management goals.

Five Springs Farm
4497 Old Adobe road
Petaluma, CA, 94954

We urge you to consider funding this project to benefit our local ecosystem, schools and community.

Thank you.

Sincerely,

Sabrina H. Hellman

Sabrina Hellman

PRUNUSKE CHATHAM, INC.

January 22, 2016

Re: STRAW application for SCWA Watershed Partnership Program

To Whom It May Concern:

PCI is honored to once again support Students and Teachers Restoring a Watershed (STRAW) in their efforts to make Sonoma County streams healthier while providing real-life restoration opportunities for local students. This year, STRAW is requesting funding to work along Washington and Ellis Creeks within the Petaluma River Watershed and in upper Russian River drainages near Cloverdale. Both of these are key watersheds that need help now and will require an educated, caring population to thrive into the future. STRAW's work does both.

PCI will continue to provide technical support to the STRAW staff. We urge you to support STRAW's effective, double "bang-for-the-buck" work in our county.

Sincerely,

Liza Prunuske

Liza Prunuske
President

c: John Parodi, STRAW

400 MORRIS STREET, SUITE G · SEBASTOPOL CA 95472 · 707 824-4600 · FAX 707 824-6854

Point Blue
Conservation science for a healthy planet.

STRAW - Hellman Ranch Restoration Project

LABOR*		
	Installation	$18,327.21
	Maintenance & Monitoring	$34,447.26
	Total Labor	$52,774.47
OTHER DIRECT COSTS		
Materials		
	Installation, Maintenance & Monitoring	$27,424.10
Mileage		
	Installation	$117.30
	Maintenance & Monitoring	$345.00
Subcontractors		
	STRAW Faculty	$910.00
	Prunuske Chatham, Inc.	$1,380.00
	Total Other Direct Costs	$30,176.40
	Indirect on Other Direct Costs	$5,076.92
TOTAL		$88,027.79

* includes salary, fringe benefits and indirect expense

Total WPP Funding Request		$50,000.00
MATCH		
Private Foundations / Donors		$21,527.79
Hellman Family		
	Wildlife Friendly Fence	$16,500.00
720	Volunteer hours @ $23.07	$16,610.40
Total Project Budget		$104,638.19

Point Blue
Conservation science
for a healthy planet.

Davis Ranch Restoration Project

Washington Creek, Zone 2A

A proposal to the Sonoma County Water Agency

Watershed Partnership Program

Conservation science for a healthy planet

3820 Cypress Drive, #11 Petaluma, CA 94954
T 707.781.2555 | F 707.765.1685
pointblue.org

Table of Contents

COMPANY NAME, CLASSIFICATION, LOCATION 1

STATEMENT OF WORK PREVIOUSLY PERFORMED 1

STATEMENT OF QUALIFICATIONS/PERSONNEL DESCRIPTIONS 1

SUBCONTRACTORS 7

PROJECT DESCRIPTION 8

PROJECT BENEFITS 11

PROJECT PARTNER ROLES 12

5 YEAR MAINTENANCE AND MONITORING PLAN 13

PROJECT SCHEDULE 14

LITERATURE CITED 15

ATTACHMENT A - TAX EXEMPT STATUS

ATTACHMENT B - PROJECT LOCATION AND PLANTING LOCATION MAPS

ATTACHMENT C - DAVIS SUPPORT LETTER

ATTACHMENT D - PRUNUSKE CHATHAM, INC. SUPPORT LETTER

ATTACHMENT E - PROJECT BUDGET

COMPANY NAME, CLASSIFICATION, LOCATION

Point Reyes Bird Observatory, dba Point Blue Conservation Science

A 501c3 non-profit, incorporated in 1965

3820 Cypress Drive, Suite #11

Petaluma, CA 94954

Please see Attachment A for tax-exempt status and Attachment G for Declaration of Local Business for Service

STATEMENT OF WORK PREVIOUSLY PERFORMED

Point Blue Conservation Science's Students and Teachers Restoring A Watershed (STRAW) Program has been successfully implementing professional habitat restoration projects with schools and community members on public and private lands over the last 24 years throughout the San Francisco Bay area. We have been fortunate to partner with The Sonoma County Water Agency (SCWA) on over 12 project sites over 40 project days, many of which have been funded through previous Watershed Partnership Program (WPP) funding cycles. Many STRAW sites have been featured during tours by SCWA staff for the regulatory community for SCWA's Stream Maintenance Program permit certification process. In addition, STRAW has successfully performed similar mitigation services for multiple federal, state and county agencies throughout the San Francisco Bay area.

STATEMENT OF QUALIFICATIONS / PERSONNEL DESCRIPTIONS

Point Blue Conservation Science's 140 staff and seasonal scientists conserve birds, other wildlife and their ecosystems through scientific research and outreach. At the

core of our work is ecosystem science, studying birds and other indicators of nature's health. Visit Point Blue on the web www.pointblue.org.

STRAW is a collaborative project that connects schools, community members, businesses, government agencies, public land managers, and private landowners to restore local ecosystems. For 24 years, STRAW has been engaging and educating Bay Area students and communities about science, conservation, and water quality through hands-on restoration projects, outreach, and classroom lessons. To date, STRAW has worked with more than 38,000 students to restore over 32 miles of riparian habitat.

STRAW provides full-service project management and implementation to our partners, including site location identification and access, climate-smart project

design, volunteer education and training, implementation, maintenance, monitoring and reporting. We work with students and community members to implement restoration projects through hands-on work days. This increases volunteers' awareness of and experience with stewardship, raises support for our partners from the communities they aim to serve, and reduces labor cost through volunteer assistance.

In addition to hands-on educational work days for students, STRAW educators deliver classroom lessons focused on water quality, macro invertebrates, biodiversity, watershed science, food webs, and more – all aimed at providing students with a greater understanding and appreciation for natural resource conservation. Classroom lessons also help students prepare for hands-on restoration work days, which reinforce stewardship principles learned in the classroom. STRAW also provides extensive professional development opportunities free to participating teachers, including curricula development, education resources, and three annual network events, including Watershed Week, a 3 day intensive training for teachers seeking to gain new teaching skills and material.

A recent independent analysis of STRAW prepared by David Mitchell from MCubed (http://mcubed.nfshost.com/MCubed/Home.html), through the Integrated Regional Water Management (IRWM) grant process, determined our benefit/cost ratio is $14.22:$1, based on creek revegetation and water quality improvement alone. In addition, all restoration projects are designed climate-smart to prepare local ecosystems for a changing climate by sequestering carbon, providing new habitat for wildlife throughout the calendar year, and improving water quality and flood protection in the face of increased storm severity.

The uncertainties of climate change call for innovative and scientifically sound habitat restoration techniques that ensure projects in Bay Area watersheds will be as

resilient as possible. STRAW planting days implemented with community volunteers will be designed using our innovative climate-smart restoration practices for riparian and wetland-upland transition zone habitat projects (Gardali et al. in review). Restoring degraded ecological conditions has been identified as a strategy for preparing for climate change (Millar et al. 2007, U.S. EPA 2012). The restoration of riparian areas has been specifically identified because it can enhance connectivity, provide thermal refugia, and build upon existing resiliency (Seavy et al. 2009).

To date, restoration practitioners have relied on historical conditions to make decisions about restoration design, from engineering to planting palettes. Climate change forces us to reconsider these decisions (Dunwiddie et al. 2009). To be successful, climate-smart restoration designs are needed to protect water quality and enhance wildlife habitat in a manner that effectively responds to the projected consequences of climate change. Specifically, these designs will: (1) increase the capacity of the restoration to rebound from the impacts of extreme weather events such as longer and/or more frequent periods of drought, floods, and, to a lesser extent, fire; and (2) reduce the vulnerability of wildlife to phenological mismatches by increasing the number of months and the amount of resources (cover, food) that are available. The planting tools we have developed allow us to create a planting palette to meet our climate-smart, project-specific restoration goals. We have already tested and implemented these designs on multiple projects in both riparian and wetland-upland transition zone habitat types.

Riparian restoration is also a highly-effective practice for sequestering atmospheric carbon. A recent study or riparian restoration projects, which included multiple STRAW sites, conducted by University of California Cooperative Extension found that a representative site 1 km (0.6 miles) long with a 45 year old revegetation project could contain as much as 748 tonnes (824 short tons) of soil carbon and 3,671

tonnes (4,046 short tons) of woody vegetation carbon above baseline conditions, which equals the energy used by 1,478 homes or emissions from 3,411 passenger cars in one year (Lewis et al. 2015, US EPA 2015).

Each year, STRAW works with about 120 teachers and 4,000 Bay Area students on more than 45 restoration work days, learning about the importance of watershed health, water quality and adapting our landscapes to a rapidly changing climate. For more information about STRAW, please visit www.pointblue.org/straw.

Laurette Rogers, MS

STRAW Program Director

Laurette is the STRAW Program Director, collaborating to provide a restoration science education program for K-12 students and teachers. In 1992, she was teaching fourth grade at Brookside School in San Anselmo, CA, when her students began the Shrimp Project, a project designed to help save an endangered species through restoration and public outreach. The Shrimp Project has now evolved into the STRAW, a project of Point Blue Conservation Science. Laurette is also the author of The California Freshwater Shrimp Project: An Example of Environmental Project-Based Learning. She received her B.A. from University of California, Berkeley, and her M.A. in Education and Teaching Credential from Dominican University.

John Parodi

STRAW Restoration Manager

John Parodi is the Restoration Manager for Point Blue Conservation Science's STRAW Program. As Restoration Manager, he has provided leadership and science expertise to STRAW's habitat restoration projects with students, teachers and community members, completing over 500 projects on public and private landscapes. John received a B.S. in Fermentation Science from the University of

California, Davis in 1996 and a California Single Subject Teaching Credential with CLAD emphasis in Biology from Dominican College in 2000.

Leia Giambastiani

STRAW Project Manager

Leia Giambastiani is a Restoration Project Manager for Point Blue Conservation Science's STRAW Program. She works in a partnership with San Pablo Bay National Wildlife Refuge to plan and implement revegetation efforts in the salt marsh to upland transition zone. In addition to her work with STRAW, Leia has worked in wetland restoration and environmental education for the past 10 years. As Restoration Projects Manager, she has provided technical expertise to STRAW's habitat restoration projects. Leia received a B.S. in Environmental Science from Humboldt State University in 2000 and has extended her education through courses at the Santa Rosa Junior College, conferences and technical workshops.

Emily Allen

STRAW Project Manager

Emily Allen is a Restoration Project Manager for Point Blue Conservation Science's STRAW Program. Emily has served the project for 10 years in a variety of capacities from field technician, environmental educator, events coordinator, and restoration project manager. Emily earned a B.A. in Environmental Studies from Sonoma State University.

Isaiah Thalmayer

STRAW Project Manager

As a STRAW Project Manager at Point Blue his work focuses on organizing and implementing professional habitat restoration projects with K-12 graders throughout

the Bay Area. He oversees STRAW restoration projects in the Tolay Creek watershed in partnership with the Sonoma Land Trust, restorations at TomKat Ranch and other sites. At Warren Wilson College, he received a B.S. in Biology focusing on botany and ecological restoration. As the student manager of the Native Plant Crew he collected seed and propagated more than 75 species of native grasses and flowers for restoration on campus.

Vanessa Wyant

STRAW Project Manager

Vanessa Wyant is a STRAW Project Manager at Point Blue. She works with teachers, landowners, restoration designers and other community members to plan and implement habitat restoration projects and in-class environmental science presentations. Vanessa holds a BA in Biology with a Concentration in Environmental Studies from Kalamazoo College.

SUBCONTRACTORS

STRAW Faculty

The STRAW Faculty is a group of seven former classroom teachers and administrators with over 300 years of collective education experience. The major goal of the STRAW Faculty is to support and enhance our STRAW education capacity, breadth, and depth. In addition to teaching about 60% of our pre-restoration lessons, the STRAW Faculty offer lessons on a wide range of environmental education topics as well as the opportunity for teachers to collaborate and develop new lessons that support curriculum.

Prunuske Chatham, Inc.

Prunuske Chatham, Inc. (PCI) is a full-service environmental restoration firm. Since 1986, we have been planning, designing, and building projects that protect or restore natural processes and habitats. We have civil engineers, scientists, landscape architects, planners, and constructors on our staff. PCI is licensed in California as a General Contractor (A) and Landscape Contractor (C-27) #590735.

Harold Appleton

Forester/Revegetation Specialist

Prunuske Chatham, Inc.

Harold Appleton is a Registered Professional Forester (RPF #1977), Certified Professional in Erosion and Sediment Control (CPESC #271), and Certified Arborist (#WC-5870). He has been active in reforestation, revegetation, and ecological restoration since 1976. As a member of the PCI team since 1988, Harold has helped to design and implement numerous wetland and riparian restoration projects for private and governmental clients, including Sonoma County Water Agency, STRAW (Students and Teachers Restoring a Watershed), County of Marin, PG&E, and the City of Santa Rosa. He was project manager for several Marin County stream channel restoration, erosion control, and revegetation projects, including the Indian Valley Preserve, Cascade Canyon Preserve, Baltimore Canyon Preserve and Saltworks Canal. Harold brings extensive field experience, a very practical perspective, and a commitment to using new scientific and technical information to his restoration designs.

PROJECT DESCRIPTION

Point Blue Conservation Science's STRAW Program proposes to work with students, teachers, community volunteers, and professional restorationists on a professionally-designed and student implemented riparian habitat restoration project at the Davis

Family Ranch on Washington Creek in Petaluma. (See Attachment B for project location and planting location maps). Two initial project locations were selected based on landowner enthusiasm, as well as exhibiting some of the most erosive features present on the ranch that are suitable for Watershed Partnership funding.

The overall conditions along Washington Creek at the ranch include periodic sections of relatively high quality riparian overstory habitat, including species of willows (*Salix sp.)*, coast live oak (*Quercus agrifolia)*, California bay laurel (*Umbellularia californica*) and California buckeye (*Aesculus californica*). The understory conditions are much less developed and are primarily dominated by native rush/sedge populations, grass/forb communities dominated by nonnative Eurasian annual grasses, and intermittent populations of Himalayan blackberry (*Rubus armeniacus)*. The proposed planting sites between these sections of developed habitat are comprised solely of the grass/forb communities dominated by nonnative Eurasian annual grasses. There are also multiple small headcuts and vertical banks contributing substantial sediment into the system.

Proposed project site #1, looking downstream

Proposed project site #1, typical erosion characteristics

Proposed project site #2 gully, looking upstream

The Davis Family is committed to progressive management of their property, and most of the property does not experience any substantial grazing, as the property is primarily used for equestrian activities. The proposed project site locations already have riparian exclusionary fencing in place.

We propose to establish native riparian vegetation at two project sites along approximately 460 linear feet of creek bank, installing 100 native trees, shrubs and graminoids, along with biotechnical erosion control structures at appropriate locations, over two project days. Additional plants will be included at installation to enhance establishment percentage relative to survival criteria. Plant species will be selected using our climate-smart design tools described above and from studies of reference reaches within the Washington Creek watershed under the guidance of Prunuske Chatham, Inc. (PCI) staff. No permit is required for revegetation efforts. Access is granted by the landowner and they offer a letter of support (Attachment C).

Students will receive at least one in-class presentation from our program staff or our STRAW Faculty about the project including watershed and restoration science as well

as site specific training and details. Through additional matching funds, each of the teachers have the opportunity to attend Watershed Week, a three-day annual professional development workshop in August and two additional STRAW Teacher Network events to support them in providing their classrooms with a rich context for learning about complicated environmental issues.

The project will be installed in the 2016-2017 school year with three years of summer maintenance and five years of annual monitoring performed by STRAW staff.

Minimum Project Dimensions:

Site #1

94 ft x 30 ft = 2,820 ft^2

207 ft x 30 ft = 6,210 ft^2

9,030 ft^2

Site #2

160 ft x 50 ft = **8,000 ft^2**

PROJECT BENEFITS

This project will accomplish the ecological goals of enhancing riparian habitat and reducing excess sediment inputs into Washington Creek and the Petaluma River. These will be accomplished by enhancing the riparian corridor by installing native trees, shrubs, grasses, forbs and biotechnical erosion control structures within the project area. In addition, establishing vegetation within the proposed project areas will link high-quality habitat present both up- and downstream. The establishment of native woody vegetation will also stabilize soils along this highly erosive section

within the Washington Creek drainage. This site was selected because of its location within the Sonoma County Water Agency's Flood Control Zone 2A, where reach scale work is planned for Washington Creek, along with proposed reach scale, sediment basin clearing and/or localized work in Adobe, East fork of the McDowell and Corona creeks.

This project will accomplish the educational goal of empowering students and teachers from local schools and other community members to actively contribute to the enhancement of Sonoma County's watersheds. Through Point Blue's STRAW Program, students from Sonoma County will play an active role in restoring the Petaluma River, learn about factors that contribute to the management of their waterways, and help prepare Sonoma's landscape for the uncertain climate ahead.

PROJECT PARTNER ROLES

PCI will provide project design and consultation services.

A minimum of four k-12 school classes (100 students), 4 teachers and 25 parents/community volunteers will participate in the implementation of the revegetation practices determined by final project design. STRAW faculty and staff will provide students with additional in-class and in-field education around restoration science, climate change adaptation, and environmental health. Teachers will receive professional development opportunities through our annual Watershed Week and periodic network events.

The Davis family will provide access, logistical support, and appropriate water source(s). Ranch staff will inspect plantings regularly and on an as needed basis and inform Point Blue of needs as they develop.

5 YEAR MAINTENANCE AND MONITORING PLAN

Plants are maintained for a three year establishment period, and monitored for a five-year period. In addition to indicating project success, monitoring data inform the project team of site specific variables that contribute to plant mortality, allowing for adaptive management of project sites. Final design elements will determine final maintenance/monitoring activities with regards to irrigation strategies/durations and monitoring protocols for specific species.

MAINTENANCE ACTIVITIES 2017-2019

- Regularly inspect plantings from late spring through early fall for three years – as often as once per week, but no less than once per month for the first three years. In addition, Point Blue staff will respond to project needs as reported by landowner.
- Maintain plantings at a minimum by weeding and repairing browse protection cages.
- Irrigate plantings with most efficient and cost-effective means available.

MONITORING ACTIVITIES 2017-2021

- Monitor plant survival by species between August-October each year for five years to inform future planting designs, using University of California Cooperative Extension's Riparian Zone Monitoring Protocols (Lennox et al. 2010)
- Perform annual photomonitoring using the State Water Resources Control Board's SOP 4.2.1.4.

PROJECT SCHEDULE

STRAW uses the following annual timeline for restoration, monitoring, and maintenance activities:

MONTHS	ACTIVITIES
July/August 2016	Site reconnaissance/restoration planning and design Teacher professional development at Watershed Week Begin scheduling classes to restoration sites
September/October 2016	Finalize restoration planning and design Finalize scheduling classes to restoration sites Conduct in-class presentations for restoration Conduct fall teacher professional development seminar
November 2016 – March 2017	Restoration implementation Conduct spring teacher professional development seminar
April-October 2017-2019	On-going maintenance of project site
August-October 2017-2021	Monitoring conducted

PROJECT BUDGET

Please see the attachment E for project budget.

PROPOSED EXCEPTIONS TO SAMPLE SCWA AGREEMENT

Please see the attachment F for highlighted proposed exceptions.

DECLARATION OF LOCAL BUSINESS FOR SERVICES

Please see the attachment G for declaration of local business for service.

LITERATURE CITED

Dunwiddie, P.W., S.A. Hall, M.W. Ingraham, J.D. Bakker, K.S. Nelson, R. Ruller, and E. Gray. 2009. Rethinking conservation practice in light of climate change. *Ecological Restoration* 27:320-329.

Gardali, T., N.E. Seavy, J.J. Parodi, L. Giambastiani, and S.C. Nelson. In review. Climate-smart ecological restoration: framework and lessons learned from a coastal California stream. *Restoration Ecology.*

Lennox, M., N. Scolari, and D. Lewis. 2010. Riparian Zone Monitoring Plan. Prepared by University of California Cooperative Extension for Marin Resource Conservation District, Point Reyes Station CA. 75 p

Lewis, D.J., M. Lennox, A. O'Geen, J. Creque, V. Eviner, S. Larson, J. Harper, M. Doran, and K.W. Tate. 2015. Creek carbon: Mitigating greenhouse gas emissions through riparian restoration. University of California Cooperative Extension in Marin County. Novato, California. 26 pgs.

Millar, C. I., N. L. Stephenson, and S. L. Stephens. 2007. Climate change and forests of the future: Managing in the face of uncertainty. *Ecological Applications* 17:2145-2151.

Seavy, N. E., T. Gardali, G. H. Golet, F. T. Griggs, et al. 2009. Why climate change makes riparian restoration more important than ever. *Ecological Restoration* 27:330-338.

U.S. EPA. 2012. Vulnerability Assessments in Support of the Climate Ready Estuaries Program, Volume I: Results for the San Francisco Estuary Partnership. EPA/600/R-11/058Fa.

US EPA. 2015. Greenhouse gas equivalence calculator. http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results

Internal Revenue Service

Date: August 29, 2006

POINT REYES BIRD OBSERVATORY
3820 CYPRESS DR STE 11
PETALUMA CA 94954-6964

Department of the Treasury
P. O. Box 2508
Cincinnati, OH 45201

Person to Contact:
Kathy Masters ID# 31-04015
Customer Service Representative
Toll Free Telephone Number:
877-829-5500
Federal Identification Number:
94-1594250

Dear Sir or Madam:

This is in response to your request of August 29, 2006, regarding your organization's tax-exempt status.

In May 1965 we issued a determination letter that recognized your organization as exempt from federal income tax. Our records indicate that your organization is currently exempt under section 501(c)(3) of the Internal Revenue Code.

Our records indicate that your organization is also classified as a public charity under sections 509(a)(1) and 170(b)(1)(A)(vi) of the Internal Revenue Code.

Our records indicate that contributions to your organization are deductible under section 170 of the Code, and that you are qualified to receive tax deductible bequests, devises, transfers or gifts under section 2055, 2106 or 2522 of the Internal Revenue Code.

If you have any questions, please call us at the telephone number shown in the heading of this letter.

Sincerely,

Janna K. Skufca

Janna K. Skufca, Director, TE/GE
Customer Account Services

ATTACHMENT B

Davis Ranch Restoration Project

Project Location Map

Davis Ranch Restoration Project

Planting Location Map

January 27, 2016

Grant Davis

Sonoma County Water Agency

404 Aviation Blvd

Santa Rosa, CA 94503

Dear Mr. Davis,

I am writing to express my support for Point Blue Conservation Science's Students and Teachers restoring A Watershed (STRAW) Program and their application to the Sonoma County Water Agency Watershed Partnership Program for Washington Creek and tributaries. For the past 23 years, STRAW has provided excellent watershed science education, including teaching thousands of North Bay students and teachers professional quality habitat restoration practices.

Since its inception in 1993, STRAW has provided over 40,000 students with opportunities to participate in over 500 completed restorations on both rural and urban creeks and wetlands. Together they have planted over 40,000 native plants and restored over 35 miles of habitat. STRAW is directly responsible for connecting schools, businesses, government agencies and ranches to restore local ecosystems. Many partners depend on STRAW to help facilitate their education and land management goals.

Our three children have attended or currently are attending Corona Creek Elementary School in Petaluma and many of their friends spend time at our ranch and explore the streams. We feel as land owners of beautiful Sonoma County property it is our duty to be stewards of the land for our generation as well as future generations. Children who spend time on our property are in awe of the natural beauty and earn respect for the importance it holds in terms of wildlife survival and access to clean water. Having local children involved first hand with STRAW is a solid investment in their future as well as the preservation of Sonoma County watersheds.

We urge you to consider funding this project to benefit our local ecosystem, schools and community. Thank you.

Sincerely,

Eric & Margaret Davis

E Davis

Margaret Davis

Owners of Sienna Mountain Ranch

PRUNUSKE CHATHAM, INC.

January 22, 2016

Re: STRAW application for SCWA Watershed Partnership Program

To Whom It May Concern:

PCI is honored to once again support Students and Teachers Restoring a Watershed (STRAW) in their efforts to make Sonoma County streams healthier while providing real-life restoration opportunities for local students. This year, STRAW is requesting funding to work along Washington and Ellis Creeks within the Petaluma River Watershed and in upper Russian River drainages near Cloverdale. Both of these are key watersheds that need help now and will require an educated, caring population to thrive into the future. STRAW's work does both.

PCI will continue to provide technical support to the STRAW staff. We urge you to support STRAW's effective, double "bang-for-the-buck" work in our county.

Sincerely,

Liza Prunuske

Liza Prunuske
President

c: John Parodi, STRAW

400 MORRIS STREET, SUITE G · SEBASTOPOL CA 95472 · 707 824-4600 · FAX 707 824-6854

Point Blue
Conservation science
for a healthy planet.

STRAW - Davis Ranch Restoration Project

LABOR*		
	Installation	$18,327.21
	Maintenance & Monitoring	$34,447.26
	Total Labor	$52,774.47
OTHER DIRECT COSTS		
Materials		
	Installation, Maintenance & Monitoring	$7,776.73
Mileage		
	Installation	$175.95
	Maintenance & Monitoring	$517.50
Subcontractors		
	STRAW Faculty	$910.00
	Prunuske Chatham, Inc.	$1,380.00
	Total Other Direct Costs	$10,760.18
	Indirect on Other Direct Costs	$2,210.72
TOTAL		$65,745.36

* includes salary, fringe benefits and indirect expense

Total WPP Funding Request	$50,000.00
MATCH	
Private Foundations / Donors	$15,745.36
720 Volunteer hours @ $23.07	$16,610.40
Total Project Budget	$82,355.76

2016 Watershed Partnership Program Project Funding Application

Application Information

Applicant/Lead Organization Address

Sonoma Ecology Center (SEC)
P.O. Box 1486
Eldridge, CA 95431

Mark Newhouser, project manager

Telephone: 707-996-0712 x103

Email Address: mark@sonomaecologycenter.org

List of Other Participating Organizations

City of Sonoma

Sonoma Valley Unified School District

Sonoma County Agricultural Preservation and Open Space District (SCAPOSD)

Prunuske Chatham, Inc. (PCI)

Project Information

Project Name: Nathanson Creek Restoration Project, WPP Area 2

Project Location: Nathanson Creek, City of Sonoma

Total Project Budget: $117,550

Available Matching Funds: $67,550 from DWR USRP

Total Requested through WPP: $50,000

Table of Contents

2. Organization Information 3
3. Statement of Previous Work 3
4. Statement of Qualifications and Personnel 4
5. Subcontractors 6
6. Project Description and Map 6
7. Project Size 7
8. Approvals and Permits 8
9. Partners and Public Involvement 8
10. Maintenance and Monitoring Plan 9
11. Project Schedule 10
12. Budget 10
13. Insurance Indemnifications 10
14. Declaration of Local Business for Services 10

Attachments

Attachment 1: Nathanson Creek Restoration Plant List, 2016

Attachment 2: Declaration of Local Business for Services

Attachment 3: Documentation of 501c3 Nonprofit Status

Attachment 4: Landowner Agreement MOU

2. Organization Information

Sonoma Ecology Center is a nonprofit 501c3 organization incorporated in Eldridge, CA in Sonoma Valley within Sonoma County. Sonoma Ecology Center (SEC) works to increase appreciation and stewardship of Sonoma's natural heritage and create measurable benefits in areas of land, water, and biodiversity. We endeavor to preserve and protect the beauty and biodiversity of our North Bay community by addressing challenges related to water supply and quality, open space, rural character, biodiversity, energy, climate change, and community engagement. SEC's work focuses on the following programmatic areas:

- Research & GIS Services: to understand the condition of our watershed and ecosystems, SEC projects include water quality and quantity monitoring, species monitoring, and systematic testing of new restoration techniques;

- Education & Civic Engagement: to share what we know with both children and adults in order to build an environmentally resilient community SEC provides K-12 programs and adult education and volunteer opportunities; and

- Restoration & Land Management: to repair damage to ecological systems, SEC projects include wetland and riparian corridor, forest, and meadow restoration, as well as management of parks and open space preserves.

3. Statement of Previous Work

Sonoma Ecology Center has developed Sonoma Garden Park, the Nathanson Creek Preserve and Native Plant Demonstration Garden, and the Fryer Creek pedestrian path and future bikeway project. SEC also oversees the management of the Montini Preserve and sponsors the Sonoma Overlook Trail (SOT) Task Force, which maintains the Sonoma Overlook Trail. Grant funded projects have greatly improved these public sites and they have become destinations for locals and tourists visiting from out of town. With the improvements funded by SEC awarded grants and partner contributions, these destinations now provide greatly needed hiking, biking, and recreational opportunities for the people of Sonoma. These sites also demonstrate how recreational, aesthetic, and ecological improvements can be compatible. For example, the Nathanson Creek Preserve includes a native plant botanical garden which provides important riparian habitat as well as interpretive elements, park benches, picnic tables, and other amenities that serve hikers, bikers and tourists who wish to explore and learn about the environs in and around the City of Sonoma.

In addition to initiating new restoration projects, SEC remains committed to the long-term maintenance and operation of restored areas. As managers of these parks, preserves, and trailways, SEC is responsible for ongoing maintenance of the landscape, infrastructure, and other improvements on the properties. Landscape maintenance includes all tasks necessary to keep the grounds healthy, safe, clean, and attractive. Tasks include weed control, mowing, pruning, replacement planting, erosion control, irrigation maintenance, repairs and replacements of infrastructure, and litter removal within these public sites. Infrastructure maintained includes walkways, trellises, structures, interpretive signs, park benches, picnic tables, and other hardscape elements. In addition to standard landscaping, SEC maintains stormwater management, flood control, and ecological features on managed properties.

Current and Completed Projects in the City of Sonoma:

- Nathanson Creek Preserve
  - $658K Resources Agency, River Parkways Grant Program - Demonstration Garden, ADA access, landscaping, creek restoration, vegetation management, interpretive panels, park benches, picnic tables
  - $25K Calfed – Restoration Plan
  - $99K Coastal Conservancy Hands-On Grant Program - Tree planting with middle school, Enviroleaders program involvement in restoration
  - $15K Green Trees for the Golden State, Tree planting
  - $15K Montini Development mitigation fund, Revegetation, site maintenance
  - $15K Urban Forestry Grant Program, Tree planting
  - $4K SEC In-kind contribution for MOU
- Sonoma Garden Park
  - $99K, SCAPOSD, Matching Grant Program, ADA accessible pathways, greenhouse and shade structure construction, picnic tables, irrigation, and barn improvements
  - $26K City of Sonoma – ADA pathways and greenhouse
  - $20K Sonoma Rotary – Greenhouse kit
  - $10K Impact 100 Sonoma – Electrical to barn and refrigerator
  - $25k produce and plant sales per year
  - $13K Stanley Smith Horticultural Trust, Demonstration garden plans and materials
  - $30K Scarlet Oak Foundation – Children's discovery trail, interpretive panels
  - $20K Solarcraft – photovoltaic system
- Fryer Creek Trail-way
  - $186.5K Sonoma Valley County Sanitation District, Supplemental Environmental Program - Over 5,000 trees and plants installed along Fryer Creek, invasive trees removed, creek cleanups, volunteer workdays, and ongoing maintenance and operations
  - $20K, Department of Conservation - Watershed Coordination, outreach and education
- Montini Preserve
  - $17.5K, SCAPOSD - Volunteer Patrols, restoration projects
  - $7.5K, Mental Insight Foundation - Waterboxx tree planting, restoration and maintenance
- Sonoma Overlook Trail
  - $15K from SEC - Administration and SOT task force support
  - $29K from SEC and Sonoma Overlook Trail Task Force for restoration, trail maintenance, volunteer coordination, docent training, volunteer workdays

4. Statement of Qualifications and Personnel

SEC's Restoration & Land Management Program applies the best available science and techniques to repair instream and upland habitats by planting native plants and trees, removing barriers to migrating salmon and steelhead, removing invasive weeds and debris, and infiltrating stormwater. The SEC Restoration Program also helps local residents design and install rain gardens, rain barrels, and drought-tolerant landscaping to reduce stormwater runoff and conserve water. A native plant nursery located at Sonoma Garden Park provides all the plants necessary for our restoration efforts, growing over 18,000

plants this year, all propagated from local stock. Volunteer creek clean-ups and planting days get the community involved in watershed stewardships.

SEC has experience coordinating large, complex projects with multiple project partners and consulting regulatory agencies throughout northern California. The Arundo Eradication and Coordination Program, for example, involved large scale project planning, cross jurisdictional environmental compliance preparation, implementation, and centralized monitoring data processing; scientific control methodology research; monitoring database development; and overall coordination of multiple project implementation partners. Partners included the California Department of Fish and Game, Solano County Water Agency, San Francisquito Watershed Council, Butte County Agricultural Commissioner, Contra Costa County Public Works, CSU Chico Research Foundation, USDA ARS Exotic & Invasive Weeds Research Unit, and Napa County Flood Control and Water Conservation District. Between 2001 and 2010, SEC managed this Program, supervising over $3 million in state and federal funds expended in 9 watersheds.

Our project partners and clients include private individuals, small and large businesses, and agencies at all levels of government. SEC has worked on contracts for the Regional Water Quality Control Boards, Sonoma Land Trust, Sonoma County Water Agency, Sonoma County Agricultural Preservation and Open Space District, California Department of Fish and Wildlife, California Coastal Conservancy, Wildlife Conservation Board, California Department of Parks and Recreation, National Oceanic and Atmospheric Administration, Sonoma County Regional Parks, Point Blue Conservation Science, U.C. Davis, U.C. Berkeley, Stillwater Sciences, Tessera Consulting, Sonoma Resource Conservation District, Sonoma County Regional Climate Protection Authority, and many more.

Restoration Personnel for the Nathanson Creek Restoration Project

Mark Newhouser, Restoration Program Manager
BA Environmental Studies, Sonoma State University

Mark has over 20 years of experience in restoration project management, including planning, design, and construction. His completed projects include fish and wildlife habitat enhancement, stormwater management, river parkway development, and preserve management. He is also a natural resource workshop and field school instructor, specializing in invasive weed species ecology and control methodology. Mark leads the Restoration Program which plans, designs, and implements riparian, wetland, and upland restoration projects throughout Sonoma Valley. The program leads community service workdays to connect the community to the land and provide volunteers with an opportunity to learn about the environment and how to protect and restore natural systems.

Michael Zigler, Horticulture Specialist
BS in Conservation and Resource Studies, UC Berkeley

Michael has four years' experience in Horticultural Science, ranging from growing California native plants for restoration projects in the greater San Francisco Bay Area to managing the operations of a hop farm in Sonoma County and working on a permaculture farm on the Big Island of Hawaii. In conjunction with his work in nursery and farm settings, he has extensive experience installing native and drought tolerant landscapes in the urban and wildland environments of the North Bay. Using his passion and knowledge of botany and ecology, Michael is interested in connecting people with their local watershed and food systems while promoting sustainable land use and management.

5. Subcontractors

Prunuske Chatham, Inc. (PCI) is our subcontractor in planning the overall Nathanson Creek Preserve Restoration Project, and their expertise has been utilized in planning the WPP restoration sites. PCI is a full-service environmental restoration firm that has been planning, designing, permitting, and building projects to restore and protect natural resources in the North Bay since 1986. PCI staff includes civil engineers, scientists, landscape architects, planners, and constructors. PCI conducted surveys, hydraulic modeling, flood reduction and habitat enhancement feasibility analyses, stakeholder outreach, and CEQA scoping for Nathanson Creek Preserve planning. PCI also completed 100% designs for projects on the City Parcel (DWR USRP Phase 2, 2015 implementation) and the Demonstration Park (DWR USRP Phase 3 implementation), and CEQA compliance and the acquisition of state, federal, and local permits for these two construction projects. PCI design staff registrations include John Ferons, PE # C59468; Lucas Walton, PE #C79859; Mike Jensen, PLA #4727; Margaret Jensen, PLA #5594; and John Pawson, PLS #9077.

6. Project Description and Map

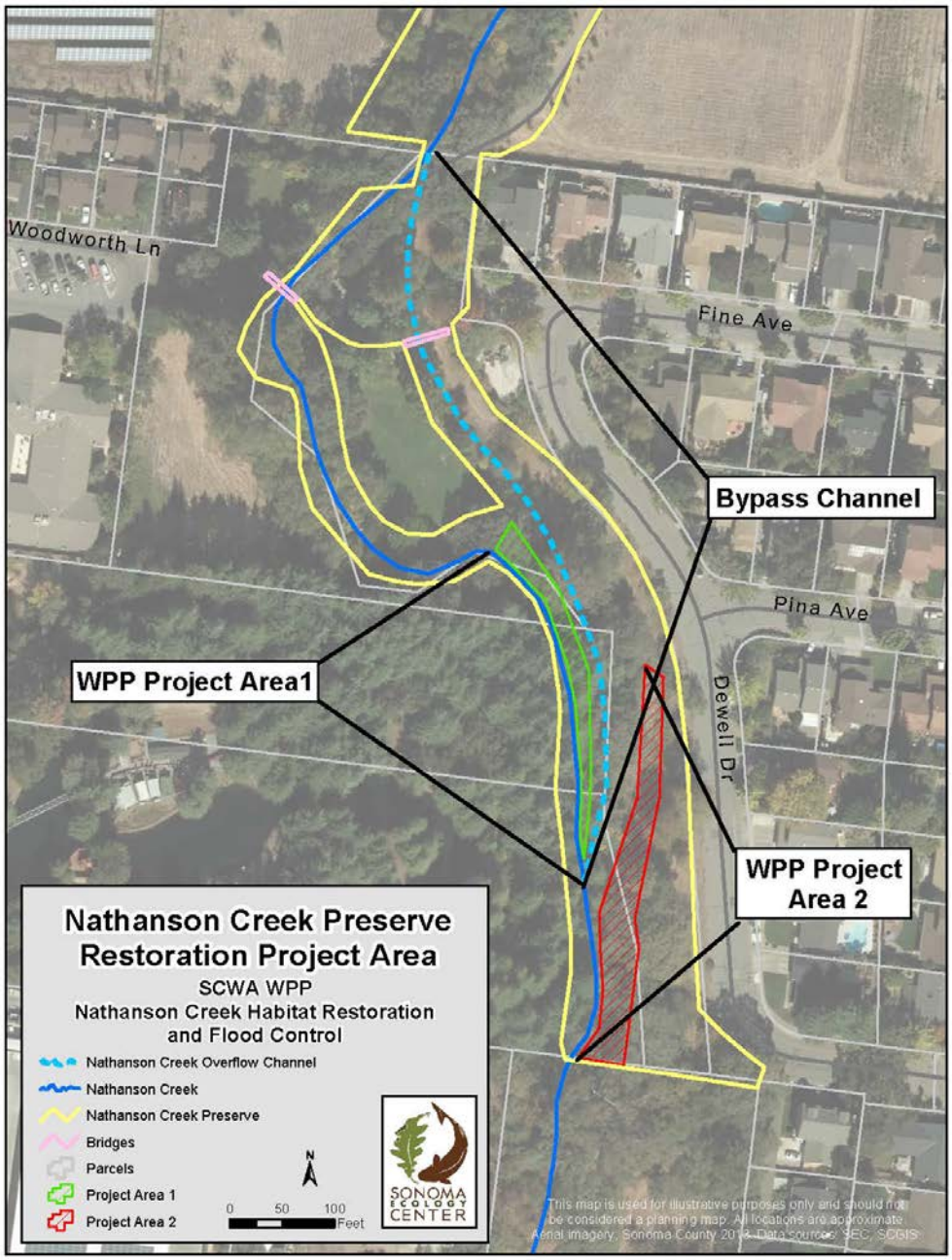
This project will complement sediment removal completed by the Sonoma County Water Agency (SCWA) on the Nathanson Creek bypass in the City of Sonoma. This project will assist in reducing sediment entering Nathanson Creek and will assist the water agency in achieving its stream maintenance goals. Proposed work will continue the next phase of work begun under existing WPP funding and will consist of more invasive weed removal, biotechnical bank stabilization, and native plant restoration on the natural channel of Nathanson Creek and the Nathanson Creek bypass overflow channel, downstream of the existing WPP funded portion of the project (see map on the next page).

The proposed project area, shown on the map, includes the southernmost reach of the Preserve below the bypass at Nathanson Creek City Park, adjacent to the intersection of Pina Ave and Dewell Dr. This work will be integrated with a larger watershed scale flood reduction and habitat enhancement planning, design, and construction project initiated under a currently funded DWR USRP project. The current Phase 2 USRP implementation project is improving flood capacity and enhancing riparian habitat on the Nathanson Creek Preserve, a 0.7 mile reach of a flood prone urban stream.

The project reach will include removal of invasive species, such as fennel, Himalayan blackberry, periwinkle, and invasive annual grasses. Appropriate native plants, grown from propagules sourced from the watershed, will be installed to replace the invasive species. Drip irrigation will be installed to ensure survival of native plants. In areas of bank erosion, debris will be removed or relocated and willow staking or biological revetments will be installed to check erosion and establish plants at the toe of the bank. Non-invasive willow or other species will be used to prevent debris accumulation and maintain flood conveyance in the channel.

The project will also reestablish native oaks that recently fell and had to be removed. Since native trees are not able to successfully reproduce at this site, active revegetation will ensure the establishment of a diverse native plant community. Reestablishment of tree canopy will also improve stream bank stability, water quality and aesthetically improve this highly visible portion of the Preserve. Tree planting locations will be vetted by the City of Sonoma and SCWA to accommodate future channel maintenance and equipment access.

This project will provide multiple benefits for local residents, fish and wildlife. The larger project will benefit the community by addressing existing flood risk and the associated property damage along Nathanson Creek. Current and proposed channel improvements upstream will increase channel capacity and improve habitat along the entire length of the Preserve. Improvements in the flood capacity of the project area may also serve to create flood control benefits for upstream and downstream properties. The project will also contribute to water quality improvements to enhance fish and wildlife habitat. Invasive weed eradication, native plant revegetation, debris removal, and bioengineering erosion control will benefit the ecological health of the stream and improve habitat for steelhead and Chinook salmon populations.



7. Project Size

The overall length of the Preserve restoration project area is 0.7 mile and approximately 9 acres. The current WPP proposed revegetation area (Project Area 2 in the map) is approximately 380 linear feet of stream length and approximately 10,000 sq. ft. Planting will be conducted from the toe to the top of bank. A diverse mix of trees, shrubs and understory vegetation will be placed according to appropriate location on the bank. A total of 550 plants will be installed, approximately 35 trees, 90 shrubs/groundcovers, 35 vines, 140 herbs, and 250 grasses. See representative species list in Attachment 1: Nathanson Creek Restoration Plant List.

8. Approvals and Permits

The Sonoma Ecology Center has full access to the Nathanson Creek Preserve for implementation and maintenance of the proposed project. SEC has an MOU with the City of Sonoma and the Sonoma Valley Unified School District to implement the Nathanson Creek Master Plan on the Nathanson Creek Preserve. Attachment 4 contains a copy of the landowner MOU for reference. Under this MOU and Plan, SEC is granted access and permission to restore fish and wildlife habitat through invasive species control and native plant establishment, as well as conceptual approval to implement channel modifications to improve flood conveyance and improve in-stream fish habitat.

Regulatory compliance (CEQA review and permits) for work along the Preserve was funded by DWR and will be complete by the end of spring 2015. A Joint Aquatic Resources Permit Application (JARPA) to the USACE, RWQCB, and CDFW was prepared for federal Clean Water Act §404 Nationwide Permit 27 for habitat restoration and §401 Certification and F&G §1602 Streambed Alteration Agreement (SAA); there is also an existing SAA for eradication of non-native vegetation species, which will be renewed or reapplied for prior to expiration at the end of 2016. If work will require dewatering and/or relocation of listed species, USACE will consult with NMFS or USFWS as part of §404 review to obtain the appropriate permits. Project partner, the City of Sonoma's Dept. of Public Works, will review grading plans, and the City's Tree Committee will oversee removal of trees under Ord. No. 11-2009. Costs are included to host an on-site meeting with regulators and to summarize requirements for the construction contract documents to ensure conformity with all permit conditions; no regulatory issues that would delay the project are expected.

9. Partners and Public Involvement

SEC is currently collaborating with the City, SCWA, and the Sonoma County Agricultural Preservation and Open Space District (SCAPOSD) on flood control, groundwater recharge, and habitat enhancement projects within and near the City of Sonoma. This partnership was formalized in the City Watersheds of Sonoma Project included in the Bay Area IRWMP.

SEC has strong partnerships to support this project. The City of Sonoma and Sonoma Valley Unified School District are participating partners and landowners; Sonoma County Agricultural Preservation and Open Space District is a funding partner; and the two participating engineering and design consulting firms, Prunuske Chatham, Inc. and Environmental Science Associates, have expertise in local river restoration planning and implementation.

The public has been involved in the planning, design and implementation of this project. SEC has conducted several public meetings to discuss the project and get input. SEC also sponsors creek

cleanups and community service workdays on an ongoing basis. Student and community members regularly volunteer. SEC will continue to provide public updates and receive feedback from the community on restoration work along Nathanson Creek. SEC will acknowledge the funder in any media outreach including press releases, Facebook posts or volunteer outreach.

SEC programs in the Nathanson Creek Preserve also provide education opportunities to local students, and the location of the Preserve provides educational, aesthetic, and recreational opportunities that enhance an adjacent recreation complex. We have already installed interpretive signage about native habitat and we are preparing to install interpretive signage illustrating several innovative stormwater management elements utilized along the Preserve. Educational opportunities for the public will include volunteer restoration workdays, public meetings, and tours of the Preserve.

10. Maintenance and Monitoring Plan

The project will be monitored and maintained for 5 years following initial planting. Yearly maintenance will include inspecting plant installations, irrigation systems, and erosion control features to ensure survival and functionality. Maintenance will also include removing weeds within a minimum of a 3-foot diameter around planted trees and shrubs, installing tree protection cages as needed, and replacing dead plants. Maintenance will occur on a monthly basis during the growing season.

Non-native invasive plant species control will be implemented using a combination of control methods, including manual, mechanical, and herbicide treatments. Choice of control methods depends on site-specific conditions and appropriate methods for individual species. Weeds will be hand pulled or brush cut around sensitive areas and new plantings. Treatment areas will be monitored for efficacy and retreatment will be conducted as necessary to control invasive species with a targeted 75% reduction.

Herbicide treatments will be done in accordance with California Department of Fish and Game regulations by a licensed applicator. Weed eradication methods recommended by Cal-IPC (California Invasive Plant Council) will be followed for each invasive species. Only herbicide and adjuvants approved for aquatic habitats will be used near the stream.

SEC will install irrigation to provide adequate water for plant survival. Plants will be irrigated from approximately May through September using drip irrigation or hand watering. Irrigation will be coordinated with the landowner and will be set up with one emitter per plant, ranging from 1 to 2 gallons per week during the growing season. Trees and shrubs will receive 3-5 gallons of water per plant every week in the growing season the first year. Plants will be gradually weaned off the irrigation system in the second and third years of the project. The irrigation system will be checked monthly through the summer to ensure that all lines and emitters are functioning properly.

SEC will monitor revegetated areas for plant mortality and establishment. Dead plants will be replaced that winter to reach a target of 75% survivorship. Photo monitoring will take place annually for the project period and beyond, as funding allows.

11. Project Schedule

Task No.	Description	Start Date	End Date
1	Project management (planning and permiting)	8/1/2016	7/31/2021
2	Non-native weed removal and native plant installation	12/1/2016	3/30/2017
3	Implementation of erosion control measures	8/1/2017	10/15/2017
4	Site maintenance	9/1/2016	3/30/2021
5	Annual site monitoring and reporting	9/1/2016	7/31/2021

12. Budget

Task No.	Description	WPP	DWR	Total
1	Project management (planning and permiting)	$2,596	$3,750	$6,346
	Expenses: Permit Fees	$715		$715
2	Non-native weed removal and native plant installation	$16,360	$16,500	$32,860
	Expenses: Materials (plants, irrigation, supplies)	$9,953	$4,500	$14,453
3	Implementation of erosion control measures	$7,804	$17,600	$25,404
	Expenses: Materials (staples, fabric)	$966	$1,200	$2,166
4	Site maintenance	$7,601	$17,800	$25,401
5	Annual site monitoring and reporting	$4,005	$6,200	$10,205
	Total Costs	$50,000	$67,550	$117,550

13. Insurance Indemnifications

No exception to standard terms.

14. Declaration of Local Business for Services

See Attachment 2: Declaration of Local Business for Services form, and Attachment 3: Documentation of 501c3 Nonprofit Status.

Attachment 1: Nathanson Creek Restoration Plant List, 2016		
Common Name	**Latin Name**	**Planting Location** C=channel, F=floodprone zone, T=top of bank
TREES		
Big leaf maple	*Acer macrophyllum*	F
Blue elderberry	*Sambucus mexicana*	F
Box elder	*Acer negundo var. californicum*	F
California buckeye	*Aesculus californica*	F, T
Coast live oak	*Quercus agrifolia*	T
Oregon ash	*Fraxinus latifolia*	C, F
Valley oak	*Quercus lobata*	T
SHRUBS & GROUNDCOVERS		
Coyote brush	*Baccharis pilularis*	T
Fuchsia, California	*Epilobium californicum*	T
Monkeyflower	*Mimulus spp.*	T
Mugwort	*Artemisia douglasiana*	F
Ninebark	*Physocarpus capitatus*	F
Ocean spray	*Holodiscus discolor*	F
Rose, California	*Rosa californica*	C, F, T
Rose, wood	*Rosa gymnocarpa*	F, T
Snowberry	*Symphorocarpus albus*	F
Toyon	*Heteromeles arbutifolia*	T
VINES		
California blackberry	*Rubus ursinus*	F
Dutchman's pipe	*Aristolochia californica*	F, T
Honeysuckle	*Lonicera hispidula*	F, T
Virgin's bower	*Clematis ligusticifolia*	F, T
Wild cucumber	*Marah fabaceus*	F
HERBACEOUS SPECIES		
Beeplant	*Scrophularia californica*	T
Fringe cup	*Tellima grandiflora*	F
Milkweed	*Asclepias spp.*	T
Yarrow	*Achillea millefolium*	T
GRASSES, RUSHES AND SEDGES		
Blue wildrye	*Elymus glaucus*	T
California fescue	*Festuca californica*	T, F
Creeping wildrye	*Leymus triticoides*	C, F, T
Field Sedge	*Carex praegracilis*	
Gray rush	*Juncus patens*	F
Meadow barley	*Hordeum brachyantherum*	F, T
Red fescue	*Festuca rubra*	F, T
Santa Barbara sedge	*Carex barbarae*	C, F
Soft rush	*Juncus effusus*	C, F
Spike rush	*Eleocharis macrostachya*	C, F
Torrent sedge	*Carex nudata*	C, F

Attachment 2

Exhibit C

DECLARATION OF LOCAL BUSINESS FOR SERVICES

COUNTY OF SONOMA

GENERAL SERVICES PURCHASING DIVISION

2300 COUNTY CENTER DRIVE, SUITE A208
SANTA ROSA, CALIFORNIA 95403
(707) 565-2433 Fax: (707) 565-6107

DECLARATION OF LOCAL BUSINESS FOR SERVICES

Sonoma County gives local businesses a preference in formal solicitations of services as set forth in the County of Sonoma Local Preference Policy for Services.

In order to qualify for this preference, a business must meet *all* of the following criteria:

1. For businesses with a location in a city within Sonoma County, a valid business license if required by the city; and
2. A valid physical address located within Sonoma County from which the vendor or consultant operates or performs business on a day-to-day basis.

By completing and signing this form, the undersigned states that, under penalty of perjury, the statements provided herein are true and correct and that the business meets the definition of a local business as set forth in the County of Sonoma Local Preference Policy for Goods.

All information submitted is subject to investigation as well as disclosure to third parties under the California Public Records Act. Incomplete, unclear, or incomprehensible responses to the following will result in the bid not being considered for application of the County's local preference policy. False or dishonest responses will cause the rejection of the bid and curtail the declarant's ability to conduct business with the County in the future. It may also result in legal action.

1. Legal name of business: Sonoma Ecology Center
2. Physical address of the principal place of business.
   15000 Arnold Drive, Eldridge, CA 95431
3. Business license issued by incorporated city within the County:
   License Number_____ Issued by: _____

Authorized Signature: _____ Date: 1-25-16

Printed Name & Title: Richard Dale, Executive Director

Attachment 3

Internal Revenue Service

Date: June 11, 2005

SONOMA ECOLOGY CENTER
PO BOX 1486
ELDRIDGE CA 95431

Department of the Treasury
P. O. Box 2508
Cincinnati, OH 45201

Person to Contact:
Steve Brown 31-07422
Customer Service Specialist
Toll Free Telephone Number:
8:30 a.m. to 5:30 p.m. ET
877-829-5500
Fax Number:
513-263-3756
Federal Identification Number:
94-3136500

Dear Sir or Madam:

This is in response to the amendment to your organization's Articles of Incorporation filed with the state on October 22, 1998. We have updated our records to reflect the name change as indicated above. We have also updated our records to reflect the address change.

In March 1996 we issued a determination letter that recognized your organization as exempt from federal income tax. Our records indicate that your organization is currently exempt under section 501(c)(3) of the Internal Revenue Code.

Our records indicate that your organization is also classified as a public charity under sections 509(a)(1) and 170(b)(1)(A)(vi) of the Internal Revenue Code.

Our records indicate that contributions to your organization are deductible under section 170 of the Code, and that you are qualified to receive tax deductible bequests, devises, transfers or gifts under section 2055, 2106 or 2522 of the Internal Revenue Code.

If you have any questions, please call us at the telephone number shown in the heading of this letter.

Sincerely,

Janna K. Skufca

Janna K. Skufca, Director, TE/GE
Customer Account Services

Attachment 4

Memorandum of Understanding
between the City of Sonoma,
the Sonoma Valley Unified School District,
and the Sonoma Ecology Center,
for the restoration and enhancement of Nathanson Creek.

This agreement ("Agreement") is entered into this 19th day of September 2005, by and between the City of Sonoma (CITY), a municipal corporation, the Sonoma Valley Unified School District (DISTRICT), and the Sonoma Ecology Center (SEC), a 501(c)(3) non-profit corporation, collectively referred to as "the parties".

I. General

A. The purpose of this Agreement is to clarify and establish the roles and responsibilities of each of the parties in the planning and implementation of the restoration and enhancement of Nathanson Creek, and to clarify the locations of restoration activities and protected areas along the creek.

B. All references to Nathanson Creek, the "creek," "project area," and Nathanson Creek Preserve and Trailway Corridor for the purposes of this agreement, are understood to be that portion of Nathanson Creek from the northwestern corner of the City-owned parcel north of East MacArthur Street (APN#018-412-14) to Napa Road, as shown on Figure 5 in the Nathanson Creek Preserve and Trailway Corridor Master Plan adopted by the City Council of the CITY on August 19, 1998. References to the "project" are understood to be the restoration and enhancement of this portion of Nathanson Creek, including the creek setback area as defined under Section II, 2b. and 2c.

C. Within the project area, the parties desire to preserve and enhance Nathanson Creek and its riparian habitat and provide environmental educational opportunities. These activities will be pursued in a manner consistent with maintaining or enhancing existing levels of flood protection. The restoration of Nathanson Creek will be planned and implemented to enhance and restore local native plant species and plant communities, native fish habitat, native bird and other faunal habitats for the benefit of the local and regional natural environment and the public, including students in the Sonoma Valley Unified School District, citizens of the City of Sonoma, and other Sonoma Valley and Sonoma County residents.

D. The parties will cooperate at all times so that the Nathanson Creek and Trailway Corridor will be fully utilized and provide maximum enjoyment and education to students and the general public. The parties agree to keep each other informed of all activities, projects, and plans relating to or taking place within the project area. Generally, the CITY's role will be to preserve the City-owned parcels along Nathanson Creek depicted in the Nathanson Creek Preserve Master Plan, to make them available to the public for restoration and park purposes, and to participate in restoration and park creation and maintenance activities. The DISTRICT's role will be to preserve the area along

Nathanson Creek depicted on the DISTRICT's Master Plan, and to accommodate and support restoration, educational, and stewardship activities in this area. The SEC's role will be planning and implementation of the restoration and enhancement of Nathanson Creek, education of students and the public about the natural resources of the area and stormwater pollution prevention, and helping to organize stewardship of the creek.

E. The term of this Agreement shall commence on September 19, 2005, and shall continue until June 30, 2024, unless sooner terminated as set forth below.

F. Any party may withdraw from this Agreement by giving ninety (90) days written notice to the other parties. If DISTRICT exercises its right to withdraw from the Agreement pursuant to this provision, permission to enter and use DISTRICT property pursuant to this Agreement shall terminate upon the effective date of the withdrawal. *Termination of the agreement shall not affect contracts or grants pursuant to I.C. above, and II.1.a. below that are in progress at the time of termination.*

G. This Agreement may only be modified by a written instrument executed by all parties.

H. No assignment or transfer in whole or in part of this Agreement shall be made without the prior written consent of all parties.

II. Specific Understandings

A. Upon execution of this Agreement, and in consideration of mutual promises made to work toward the success of the restoration of Nathanson Creek, the parties agree to perform the following as specified:

1. *Planning & Permitting:*

a. Any of the parties may seek and obtain grants to further the restoration and enhancement of the creek, but shall do so with the knowledge of the other parties involved, and consistent with I.C above. The SEC will take the lead and actively seek grants to restore and enhance the creek.

b. The SEC shall be generally responsible for the preparation of plans and the oversight or management of implementation for the ecological restoration and enhancement of Nathanson Creek. The SEC shall undertake planning and implementation in accordance with the CITY's and DISTRICT's processes and plans in existence at this time, including the Sonoma Valley High School Master Plan, the Nathanson Creek Preserve and Trailway Corridor Master Plan, and the City of Sonoma General Plan. During the planning phase, prior to permits being obtained, preliminary plans shall be made available by SEC to CITY or DISTRICT, depending on whose lands implementation is planned, so that modifications can be made to the preliminary plans if determined necessary by the affected property owner, i.e., CITY or DISTRICT. At least ___ days prior to construction or implementation, plans shall be made available by SEC for final review and approval to CITY and DISTRICT staff. Similarly, plans or projects prepared by the CITY or DISTRICT within the project

area shall be made available to the SEC for review and comment prior to permitting and construction. Each party shall exercise best efforts to review and respond to proposed plans within four (4) weeks of the date that the plans are submitted to that party. A response requesting a need for additional review time shall specify the date that the review will be final. All plans and projects shall be planned and implemented to be consistent with, or not in conflict with, I.C above, and shall obtain all necessary permitting from, and/or provide necessary notification to, responsible agencies such as USFWS, NMFS, ACOE, CDFG, RWQCB, SCWA*.

c. In planning and implementation of actions affecting the project area, all proposed restoration actions will be evaluated by qualified staff or agents of SEC to ensure that the flood capacity of Nathanson Creek at the time the parties into this Agreement ("current flood capacity") shall be maintained or enhanced throughout the term of the Agreement, and to ensure that the current flood capacity shall not be decreased at any time as a result of any such restoration actions. Such planning and implementation will be performed in full coordination with the DISTRICT and the CITY, and all responsible permitting agencies.

d. The SEC shall be responsible for obtaining required permits to implement plans prepared under their oversight for the restoration and enhancement of the project area. The other parties (CITY and DISTRICT) shall be responsible for obtaining permits for projects proposed by them within the project area.

e. The CITY shall be responsible for the preparation of required environmental documents for the project on city-owned lands. The SEC shall be responsible for the preparation of required environmental documents for the project on DISTRICT lands, subject to DISTRICT approval, in accordance with the California Environmental Quality Act ("CEQA").

2. *Locations of Restoration Activities:*

a. Restoration and enhancement of Nathanson Creek will generally take place within the creek and its setback as shown on Figure 5 of the Nathanson Creek Preserve and Trailway Corridor Master Plan, and within the project area as shown on the Nathanson Creek Project Area Map accompanying this agreement.

b. Restoration and enhancement of the creek and setback area on the two undeveloped CITY-owned parcels north of the high school will occur, at a minimum, within the area from the center of the creek to fifty feet from the top of bank. Restoration and enhancement on the developed CITY park property south of DISTRICT lands will occur within the creek and setback area for a minimum of thirty feet from the top of bank, and within and along the low-flow secondary channel.

c. Restoration and enhancement of the creek and setback area on DISTRICT lands will occur within the area shown on the High School Master Plan, indicated as 50 feet from centerline of creek, on both sides of the creek. However, where development has already occurred within this area by this date, restoration and enhancement activities shall be delayed or not undertaken until future redevelopment occurs and the DISTRICT agrees to restoration in these areas.

d. The project area shall not be developed or disturbed by the parties, apart from the restoration and enhancement set forth herein. All reasonable measures to prevent harm to the project area shall be taken by the parties. For example, employees,

associates, contractors, and other groups or entities who use or maintain the project area shall be provided the information (including maps) necessary to make them aware of the locations and sensitivity of the project area. Signage or physical demarcation of restoration areas may be used.

3. *Materials/Resources:*

a. Water. The CITY shall be responsible for providing water for irrigation from a nearby source on CITY-owned property to be identified and approved by the Department of Public Works. The CITY agrees to schedule and document water usage. The DISTRICT shall not be responsible for providing water for the project. Water provided for the project shall be used in a drought-conscious way. It is understood that irrigation water will be used only during the establishment of native plants. The CITY shall audit water use on a regular basis to ensure that plantings are irrigated in an efficient manner.

b. Irrigation. The SEC shall be responsible for planning and implementing the provision of water to the plantings.

c. Plants. The SEC shall be responsible for providing, installing, and maintaining all plants within the Nathanson Creek project area, and for oversight of the restoration effort. The SEC shall not plant trees closer than 10 feet from the bicycle-pedestrian path.

4. *Maintenance:*

a. Trash. The DISTRICT shall be responsible for picking up trash on DISTRICT properties. The CITY shall be responsible for picking up trash on CITY properties. The SEC will help the DISTRICT organize a stewardship program on its school campuses for maintaining the project area in a clean and trash-free condition.

b. Creek clean-ups. The SEC shall be responsible for organizing and managing periodic creek clean-ups of trash within the project area. Trash picked up during these events shall be deposited in a location for the CITY to pick up, and the CITY shall be responsible for picking up trash collected during these periodic events. The SEC shall coordinate with the CITY and the DISTRICT on planned creek clean-up dates at least two weeks prior to the events, and shall place the trash at collection points specified by the CITY.

c. Vegetation Management. Vegetation management includes weeding, mowing, and pesticide/herbicide use. Prior to restoration plantings having occurred, vegetation management within the project area shall remain the responsibility of the DISTRICT on DISTRICT properties, and the CITY on CITY properties, unless other arrangements have been established with the SEC. Where restoration and enhancement plantings have occurred, vegetation management shall be the responsibility of the SEC, or shared between the SEC and the party that owns the land, and governed by a Management Plan. All parties shall make their best efforts to prevent and avoid impacts to restoration plantings during maintenance activities. No

pesticides/herbicides shall be used within the creek setback area by the CITY, DISTRICT, or SEC except in consultation and with the approval of the property owner and the SEC, and then only to remove invasive non-native species. Any party planning to use pesticides/herbicides within the creek setback shall inform the appropriate other parties and obtain all necessary approvals and permits prior to the use, and shall use a licensed pesticide/herbicide applicator. It should be noted that pesticide/herbicide use on DISTRICT grounds requires extensive public notification.

d. Pathway. The 1998 agreement between the DISTRICT and CITY regarding maintenance of the bicycle-pedestrian path on DISTRICT properties specifies that the CITY is responsible for maintenance of the bicycle-pedestrian path. The CITY shall make its best efforts to repair the path without causing harm to native tree roots and restoration plantings.

5. *Security/Liability*

a. Keeping in mind that the Nathanson Creek Preserve and Trailway Corridor is intended to benefit students and the general public alike, the DISTRICT may use any measure it deems necessary to protect students from unauthorized entry into classroom areas or disruption or harm from intruders accessing the schools from the project area. The DISTRICT, CITY, and SEC will cooperate to devise solutions that protect students while also retaining the benefits of the Nathanson Creek Preserve and Trailway Corridor.

b. When the SEC uses volunteers in restoration and creek clean-up activities, the SEC shall provide a form covering release of liability to be signed by all volunteers. The DISTRICT and CITY shall also be released from liability for restoration activities occurring on their properties. The forms used shall be approved by each party prior to first use, and when revised.

c. When classes enter and use the Nathanson Creek project area to perform research and educational activities, including restoration and enhancement under the supervision of teachers, the DISTRICT shall be responsible for any necessary release of liability forms to be signed by parents.

d. Any agency or organization employing the use of volunteer minors shall be responsible to perform screening of the adults supervising the minors as may be required by state or local law or regulations or DISTRICT policy and procedures, provide verification of such screening, and hold harmless the other agencies party to the agreement.

e. SEC shall indemnify, hold harmless, and defend the DISTRICT and the CITY, and their respective officers, agents and employees, from and against any and all claims, damages, losses and expenses, including reasonable costs and attorney fees (collectively, "Liability"), arising out of SEC's acts or omissions under this Agreement, excepting therefrom any Liability arising from the sole negligence or willful misconduct of DISTRICT and/or CITY. This obligation shall continue beyond the term of this Agreement as to any acts or omissions which occurred during or under this Agreement.

f. SEC shall file with the DISTRICT and the CITY proof of a policy of liability and property insurance, issued by a company duly and legally licensed to transact business in the State of California, covering personal injuries, including wrongful

death, and claims for property damage arising from SEC's activities under this Agreement. Said insurance shall be in the following amount: comprehensive general liability insurance in a combined single limit of not less than one million dollars ($1,000,000) on account of any one occurrence.

The insurance policy shall be issued at the cost and expense of SEC and maintained by SEC during the entire term of this Agreement, and shall be primary to DISTRICT's and CITY's insurance coverage. The insurance policy shall name the DISTRICT and the CITY, and their respective officers, agents and employees as additional insureds. The insurance policy shall not be cancelled, changed or allowed to lapse unless SEC has first provided written notice to the DISTRICT and the CITY at least thirty (30) days in advance.

III. Contacts:

[Note: over the course of a 19 year MOU, the names of the individuals involved will change, so it is advisable to use titles rather than individual names for contacts.—CMG]

A. SEC contacts:

- Nathanson Creek Restoration Project Manager: Lisa Micheli, micheli@vom.com, 996-0712 x 107
- Nathanson Creek Task Force: Will Pier, co-chair, sec-pier@vom.com, 996-0712 x 101, *and* Jacqueline Steuer, co-chair, jast126@jps.net, 935-0808
- Assistant Director, SEC: Caitlin Cornwall, sec-cornwall@vom.com, 996-0712 x 106

B.. CITY contacts:

- City/Associate Planner: Rob Gjestland, robg@sonomacity.org, 933-2202
- City Engineer: John Bonnoitt, johnbonn@sonomacity.org, 933-2207
- Community Services Administrator: David Goodison, davidg@sonomacity.org, 938-3681
- Public Works Administrator (for creek clean-ups): Al Bandur, alb@sonomacity.org, 938-3681)

C.. DISTRICT contacts:

- Superintendent: D. Kim Jamieson, kimj@sonomavly.k12.ca.us, 935-6001
- Manager of Operations: Brian Clark, brianc@sonomavlyk12.ca.us, 935-6090

IV. Notice

All notices required to be given under this Agreement shall be in writing and shall be served either by personal delivery or by first class mail, postage prepaid, and addressed as follows:

DISTRICT: Attn: Director of Fiscal Services
17850 Railroad Avenue
Sonoma, CA 95476

Nathanson Creek MOU, page 7

CITY: Attn: Mike Fuson
City Manager
No. 1 The Plaza
Sonoma CA 95476

SEC: Attn: Caitlin Cornwall, SEC
205 First Street West
Sonoma, 95476

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first written above.

DISTRICT

By: _____
D. Kim Jamieson, Superintendent

SEC

By: _____

CITY

By: _____

By: _____

Abbreviations Used in Document:
*USFWS, NMFS, ACOE, CDFG, RWQCB, SCWA
USFWS: U.S. Fish & Wildlife Service
NMFS: National Marine Fisheries Service
ACOE: Army Corps of Engineers
CDFG: California Department of Fish & Game
RWQCB: Regional Water Quality Control Board
SCWA: Sonoma County Water Agency

Memorandum of Understanding
Between the City of Sonoma,
the Sonoma Valley Unified School District,
and the Sonoma Ecology Center,
for the restoration and enhancement of Nathanson Creek

FIRST ADDENDUM

On November 1, 2007, the following were added to the Memorandum of Understanding entered into by and between the parties on September 19, 2005:

1. Section I.E. is modified to delete "June 30, 2024," and substitute instead "June 30, 2030".

2. Section II.A.1.b. is modified to insert "30" into the blank space, thereby specifying that at least 30 days prior to construction or implementation, plans shall be made available by SEC for final review and approval to CITY and DISTRICT staff.

3. Section I.F is modified by adding the following sentence:

"In the event of any party's withdrawal from this MOU, SEC will resume responsibility for completing the scope of work described by the California Resources Agency River Parkways Grant Agreement # R81754-0, Exhibit A, within the specified project timeline."

4. SEC's contact address is changed to: 20 East Spain Street, Sonoma, CA 95476.

5. The contacts listed in Section III are changed to:

A. SEC contacts:
- Nathanson Creek Restoration Project Manager: 996-0712 x 122
- Executive Director, SEC: 996-0712 x 106

B. CITY contacts:
- City/Associate Planner: 938-3743
- City Engineer: 938-3743
- Community Services Administrator: 938-3743
- Public Works Administrator: 938-3681

C. DISTRICT contacts:

- Superintendent: 935-4246
- Manager of Operations: 935-6090

By affixing their signatures below, the parties and their authorized representatives consent to the foregoing:

DISTRICT	CITY	SEC
By: _____ 12-10-07	By: _____	By _____

Appendix H

Sediment Sampling and Disposal Memorandums

1. Monitoring and Reporting Program Amendment (approved)
2. Sediment Sampling and Disposal Notification to North Coast RWQCB (approval pending)
3. Sediment Sampling Notification to San Francisco Bay RWQCB (approval pending)

CALIFORNIA Water Boards

EDMUND G. BROWN JR. GOVERNOR

MATTHEW RODRIQUEZ SECRETARY FOR ENVIRONMENTAL PROTECTION

North Coast Regional Water Quality Control Board

April 29, 2016

Mr. Keenan Foster
Sonoma County Water Agency
P.O. Box 11628
Santa Rosa, CA 95406-1628

Dear Mr. Foster:

Subject: Amendment to Monitoring and Reporting Program No. R1-2009-0049

File: Sonoma County Water Agency Stream Maintenance Program
WDID No. 1B09026WNSO, ECM PIN CW-735104

On July 23, 2009, the Regional Water Quality Control Board for the North Coast Region (Regional Water Board) issued Order No. R1-2009-0049, Waste Discharge Requirements and 401 Water Quality Certification for Sonoma County Water Agency Stream Maintenance Program (Order), and No. R1-2009-0049 Monitoring and Reporting Program, Sonoma County Water Agency Stream Maintenance Program, WDID No. 1B09026WNSO (MRP).

The MRP contains the following language in the Modification section: "Any part of this Monitoring and Reporting Program may be revised with the written approval of the Executive Officer." The Order also allows for updates and revision of the MRP to incorporate changes in adaptive management, by written approval of the Executive Officer.

The Sonoma County Water Agency requested, and the Executive Officer approved, an amendment to the Sediment Monitoring portion of the MRP on July 29, 2010.

The Sonoma County Water Agency requested a second amendment to the Sediment Monitoring portion of the MRP, contained in a Memorandum submitted on February 22, 2016 by their consultant, Horizon Water and Environment. The Memorandum details sediment sampling results collected since the Order was issued in 2009 and provides rationale for the proposed revisions to the MRP. These revisions include:

JOHN W. CORBETT, CHAIR | MATTHIAS ST. JOHN, EXECUTIVE OFFICER

5550 Skylane Blvd., Suite A, Santa Rosa, CA 95403 | www.waterboards.ca.gov/northcoast

RECYCLED PAPER

1. add clarification that all excavated material will be disposed upland at permitted disposal facilities or upland beneficial reuse sites;
2. revise the list of analytes (Table 3) to focus sampling on analytes found to be present within past samples;
3. refine the laboratory analytical methods and reporting limits to more efficiently detect presence of the target analytes; and
4. modify the Sampling Frequency and Locations section to allow for reduced sampling where a history of testing has occurred without exceedances of applicable thresholds.

These changes will be implemented during the 2016 operational season.

This Amendment authorizes the following:

Amended Monitoring and Reporting Program No. R1-2009-0049

California Regional Water Quality Control Board
North Coast Region

Monitoring and Reporting Program No. R1-2009-0049
With amendments approved on July 29, 2010 and on April 29, 2016
SONOMA COUNTY WATER AGENCY
STREAM MAINTENANCE PROGRAM
WDID No. 1B09026WNSO

Sonoma County

GENERAL

For monitoring, applicant shall follow requirements contained in this Order, and additional requirements listed in the *Sediment Sampling and Analysis Guidelines* section of the *SMP Manual.*

WATER DIVERSION MONITORING

For all activities involving diversion of stream:
The Applicant shall establish two surface water monitoring stations, one representative of typical undisturbed conditions 100 feet upstream of the active work area, and one representative of surface water affected by diversion 100 feet downstream of the water diversion outlet. Baseline measurements shall be taken before installation of diversion structures at both stations. If for whatever reason work within that reach is interrupted for over one day, new baseline measurements shall be taken. Water diversion activity monitoring shall be in accordance with Table 1 below:

TABLE 1
WATER DIVERSION SAMPLING AND ANALYSIS

Parameter	Units	Sample Type	Minimum Analysis Frequency*
Dissolved Oxygen	mg/L	Grab	Once Daily at each monitoring station
pH	pH units	Grab	Once Daily at each monitoring station
Temperature	°F	Grab	Once Daily at each monitoring station
Turbidity	NTU	Grab	Once Daily at each monitoring station

* Field analysis allowed.

The daily sampling set shall be taken during work hours, and shall be collected no earlier than one hour after work commencement each day. Samples shall be taken with accurately calibrated field measurement instrument(s) such as a DataSonde®, or equivalent, and the results shall be saved and logged. A QA/QC program equivalent to requirements of the SWAMP program shall be followed. Samples are not required to be sent to a fixed laboratory. Use of a field measurement instrument(s) is authorized as the majority of SMP activities take three days or less and use of a fixed laboratory for analysis would be time prohibitive. Additionally, the Applicant shall observe surface water conditions upstream and downstream of the active project area to visually detect impacts of water diversion. Observations shall be conducted during sampling events at sampling locations for presence of bottom deposits, color, film or coating (from oil, grease, wax, etc.), floating material (including solids, liquids, foams, and scum), and odor. If any visual events occur, additional samples as detailed in Table 1 shall be taken, with results being saved and logged.
Applicant will have equipment and supplies on-site (or readily available nearby) that could be quickly deployed to provide additional filtration if turbidity is observed. These supplies may include: bladders for settling, filter bags and pumps, silt filter dams, or a silt barrier as appropriate depending on site conditions. Surface water observations detecting exceedances of Effluent and Receiving Water Limitations are subject to "Reporting" requirements at the end of this document.
During installation and removal of diversion structures the Applicant shall monitor surface monitoring stations, described above (100 feet upstream and 100 feet downstream) in accordance with Table 2 below:

TABLE 2
DIVERSION STRUCTURE INSTALLATION SAMPLING AND ANALYSIS

Parameter	Units	Sample Type	Minimum Analysis Frequency*
Turbidity	NTU	Grab	Twice Daily

* Field analysis allowed

BANK STABILIZATION MONITORING

For the first year following completion of a bank stabilization project, Applicant shall inspect surface waters twice following larger storm events to determine if the project and BMPs are adequately functioning to stabilize soil and prevent excessive erosion.
Photos will be taken to document site inspections during these post-storm visits during the first year following the maintenance project and once a year for a period of 5 years thereafter. The Applicant shall observe surface water upstream and downstream of the bank stabilization site for bottom deposits, color and floating material.
If the site fails such that erosion or degradation to the appearance of surface waters degrades, the Regional Board will be immediately notified and actions will be taken to resolve the issue.

REVEGETATION MONITORING

The Applicant shall monitor all revegetated sites annually for five years after planting, and for at least two years after supplemental watering is discontinued, to determine if supplemental watering, weed control, rodent control, and/or protection from vandalism are required to encourage plant establishment. Applicant shall also implement requirements contained within the SMP Manual.

SEDIMENT MONITORING

All excavated sediment material will be disposed in uplands at a permitted disposal facility or an upland beneficial reuse site, such as construction fill, non-agricultural cover, or landfill daily cover. Excavated sediment material disposal at an aquatic or wetland beneficial reuse site is not covered under the SMP Waste Discharge Requirements.
For projects involving sediment removal (excluding minor maintenance sediment removal):

Sampling Frequency and Locations

- For sediment removal projects involving at least 100 cubic yards at creeks that have not been approved for reduced sampling frequency (as described below), one sample will be collected and analyzed for every 500 cubic yards of sediment removed from each site and every additional 500 cubic yards. Up to three discrete grab samples may be composited into one sample to represent the bulk of sediment to be removed from the creek.
- For project sites that require more than one sample, grab sampling locations will be selected to represent overall reach conditions, and to target conditions at the upstream and downstream ends of the project. Sample sites will also specifically target conditions downstream of culvert crossings, culvert outfalls, and key stream confluences.
- There may be situations where long channel reaches are not particularly wide or deep with sediment, it will be preferable to collect grab sediment samples for every 1,000 feet of project length rather than per 500 cubic yards of sediment removal. Samples collected from such sites shall be most representative of the total amount of soil to be removed from that site. No more than three composite samples shall be collected to characterize sediment quality from long, homogeneous reaches of sediment deposits.
- In all cases, sampling locations shall be project areas with the highest potential for detecting the maximum number of contaminants at the highest concentrations, and shall be most representative of site conditions.
- Upon approval by the Executive Officer, sampling frequencies may be reduced at locations where the review of readily available, existing information, including all results of previously collected physical and chemical testing, have continually demonstrated attainment of the Environmental Screening Level (ESL) guidelines developed by the San Francisco Bay Regional Water Board[1]. SCWA may propose reduced sampling frequency for

[1] San Francisco Bay Regional Water Quality Control Board, 2013. Environmental Screening Levels (ESL) Workbook. Interim Final. February 2016. Available: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml.

sites with a minimum of two years of data. Testing results must be below corresponding San Francisco Bay Regional Water Board's Tier I ESLs[1] for soil or commensurate with natural/anthropogenic background concentrations for two consecutive sampling episodes. For sites with reduced sampling frequency, Regional Water Board staff may still require sediment sampling and analysis when there is a suspected contamination source.

- Approval of reduced sediment sampling frequencies may be accomplished through the Regional Water Board staff review and concurrence of annual reports and data proposed to substantiate reduction in accordance with this MRP.
- Sites where sediment removal activities occurred on a regular basis, and where sampling has been reduced due to two sequential testing results reporting below ESLs (or commensurate with natural/anthropogenic non-urban background) need only be sampled every 10 years with the sampling regime at the discretion of the Executive Officer. A significant change in land use at the site or upstream that may require reinitiating a sampling regime for constituents of concern.
- Sediment from creeks or sub-basins that have not been evaluated in the past shall be sampled for the full suite of analytes prior to sediment removal activities.

Sediment Sampling Methodology

This guidance applies to discrete (single) samples and composite samples. All samples shall be collected by means of a hand trowel, a hand auger, or another sampling method approved by the Regional Water Board. The individual collecting the sample will have the discretion of choosing the sampling method which is the most efficient to perform. Sampling methodology is described in the *Sediment Sampling and Analysis Guidelines* section of the *SMP Manual.*

Sampling parameters/analytes and locations will be reviewed by Regional Board staff annually during review of the SMP Notification Report. As is appropriate and as directed by the Regional Board, each sample location and disposal site shall include sampling for the parameters/analytes listed in Table 3. Sampling parameters/analytes listed in Table 3 may be modified after a history of sampling is obtained. This may result in not requiring monitoring for some of these contaminants under certain situations or at certain locations, or the addition of more parameters/analytes if deemed necessary by the Executive Officer. Sampling shall be in accordance with Table 3:

TABLE 3
DISCRETE SEDIMENT SAMPLING AND ANALYSIS

Table 3 was amended on July 29, 2010 and April 29, 2016

EPA Test Method[1]	Analyte	Reporting Limit for Soil[2] (mg/kg)	Analyte (cont.)	Reporting Limit for Soil[2] (mg/kg)
	Conventional Parameters			
	Grain Size (%) (Gravel, Sand, Silt, Clay)	0.1		
9060	Total Organic Carbon (%)	0.1		
	Total Solids (%)	0.1		
6020 or 7000 series	**Total Metals**			
	Arsenic	0.05	Mercury (total)	0.005
	Cadmium (total)	0.005	Nickel (total)	0.1
	Chromium (total)	0.02	Selenium (total)	0.1
	Copper (total)	0.1	Silver (total)	0.1
	Lead (total)	0.01	Zinc (total)	0.5
8081 or 8082A	**Organochlorine Pesticides**			
	Aldrin	0.002	Dieldrin	0.002
	α-HCH (hexachlorocyclohexane)	0.002	Endosulfan I	0.002
	β-HCH	0.002	Endosulfan II	0.002
	γ-HCH (Lindane)	0.002	Endosulfan sulfate	0.002
	δ-HCH	0.002	Endrin	0.002
	Chlordane (tech)	0.002	Endrin aldehyde	0.002
	2,4'-DDD	0.002	Heptachlor	0.002
	4,4'-DDD	0.002	Heptachlor epoxide	0.002
	2,4'-DDE	0.002	Toxaphene	0.002
	4,4'-DDE	0.002		
	2,4'-DDT	0.002		
	4,4'-DDT	0.002		
8270C or 8270D[3]	**Polycyclic Aromatic Hydrocarbons (PAHs)**			
	2-Methylnaphthalene	0.005	Chrysene	0.001
	Acenaphthene	0.001	Dibenz(a,h)anthracene	0.001
	Acenaphthylene	0.001	Fluoranthene	0.001
	Anthracene	0.001	Fluorene	0.001
	Benz(a)anthracene	0.001	Indeno(1,2,3-cd)pyrene	0.001
	Benzo(a)pyrene	0.001	Naphthalene	0.001
	Benzo(b)fluoranthene	0.001	Phenanthrene	0.001
	Benzo(k)fluoranthene	0.001	Pyrene	0.001

NOTES:
[1] The most recent version of EPA's SW-846 Test Methods will be used.
[2] All sediment results to be reported in dry weight.
[3] Analysis of PAH will be performed using appropriate cleanup methods (e.g., EPA Method 3550A with alumina column) to remove naturally occurring biogenic interferences.

The Applicant shall maintain records of field sampling in a log containing at least the following information:

- ***Date and time***
- ***Site location***
- ***Sample collector***
- ***Sampling methods***
- ***Sampling location***
- ***Sampling depth***
- ***Number of sampling containers***
- Specific site conditions
- Analysis requested
- Other information describing the sampling event

Field sampling logs shall be made available to Regional Board staff upon request.

BEST MANAGEMENT PRACTICES (BMP) MONITORING

The applicant shall inspect temporary and permanent structural BMPs at active sites at least twice daily to determine if BMP maintenance, repair, or replacement is necessary. The Applicant shall maintain, repair, and/or replace BMPs as appropriate to prevent sediment discharge and reduce erosion. BMP inspections and corrective action shall be documented in a BMP inspection log. The BMP inspection log shall be kept on-site while the site is active, and shall be available to Regional Board staff upon request.
The Applicant shall document BMP effectiveness, and BMP installation, maintenance and repair, and sediment removal activities in the BMP inspection log. All changes to the Applicant's SMP Manual shall be documented, and a summary of changes shall be reported annually.

REPORTING

A. Violation Reporting

1. Upon discovery of an exceedance, the Applicant shall identify the source of the exceedance, implement corrective action, and resample or make additional observations to determine whether or not the exceedance was corrected. After four hours, an exceedance will be considered a violation.

2. The Applicant shall notify Regional Board staff by telephone at (707) 576-2220 immediately to report violations that last longer than 12-hours. The applicant shall stop all work at the site for violations lasting longer than 24-hours. The Applicant shall update Regional Board staff of site conditions and obtain verbal permission to resume work.

3. The Applicant shall notify Regional Board staff in writing within seven calendar days of all violations. Written reports shall include time and date of incident, duration, estimate of discharge or bypass volume, and documentation of sampling results/observations determining compliance status. The report shall also include detailed discussion of reasons for noncompliance, and specific steps that were or will be taken to correct the failure and prevent it from reoccurring.

B. For each sediment removal project, the Applicant shall characterize the sediment and summarize all sediment sampling analyses, and submit a report to the Regional Board staff at least fifteen days prior to proposed sediment removal activities.

C. All monitoring performed in compliance with this Order shall be made available to Regional Board staff upon request.

D. The Applicant shall submit a letter with all monitoring reports to demonstrate compliance status with Order No. R1-2009-0049.

E. Applicant shall comply with reporting dates and requirements within the SMP Manual.

MODIFICATION

Any part of this Monitoring and Reporting Program may be revised with the written approval of the Executive Officer.

Ordered By: _____

Matthias St. John
Executive Officer

April 29, 2016

160429_09_0049_Amended_MRP

Memorandum

Subject: **Sediment Sampling and Disposal Notification for the Sonoma County Water Agency's 2016 Stream Maintenance Program**

May XX, 2016

To: Gil Falcone, North Coast Regional Water Quality Control Board (NCRWQCB)
Stephen Bargsten, (NCRWQCB)

From: Jill Sunahara, Horizon Water and Environment
Cynda Maxon, Maxon Consulting

CC. Jon Niehaus, Sonoma County Water Agency (SCWA)
Keenan Foster, SCWA
Chase Takajo, SCWA

This is the proposed sediment sampling and disposal plan for the SCWA's 2016 Stream Maintenance Program (SMP) maintenance sites for review and approval by the NCRWQCB (or Regional Board), as required under the Monitoring and Reporting Program, as part of WDR No. R1-2009-0049 and Section 401 Water Quality Certification WDID No. 1B09026WNSO, as amended on April 29, 2016.

This memo includes the following sections:

1. Summary of sampling efforts to date.
2. Evaluation of proposed 2016 sediment removal sites
3. Proposed sediment sampling and testing plan for 2016
4. Proposed sediment reuse and disposal plan for 2016

1. Summary of SMP sampling efforts to date

Regulatory approval of the SMP by the NCRWQCB was provided in July 2009, with amendments authorized in 2011 and 2016. SCWA has conducted sediment sampling at maintenance sites since the program was approved. The results of the sediment analysis were previously submitted to the Regional Board.

Prior to 2016, sample test results were evaluated against the San Francisco Bay RWQCB's 2013 Environmental Screening Levels (ESLs) or other conservative sediment guidance (e.g., NOAA SQuiRT values). In February 2016, the ESLs were updated and the guidelines for soil differ substantially from the 2013 version of the soil ESLs both in application and threshold concentrations.

Past test results from 2010-2015 were reevaluated against the 2016 Tier 1 soil ESLs or natural/anthropogenic non-urban background, as recommended in the 2016 "ESL User's Guide" (http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/ESL/ESL%20Users%20Guide_22Feb16.pdf). We used upper limit (high) background (e.g., 95% UCLs) concentrations for northern California soils reported by the Lawrence Berkeley National Laboratory (Diamond et al. 2012), and a joint PG&E and U.S. Navy study (recommended in the ESL guidance), to screen for metals and selected PAHs, respectively. Tier 1 soil ESLs were used to evaluate chlorinated pesticides because anthropogenic background data for northern California soils are lacking. It should be noted that many of the 2016 ESLs vary widely with respect to natural and anthropogenic non-urban background. For example, the Tier 1 soil ESL for zinc is 23,000 $\mu g\ g^{-1}$, although natural background rarely exceeds 200 $\mu g\ g^{-1}$; and the Tier 1 ESL for benzo(a)pyrene, a carcinogenic PAH, is 0.070 $\mu g\ g^{-1}$ although anthropogenic background concentrations can approach 1 $\mu g\ g^{-1}$ from aerial fallout of combustion-related particulates.

We further evaluated results that exceeded high background at less than 2x by considering likely ubiquitous (non-point) sources, such as aerial fallout of combustion related PAH, and elevated metals, including zinc from storm-water runoff containing spent tire particulates. Corresponding creek locations and surrounding environs also were evaluated to identify potential sources of contamination, such as proximity to heavily trafficked roads or highways. Creeks with three or fewer exceedances that were likely anthropogenic non-urban background were considered exempt from future sampling, providing they met multiple testing criteria, and results were <2x high background or <2x the Tier 1 soil ESL, depending on the analyte. Rationale for each creek recommended for exemption from future sampling is presented in Table 1, which also lists creek sites that will be tested in 2016.

2. Evaluation of Proposed 2016 Sediment Removal Sites

The projects listed below are proposed for 2016. Project designs for these projects will be submitted by the Water Agency as part of their 2016 Annual Notification. However, the designs for the Ducker Creek and Fife Creek projects are included for reference.

Sediment removal projects:

1. Cook Creek Reach 1 – localized
2. Copeland Creek Reach 2 – reach scale
3. Ducker 1 and 2 – localized
4. Laguna Creek Reach 3 – localized
5. Laguna Creek Reach 4 – reach scale

Sediment basins to be cleared:

1. Cook Creek Basin (Reach 2)
2. Copeland Creek Basin (Reach 2; this entire reach and basin will be cleared)
3. Copeland Basin (between Reaches 3 and 4, at Country Club])
4. Copeland Basin (between Reaches 4 and 5, at Snyder)
5. Wilfred Creek (at Snyder)
6. Fife Creek Basin (in Zone 5A, Reaches 2, 3, and 4)

The Water Agency also intends to implement other sediment removal projects previously approved but the work was not conducted that year. These pre-approved sites do not require repeat testing.

Table 1. Evaluation of 2016 Project Sites using Existing Sediment Results Compared to 2016 Tier 1 Soil ESL Thresholds and Regional Background.

2016 Project Site	Previously Tested Creek	Previous Reach(s)	Year Sampled	Analytes with Exceedance(s)	Previous Results (µg g^{-1})	2016 Tier 1 ESL (µg g^{-1})	High Background (µg g^{-1})	Exempt from 2016 Testing	Comment
Localized Scale									
Cook 1	Cook	1	2011	None	-	-	-	Yes	<100cy will be removed.
Ducker 1, 2	Ducker	2	2010	None	-	-	-	No	Requires 2nd sampling to qualify for exemption.
Laguna 3[A]	Laguna Copeland	1,2,4 2	2010, 11, 12, 15 2014	Zinc (Reach 4, 2011) None	216 -	23,000 -	140 -	Yes	Previous samples collected <1 km from Laguna 3. Only exceedance was for zinc 1x at <2x high background.
Reach Scale									
Copeland 2	Copeland	4 2 S. Fork	2011 2014 2014	None None None	-	-	-	Yes	No exceedances in 2011 or 2014
Laguna 4	Laguna Copeland	1,2,4 2	2010, 11, 12, 15 2014	Zinc (Reach 4, 2011) None	216 -	23,000 -	140 -	Yes	Previous samples collected <600m from Laguna 4. Only exceedance was for zinc 1x at <2x high background.
Sediment Basin/Instream Basin Clearing									
Cook Creek Basin	Cook	2 (sed basin)	2011	None	-	-	-	No	Requires 2nd sampling to qualify for exemption
Copeland 2, 3/4, 4/5	Copeland	4 2 S. Fork	2011 2014 2014	None None None	-	-	-	Yes	No exceedances in 2011 or 2014
Wilfred 1	NA	-	-	-	-	-	-	No	Not previously tested.
Fife 2, 3 & 4	Fife	3	2015	Mercury	18.2	13	0.42	No	Additional testing needed to verify Hg is <2x high background. No known Hg source, may be from historic mining.

[A]=Laguna 3 is located adjacent to and ~~downstream~~ Upstream from Laguna 2, and at confluence of Laguna Creek and Copeland 2. These results were used to evaluate Laguna 3.

The 2016 project sites that have been previously tested two or more times qualify for exemption from future testing (see Table 1). Localized scale sediment removal at Cook Creek Reach 1 is exempt from testing requirements because less than 100 cubic yards will be removed (the estimated amount to be removed is 54 cy), and the site was tested in 2011 an no exceedances of ESL or regional background levels were detected.

Sediment results at these sites were consistent with naturally occurring or very low anthropogenic background concentrations for all analytes, except zinc at Laguna Creek, which was slightly above natural background. Laguna Creek is considered exempt from future testing because the 216 µg g^{-1} zinc measured in 2011 is less than 2x high background and well below the 2016 Tier 1 ESL (23,000 µg g^{-1}). Elevated mercury at Fife Creek was the only analyte that exceeded the Tier 1 ESL and was more than 2x above high background. Fife Creek will be tested again in 2016.

3. Proposed Sediment Sampling and Testing Plan for 2016

Sampling plans for 2016 project sites, including creek reach, removal volume, number of composite samples, and core sampling locations are presented in Table 2.

The design plans for the Ducker Creek and Fife Creek projects are attached for reference.

Table 2: Proposed Sediment Sampling Plan for 2016

Maintenance Reach Number and Maintenance Scale (see SMP Manual for reach locations)	**Estimated Amount of Sediment to be Removed** (cubic yards)	**Number of Samples to be Collected**	**Comments**
Localized Sediment Removal			
Ducker 1/2 (Reach 1: 1,495 lf) (Reach 2: 50 lf)	 1,495 36	3	Tested in 2010. Samples to be collected where bulk of sediment is to be removed: Sample 1, Reach 1 Sta 975+49 Sta 980+30 Sample 2, Reach 1 Sta 983+50 Sta 985+31 Sample 2, Reach 1,2 Sta 986+81 Sta 987+92 Sta 990+50
Sediment Basin/Instream Basin Clearing			
Cook Creek Sediment Basin (Reach 2) (200 lf)	150	1	Annual site. Tested in 2011.
Wilfred Channel at Snyder Lane (200 lf)	100	1	Annual site. Not yet sampled.
Fife Creek (Reach 2/3: 1,265 lf) (Reach 4 [sed basin 2]: 115 lf)	 1,377 290	 2 1	Annual site. Tested in 2010. Sample 1, Reach 2 Sta 42+28 Sta 44+75 Sample 2, Reach 3/4 Sta 46+01 Sta 50+81 Sta 53+58 Sample 3, Reach 4 Sta 58+06 Sta 58+53

4. Sediment Disposal and Reuse Plan for 2016

The following sites are proposed for sediment disposal and reuse. These are the same sites used for past maintenance seasons.

- **Soil and/Grab N' Grow**
  Grab N' Grow Products processes and sells soil products for farmers, gardeners, and landscapers. The company is located at 2759 Llano Road in Santa Rosa. The facility recycles over 80,000 cubic yards of organic materials including green waste (tree trimmings and landscaping waste) and agricultural waste each year. Grab N' Grow produces soil mixes, compost, and groundcover materials. Grab N' Grow is primarily interested in material that can be used to augment other materials for use as construction fill.

- **Wheeler Zamaroni**
  Wheeler Zamaroni is a local company that sells landscape and building materials, and custom fabricated stone. The company operates at a 30-acre facility located at 3500 Petaluma Hill Road in south Santa Rosa. SCWA has established an agreement with this company for soil disposal.

  No SMP sediments would be resold as soil products, such as for gardening or soil amendments, due to the potential for redistribution of anthropogenic bioaccumulative materials present in the stream sediments. Wheeler Zamaroni is primarily interested in material that they can sort into sand and gravels for reuse.

- **Sweet Lane Nursery (Grossi Site)**
  Mr. Ed Grossi's property is located at 6652 Petaluma Hill Road in Rohnert Park. On this property, Mr. Grossi operates a landscaping nursery and grows feed grains for dairy cattle. He also maintains an open area to process soil material for potting and resale. Mr. Grossi has an existing agreement with SCWA to accept sediment from stream channels in the SMP area. As approved in past maintenance seasons, the Grossi property has received and reused sediment from stream maintenance activities for the past two years. The memorandum of agreement between Mr. Grossi and SCWA for soil disposal does not expire until 2023.

  This site has the potential capacity to receive the entirety of sediment excavated from this year's maintenance sites. Sediment excavated from the Rohnert Park and Cotati areas would likely be taken to Grossi's property to reduce transportation costs. SMP sediment would not be used for agricultural purposes, such as growing feed grasses or reuse as potting soils for edible plants. The sediment will be reused as fill material only.

- **Dairy Bedding**
  SCWA has received inquiries from several local dairies in the Stony Point Rd vicinity about the use of SMP sediment for use as bedding material. Any agreement with local dairies would require that material be placed in preapproved locations upon evaluation by SCWA staff and could not be used as fill in wetlands or sensitive areas. SCWA obtained approval for this type of sediment reuse from Water Board staff in 2011.

- **Sonoma County Central Landfill, Petaluma**
  Soil that is not suitable for reuse at the sites listed above based on testing results will be taken to the Sonoma County Central Landfill in Petaluma for use as cover material. The soil must conform to the County's testing and material quality requirements. Review and approval from the Regional Board will be requested if this option will be pursued for sediment disposal.

- **SCWA Pond #5 Mirabel Facility**
  SCWA is in the process of filling pond #5 at the Mirabel water collector facility located at 10290 Westside Road in Forestville, Ca. Sediment disposed at this site will not be used for agricultural purposes, it will strictly be used as backfill material (construction fill) to restore finished grade to #5. This site was used in 2014 and 2015.

- **Gravel Access Roads owned by SCWA**
  SCWA will use gravel excavated from sediment removal sites on access roads in various locations on SCWA-owned property. These access roads are existing gravel, non-paved access roads located on upland areas, not within wetlands or water bodies. This gravel reuse activity was conducted in 2015 under approval of the North Coast RWQCB. Gravel reuse may occur at SCWA's Geyserville Treatment Plant, the Mirabel Yard, Spring Lake Park, and creek maintenance access roads.

Memorandum

Subject: **Sediment Sampling Notification for the Sonoma County Water Agency's (SCWA's) Stream Maintenance Program (SMP) - San Francisco Bay Region**

April 26, 2016

To: Ben Livsey, San Francisco Bay Regional Water Quality Control Board (SFBRWQCB)
Keith Lichten, SFBRWQCB

From: Jill Sunahara, Horizon Water and Environment

Cc: Jon Niehaus, Sonoma County Water Agency (SCWA)
Keenan Foster, SCWA
Chase Takajo, SCWA

The objective of this memo is to submit the sediment sampling plan for the SCWA's 2016 SMP maintenance sites for review and approval by the SFBRWQCB, as required under the Monitoring and Reporting Program, Attachment A of Waste Discharge and Water Quality Certification (Order No. R2-2016-0020) adopted on April 13, 2016.

This memo includes the following sections:

1. Summary of sampling efforts to date.
2. Evaluation of proposed 2016 sediment removal sites.
3. Proposed sediment disposal and reuse plan for 2016.

1. Summary of SMP sampling efforts to date

Regulatory approval of the SMP by the SFBRWQCB was provided in April 2011 and recently renewed in April 2016. SCWA conducted sediment sampling at maintenance sites in Zones 2A and 3A in 2011 through 2015. The results of the sediment analysis were previously submitted to the SFBRWQCB. All sediment excavated from Zone 2A and Zone 3A reaches was taken to the Grossi Site (Sweet Nursery Lane) for reuse as landscaping plant potting soil or reused as construction fill material, as authorized by the North Coast RWQCB.

Prior to 2016, sample test results were evaluated against the SFBRWQCB's 2013 Environmental Screening Levels (ESLs) or other conservative sediment guidance (e.g., NOAA SQuiRT values). In February 2016, the ESLs were updated and the guidelines for soil differ substantially from the 2013 version of the soil ESLs both in application and threshold concentrations.

Past test results from 2011-2015 were reevaluated against the 2016 Tier 1 soil ESLs or natural/anthropogenic non-urban background, as recommended in the 2016 "ESL User's Guide" (http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/ESL/ESL%20Users%20Guide_22Feb16.pdf). We used upper limit (high) background (e.g., 95% UCLs) concentrations for northern California soils reported by the Lawrence Berkeley National Laboratory (Diamond et al. 2012), and a joint PG&E and U.S. Navy study (recommended in the ESL guidance), to screen for metals and selected PAHs, respectively. Tier 1 soil ESLs were used to evaluate chlorinated pesticides because anthropogenic background data for northern California soils are lacking. It should be noted that many of the 2016 ESLs vary widely with respect to natural and anthropogenic non-urban background. For example, the Tier 1 soil ESL for zinc is 23,000 $\mu g\ g^{-1}$, although natural background rarely exceeds 200 $\mu g\ g^{-1}$; and the Tier 1 ESL for benzo(a)pyrene, a carcinogenic PAH, is 0.070 $\mu g\ g^{-1}$ although anthropogenic background concentrations often exceed 1 $\mu g\ g^{-1}$ from aerial fallout of combustion-related particulates.

We further evaluated results that were above high background, but below the Tier 1 ESL, by considering likely ubiquitous (non-point) sources, such as aerial fallout of combustion related PAH, widely used agricultural pesticides, and elevated zinc/lead from storm-water runoff of vehicle brake particulates. Corresponding creek locations and surrounding environs also were evaluated to identify potential sources of contamination. Examples included creeks adjacent to heavily trafficked roads or highways, and those located in rural farming areas impacted with historic pesticides. Creeks with three or fewer exceedances that were likely anthropogenic non-urban background were considered exempt from future sampling, providing they met multiple testing criteria and results were <2x high background or <2x the Tier 1 soil ESL. Rationale for each creek recommended for exemption from future sampling is presented in Table 1.

Reevaluation of past results provided useful information on likely potential sources of elevated concentrations of metals in particular. All sediment samples with copper, lead, and zinc concentrations above high background were located within several hundred meters of Hwy 101 or another heavily trafficked road, indicting road runoff as a probable source. All three metals have high relative concentrations in disc brakes, typically ranging from 1% for lead and zinc to >20% for copper. Spent tires are a well-documented source of zinc contamination in storm water runoff.

Table 1: Analysis of 2011-2015 Sediment Test Results Compared to 2016 Tier 1 Soil ESL Thresholds and Regional Background (all concentrations in µg g^{-1} dry weight)

Sampling Year	Zone	Creek Name	Reach Name	Analyte	Result	2016 Tier 1 ESL	High Background Threshold	Exempt from Sampling	Rationale for Creek Exemption
2015	2A	Adobe Creek	Adobe1/2 (lower)	Mercury	0.646	13	0.42	yes	Mercury was the only exceedance at <2x high background, but was far below the ESL threshold.
2015	2A	Adobe Creek	Adobe1/2 (upper)	Mercury	0.617	13	0.42	yes	
2011	2A	Corona Creek	Corona1	Copper	64.7	3100	63	yes	Copper only slightly above high background ; Zinc >2x high background, exempt because likely source is stromwater runoff associated with brake/tire particulates. Creek is <30m from Hwy 101 and adjacent to large parking/shopping complex.
				Zinc	638	23,000	140	yes	
2013	2A	Corona Creek	Corona1	Copper	88.3	3100	63	yes	See above for 2011 Corona1 regarding copper and zinc. Lead <2x high background. Lead is also associated with spent brake particulates. Mercury <<< ESL. See above comment on creek location.
				Lead	53	80	43	yes	
				Mercury	1.67	13	0.42	yes	
				Zinc	704	23,000	140	yes	
2012	2A	Lichau Creek	Lichau4	Mercury	0.732	13	0.42	yes	Mercury only exceedance at <2x high background. The Creek is <100m from Hwy 101 and <300m from Digilock (electronics manufacturing) & commercial complex.
2013	2A	Lichau Creek	Lichau/ Willowbrook 1	Mercury	0.773	13	0.42	yes	See above comment.
2014	2A	McDowell Creek	McDowell2	Lead	150	90	43	yes	Only 3 metals above high background thresholds; exempt because the likely source of lead and zinc is stromwater runoff associated with brakes/tires. Mercury <2x high background. This creek is located 100m from Hwy 101.
				Mercury	0.554	13	0.42	yes	
				Zinc	241	23,000	140	yes	
2011	3A	Fryer Creek	Fryer2/3	Benzo(a)pyrene	0.37	0.07	0.66	yes	See above comment for lead and zinc. BaP <2x high background, likely from aerial fallout of fossil fuel combustion particulates.
				Lead	60.8	90	43	yes	
				Zinc	196	23,000	140	yes	
2012	3A	Fryer Creek	East Fork Fryer Creek	Benzo(a)pyrene (BaP)	0.34	0.07	0.33	yes	BaP <2x high background, likely from aerial fallout of fossil fuel combustion particulates. BbF <2x high ESL, likely from aerial fallout of fossil fuel combustion particulates. Located in rural area, with historic use of pesticide Endosulfan, which was <2x ESL.
				Benzo(b)fluoranthene (BbF)	0.86	0.70	0.037	yes	
				Endosulfan I	0.0071	0.0046	NA	yes	

2. Evaluation of Proposed 2016 Sediment Removal Sites

Maintenance reaches, estimated quantities of sediment to be removed, the number of samples to be collected, and the sample collection locations are listed below. The stream crossing stations are depicted on the sediment removal design drawings for each site (submitted with the Water Agency's 2016 SMP notification report).

- Adobe Creek Sediment Basin – 375 LF; 1,130 cy to be excavated
- Corona Creek Reach 1 – 3,167 LF; 939 cy to be excavated
- Fryer Creek Reach 3 – 650 LF; 289 cy to be excavated

The Adobe Creek sediment basin has been tested three times (2013, 2014, and 2015) with no exceedances of the 2016 ESL thresholds or regional background levels.

Corona Creek Reach 1 which has been tested twice (2011 and 2013) with no exceedances of the 2016 ESL thresholds/high regional background levels.

Fryer Creek has been tested twice with no exceedances of the 2016 ESL thresholds/high regional background levels. Fryer Creek Reach 3 was sampled in 2011 and East Fork Fryer, located approximately 200m downstream from Reach 3, was sampled in 2012. Results for both sampling events had no exceedances based on the 2016 ESL/high regional background thresholds.

In our opinion, no further testing should be required for the 2016 sediment removal sites.

3. Sediment Disposal and Reuse Plan for 2016

The following sites are proposed for sediment disposal and reuse. These are the same sites used for past maintenance seasons with all sediment disposal occurring in the Zone 1A Santa Rosa area, under the authority of the North Coast RWQCB.

- **Soil and/Grab N' Grow**
  Grab N' Grow Products processes and sells soil products for farmers, gardeners, and landscapers. The company is located at 2759 Llano Road in Santa Rosa. The facility recycles over 80,000 cubic yards of organic materials including green waste (tree trimmings and landscaping waste) and agricultural waste each year. Grab N' Grow produces soil mixes, compost, and groundcover materials. Grab N' Grow is primarily interested in material that can be used to augment other materials for use as construction fill.
- **Wheeler Zamaroni**
  Wheeler Zamaroni is a local company that sells landscape and building materials, and custom fabricated stone. The company operates at a 30-acre facility located at 3500 Petaluma Hill Road in south Santa Rosa. SCWA has established an agreement with this company for soil disposal.

  No SMP sediments would be resold as soil products, such as for gardening or soil amendments, due to the potential for redistribution of anthropogenic bioaccumulative materials present in

the stream sediments. Wheeler Zamaroni is primarily interested in material that they can sort into sand and gravels for reuse.

- **Sweet Lane Nursery (Grossi Site)**
  Mr. Ed Grossi's property is located at 6652 Petaluma Hill Road in Rohnert Park. On this property, Mr. Grossi operates a landscaping nursery and grows feed grains for dairy cattle. He also maintains an open area to process soil material for potting and resale. Mr. Grossi has an existing agreement with SCWA to accept sediment from stream channels in the SMP area. As approved in past maintenance seasons, the Grossi property has received and reused sediment from stream maintenance activities for the past two years. The memorandum of agreement between Mr. Grossi and SCWA for soil disposal does not expire until 2023.

  This site has the potential capacity to receive the entirety of sediment excavated from this year's maintenance sites. Sediment excavated from the Rohnert Park and Cotati areas would likely be taken to Grossi's property to reduce transportation costs. SMP sediment would not be used for agricultural purposes, such as growing feed grasses or reuse as potting soils for edible plants. The sediment will be reused as fill material only.

- **Dairy Bedding**
  SCWA has received inquiries from several local dairies in the Stony Point Rd vicinity about the use of SMP sediment for use as bedding material. Any agreement with local dairies would require that material be placed in preapproved locations upon evaluation by SCWA staff and could not be used as fill in wetlands or sensitive areas. SCWA obtained approval for this type of sediment reuse from Water Board staff in 2011.

- **Sonoma County Central Landfill, Petaluma**
  Soil that is not suitable for reuse at the sites listed above based on testing results will be taken to the Sonoma County Central Landfill in Petaluma for use as cover material. The soil must conform to the County's testing and material quality requirements. Review and approval from the Regional Board will be requested if this option will be pursued for sediment disposal.

- **SCWA Pond #5 Mirabel Facility**
  SCWA is in the process of filling pond #5 at the Mirabel water collector facility located at 10290 Westside Road in Forestville, Ca. Sediment disposed at this site will not be used for agricultural purposes, it will strictly be used as backfill material (construction fill) to restore finished grade to #5. This site was used in 2014 and 2015.

- **Gravel Access Roads owned by SCWA**
  SCWA will use gravel excavated from sediment removal sites on access roads in various locations on SCWA-owned property. These access roads are existing gravel, non-paved access roads located on upland areas, not within wetlands or water bodies. This gravel reuse activity was conducted in 2015 under approval of the North Coast RWQCB. Gravel reuse may occur at SCWA's Geyserville Treatment Plant, the Mirabel Yard, Spring Lake Park, and creek maintenance access roads.

Appendix I

Permit Fees and Application Materials

California Department of Fish and Wildlife

1. Annual Notification Checklist for CDFW MLSAA
2. Notification of Lake or Streambed Alteration (Scanned Copy)
3. Check for Annual Master Agreement Fee (Scanned Copy)
4. CD with 2016 Annual Notification

North Coast Regional Water Quality Control Board

1. Clean Water Act Section 401 Water Quality Certification fee

Sonoma County Water Agency's Stream Maintenance Program

2016 Annual Notification Checklist for DFW Master LSAA

Included	Component
☑	Check for Annual Master Agreement Fee
☑	Completed Notification for Lake and Streambed Alteration Agreement Form • Check Item 5.G. Master • Check "Yes" and specify 1600-2009-0399-3 under Item 7.A.
☑	Copy of this Checklist
☑ ☑ ☑

Included	Component
☑ ☑ ☑	o Identification of other biological surveys that will be conducted during the maintenance year o Longitudinal Profiles o Plan Views o Channel Cross Sections o Sediment Sampling Locations • Annual Mitigation Plan o On-Site o Off-Site • Annual Sediment Disposal Plan • Permits and Fees
☑	Status of on-site program mitigation from prior year projects. Should include status of riparian planting and reveg reports from preceding five years.[3]

Table notes:

1. Pre-construction surveys (i.e. nesting birds, etc) are generally conducted 1-2 weeks prior to commencing work and associated reporting. The Annual Notification materials include a schedule and timeline for all pre-construction surveys.). As such, we propose submitting the pre-construction survey data and evidence of appropriate BMP implementation with the Annual Report versus the Annual Notification.

2. Channel Characterization sheets are incorporated into the SMP Manual. New Channel Characterization Sheets are included in the Annual Notification only if there are changes or revisions.

3. The Annual Report provides a thorough accounting of the status of Tiers 1-3 on and off site mitigation programs for a period of 5 years. The Annual Report is generally submitted in December or January of each year.

FOR DEPARTMENT USE ONLY				
Date Received	*Amount Received*	*Amount Due*	*Date Complete*	*Notification No.*
	$	$		

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Grant Davis		
Business/Agency	Sonoma County Water Agency		
Street Address	404 Aviation Boulevard		
City, State, Zip	Santa Rosa, CA 95403		
Telephone	(707) 5471900	Fax	(707) 524-3782
Email	grant.davis@scwa.ca.gov		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name	Keenan Foster		
Street Address	404 Aviation Boulevard		
City, State, Zip	Santa Rosa, CA 95403		
Telephone	(707) 5471941	Fax	(707) 524-3782
Email	kfoster@scwa.ca.gov		

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name			
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name		Stream Maintenance Program		
B. Agreement Term Requested		☐ Regular (*5 years or less*) ☑ Long-term (*greater than 5 years*)		
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2016	2016	06/15	10/31	

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.	
A.	☐ Standard *(Most construction projects, excluding the categories listed below)*
B.	☐ Gravel/Sand/Rock Extraction (*Attachment A*) *Mine I.D. Number:* _____
C.	☐ Timber Harvesting (*Attachment B*) THP *Number:* _____
D.	☐ Water Diversion/Extraction/Impoundment (*Attachment C*) *SWRCB Number:* _____
E.	☐ Routine Maintenance (*Attachment D*)
F.	☐ CDFW Fisheries Restoration Grant Program (FRGP) *FRGP Contract Number* _____
G.	☑ Master
H.	☐ Master Timber Harvesting

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	Annual Master Agreement Fee		$3,070.00
2	(annual project fees paid with annual report after project complete)		
3			
4			
5			
		D. Base Fee *(if applicable)*	0.00
		E. TOTAL FEE ENCLOSED	$3,070.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

☑ Yes (*Provide the information below*) ☐ No

Applicant: Sonoma County Water Agency Notification Number: 1600-2009-0399-R3 Date: 04/30/16

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

☑ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

8. PROJECT LOCATION

A. Address or description of project location.

(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway*)

This application covers all the projects listed in the SMP's 2016 Annual Notification (attached). All of these projects should be appropriate under the Master Streambed Alteration Agreement # 1600-2009-0399-R3.

☑ *Continued on additional page(s)*

B. River, stream, or lake affected by the project.	
C. What water body is the river, stream, or lake tributary to?	
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?	☐ Yes ☑ No ☐ Unknown
E. County	

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section

☐ *Continued on additional page(s)*

K. Meridian (*check one*)	☐ Humboldt ☑ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

Multiple, please see the 2015 SMP Annual Notification (attached) for project locations and conditions.

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)*

Latitude/Longitude	*Latitude:* see Notification (attached)	*Longitude:*	
	☐ Degrees/Minutes/Seconds	☐ Decimal Degrees	☐ Decimal Minutes
UTM	*Easting:*	*Northing:*	☐ Zone 10 ☐ Zone 11
Datum used for Latitude/Longitude or UTM	☐ NAD 27	☑ NAD 83 or WGS 84	

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☐	☐	☑
Bank stabilization – rip-rap/retaining wall/gabion	☐	☐	☑
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☐	☐	☐
Channel clearing/vegetation management	☐	☐	☐
Culvert	☐	☐	☑
Debris basin	☐	☐	☑
Dam	☐	☐	☑
Diversion structure – weir or pump intake	☐	☐	☐
Filling of wetland, river, stream, or lake	☐	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☑	☐	☑
Levee	☐	☐	☐
Low water crossing	☐	☐	☐
Road/trail	☐	☐	☑
Sediment removal – pond, stream, or marina	☐	☐	☑
Storm drain outfall structure	☐	☐	☑
Temporary stream crossing	☐	☐	☑
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*:	☐	☐	☐

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

This application covers all the projects listed in the SMP's 2016 Annual Notification (attached). All of these projects should be appropriate under the Master Streambed Alteration Agreement # 1600-2009-0399-R3. The Annual Notification contains all pertinent information for each 2016 project.

☑ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

This application covers all the projects listed in the SMP's Annual Notification (attached). All of these projects should be appropriate under the Master Streambed Alteration Agreement # 1600-2009-0399-R3. The Annual Notification contains all pertinent information for each 2016 project.

☑ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).	☐ Yes ☐ No (*Skip to box 11*)
D. Will the proposed project require work in the wetted portion of the channel?	☑ Yes (*Enclose a plan to divert water around work site*) ☐ No

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

This application covers all the projects listed in the SMP's Annual Notification (attached). All of these projects should be appropriate under the Master Streambed Alteration Agreement # 1600-2009-0399-R3. The Annual Notification contains all pertinent information for each 2016 project.

☑ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☐ Yes (*Complete the tables below*) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)

☑ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☐ Yes *(List each species and/or describe the habitat below)* ☑ No ☐ Unknown

Details are included in the Annual Notification (attached)

☑ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

CNDDB, survey data, Water Agency Reports and routine maintenance habitat evaluations

☐ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☑ Yes (*Enclose the biological study*) ☐ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☑ Yes (*Enclose the hydrological study*) ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

This application covers all the projects listed in the SMP's Annual Notification (attached). All of these projects should be appropriate under the Master Streambed Alteration Agreement # 1600-2009-0399-R3. The Annual Notification contains all pertinent information for each 2016 project. All projects will follow the terms and conditions of the Master Agreement and BMPs defined in the SMP Manual.

☐ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

This application covers all the projects listed in the SMP's Annual Notification (attached). All of these projects should be appropriate under the Master Streambed Alteration Agreement # 1600-2009-0399-R3. The Annual Notification contains all pertinent information for each 2016 project. All projects will follow the terms and conditions of the Master Agreement and BMPs defined in the SMP Manual.

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

The mitigation program for the SMP Manual and in the Master Agreement. All projects will follow the terms and conditions of the Master Agreement and BMPs defined in the SMP Manual. The Annual Notification describes the mitigation plan for each project.

☑ *Continued on additional page(s)*

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A. RWQCB Section 401 Certification (North Coast and SF Bay) ☐ Applied ☑ Issued

B. USACE Individual Permit ☐ Applied ☑ Issued

C. BOs from FWS and NMFS (Russian River and Zones 2A, 3A) ☐ Applied ☑ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?

☑ Yes (*Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each*)

☐ No (*Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared*)

☑ Notice of Exemption	☐ Mitigated Negative Declaration	☐ NEPA document (*type*):
☐ Initial Study	☐ Environmental Impact Report	☑ CESA document (*type*): CD
☐ Negative Declaration	☐ Notice of Determination *(Enclose)*	☑ ESA document (*type*): BOs
☐ THP/ NTMP	☐ Mitigation, Monitoring, Reporting Plan	

B. State Clearinghouse Number (*if applicable*)	2005-082131		
C. Has a CEQA lead agency been determined?	☑ Yes (*Complete boxes D, E, and F*)	☐ No (*Skip to box 14.G*)	
D. CEQA Lead Agency	Sonoma County Water Agency		
E. Contact Person	Keenan Foster	F. Telephone Number	(707) 547-1941

G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.

This application covers all the projects listed in the SMP's Annual Notification (attached). All of these projects should be appropriate under the Master Streambed Alteration Agreement # 1600-2009-0399-R3. The SMP's guiding document is the SMP Manual prepared in coordination with all the regulating agencies.

☐ *Continued on additional page(s)*

H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?

☑ Yes (*Enclose proof of payment*) ☐ No (*Briefly explain below the reason a filing fee has not been paid*)

Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.

15. SITE INSPECTION

Check one box only.

☐ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.

☑ I request the Department to first contact (*insert name*) Keenan Foster at (*insert telephone number*) (707) 547-1941 to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☐ Yes (Please enclose the information via digital media with the completed notification form)

☐ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Michael Thompson

Signature of Applicant or Applicant's Authorized Representative

5/2/2016

Date

Michael Thompson

Print Name

THIS CHECK IS VOID WITHOUT A GREEN & BLUE BORDER AND BACKGROUND PLUS A DIAMOND & FINGERPRINT WATERMARK ON THE BACK - HOLD AT ANGLE TO VIEW

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

VOID

CLAIMS CHECK

CHECK NO.
1550178

11-35
1210

DATE 05/04/2016

VOID AFTER SIX MONTHS

PAY THIS AMOUNT
*******$3,070.00

BANK OF AMERICA

PAY *Three thousand seventy and 00/100 Dollars*

VOID

To The Order Of
ST OF CA DEPT OF FISH & WILDLIFE
DEPT FISH & WILDLIFE
PO BOX 944209
SACRAMENTO CA 94244-2090

Donna Dunk
DONNA DUNK
AUDITOR-CONTROLLER

⑈01550178⑈ ⑆121000358⑆ 00439⑈80050⑈

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

VENDOR NO. 0000000386 01 DATE PAID 05/04/2016 201 1550178 No. 1550178

VOUCHER NUMBER	P.O. NUMBER	DESCRIPTION	AMOUNT
00142367		04/29/2016 STREAMBED ALTERATION FEE	3,070.00
00142367		MASTER AGREEMENT NO. 1600-2009-0399-R3	0.00
			$3,070.00

REORDER D908 • U.S. PATENT NO. 5538290, 5575508, 5641183, 5785353, 5984364, 6030000

2016 Proposed SMP Projects Under North Coast RWQCB Authority:

Linear Feet/Area Calculations for Annual 401 Certification Project Fees

Project SIte	Length (linear feet)	Acres Disturbed	
		Waters of the U.S. (below OHWM)	Waters of the State (below TOB)
Zone 1A			
Localized Scale			
Cook 1	65.000	0.022	N/A
Ducker 1 and 2A	1,495.000	0.754	N/A
LaBath 2	146.000	0.026	0.023
Laguna 3	1,452.000	0.867	N/A
Paulin 6A	655.000	0.165	0.023
Reach Scale			
Copeland 2	3,850.000	2.995	0.099
Laguna 4	1,969.000	0.407	N/A
Russell 2	1,155.000	0.420	N/A
In-stream Sediment Basin Clearing			
Brush 2A	100.000	0.046	N/A
Cook 2 Basin	200.000	0.184	N/A
Copeland 3/4	200.000	0.207	N/A
Copeland 4/5	205.000	0.212	N/A
Five 1	120.000	0.110	N/A
Santa Rosa 2	2,050.000	2.581	N/A
Wilfred 1C	200.000	0.046	N/A
Reservoir Outlet Clearing			
Brush Creek Reservoir	0.000	0.052	N/A
Matanzas Creek Reservoir	0.000	0.052	N/A
Piner Creek Reservoir	0.000	0.052	N/A
Santa Rosa Creek Reservoir	0.000	0.062	N/A
Bank Repair			
Peterson 1	40.000	0.008	0.012
Russell 1A	75.000	0.005	0.026
Zone 5A			
In-stream Sediment Basin Clearing			
Fife 3 and 4	1,380.000	0.479	N/A
Zone 8A			
Culvert Replacement			
Bloomfield 1	120.000	0.001	0.017
		9.753	**0.200**
TOTAL	**15,477.000**	**9.953**	

DREDGE AND FILL FEE CALCULATOR [1] v14c 09/08/2015

This fee schedule is based on California Code of Regulations, Title 23, section 2200(a)(3). TO CALCULATE FEE: Enter the "Discharge Size" in Section A or, if the project qualifies, check the check-box in Section B according to the applicable Flat Fee category. If the project involves multiple discharges, then both Section A and Section B fee charges may apply. The project application deposit amount will appear in the "Application Fee Deposit" row at the bottom of the Fee Calculator. The remaining fee due prior to issuance of a certification for the project will appear in the "Balance of Application Fee Due Prior to Certification" row at the bottom of the Fee Calculator. The annual active discharge fee and annual post discharge monitoring fee will appear in the "Annual Fees" row at the bottom of the Fee Calculator. Discharges to waters of the state from both temporary and permanent project impacts are subject to fees. In any case, dredge and fill operation fees shall not exceed $90,000 for Fill and Excavation Applications and $90,000 for Dredging Annual Active Discharge Fee.

Fee Due Dates: Only the application fee deposit for the required fee categories is due at time of application. The balance of the application fee is due prior to certification (see row at bottom of calculator). Dischargers will be invoiced an Annual Active Discharge Fee beginning in November/December of the year following the Effective Date of certification. Dischargers will be invoiced for an Annual Active Discharge fee each year until the Active Discharge Period is completed. If applicable, dischargers will be invoiced for an Annual Post Discharge Monitoring Fee after the project has completed the Active Discharge Period.

Single Project Including Multiple Discharges ☐

A. FEES BASED ON DISCHARGE SIZE

	FEE CATEGORY	RATE	DISCHARGE SIZE		APPLICATION FEE[2]	ANNUAL ACTIVE DISCHARGE FEE[3]	ANNUAL POST DISCHARGE MONITORING FEE[4]
(A)	**Fill & Excavation[5] Discharges.** Discharges will be assessed as the higher fee of "discharge length in feet" and "discharge area in acres". Discharge length shall be reported in Linear Feet. Includes linear discharges to drainage features and shorelines The size of the discharge area shall be rounded to two decimal places (0.01 acre = 436 square feet).	**Discharge Length Feet** x $13.50	15477	**$90,000**	**$90,000**	**$600**	**$300**
		Discharge Area Acres x $5,670	9.953	**$56,434**			
(B)	**Dredging Discharges (except Sand Mining-see (C) below)[6]** Annual dredge volume expressed in cubic yards.	**Dredge Volume CY** x $0.21			**$0**	**$0**	**$0**
	Total Application Fee (to be submitted prior to certification):[1(b)]:	**Categories (A) and (B)**			$90,000		
	Active and Post Discharge Monitoring Fee (invoiced in following years):	**Categories (A) and (B)**				$600	$300

B. FEES BASED ON FLAT FEE CATEGORIES

(C)	**Sand Mining Dredging Discharges.** Aggregate extraction in marine waters where the source material is free of pollutants and the dredging operation will not violate any Basin Plan Provisions.	**Flat fee**	Check if Applicable	☐	**$0**	**$0**	**$0**
(D)	**Ecological Restoration and Enhancement Projects** Projects undertaken for the sole purpose of restoring or enhancing the beneficial uses of water. This schedule does not apply to projects required under a regulatory mandate or to projects that are not primarily intended for ecological restoration or enhancement, e.g., land development.	**Flat fee**	Check if Applicable	☐	**$0**	**$0**	**$0**
(E)	**Low Impact Discharges.** Projects may be classified as low impact discharges if they meet the following criteria: 1. The discharge size is less than all of the following: (a) for fill, 0.1 acre, and 200 linear feet; and (b) for dredging, 25 cubic yards. 2. The discharger demonstrates that: (a) all practicable measures will be taken to avoid impacts; (b) where unavoidable temporary impacts take place, waters and vegetation will be restored to pre-project conditions as quickly as practicable; and (c) where unavoidable permanent impacts take place, there will be no net loss of wetland, riparian area, or headwater functions, including onsite habitat, habitat connectivity, floodwater retention, and pollutant removal. 3. The discharge will not do any of the following: (a) directly or indirectly destabilize a bed of a receiving water; (b) contribute to significant cumulative effects; (c) cause pollution, contamination, or nuisance; (d) adversely affect candidate, threatened, or endangered species; (e) degrade water quality or beneficial uses; (f) be toxic; or (g) include "hazardous" or "designated" material.	**Flat fee**	Check if Applicable	☐	**$0**	**N/A**	**N/A**
(F)	**General Orders For CEQA Exempt Projects** Projects which are CEQA exempt and which are required to submit notification of a proposed discharge to the State and/or Regional Board pursuant to: (1) a general order authorizing impacts for the qualifying project CEQA exemption (e.g. Small Habitat Restoration General Permit); or (2) a general water quality certification permitting discharges authorized by a U.S. Army Corps of Engineers general permit (e.g., nationwide permit). Applies ONLY if a general order or general water quality certification was previously granted.	**Flat Fee**	Check if Applicable	☐	**$0**	**N/A**	**N/A**
(G)	**Emergency Projects authorized by a Water Board General Order**	**Flat Fee**	Check if Applicable	☐	**$0**	**N/A**	**N/A**
	Application Fee (to be submitted during application)	**Categories (C) to (G)**			$0		

	Active and Post Discharge Monitoring Fee (invoiced in following years):	Categories (C) to (G)			$0	$0
	C. FEES BASED ON AMENDED ORDERS					
	Amended Orders. Amendments of WDR's or water quality certifications previously issued for one-time discharges not subject to annual billings. Fees charged as follows:					
	(i) Minor project changes, not requiring technical analysis and involving only minimal processing time.	No fee required				
	(ii) Changes to project eligible for flat fees (fee categories C, D and E above) where technical analysis is needed to assure continuing eligibility for flat fee and that beneficial uses are still protected. This does not apply if a general order or general water quality certification was issued.	Flat fee	Check if Applicable	☐	$0	
	(iii) Project changes not involving an increased discharge amount, but requiring some technical analysis to assure that beneficial uses are still protected and that original conditions are still valid, or need to be modified	Flat fee	Check if Applicable	☐	$0	
	(iv) Project changes involving an increased discharge amount and requiring some technical analysis to assure that beneficial uses are still protected and that original conditions are still valid, or need to be modified.	Additional fee assessed per increased amount of discharge(s) Complete Section A	Check if Applicable	☐		
	(v) Major project changes requiring an essentially new analysis and re-issuance of WDR's or water quality certification.	New fee assessed				
	Fees Based on Amended Orders	Amended Orders (i) to (v)			$0	$0	$0
	APPLICATION FEE DEPOSIT				$600		
	BALANCE OF APPLICATION FEE DUE PRIOR TO CERTIFICATION				$89,400		
	ANNUAL FEES					$600	$300
	Federal Facility (check box)			☐			
	APPLICATION FEE DEPOSIT (FEDS)				N/A		
	BALANCE OF APPLICATION FEE DUE PRIOR TO CERTIFICATION (FEDS)				N/A		
	ANNUAL FEES (FEDS)					N/A	N/A

1(a) For "excavation" the area of the discharge is the area of excavation; if the excavated material is then discharged to waters, an additional "fill" fee will be assessed.

1(b) When a single project includes multiple discharges within a single dredge and fill fee category, the fee for that category shall be assessed based on the total area, volume, or length of discharge (as applicable) of the multiple discharges. When a single project includes discharges that are assessed under multiple standard fee categories, the total application fee shall be the sum of the application fees assessed under each applicable fee category; however only a single annual active discharge fee or annual post-discharge monitoring fee, if required, shall be assessed for the project. The single annual active discharge fee and the single annual post-discharge monitoring fee for the project shall be based on the higher of the applicable fee categories. Single projects qualifying for a flat fee or amended order fee shall only be assessed the applicable flat fee or amended order fee.

1(c) Fees shall be based on the largest discharge size specified in the original or revised report of waste discharge or Clean Water Act (CWA) Section 401 water quality certification application, or as reduced by the applicant without any State Board or Regional Board intervention.

1(d) If water quality certification is issued in conjunction with dredge or fill WDRs or is issued for a discharge regulated under such preexisting WDRs, the current annual WDR fee as derived from this dredge and fill fee schedule shall be paid in advance during the application for water quality certification, and shall comprise the fee for water quality certification.

1(e) Discharges requiring water quality certification and regulated under a federal permit or license other than a US Army Corps of Engineers CWA Section 404 permit or a Federal Energy Regulatory Commission License shall be assessed a fee determined from CCR 23, Section 2200(a).

2 Dischargers shall pay a one-time application fee for each project at the time that the application or report of waste discharge is submitted. Notwithstanding section 2200.2, if discharges commence in a fiscal year other than the fiscal year in which the application or report of waste discharge is submitted, the application fee is in addition to the first annual active discharge fee for the project. If discharges commence in the same fiscal year as the application or report of waste discharge is submitted, the discharger shall pay only the greater of the application fee or the first annual active discharge fee. The application fee for category (A) fill and excavation discharges will be based on the discharger's estimate of project length and area. If, upon completion, the actual length or area is larger than the estimate, the discharger may receive an additional application fee invoice that is based on the actual project length and area, minus the application fee that was previously paid.

3 Dischargers shall pay an annual active discharge fee each fiscal year or portion of a fiscal year during which discharges occur until the regional board or the State Board issues a Notice of Completion of Discharges Letter to the discharger. The annual active discharge fee for category (B) dredging discharges will be invoiced after the annual dredge volume has been determined.

4 Dischargers shall pay an annual post-discharge monitoring fee each fiscal year or portion of a fiscal year commencing with the first fiscal year following the fiscal year in which the regional board or State Board issued a Notice of Completion of Discharges Letter to the discharger, but continued water quality monitoring or compensatory mitigation monitoring is required. Dischargers shall pay the annual post-discharge monitoring fee each fiscal year until the regional board or the State Board issues a Notice of Project Complete Letter to the discharger.

5 "Excavation" refers to removing sediment or soil in shallow waters or under no-flow conditions where impacts to beneficial uses are best described by the area of the discharge. It typically is done for purposes other than navigation. Examples include trenching for utility lines, other earthwork preliminary to discharge, removing sediment to increase channel capacity, and other flood control and drainage maintenance activities (e.g., debris removal, vegetation management and removal, detention basin maintenance and erosion control of slopes along open channels and other drainage facilities).

6 "Dredging" generally refers to removing sediment in deeper water to increase depth. The impacts to beneficial uses are best described by the volume of the discharge and typically occur to facilitate navigation. For fee purposes it also includes aggregate extraction within stream channels where the substrate is composed of course sediment (e.g., gravel) and is reshaped by normal winter flows (e.g., point bars), where natural flood disturbance precludes establishment of significant riparian vegetation, and where extraction timing, location and volume will not cause changes in channel structure (except as required by regulatory agencies for habitat improvement) or impair the ability of the channel to support beneficial uses.

THIS CHECK IS VOID WITHOUT A GREEN & BLUE BORDER AND BACKGROUND PLUS A DIAMOND & FINGERPRINT WATERMARK ON THE BACK - HOLD AT ANGLE TO VIEW

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

VOID

CLAIMS CHECK

CHECK NO.
1552012

11-35
1210

DATE 05/13/2016

VOID AFTER SIX MONTHS

PAY THIS AMOUNT
******$90,000.00

BANK OF AMERICA

PAY *Ninety thousand and 00/100 Dollars*

VOID

To The Order Of

ST OF CA REGIONAL WATER QUALITY CONTROL BOARD
RWQCB REGION 1
5550 SKYLANE BLVD STE A
SANTA ROSA CA 95403

Donna Dunk
DONNA DUNK
AUDITOR-CONTROLLER

⑈01552012⑈ ⑆121000358⑆ 00439⑈80050⑈

TO THE TREASURER OF THE
COUNTY OF SONOMA
SANTA ROSA, CALIFORNIA

VENDOR NO. 0000000386 01 DATE PAID 05/13/2016 201 1552012 No. 1552012

VOUCHER NUMBER	P.O. NUMBER	DESCRIPTION	AMOUNT
00144105		05/05/2016 WDID NO IB09026WNSO	90,000.00
00144105		2016 FIELD SEASON, ORDER #R1-2009-0049	0.00
			$90,000.00

REORDER D908 • U.S. PATENT NO. 5538290, 5575508, 5641183, 5785353, 5984364, 6030000

Appendix J

Stream Maintenance Program Addendum

2015 Mitigation Activities Completed in Winter 2016

Mitigation for Vegetation Management Activities

In compliance with the SMP's Vegetation Management Plan, all Class 1 and Class 3 tree species with a diameter at breast height (DBH) of at least four inches are mitigated for at a 2:1 ratio (for further details related to mitigation for vegetation management activities, refer to Appendix E of the SMP Manual). Table A (below) provides an updated accounting of the planting efforts completed in early 2016 that were not included in the 2015 Annual Post-Maintenance Summary Report.

Table A. Updated Accounting of 2015 Vegetation Management Mitigation (Class 1 and 3 Removals).

Current Season Native Tree Mitigation Needs				*Native Mitigation Plantings Implemented 2015*			
					Quantity Installed		
Year	Class 1 Trees Removed	Class 3 Trees Removed	Mitigation Requirement	Tree Installation Site	Willow Cuttings	Upper Bank Acorns	Date of Installation
2015	297	9	608	Abramson 1	0	140	January 2016
				Bellevue Wilfred 1A	0	49	
				Capri 3	134	0	December 2015
				Capri 4	38	0	January - February 2016
				Corona 7	52	0	
				Hunter 1	38	0	
				Piner 1	0	58	
				Roseland 4	73	0	
				Todd 5A	136	0	
				Wilfred 1B/1C	0	202*	
				Subtotal=	**471**	**449**	
				Total Trees Installed 2015 Field Season	**920**		

Accounting Summary To Date	
2009-2014 Native Tree Mitigation Requirement (Backlog)	**3,009**
2015 Native Tree Mitigation Requirements	**608**
Native Tree Mitigation Requirement to Date (2009-2015) (3,009+608=)	**3,617**
Current Season Survival Count Total (Fall 2015)	**1,560**
Total Trees Installed 2015 Field Season	**920**
Additional Trees Needed to Meet Outstanding Native Tree Mitigation Requirement (*Requirement to Date* (3,617) minus *Survival Count Total Fall 2015* (1,560) minus *Total Trees Installed 2015* (920)=)	**1,137**

*Photo of germinating acorn on Wilfed 1B, April 13, 2016.