

January 8, 2018

MEETING NOTICE & REQUEST FOR RSVP

TO: ENVIRONMENTAL AND WATER RESOURCES COMMITTEE

<u>Jurisdiction</u>	<u>Representative</u>	<u>Representative</u>	<u>Representative</u>
District 1	Bonnie Bamburg	Loren Lewis	Rita Norton
District 2	Elizabeth Sarmiento		
District 3	Hon. Dean Chu	Rev. Jethroe Moore, II	Charles Taylor
District 4	John Bourgeois	Bob Levy	Richard R. Zahner
District 5	Hon. Tara Martin-Milius	Mike Michitaka	Marc Rauser
District 6	Maya Esparza	Hon. Patrick Kwok	
District 7	Tess Byler	Arthur M. Keller, Ph.D.	Stephen A. Jordan

The regular meeting of the Environmental and Water Resources Committee is scheduled to be held on **Monday, January 22, 2018, at 6:00 p.m.** in the Headquarters Building Boardroom located at the Santa Clara Valley Water District, 5700 Almaden Expressway, San Jose, California. Dinner will be served.

Enclosed are the meeting agenda and corresponding materials. Please bring this packet with you to the meeting. Additional copies of this meeting packet are available on-line at <http://www.valleywater.org/About/EnvironmentalandWaterResourcesCommittee.aspx>.

A majority of the appointed membership is required to constitute a quorum, which is fifty percent plus one. A quorum for this meeting must be confirmed at least 48 hours prior to the scheduled meeting date or it will be canceled.

Further, a quorum must be present on the day of the scheduled meeting to call the meeting to order and take action on agenda items.

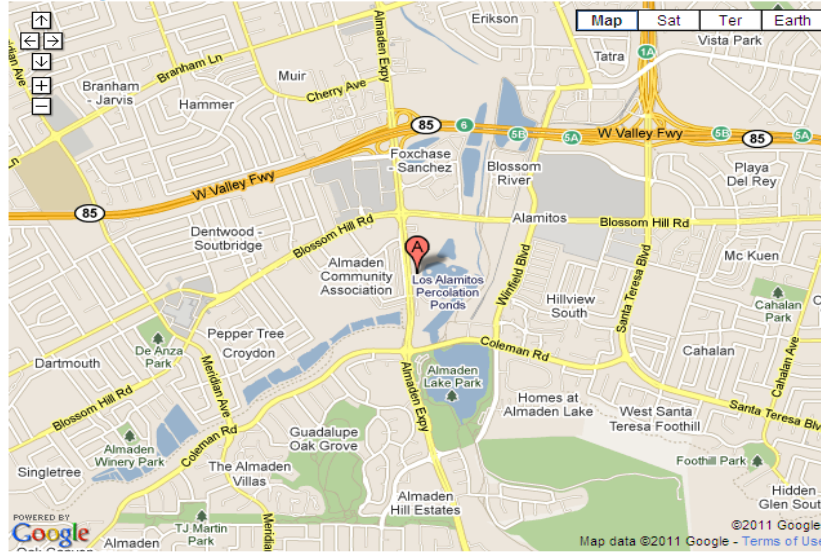
Members with two or more consecutive unexcused absences will be subject to rescinded membership.

Please confirm your attendance **no later than Thursday, January 18, 2018, 5:00 p.m.** by contacting Ms. Glenna Brambill at 1-408-630-2408, or gbrambill@valleywater.org.

Enclosures



**Santa Clara Valley Water District - Headquarters Building,
5700 Almaden Expressway, San Jose, CA 95118**



From Oakland:

- Take 880 South to 85 South
- Take 85 South to Almaden Expressway exit
- Turn left on Almaden Plaza Way
- Turn right (south) on Almaden Expressway
- At Via Monte (third traffic light), make a U-turn
- Proceed north on Almaden Expressway approximately 1,000 feet
- Turn right (east) into the campus entrance

From Morgan Hill/Gilroy:

- Take 101 North to 85 North
- Take 85 North to Almaden Expressway exit
- Turn left on Almaden Expressway
- Cross Blossom Hill Road
- At Via Monte (third traffic light), make a U-turn
- Proceed north on Almaden Expressway approximately 1,000 feet
- Turn right (east) into the campus entrance

From Sunnyvale:

- Take Highway 87 South to 85 North
- Take Highway 85 North to Almaden Expressway exit
- Turn left on Almaden Expressway
- At Via Monte (third traffic light), make a U-turn
- Proceed north on Almaden Expressway approximately 1,000 feet
- Turn right (east) into the campus entrance

From San Francisco:

- Take 280 South to Highway 85 South
- Take Highway 85 South to Almaden Expressway exit
- Turn left on Almaden Plaza Way
- Turn right (south) on Almaden Expressway
- At Via Monte (third traffic light), make a U-turn
- Proceed north on Almaden Expressway approximately 1,000 feet
- Turn right (east) into the campus entrance

From Downtown San Jose:

- Take Highway 87 - Guadalupe Expressway South
- Exit on Santa Teresa Blvd.
- Turn right on Blossom Hill Road
- Turn left at Almaden Expressway
- At Via Monte (first traffic light), make a U-turn
- Proceed north on Almaden Expressway approximately 1,000 feet
- Turn right (east) into the campus entrance

From Walnut Creek, Concord and East Bay areas:

- Take 680 South to 280 North
- Exit Highway 87-Guadalupe Expressway South
- Exit on Santa Teresa Blvd.
- Turn right on Blossom Hill Road
- Turn left at Almaden Expressway
- At Via Monte (third traffic light), make a U-turn
- Proceed north on Almaden Expressway approximately 1,000 feet
- Turn right (east) into the campus entrance



Committee Officers
Loren Lewis, Chair
Elizabeth Sarmiento, Vice Chair

Board Representative
Tony Estremera, Board Representative
Nai Hsueh, Board Alternate
Linda J. LeZotte, Board Representative

AGENDA

ENVIRONMENTAL AND WATER RESOURCES COMMITTEE

MONDAY, JANUARY 22, 2018

6:00 p.m. – 8:00 p.m.

Santa Clara Valley Water District
Headquarters Building Boardroom
5700 Almaden Expressway
San Jose, CA 95118

Time Certain:

6:00 p.m.

1. **Call to Order/Roll Call**
2. **Time Open for Public Comment on Any Item Not on Agenda**
Comments should be limited to two minutes. If the Committee wishes to discuss a subject raised by the speaker, it can request placement on a future agenda.
3. **Approval of Minutes**
3.1 Approval of Minutes – October 16, 2017, meeting
4. **Election of Chair and Vice Chair**
5. **Action Items**
 - 5.1 Review and Approve 2017 Annual Accomplishments Report for Presentation to the Board (Committee Chair)
Recommendation: This is an action item to provide comments to the Committee Chair to share with the Board as part of the Accomplishments Report presentation pertaining to the purpose, structure, and function of the Committee.
 - 5.2 Civic Engagement (Rick Callender)
Recommendation: This is a discussion item and the Committee may provide comments if applicable, however no action is required.
 - 5.3 Update from Working Groups (Committee Chair)
Recommendation: Provide comment to the Board in the implementation of the District's mission as it applies to the working groups' recommendations.
 - 5.4 Review Environmental and Water Resources Committee Work Plan, the Outcomes of Board Action of Committee Requests and the Committee's Next Meeting Agenda (Committee Chair)
Recommendation: Review the Board-approved Committee work plan to guide the committee's discussions regarding policy alternatives and implications for Board deliberation.

6. Information Only Items

Informational only items are not for discussion or action. However, clarifying questions may be asked, and will be called for by the Chair.

6.1 Update on the District's Winter Preparedness (Raymond Fields)

Recommendation: This is an information item only and no action is required.

6.2 Receive information on shallow aquifers, dewatering, recharge, well pumping (when to use or not). (Vanessa De La Piedra)

Recommendation: This is an information item only and no action is required.

7. Clerk Review and Clarification of Committee Requests to the Board

This is a review of the Committee's Requests, to the Board (from Item 5). The Committee may also request that the Board approve future agenda items for Committee discussion.

8. Reports

Directors, Managers, and Committee members may make brief reports and/or announcements on their activities. Unless a subject is specifically listed on the agenda, the Report is for information only and not discussion or decision. Questions for clarification are permitted.

8.1 Director's Report

8.2 Manager's Report

8.3 Committee Member Reports

9. Adjourn: Adjourn to next regularly scheduled meeting at 6:00 p.m., **April 16, 2018**, in the Headquarters Building Boardroom, 5700 Almaden Expressway, San Jose, CA 95118

All public records relating to an open session item on this agenda, which are not exempt from disclosure pursuant to the California Public Records Act, that are distributed to a majority of the legislative body will be available for public inspection at the Office of the Clerk of the Board at the Santa Clara Valley Water District Headquarter Building, 5700 Almaden Expressway, San Jose, CA., 95118, at the same time that the public records are distributed or made available to the legislative body.

The Santa Clara Valley Water District will make reasonable efforts to accommodate persons with disabilities wishing to attend committee meetings. Please advise the Clerk of the Board office of any special needs by calling 1-408-630-2277.

Environmental and Water Resources Committee's Purpose and Duties

The Environmental and Water Resources Committee of the Santa Clara Valley Water District is established to assist the Board of Directors (Board) with policies pertaining to water supply, flood protection and environmental stewardship.

The specific duties are:

- Prepare policy alternatives;
- Provide comment on activities in the implementation of the District's mission; and
- Produce and present to the Board an Annual Accomplishments Report that provides a synopsis of the annual discussions and actions.

In carrying out these duties, Committee members bring to the District their respective expertise and the interests of the communities they represent. In addition, Committees may help the Board produce the link between the District and the public through information sharing to the communities they represent.



ENVIRONMENTAL AND WATER RESOURCES COMMITTEE MEETING

DRAFT MINUTES

**MONDAY, OCTOBER 16, 2017
6:00 PM**

(Paragraph numbers coincide with agenda item numbers)

A regular scheduled meeting of the Environmental and Water Resources Committee (Committee) Meeting was held on October 16, 2017, in the Headquarters Building Boardroom at the Santa Clara Valley Water District, 5700 Almaden Expressway, San Jose, California.

1. CALL TO ORDER/ROLL CALL

Chair Loren Lewis called the meeting to order at 6:00 p.m.

Members in attendance were:

<u>District</u>	<u>Representative</u>
District 1	Bonnie Bamburg Loren Lewis Rita Norton
District 2	Elizabeth Sarmiento*
District 3	Hon. Dean Chu Rev. Jethroe Moore, II Charles Taylor
District 4	Bob Levy
District 5	Hon. Tara Martin-Milius Mike Michitaka* Marc Rauser
District 6	Maya Esparza Hon. Patrick Kwok
District 7	Tess Byler Arthur M. Keller, Ph.D.*

Members not in attendance were:

<u>District</u>	<u>Representative</u>
District 4	John Bourgeois Richard Zahner
District 7	Stephen A. Jordan

*Committee members arrived as noted below.

Board members in attendance were: Director Tony Estremera, Board Representative, Director Nai Hsueh, Board Alternate and Director Linda J. LeZotte, Board Representative.

Staff members in attendance were: Glenna Brambill, Usha Chatwani, Vincent Gin, Garth Hall, and Melanie Richardson.

2. PUBLIC COMMENT

There was no one present who wished to speak.

3. APPROVAL OF MINUTES

It was moved by Ms. Tess Byler, seconded by Ms. Maya Esparza and carried by majority vote, to approve the July 17, 2017, Environmental and Water Resources Committee meeting minutes, as presented. There were two abstentions by: Ms. Rita Norton and Mr. Charles Taylor.

Mr. Mike Michitaka arrived at 6:04 p.m.

Ms. Elizabeth Sarmiento arrived at 6:11 p.m.

Dr. Arthur M. Keller arrived at 6:13 p.m.

4. ACTION ITEMS

4.1 JOINT USE TRAILS ON DISTRICT PROPERTY: STATUS AND UPDATES

Ms. Usha Chatwani reviewed the materials as outlined in the agenda item.

Ms. Melanie Richardson was available to answer questions.

Ms. Tess Byler, Hon. Tara Martin-Milius, Mr. Bob Levy, Ms. Rita Norton, Mr. Mike Michitaka. Hon. Patrick Kwok, Rev. Jethroe Moore, II, Arthur M. Keller, Ph.D. and Ms. Elizabeth Sarmiento spoke on the various aspects and concerns of trails within the county.

The Committee took no action on this agenda item.

4.2 DISCUSS UPDATE ON CA WATERFIX

Mr. Garth Hall reviewed the materials as outlined in the agenda item and an updated agenda memo was distributed.

Directors Tony Estremera and Linda J. LeZotte were available to answer questions.

Mr. Loren Lewis, Arthur M. Keller, Ph.D., Mr. Bob Levy, Mr. Mike Michitaka, Ms. Rita Norton, Hon. Patrick Kwok, Hon. Dean Chu, Rev. Jethroe Moore, II, Mr. Marc Rauser, Ms. Elizabeth Sarmiento and Hon. Tara Martin-Milius spoke on the various aspects of the pros and cons of the California Water Fix.

Ms. Rita Norton left at 8:01 p.m. and did not return.

Ms. Tess Byler left at 8:04 p.m.

Rev. Jethroe Moore, II, left at 8:09 p.m.

The Committee took no action on this agenda item.

4.3 UPDATE FROM WORKING GROUPS

Mr. Loren Lewis reviewed the materials as outlined in the agenda item. Two handouts were distributed and discussed; Performance Monitoring Calendar and Board Policy Planning Calendar.

Director Nai Hsueh was available to answer questions.

Ms. Elizabeth Sarmiento and Arthur M. Keller, Ph.D., spoke on the working groups.

Mr. Marc Rauser left at 8:19 p.m. and did not return.

Hon. Dean Chu and Hon. Patrick Kwok left at 8:20 p.m. and did not return.

Ms. Bonnie Bamburg left at 8:23 p.m. and did not return.

The Committee took no action on this agenda item.

4.4 REVIEW OF ENVIRONMENTAL AND WATER RESOURCES COMMITTEE WORK PLAN, THE OUTCOMES OF BOARD ACTION OF COMMITTEE REQUESTS AND THE COMMITTEE'S NEXT MEETING AGENDA

Mr. Loren Lewis and Ms. Glenna Brambill reviewed the materials as outlined in the agenda item.

There was a correction to work plan item #25 to change to plastic ware.

The Committee took no action on this agenda item.

5. CLERK REVIEW AND CLARIFICATION OF COMMITTEE'S REQUESTS TO THE BOARD

Ms. Glenna Brambill reported there were no Committee action items for the Board.

6. REPORTS

6.1 Director's Report

Director Tony Estremera reported on the following:

- Board Action
- Water District News
- Water Supply
- Flood Protection
- Community Outreach

6.2. Manager's Report

Mr. Garth Hall gave the following report:

- Stream Maintenance Program -Project work was being extended to the end of October
- Upcoming winter preparation
- Upcoming Outage on the San Felipe System (12-week outage for inspection and minimum repairs)

6.3 Committee Member Reports

None.

7. ADJOURNMENT

Chair Mr. Loren Lewis adjourned at 8:36 p.m. to the next regular meeting on Monday, January 22, 2018, at 6:00 p.m., in the Santa Clara Valley Water District Headquarters Boardroom.

Submitted by:

Glenna Brambill
Board Committee Liaison
Office of the Clerk of the Board

Approved:



Committee: Environmental and Water Resources
Meeting Date: 01/22/18
Agenda Item No.: 4
Unclassified Manager: Michele King
Email: mking@valleywater.org
Est. Staff Time: 5 minutes

COMMITTEE AGENDA MEMO

SUBJECT: Election of 2018 Committee Chair and Vice-Chair

RECOMMENDED ACTION:

Elect the 2018 Chair and Vice-Chair

SUMMARY:

This is an Action item:

Per the Board Resolution, the duties of the Chair and Vice-Chair are as follows:

The officers of each Committee shall be a Chairperson and Vice-Chairperson, both of whom shall be members of that Committee. The Chairperson and Vice-Chairperson shall be elected by the Committee, each for a term of one year commencing on January 1 and ending on December 31 and for no more than two consecutive terms. The Committee shall elect its officers at the first meeting of the calendar year. All officers shall hold over in their respective offices after their term of office has expired until their successors have been elected and have assumed office.

The Chairperson shall preside at all meetings of the Committee, and he or she shall perform other such duties as the Committee may prescribe consistent with the purpose of the Committee.

The Vice-Chairperson shall perform the duties of the Chairperson in the absence or incapacity of the Chairperson. In case of the unexpected vacancy of the Chairperson, the Vice-Chairperson shall perform such duties as are imposed upon the Chairperson until such time as a new Chairperson is elected by the Committee.

Should the office of Chairperson or Vice-Chairperson become vacant during the term of such office, the Committee shall elect a successor from its membership at the earliest meeting at which such election would be practicable, and such election shall be for the unexpired term of such office.

Should the Chairperson and Vice-Chairperson know in advance that they will both be absent from a meeting, the Chair may appoint a Chairperson Pro-tempore to preside over that meeting. In the event of an unanticipated absence of both the Chairperson and Vice-Chairperson, the Committee may elect a Chairperson Pro-tempore to preside over the meeting in their absence.

BACKGROUND:

The District Act provides for the creation of advisory boards, committees, or commissions by resolution to serve at the pleasure of the Board.

Accordingly, the Board has established Advisory Committees, which bring respective expertise and community interest, to advise the Board, when requested, in a capacity as defined: prepare Board policy alternatives and provide comment on activities in the implementation of the District's mission for Board consideration. In keeping with the Board's broader focus, Advisory Committees will not direct the implementation of District programs and projects, other than to receive information and provide comment.

Further, in accordance with Governance Process Policy-3, when requested by the Board, the Advisory Committees may help the Board produce the link between the District and the public through information sharing to the communities they represent.

The Board may also establish Ad-hoc Committees to serve in a capacity as defined by the Board and will be used sparingly.

ATTACHMENT(S):

None



Committee: Environmental and Water Resources
Meeting Date: 01/22/18
Agenda Item No.: 5.1
Unclassified Manager: Michele King
Email: mking@valleywater.org
Est. Staff Time: 10 minutes

COMMITTEE AGENDA MEMO

SUBJECT: Approve 2017 Annual Accomplishments Report for Presentation to the Board

RECOMMENDED ACTION:

1. Approve the 2017 Accomplishments Report for presentation to the Board.
2. Provide comments to the Committee Chair to share with the Board as part of the Accomplishments Report presentation pertaining to the purpose, structure, and function of the Committee

SUMMARY:

This is an ACTION item:

The Accomplishments Report summarizes the committee's discussions and actions to prepare Board policy alternatives and implications for Board deliberation throughout 2017. The Committee Chair, or designee, presents the Accomplishments Report to the Board at a future Board meeting.

The Committee may provide feedback to the Committee Chair, at this time, to share with Board as part of the Accomplishments Report presentation pertaining to the purpose, structure, and function of the Committee.

BACKGROUND:

Governance Process Policy-8:

The District Act provides for the creation of advisory boards, committees, or commissions by resolution to serve at the pleasure of the Board.

Accordingly, the Board has established Advisory Committees, which bring respective expertise and community interest, to advise the Board, when requested, in a capacity as defined: prepare Board policy alternatives and provide comment on activities in the implementation of the District's mission for Board consideration. In keeping with the Board's broader focus, Advisory Committees will not direct the implementation of District programs and projects, other than to receive information and provide comment.

Further, in accordance with Governance Process Policy-3, when requested by the Board, the Advisory Committees may help the Board produce the link between the District and the public through information sharing to the communities they represent.

ATTACHMENT(S):

Attachment 1: Environmental and Water Resources Committee 2017 Accomplishments Report

2017 Annual Accomplishments Report: Environmental and Water Resources Committee

Update: January 2018

GP8. Accordingly, the Board has established Advisory Committees, which bring respective expertise and community interest, to advise the Board, when requested, in a capacity as defined: prepare Board policy alternatives and provide comment on activities in the implementation of the District's mission for Board consideration. In keeping with the Board's broader focus, Advisory Committees will not direct the implementation of District programs and projects, other than to receive information and provide comment.

The annual work plan establishes a framework for committee discussion and action during the annual meeting schedule. The committee work plan is a dynamic document, subject to change as external and internal issues impacting the District occur and are recommended for committee discussion. Subsequently, an annual committee accomplishments report is developed based on the work plan and presented to the District Board of Directors.

ITEM	WORK PLAN ITEM	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
1	Annual Accomplishments Report	<ul style="list-style-type: none"> Review and approve 2016 Accomplishments Report for presentation to the Board. (Action) Provide comments to the Board, as necessary. 	<p>Accomplished January 23, 2017: The Committee reviewed and approved the 2016 Accomplishments Report for presentation to the Board.</p> <p><i>The Board received the 2016 Accomplishments report at their March 28, 2017, meeting.</i></p>
2	Election of Chair and Vice Chair for 2017	<ul style="list-style-type: none"> Committee Elects Chair and Vice Chair for 2017. (Action) 	<p>Accomplished January 23, 2017: The Committee elected the 2017 Committee Chair and Vice-Chair, Mr. Loren Lewis and Ms. Elizabeth Sarmiento respectively.</p>

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

Attachment 1
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**2017 Annual Accomplishments Report:
Environmental and Water Resources Committee**

Update: January 2018

ITEM	WORK PLAN ITEM	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
3	Water Supply Update and Drought Response (Demand Management Strategies and Portfolio)	<ul style="list-style-type: none"> • Receive update on water supply and drought response. (Action) • Provide comments to the Board, as necessary. 	<p><u>Accomplished January 23, 2017:</u> The Committee received information on the water supply and drought response and took no action.</p> <p><u>Accomplished July 17, 2017:</u> The Committee received information on the water supply and drought response and took no action.</p>
4	Review of Environmental and Water Resources Committee Work Plan, the Outcomes of Board Action of Committee Requests and the Committee's Next Meeting Agenda	<ul style="list-style-type: none"> • Receive and review the 2017 Board-approved Committee work plan. (Action) • Submit requests to the Board, as appropriate. 	<p><u>Accomplished January 23, 2017:</u> The Committee reviewed the 2017 Work Plan and took the following actions:</p> <p><u>The Committee requested to make sure the following items are added to the work plan:</u></p> <ul style="list-style-type: none"> • Discussion on energy use policy. • Receive an audit on the District's environmental/disposable products from food services (catering). <p><u>Accomplished April 17, 2017:</u> The Committee reviewed the 2017 Work Plan and took the following actions:</p> <p><u>The Committee requested to add the following items to the work plan:</u></p> <ul style="list-style-type: none"> • Discussion on energy use policy. • Receive an audit on the District's environmental/disposable products from food services (catering).

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

Attachment 1
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**2017 Annual Accomplishments Report:
Environmental and Water Resources Committee**

Update: January 2018

ITEM	WORK PLAN ITEM	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
			<p><u>Accomplished July 17, 2017:</u> The Committee reviewed the 2017 Work Plan and took the following actions:</p> <p><u>The Committee requested to add the following items to the work plan:</u></p> <ul style="list-style-type: none"> • Habitat Conservation Plan and • An overview of the District's Flood Protection Management Plan. <p><u>Accomplished October 16, 2017:</u> The Committee reviewed the 2017 Work Plan and took no action.</p>
5	<p>Status of Working Groups/Realignment of Working Groups</p>	<ul style="list-style-type: none"> • Receive updates on the status of the working groups (realignment). (Action) • Submit requests to the Board, as appropriate. 	<p><u>Accomplished January 23, 2017:</u> The Committee discussed the working groups and chose to have the groups align with the Board's schedule and calendar.</p> <p><u>Accomplished April 17, 2017:</u> The Committee discussed the working groups and chose 7 groups to sign up for.</p> <p><u>Accomplished July 17, 2017:</u> The Committee discussed the possibility of joining working groups: #3. Climate Change Mitigation #4. Climate Change and Sea Level Rise Adaptation</p> <p><u>Accomplished October 16, 2017:</u> The Committee discussed the working groups and chose to have the groups align with the Board's schedule and calendar.</p>

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

Attachment 1
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**2017 Annual Accomplishments Report:
Environmental and Water Resources Committee**

Update: January 2018

ITEM	WORK PLAN ITEM	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
6	Review and Comment to the Board on the Fiscal Year 2018 Proposed Groundwater Production Charges	<ul style="list-style-type: none"> Review and comment to the Board on the Fiscal Year 2018 Proposed Groundwater Production Charges. (Action) Provide comments to the Board, as necessary. 	<p>Accomplished April 17, 2017: The Committee reviewed the Fiscal Year 2018 Proposed Groundwater Production Charges and took no action.</p>
7	Receive a brief report of the ongoing discussion with the Sierra Club and District on Water Planning.	<ul style="list-style-type: none"> Receive a brief report of the ongoing discussion with the Sierra Club and District on Water Planning. (Information) Provide comments to the Board, as necessary. 	<p>Accomplished April 17, 2017: The Committee received a brief report of the ongoing discussion with the Sierra Club and District on Water Planning and took no action.</p>
8	Socially Responsible Investment Policy	<ul style="list-style-type: none"> Receive information regarding the principles of socially responsible investment policy and provide comments, if applicable. (Information) 	<p>Accomplished July 17, 2017: The Committee received information regarding the principles of socially responsible investment policy and took the following action:</p> <ul style="list-style-type: none"> The Committee approved by majority vote that the Committee would support the Socially Responsible Investment Policy.
9	Santa Clara Valley Water District Communications and Community Engagement Program Update	<ul style="list-style-type: none"> Receive information on District Communications and Community Engagement Program Update. (Information) 	<p>Accomplished July 17, 2017: The Committee received information on District Communications and Community Engagement Program Update and took no action.</p>

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

Attachment 1
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**2017 Annual Accomplishments Report:
Environmental and Water Resources Committee**

Update: January 2018

ITEM	WORK PLAN ITEM	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
10	Board Feedback on the Safe, Clean Water and Natural Flood Protection Program (Safe, Clean Water Program)	<ul style="list-style-type: none"> Discussion on Board Feedback on the Safe, Clean Water and Natural Flood Protection Program (Safe, Clean Water Program). (Action) Provide comments to the Board, as necessary. 	<p><u>Accomplished July 17, 2017:</u> The Committee received information Board Feedback on the Safe, Clean Water and Natural Flood Protection Program (Safe, Clean Water Program) and took no action.</p>
11	One Water Plan – July 2017 Update	<ul style="list-style-type: none"> Receive an update on the One Water Plan. (Action) Provide comments to the Board, as necessary. 	<p><u>Accomplished July 17, 2017:</u> The Committee received an update on the One Water Plan and took the following action:</p> <ul style="list-style-type: none"> The Committee unanimously approved accepting the One Water Plan concept and encouraged the broad perspective in how the District is looking at the watersheds and wa uses throughout the County and the broad approach to encompass all aspects.
12	Overview of Hydraulic Fracturing (Fracking)	<ul style="list-style-type: none"> Overview of Hydraulic Fracturing (Fracking) (Action) Provide comments to the Board, as necessary. 	<p><u>Accomplished July 17, 2017:</u> The Committee received an overview of hydraulic fracturing (fracking) and took the following action:</p> <ul style="list-style-type: none"> The Committee by majority vote to encourage that the Board of Directors consider taking action on a moratorium on fracking policy and then contacting the Board of Supervisors to ask that they support this policy and to enact a county-wide ban on new or increased fracking within the County of Santa Clara.

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

Attachment 1
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**2017 Annual Accomplishments Report:
Environmental and Water Resources Committee**

Update: January 2018

ITEM	WORK PLAN ITEM	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
			<p><i>Board postponed taking action on the agenda item until January 9, 2018.</i></p> <p><i>The Board took the following action at their January 9, 2018, meeting: "Agendize on a future agenda, inline when the County Board of Supervisors are considering this subject, for the Board to consider an ordinance or Board policy on the subject."</i></p>
13	Update on Joint Use of Trails	<ul style="list-style-type: none"> Receive information on the joint use of trails. (Information) 	<p>Accomplished October 16, 2017: The Committee received information on the joint use of trails and took no action</p>
14	Update on the CAWater Fix	<ul style="list-style-type: none"> Receive an update on the CAWater Fix (Action) Provide comments to the Board, as necessary. 	<p>Accomplished October 16, 2017: The Committee received an update on the CAWater Fix and took no action.</p>

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

Attachment 1
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Committee: Environmental and Water Resources
Meeting Date: 01/22/18
Agenda Item No.: 5.2
Unclassified Manager: Rick Callender
Email: rcallender@valleywater.org
Est. Staff Time: 15 minutes

COMMITTEE AGENDA MEMO

SUBJECT: Civic Engagement

RECOMMENDED ACTION:

This is a discussion item and the Committee may provide comments if applicable, however no action is required.

SUMMARY:

This is an update to the committee regarding the programs and projects in the Office of Civic Engagement

BACKGROUND:

The Office of Civic Engagement (OCE) was officially formalized on August 28, 2017. The purpose of the new unit is to advance and build positive and proactive relationships with the community through engagement, education, and partnerships. The programs and projects in the unit are designed to provide the community with access to resources and opportunities that will help build understanding, trust, and support for the District's goals and mission.

The OCE is organized into two (2) program areas:

Community Benefits Program

1. Safe, Clean Water Grants & Partnerships Program
2. Creek Stewardship
3. Public Arts & Signage

Water Education & Volunteer Program

1. District Volunteer Project
2. Water Education Outreach
3. Recycled Water Outreach

Water Education & Volunteer Program

The Office of Civic Engagement is in the process of expanding the Water Education and Volunteer Program in a way that will help further the District's goals in water education and diversity engagement. Currently, the Program includes the following project areas: Recycled Water Outreach, Water Education Outreach, and a new District Volunteer pilot project.

A. District Volunteer Project. The goal of this new project is to develop an integrated and robust volunteer experience that engages a diverse group of volunteers to expand opportunities beyond just creek cleanups to other functions and areas within the District that could benefit from volunteer support. The first two project areas that will be expanded by volunteer support include the Water Education and Recycled Water Outreach projects to add bilingual teachers and tour docents to not only support those projects areas with trained volunteer resources, but to also further the OCE Unit's goal of diversity engagement. Having bilingual volunteers will allow the District to engage diverse communities that might not be accomplished otherwise.

Staff is currently working on developing a project plan to launch a new District Volunteer project in early 2018. Staff is gathering information from similar volunteer programs throughout the County to better understand structure, training programs, HR compliance and regulatory issues, background clearance and projected costs among other items, to build out our own program.

The volunteer project will include the following components and elements that are still under development for an early spring 2018 launch:

- a. Volunteer Staff Advisory Group - Form staff advisory group of influential volunteer leaders to help build and recruit other interested volunteers and provide input on volunteer opportunities.
- b. Bilingual Volunteers - Recruit and train a cadre of 5 -10 bilingual volunteers initially to serve as either education teacher aids, and/or tour docents for facility tours at the Silicon Valley Advanced Water Purification Center and/or other facilities, open house events, or special projects.
- c. Adopt-A-Creek Volunteers - Continue to grow and expand Adopt-a-Creek volunteers for creek cleanups and other potential volunteer opportunities.
- d. Ambassador program - Develop District ambassadors in which volunteers get specific training on local water issues and messaging. Ambassadors will then and serve as neighborhood leads in distributing messages when needed.

B. Water Education Outreach Project Area. The goal of the Water Education Outreach project area is to provide educational programming and outreach to students and youth about important water issues but also District projects and initiatives, as well as to showcase the type of careers possible with the District. Project staff have been busy presenting at libraries and in classrooms, leading field trips at the District's five outdoor classrooms and fielding many other requests for educational programming.

Silicon Valley Boys and Girls Clubs - Staff visited all the first and second graders at the local clubs over the Spring and repeated the visits again over the Summer to the third and fourth graders. Staff presented activities focused on watersheds, water pollution, the water cycle, and salmon survival.

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15,000 students annually; by the end of December, staff expects to have reached close to 6,000 students through our lessons and outreach.

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Looking ahead, staff will look to expand the project area by providing bilingual volunteer teachers and docents to support project goals, and provide engagement opportunities to community members interested in enrichment and volunteering opportunities. Staff will also be targeting outreach to Middle Schools, South County & underserved communities, and ensuring that curriculum is aligned with the Next Generation Science Standards, and furthering school partnerships. Staff will also be furthering the District Flood Awareness campaign & outreach by incorporating a flood awareness coloring contest and furthering school partnerships

C. Recycled Water Outreach Project. Since the reorganization, staff has focused further on expanding potable reuse education and outreach, specifically under stakeholder engagement and multi-cultural outreach efforts where several key milestones were met.

Multi-cultural outreach - Efforts have included extensive outreach to the Asian community this summer to promote the recycled and purified water program and tours, as well as a hosting a hugely successful Asian Community Tour Day event that was part of staff's strategy to increase the District's visibility in the Asian community. The Asian Community Tour Day was held on July 15, 2017 at the Silicon Valley Advanced Water Purification Center. The event was well-attended with 250 community members attending, well above the projected number of 100 people. Directors Nai Hsueh and Richard P. Santos met guests with welcome remarks, and tours were offered in multiple languages of English, Chinese, and Vietnamese.

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Currently, staff is wrapping up a potable reuse opinion survey and working on securing a Social Marketing/Media contractor within the next few months to develop a Potable Reuse social media plan that addresses Direct Potable Reuse. Looking ahead, staff will also plan for ways to incorporate volunteer support in the form of bilingual tour docents and provide training to volunteers to assist in this effort to engage with diverse and multi-ethnic communities.

Community Benefits Program

The development of the Community Benefits Program demonstrates the District's commitment to providing opportunities that will make positive and sustainable social impacts in the communities that we serve. The programs and projects under Community Benefits Program will provide access to resources, engage, and collaborate with community members through grants and partnerships, creek stewardship volunteerism, and public arts projects.

A. Safe Clean Water Grants & Partnerships. Reorganizing the Safe, Clean Water Grants & Partnerships Program (SCW Grants Program) under the Office of External Affairs allows the District to increase our engagement with the community as well as broaden the reach and impact of our grant and partnership dollars. With the SCW Grants Program closely connected to the other units under External Affairs, staff is able to coordinate broader outreach efforts with Communications and Government Relations and stay closely connected with the needs and concerns of the community through Community Engagement and the Education programs.

Below is the current status for each SCW priority:

SCW Program Priority	# Funded Projects	Total Funding Awarded	FY2018 Status
A2 - Hydration Stations	50	\$250,000	5 additional schools to fund
B3 - Pollution Prevention	12	\$1.8 M	Funding released Nov 1; due Jan 12, 2018
B7 - Volunteer Cleanup & Education	7	\$350,000	Funding released Aug 4 - Oct 27; funding decisions Mar 2018
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D3 - Restoration	22	\$4 M	Anticipated release Jan 2018
D3 - Mini-grants	0	\$ 0	Funding released Jul 31; apps accepted ongoing until all funding is awarded

Moving forward, staff will prioritize three areas for the SCW Grants Program: *Engagement, Outreach, and Efficiency*. Staff intends to get more engaged with grantees and their projects by conducting more site visits, providing timely technical assistance, and staying engaged with project status. Grantees' projects are intended to be an extension of the District's positive impacts to the community, therefore, establishing strong relationships with grantees allows staff to not only stay connected but also have a stronger presence as the project moves along to completion. Staff is also committed to expanding our outreach efforts. In order for projects to be more diverse and have a broader community impact, the outreach efforts to ensure a more diverse pool of applicants is critical. For FY2018's grant cycle, Staff has conducted outreach in communities that have not submitted project proposals in the past and hopes to build more relationships in the community to encourage more active participation in our grants & partnerships program. Staff is also seeking to utilize partnership funding to expand the District's impact in underserved communities.

For the grant cycles in FY2018, the District piloted an online grants application system to streamline the application process. All applications were submitted online and are also currently being reviewed and evaluated through the online system. Staff is seeking to expand the grants system to also include the management of the grant-funded projects once awarded. Grantees will be able to submit invoices, project status reports, and other supporting documents all through the online system with built in forms and templates to make the process easier and more efficient for the grantees and staff. Staff is working with Procurement to solicit bids for a vendor that will be able to implement the expansive grants management system to provide

greater efficiency for the program. Staff anticipates implementing the full grants management system in FY2019.

B. Creek Stewardship. The District continues to receive active and increasing participation from the community for our various cleanup efforts. Through all our cleanup projects, volunteers contribute thousands of in-kind service hours and remove hundreds of thousands of pounds of trash throughout Santa Clara County (County). There are currently 139 Adopt-A-Creek (AAC) partners that actively coordinate bi-annual cleanups at their adopted sites. The District also coordinates the One-Day Use Permits project and have already provided 36 one-day permits this calendar year for cleanups. Additionally, the District continues to host annually the National River Cleanup Day (NRCD) and Coastal Cleanup Day (CCD). This year, 1,251 volunteers for NRCD cleaned 48 sites (65 miles of creek) and collected 36,494lbs of trash. For CCD, 1,892 volunteers cleaned 50 sites (68 miles) and picked up 50,838lbs of trash. On September 30th, the District worked with the Board to host the Coyote Creek Cleanup, where 136 volunteers gathered at two sites and collected a total of 5.25 tons of trash.

Creek Stewardship Cleanup Efforts Achievements 2017 (to date) <i>National River Cleanup Day (May) Coastal Cleanup Day (Sept) Coyote Creek Cleanup (Sept)</i>	
# of Volunteers	3,279
# of Volunteer Hours	13,116
# of Creek Miles Cleaned	133.37
# lbs of trash removed	101,092
Total of Hours In-Kind Value	\$367,248

Staff is working to continually improve how we coordinate our cleanup efforts, collect data, and support the volunteerism for the projects. For the AAC project, staff is developing an interactive GIS map that will allow the public to locate all the creeks on District property. The map would identify adoptable creek sections as well as the ones that are currently adopted. The map would allow the public to submit the adoption form directly online to streamline the process and allow for residents to research areas of interest and easily register as AAC partners. Staff established an online reporting form to capture the number of volunteers, pounds of trash collected, miles of creek cleaned, and pictures of the trash that was collected via Access Valley Water. This will allow the District to start collecting more data for AAC and the One-Day Use Permit projects.

C. Public Arts & Signage. Staff is in the process of developing the Public Arts & Signage program that will utilize art to convey messages about water conservation, environmental protection and stewardship, pollution prevention, and other District values. Creating art projects throughout the County will allow the District to have a presence and be a part of the culture and fabric of the various communities we serve. Additionally, the public art projects will further educate, bring awareness, and build community support around stream stewardship, environmental protection, water conservation, among other District efforts and initiatives. Staff has developed an outline of the program which will initially consist of the following two components:

1. **Adopt-A-Bench Project** - Revitalize interpretive signs & benches by allowing the public to “adopt” a bench and propose an artistic design for the bench.
2. **Art Grants** - Award grants to the community to collaborate on public arts projects (i.e. murals, art installation)

In FY2018, staff will continue to research and gather information to build out the components of the program. Staff is working to reach out to all the cities in the County to understand the procedures for commissioning public arts within each respective jurisdiction. Staff is also working to identify the locations of all the District's interpretive signs and benches to develop an interactive GIS map, similar to the Adopt-A-Creek project. The map will allow the public to view information about the benches & signage and, if interested, submit a form to "adopt" the bench and propose an art design. Staff anticipates piloting the program with 7 adoptable benches in FY2018, with one bench in each Board Member's district. Staff intends to request resources through the FY2019 budget process to carry out the program.

ATTACHMENT(S):

- Attachment 1: Community Benefits Program Overview
- Attachment 2: Water Education & Volunteer Program
- Attachment 3: PowerPoint

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Civic Engagement Unit

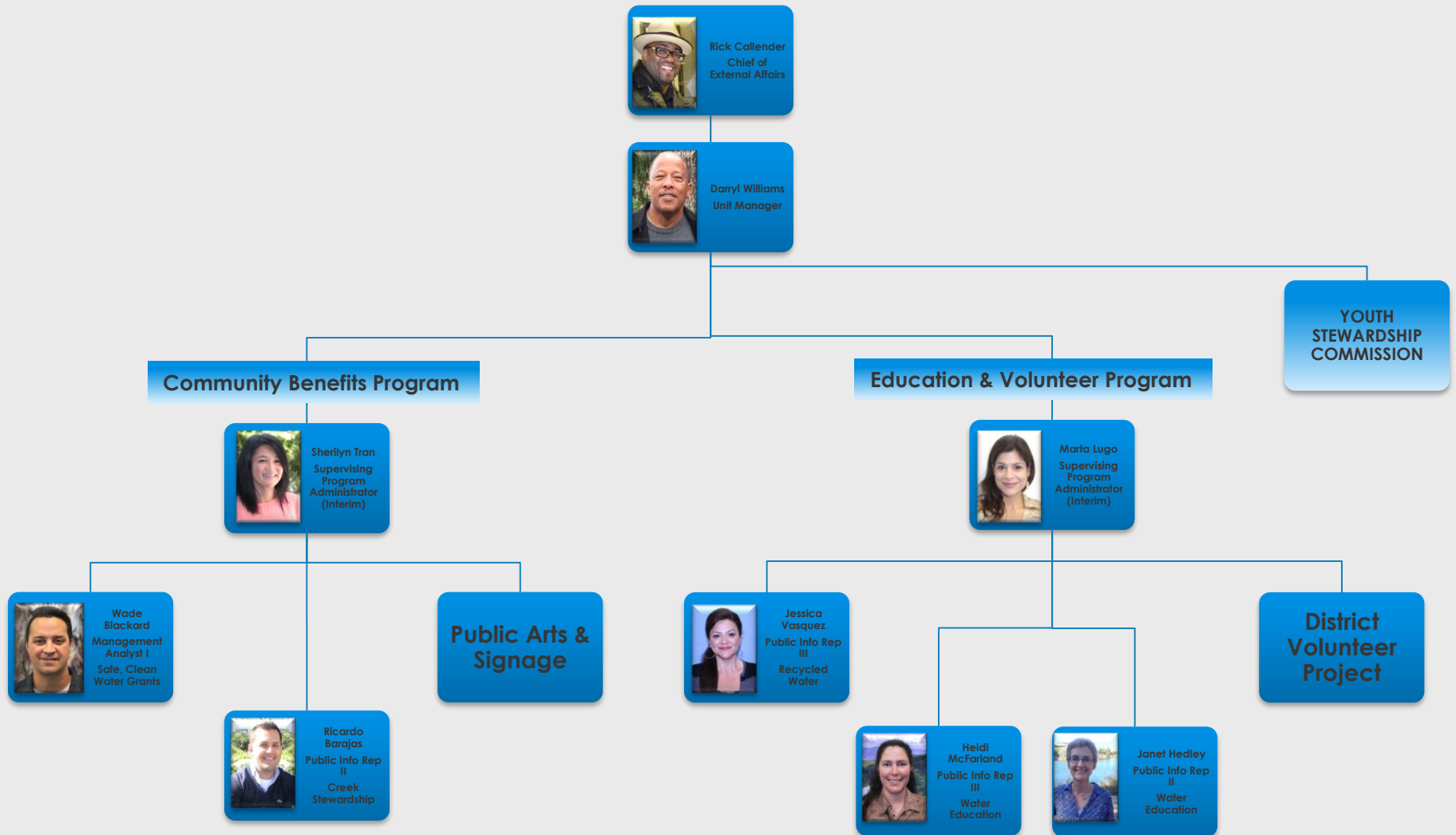
Board Presentation
December 12, 2017



Value Statement

The purpose of the **Office of Civic Engagement** is to advance and **build positive and proactive relationships** with the **community** through **engagement, education, and partnerships**. The programs and projects in the unit are designed to provide the community with **access to resources** and **opportunities** that will help **build understanding, trust, and support** for the District's goals and mission.

Civic Engagement Structure



Community Benefits Program

Safe, Clean Water Grants & Partnerships



Photo: SF Bay Wildlife Society Project funded by B3 Pollution Prevention

Creek Stewardship



Photo: National River Cleanup Day Volunteers

Public Arts & Signage



Photo: Acquired from Internet - unknown location/artist

Safe, Clean Water Grants Program

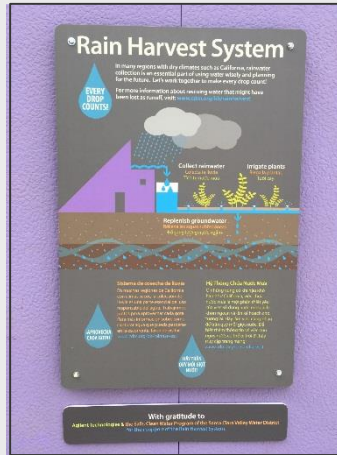


Foothills Park Riparian Enhancement Project

2014 Safe, Clean Water Grant
July 2014 - June 2017

(A3760R)

Lead Agency: Grassroots Ecology/Acterra
Partner Agency: City of Palo Alto



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Engagement

more site visits, timely technical assistance, engaged with project progression

Outreach

broader outreach into underserved communities, expand impact of grant dollars

Efficiency

implement Grants Management System to streamline pre and post award process for staff and grantees

Creek Stewardship

Creek Stewardship Cleanup Efforts Achievements 2017 (to date)

National River Cleanup Day (May) Coastal Cleanup Day (Sept) Coyote Creek Cleanup (Sept)

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Public Arts & Signage

Using **art** to convey messages about **water conservation**, **environmental protection** and **stewardship**, **pollution prevention**, and other **District values** throughout the county, will allow the District to be a part of the **culture** and **fabric** of the various **communities we serve**.

Adopt A Bench



Art Grants



Water Education & Volunteer Program

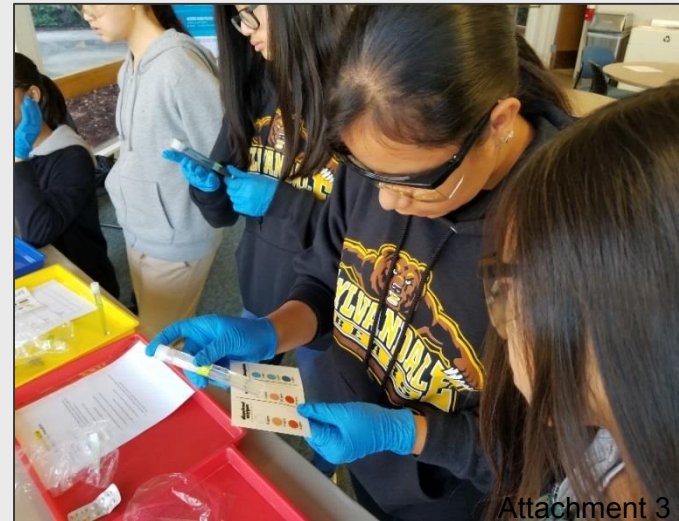
District Volunteer



Recycled Water Outreach



Water Education Outreach



District Volunteer Project

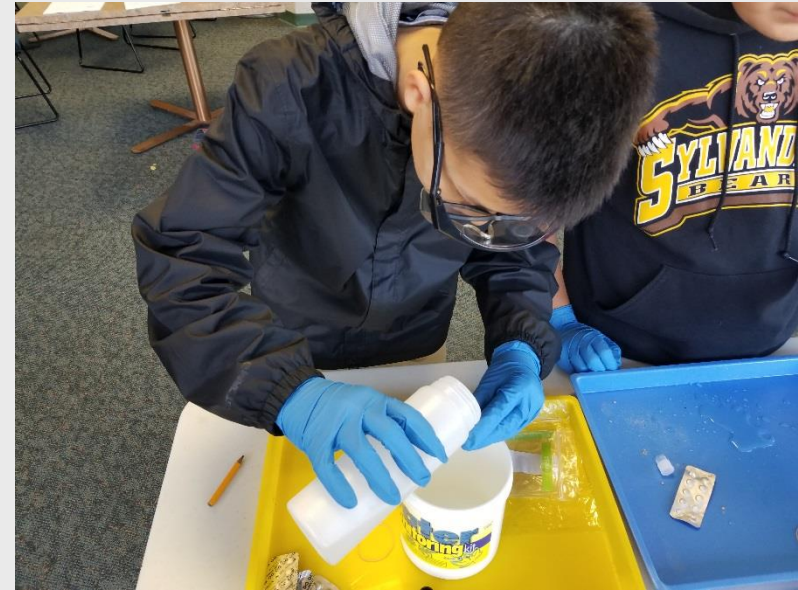
Create a robust **volunteer experience** that engages a **diverse** group of volunteers to **expands opportunities** beyond just creek cleanups to other functions and areas within the District that could benefit from **volunteer support**



Water Education

Successes and Milestones 2017

- County and City Library Outreach
- Summer Camp Programming
- First Lego-League Hydrodynamics Fall Tours & Presentations



Water Education

Looking ahead...

- Add Volunteers & Bilingual Tour Docents
- Targeted Schools outreach
- Flood Awareness & Recycled & Purified Water Outreach



Recycled Water

Success & Milestones

- Asian Community Tour Day on July 15
- Youth Tours at SVAWPC
- Community & Employee Outreach



Recycled Water

Looking ahead...

- Develop Bilingual Volunteer Tour Docent Program
- Multi-Ethnic Outreach & Special Events
- Social Marketing/ Media Campaign



Youth Commission

Foster greater involvement of **youth** in local government to **inspire** and develop **future public policy leaders** and professionals with an **awareness** of issues and activities relating to **water supply, conservation, flood protection, and stream stewardship.**



City of Fresno Youth Commission



Highlights of Key Accomplishments



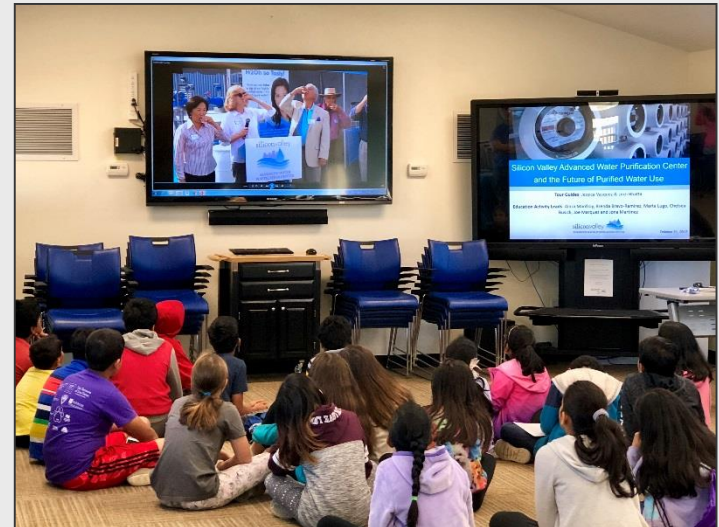
Asian Community Tour Day, July 15



Volunteer Recognition Awards, August 29



Coyote Creek Cleanup Day, September 30



1st Lego League SVAWPC Tour, October 21

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Committee: Environmental and Water Resources
Meeting Date: 01/22/18
Agenda Item No.: 5.3
Unclassified Manager: Michele King
Email: mking@valleywater.org
Est. Staff Time: 5 minutes

COMMITTEE AGENDA MEMO

SUBJECT: Update from Working Groups

RECOMMENDED ACTION:

Provide comments to the Board on implementation of District mission applicable to working groups' recommendations.

SUMMARY:

At the Committee's January 2017 meeting, the Committee would like to see the working groups more aligned with the issues and policies that the Board of Directors has on their work plan and calendar for this year.

The Board approved the Committee's request to keep the Committee informed of the working groups' activities and results.

This will be a standing agenda item.

BACKGROUND:

The District Act provides for the creation of advisory boards, committees, or commissions by resolution to serve at the pleasure of the Board.

Accordingly, the Board has established Board Committees, which bring respective expertise and community interest, to advise the Board, when requested, in a capacity as defined: prepare Board policy alternatives and provide comment on activities in the implementation of the District's mission for Board consideration. In keeping with the Board's broader focus, Board Committees will not direct the implementation of District programs and projects, other than to receive information and provide comment.

Further, in accordance with Governance Process Policy-3, when requested by the Board, the Board's Committees may help the Board produce the link between the District and the public through information sharing to the communities they represent.

ATTACHMENT(S):

Attachment 1: Working Groups Spreadsheet

2018 EWRC Independent Working Groups

Name	1. District's Communications Programs/Civic Engagement (Review Transparency Report)	2. Winter Preparedness	3. Climate Change Mitigation	4. Climate Change and Sea Level Rise Adaptation	5. Riparian Corridor Ordinance, Encroachment Process	6. Endangered Species (Drought/Environmental Impacts)	7. Joint Use of Trails	8. Open Space Credit	Total Groups Joined
New Groups to Align with Board's Calendars/Work Plans									
Bonnie Bamburg									0
John Bourgeois									0
Tess Byler	1			1					2
Hon. Dean Chu									0
Patricia Colombe									0
Maya Esparza	1						1		2
Stephen A. Jordan									0
Arthur M. Keller, Ph.D.			1	1					2
Hon. Patrick S. Kwok									0
Loren B. Lewis									0
Bob Levy									0
Tara Martin-Milius	1		1	1					3
Sachihiko Michitaka					1				1
Rev, Jethroe Moore II				1			1		2
Rita Norton	1		1		1				3
Marc Rauser									0
Elizabeth Sarmiento						1			1
Charles Taylor									0
Richard Zahner									0
Total Members	4	0	3	4	2	1	2	0	16

No District Staff hours are provided to support the working groups

Members should limit the number of working groups they participate in because of possible Brown Act Violations (2-3 groups only)

Please Note: You will be sharing your phone number and email address with the other members when signing up.

When planning meetings, the Group Chair (Lead) should contact Glenna via email with meeting date/time and location and how many members are expected to attend.

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Committee: Environmental and Water Resources
Meeting Date: 01/22/18
Agenda Item No.: 5.4
Unclassified Manager: Michele King
Email: mking@valleywater.org
Est. Staff Time: 5 minutes

COMMITTEE AGENDA MEMO

SUBJECT: Review Environmental and Water Resources Committee Work Plan, the Outcomes of Board Action of Committee Requests; and the Committee's Next Meeting Agenda.

RECOMMENDED ACTION:

Review the Board-approved Committee work plan to guide the Committee's discussions regarding policy alternatives and implications for Board deliberation.

SUMMARY:

The attached Work Plan outlines the Board-approved topics for discussion to be able to prepare policy alternatives and implications for Board deliberation. The work plan is agendaized at each meeting as accomplishments are updated and to review additional work plan assignments by the Board.

BACKGROUND:

Governance Process Policy-8:

The District Act provides for the creation of advisory boards, committees, or committees by resolution to serve at the pleasure of the Board.

Accordingly, the Board has established Advisory Committees, which bring respective expertise and community interest, to advise the Board, when requested, in a capacity as defined: prepare Board policy alternatives and provide comment on activities in the implementation of the District's mission for Board consideration. In keeping with the Board's broader focus, Advisory Committees will not direct the implementation of District programs and projects, other than to receive information and provide comment.

Further, in accordance with Governance Process Policy-3, when requested by the Board, the Advisory Committees may help the Board produce the link between the District and the public through information sharing to the communities they represent.

ATTACHMENT(S):

Attachment 1: Environmental and Water Resources Committee 2018 Work Plan
Attachment 2: Environmental and Water Resources Committee April 2018 Draft Agenda

2018 Work Plan: Environmental and Water Resources Committee

Update: November 2017

GP8. Accordingly, the Board has established Advisory Committees, which bring respective expertise and community interest, to advise the Board, when requested, in a capacity as defined: prepare Board policy alternatives and provide comment on activities in the implementation of the District's mission for Board consideration. In keeping with the Board's broader focus, Advisory Committees will not direct the implementation of District programs and projects, other than to receive information and provide comment.

The annual work plan establishes a framework for committee discussion and action during the annual meeting schedule. The committee work plan is a dynamic document, subject to change as external and internal issues impacting the District occur and are recommended for committee discussion. Subsequently, an annual committee accomplishments report is developed based on the work plan and presented to the District Board of Directors.

ITEM	WORK PLAN ITEM	MEETING	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
1	Annual Accomplishments Report	January 22	<ul style="list-style-type: none"> Review and approve 2017 Accomplishments Report for presentation to the Board. (Action) Provide comments to the Board, as necessary. 	
2	Election of Chair and Vice Chair for 2018	January 22	<ul style="list-style-type: none"> Committee Elects Chair and Vice Chair for 2018. (Action) 	
3	Winter Preparedness Update	January 22	<ul style="list-style-type: none"> Receive information on the District's Winter Preparedness. (Information) 	

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

Attachment 1
Page 1 of 4

ITEM	WORK PLAN ITEM	MEETING	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
4	Civic Engagement	January 22	<ul style="list-style-type: none"> Receive feedback from Committee per Transparency Audit. (Action) Provide comments to the Board, as necessary. 	
5	Receive information on shallow aquifers, dewatering, recharge, well pumping (when to use or not).	January 22	<ul style="list-style-type: none"> Receive information on shallow aquifers, dewatering, recharge, well pumping (when to use or not). (Information) Provide comments to the Board, as necessary. 	
6	Review of Environmental and Water Resources Committee Work Plan, the Outcomes of Board Action of Committee Requests and the Committee's Next Meeting Agenda	January 22 April 16 July 16 October 15	<ul style="list-style-type: none"> Receive and review the 2018 Board-approved Committee work plan. (Action) Submit requests to the Board, as appropriate. 	
7	Status of Working Groups	January 22 April 16 July 16 October 15	<ul style="list-style-type: none"> Receive updates on the status of the working groups (realignment). (Action) Submit requests to the Board, as appropriate. 	
8	Overview of District's Flood Protection Management Plan	April 16	<ul style="list-style-type: none"> Receive information on the District's Flood Protection Management Plan. (Information) 	

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

ITEM	WORK PLAN ITEM	MEETING	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
9	Review and Comment to the Board on the Fiscal Year 2019 Proposed Groundwater Production Charges	April 16	<ul style="list-style-type: none"> Review and comment to the Board on the Fiscal Year 2019 Proposed Groundwater Production Charges. (Action) Provide comments to the Board, as necessary. 	
10	Discussion on Environmental Issues-Endangered Species, Drought Environmental Impacts	April 16	<ul style="list-style-type: none"> Discuss the environmental issues-endangered species, drought environmental impacts. (Action) Provide comments to the Board, as necessary. 	
11	Energy Use Policy Discussion	July 16	<ul style="list-style-type: none"> Discuss any District energy policies. (Action) Provide comments to the Board, as necessary. 	
12	Habitat Conservation Plan	July 16	<ul style="list-style-type: none"> Update on the Habitat Conservation Plan (Information) 	

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors

ITEM	WORK PLAN ITEM	MEETING	INTENDED OUTCOME(S) (Action or Information Only)	ACCOMPLISHMENT DATE AND OUTCOME
13	Discussion on the District's Water Resources Protection Ordinance	July 16	<ul style="list-style-type: none"> Discuss the District's Water Resources Protection Ordinance. (Action) Provide comments to the Board, as necessary. 	
14	Climate Change Mitigation – Carbon Neutrality by 2020 Program Update	TBD	<ul style="list-style-type: none"> Receive information on climate change mitigation – carbon neutrality by 2020 program update. (Action) Provide comments to the Board, as necessary. 	
15	<p>Receive information on Climate Change And the District's policy response regarding flooding, sea level rise, wildfires.</p> <p>Climate Change and Sea Level Rise Adaptation – Water Supply, Flood Protection, Ecosystems Protection</p>	TBD	<ul style="list-style-type: none"> Receive information on climate change and the District's policy response regarding flooding, sea level rise, wildfires. (Action) Provide comments to the Board, as necessary. 	
16	District's environmental audit of disposable (paper and plastic ware) products pertaining to their food services.	TBD	<ul style="list-style-type: none"> Receive information of the District's environmental audit of disposable (paperware) products pertaining to their food services. (Information) 	

Yellow = Update Since Last Meeting

Blue = Action taken by the Board of Directors



Committee Officers
, Committee Chair
, Committee Vice Chair

Board Representative
Board Representative
Board Alternate
Board Representative

DRAFT AGENDA

ENVIRONMENTAL AND WATER RESOURCES COMMITTEE

MONDAY, APRIL 16, 2018

6:00 p.m. – 8:00 p.m.

**Santa Clara Valley Water District
Headquarters Building Boardroom
5700 Almaden Expressway
San Jose, CA 95118**

**Time Certain:
6:00 p.m.**

- 1. Call to Order/Roll Call**
- 2. Time Open for Public Comment on Any Item Not on Agenda**
Comments should be limited to two minutes. If the Committee wishes to discuss a subject raised by the speaker, it can request placement on a future agenda.
- 3. Approval of Minutes**
3.1 Approval of Minutes – January 22, 2018, meeting
- 4. Action Items**
 - 4.1 Overview of District’s Flood Protection Management Plan (Vincent Gin)
Recommendation: This is a discussion item and the Committee may provide comments, however, no action is required.
 - 4.2 Review and Comment to the Board on the Fiscal Year 2019 Proposed Groundwater Production Charges (Darin Taylor)
Recommendation: This is an action item to provide comment to the Board in the implementation of the District’s mission as it applies to staff’s groundwater production charge recommendation for FY 2018–19.
 - 4.3 Discussion on Environmental Issues-Endangered Species, Drought Environmental Impacts (Melanie Richardson)
Recommendation: This is a discussion item and the Committee may provide comments, however, no action is required.
 - 4.4 Update from Working Groups (Committee Chair)
Recommendation: Provide comment to the Board in the implementation of the District’s mission as it applies to the working groups’ recommendations.

- 4.5 Review Environmental and Water Resources Committee Work Plan, the Outcomes of Board Action of Committee Requests and the Committee's Next Meeting Agenda (Committee Chair)

Recommendation: Review the Board-approved Committee work plan to guide the committee's discussions regarding policy alternatives and implications for Board deliberation.

5. Clerk Review and Clarification of Committee Requests to the Board

This is a review of the Committee's Requests, to the Board (from Item 5). The Committee may also request that the Board approve future agenda items for Committee discussion.

6. Reports

Directors, Managers, and Committee members may make brief reports and/or announcements on their activities. Unless a subject is specifically listed on the agenda, the Report is for information only and not discussion or decision. Questions for clarification are permitted.

6.1 Director's Report

6.2 Manager's Report

6.3 Committee Member Reports

7. Adjourn: Adjourn to next regularly scheduled meeting at 6:00 p.m., **July 16, 2018**, in the Headquarters Building Boardroom, 5700 Almaden Expressway, San Jose, CA 95118

All public records relating to an open session item on this agenda, which are not exempt from disclosure pursuant to the California Public Records Act, that are distributed to a majority of the legislative body will be available for public inspection at the Office of the Clerk of the Board at the Santa Clara Valley Water District Headquarter Building, 5700 Almaden Expressway, San Jose, CA., 95118, at the same time that the public records are distributed or made available to the legislative body.

The Santa Clara Valley Water District will make reasonable efforts to accommodate persons with disabilities wishing to attend committee meetings. Please advise the Clerk of the Board office of any special needs by calling 1-408-630-2277.

Environmental and Water Resources Committee's Purpose and Duties

The Environmental and Water Resources Committee of the Santa Clara Valley Water District is established to assist the Board of Directors (Board) with policies pertaining to water supply, flood protection and environmental stewardship.

The specific duties are:

- Prepare policy alternatives;
- Provide comment on activities in the implementation of the District's mission; and
- Produce and present to the Board an Annual Accomplishments Report that provides a synopsis of the annual discussions and actions.

In carrying out these duties, Committee members bring to the District their respective expertise and the interests of the communities they represent. In addition, Committees may help the Board produce the link between the District and the public through information sharing to the communities they represent.



Committee: Environmental and Water Resources
Meeting Date: 01/22/18
Agenda Item No.: 6.1
Unclassified Manager: Anil Comelo
Email: acomelo@valleywater.org
Est. Staff Time: 5 minutes

COMMITTEE AGENDA MEMO

SUBJECT: Update on the District's Winter Preparedness

RECOMMENDED ACTION:

This is an information item only and no action is required.

SUMMARY:

As the agency responsible for local flood protection, the District works diligently to protect Santa Clara Valley residents and businesses from the devastating effects of flooding. Since the early 1980s, the District and its partners have invested approximately \$900 million in flood protection programs, including constructing major flood protection projects that have removed approximately 100,000 parcels from previously flood-prone areas. Despite these efforts, 67,000 parcels continue to be at risk of flooding during a 100-year storm event.

Over the last one year, the District has carried out several efforts to prepare for extreme weather events, respond effectively and minimize the impacts of flooding. In October 2017, the National Weather Service (NWS) recertified the District as Storm Ready. The certification is valid through October 2020.

This report provides information regarding various measures the District has taken to prepare for the Winter season. Specifically, it includes information on the following:

- Weather outlook
- Flood protection and conveyance capacity
- Public engagement
- Preparing and responding to flood emergencies
- Monitoring and flood forecasting
- Reservoir management
- Emergency management systems and response

BACKGROUND:

Winter Hazards

Winter brings an additional set of seasonal hazards that threaten both watersheds and water utility operations. Severe and/or extended precipitation can overwhelm engineered and natural channels and has the potential to damage District flood protection infrastructure. The resulting flooding can prompt municipalities to initiate evacuations and sheltering, and disrupt transportation. Severe storms can also bring high winds and cause landslides that have the potential to impact power, communication and water utility infrastructure.

Weather Forecast

National Weather Service (NWS) seasonal weather models predict about a 75% chance of a La Niña ENSO conditions and a 25% chance of neutral El Niño Southern Oscillation (ENSO) occurring this 2017/2018 fall-winter season. Current expectations are a near normal precipitation for the first part of the water year with a higher likelihood for drier than normal conditions for Santa Clara County January through March of 2018.

NWS forecasters will also be watching how the Pacific Decadal Oscillation (PDO) and Madden-Julian Oscillation (MJO) develop for the winter season. These, and other, seasonal oscillations could bring swings in precipitation amounts, fluctuating snow levels, and/or atmospheric rivers. Medium range forecast capabilities will help to distinguish these events with as much lead time as 10-14 days, though the details may not be worked out until within a few days of any given event. Keep in mind that a season with near normal rainfall can still produce flooding especially if much of the rainfall occurs over a short period of time.

Near-term weather forecasts enable the District to anticipate the location and intensity of rainfall to better mobilize response efforts. The District receives weather forecasts from multiple sources, including meteorology consultants and the NWS. Using this data, District staff makes decisions for flood fighting and for reservoir operations.

Climate Change

Climate change impacts challenge the District's core business. Global climate models and regional or local climate projections indicate the potential for changes in the amount, intensity, and duration of precipitation in the future. To adapt to the effects of climate change, the District has established a Climate Change Framework and team to identify impacts and ways to adapt to climate change scenarios. The District's core service area of flood protection is challenged by climate change, particularly by changes in precipitation patterns and sea-level rise. Even though some effects of climate change, such as sea-level rise will not be fully realized for decades, the long-life expectancy of flood protection projects means those projects must be designed to account for likely future conditions.

Board Natural Flood Protection Ends Policies

The District Board of Directors has established Natural Flood Protection (NFP) Goals 3.1 and 3.2 to provide flood protection for residents, businesses and visitors; and to reduce the potential for flood damages. These goals establish the following five natural flood protection objectives:

- Protect parcels from flooding by applying an integrated watershed management approach that balances environmental quality and protection from flooding (Objective 3.1.1)
- Preserve flood conveyance capacity and structural integrity of stream banks, while minimizing impacts on the environment and protecting habitat values. (Objective 3.1.2)
- Promote the preservation of flood plain functions (Objective 3.2.1)
- Reduce flood risks through public engagement (Objective 3.2.2)
- Prepare and respond effectively to flood emergencies countywide to protect life and property (Objective 3.2.3)

This memorandum describes how District staff is working to achieve each of these objectives.

1. Protect Parcels from Flooding (3.1.1)

The District's Watersheds Design and Construction Division plans, manages, and implements capital improvements to comply with the Board's Ends Policy to protect parcels from flooding. A total of 15 flood protection projects are underway in Fiscal Year 2017-18 with a total FY18 budget of \$59.6 million. Five of

these projects are Safe, Clean, Water projects and 10 are funded by property taxes. All have the primary objective of providing natural flood protection for residents, businesses and visitors. As specified in the 5-year Capital Improvement Plan, approximately 25,500 parcels will be protected and/or eligible for removal from the flood hazard zone when these projects are completed.

2. Preserve Flood Conveyance Capacity (3.1.2)

The District's Watershed Operations and Maintenance Division performs sediment removal, levee inspection and maintenance, debris removal, vegetation management, and erosion protection and repairs to comply with the Board's Ends Policy to preserve flood conveyance capacity. These efforts have improved the channel conveyance capacities of many local streams and channels. Work that has been accomplished through the District's Stream Maintenance Program this year includes the following:

- Completion of 390* acres of in-stream vegetation control over 116*miles of streams
- Removal of 33,946* cubic yards of sediment
- About 2,959* linear feet of bank stabilization

*These are year-end estimates and will be revised once all projects have been completed and the end of the year totals are calculated

District staff continues to receive calls from throughout the county to service problematic trees plagued by disease or die off associated with the recent drought. Field crews continue to remove trees that could potentially block flows in local creeks or cause other hazards. Staff is also coordinating with owners of properties where trees have been reported as a potential issue and could pose additional blockage threats in local creeks.

3. Promote the preservation of flood plain functions (3.2.1)

The District preserves floodplain functionality and other watershed assets and interests from external land-use activities by promoting streamside setbacks through implementation and enforcement of the District's Water Resources Protection Ordinance and by participating on municipal General Plan update committees reviewing and commenting on development proposals.

The District's Community Projects Review Unit issues encroachment permits that regulate the third-party use of District lands adjacent to local waterways and acts on enforcement cases. Additionally, the District annually reviews environmental documents and plans for projects outside the District right-of-way to promote District's water resource interests. Through these processes, the District advocates the development setbacks and site layouts that strive to maximize protection of stream and riparian corridors and floodplain function.

4. Reduce flood risks through public engagement (3.2.2)

The District engages the public through its Office of External Affairs to provide flood awareness and safety messages and direct residents to resources. Additionally, through its Office of Water Resource Planning and Policy, the District works with municipal partners and the Community Rating System (CRS) to provide a direct financial benefit to the public through reduced premiums for flood insurance.

Community Rating System, National Flood Insurance Program

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.

As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three CRS goals:

- reduce flood damage to insurable property;
- strengthen and support the insurance aspects of the NFIP; and
- encourage a comprehensive approach to floodplain management.

CRS activities that the District carries out are verified by the Federal Emergency Management Agency (FEMA) and then claimed by the participating CRS communities in Santa Clara County where those activities apply. This simplifies FEMA's CRS bookkeeping and avoids duplicating efforts. Total annual savings on flood insurance premiums are estimated to be over \$2.3 million from the 10% to 20% discount earned through the CRS program for approximately 16,000 policy holders in Santa Clara County.

The District receives CRS points for our outreach program, mapping of flood risks, open space preservation in floodplains, and maintenance and management of our creeks. A CRS Users Group, consisting of the District and participating CRS communities, was formed in 2013. The Users Group has proven to be very useful not only for discussion of activities that earn CRS points, but also allows dialogue ongoing flood risk reduction efforts and related topics among all cities in the county and serves as an information sharing platform.

Public Education and Community Engagement

This winter, the District will continue to deliver flood-safety messages throughout Santa Clara County. The main public education objectives are the following:

- Convey to the general public that flooding can be a serious threat (even if you don't live in the floodplain)
- Explain what people can do to protect themselves and reduce risk to life and property
- Direct the public to appropriate District resources on valleywater.org for additional information
- Earn credit towards FEMA's Community Rating System through our Program for Public Information, which helps communities earn discounted flood insurance premium rates for residents

In early December, a targeted mailing of the annual floodplain mailer will be distributed to about 53,000 parcel-owners and residents in or near flood-prone areas. The piece provides information on flood-protection projects and flood-safety resources. The mailer is written in English, Spanish, Vietnamese and Chinese. This year, we are including a watershed-specific insert in each mailing which includes a watershed map that shows sandbag sites and 100-year FEMA flood zones.

This year we are preparing for a full-scale paid advertising campaign to launch by December and continue through the end of April of 2018. To reach diverse ethnic audiences, media messages will be delivered through Spanish, Chinese and Vietnamese media outlets. The campaign may be further expanded if the winter turns out to be particularly wet.

During the winter months the District will convey flood preparedness messages through a selected range of communications platforms including radio spots, newspaper ads, online ads, social media and web videos. The focus of the District's flood awareness outreach is to inform the community of flooding hazards in the county and to provide information on what community members can do to protect their family and property before, during and after a potential flooding event. Flood-safety tips and messages will also be heard by callers to the District when placed on hold.

This fall we participated in 16 community events to distribute flood-preparation materials and answer questions about flood safety. We have chosen events that are in areas most prone to flooding. These include parts of South County in Morgan Hill and Gilroy, as well as vulnerable areas in San Jose, including along Senter Road, across from the Rock Springs neighborhood. District staff has pursued partnership opportunities with local community-based organizations in cities with flood-prone areas to identify opportunities for outreach. This outreach was added to our annual outreach effort to foster a more direct, grassroots connection to

communities at risk of flooding. We have also made sure to incorporate flood safety materials during the fall months for all community events in which the district has sponsored a booth.

Through our outreach, we are also promoting Santa Clara County's AlertSCC emergency notification system and their ReadySCC app. AlertSCC is a free, easy, and confidential way for anyone who lives or works in Santa Clara County to get emergency warnings sent directly to their cell phone, mobile device, e-mail, or landline. It is one of the most effective ways for local jurisdictions to communicate flood hazards and evacuation orders, but it requires residents to opt into the system. The ReadySCC App allows residents to prepare a family emergency plan with five simple questions, send status updates to contacts, receive advisories and alerts via push notifications, and includes a detailed guide with step-by-step instructions for creating an emergency kit. As an incentive to download ReadySCC, residents who download the app receive a free emergency starter kit. These kits were first introduced to the community last year and include basic supplies such as a hand-operated flashlight, mylar blanket, rain poncho, safety whistle, gloves and glow stick. While these kits are basic and serve to encourage residents to begin preparedness on a larger scale. Residents who do not have a mobile phone are encouraged to fill out emergency contact cards to receive their kit.

The District website serves as a one-stop shop for flood-related information, including emergency updates, flood safety tips and information on sandbag sites, stream and reservoir gauges in the county, as well as links to the National Weather Service, County Office of Emergency Services; and FEMA'S preparedness site, Ready.gov. Social media and online publications through our news website, valleywaternews.org, will continue to be utilized to provide registered recipients with timely and immediate flood-hazard messages. In the wake of the February 2017 flooding, the District is committed to continually improving strategies for effective flood safety messaging.

5. Prepare and Respond Effectively to Flood Emergencies (3.2.3)

Despite all the proactive efforts to remove parcels from flood hazard zones, maintain channel conveyance capacities and floodplain function, and engage the public with flood awareness and safety messages, floods still can and do occur - usually with little warning and sometimes with potentially devastating effects.

Flood emergency preparedness entails the combined efforts of many units of the District, notably Emergency and Security Services, Field Operations, Water Supply Operations and Planning, Hydrology and Hydraulics, Communications and other units that contribute staff that are trained to participate in roles assigned in the field, Departmental Operation Centers (DOC), and within the Emergency Operations Center (EOC).

To ensure that the District is in the best possible state of readiness to address flooding when it does occur, the District maintains tools, processes, trained staff and interagency relationships that enable coordinated field response and public information.

Emergency Action Planning

Emergency Action Plans (EAPs) are documents that identify potential emergency conditions at facilities, such as creeks, and specifies actions to be followed to minimize loss of life and property damage. These documents include:

- Actions taken to moderate or alleviate a problem
- Actions, in coordination with emergency management authorities, to respond to incidents or emergencies
- Procedures to follow and warning and notification messages for responsible downstream emergency management authorities
- Inundation maps to help emergency management authorities identify critical infrastructure and population-at-risk sites that may require protective measures, warning, and evacuation planning

- Delineation of the responsibilities of all those involved in managing an incident or emergency and how the responsibilities should be coordinated

The EAPs are created following the guidance from the Federal Emergency Management Agency federal guidelines for emergency action planning for dams (FEMA Publication No. P-64). As well, EAPs also incorporate the guidance of the Federal Energy Regulatory Commission's Chapter 6 Emergency Action Plans of the Engineering Guidelines for the Evaluation of Hydropower Projects.

The most recent of these plans is the joint Coyote EAP developed in coordination with the City of San José, following the February 2017 flooding along sections of Coyote Creek. The joint EAP was adopted by the San José City Council and the District Board in November 2017.

Monitoring and Flood Forecasting

The District forecasts incoming weather systems based on weather reports received from multiple sources including the National Weather Service (NWS) and media sources such as Fox Weather. In addition, the District augments standard weather reports with detailed quantitative precipitation forecasts (QPFs) from several sources, leveraging knowledge from private meteorologists, academia, and the NWS, to get a picture of a storm event. These QPFs include details such as the amount, duration, location, and timing of storm patterns.

For real-time monitoring, as the rain and flood events unfold, the District operates more than a 100 precipitation, reservoir level, and stream gauges, including 85 stream flow gauges, 10 reservoir gauges and 47 precipitation stations. All the District stream and rain gauges are regularly maintained and calibrated. This year, the District installed an "X-band" radar unit on top of the rooftop of the Penitencia Water Treatment Plant. The unit is part of the Bay area AQPI (Advanced Quantitative Precipitation Information) system. The short range and lower elevation radar supplements our existing rainfall gauge system and provides more precise rainfall data in real time.

In addition, under the District's Safe, Clean Water Program Priority C Project, Emergency Response Upgrades Project, the District is running an experimental flood forecast and warning system, using automated hydrologic and hydraulic models to determine creek runoff and expected reservoir levels. The models ingest data from both the QPFs and monitoring sensors mentioned earlier. As the back-end modeling system and front-end user interface are perfected, additional forecast points and features can be added to provide intelligence to decision makers, emergency responders, and the general public.

Reservoir Management

The District operates 10 surface water reservoirs throughout the county. The District reservoirs are operated primarily as water supply facilities that provide incidental flood protection, environmental and recreational benefits. Many reservoirs are operated to flood risk reduction rule curves. The volume of water above the flood management rule curve may be released if it is safe to do so, to create additional storage in the reservoir and reduce flood potential. The curves maximize water supply benefit and minimize flood risk with a high probability of the water being recovered by the end of the season. For the 2017/2018 winter season, because of the improved water supply resulting from last winter's above-average precipitation, the Board has directed staff to operate Anderson and Coyote Reservoirs at a lower combined level this year than in past years, which will further reduce the risk of flooding downstream.

The following is a checklist of activities performed by Raw Water Operations/Field Operations staff before a reservoir flood release is initiated;

- Check weather forecast (estimate rainfall runoff)
- Check stream flow
- Check for National Weather Service Advisories/Watches/Warnings
- Coordinate with Watershed Operations (identify any existing blockages or restrictions downstream)
- Notify residents and agencies on creek contacts list

Real-time Information, Alerts and Warnings

The District provides precipitation and stream gauge data to the public via its website and this year the District launched a new flood watch website that utilizes a user-friendly interactive map to allow residents to monitor levels in their own neighborhoods.

The District website also provides access to weather forecasts, reservoir levels, precipitation, and flood-safety measures through its Weather/Hydrologic Assessment and Strategic Update Plan (WHASUP) that, beginning in November, is issued twice per week or more frequently as needed throughout the winter. The public can sign up to receive automatic emails when WHASUP information is updated. The District also promotes the County’s emergency alert system AlertSCC as well the ReadySCC.

District, Countywide and Regional Emergency Management Systems

The District maintains facilities, equipment, procedures, trained staff and inter-agency relationships that enable it to respond to floods and other emergencies. District emergency management facilities include its Districtwide Emergency Operations Center (EOC) and Water Utility and Watersheds Departmental Operations Centers (DOCs). The District maintains a dedicated, primary EOC that is equipped with both high and low-tech communication and information storage and display technologies to allow the enable EOC functions to perform under all hazard scenarios. EOC equipment is regularly inventoried, maintained and tested to ensure readiness. District DOCs facilities are equipped for emergencies that can be handled within departmental resources and capabilities. The District maintains its Emergency Operations Plan and EOC Activation Guides within the District’s Quality and Environmental Management System (QEMS). Position-specific checklists are available within the EOC to help guide EOC staff in the performance of their Standardized Emergency Management System (SEMS) response functions.

Over the last year, select District EOC response staff have participated in internal and multi-agency exercises. Exercises are designed to develop, learn, and test response capabilities under various hazard scenarios.

12/07/16	San Francisquito Creek Workshop and Tabletop Exercise (TTX)
02/07/17	San Francisquito Creek Levee Activation
02/09/17	San Francisquito Creek HWY 101 Activation
02/20/17	Coyote Creek Flood Event Activation
03/01/17	Llagas-Chual Spur Potential Landslide Activation
April 2017–Present	Development of a Joint Coyote Creek EAP
09/14/17-09/15/17	SCC Operational Area-Wide Exercise
09/21/17	Joint Coyote Creek EAP TTX

These exercises enabled staff to practice and identify areas of improvement for the operational coordination, operational communication, situational awareness, public information and warning, and infrastructure system core capabilities as defined by the National Response Framework.

Each fall, the District Emergency and Security Unit hosts a multi-jurisdictional Winter Emergency Operations and Preparedness Workshop. This year’s event was held on Oct. 26, 2017. Attendees included emergency managers and public works representatives from all 15 cities within the county, the County, and other local and state agencies. District staff reviewed the following topics during the workshop:

- Flood priority inspection locations (flooding hot spots)
- Real-time online resources for stream/reservoir/precipitation data
- Dam operations during the winter (flood rule curves, seismic stability operating restrictions)
- Coordination of District flood fighting resources (levee repair, debris blockages, and sand bagging)

The following made presentations on resource support:

- California Department of Water Resources (DWR)
- California Conservation Corps (CCC)
- CAL FIRE
- NWS
- Santa Clara County Office of Emergency Services (SCC OES)
- City of San José (CSJ OEM)

In addition to the Winter Preparedness Workshop, District emergency management staff, senior executives and elected officials foster strong interagency emergency preparedness relationships by participating in several important groups including the Santa Clara County Emergency Managers Association, the Santa Clara County Operational Area Signatories, and the Santa Clara County Emergency Operational Area Council.

District Field Response Actions and Capabilities

During a flood event the District can mobilize a field response that includes:

- maintaining a watersheds 24/7 hotline;
- deploying Field Information Teams (FIT); and
- maintaining a list of known flooding hotspots to expedite on-site arrival of resources and crews that are able to remove blockages, deploy sandbags and perform other functions to maximize flood conveyance capacity during a storm.

The District provides filled sandbags to 5 sites throughout Santa Clara County. Typically for winter seasons with average rainfall forecasts, the District stocks 20,000 filled sandbags to these locations by the end of October, restocking those sites with up to 40,000 filled bags as needed. When all the filled sandbags have been used, the District will then supply empty bags and sand at those locations.

Additionally, the District provides empty sandbags to municipal and county public works departments to stock an additional 19 sites around the County. Empty sandbags are offered to county public works agencies beginning October 1.

Maps of sandbag locations have been prepared in conjunction with other entities. The site locations are provided through the following link: <<http://valleywater.org/services/sandbagsites.aspx>>.

The Morgan Hill and Palo Alto sites have webcams installed to allow residents to check on sandbag availability via the District webpage. These webcams provide the District a cost-effective way to remotely monitor the sites to replenish and provide more timely services to the residents and the county.

The District currently has 407,000 empty sandbags and 278 cubic yards of sand in storage.

The District is Certified Storm Ready

As a result of the District's efforts to protect parcels from flooding, preserve flood conveyance capacity, engage the public to reduce flood risks, and maintain capabilities to respond to storm and flood events, the District continues to be recognized by the NWS as Storm Ready. The District received the recertification in October 2017 and it is valid through October 2020.

ATTACHMENT(S):

None



Committee: Environmental and Water Resources
Meeting Date: 01/22/18
Agenda Item No.: 6.2
Unclassified Manager: Garth Hall
Email: ghall@valleywater.org
Est. Staff Time: 10 minutes

COMMITTEE AGENDA MEMO

SUBJECT: Shallow Groundwater

RECOMMENDED ACTION:

This is an information only item and no action is required.

SUMMARY:

Per the Committee's request, this item provides information on shallow aquifers, including dewatering, pumping and recharge. Groundwater underlying the Santa Clara Valley occurs in various aquifers, including shallow aquifers with relatively little pumping, and deeper, principal aquifers where most pumping occurs. Shallow groundwater pumping primarily supports groundwater remediation at contaminant release sites, limited domestic/agricultural pumping, or dewatering where groundwater intersects building features or infrastructure. Shallow groundwater pumping represents a small fraction of total pumping, and comprehensive groundwater management ensures that groundwater conditions are sustainable. Because shallow groundwater is more susceptible to contamination and is often of poorer quality than principal aquifers, State and District well standards require annular seals of at least 50 feet to prevent contamination of drinking water aquifers and to protect well users.

BACKGROUND:

The primary subbasins in Santa Clara County are the Santa Clara and Llagas Subbasins, which cover a surface area of 297 and 74 square miles, respectively. A groundwater divide near Cochrane Road in Morgan Hill serves as the boundary between the subbasins. Groundwater flow generally follows surface water patterns, with groundwater in the Santa Clara Subbasin flowing toward San Francisco Bay and groundwater in the Llagas Subbasin flowing toward the Pajaro River. The subbasins are large natural reservoirs comprised of sand, silt, and other alluvial sediments that were eroded from adjacent mountain ranges and deposited in the valley. The depth of aquifer materials varies by location, extending to over 1,000 feet in places.

The principal recharge to the subbasins occurs in recharge areas located along the elevated margins where permeable aquifer materials are predominant (Attachment 1). Recharge sources include the District's managed aquifer recharge and natural recharge from rainfall, seepage through creeks, pipeline leakage, and return flows from irrigation and septic systems. Within the recharge areas, groundwater occurs under water table, or unconfined conditions. At various locations above the water table, perched groundwater may occur on a temporary or permanent basis above discontinuous lenses of low-permeability deposits.

Confined areas occur in the interior of the subbasins. In these areas, laterally-extensive aquitards comprised of silts and clays restrict the downward movement of water. These aquitards separate aquifer materials into

shallow and principal aquifer zones, which occur above and below depths of about 150 feet, respectively. Shallow groundwater is generally unconfined, and is recharged from surface sources like stream percolation and/or from lateral connections from recharge areas. Groundwater flow is typically greater laterally as opposed to vertically, and the presence of relatively impermeable aquitards restricts the movement of water from shallow aquifers to deeper zones.

Attachment 2 is a generalized map of the depth to first groundwater, based on measurements from contaminant release sites and other monitoring wells. As shown, shallow groundwater occurs throughout Santa Clara County, with depth to water of less than 20 feet in many locations. In some areas, groundwater discharge to creeks is observed when the basin is full. This condition is currently observed in creeks near San Francisco Bay, among other places.

Annual groundwater pumping from the subbasins averages about 150,000 acre-feet over the long-term, which accounts for about 40% of the water used in the county each year. The vast majority of pumping is from deeper, principal aquifer zones. Pumping from the shallow aquifers is primarily for remediation at contaminant release sites, limited domestic/agricultural use, and dewatering. Dewatering may be temporary to address water encountered during construction of subsurface features like basements. Activities that typically require dewatering are permitted by land use agencies, which may choose to impose related restrictions. For example, the City of Palo Alto limits the duration of dewatering, encourages reuse, and requires site-specific studies or features to reduce dewatering volume. Some locations experience sustained shallow groundwater conditions, and the overlying land use may require ongoing dewatering. Dewatering discharges to creeks or other surface water bodies are also regulated through National Pollution Discharge Elimination System (NPDES) permitting to ensure water quality is protected.

Temporary and ongoing dewatering represent a small component of subbasin outflows compared to pumping for beneficial use. For example, temporary dewatering within Palo Alto, an area experiencing increased basement construction, was approximately 350 acre-feet in 2017. Despite temporary and ongoing dewatering activities, groundwater conditions are sustainable throughout the subbasins.

Compared to principal aquifers, shallow groundwater quality is often poorer due to the stronger connection to overlying land use. There are over 600 open sites where fuels or other contaminants have been released to soil and/or shallow groundwater, requiring oversight by regulatory agencies such as the Regional Water Quality Control Boards. While shallow groundwater quality is impacted at many of these sites, impacts to principal aquifers have been very limited.

The District's Well Ordinance Program helps to ensure that wells and other deep excavations are properly constructed, maintained, and destroyed so they will not allow the vertical transport of water of poor quality into deeper aquifers used for drinking water. Through this program, all water supply wells being constructed must have a sanitary seal of at least 50 feet. Additionally, all wells that are constructed through the principal aquitards (around 100 feet deep in the Llagas Subbasin and 150 feet deep in the Santa Clara Subbasin) are required to have sanitary seals that extend from the surface and into aquitard materials. This is designed to prevent commingling of water of the shallow and principal aquifers to avoid cross-contamination to aquifers and to protect current and future users of the groundwater being pumped.

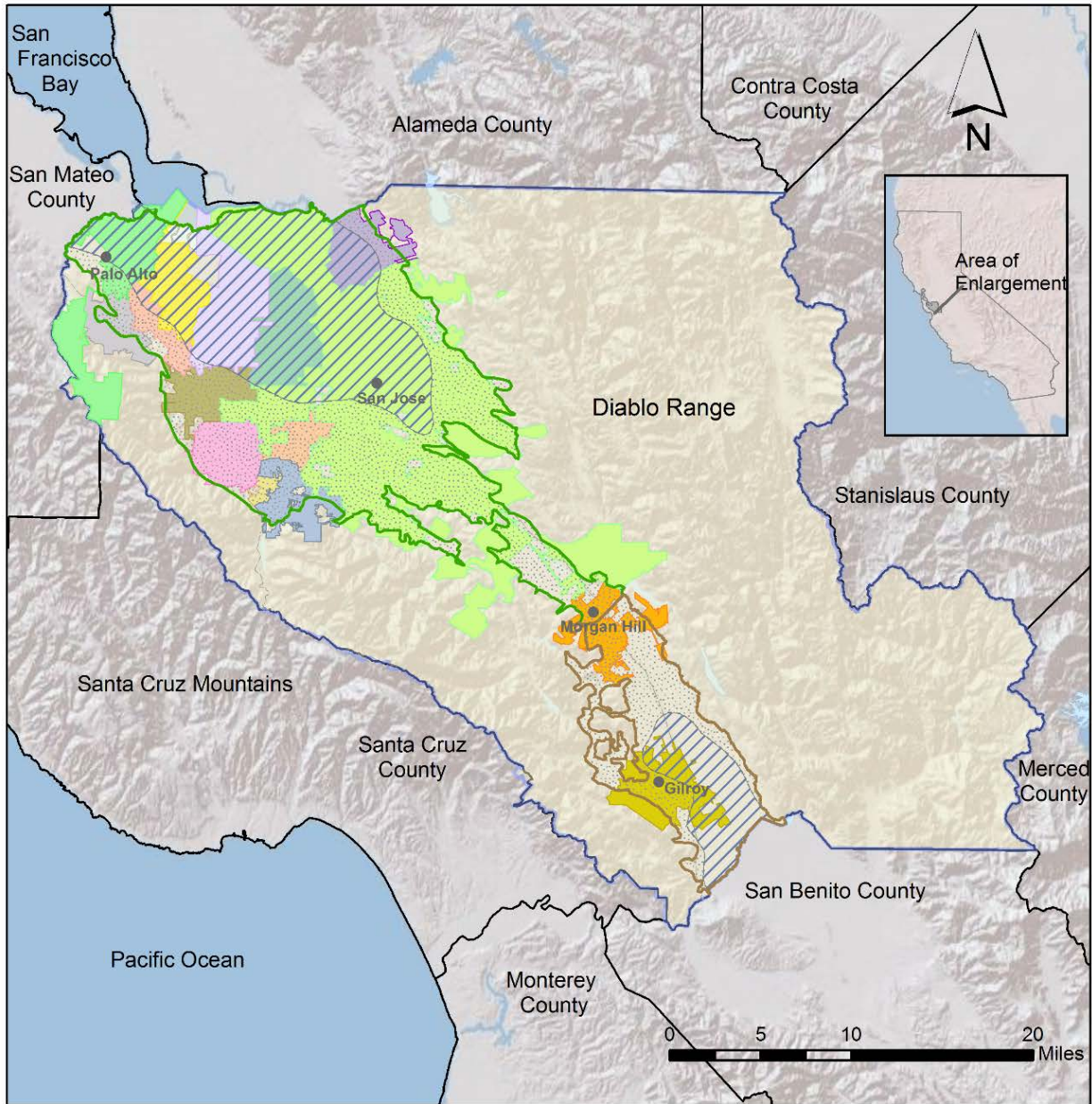
The subbasins in Santa Clara County are not adjudicated, and the District does not control the operation of wells or the amount of water than can be pumped. Rather, the District works to ensure sustainable groundwater supplies through managed aquifer recharge and "in-lieu" recharge programs that reduce pumping such as treated water deliveries, water conservation, and recycled water programs. The District's comprehensive water supply management halted historic groundwater problems, including chronic overdraft, permanent subsidence, and salt water intrusion. Effective water supply management, including proactive planning and investments, helps ensure continued, sustainable groundwater conditions into the future.

ATTACHMENT(S):

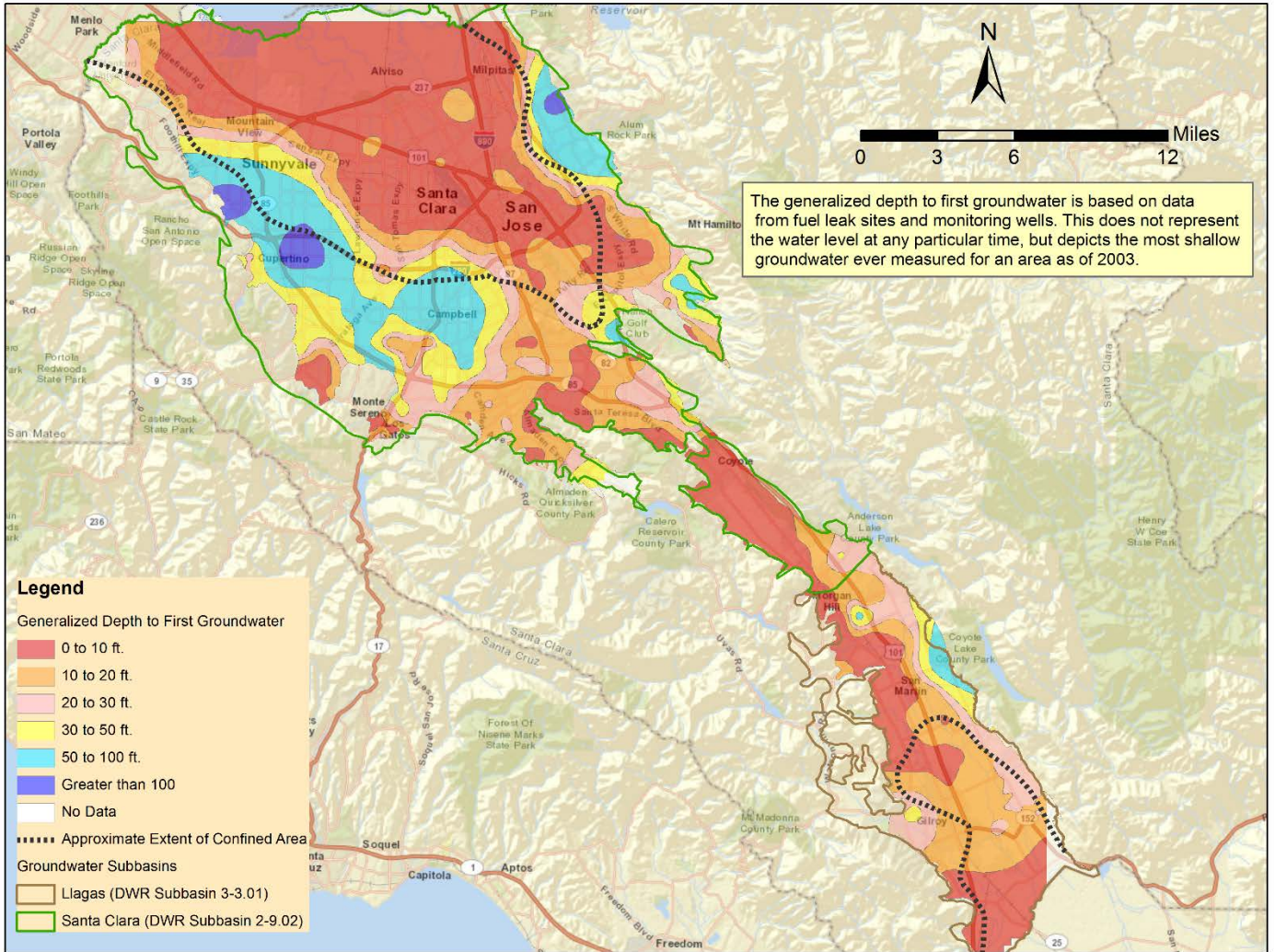
Attachment 1: Map of the Santa Clara and Llagas Subbasins

Attachment 2: Generalized Map of Depth to First Groundwater

Map of the Santa Clara and Llagas Subbasins



Generalized Map of Depth to First Groundwater



Handouts

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Fish Population Sampling In 2017 on Coyote Creek

Jerry J. Smith, Emeritus Professor
Department of Biological Sciences
San Jose State University

17 December 2017

ABSTRACT

Severe drought and cut-backs in the delivery of imported water via the San Felipe Pipeline resulted in substantial reductions in reservoir and pipeline releases to Coyote Creek from early February 2014 through March 2016. Despite the flow cut-backs, adult steelhead (*Oncorhynchus mykiss*) had access and spawned in Coyote Creek between Ogier Ponds and Anderson Reservoir during the very brief passage window in early February 2014; however, the brief and very early passage window would have prevented almost all steelhead smolts reared in 2013 or 2012 from successfully emigrating in 2014. In 2015, despite more rain and runoff into Anderson Reservoir, the reduced pipeline and reservoir releases that began in February 2014 were continued, and there was no downstream flow continuity to provide adult fish passage. No young-of-year (YOY) steelhead were captured in 2015, and most steelhead reared in 2014 were not found at sampled sites and therefore likely smolted and attempted to emigrate. However, considering the persistent lack of suitable flow conditions in downstream reaches of Coyote Creek, any steelhead smolts that attempted to emigrate would have been trapped in the dry-back zone and/or lost to bass (*Micropterus* spp.) predation in the Ogier Ponds. In 2016, the lack of connectivity continued until the end of March, when large reservoir releases were made for groundwater percolation and to provide for potential immigration of steelhead adults. However, no juvenile steelhead were captured during fall 2016 sampling. In 2017, despite the flood flows in February and high flows through summer, adult access to spawning and rearing areas upstream of Metcalf Pond would have been possible (although difficult) prior to the flood, during very brief windows during the flood, and after 30 March due to damage at the Metcalf Dam. In addition, poor flow/velocity passage conditions at the Singleton Road apron and culverts would have hindered or prevented adult upstream access during much of the migration period.

Spring-fall stream flows in 2017 were mostly between 30 and 70 cfs in the potential spawning and rearing habitat. Most of the flow come from releases from Anderson Reservoir because of seismic-related reservoir storage limits, rather than from a more equal combination of reservoir and San Felipe Pipeline releases as in previous years. Therefore, water temperatures between the reservoir and the Ogier Pond complex were somewhat cooler than in 2014-2016. Releases warmed over the summer as the reservoir was drawn down towards the mid-level release port. The heating effect of Ogier Ponds maintained very warm water temperatures downstream of the ponds (22-25+°C) as observed in 2014-2016. Temperatures downstream of the ponds were

3-6°C warmer than upstream, because of the large heat capacity within the ponds and the discharge of warm surface water from the ponds. The large amount of stored storm water in Anderson Reservoir atypically resulted in relatively turbid releases throughout summer and fall.

Despite brief windows of potential adult steelhead access and suitable rearing conditions in summer and fall 2017, no juvenile steelhead were captured during sampling at four sites in August or October. Apparently, the last potential smolts to successfully emigrate in Coyote Creek were in 2013. The unsuitable flow conditions, and the barrier at Singleton Road, have resulted in passage bottlenecks that have eliminated most or all steelhead production for the past five years, potentially extirpating steelhead.

Improvements to the steelhead population will require removal of the Singleton Road passage barrier and modification of current release strategies during late winter and spring to provide for adult and smolt passage. Stream flow connectivity for successful migration would improve substantially if releases for aquifer recharge were maintained at a level (30-50 cfs) sufficient to reach Metcalf Pond, particularly when leading up to and during larger storm events. In addition to providing aquifer recharge, these releases would connect with storm runoff from Fisher Creek and from substantial suburban runoff, which would then provide connectivity into and through lower Coyote Creek. Additionally, mid-summer through fall releases similar to those in 2016 or early summer 2017 (30-40 cfs), rather than the much smaller releases in 2014 and 2015, would provide more rearing habitat extent and more optimal fast-water feeding habitat. Cooler water, based upon source (reservoir versus San Felipe Pipeline) and release port elevation in Anderson Reservoir, during all or most of summer and fall, would also improve rearing habitat quality. Finally, re-directing the stream around Ogier Ponds is needed to eliminate the water temperature and predation effects of the ponds.

INTRODUCTION

Summer or fall investigations into the distribution and abundance of rainbow trout/steelhead had not been conducted for decades on Coyote Creek in the reach between Anderson Reservoir and Metcalf Pond until electrofishing was conducted between Anderson Reservoir and Ogier Ponds in September and November 2014 (Leicester and Smith 2014b). Despite the dry conditions in 2014, and the substantial reduction in releases to the stream after early February, presence of rearing YOY indicated that adult steelhead accessed and spawned in the reach between Ogier Ponds and Anderson Reservoir. The streambed dried downstream of Ogier Ponds by late June. YOY steelhead were captured at all three sample sites in both September and November, and despite warm late-summer water conditions, they were large enough to smolt and emigrate by spring 2015, especially with good conditions for growth in most of winter and spring 2015.

However, winter and spring conditions were extremely dry again in 2014-15, so stream connectivity was not restored and adult and smolt migration was not possible. Sampling was

repeated in late June-early July, and in November 2015. Almost all YOY fish reared in 2014 had emigrated, but would have been lost during the attempt to the drying stream farther downstream and/or to predatory bass in the Ogier Ponds (Leicester and Smith 2015). A very few yearling steelhead were still present in June. The attempted emigration by *O. mykiss* indicates that the fish were steelhead; there is no resident rainbow trout population in Coyote Creek downstream of Anderson Reservoir. In 2016, connectivity was not restored to allow potential adult or smolt migration until very late March, when high releases were made for groundwater percolation and to potentially allow late-migrating steelhead adults to access upstream spawning and rearing areas. No juvenile steelhead were captured by fall sampling at four sites in 2016.

In 2017, high stream flows provided some windows in January, February and April for potential adult steelhead to access spawning and rearing habitat upstream of Metcalf Pond and the Ogier Pond Complex. However, few adult steelhead were likely because of the impacts of flow conditions in 2014-2016. Electrofishing sampling was conducted in late August and late October to see if there was successful adult spawning and juvenile steelhead rearing in 2017, following two years without steelhead.

METHODS

Data on stream flow and Anderson Reservoir storage were obtained from the Santa Clara Valley Water District (SCVWD) Automated Local Evaluation in Real Time (“ALERT”) website (Anderson reservoir storage, Madrone and Edendale stream gages), and conditions in the streambed were visually assessed irregularly through June. In addition, stream flow conditions upstream of Coyote Reservoir were obtained from the USGS (“near Gilroy”) gage, as an index to upper watershed runoff.

Onset Hobo temperature recorders, that recorded every 30 minutes, were installed in the stream at locations in November 2016, but all but one were lost in the February flood. Seven new loggers were installed prior to 1 May 2017 (Figure 1):

- 1) in Coyote Creek County Park immediately downstream of Anderson Reservoir, installed to start recording on 1 May;
- 2) in the Park downstream of the San Felipe Pipeline discharge location, to reflect the combination of reservoir and pipeline discharges, installed to start 1 May;
- 3) upstream of the Ogier Ponds complex, downstream of the Model Airplane Park, installed to start 1 May;
- 5) immediately downstream of the Ogier Pond Complex, installed to start 1 May;
- 6) downstream of the dead end Golf Course Road, installed to start 1 May; and
- 7) downstream of Coyote Creek Ranch Road, installed to start 1 May.

Temperature recorders 2-7 were removed on 18 November, but recorder #1 had apparently been stolen. An air temperature recorder was installed to start on 1 May near the Highway 152

crossing of Uvas Creek in Gilroy as part of a separate study of the Uvas Creek watershed; it was retrieved on 15 November. This recorder was used as an indicator of air temperatures in south Santa Clara County.

On 28 August, two previously sampled sites (Leicester and Smith 2014b and 2015b; Smith 2016), upstream of the Correctional Facility downstream of the Reservoir, and the site immediately downstream of Anderson Reservoir were sampled by electrofishing. On 26 October two other previous sites, upstream of Ogier Pond #1 and downstream of the Golf Course Road (downstream of Ogier Ponds), were also sampled, to assess fish populations, primarily in the habitat upstream of Ogier Ponds where steelhead were captured in 2014. Stream flow during the August sampling was approximately 45 cfs, and stream flow during October sampling was approximately 70 cfs (Figure 5). Two pass electrofishing was conducted to provide depletion population estimates, but no *O. mykiss* were captured. Approximately the same habitats were sampled at three of the resampled sites as in 2014, 2015, and 2016, but some slower, deep habitats could not be sampled because of the much higher stream flows in 2017. At the site upstream of Ogier Pond #1, the stream had abandoned its previous channel at the sample site and was braided farther downstream, so new and more extensive representative habitats were sampled in both habitats. A total of 1440 feet of stream was sampled among the four sites.

Fish were identified to species, lengths (fork length, FL) measured, and were released in or near the habitat in which they were collected.

RESULTS AND DISCUSSION

Streamflow Conditions

Stream flow Conditions in 2017. In early January through February extremely large storms produced record runoff in the upper Coyote Creek watershed (Figure 2). From October through 9 January releases from Anderson Reservoir slowly declined from about 50 to 20 cfs (Figure 4) to conserve water following the severe 2013-2015 drought, with the reservoir having only about 27,000 acre-ft of storage at the start of the intense storms. With the start of the storms the SCVWD began releasing at the maximum capacity of the outlet, increasing releases to about 370 and then to 525 cfs as the reservoir depth (and hydraulic head) increased (Figure 4). Runoff from the upper watershed far outpaced the ability to release water from the reservoir, and the reservoir filled and began to spill on 18 February (Figures 3 and 4), with spilling (and bottom release) reaching approximately 7,300 cfs on 21 February. Flows from the reservoir declined to 600 cfs by 27 February and gradually declined to 400 cfs (with the maximum bottom release) through late April (Figures 4 and 5); seismic rules required lowering the reservoir storage. Two brief reductions of releases were made: the first in early February to lower or remove dam panels at Metcalf Pond and the second in late May to modify the fish ladder at the dam for fish passage at the reduced pond water level (Figure 4). Releases from the reservoir and the San Felipe Pipeline gradually declined to almost 30 cfs by early July before

increasing to about 45 cfs from mid-July through most of September. Releases then fluctuated between 50 and 70-90 cfs in October and November to accommodate infrastructure repair and pond filling at Metcalf Pond and to draw down the reservoir by December to provide very conservative flood capacity (Figure 5; Photos 7-9). The flood flows washed out the road downstream of Ogier Pond #1 (to the Model Airplane Park; Photo 16) and severely damaged the bridge at Coyote Ranch Road. In addition, it rerouted the main channel and produced braided channels upstream of Ogier Pond #1 (Photos 14 and 15) and greatly widened the outlet channel from Ogier Pond #4 (Photo 17)

The releases in January would have provided potential passage through the ladder at Metcalf Pond. However, the unprecedented storm flows in February required lowering the dam panels and opening the radial gates at Metcalf Dam (“Coyote Percolation Pond”). The fish ladder operated briefly during the peak on 21 February, but adult steelhead would have been unlikely to locate the ladder during the peak. Fish passage would probably not have been possible over the apron or through the radial gates at the Metcalf Dam between 19 February and 30 March, when the fish ladder was modified to function with the lowered pond level. Even after 30 March, steelhead might have had problems locating the ladder among the high flows dispersed among the dam apron and the left bank ladder in April. In October the dam panels were reinstalled, the damage to the supporting apron was buttressed with grouted boulders, and a set of grouted boulder weirs were constructed between the down-cut channel downstream of the dam and the fish ladder (see photos 1-9).

Early January through mid-April stream flows farther downstream on Coyote Creek would have provided potential adult steelhead passage everywhere except at Singleton Road which is a major steelhead passage barrier (Figures 6 and 7). The high releases from the reservoir probably restricted passage at Singleton Road because of high velocities over the apron of the road crossing and through the two culverts. Only fish moving during the peak of the flood, which submerged the crossing, would have been likely to pass easily. Only in late April and May, after the migration/spawning period, would flows have declined enough to allow potentially marginal passage through the culverts (see photos 10-12). Even without the passage problems at Metcalf Pond, steelhead access to spawning and rearing habitat would have been very difficult during and after January.

Streamflow Conditions 2014-2016. -- All late spring through fall stream flow, and almost all of the winter stream flow, in the potential steelhead rearing reaches downstream of Anderson Reservoir is provided by releases from Anderson Reservoir and from imported water from the San Felipe Pipeline (San Luis Reservoir water). Year-round releases from these sources are used for groundwater percolation, and in April through September of 2013, releases were usually 37 – 55 cubic feet per second [cfs] (as reported by the SCVWD Alert Gage for the Madrone stream gage); that magnitude of releases had been typical of operations for the last 15 years. However, the releases after February 2014 and in 2015 were substantially curtailed because of severe reductions in Bureau of Reclamation deliveries to the San Felipe Pipeline due to the ongoing severe state-wide drought (Leicester and Smith 2014b and 2015b). A State Water Board decree restricted all Delta contract water to municipal and industrial use, stopping agricultural

deliveries and general groundwater recharge. For the Coyote Creek watershed, this meant a shift from groundwater percolation to direct pipeline delivery of water to the water treatment plant for distribution to water retailers. This resulted in stream flows that were reduced from an average of 30 – 37 cfs in December 2013 - January 2014, to 13-15 cfs from early February 2014 through mid-June, and 8.0 – 9.0 cfs from mid-June through November 2014 (Leicester and Smith 2014b). Except for storms in December 2014 and February 2015, stream flows then remained in the 8 – 9 cfs range through mid-November 2015 (Leicester and Smith 2015b). Releases then increased slightly in mid-November to 14-15+ cfs, when the San Felipe water not imported during the pipeline interruption was recovered for SCVWD use. Those flows continued through late March 2016.

Storms in mid-December 2014 produced stream flows above Coyote Reservoir of more than 2000 cfs, and a brief storm in early February produced stream flows of approximately 1800 cfs (Leicester and Smith 2015b). Runoff increased Anderson Reservoir storage from about 34,000 acre feet (AF) to 46,000 AF from December through May. Despite the increased storage, releases from the reservoir and from the San Felipe Pipeline remained unchanged through winter and spring 2014-15 at 8-9 cfs. Local runoff from the December and February storms only slightly increased stream flow at the Madrone stream gage 1.5 miles downstream of the reservoir to 16 cfs in December and 12 cfs in February (Leicester and Smith 2015b). A small amount of local runoff was added farther downstream, and surface flow in Coyote Creek extended to downstream of the Golf Course. However, monitoring of the streambed after the storms indicated that neither storm resulted in extension of surface flow to Bailey Avenue. The Edenvale stream gage farther downstream, which is subject to runoff from Fisher Creek near Bailey Avenue and to flashy suburban runoff during storms, recorded brief runoff of approximately 200 cfs in late November, 165 cfs in December, and 40 cfs in February (Leicester and Smith 2015b). However, the low and steady releases from the reservoir and the pipeline did not provide a surface flow connection to the downstream storm runoff. In addition, the radial gate at the Metcalf Pond was closed during the late portion of the February runoff; therefore passage was not possible through the fish ladder at the partially filled pond. No potential adult steelhead or smolt passage was possible in winter/spring 2014-15 (Leicester and Smith 2015b).

In 2014, stream flow downstream of the Ogier Pond complex was eliminated by 20 June, but in 2015, flow below the Ogier Ponds was eliminated by 20 April. The most downstream Ogier Pond (#4) dried in both years.

In 2015, releases to Coyote Creek were generally about 2/3 from the San Felipe Pipeline and 1/3 from the reservoir (Leicester and Smith 2015b). However, the San Felipe Pipeline had to be shut down for repair from 1 August through 12 September. During that period, the 8-9 cfs discharge to the creek was maintained, but came entirely from the reservoir.

In winter 2016 there were two storms in January and two larger storm periods in early to mid-March (Smith 2016). The January runoff increased water stored in Anderson Reservoir from

about 30,000 AF to 40,000 AF. The larger March storms increased storage to over 55,000 AF, and additional water was stored during both periods farther upstream in Coyote Reservoir. Despite the large gains in storage in January and March, releases from the reservoir and the San Felipe Pipeline to Coyote were maintained at only about 15-17 cfs until the end of March. The releases into Coyote Creek produced surface flow only downstream to about 1 mile upstream of Bailey Avenue. During both January and early March, runoff from impervious surfaces in the suburbs near and downstream of Metcalf Pond produced brief and modest (38 and 49 cfs) runoff peaks at the Edenvale Gage, with larger stream flow increases farther downstream from more extensive suburbs. In addition, runoff was produced in January and March in Fisher Creek, which discharges to Coyote Creek upstream of Metcalf Pond, but downstream of the dry streambed up and downstream of Bailey Avenue during the storm periods. If releases from the reservoir had extended flows to fill Metcalf Pond during those periods, connectivity throughout Coyote Creek would have allowed potential adult steelhead immigration.

Large releases (which reached 140 cfs) from the Reservoir and the San Felipe Pipeline for groundwater recharge and adult steelhead passage were begun in late March (Smith 2016), with releases recharging the upstream aquifer and progressively extending surface flow downstream. Metcalf Pond was nearly full on 26 March and spilling about 25 cfs through the fish ladder on 28 March. By 1 April stream flow sufficient to allow adult steelhead passage had reached throughout the lower Coyote Creek channel, and connecting flow was maintained for much of April. Late-migrating adult steelhead should have been able to reach spawning and rearing areas upstream of the Ogier Ponds, although the culverts at Singleton Road may have made passage difficult.

Releases were cut back to about 60 cfs in mid-April and gradually declined to about 50 cfs by the end of October (Smith 2016). Much of the released water over the summer was from Anderson Reservoir, because of interrupted deliveries of Central Valley (San Felipe Pipeline) water. The reduced releases after the large release for adult passage maintained the flow to downstream of Metcalf Pond (which has a bypass requirement), but connectivity for potential smolt or adult emigration passage ceased by late April. The summer releases were generally similar to those that supported large-scale groundwater recharge prior to drought-induced flow cutbacks in February 2014 (Leicester and Smith 2014b).

Water Temperature Conditions

Temperature Conditions in 2017. Anderson Reservoir releases directly downstream of the dam and through the pipeline a short distance downstream (dominated by reservoir water throughout the summer) varied by only 0.5-1.5°C daily, but showed a major seasonal shift (Figure 7). Mean temperature was less than 15°C in May, but gradually increased to 18°C in mid-September. Temperature increased more quickly to 19.5°C in late September and early October, before declining to less than 18°C in late October (Figure 7); the decline coincided with exclusive releases from the reservoir while the San Felipe Pipeline was off-line for inspection. There was a one week spike in temperature to 18.5°C in late May when the source of releases

was being adjusted. (Figure 7). Peak temperatures of releases were about 1.5°C cooler than in 2015 and 2016 and occurred for a somewhat briefer period.

Farther downstream above the Ogier Pond complex water temperatures varied 2-3°C daily and had warmed somewhat, despite the relatively high stream flows that buffered against warming (Figure 8). The daily variation was less than in 2014 and 2015, when variation was 5°C, with much lower releases (Leicester and Smith 2015b). Rather than climbing gradually throughout the summer, mean temperature climbed from 16°C in early May to 18.5°C by mid-June and only to 19°C by September, before declining to 17°C by the end of October (Figure 8). This same general pattern of early rise and relatively stable over the June to September period occurred for all downstream sites (Figures 8-11) and was similar to that of air temperature (Figure 7), which apparently controls seasonal temperature progression in the stream. Mean temperatures were only 0.5-1.0°C warmer than below the reservoir in May through August, and the seasonal peak was actually lower, with air cooling downstream in September (Figure 8).

Immediately downstream of the Ogier Pond complex daily temperature variation was substantially lower (1-1.5°C) and mean temperatures were substantially higher (Figure 9), due to the heating effects in the pond, especially at the pond surface, the source of outflow from the pond. Mean water temperatures were 19°C in May and climbed to 25°C by mid-June (with maximums above 26°C) and then declined to 23.5°C by mid-September and 17-19°C in October (Figure 9). There was no overlap in water temperatures up and downstream of the Ogier Pond complex before mid-September, and mean temperatures were 3°C to more than 6°C higher downstream of the ponds (Figure 9), even more than the heating effect in 2016 (Smith 2016). As in 2016, the temperatures downstream of the ponds are likely to be consistently 22-25°C in summer regardless of the water temperature upstream of the ponds because of the large heat capacity and heating effect within the ponds (Leicester and Smith 2014b and 2015b; Smith 2016). The lower daily variation in outflow temperature in 2017 may be related to the wider opening at Ogier Pond #4 eroded by the February flood (Photo 17).

Farther downstream of the ponds, at the Golf Course Road, diurnal variation was 3-4°C, and mean water temperatures were 22-25°C from mid-June to mid-September. With maximums above 26°C in June (Figure 10). These were similar to those in the pond outflow, although in 2016 means were actually slightly lower (0.5-1.0°C) than the pond outflow temperatures. Even farther downstream, at Coyote Ranch Road, the water temperatures were nearly identical to those at the Golf Course Road (Figure 11). The effects of the ponds makes water temperatures downstream of the Ogier Ponds unsuitable for rearing steelhead unless food is unusually abundant and available.

The major water temperature issue in 2014 (Leicester and Smith 2014b) and 2015 (Leicester and Smith 2015b) was the sustained release of relatively warm water to Coyote Creek from the San Felipe pipeline and/or from Anderson Reservoir. This occurred despite a pool of cool water in the lower level of the reservoir that could have been utilized to maintain much cooler stream temperatures if the inflow to Coyote Creek had come solely from the near the bottom of the reservoir. With the additional stream flow and much longer wetted channel in 2016 and 2017

(and prior to 2014), then the additional major water temperature issue is the heating effect of the Ogier Ponds. If release temperatures are reduced in late summer, the warm surface water outflows from these large ponds will still result in temperatures downstream that would be similar to those seen in 2016 and 2017. Those temperatures would severely affect rearing quality for juvenile steelhead in the long reach between the Ogier Ponds and Metcalf Pond.

Temperature Conditions in 2014-2016. In 2014 and 2015, with the cut backs in releases and stream flow extending only as far as Ogier Ponds in summer, the temperature analysis was limited to that of releases and changes down to and through the first two Ogier Ponds for most of the years (Leicester and Smith 2014b and 2015b). In 2016 and 2017, the restored percolation releases allowed analysis under higher flow conditions and downstream through all four Ogier Ponds and to just above Metcalf Pond.

Air temperature patterns were similar in all three years (and in 2017), with general increases from April through June, relatively level means through August, and then gradual declines through October (Figure 6). Throughout the study period there were alternating periods of cooler and warmer conditions, with sharp contractions of temperature ranges during cooler, more overcast conditions. Peak air temperatures during warm periods were 30°C to more than more than 35°C, with maximums in 2015 generally somewhat higher than in 2016 (Leicester and Smith 2015b and Smith 2016). Air temperature means during June through August in both years were 20-21°C.

Water temperatures downstream of Anderson Reservoir and the San Felipe Pipeline had narrow (1°C) temperature ranges in all three years (Leicester and Smith 2015b and Smith 2016). In 2015 mean water temperatures increased from 14°C in mid-April to 16°C by early August, then increased sharply to above 20°C for early September through October, before declining sharply after late October (Leicester and Smith 2015b). In 2016 mean temperature increased from 13 °C in mid-April to 14.5°C at the beginning of July, then increased very sharply to 20°C, before sharply declining to 16.5°C a week later, as releases shifted from predominantly San Felipe water to a blend of Anderson Reservoir water and San Felipe water that was both discharged to the stream and delivered to the water treatment plant (Smith 2016). Temperatures then climbed to 20°C by the beginning of August, one month earlier than in 2015, as the draw-down of Anderson Reservoir lowered the thermocline to the level of the mid-elevation multiport release (Smith 2016). Means stayed 20-20.5°C until a slow decline to 19°C through October. The similar water temperatures in September of the three years provide the best month to compare downstream temperature changes.

In 2015, temperature ranges in summer at the site upstream of Ogier Ponds were usually about 5°C (Leicester and Smith 2015b). In 2016, with stream flow increased from about 9 to more than 50 cfs, the temperature range was less than 3°C (Smith 2016). In 2015, means upstream of the Ogier Ponds were 20-21°C in June through September, with maximums often 23-24°C (Leicester and Smith 2015b). In 2016, with the greater flow volume, the means and maximums were cooler; the mean in July was 17.5°C, the mean in August through September was 19.5°C, 0.5-1.5°C cooler than in 2015. Maximums were usually less than 21.5°C, 1.5-2.5°C cooler than in

2015 (Smith 2016). Means in August and September were actually 0.5-1°C cooler than at the site near the reservoir and pipeline discharges (Smith 2016).

In 2015, in the outflow from Ogier Pond #2, mean water temperatures were 17°C in early April, climbing to 22°C in May (Leicester and Smith 2015b). Mean temperatures reached 24-25°C in mid-June through August, and didn't drop below 20 °C until late October. In 2016, mean temperature climbed from 17°C at the beginning of May to 20°C by June and 22.5°C by the beginning of July (Smith 2016). By the beginning of August the mean was 22°C and declined to 21 °C by late September; means in October were 18-18.5°C (Smith 2016). Temperatures downstream of the first two Ogier Ponds were about 3-4°C warmer than upstream of the ponds in 2015 (Leicester and Smith 2015b) and 2-2.5°C warmer in 2016 (Smith 2016), due to discharge of surface-heated pond water, while the cooler (and denser) inflows to the ponds went to lower levels in the pond. Warming through the first two ponds was apparently somewhat reduced by the substantially higher stream flow in 2016 (and slightly cooler air temperatures). However, the thermal effects of the ponds have sufficient surface heating capacity to overcome much of the thermal mass of the inflow at most operational flows. Diurnal variation was less below the ponds than at upstream stream sites due the larger volume of warm water in the ponds which had a buffering effect against nighttime cooling (Leicester and Smith 2015B and Smith 2016).

In 2015, immediately downstream of the fourth pond in the Ogier Pond sequence, water temperatures during March and April were about 1°C warmer than below Pond #2, before the pond level dropped and the stream dried (Leicester and Smith 2015b). In 2016, mean water temperatures below the fourth pond reached 22-24°C in August through September (Smith 2016), and were 1-1.5°C higher than in the outflow from Ogier Pond #2. Therefore, more of the heating by the Ogier Pond complex occurred in the first two ponds, but the overall heating by the four ponds was 3-4°C in June – October.

Farther downstream in 2016, near the Golf Course, diurnal temperature variation increased to about 2°C, but mean water temperatures (21-23°C in June through August) actually cooled 0.5-1°C compared to the outflow from the ponds (Smith 2016). Maximum water temperatures were similar (23-24 °C) to the site immediately downstream of the ponds. Upstream of Metcalf Pond at Coyote Ranch Road, diurnal variation increased to 3-4°C, mean temperatures were similar to those at the golf course, but maximum temperatures reached 24-25°C (Smith 2016).

Substrate and Turbidity

Turbidity level in Coyote Creek was relatively clear (visibility > 120 cm) in 2014-2016 compared to that of other Santa Clara Valley streams downstream of reservoirs (Casagrande 2010; 2014; Leicester and Smith 2014a). In the smaller reservoirs, like Uvas and Stevens Creek, turbid storm water makes up most of the volume and remains suspended in the reservoir for much of the spring and is deposited on the streambed downstream with releases in spring. Sediment can also be deposited from turbid releases in late summer and fall, when the reservoirs are substantially drawn down. Anderson Reservoir is an order of magnitude larger than either of

the smaller reservoirs, has usually been more than one-third full at the start of winter, and in most years winter runoff less than doubles the stored volume. Fine sediment in storm water tends to be diluted and settled in spring, and spring turbidity is therefore much lower in releases from Anderson Reservoir. Release water was observed to be clear in March 2014, February 2015, and April 2016; on 15 April 2016, even with significant winter storms, visibility downstream of the reservoir was 65 cm and at the Golf Course it was 89 cm. In addition, the usually high summer releases in 2016, and prior to 2014, apparently rinsed most fine sediments off the streambed, at least in most habitats except large pools. In 2014-2016, substrate in riffles and fast runs was clean, and slower runs, glides and smaller pools had much less fine sediment than observed in Stevens Creek and much of Uvas Creek. The relatively clean substrate can potentially maintain much higher numbers of aquatic invertebrates (Kaller and Hartman 2004; Foster 2014). In particular, Hydropsychid (net-spinning) caddisflies and Baetid mayflies were abundant in 2016. The relatively clear water should also improve fish feeding efficiency (Barret et al. 1992).

In 2017, the near record winter runoff to Anderson Reservoir was more than four times the storage prior to the storms, so the entire stored volume of the reservoir was atypically turbid, similar to the usual annual condition in the smaller reservoirs. Even though the peak of the storm runoff in the upper watershed was over by March, turbidity in the reservoir persisted into summer. On 2 May visibility in Coyote Creek immediately downstream of the reservoir releases was only 15 cm, and downstream of Ogier Ponds at the Golf Course visibility was only 17 cm. By 23 July visibility below the reservoir had only improved to 40 cm and visibility at the Golf Course to only 48 cm. Even by 18 November visibility had only improved to 50 cm below the reservoir and 85 cm at the Golf Course; water in November 2017 was still more turbid than on 15 April 2016.

There are no significant tributaries between Anderson Reservoir and Metcalf Pond, and Anderson Reservoir has blocked gravel recruitment for more than 60 years. Gravels in the range of 25 – 75 mm were relatively scarce in 2014-2016, and spotty in their distribution, including at the tails of pools and glides where steelhead spawning normally occurs. Large cobbles were common at pool tails and in riffles and runs, but they are too large to provide suitable spawning substrate. Suitable spawning gravels were present in the floodplain, but they are normally not available for spawning or recruitment to the active channel except during severe floods, which were largely prevented by the dam. However, the 2017 flood was sufficient to spread over the flood plain, move bank gravels into the channel to improve spawning conditions, and rearrange some channel configurations. Upstream of Ogier Pond #1, a significant part of the main channel was moved to an old flood plain channel (Photo 14). The unshaded but reoccupied old channel has abundant cobbles and well-distributed gravels. Even where the stream generally remained in the vegetated recent channel, it occasionally braided into multiple channels (Photo 15).

Shade and Algal Growth

The usually perennial flows, and scarcity of significant floods and scouring flows occurring downstream of Anderson Reservoir, have allowed the density of riparian trees to increase substantially (Grossinger et al. 2006). The original sparse sycamore alluvial woodland has been converted to a dense mixed riparian forest. Western sycamores (*Platanus racemosa*) are still present along the stream, but are now joined, and far outnumbered, primarily by willows (*Salix* spp.), but also by box elder (*Acer negundo*), and cottonwood (*Populus balsamifera*). The resulting shade reduces water temperatures, but has other potentially undesirable effects on aquatic habitat. Densely shaded habitats can reduce feeding efficiency by steelhead, just as turbidity can. Shading also reduces growth of algae, which provides food and substrate for aquatic invertebrates (Hill et al. 1995; Foster 2014). Algae was generally only a thin coating on the rocks at the sites sampled in 2014-2016. Algae was more abundant at Coyote Ranch Road in 2016. However, even in sunnier areas algae appeared relatively scarce, which might also be due to low nutrient levels in the controlled releases from the reservoir and from the pipeline. Anderson Reservoir may have low nutrient levels, at least in the middle water column where the releases have come from, because of its depth and because Coyote Reservoir, upstream, may trap many of the nutrients coming from upper Coyote Creek.

The turbid water in 2017 probably reduced the sparse and shaded algae. However, the new unshaded channel upstream of Ogier Pond #1 is likely to provide greatly enhanced algae and invertebrates next year; it may provide the best potential steelhead rearing habitat.

***O. mykiss* Sampling Results**

All captured *O. mykiss* in 2014 ($n = 52$) were found to be young-of-year (YOY) based on scale analysis. Sizes ranged from 85 to 124 mm SL long (Leicester and Smith 2014b and Figure 13). These were judged to be steelhead, because all were good-sized YOY. They were expected to grow enough in winter and spring to smolt and attempt to emigrate in spring 2015 (Leicester and Smith 2014b).

No YOY *O. mykiss* were captured or observed during sampling of the same three sites in 2015, reflecting the lack of adult steelhead access in either the December or February storm events. Most of the fish present in 2014 were apparently gone; only a single large yearling (250 mm) was captured (Figure 13) and a similar-size fish observed, but not captured. The large size of the single yearling captured in 2015 supports the prediction made in the 2014 report that fish captured in 2014 would grow well enough over winter and spring to be able to smolt and emigrate the following spring. The lack of additional captures or observations of larger fish indicates that almost all of the 2014 YOY steelhead attempted to emigrate. However, because there was no stream flow continuity through the passage corridor, emigrating smolts would have been lost to predation by bass (*Micropterus* spp.) in the Ogier Ponds or trapped and killed by the dry-back in the disconnected channel downstream of the ponds. In 2014 a single *O. mykiss* estimated at 300 mm SL was observed but not caught (Leicester and Smith 2014b). Based upon the size of the yearling captured in 2015, that 2014 fish was probably also a

yearling steelhead. Adult steelhead access, spawning, and rearing probably occurred in 2013, based upon stream flow conditions. Therefore, the scarcity of yearling fish in 2014 indicates that most fish reared in 2013 also smolted and attempted to emigrate in 2014 (Leicester and Smith 2015b). The attempts would have been unsuccessful because of flow cut-backs after mid-February.

In 2016 and 2017, no *O. mykiss* were captured or seen at any of the four sampled sites. Therefore, although potential passage stream flows had been provided in early April in 2016 and possibly in January, briefly in February, and April in 2017, apparently no adults accessed and/or spawned in the habitats used in 2014. The available passage in April 2016 and 2017, compared to the dominant late December to early April migration period (Shapovalov and Taft 1954), may have been a problem. Steelhead studies on the central coast found lower adult numbers and few late migrating and spawning steelhead in 2016 (Joseph Kiernan, NOAA Southwest Fisheries Science Center; and Jon Jankovitz, California Dept. Fish and Wildlife, pers. comm.). However, it may also be that with smolt or adult passage problems in 2014-2015 there were few or no potential returning adults produced in either 2016 or 2017. The very few yearlings present in 2015 may have been able to emigrate during the brief passage window provided by the pulse flows in April 2016.

Other Fishes

In 2014-2016, prickly sculpin (*Cottus asper*) and Sacramento sucker (*Catostomus occidentalis*) were the only native fish caught at all three sites upstream of Ogier Ponds, but hitch (*Lavinia symmetricus*) were present at the two sites nearest Anderson Reservoir (Leicester and Smith 2014b and 2015b; Smith 2016). Hitch were more common at the upstream sites in 2016. In 2017, all three native species appeared to be less abundant, except in calmer secondary channels; they were probably reduced by the flood.

Juvenile spotted bass (*Micropterus punctulatus*) and largemouth bass (*M. salmoides*), were present at all three sample sites in 2014 and 2015, but were less abundant in 2015 (Leicester and Smith 2015b). In 2016, bass were almost absent at the three sites upstream of the Ogier Ponds, apparently because of the pulse flow in late March and April and the higher flows throughout the remainder of the year (Smith 2016). Common carp (*Cyprinus carpio*) and bass (115-275 mm FL) were common at the Golf Course sample site in 2016. The site was dry in summer 2014 and 2015, and the fish had apparently been rinsed down from the Ogier Ponds with the higher stream flows. In 2017, non-native fishes were absent during sampling at all sites upstream of Ogier Ponds and very scarce at the site below the ponds.

The 2017 flood, and the substantial draining and flushing of Metcalf Pond, probably reduced the predatory bass in the pond.

MANAGEMENT IMPLICATIONS

Adult Passage.—Some adult steelhead accessed the spawning and rearing habitat in 2014 despite a only about a 2-3 day window of flow continuity through the passage corridor in February (Leicester and Smith 2014b). It is likely that access by most adults was severely constrained by the single small window of potential suitable stream flow. In 2015, the drought continued, as did severely reduced releases to Coyote Creek, despite improved runoff into Coyote and Anderson reservoirs compared to 2014 (Leicester and Smith 2015b). The continued reduced releases to Coyote Creek were insufficient to provide passage corridor connectivity. Increased releases from Anderson Reservoir during the February storm would have provided suitable adult passage through the dry gap in surface flow at and upstream of Bailey Avenue. The storm runoff from Fisher Creek, and urban runoff downstream of Metcalf Road, would have completed the connection to spawning and rearing habitat upstream of the Ogier Ponds. In 2016 potential passage was provided by large (up to 140 cfs) releases, but not until early April, which may have been too late. Spawning and rearing habitat upstream of Ogier Ponds was under-utilized in 2014, and unused in 2015, 2016 and 2017. Releases in years prior to February 2014 had maintained continuous stream flow downstream to below the Metcalf Pond, and adult access was probably regularly available during even small winter storms, due to Fisher Creek and suburban runoff. A February or early March pulse flow release strategy that would provide or improve adult steelhead access, even *or especially* in drier years, should be considered as a vital tool to restore and maintain a viable steelhead population.

The Singleton Road low flow crossing, with its perched culverts and concrete apron, makes passage past this location difficult except during periods of sustained moderate storm flows. Down-cutting of the channel downstream of the crossing has reduced the back-flooding of the apron and culverts, increasing the jump height into the culverts and the length of the inclined apron that must be negotiated. The high flows in 2017 demonstrated the severe velocity problems of high flows. The potential flow windows for passage are few. Removal of this crossing as soon as possible should be a priority, because it jeopardizes (and may have already crippled) the steelhead run. A plan is being developed by a consortium of local municipalities to modify the Singleton Road crossing for fish passage. It is hoped that this will continue to move forward expeditiously.

Smolt Passage.—Restored late winter and early spring stream flows would create suitable stream flow conditions for smolt emigration. The narrow window during and prior to the February storm in 2014 probably prevented most smolts reared in 2013 from emigrating, as it occurred prior to the peak smolt emigration period (Shapovalov and Taft 1954; Fukushima and Lesh 1998). However, if Coyote Creek regularly produces large smolts, that emigrate early, some smolts might have been able to use the small, early passage window. Smolts reared in 2014 had no chance to successfully emigrate in 2015 and were lost to the surface flow dry-back downstream of Ogier Ponds and/or to predation in Ogier Ponds. Since no YOY steelhead were apparently reared in 2015, 2016, and 2017, four consecutive years of steelhead production were eliminated, and smolt emigration substantially reduced in a fifth year, extirpating the

steelhead population in Coyote Creek or putting it at very significant risk of extirpation. Similar passage issues in Upper Penitencia Creek, the only tributary stream that has been recently documented to support steelhead, put the steelhead population in the entire watershed at great risk of extirpation (Leicester and Smith 2016). A strategy needs to be developed to provide for smolt emigration, even in some drought years, if a viable steelhead population is to be restored and maintained.

All of the steelhead juveniles produced in the rearing habitat upstream of Ogier Ponds must emigrate through the Ogier Pond complex, with its abundant predatory largemouth and spotted bass. Taking the ponds off-channel, by rerouting the stream around the ponds, is a necessary action to prevent predation loss of many of the smolts. Unlike Metcalf Pond, which can be periodically and temporarily drained (an unintended result of the 2017 flood) to remove predatory non-native fish, the task of significantly reducing the predators in the Ogier Ponds is not feasible without reducing or eliminating stream flow into the ponds for an extended period (which would require severe reductions in stream flows upstream). Routing Coyote Creek around the Ogier Pond complex and taking them off-channel would allow for management actions that would not be possible under current conditions. A seasonal (April through November) sport fishing season presently exists on Coyote Creek, and on other South Bay streams, despite the closure of all coastal steelhead streams to fishing during this period. A proposal should be made to the California Department of Fish and Wildlife Commission to close the stream to fishing during this period to better protect steelhead. The seasonal fishery, with allowable take of “hatchery” trout and steelhead, presents an enforcement problem and a threat to maintaining the precarious steelhead populations. However, the open season also allows fishing for bass and other species in the Ogier Ponds and at Metcalf Pond, as well as in the stream. If the Ogier Ponds are taken off line to eliminate the temperature and predatory threats to steelhead, fishing could continue in the off-channel Ogier Ponds, even if the fishing regulations are changed to exclude fishing in the creek.

Stream Flow.—The sites sampled in 2014 and 2015 were atypical of the general habitat conditions in Coyote Creek, in that they were specifically chosen to include riffles and shallow run habitats that provide fast-water feeding habitat preferred by drift-feeding juvenile steelhead downstream from reservoirs in Santa Clara County (Casagrande 2010; Smith 2011; Leicester and Smith 2014a and 2015b). All of the *O. mykiss* caught in 2014 were from fast-water habitats (Leicester and Smith 2014b). The majority of Coyote Creek between Anderson Reservoir and Metcalf Pond is low gradient, and dominated by pools. Riffles and runs with coarse substrate are relatively scarce. Higher stream flows are necessary to increase width, depth, and velocity of riffles and runs and to increase the amount of fast-water “head of pool” habitat in pools located downstream of these coarse-bottomed riffle and run areas (Casagrande 2010) where aquatic invertebrates are abundant (Casagrande 2010; Foster 2014). However, those fast habitats would still be relatively scarce in the context of the entire system, and slow to moderate velocity pool habitat would still be the predominant habitat feature, even at high stream flows like those in 2016 and summer 2017. The operational flows observed in 2014 and 2015 were atypical due to the drought. Under operations prior to 2014 and in 2016 and 2017, with higher augmented flow rates, the amount and quality of juvenile steelhead rearing habitat

increases substantially. Even where coarse substrates are absent or scarce, fast-water areas can make substantial numbers of terrestrial invertebrates available to drift-feeding steelhead (Foster 2014).

In years prior to 2014, dry season stream flows in Coyote Creek downstream of Anderson Reservoir were typically between 30 and 50 cfs. Most of this flow percolated between the reservoir and Blossom Hill Boulevard and recharged the underground aquifer, which the Santa Clara Valley heavily depends upon for its water supply. These flows would have also provided suitable fast-water rearing habitat for juvenile steelhead. Habitat appears to have been better in 2016 and 2017 in the areas that supported summer flow in 2014 and 2015, and potentially suitable physical (but warm) habitat existed downstream in 2016 and 2017 in areas that were dry in both years. Higher stream flows also reduced the relatively abundant juvenile spotted and largemouth bass that were common at the three sites sampled in 2014 and 2015, although bass and carp from the Ogier Ponds were present downstream of the ponds in 2016.

Water Temperature.—Quality of potential rearing habitat depends heavily on the food available and upon the water temperature of stream flows, as higher water temperature increases the metabolic rate of fish and increases their food demands for survival and growth (Myrick and Cech 2005). When food is readily available, the best growth rates occur at warmer temperatures (e.g., 19°C), because assimilation rate also increases at higher temperatures (Myrick and Cech 2005). However, at lower food availability the increased metabolic cost of higher temperature reduces growth (Weber et al. 2014). For drift-feeding steelhead, higher water temperatures cause fish to use faster microhabitats, where food is more abundant (Smith and Li 1983); therefore, stream flow and water temperature are not independent in determining steelhead abundance, growth and habitat selection.

For Coyote Creek the two main factors potentially affecting stream temperature are the temperatures of reservoir and pipeline releases to the stream and the warming effect of the Ogier Pond complex on water temperature downstream of the ponds. With most reservoirs operated by SCVWD, water is released from the bottom, which is normally cool in summer, at least until the reservoir is drawn down (Casagrande 2010 and 2014; Leicester and Smith 2014a). However, Anderson Reservoir on Coyote Creek has a multiport release system; water can be released from the bottom where it remains cool year-round, or it can be released from higher in the reservoir water column where temperatures are much warmer, especially in late summer. The San Felipe Pipeline also brings in Bureau of Reclamation water from San Luis Reservoir for potential distribution to Anderson Reservoir by pumping up into the reservoir, when no reservoir withdrawals are being made, for direct release to Coyote Creek, or for distribution to other locations in northern Santa Clara County. In 2014-2016, releases to Coyote Creek were usually more from the pipeline than the reservoir and were quite warm for most of the late summer and fall. The moderate size of the YOY steelhead captured in 2014, their lack of significant growth between late September and late November, and the indications of slower growth and growth interruptions on their scales in late summer indicated that the water temperatures were too high for the food available for late summer growth (Leicester and Smith 2014b). Conversely, the large size of the single yearling steelhead captured in in early summer

of 2015 indicates that growth in late fall through spring is good, and may be attributable to warmer and clearer water than is typically present in most local streams during that period. In 2017, a larger share of the stream flow was provided by reservoir releases, because of the seismic need to lower the reservoir storage level. Water temperatures were slightly lower, but increased later in summer as the reservoir was drawn down, sending warmer water through the mid-level release port.

If substantially cooler water was released for all or part of the summer, steelhead growth and survival would likely be much better, at least in the reach between the dam and the Ogier Ponds. However, this would potentially require sending more warm imported water to the treatment plants, blended with cool bottom reservoir water (rather than from the mid-elevation release port), which could impact treatment costs or drinking water quality. Operations might have to depend upon monitoring the temperature of pipeline and reservoir releases. In non-drought years, providing cooler (and greater) releases should be pursued to improve conditions for threatened steelhead.

The Ogier Pond complex causes substantial increases in water temperatures downstream, because warmed surface water is progressively shuttled through the four ponds. The outflow temperature from the ponds in summer is likely to average 22-25°C, regardless of inflow temperature because of the high heat capacity of the ponds and the outflow of warm surface water. Such temperatures will have severe effects on steelhead growth and survival downstream of the ponds, regardless of the release temperatures at the reservoir. Elevated water temperatures in the ponds also create another indirect effect by increasing the food requirements of the predatory bass. This would be especially problematic during the late spring smolt emigration period. Predation impacts caused by the ponds and their substantial heating effect on water temperatures constitute very strong justification to reroute the stream around the ponds as soon as possible.

Spawning Gravels and Other Channel Enhancements.—Future investigations should evaluate the need for gravel augmentation to improve spawning success, especially since there are probably relatively few returning adult steelhead. Fast-water feeding habitats are important for steelhead abundance and growth in low gradient streams (Casagrande 2010). The step-run and riffle habitat created by boulders immediately downstream of Anderson Reservoir (the upper sample site) may provide a viable example of channel enhancement for juvenile steelhead feeding (Leicester and Smith 2015b).

Fish Sampling.—NOAA guidelines since 2015 for electrofishing limit sampling to water temperatures of 18°C or less. Unless water temperatures are reduced from those encountered in 2014-2017, sampling for juvenile steelhead would be extremely restricted both as to timing and location. In 2015-2017, fall sampling was not possible until October or November, and early morning sampling in late June and early July was conducted to meet the requirements in 2015. In 2017, morning sampling in August was conducted just prior to the sampling temperature cut-off at the two sites closest to the reservoir; sampling the two warmer sites farther downstream was delayed until late October. Future sampling at the warmer sites

downstream of Ogier Ponds could probably not be sampled to determine their utilization by steelhead until late October or later. November sampling can only be conducted if it is prior to rains which might allow adult access. Sampling prior to June is not allowed because adults and smolts might still be present, and although sampling in June would occur after smolts had left, YOY would then be too small to be efficiently captured. In addition, sampling at most sites prior to June would still be prevented by high water temperatures produced by the Ogier Pond complex. This conflict for necessary population monitoring will persist as long as the 18°C cap is in place.

The more typical high summer/fall stream flows present in 2016, 2017, and prior to 2014 are desirable for rearing steelhead, but in 2016 and 2017 the high flows made electrofishing more difficult. Coordinated, brief (1-2 day) reductions in flows, if they could be conducted without resulting in stream dry-back, might improve electrofishing effectiveness.

ACKNOWLEDGMENTS

Permission to sample in the Coyote Creek County Park was provided by Santa Clara County Department of Parks and Recreation and the SCVWD. Jim Butera assisted with the electrofishing. Jae Abel (SCVWD) assisted with water temperature data management.

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Figure 1. Coyote Creek downstream of Anderson Reservoir, showing locations of temperature recorders (orange circles) and fish sampling reaches (red squares) in 2017. An additional temperature recorder was just upstream of Metcalf Pond, farther north.

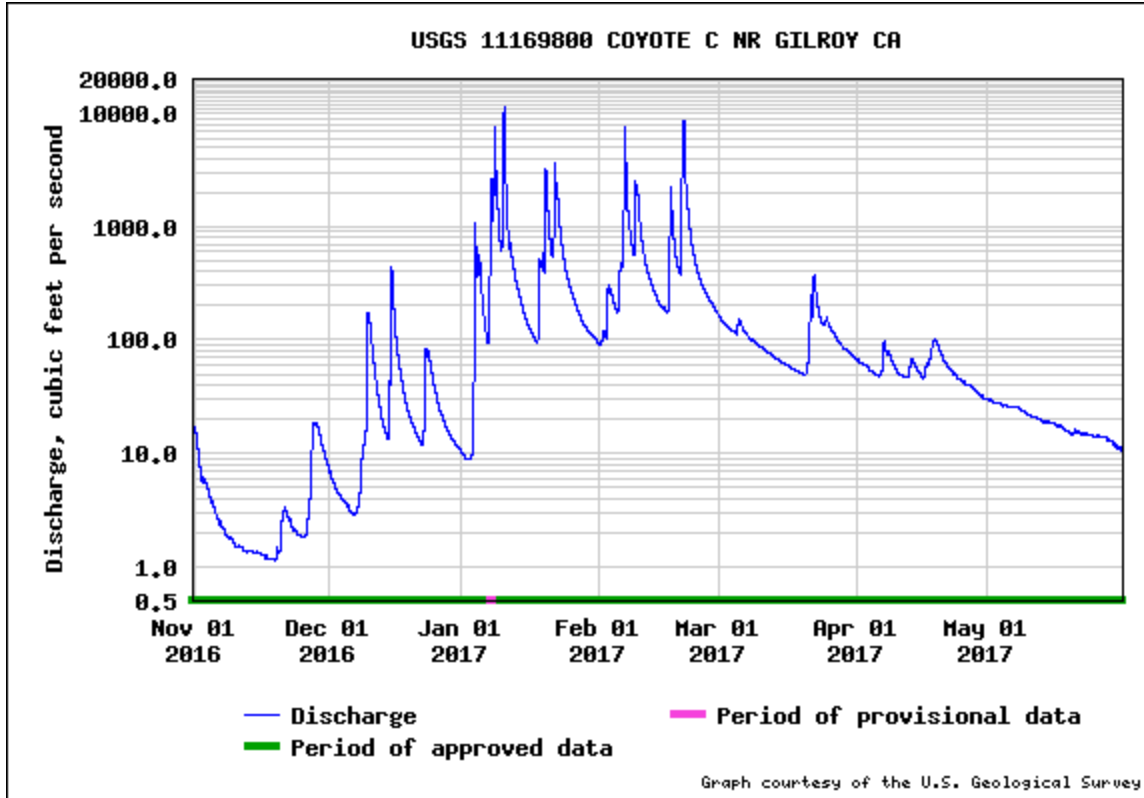


Figure 2. Stream flow on Coyote Creek at the USGS gage upstream of Coyote Reservoir From 1 November 2016 through May 2017.

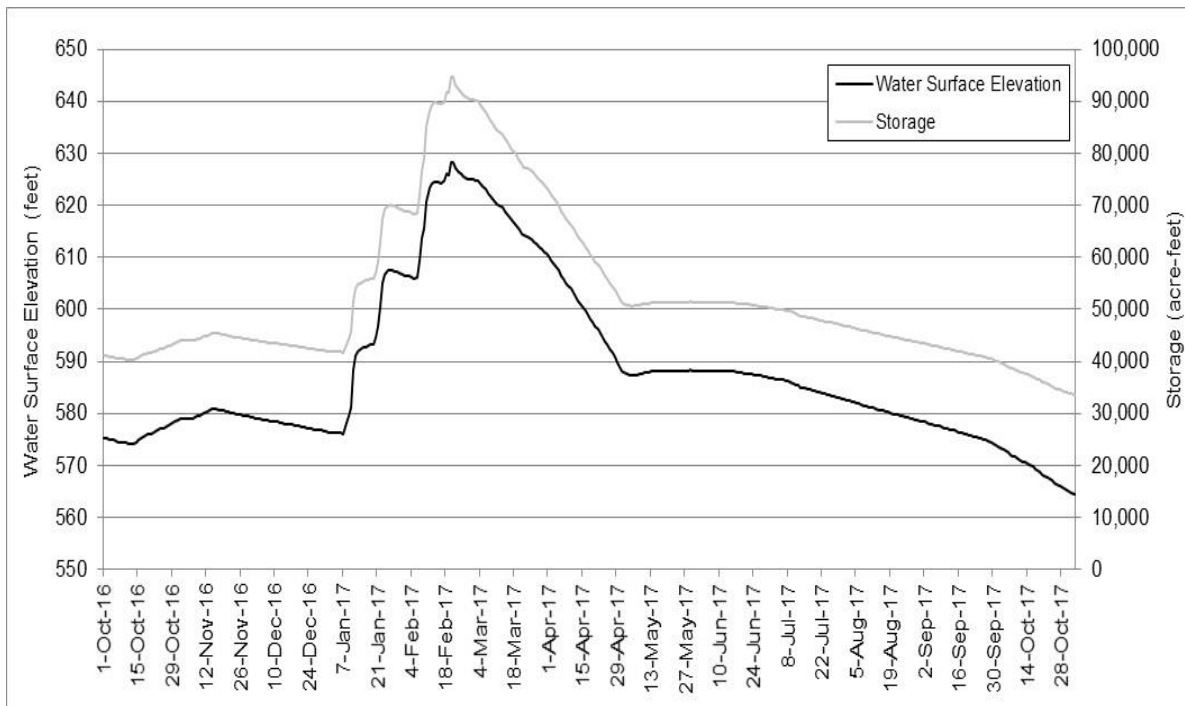


Figure 3. Anderson Reservoir water surface elevation and storage from 1 Oct 2016 through 1 Nov 2017.

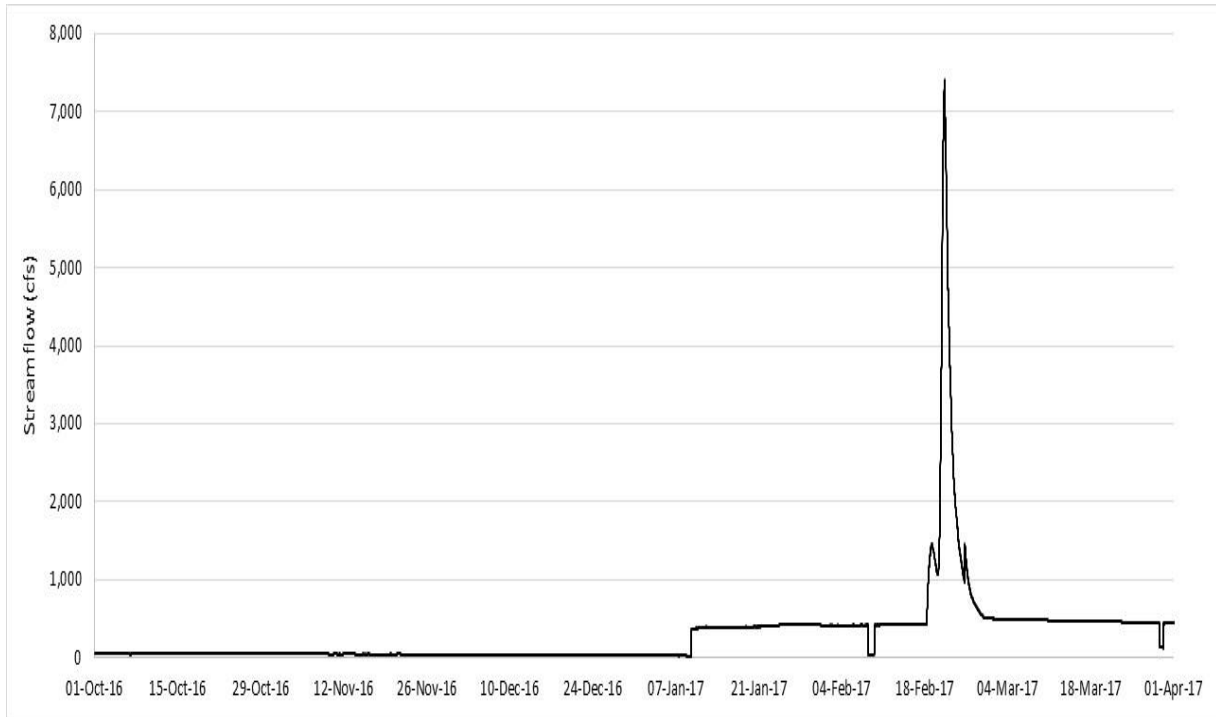


Figure 4. Mean daily stream flow at the SCVWD Madrone Gage (1.5 miles downstream of Anderson Reservoir) from 1 October 2016 through 1 April 2017. The brief drop in Reservoir release in February was to lower or remove Metcalf Pond dam panels, and the Drop on 30 March was to modify the fish ladder for passage at the lower pond level.

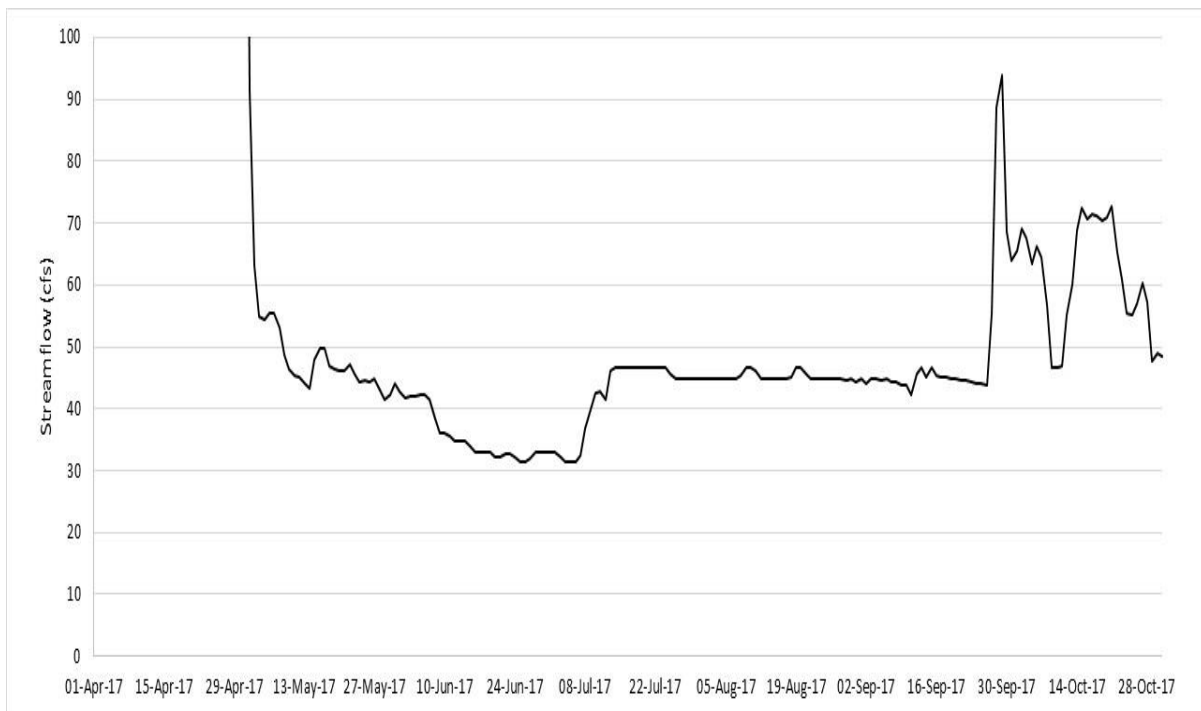


Figure 5. Mean daily stream flow at the SCVWD Madrone Gage (1.5 miles downstream of Anderson Reservoir) from 1 April through 1 November 2017.



Figure 6. Mean daily stream flow at the SCVWD Edendale gage (in the urban area downstream of Metcalf Percolation Pond) from 1 October 2016 through 1 April 2017.

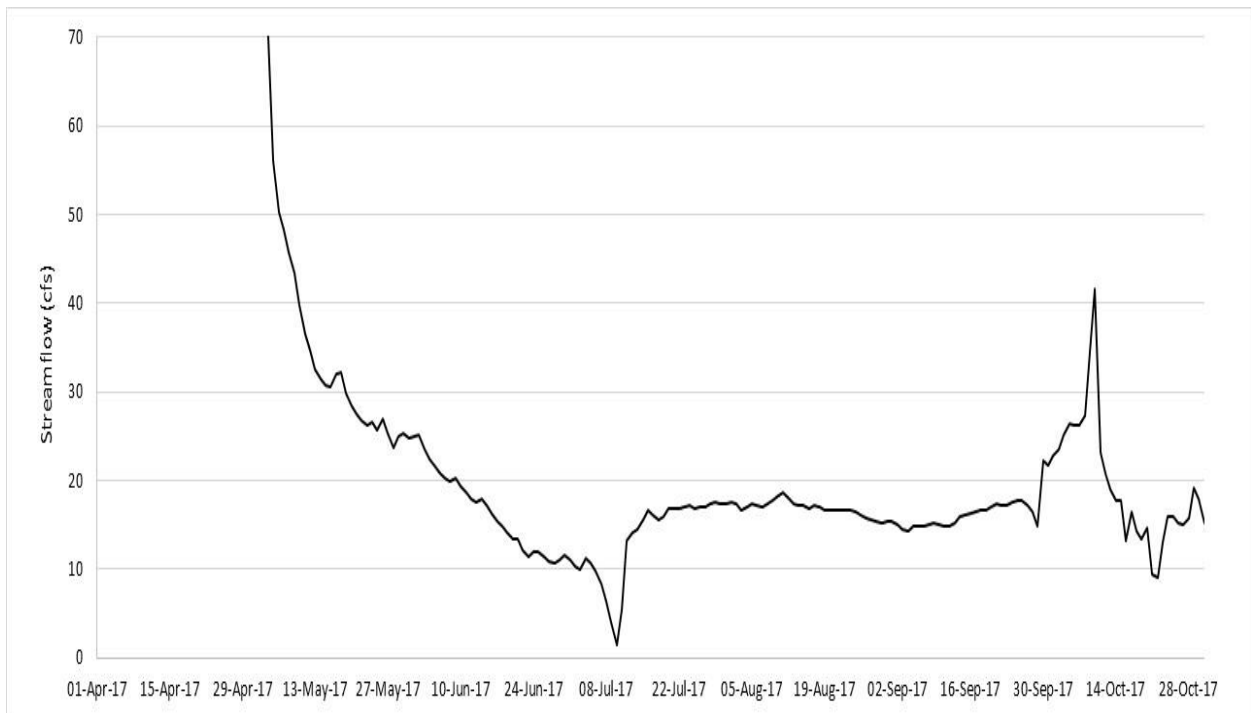


Figure 7. Mean daily stream flow at the SCVWD Edendale gage (in the urban area downstream of Metcalf Percolation Pond) from 1 April through 1 November 2017.

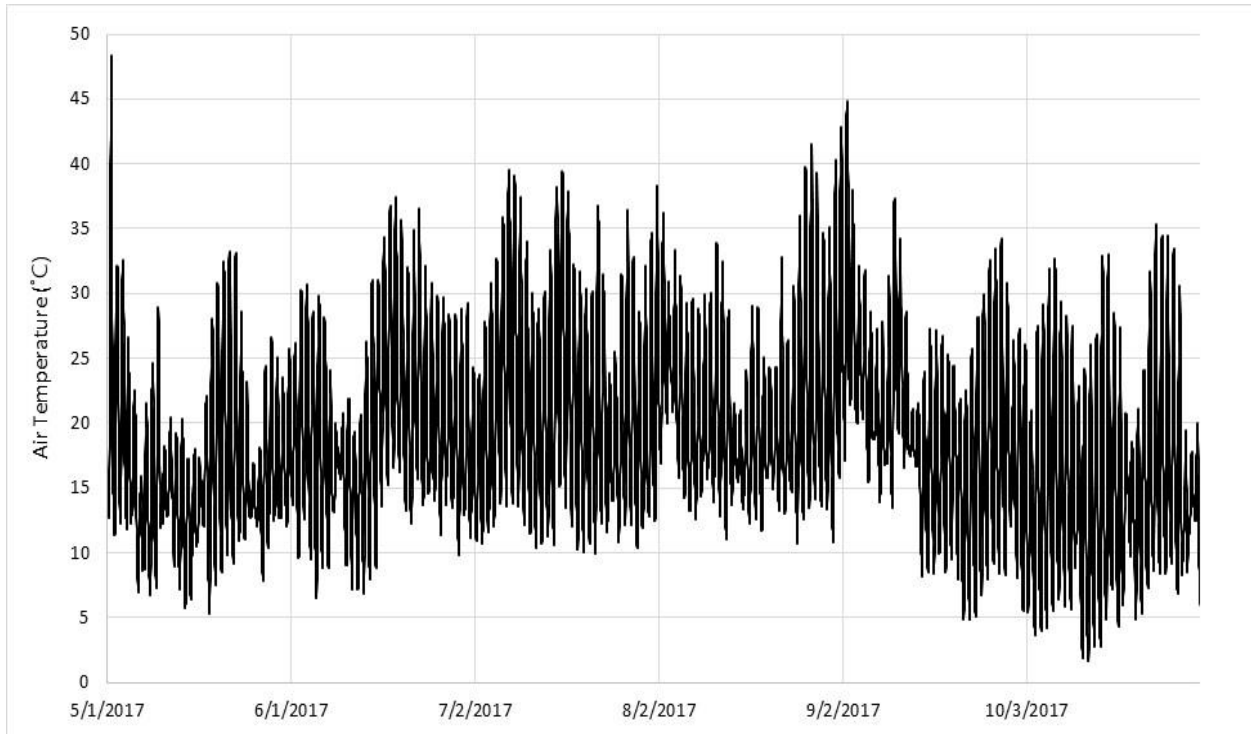


Figure 6. Air temperatures near Highway 152 west of Gilroy from 1 May through 1 November 2017.

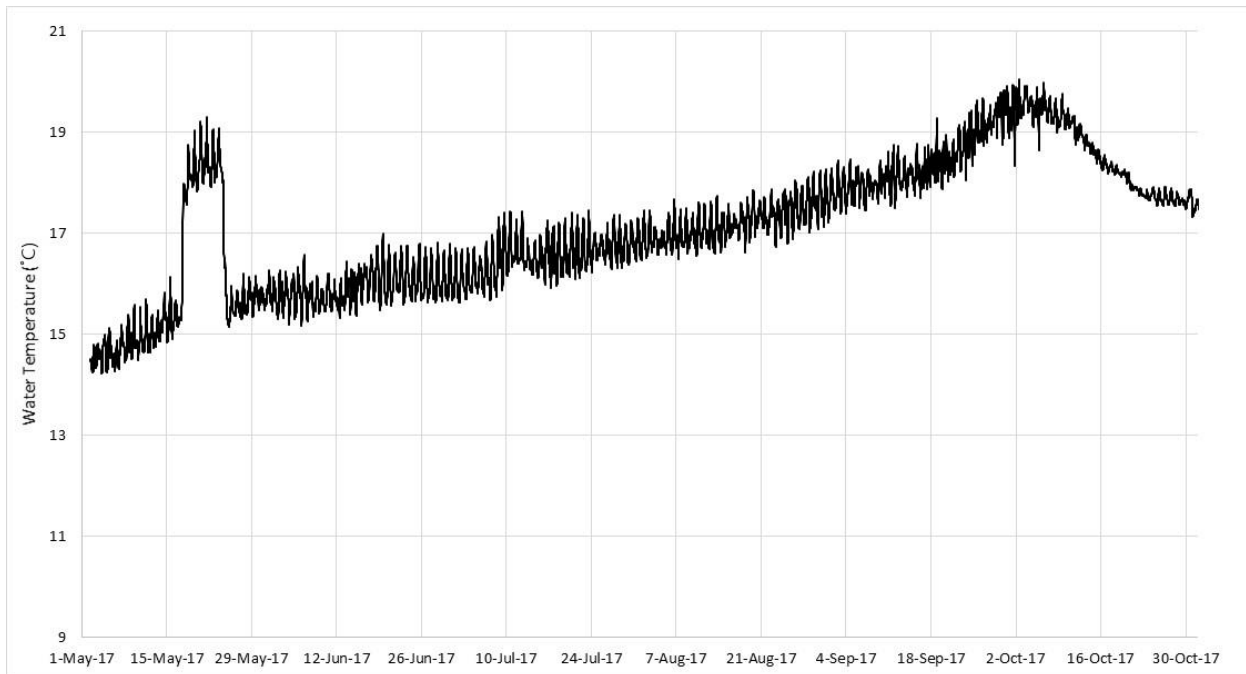


Figure 7. Water temperatures in Coyote Creek in the park downstream of the pipeline and reservoir discharges from 1 May through 1 November 2017.

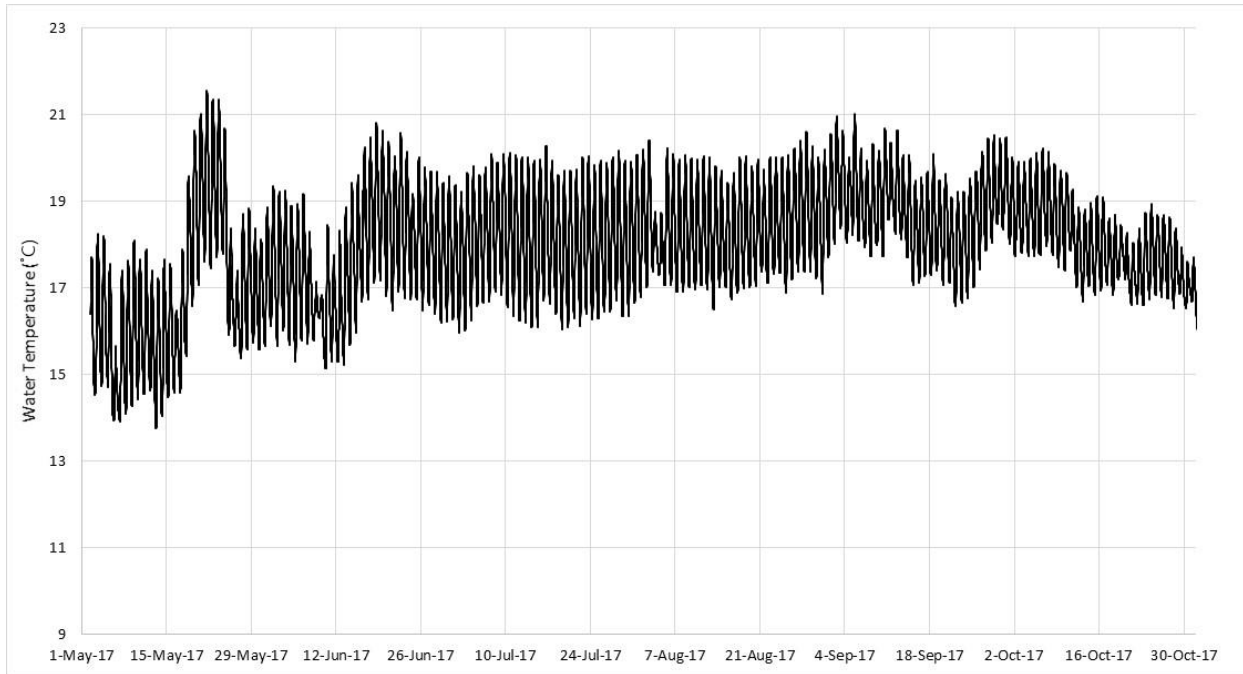


Figure 8. Water temperatures in Coyote Creek upstream of the Ogier Ponds Complex from 1 May through 1 November 2017.

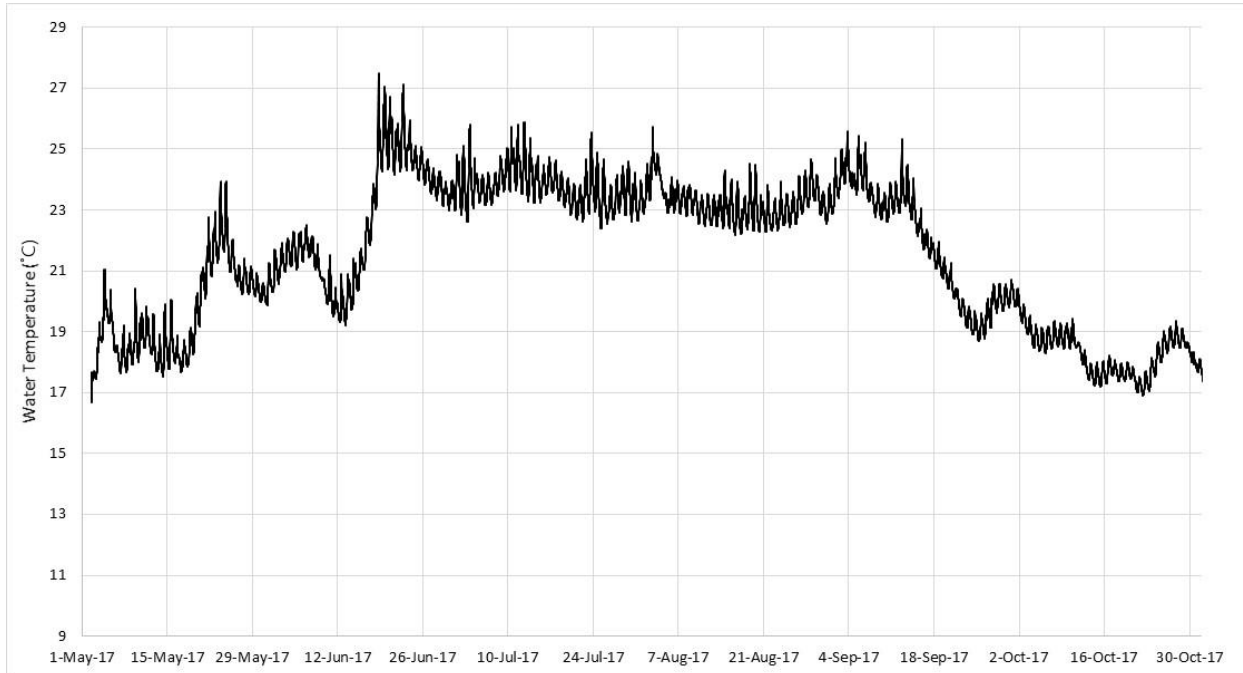


Figure 10. Water temperatures in Coyote Creek immediately downstream of the Ogier Pond complex (downstream of Ogier Pond #4) on Coyote Creek from 1 May through 1 November 2017.

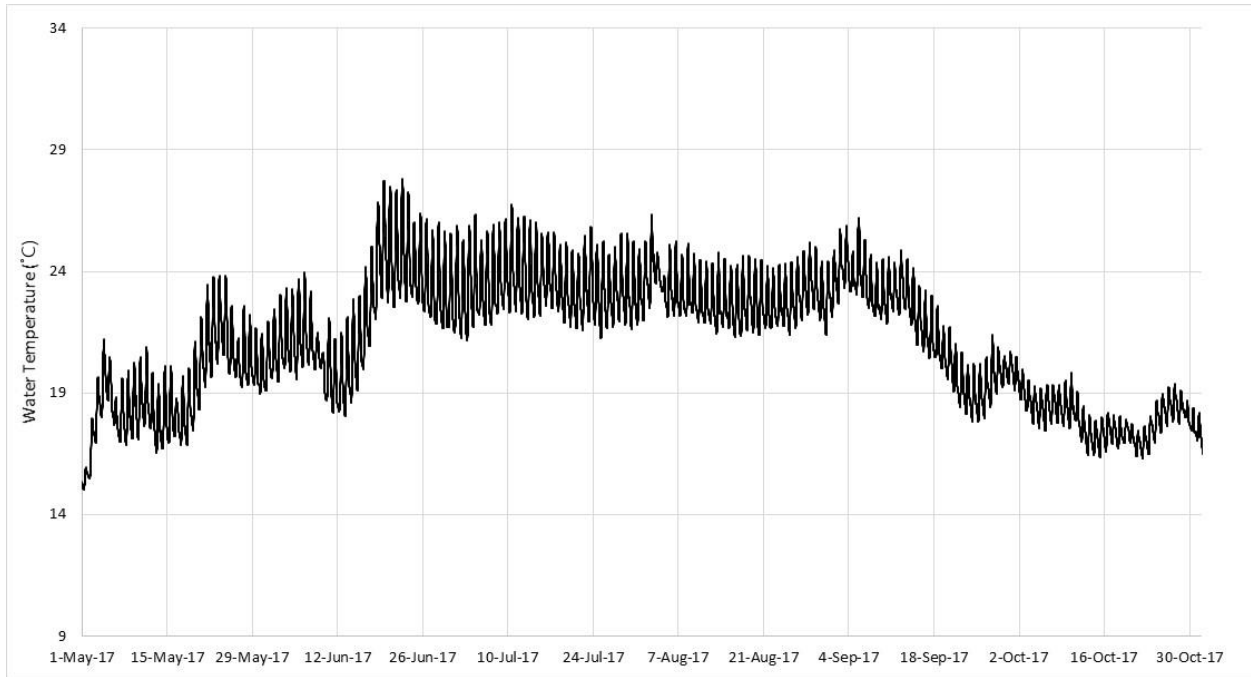


Figure 11. Water temperatures in Coyote Creek immediately downstream the Golf Course Road from 1 May through 1 November 2017.

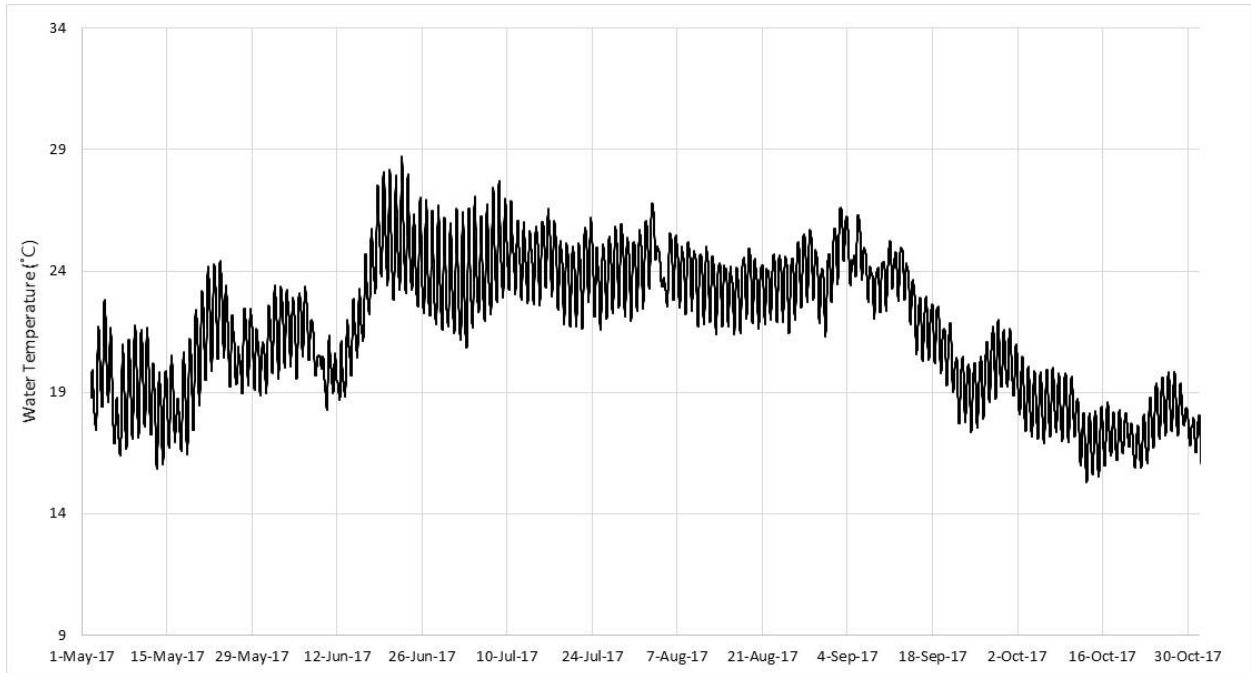


Figure 12. Water temperatures in Coyote Creek immediately downstream of Coyote Ranch Road (upstream of Metcalf Pond) from 1 May through 1 November 2017.

Figure 13. Standard lengths (mm) of *O. mykiss* captured by electrofisher at three sites on Coyote Creek on 29 September/24 November 2014; and 28 June 2015. No *O. mykiss* were captured in 2016 or 2017.

Standard Length (mm)	Upstream of Ogier Ponds 2014		US Boys Ranch DS of Anderson Res. 2014	Immediately DS Anderson Reservoir 2014	
	9/29 (n=9)	11/24 (n=3)	11/24 (n=30)	9/29 (n=12)	11/24 (n=7)
80 – 84			XXX		
85 – 89	XXX		XXXXXXXXXXXX		
90 – 94	XX		XXXXX	X	
95 – 99	X		XXXXX	XX	XXX
100-104	X	XX	XXXX	XXX	X
105-109	X	X	X	XXX	X
110-114				XXX	X
115-119	X				
120-124			X		X
225 -229			US Boys Ranch DS of Anderson Res. 28 June 2015 X		

Table 1. Amount of habitat sampled, number of *O. mykiss* captured, and estimated density from depletion at sites on Coyote Creek in September and November 2014 and 28 June, 3 July and 14 November 2015, 21 October 2016 , and 28 August and 26 October 2017 (2017 data in bold).

Site and Date	Distance Sampled (feet)	<i>O. mykiss</i> Captured	Estimated Density (number per 100 feet)
Downstream of Reservoir			
29 September 2014	175	12	7.1 / 100 feet
24 November 2014	175	7	4.1
3 July 2015	175	0	0
21 October 2016	175	0	0
28 August 2017	185	0	0
Upstream of Correctional Facility			
24 November 2014	422	30 (+ 1 yearling missed)	8.2
28 June 2015	425	1 (+ 1 missed)	0.4 (yearlings)
14 November 2015	425	0	0
21 October 2016	365	0	0
28 August 2017	425	0	0
Upstream of Ogier Ponds near Model Airplane Park			
29 September 2014	524	10	1.9
24 November 2014	275	3	1.1
28 June 2015	475	0	0
21 October 2016	285	0	0
26 October 2017	710	0	0

Table 1 (continued)

Site and Date	Distance Sampled (feet)	<i>O. mykiss</i> Captured	Estimated Density (number per 100 feet)
Downstream of Golf Course Road			
21 October 2016	95	0	0
26 October 2017	120	0	0

Appendix: Photos



Photo 1. Metcalf Pond dam on 18 February 2017 at 1300 cfs. Radial gates were open and the fish ladder was not passable.



Photo 2. Metcalf Pond dam on 21 February 2017 at 6500+ cfs. Very turbid water from storm flows that filled and spilled from Anderson Reservoir.



Photo 3. Metcalf Pond ladder and radial gates on 21 February 2017 at 6500+ cfs. The pond water level was high enough that even with the dam panels down there was potential passage in the fish ladder.



Photo 4. Metcalf Pond dam on 26 February 2017 at approximately 700 cfs, with impassable apron and lowered dam panels.



Photo 5. Metcalfe Pond radial gates and impassable (no flow) fish ladder on 26 February 2017.



Photo 6. Metcalfe Pond Dam on 15 April 2017, with a functioning fish ladder that had been modified for passage by 30 March.



Photo 7. Metcalfe Pond dam panels reinstalled and dam apron buttressed with grouted boulders on 3 October 2017. Flow bypassed in pipeline to allow grouted boulder weir construction that was necessitated by channel down-cutting during flood.



Photo 8. Boulder weir fishway construction leading to fish ladder on 3 October 2017.



Photo 9. Grouted boulder weirs on 15 October 2017, with pipeline removed and flow through radial gates. Gates were slowly closed (to maintain a live stream downstream) raising the Metcalf Pond water level, and allowing flow to spill through the fish ladder 1 week later.



Photo 10. Singleton Road on 26 February 2017 at 650++ cfs, with no adult steelhead passage possible because of high velocity in the two submerged culverts and on the steeply inclined apron.



Photo 11. Singleton Road at approximately 450 cfs on 15 April 2017, impassable due to high velocity in the culverts and on the inclined apron.

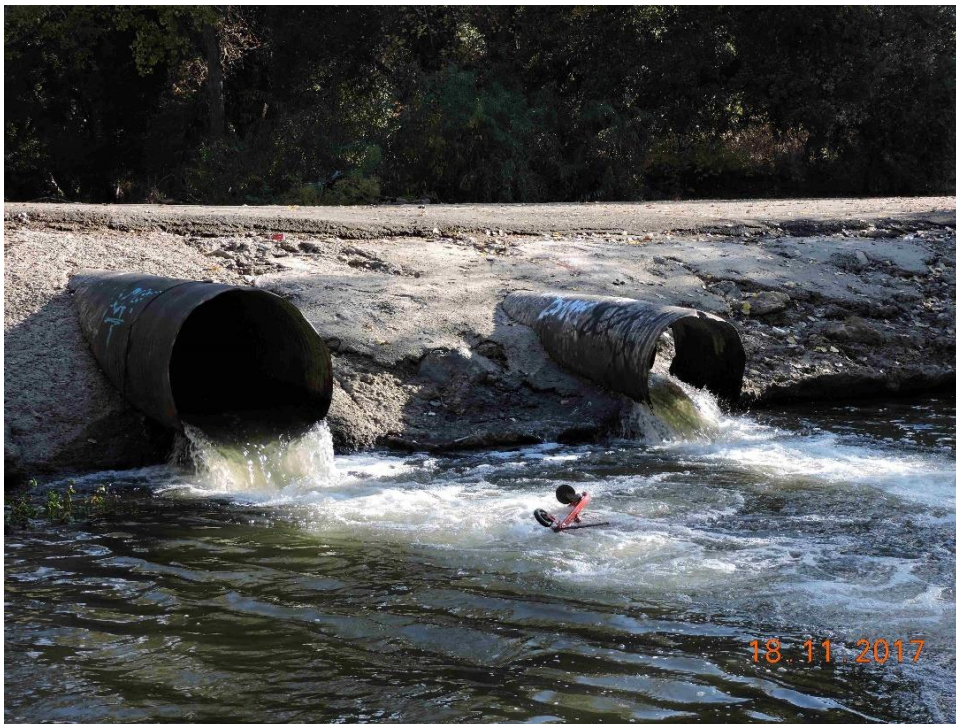


Photo 12. Singleton Road on 18 November 2017 at approximately 50 cfs. Possibly marginally passable through the culverts. Note the damage to culvert on the right in the picture.



Photo 13. Immediately downstream of the outflow from Anderson Reservoir on 2 May 2017. Due to the seismic need to lower the water level in the reservoir and to recharge the aquifer, stream flows were high in Coyote Creek all summer and fall, and most of the water came from the reservoir rather than from a more equal combination of imported San Felipe Pipeline water and reservoir releases. This resulted in cooler stream water temperatures upstream of Ogier Ponds than in 2014-2016. Releases were usually turbid (visibility 15 cm on 2 May and 50 cm on 18 November) because of the abundant stored storm runoff.



Photo 14. Realigned channel between the Model Airplane Park and Ogier Pond #1 at 70 cfs on 26 October 2017. The channel was moved during the February flood 300 feet to the east to an old stream channel. Less than 1 cfs was flowing in the bypassed old channel.



Photo 15. The stream rejoined and braided 4+ channels through the forested old channel location upstream of Ogier Pond #1. 26 October 2017.



Photo 16. Washed out road and culvert immediately downstream of Ogier Pond #1 on 2 May 2017 at approximately 150 cfs. Stream flow was still turbid (16 cm visibility) from storm water stored in Anderson Reservoir. Visibility had cleared to 75 cm by 26 October 2017.



Photo 17. Outlet to Ogier Pond #4 on 18 November 2017 at approximately 70 cfs. The narrow outlet was widened from about 25 feet to 85 feet (including 45 feet above the present water surface).