

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
ZONE 9 ADVISORY COMMITTEE

NOTICE IS HEREBY GIVEN that the Zone 9 Advisory Committee will hold a Regular Meeting at **1:30 PM** on **Wednesday, October 09, 2019** at the City of San Luis Obispo, Community Development Department in Conference Room #1 located at 919 Palm Street, San Luis Obispo, CA 93401.

AGENDA

1. Introductions and roll call
2. Approval of June 12, 2019 meeting minutes
3. Reports
 - a. Sustainable Groundwater Management Act (SGMA) updates
 - b. Mid-Higuera Bypass Project updates
 - c. Creek maintenance updates
 - d. Arundo removal updates and presentation
4. Endorsement of City of San Luis Obispo's Annual Work Plan – Fiscal Year 2020-21
5. Discussion of Cloud Seeding in Zone 3 – Keith Miller, Environmental Division, Public Works
6. Discussion of Draft Scope of Services – East Fork of San Luis Obispo Creek
7. Public comment

At this time, the public may address the Committee on any item not appearing on the agenda that is within the subject matter jurisdiction of the Committee.
8. Future agenda items

Next Regular Meeting

Wednesday, December 11, 2019 at 1:30 PM

City of San Luis Obispo, Community Development Department
919 Palm Street, San Luis Obispo, CA 93401

“The purpose of the Zone 9 Advisory Committee: SECTION 1: To advise the County Board of Supervisors concerning all policy decisions relating to Zone 9. The Committee shall determine the needs, desires, and financial capabilities of the property owners in Zone 9 and, upon deliberation, shall convey to the Board of Supervisors their recommendations with respect to the objectives of said zone. SECTION 2: To recommend to the Board of Supervisors specific programs to alleviate and control flood damage within Zone 9 with recognition of the ecological and aesthetic values of the programs. Further, to recommend to the Board of Supervisors other programs within Zone 9 concerning the objects and purposes of the Flood Control District Act. SECTION 3: To recommend methods of financing programs for Zone 9.” – Excerpts from the By-Laws adopted March 1, 2011

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
ZONE 9 ADVISORY COMMITTEE

Meeting Minutes (DRAFT) – Wednesday, June 12, 2019

Members Present

Matt Horn, Vice Chairperson, Member, City Staff
Brian Nelson, Alternate, City Staff (non-voting)
Carlyn Christianson, Member, City Council
Christine Mulholland, Member, City At-Large
Dave Romero, Alternate, City At-Large (non-voting)
Janet Andrews, Alternate, County-At-Large
Jon Hall, Alternate, County At-Large

1. Introductions and roll call

Matt Horn calls the meeting to order at 1:30 PM. Quorum established.
Introductions of attendees present.

2. Approval of Meeting Minutes - April 10, 2019

Motion by: **Carlyn Christianson**
Second by: **Christine Mulholland**

The Committee approves the April 10, 2019 meeting minutes (5-0-0), as amended.

3. County at-large alternate appointments update

Sarah Crable, County staff, confirms the appointment of Janet Andrews for the County At-Large Alternate by the Board of Supervisors at their June 4, 2019 meeting.

4. New secretary appointment

Brendan Clark, County staff, explains his transition into the Water Resources Regional Unit Supervisor role within the County where he is now in charge of overseeing work efforts associated with Zone 9 activities. Historically, this role has served as Committee Secretary upon approval by the Committee.

Motion by: **Christine Mulholland**
Second by: **Janet Andrews**

The Committee moves to approve Brendan Clark as Committee Secretary (5-0-0).

5. Fiscal Year 2019/20 Budget presentation by County Finance

Lisa Mendez, County Finance, presents a "Schedule 15" handout that shows the proposed Zone 9 Budget for the Fiscal Year 2019-20. The budget was tentatively approved by the Board of Supervisors on June 10, 2019. The budget will be finalized in August or September 2019. Financing and revenue sources total \$743,337 which includes a repayment of the \$60,000 loan to Zone 1/1A from 2006-07. The Schedule 15 form includes the additional internal orders (IOs) (455R277822 and 455R277823) resulting from the two budget requests approved by the Committee at the April 10, 2019 meeting. Lisa reports that the total in reserves for Zone 9, not shown on the Schedule 15 form, is approximately \$4,000,000.

6. Reports

- Sustainable Groundwater Management Act (SGMA) Update

Mladen Bandov, County staff, reports that on June 12, 2019 at 3:30, a Groundwater Sustainability Commission meeting is being held to present the communication and engagement plan.

- Mid-Higuera Bypass Project Updates

Brian Nelson, City of San Luis Obispo Engineer, reports that the Consultant, Wallace Group, received both the City and County's comments for the 60% Design Submittal. A July 11, 2019 meeting is scheduled with the Consultant to address County comments prior to the 90% Design being submitting for the permitting process. The permitting process is estimated to be completed in October 2020. The discussion of easements with the Madonna property and access for the temporary bridge will occur after the 90% Design has been submitted.

- Creek Maintenance Updates

Freddy Otte, City of San Luis Obispo Biologist, reports that two additional part time employees were hired to assist with creek maintenance activities. In addition, the City and County are still discussing the future agreement that needs to be in place to expand existing creek maintenance activities into County areas.

- Arundo Removal Updates

Jon Hall, Land Conservancy, reports that Arundo removal activities will resume in September and October 2019. In preparation, landowner outreach will begin in August 2019. An Arundo removal progress map will be presented at the next meeting.

Freddy Otte, City Biologist, reports that the City is still working with the property

owner at 12500 Los Osos Valley Road regarding the homeless encampment and trash removal in order to perform creek vegetation management activities and gain access to the large Arundo stand in the creek.

7. Public Comment

No public comment.

8. Future Agenda Items

- Review of scope for the East Branch limited hydrologic/hydraulic study

Motion by: **Carlyn Christianson**

Second by: **Christine Mulholland**

Meeting adjourned at approximately 2:05.

TO: Zone 9 Advisory Committee

FROM: Dick Tzou, Water Resources Engineer, County Public Works

DATE: October 09, 2019

SUBJECT: Agenda Item #3a: Sustainable Groundwater Management Act (SGMA) Updates

Update

- **August 14, 2019** – A SGMA and Groundwater 101 workshop was held and well attended by over 50 participants. The purpose of the workshop was to educate and inform all interested stakeholders about the basics of SGMA and groundwater basins. Topics included: an overview of SGMA requirements and how groundwater flows; current groundwater conditions and data gaps within the San Luis Obispo (SLO) Basin; and details on how stakeholders can help by providing well data and actively participating in the development of the SLO Basin GSP.
- **September 11, 2019** – The Groundwater Sustainability Commission (GSC) reviewed draft GSP Chapter 1 (Introduction to the SLO Basin GSP) and Chapter 2 (Agency Information) and recommended that the GSAs receive and file them. The consultant team presented the hydrogeologic characterization of the basin and an update on the surface water and groundwater modeling efforts. Please visit the new GSP Portal: <http://www.slowaterbasin.com/> to review the chapters, provide comments, and register as a interested party to receive email alerts. All written comments submitted to the GSAs will be posted online for viewing. The comment period for draft GSP Chapters 1 & 2 ends October 31, 2019.

For additional information, please contact:

Dick Tzou
Water Resources Engineer, County Public Works
dtzou@co.slo.ca.us
(805) 781-4473

Visit the San Luis Obispo Valley Groundwater Basin SGMA website for mailing list and updates:

<https://www.slocounty.ca.gov/slobasin>

TO: Zone 9 Advisory Committee

FROM: Brian Nelson, Supervising Engineer, City of San Luis Obispo
Keith Miller, Environmental Division Manager, County Public Works

DATE: October 09, 2019

SUBJECT: Agenda Item #3b: Mid-Higuera Bypass Project Updates

Update

City, County, and Consultant staff participated in a design meeting in July to discuss 60% level plan review comments and permitting requirements. Additional details were necessary to depict areas of disturbance and creek diversion and dewatering details for regulatory compliance. Consultant is working through these plan revisions, including bridge replacement and utility alignments, and is anticipating submitting 90% plans, specifications, and estimates this fall at which point the project could be submitted for permits. Concurrently, City staff and design consultant are reviewing the Proposition 1 Coastal Watershed Flood Risk Reduction Program grant funding criteria as a potential funding mechanism to support project construction. This grant could provide 50% state matching funds for selected projects. Final grant guidelines are anticipated to be published this fall with the grant application period anticipated to begin in January.

TO: Zone 9 Advisory Committee

FROM: Freddy Otte, City Biologist, City of San Luis Obispo

DATE: October 09, 2019

SUBJECT: Agenda Item 3c: Creek Maintenance Updates

Update

Staff has conducted flood control surveys in the accessible portions of the creek and has been escorted through other areas to see if there are threats that need to be addressed before the winter rains start. The creek currently appears to be in good condition. Staffing requests will be made this week.

TO: Zone 9 Advisory Committee
FROM: Jon Hall, Biologist, Stewardship Director, Land Conservancy
DATE: October 09, 2019
SUBJECT: Agenda Item #3d: Arundo Removal Update and Presentation

Update

The following report sections from the Land Conservancy's 2019 Request funding: Zone 9 Flood Control District: *Arundo donax* Removal in SLO Creek are provided as an update:

- Introduction (Background Information)
- Project Need
- Methodology (Arundo removal and treatment)
- Arundo Treatment Status (2016-2018)
- Project Site Map (Current Conditions)

For additional information, please contact:

Jon Hall
Stewardship Director, Land Conservancy
jonh@lcslo.org

**San Luis Obispo County Flood Control and Water Conservation District Zone 9
Request for Funding,
The Land Conservancy of San Luis Obispo's Arundo Removal Program**

Introduction

The San Luis Obispo Creek Watershed drains approximately 84 square miles of land surrounding San Luis Obispo, California and carries the drainage to the Pacific Ocean at Avila Beach. The main waterway is San Luis Obispo Creek, the headwaters of which begin as flow from the Santa Lucia Range. San Luis Obispo Creek and its tributaries have long been a significant resource to the community. The watershed provides habitat and migration corridors for many species of plants, animals and fish, while also offering recreational opportunities, a water supply for agriculture, and ground water recharge. The San Luis Obispo Creek Watershed lies within the South Central Coast Steelhead Evolutionary Significant Unit (ESU), which was listed as threatened in 1997. San Luis Obispo Creek has faced fish passage, erosion, and flooding problems in the past. Great progress has been made with barrier removal and stream restoration, however invasive, non-native plant species such as *Arundo* are threatening the habitat of the entire stream system.

The California Salmonid Habitat Restoration Manual published by the California Department of Fish and Wildlife names *Arundo donax* (Giant Reed) as one of the greatest threats to California's waterways. While *Arundo* is usually associated with rivers that have been physically disturbed, it also can colonize within native stands of cottonwoods, willows, and other riparian species, even growing in sites shaded by tree canopy, as it has done in San Luis Obispo Creek. *Arundo* establishes primarily in streamside sites, but expand beyond margins of riparian vegetation. During warm months with ample water *Arundo* canes are reported to attain growth rates of 0.7 meters per week or about 4 inches per day, putting it among the fastest growing terrestrial plants (Dudley, 2003).

It appears that plants in North America do not produce viable seed, and seedlings are not observed in the field. Population expansion rather occurs through vegetative reproduction, either from underground rhizome extension of a colony or from plant fragments carried downstream, primarily during floods, to become rooted and form new clones. *Arundo* vegetative reproductive method results in the spread of the plant in a primarily downstream direction.

Local Distribution

Arundo infestations throughout most of the watershed have been surveyed and mapped. Long-term efforts by the City of San Luis Obispo and others have limited its widespread occurrence within the main channels in the City. Within the City, however, *Arundo* has colonized small drainage channels and still poses a threat of continued spread. Infestations are smaller in upper San Luis Obispo Creek and Stenner Creek.

Project Need

The California Invasive Plant Council (CalIPC) has placed Arundo as a high priority on their list of most invasive plants. Due to its impacts on local ecology and its ability to thrive in the local environment, it is listed as a Category 1 plant in the San Luis Obispo Creek Watershed Exotic Plant Management Plan. The plan was developed in 2002 and funded by the Avila Beach Trustee Council to identify priority non-native invasive species and critical areas. The 2002 San Luis Obispo Creek Watershed Enhancement Plan also identifies Arundo as a critical issue for the watershed.

Arundo displaces native plants and associated wildlife species because of the massive stands it forms (Bell 1994, Gaffney and Cushman 1998). Competition with native species has been shown to result from monopolization of soil moisture and by shading (Dudley and Collins 1995). As Arundo replaces riparian vegetation in semi-arid zones, it reduces habitat and food supply, particularly insect populations, for several special status species such as least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and yellow-billed cuckoo (*Coccyzus americanu*) (Frandsen and Jackson 1994, Dudley and Collins 1995). Unlike native riparian plants, Arundo provides little shading of stream channels, leading to increased water temperatures and reduced habitat quality for aquatic wildlife, particularly the California red-legged frog (*Rana draytonii*) and the South-Central California Coast Steelhead (*Oncorhynchus mykiss*).

Eradicating Arundo from San Luis Obispo Creek will provide many benefits, including reducing damage to properties within and adjacent to the floodplain and improving habitat for steelhead. Since Arundo can cause flooding and erosion by clogging stream channels and deflecting flow onto banks, the removal of Arundo will lead to less bank erosion, reduced turbidity and improved water quality. Removing Arundo will provide native plant species the opportunity to re-establish which will increase shade and cover, thus reducing surface water temperatures and enhancing riparian habitat

With these types of threats, the fertile environment of these streams, and the current size of the infestations, a zero tolerance policy (total eradication) is appropriate.

Starting in 2006, The Land Conservancy implemented Arundo removal projects from the upper reaches of the San Luis Obispo Creek watershed to the Pacific Ocean for a total cost of approximately \$347,000, which was funded by state and local agencies and organizations. Unfortunately, most funders do not provide maintenance funding, nor do they provide the resources necessary to address new stands within the areas that have already been treated. While the majority of Arundo stands in San Luis Creek have gone through initial treatments, additional funding is needed to achieve total eradication. Since 2006, our Arundo removal effort has successfully exterminated 82% of surveyed Arundo stands in the San Luis Obispo Creek Watershed. All but 44 of the remaining 82 Arundo stands have gone through at least 1 phase of treatment. Many of these remaining 44 stands are in residential areas not directly draining to a creek and are considered a low priority. Funding is needed to re-survey and re-treat 44 Arundo stands throughout the watershed and begin control efforts for priority targets from the remaining 44 untreated stands.

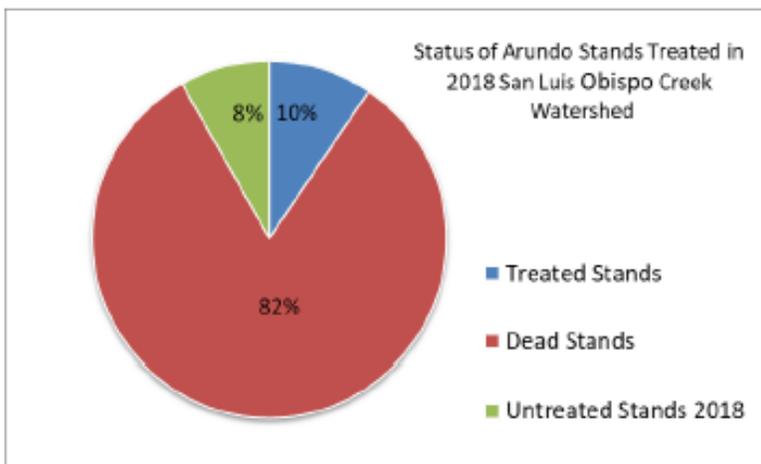
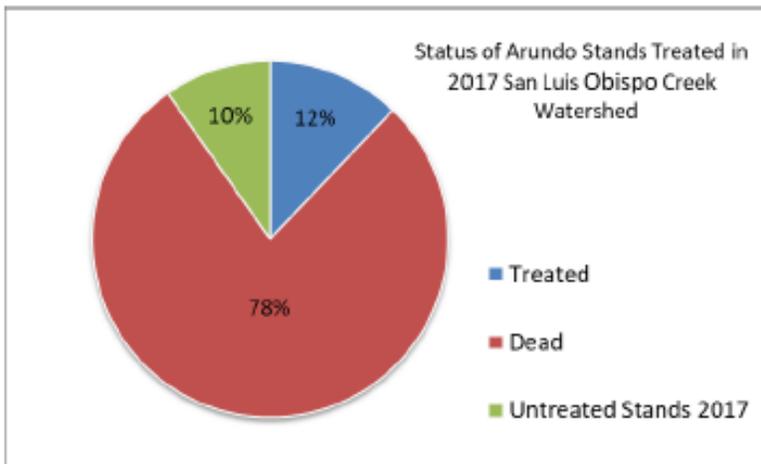
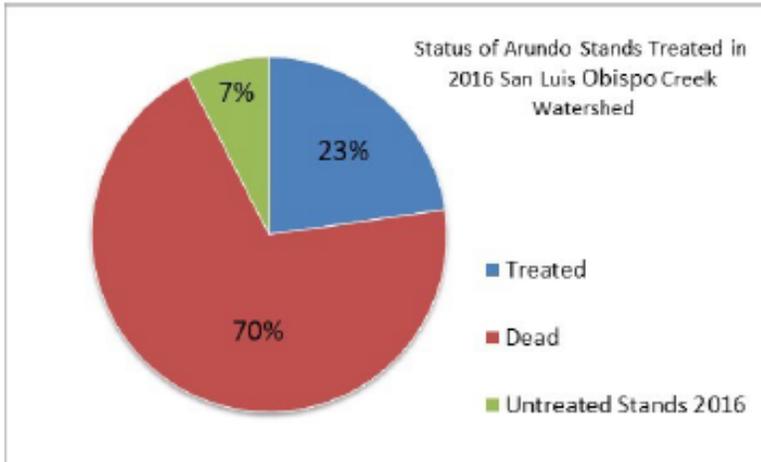
Methodology

The Land Conservancy removes Arundo using the following methods:

- 1) Mechanically remove Arundo biomass using loppers/chainsaws.
- 2) Treatment with herbicide.
- 3) On-site chipping of Arundo biomass.
- 4) Follow-up assessment and herbicide treatment if necessary.

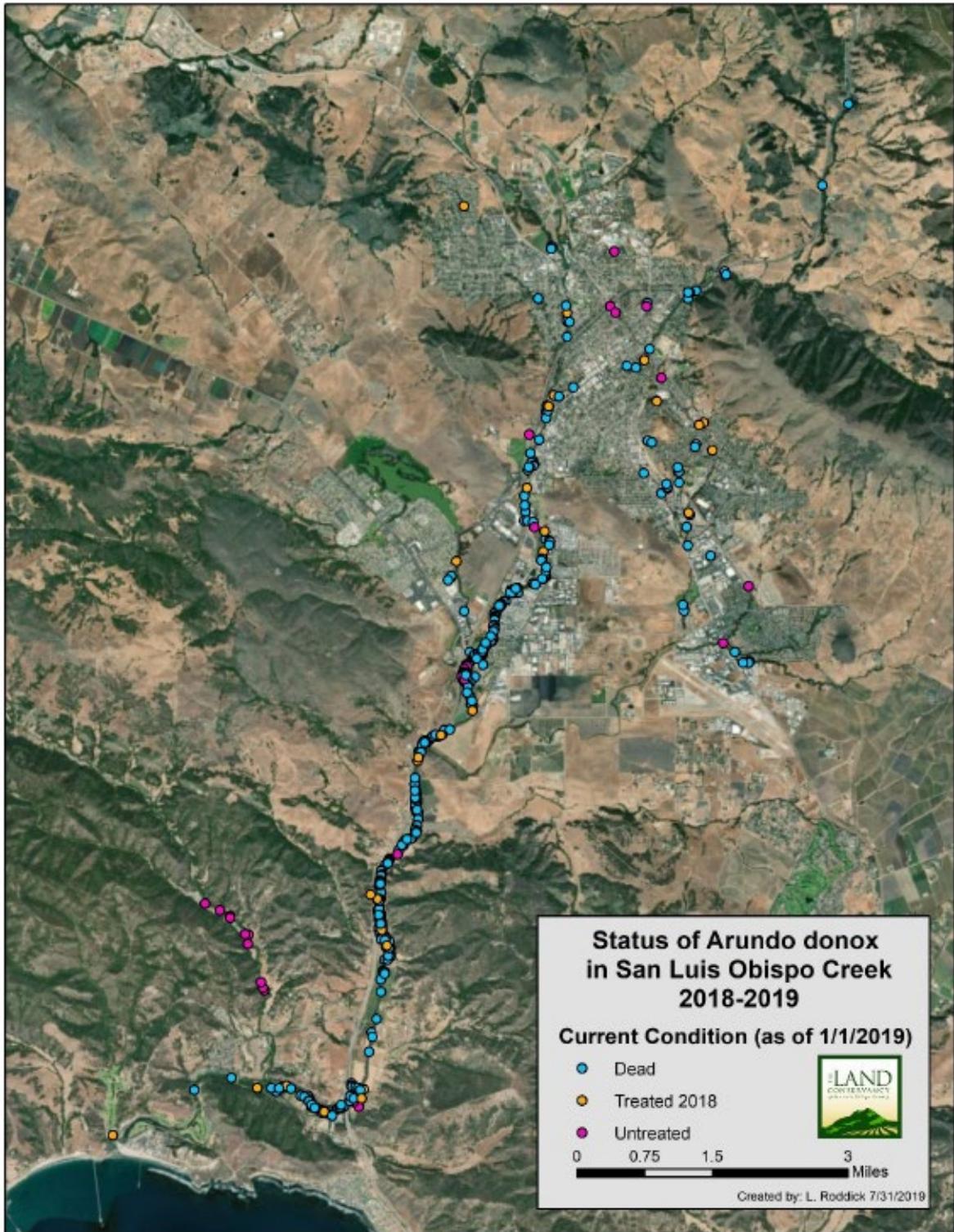
By first mechanically cutting the Arundo canes, herbicide costs are reduced and drift onto desirable plants is avoided. The Arundo stands are re-visited three weeks to three months later when plants have new growth to apply a foliar systemic herbicide. New growth promotes the uptake of herbicides into the root system. The Land Conservancy has two Department of Pesticide Regulation licensed applicators on staff to ensure that herbicide applications are made properly and safely. Also the organization is covered under the National Pollutant Discharge Elimination System (NPDES) permit and completes all the required water monitoring in accordance with an Aquatic Pesticide Application Plan (APAP). Follow-up assessments on treated Arundo stands is a necessity as it has been found that Arundo stands can take up to 6 spot treatments before achieving eradication.

DRAFT



The graphs above show the difference in the status of Arundo stands treated from 2016 to 2018.

Project Site Map



Agenda Item #4: Endorsement of City of San Luis Obispo's Annual Work Plan – FY 2020-21



Public Works

919 Palm Street, San Luis Obispo, CA 93401-3218
805.781.7200
slocity.org

Date: September 27, 2019
To: Brendan Clark, Water Resources Engineer – County of San Luis Obispo
From: Matt Horn, City Engineer - City of San Luis Obispo
Subject: 2020-2021 Zone 9 Budget Request

Based on the current status and future needs to continue making progress on several projects, the City is requesting the following funding from Zone 9 for the 2020-2021 Fiscal Year.

Project Name	Requested FY 2020/21
General Creek Maintenance	\$130,500
Silt Removal	\$150,000
Mid Higuera Bypass	\$60,000
Total	\$340,500

General Creek Maintenance

\$130,500 to fund ongoing general creek maintenance which includes channel clearing, including removal of trees, vegetation, and arundo from creeks. Funding is planned to be used as follows:

1. Contract Labor - Channel Clearing: \$51,500
2. Channel Tree Removals: \$46,000
3. Vegetation Disposal: \$ 5,000
4. Arundo Removal: \$28,000

Silt Removal

Existing funding to support Silt Removal is \$231,000, which is sufficient to support upcoming remediation work and funding for future design and permitting work. The following locations have received final regulatory permits and are awaiting construction:

1. 2019 - Tank Farm Road 250 ft West of Orcutt
2. 2019 - Sacramento 500 ft North of Via Esteban
3. 2019 - Prefumo Creek - Downstream of South Madonna

An additional \$150,000 is requested to support design and environmental permitting services for silt removal locations planned for construction in 2020. Currently, the following locations are prioritized:

1. Prefumo Creek at LOVR upstream of Laguna Lake
2. Orcutt Creek at Sacramento Street near Ricardo Court

Mid Higuera Bypass

\$60,000 is requested for the Mid Higuera Bypass project to establish a 13% design contingency to address unforeseen changes that may require funding in fiscal year 2020.

TO: Zone 9 Advisory Committee

FROM: Ray Dienzo, Water Resources Engineer, County Public Works
Keith Miller, Environmental Division Manager, County Public Works

DATE: October 09, 2019

SUBJECT: Agenda Item #5: Discussion of Cloud Seeding in Zone 3

Update

The County of San Luis Obispo Flood Control and Water Conservation District is proposing a Winter Cloud Seeding Program in Flood Control Zone 3 – Lopez Lake Watershed. Key information about the program:

- The CEQA Process found that a Mitigated Negative Declaration (MND) was appropriate. The County Board of Supervisor's approved the resolution adopting the MND and is available for review online: <https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/Winter-Cloud-Seeding-for-Lopez-Salinas/Approved-MND-and-Resolution.aspx>
- The feasibility report prepared for the program, and summarized in the MND, includes the following suspension criteria:
Whenever the National Weather Service (NWS) issues a severe storm, precipitation, flood warning or flash flood warning that affects any part of the project area, the project meteorologist shall suspend operations which may affect that part. Operations will be suspended at least for the period that the warning is in effect.
- A Request for Proposals (RFP) for a Cloud Seeding Contractor was released on September 16, 2019.
- The County Board of Supervisor's target contractor approval date is December 10, 2019. The proposed 3-year program has the following cloud seeding intervals as shown:
 - Year 1 – December 15, 2019 through April 15, 2020
 - Year 2 – November 10, 2020 through April 15, 2021
 - Year 3 – November 10, 2021 through April 15, 2022

For additional information, please contact:

Ray Dienzo
rdienzo@co.slo.ca.us

Keith Miller
klmiller@co.slo.ca.us

For FAQs and pertinent documents, please visit:

<https://www.slocounty.ca.gov/Departments/Public-Works/Current-Public-Works-Projects/Winter-Cloud-Seeding-Program-for-Lopez-Lake-and-Sa.aspx>

TO: Zone 9 Advisory Committee

FROM: Sarah Crable, Water Resources Engineer, County Public Works

DATE: October 09, 2019

SUBJECT: Agenda Item #6: Discussion of Draft Scope of Services – East Fork of San Luis Obispo Creek

Recommendation

Advisory Committee review and provide comments on attached Draft Scope of Services for the development of a hydrologic and hydraulic study for the East Fork of the San Luis Obispo Creek.

Background

At the April 10, 2019 Zone 9 Advisory Committee meeting, the Committee approved a budget increase to the FY 2019-20 budget for conducting a limited hydrologic and hydraulic study of the East Branch of the San Luis Obispo Creek in the amount of \$87,000.

Discussion

District Staff has developed the attached Draft Scope of Services for a hydrologic and hydraulic study for the East Fork of the San Luis Obispo Creek. Committee comments on the Draft Scope can be sent to scrable@co.slo.ca.us and will be integrated where feasible. An estimated schedule for securing a consultant through the Request for Proposal process (RFP) is provided in **Table 1**.

Table 1: East Fork Limited Study – Approximate RFP schedule

Item	Date
Committee Comments on Draft Scope Due to District	November 1, 2019
District Integrate Comments	November 8, 2019
Final Scope Approval by Committee	December 11, 2019
Initiate RFP Process	Estimated early January 2020
Proposal Review Panel	Estimated early February 2020
Consultant Selection	Estimated late February 2020
Contract Execution	Estimated March 2020

DRAFT - SCOPE OF SERVICES

The Consultant will assist the District with the completion of an Addendum to the Waterway Management Plan by conducting a hydrologic and hydraulic study (Study) of the East Fork of the San Luis Obispo Creek. The East Fork, particularly in and around the Buckley/Vachell intersection, experiences regular flooding. The Study will focus on the determining the causes and frequency of flooding, and water surface elevations at key locations along the East Fork of the San Luis Obispo Creek. In addition, the Consultant will provide a cursory list of recommendations for lessening the frequency of flooding in the East Fork at these key locations. This project falls within the jurisdiction of the San Luis Obispo County Flood Control and Water Conservation District, Flood Control Zone 9 (Zone 9) which encompasses the San Luis Obispo Creek Watershed (see **Figure 1**). A map of the Study area is shown in **Figure 2**.

General information related to Zone 9 is found at the District's website:

<https://www.slocounty.ca.gov/Departments/Public-Works/Committees-Programs/Flood-Control-Zones/Zone-9-%E2%80%93-San-Luis-Obispo-Creek-Watershed.aspx>

The San Luis Obispo Creek Watershed Waterway Management Plan (WMP, 2003) includes the most recent hydrologic and hydraulic analysis. The WMP's three volumes, appendices, and model files are located on the City of San Luis Obispo's website: <https://www.slocity.org/government/department-directory/public-works/documents-online/waterway-management-plan>.

The Consultant shall include and specify sub-consultants or other third-party firms that will be utilized as the project team to develop this Study. Consultant services will begin upon receipt of the notice to proceed (estimated December 2019) through the end of the fiscal year (June 2020).

The Consultant shall provide a written scope of services detailing the approach that will be used to complete the study, which includes but is not limited to the performance of the following professional services:

Task 1: Project Management

The Consultant will provide project management services that begin with a project kickoff meeting with the District. The Consultant will provide brief status updates with task completion percentage approximations due at the 10th of each month, noting issues or problems. The consultant will also regularly submit project invoicing at the 10th of each month for work completed for the previous month.

Deliverables

- Project kick-off meeting summary
- Monthly project status updates
- Monthly project invoices

Task 2: Project Area Data Compilation

The Consultant will perform a review of the studies, models, imagery, survey and historical data collected in the study area. The Consultant will identify the data that is applicable and how it can or may be used

in the Study. The Consultant will also identify data gaps and how that information will be obtained. The Consultant will provide a data request to the District if necessary. The following data sources are managed by the District and may be useful:

1. Creek stage gauge information found here:
<https://wr.slocountywater.org/dashboard/?dashboard=0f9df713-4cf0-4b88-81a5-859f9f78a794>
2. Rain gauge information: <https://wr.slocountywater.org/dashboard/?dashboard=ca742410-2999-4c1f-bb56-20bed1b36fe0>

Deliverables

- List of applicable data sources with description of how it will be used
- Description of any data gaps and how the information will be collected
- Information request list for the County

Task 3: Existing Conditions Assessment

The Consultant will conduct an existing conditions assessment of the East Fork of the San Luis Obispo Creek and any tributaries to gather information that will be used in developing the hydrologic and hydraulic model, determining water surface elevations, structure elevations, channel geometry creek walk to observe existing conditions with the intent of understanding.

Deliverables

- Written conditions assessment report including, as applicable:
 - Topographic Maps
 - Survey Data
 - GIS Layers

Task 4: Hydrologic and Hydraulic Model Development

The H and H Study Conducted for the 2002 Waterway Management Plan report examined four separate watershed conditions:

1. Pre-European settlement
2. Historic circa 1960
3. Existing (2000-2001)
4. Future - assuming General Plan build-out from City and County Plans at that time.

The Consultant will examine the following watershed conditions in the development of the hydraulic and hydrologic study:

1. Current (2019)
2. Future assuming General Plan build-out of City and County areas (including the airport).

Deliverables

- HEC-HMS Model Files
- HEC-RAS Model Files
- Runoff hydrographs
- GIS maps with the model results

Task 5: Development of Hydrologic and Hydraulic Study Report

The Consultant will provide a final report that uses field data and model results to make recommendations to lessen the frequency of flooding in the Study area. The Final Report will include the following:

1. List of assumptions used in model development
2. Interpretation of City's existing model results
3. Identification of water surface elevations at various key locations of the East Fork of the San Luis Obispo Creek. See **Figure 2** for a map of key locations.
4. Understanding of how downstream conditions, including the confluence of the East Fork with San Luis Obispo Creek, affect the inundation along and around the East Fork.

Deliverables

- Draft report for District review and feedback
- Final report integrating District comments
- Frequency of flooding using existing conditions at various storm intensities and durations, for wet and dry conditions, including:
 - 2 year, 24hr
 - Back-to-back 2yr, 24hr
 - 5 year, 24hr
 - 10 year, 24hr
 - 25 year, 24hr
- Water surface elevation at Buckley Road bridge at Vachell Lane for all evaluated scenarios in tabular and cross-sectional format
- List of observations
- List of potential issues identified
- List of recommendations to lessen the frequency of flooding

Task 6: Zone 9 Presentation

Present findings and recommendations at a Zone 9 meeting.

Deliverables:

- Present key findings, recommendations and respond to questions from the Zone 9 Advisory Committee and members of the public.

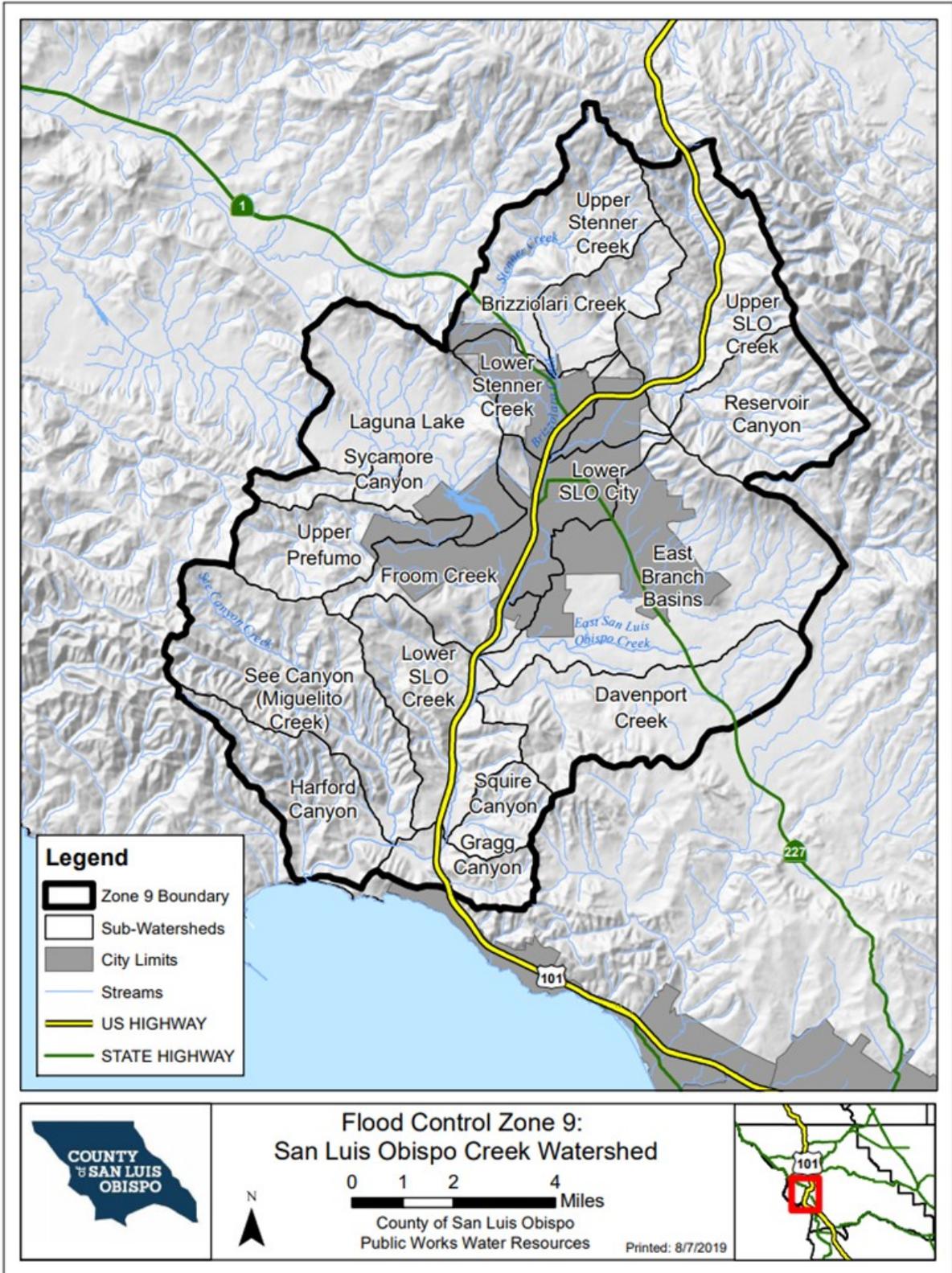


Figure 1: San Luis Obispo Flood Control and Water Conservation District Flood Control Zone 9 (Zone 9) and the San Luis Obispo Creek Watershed share the same boundaries.

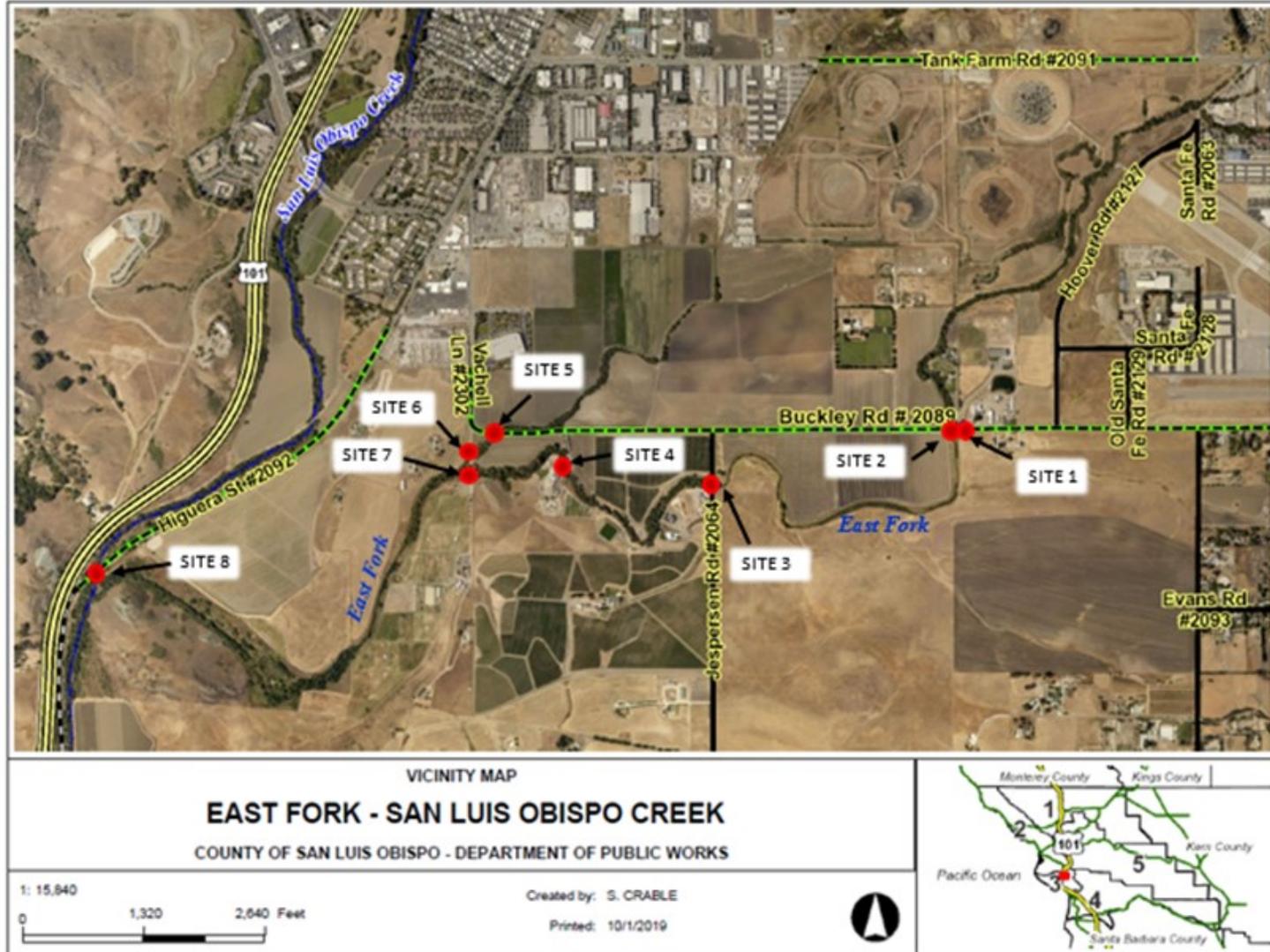


Figure 2: Project study area – East Fork of the San Luis Obispo Creek adjacent to Buckley Road and Vachell Lane.

References:

1. County of San Luis Obispo. Land Use Maps. <https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Maps/Land-Use-Maps/San-Luis-Obispo-Planning-Area-Maps.aspx>
2. County of San Luis Obispo. Rain gauge data. <https://wr.slocountywater.org/dashboard/?dashboard=ca742410-2999-4c1f-bb56-20bed1b36fe0>
3. County of San Luis Obispo. Creek stage gauge data. <https://wr.slocountywater.org/dashboard/?dashboard=0f9df713-4cf0-4b88-81a5-859f9f78a794>
3. Boyle. 1999. City of San Luis Obispo Storm Drain Master Plan.
4. City of San Luis Obispo. 2014. City of San Luis Obispo Airport Area Specific Plan. <http://www.slocity.org/home/showdocument?id=4294>
5. City of San Luis Obispo. 2015. General Plan. <https://www.slocity.org/government/department-directory/community-development/planning-zoning/general-plan>
6. County of San Luis Obispo. General Plan.
7. Questa Engineering. 20023. Waterway Management Plan. Volumes I through 3. <https://www.slocity.org/Home/ShowDocument?id=4913>.
8. Questa Engineering. 2007. San Luis Obispo Creek Watershed Hydrology and Hydraulic Model Calibration Study. <https://www.slocity.org/Home/ShowDocument?id=4915>