State Water Resources Control Board
Order 6/17/20145

Provision 18 – Water Loss, Water Use Efficiency and Water Reliability Program Update

April 1, 2016

Prepared by

Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95403

1 Introduction

This report has been prepared by the Sonoma County Water Agency (Water Agency) to fulfill the requirements of Provision 18 of the State Water Resources Control Board (State Board) Order dated June 17, 2015 (Order).

Provision 18 of the Order directs the Water Agency to take the following actions:

> SCWA shall provide a written update to the Deputy Director by April 1, 2016, regarding activities and programs being implemented by SCWA and its water contractors to assess and reduce water loss, promote increasing water use efficiency and conservation, and improve regional water supply reliability.

2 Water Use Efficiency

The Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor and North Marin, Marin Municipal and Valley of the Moon Water Districts and the Water Agency formed the Sonoma-Marin Saving Water Partnership in 2010. The purpose of the Sonoma-Marin Saving Water Partnership is to establish the financial obligation for the eight local water retailers, Marin Municipal Water District and Sonoma County Water Agency, identify and recommend implementation of water conservation projects and to maximize implementation of cost-effective projects for the Partnership. The Partnership coordinates all water use efficiency focused media buys in the region and provides support to members that need additional assistance meeting conservation targets.

In 2014 as a response to ongoing drought conditions, the Partnership and the Water Agency launched a conservation campaign, "There's a Drought On. Turn the Water Off." which was the regions first ever winter advertising reminding customers to conserve water. In 2015 the Partnership wanted to keep the similar, humorous, engaging campaign that resonated with the general public so we shifted into the "There's Never Enough to Waste. Turn the Water Off." campaign. The new campaign had the same look and feel as the prior year with a slight shift. Our focus became providing resources on how to make specific behavioral and hardware changes with the ads focusing on a call to action.

The Water Agency also hosted an additional "Drought Drive-Up" event in the City of Sonoma. This event gave away free water saving kits of a free showerhead, bathroom and kitchen faucet aerators, dye tabs, a shower timer and a bucket for saving water while waiting for hot water. The City of Sonoma was the focus because they were assigned the highest water conservation standard in our region (28%) and they historically have had the highest per capita water use.

In addition to the Drought Drive-Up event, the Water Agency was one of the hosts of the DIY Outdoor Drought Solutions event promoted by the Partnership. This event was an interactive water conservation focused event that attracted approximately 1,000 people. At the event customers learned how to sheet mulch, convert their sprinklers to drip irrigation, harvest rainwater and more.

The Agency actively engaged all the Partnership members to track and report their water use data and ensure the State mandated water conservation goals were met. The table below shows the regions cumulative progress through February 2016 and each individual Partner served by the Agency. As displayed, the Partnership exceeded the goal as a region and each water contractor was able to successfully reduce water demands to meet the assigned targets.

Water Retailer	Aggregate June 2015 to Feb 2016 (Gallons)	2013 Benchmark (Gallons)	Relative to 2013 Benchmark	Conservation Standard
Cal Am	176,862,088	234,278,000	25%	25%
Cotati	189,812,958	248,428,802	24%	20%
Marin Municipal	5,509,814,559	6,899,385,863	20%	20%
North Marin	1,641,864,261	2,457,000,000	33%	24%
Petaluma	1,849,188,132	2,392,250,680	23%	16%
Rohnert Park	1,049,709,445	1,267,000,000	17%	16%
Santa Rosa	4,077,711,486	5,454,466,874	25%	16%
Sonoma	412,263,915	562,964,712	27%	28%
Valley of the Moon	575,988,721	800,493,133	28%	20%
Windsor	744,972,939	963,136,985	23%	16%
Partnership Total	**16,228,188,505**	**21,065,970,788**	**23%**	**19%**

The Water Agency also won the U.S. Environmental Protection Agency WaterSense Partner of the Year award for the Sonoma-Marin Saving Water Partnership work with the Qualified Water Efficient Landscaper (QWEL) program. QWEL is a national certification program, created in part by the Water Agency, developed to educate landscape professionals to the benefits of sound landscape design, management and irrigation practices.

2.1 Sonoma-Marin Saving Water Partnership Annual Report

The Partners are committed to remain as members in good standing of the California Urban Water Conservation Council (CUWCC) and implement the Best Management Practices (BMPs) for water conservation. The Partners will implement or use best efforts to secure the implementation of any water conservation requirements and will publish an Annual Report to track progress. The Annual Report will track program implementation, highlight program milestones, and reinforce the importance of protecting and preserving water resources for future generations. The 2014/2015 Annual Report for the Partnership is attached in Appendix A.

3 Water Loss

Under the Water Agency's Condition Assessment Program, Pure Technologies (Pure) was contracted to conduct two pipeline inspections in 2014 using two different approaches. In January 2014, Pure provided detailed inspection of 1.2 miles of the Water Agency's 24-inch Oakmont Pipeline. The pipeline

was taken off-line, dewatered, and inspected with a robotic crawler (PureRobotics platform) outfitted with a high-definition CCTV camera to assess mortar lining, LiDAR assembly for 3-dimensional pipe scans, and enhanced electromagnetics equipment to assess the condition of the steel cylinder and bar-wrapping of the bar-wrapped concrete cylinder pipe (AWWA 303). The results of the inspection identified small isolated areas that experienced mortar loss, but overall the inspected pipeline was found to be in very good condition with no signs of the pipe integrity being compromised. The enhanced electromagnetics analysis found no indications of corrosion of the pipe's steel cylinder or bar-wrapping.

In June 2014, Pure conducted an acoustic pipeline inspection of 6.8 miles in the southern portion of the Sonoma Aqueduct to identify potential leaks and air pockets. The inspected section of pipeline was welded steel pipe of mainly 20-inch and 16-inch diameter. Pure inspected the pipeline with a free-floating acoustic sensing device (SmartBall) placed inside the in-service pipe. The results of the acoustic data analysis identified two leaks over the 6.8 miles. The first leak was categorized as medium-sized (2-10 gallons per minute (gpm)) and was found during a follow-up site visit to be a delivery turnout valve that was not properly sealing. This 'leak' was not a water loss leak since water was flowing out to a Water Agency customer's distribution system (Valley of the Moon Water District). The second identified leak was categorized as small (<2 gpm). Subsequent site visits were not able to detect a leak with a ground mic in the vicinity identified by the SmartBall. The final determination for this leak was that the elevated pipeline pressures during the inspection created a small joint leak that under normal pressures was not present. While the analysis of the acoustic data did not identify it, an additional leak was discovered at a leaking check valve during the inspection planning process. Noise from the mainline valve used to throttle flow during the inspection was located in the vicinity and had masked any signal that could have been identified as associated with this leak. The swing check valve located on the east end of the Verano Avenue bridge in Sonoma was discovered to have a bad seal and leaking at approximately 5 gpm. There was no recollection by Agency staff of any inspection of the check valve prior and therefore the leak may have been occurring for many years without detection. Temporary repairs reduced the leak and repairs to the check valve were completed later in the year.

4 Water Supply Reliability- Forecast-Informed Reservoir Operations

Forecast-Informed Reservoir Operations (FIRO) is a management strategy that uses data from watershed monitoring and modern weather and water forecasting to help water managers selectively retain or release water from reservoirs in a manner that reflects prevailing and anticipated conditions. FIRO represents an innovative use of emerging science and technology to optimize limited resources and relieve potential impacts climate change without building expensive new reservoir infrastructure. It is anticipated that FIRO may have tangible benefits for drought and flood mitigation and ecosystem benefits. Lake Mendocino has become a test case for evaluating whether FIRO can be implemented to provide tangible water supply benefits without adversely affecting flood risk. A steering committee of was formed with members from the Water Agency, USACE, NOAA, Scripps, DWR and the Federal Bureau of Reclamation. Under the guidance of the Steering Committee a work plan was completed in

September 2015. Additionally 2 major workshops have been held in August of 2014 and July of 2015 convening engineers, atmospheric scientists, policy makers, fisheries biologists and regulators to discuss alternatives and provide valued input in the overall effort. The FIRO study is expected to occur over the next five years (depending on funding). Tangible outcomes from the full Lake Mendocino FIRO study will include identification, assessment and enhancement of the best science available to improve operations to maximize flood control, water supply and ecosystem benefits. The evaluation will identify realistic, short-term steps to provide more accurate and timely information about weather and watershed conditions. In addition to benefitting Lake Mendocino, the project has transferability potential throughout the western United States. Additional information on Improving Reliability for Droughts & Floods: Forecast-Informed Reservoir Operations can be found at the following website: http://cw3e.ucsd.edu/FIRO/.

Appendix A

2014/2015 Annual Report for the Sonoma-Marin Saving Water Partnership

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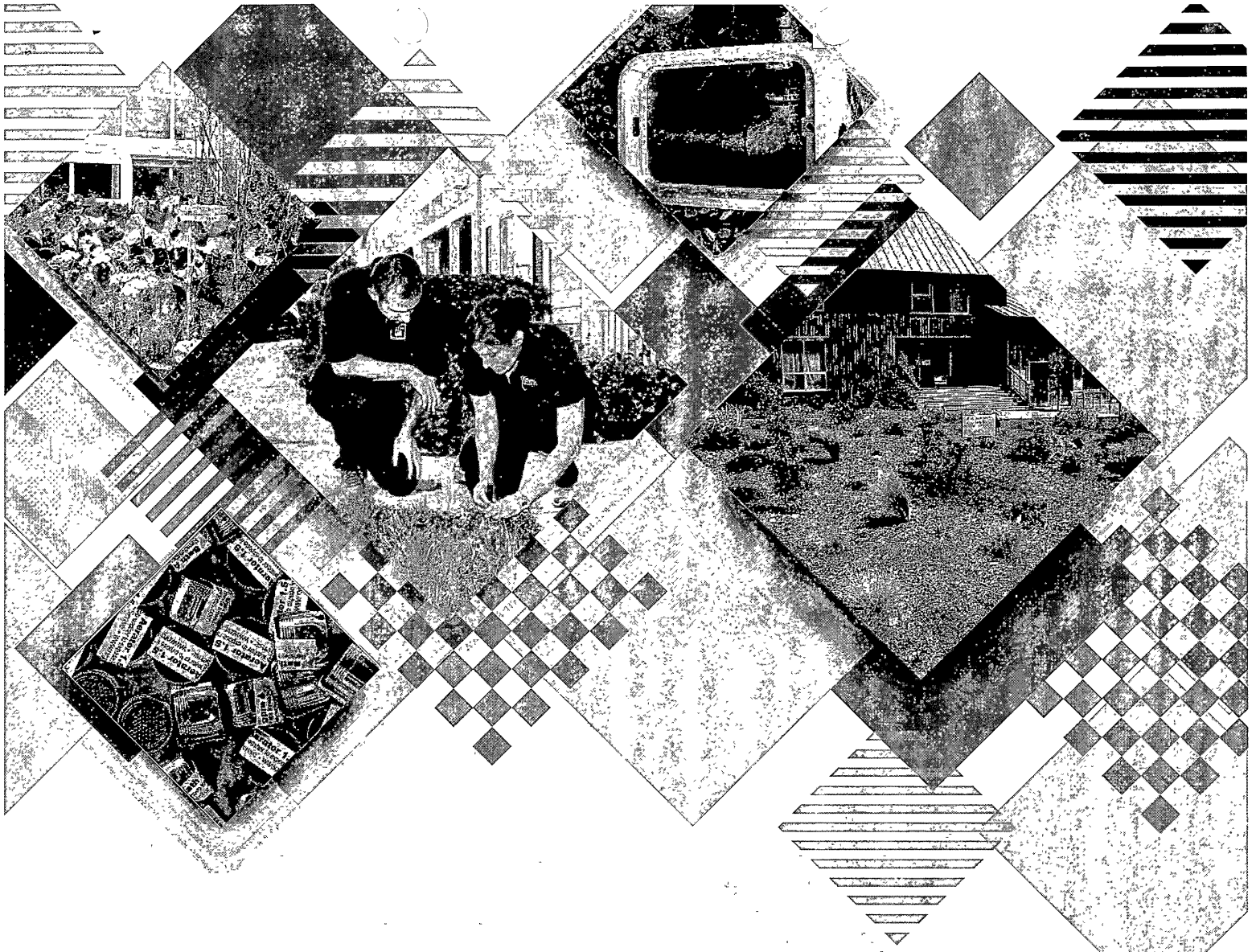


ANNUAL REPORT
FISCAL YEAR 2014-2015

SONOMA - MARIN
SAVING WATER
PARTNERSHIP

About the Partnership

The Sonoma-Marin Saving Water Partnership (Partnership) represents 10 water utilities in Sonoma and Marin counties that have joined together to provide regional solutions for water use efficiency.

The utilities include the Cities of Santa Rosa, Rohnert Park, Petaluma, Sonoma, Cotati; North Marin, Valley of the Moon and Marin Municipal Water Districts; Town of Windsor and Sonoma County Water Agency (Partners). Each of the Partners have water conservation programs that can assist customers in reducing their water use

The Partnership was formed to identify and recommend implementation of water use efficiency projects, and maximize the cost-effectiveness of water use efficiency programs in our region.

The Partners are committed to remain members in good standing of the California Urban Water Conservation Council (CUWCC) and implement the Best Management Practices (BMPs) for water conservation.

Our Service Area

More than 600,000 residents in Sonoma and Marin counties rely on the water delivered from the Russian River by the Sonoma County Water Agency (Water Agency) to the nine cities and districts in the Partnership. Supplementing the water provided by the Water Agency are local supplies including recycled water, groundwater from underground aquifers and surface water reservoirs.

Recreation, agriculture and wildlife, including threatened and endangered steelhead, coho and Chinook salmon also rely on these same natural resources in order to thrive.

Realizing the importance of protecting and preserving water resources for future generations, the members of the Partnership have taken a proactive role in helping fund, maintain and implement an array of water supply, water use efficiency and fishery recovery programs.

There's Never Enough to Waste! Turn the Water Off!

This year the California Drought continued for a fourth consecutive year and Governor Jerry Brown directed the State Water Resources Control Board to mandate outdoor water use restrictions and reduce overall water use in California from June 2015 through February 2016 by 25% compared to the same period in 2013. Even though our region experienced more rainfall than the prior year the Sonoma Marin Water Saving Partnership continued its' collaborative water use efficiency public outreach effort with a simple message: "There's Never Enough to Waste! Turn the Water Off!" Radio, television, print and online media urged water users to conserve. The area retail water providers stepped up their water conservation efforts with additional Drought Drive-Ups, Do-It-Yourself campaigns, recycled water residential fill stations and cooperation with local businesses.

For the third year in a row the Partnership received an award from the U.S. Environmental Protection Agency (EPA). The 2015 WaterSense "Partner of the Year" recognition as a professional certifying organization for promoting water efficient irrigation practices through implementation of the Qualified Water Efficient Landscaper Program (QWEL) was presented to the Partnership at the WaterSmart Innovations Conference. QWEL educates landscape professionals and their customers on the benefits of sound landscape design, management and irrigation practices. The award was one of only seven issued by the EPA nationally.

The Partnership was formed in late 2010 and recognizes that establishing common regional water conservation projects may cost effectively conserve more water than would otherwise be conserved by individual agencies. This regional approach is based on meeting water conservation regulatory requirements by offering financial incentives to conserve and by educating water users about where their drinking water comes from and how to use it most efficiently. The Partnership, through its many water efficiency programs, educational seminars and outreach campaigns, is working every day of the year to educate our communities about the importance of conserving water resources and curbing water-wasting behaviors.

Regional water use during Fiscal Year 2014/15 remains to be significantly from prior years as mandatory outdoor water use restrictions continue in effect. The Partnership offers educational resources, programs and incentives to aid our communities in meeting water use efficiency requirements in the future as we work together in response to variable water year conditions and maintain supplies for beneficial use and instream needs.

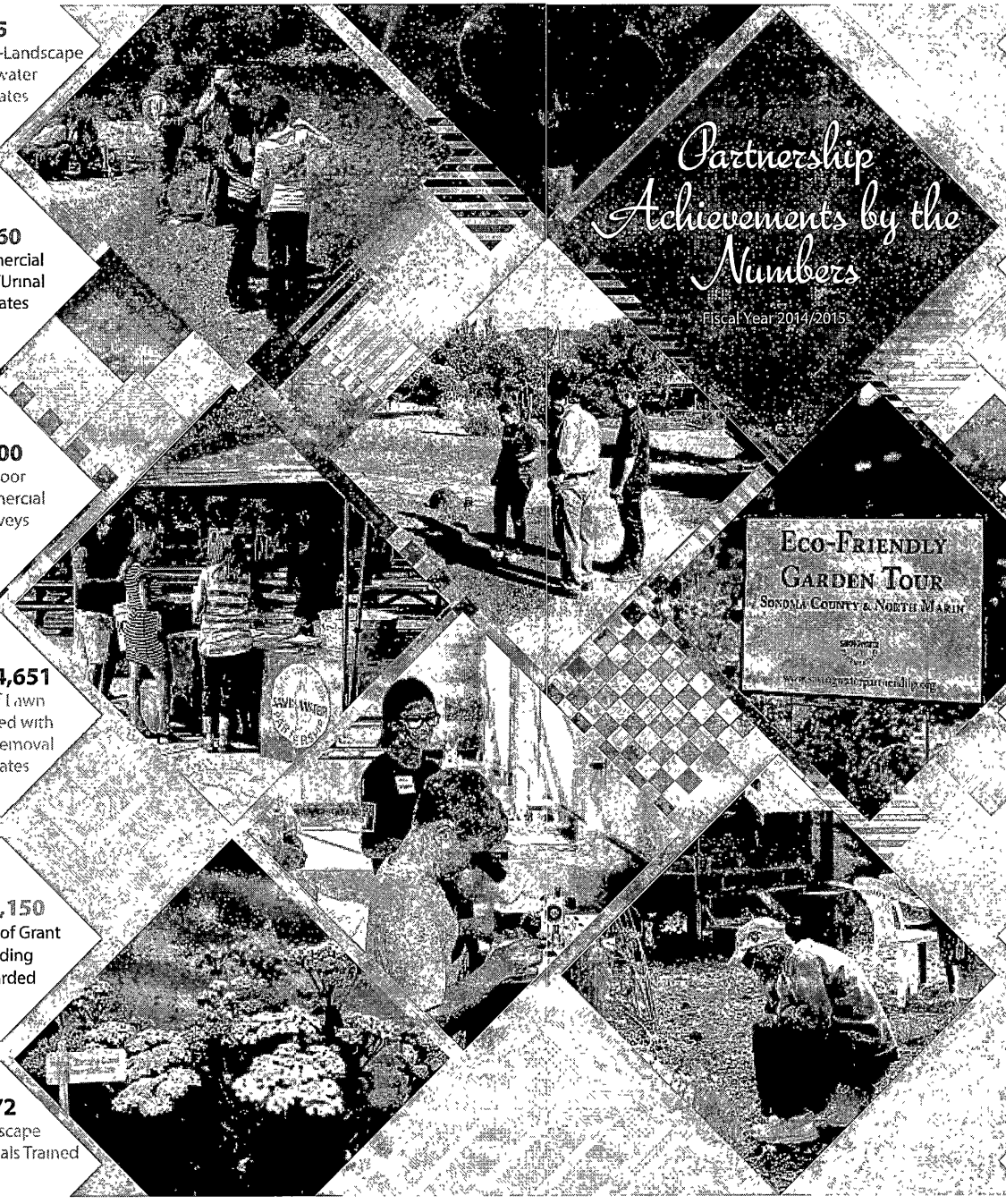
Sincerely,

Dennis Rodoni, Chair
Water Advisory Committee

David Rabbitt, Chair
Sonoma County Water Agency

Partnership Achievements by the Numbers

Fiscal Year 2014/2015



3,737 Residential Toilets Replaced

5 Laundry-to-Landscape Graywater Rebates

104 Pool Cover Rebates

1,513 Residential Clothes Washer Rebates

2,412 Water Smart Home Evaluations

460 Commercial Toilet/Urinal Rebates

1,106 Landscape Upgrade Rebates

117 Hot Water Recirculating Pump Rebates

47,860 Gallons of Rainwater Harvesting Rebated

100 Indoor Commercial Surveys

369,241 Gallons Saved through Sustained Reduction Programs

11 Commercial Laundry Machines Replaced

1,054,651 sqft of Lawn Removed with Lawn Removal Rebates

3 Rainwater Harvesting Classes

1,099 Smart Controller Replacements

8,363 Community Resiliency Challenge Actions

600,150 Dollars of Grant Funding Awarded

19 Sheet Mulching Classes

9 Permitted Graywater Installations

72 Landscape Professionals Trained

24 Eco Friendly Garden Tour Sites

684 Eco Friendly Garden Tour Attendees

36 Green Business Certifications

5 Greywater Installation Workshops

10,928 Students Experienced Zun-Zun

274 Garden Sense Consultations

1,183 Classrooms Received Curriculum Materials

1,925 Students in Kinder Classroom Program

1,775 Students Participated in Middle and High School Water Ed Program

14 Entries in the Middle School Write with Might Program

70 Teachers Attended Water Ed Trainings

69 Meters Tracking Leaks Through the Barnacle Pilot

1,404 Water Awareness Poster Contest Entries

14,000 Kids Received Scoop News

29 High School C Entries

110 LSL Students had a Water Focused Lesson

356 Adult Chaperones Attended Water Ed Field Trips

32,636 Students Received Curriculum Materials

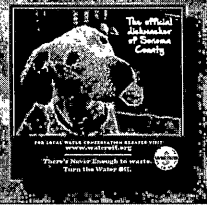
2,564 Students Participated in Field Study Programs

4,256 Students Received in Classroom Instruction

ANNUAL MULTI-MEDIA PUBLIC EDUCATION CAMPAIGN

Building on the success of the 2014 "There's a drought on. Turn the water off" campaign, the Partnership continued "The official ..." theme with a new message, "There's never enough to waste. Turn the water off." The response to the campaigns have been overwhelmingly positive as the region entered the fourth year of drought.

The Partnership also held four "Drought Drive-Up" events to distribute drought tool kits in partnership with local businesses to promote water use efficiency. The kits included buckets for collecting and reusing bath and shower water, high-efficiency shower heads and faucet aerators, and dye tablets to test toilets for leaks. A total of 2,500 kits were distributed.



Partnership Highlights

BARNACLE PILOT PROGRAM

Sonoma County Water Agency launched a 12 month pilot program in November 2014 to track hourly water use at 69 single family, industrial, institutional and commercial facilities in Windsor, Santa Rosa, Petaluma, Sonoma and Novato. The Barnacle records water use hourly and uploads the information via cellular technology to a user-friendly website for the customer and the Water Agency to monitor. Through this program, several large leaks were detected and fixed. In a post-program study, 62% of applicants said that the Barnacle helped them save water

PLANT SALE

On May 30, 2015, The Home Depot in Santa Rosa and the Partnership hosted the Plant Sale and Water Smart Fair The Sale included exhibitors such as the Master Gardeners, who offered advice to shoppers about low water use plants, and the City of Santa Rosa which outfitted their booth with a working replica of a rainwater harvesting system There were also demonstrations of sheet mulching, information about compost, irrigation conversion and graywater systems. Low water use plant varieties were put on sale specifically for this event to encourage customers to purchase these plants. Kids activities were hosted throughout the 4 hour event including planting succulents and painting a small bug box.

PROGRAM EXPENDITURES

Program Expenditures (in thousands of dollars)

	City of Cotati	Marin Municipal Water District	North Marin Water District	City of Petaluma	City of Rohnert Park	City of Santa Rosa	City of Sonoma	Valley of the Moon Water District	Town of Windsor	Sonoma County Water Agency	Regional Total
FY 14-15	$20	$1,175	$461	$576	$16	$1,294	$116	$366	$411	$2,020	$6,440
Minimum	$1	$706	$277	$200	$12	$556	$70	$220	$11	NA	$1,600

Minimum is established in the MOU regarding the Sonoma-Marin Saving Water Partnership

2015 TEMPORARY URGENCY CHANGE PETITION and GOVENOR'S DECLARATION

On April 1, 2015, Governor Brown issued the fourth in a series of Executive Orders on actions necessary to address California's severe drought conditions, which directed the State Water Resources Control Board to implement mandatory water reductions in urban areas to reduce potable urban water usage by 25 percent statewide. On May 5, 2015, the State Water Board adopted an emergency conservation regulation in accordance with the Governor's directive. The provisions of the emergency regulation went into effect on May 18, 2015.

On May 1, 2015, the amount of water released from Lake Mendocino into the Russian River was reduced in order to preserve water supplies during the ongoing drought. The State Water Resources Control Board issued a Temporary Urgency Change Order allowing the Sonoma County Water Agency to reduce Russian River flows starting May 1 through October 27, 2015. This action, along with the reduction in demands due to the Governor's mandate, has ensured local water supplies have been adequate.

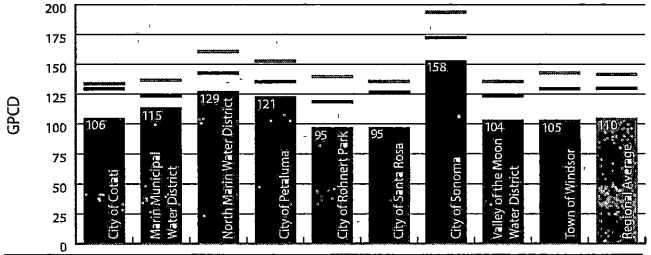
20 x 2020 GOALS

In 2009, SBx7-7 established a statewide goal, known as 20 x 2020, to reduce per capita water use 20% by the year 2020 with an interim goal of a 10% reduction by 2015 The chart below displays 2014 per capita water use in each Partner service area and the region as a whole. The 2015 and 2020 goals are indicated by the green and red lines, respectively.

While the chart shows that all of the Partners are currently meeting their 2020 targets, we recognize that water use efficiency must continue. Many factors can affect water use patterns as seen in recent years. The rebound in the economy is one key factor that has caused an increase in water use. The overall longterm trend shows water demands have dropped as a result of many factors including the California drought, economy, changes in weather conditions, and active water use efficiency programs

It is important to continue the work on water use efficiency to maintain the savings already achieved and make sure the region captures all the benefits of future water savings.

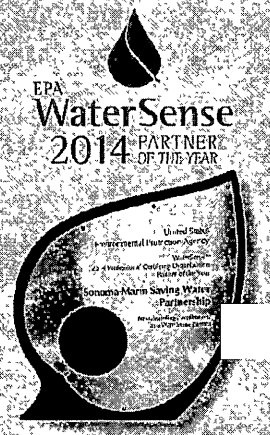
2014 Gallons per Capita per Day (GPCD) and 20 x 2020 Goals



	City of Cotati	Marin Municipal Water District	North Marin Water District	City of Petaluma	City of Rohnert Park	City of Santa Rosa	City of Sonoma	Valley of the Moon Water District	Town of Windsor	Regional Average
2015 Target	134	137	161	153	140	136	194	136	143	142
2020 Target	130	124	143	136	119	127	173	124	130	129

CAR WASH PROGRAM LAUNCH

The Sonoma County Green Business Program, which has certified 148 local businesses who have volunteered to operate in a more environmentally responsible way, has launched a new certification for car washes. The criteria was developed to prompt a reduction in water, energy use, waste and chemicals. The car wash criteria complies with specific gallon per minute standards on wash nozzles, education to customers about how to save water and leak detection practices. This new certification is especially critical because of California's ongoing drought conditions as well as increased efforts to protect local waterways For a list of certified car washes in Sonoma County, visit www.savingwaterpartnership.org/carwash



EPA PARTNER OF THE YEAR AWARD

The Partnership was recognized with a 2014 WaterSense Partner of the Year Award from the U.S. Environmental Protection Agency (EPA) for its work in educating landscape professionals through its WaterSense labeled Qualified Water Efficient Landscaper (QWEL) professional certification program in irrigation system auditing.

The QWEL professional certification program presents an affordable proactive local approach to reducing lands water demand. QWEL provi graduates with knowledge in water efficient and sustainable landscape practices including water management and preservation of other valuable resources. QWEL has issued over 1200 certifications to date and is offered by 12 organizations throughout the U.S. In 2014, 200 landscape professionals became QWEL certified.

SONOMA - MARIN SAVING WATER PARTNERSHIP

City of Cotati
(707) 665-3631
www.ci.cotati.ca.us

Marin Municipal Water District
(415) 945-1520
www.marinwater.org

City of Petaluma
(707) 778-4507
cityofpetaluma.net/wrcd

North Marin Water District
(415) 761-8933
www.nmwd.com

City of Rohnert Park
(707) 588-3300
www.rpcity.org

Sonoma County Water Agency
(707) 547-1933
sonomacountywater.org

City of Santa Rosa
Utilities Department
(707) 543-3985
www.srcity.org/wue

Town of Windsor
(707) 838-1004
townofwindsor.com

City of Sonoma
(707) 933-2237
www.sonomacity.org

Valley of the Moon Water District
(707) 996-1037
www.vomwd.com

www.savingwaterpartnership.org

EPA WaterSense PARTNER

Lynn Anderson

From: Justin Smith
Sent: Thursday, January 28, 2016 1:42 PM
To: Gregory Brown; amckannay; Bob Coey; CGray@dfg.ca.gov; Dan Wilson - NOAA Federal; 'Eric Larson'; Jonathan Ambrose (NOAA); Joshua.Fuller@noaa.gov; Katy Lee; Records; Rick Rogers; Ryan Watanabe - DFW (Ryan.Watanabe@wildlife.ca.gov); Timothy Dodson (timothy.dodson@wildlife.ca.gov); Tom Daugherty - NOAA Federal
Cc: Amber Villalobos; Brian Coats; Bryan McFadin; Laura Lavallee; Matt St.John; scott frazier; Aaron Johnson; Alan Lilly; Andrea Pecharich; Ann DuBay; Ben White (Benjamin.C.White@usace.army.mil); Brad Sherwood; Brian Michelsen; Carly Cabrera; Chris Delaney; Cory O'Donnell; Darren Tran; David Cook; David Cuneo; David Manning; Derek acomb (Derek.Acomb@wildlife.ca.gov); Donald Seymour, 'Efren Carrillo'; Ellen McKenna (Ellen.McKenna@wildlife.ca.gov); George Lincoln; Grant Davis; Gregg Horton; Jay Jasperse; Jeff Church; Jennifer Dick-McFadden (State Water Board); Jessica Martini Lamb; Jill Golis; Justin Smith; Macedo, Richard@Wildlife; Michael Thompson; Nathan Baskett; Neil Lassettre; Pam Jeane; Records; Resnik, Dan@Wildlife; 'rfadness@waterboards.ca.gov'; Ryan Pedrotti; Shawn Chase; Steve Shupe; Stokes, Wesley@Wildlife; 'Susan Upchurch'; Tim Anderson; White, Mark@Wildlife; Wilson, Brett@Wildlife; Miller, Barry@Wildlife
Subject: Russian River Fisheries Update January 28, 2016
Attachments: 2016 January Russian River Fisheries Update.pdf

Good Afternoon,

Please find the January Russian River fisheries update attached to this email.

Justin Smith
Senior Environmental Specialist
Environmental Resources Department
Sonoma County Water Agency
PH: 707-547-1995

CF/42-0.19-9 SWRCB Order Approving Temporary Urgency Change in Permits 12947A, 12949, 12950 & 16596 for 2015 (ID 5315)

To date the Water Agency has reviewed 124 days of DIDSON data collected in Dry Creek near the mouth and 76.5 days of video collected in the mainstem Russian at the Healdsburg fish ladder approximately 2 km upstream of the Dry Creek confluence. Dry Creek DIDSON has been reviewed through January 18 and partially reviewed through January 21, 2015 (Figure 2). The Healdsburg video camera was removed from the Russian River on December 9, 2015 in advance of a storm that would have compromised video equipment. All of the video collected at Healdsburg for the 2015 season has been reviewed (Figure 3). Between September 1, 2015 and January 21, 2016, we observed 7,685 fish at both sites combined. Of those we estimate 3,931 were Chinook. All counts presented in this report are preliminary and subject to change.

Figure 1. A coho from the Healdsburg fish ladder video.

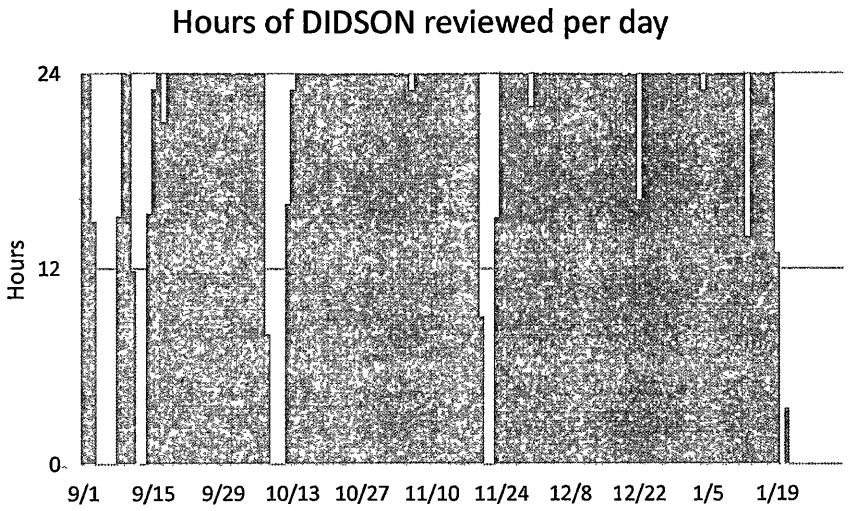


Figure 2. The number of hours of DIDSON reviewed per day at Dry Creek through January 21, 2016 shown as shaded bars. Unshaded portions represent days when data collection was incomplete due to equipment failure or when data has been collected but not yet fully reviewed.

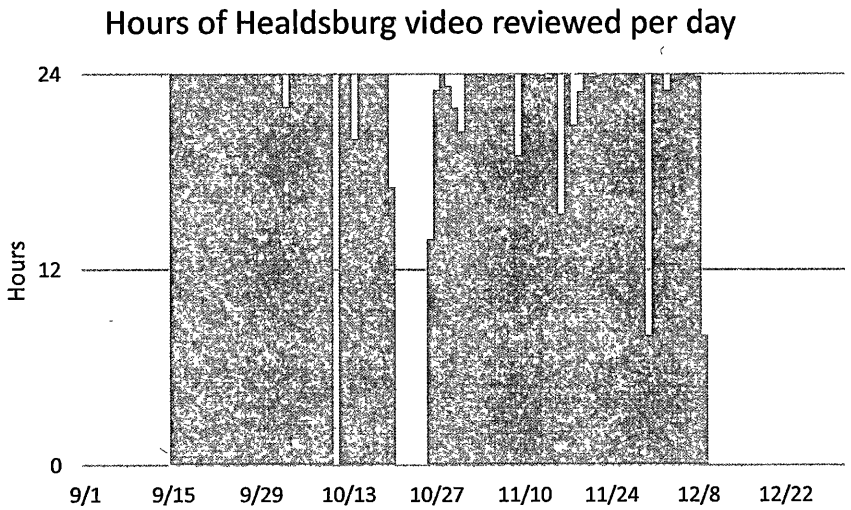


Figure 3. The number of hours of video reviewed per day at Healdsburg through December 9, 2015 shown as shaded bars. Unshaded portions represent days when data collection was incomplete due to equipment failure.

In previous years (2000-2013) we used the Mirabel fish counting station to construct minimum Chinook counts for the Russian River mainstem. Beginning in 2014, active construction of a new fish ladder and fish screens at Mirabel has required us to shift our monitoring effort to the Healdsburg fish ladder on mainstem Russian River (river km 51) and to the life cycle monitoring

station at the mouth of Dry Creek. Because there is little Chinook spawning habitat between the Mirabel dam and the Healdsburg dam, the combination of Chinook counts from DIDSON and underwater video at both sites is comparable to counts from Mirabel between 2000-2013 (Martini Lamb and Manning 2014).

We attempted to use the species ratio observed on the Healdsburg fish ladder video to prorate unidentified salmonids and other unidentified fish observed on the Dry Creek DIDSON. However a large storm in early December forced us to remove the video camera in the Healdsburg fish ladder for the remainder of the season. As an alternative method to prorate fish observed on the DIDSON we used the Mirabel underwater video weekly species ratios from 2009-2013. We chose not to include data from before 2009 as coho would likely be under-represented in years prior to 2009. The proportion of Chinook returning by week was calculated by summing the number of Chinook observed each week across all years then dividing that sum by the combined total of all three species observed each week across all years (Figure 4). The weekly ratios of Chinook to steelhead and coho in Dry Creek in 2013 and 2014 followed a similar pattern with Chinook dominating the species assemblage in the fall and replaced by steelhead in the winter (Figure 5).

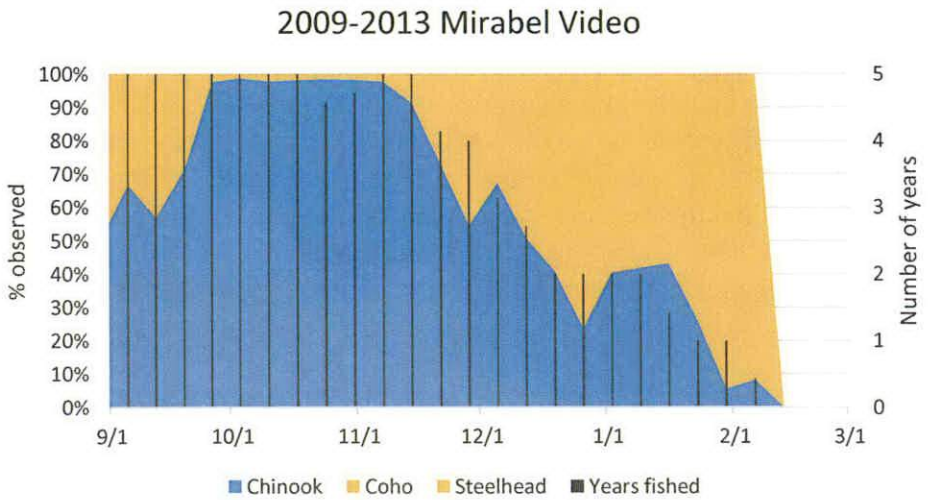


Figure 4. The proportion of Chinook, coho, and steelhead observed by standard week for Mirabel from 2009-2013 (shaded areas) and the number of years the video system was operated for a particular week across all years (vertical bars). The proportion of Chinook returning by week was calculated by summing the number of Chinook observed each week across all years then dividing that sum by the combined total of all three species observed each week across all years.

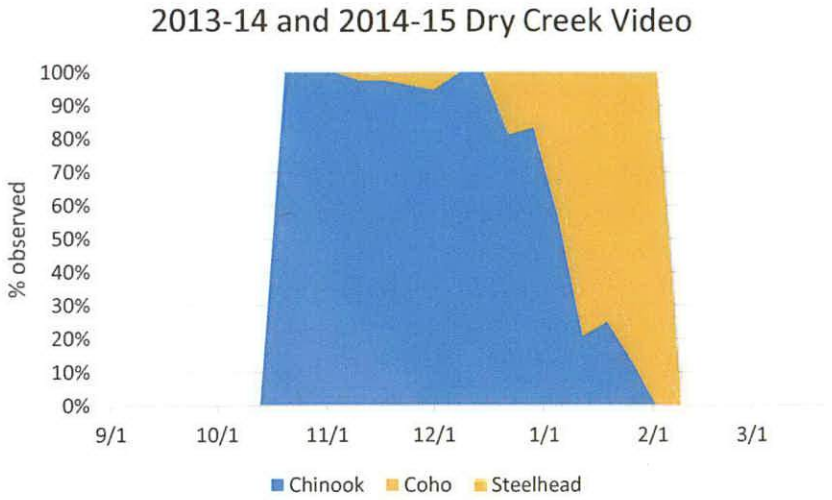


Figure 5. The ratio of Chinook, coho, and steelhead observed on the 2013-14 and 2014-15 Dry Creek video by standard week. One steelhead was observed during the week of September 22 and is not included in this graph.

In total, between the two monitoring sites we have observed 7,685 fish. We estimate that 500 Chinook (418 observed and 82 prorated) passed Healdsburg before the camera was removed on December 8, 2015. At Dry Creek we observed 7,111 fish on the DIDSON, and an additional 40 Chinook, 4 steelhead, and 2 coho on the Dry Creek video camera. Using the weekly species ratios from the 2009-2013 Mirabel video data we estimate that 3,431 of the fish observed at Dry Creek are Chinook and the remainder are mainly steelhead. Because we were often unable to operate the Mirabel video camera past early December (Table 1), we have greater confidence in the estimates for September through November as compared to December and January.

In summary, we estimate a total of 3,931 adult Chinook (500 at Healdsburg plus 3,431 at Dry Creek) passed the two monitoring sites from September 1, 2015 to January 21, 2016. The Chinook count is not unlike previous year's counts (Figure 5). However the period of time sampled is greater in 2015-16 than in most years. Unfortunately we have little quantitative data on steelhead counts other than the last two years of DIDSON in Dry Creek and Warm Springs hatchery counts. Our capacity to separate coho counts from steelhead counts is limited because of the timing of steelhead and coho returns which is typically later than we can safely operate our video monitoring equipment at Mirabel. Because of this, we recommend using the recently constructed expanded count of 115 coho reported by UC Cooperative Extension. That count is based on PIT tag detections and includes data through January 5, 2016.

Table 1. Weekly prorated counts for Dry Creek Chinook for the 2015-16 return year. Estimates are based on the weekly ratio of Chinook, coho, and steelhead counts at Mirabel from 2009-2013 video counts. The number of steelhead trapped at Warm Springs hatchery are also shown. We have higher certainty for standard weeks containing 4 or more years of data. *An additional 40 Chinook observed on the Dry Creek video camera are included in this column.

Week start	Number of years in week Mirabel video (2009-2013)	Proportion of Chinook from Mirabel video (2009-2013)	Fish observed on Dry Creek DIDSON (2015)	*Estimated Chinook (2015)	Steelhead trapped at WSD (2015)
8/29	5	0.50	0	0	0
9/5	5	0.67	0	0	0
9/12	5	0.57	0	0	0
9/19	5	0.71	2	1	0
9/26	5	0.98	0	0	0
10/3	5	0.99	4	4	0
10/10	5	0.98	6	7	0
10/17	5	0.98	70	69	0
10/24	5	0.98	97	96	0
10/31	5	0.98	239	237	0
11/7	5	0.98	140	138	0
11/14	5	0.91	88	82	0
11/21	4	0.73	43	34	0
11/28	4	0.55	122	74	0
12/5	3	0.68	372	268	1
12/12	3	0.51	324	169	8
12/19	2	0.41	1114	458	94
12/26	2	0.24	401	96	118
1/2	2	0.40	1328	537	355
1/9	2	0.42	2447	1025	389
1/16	1	0.43	314	136	338
Dry Creek Total	-	-	**7111**	**3431**	**1303**

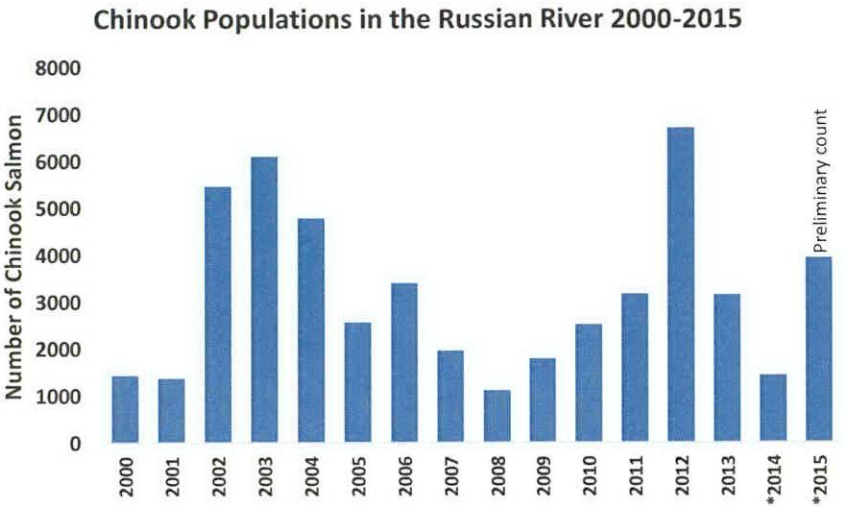


Figure 5. Russian River adult Chinook salmon. *Note that the 2014 and 2015 counts are a sum of Chinook observed on an underwater video camera in the Healdsburg fish ladder on the mainstem Russian River and the fish observed on a DIDSON sonar at the mouth of Dry Creek.

J. Martini-Lamb and Manning, D.J, editors. 2014. Russian River Biological Opinion status and data report year 2013-14. Sonoma County Water Agency, Santa Rosa, CA. p. 208

Lynn Anderson

From: Justin Smith
Sent: Tuesday, December 08, 2015 5:16 PM
To: Gregory Brown; amckannay; Bob Coey; CGray@dfg.ca.gov; Dan Wilson - NOAA Federal; 'Eric Larson'; Jonathan Ambrose (NOAA); Joshua.Fuller@noaa.gov; Katy Lee; Records; Rick Rogers; Ryan Watanabe - DFW (Ryan.Watanabe@wildlife.ca.gov); Timothy Dodson (timothy.dodson@wildlife.ca.gov); Tom Daugherty - NOAA Federal
Cc: Amber Villalobos; Brian Coats; Bryan McFadin; Laura Lavallee; Matt St.John; scott frazier; Aaron Johnson; Alan Lilly; Andrea Pecharich; Ann DuBay; Ben White (Benjamin.C.White@usace.army.mil); Brad Sherwood; Brian Michelsen; Carly Cabrera; Chris Delaney; Cory O'Donnell; Darren Tran; David Cook; David Cuneo; David Manning; Derek acomb (Derek.Acomb@wildlife ca.gov); Donald Seymour; 'Efren Carrillo'; Ellen McKenna (Ellen.McKenna@wildlife.ca.gov); George Lincoln; Grant Davis; Gregg Horton; Jay Jasperse; Jeff Church; Jennifer Dick-McFadden (State Water Board); Jessica Martini Lamb; Jill Golis; Justin Smith; Macedo, Richard@Wildlife; Michael Thompson; Nathan Baskett; Neil Lassettre; Pam Jeane; Records; Resnik, Dan@Wildlife; 'rfadness@waterboards.ca.gov'; Ryan Pedrotti; Shawn Chase; Steve Shupe; Stokes, Wesley@Wildlife; 'Susan Upchurch'; Tim Anderson; White, Mark@Wildlife; Wilson, Brett@Wildlife
Subject: Russian River Fisheries Update December 8, 2015

Good afternoon,

To date the Water Agency has reviewed 83 days of DIDSON data collected at Dry Creek and 71 days of video collected at the Healdsburg fish ladder. Dry Creek DIDSON has been reviewed through December 7, 2015 and Healdsburg video has been reviewed to December 3, 2015 (Figure 1 and Figure 2). In total 1,426 fish have been observed. Based on the video data (mainly from Healdsburg) it is likely that 94 % of these fish are Chinook, 2 % are steelhead and 4 % are coho.

In previous years (2000 to 2013), Water Agency counts of adult salmonids were based on observations of fish passage through ladders at Mirabel Dam. Monitoring at Mirabel has been suspended for the past two years while a new fish screen and fishway are being constructed at the site. Our assessment of adult salmonid abundance in 2014-15 and 2015-16 utilizes information gathered at the Dry Creek life cycle monitoring station and Healdsburg fish ladder. As you recall, at Dry Creek we collect video images of fish to calibrate DIDSON sonar data. Because the video camera in Dry Creek operates in a natural stream channel, the camera cannot capture images from the entire stream cross-section and many fish observed at that site can't be positively identified. In contrast, most fish identified on the video system at the Healdsburg ladder can be identified to species. At Dry Creek, we have observed 495 adult salmonids and another 525 large bodied fishes that are likely salmonids but could not be positively identified (Table 1). At Healdsburg we have observed a total of 284 Chinook, 3 steelhead, 12 probable coho, and 76 additional adult salmonids that could not be identified to species (Table 2).

The river mouth has been closed for much of the 2015 Chinook season. Flow at Hacienda has been above 130 cfs since October 28, 2015 (Figure 3). In previous years, flow of approximately 130 cfs at Hacienda was sufficient to allow for Chinook passage to Mirabel.

The Water Agency uses redd surveys in addition to DIDSON and video equipment to monitor salmonids. To date the Water Agency has conducted 3 redd surveys on mainstem Dry Creek (11/2, 11/16, 12/01) and has observed a total of 108 new redds.

CF/42-0.19-9 SWRCB Order Approving Temporary Urgency Change in Permits 12947A, 12949, 12950 & 16596 for 2015 (ID 5315)

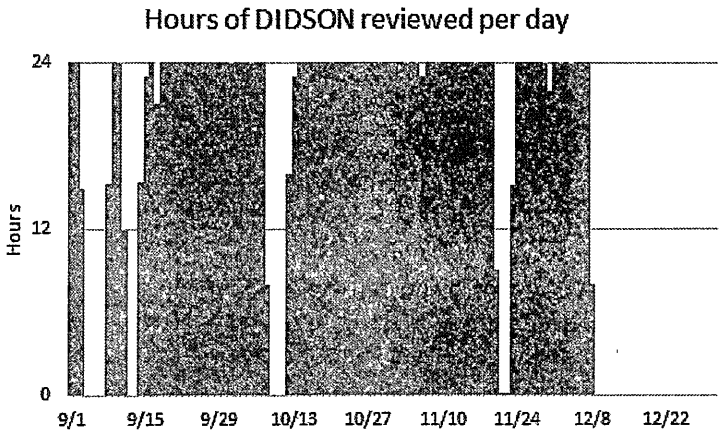


Figure 1. The number of hours of DIDSON reviewed per day at Dry Creek through December 4, 2015 shown as shaded bars. Time periods shown in white represent days when data collection was incomplete due to equipment failure.

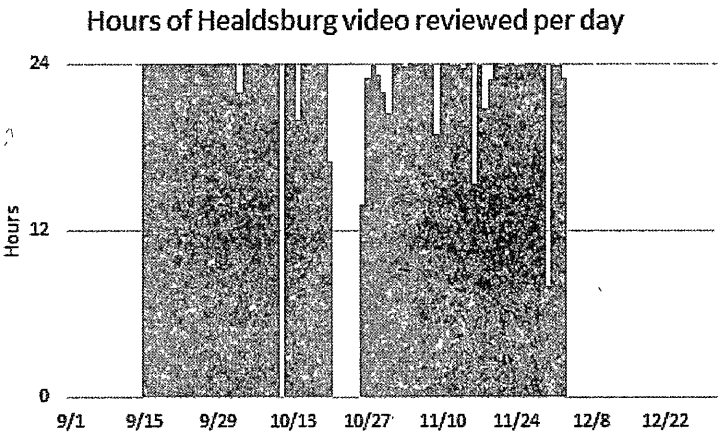


Figure 2. The number of hours of video reviewed per day at Healdsburg through December 2, 2015 shown as shaded bars. Time periods shown in white represent days when data collection was incomplete due to equipment failure.

Table 1. The number of days of Dry Creek DIDSON sonar images reviewed per week and total counts of Chinook, steelhead, coho, fish that could be identified only as adult salmonids, and other large bodied fish that could not be identified.

Dry Creek						
Week	Number of days reviewed	Chinook	Steelhead	Coho	Unidentified Salmonids	Unidentified fish species
9/1	3	0	0	0	0	0
9/8	4	0	0	0	0	0
9/15	7	0	0	0	0	2
9/22	7	0	1	0	0	0
9/29	7	0	0	0	1	1
10/6	3	0	0	0	0	2
10/13	7	1	1	0	16	37
10/20	7	0	1	0	19	18
10/27	7	0	0	0	74	116

11/3	7	3	0	0	89	122
11/10	7	1	0	0	66	43
11/17	4	1	0	0	24	21
11/24	7	6	0	0	20	43
12/1	7	14	0	2	186	120
Total	**83**	**26**	**3**	**2**	**495**	**525**

Table 2. The number of days of Healdsburg fish ladder video reviewed per week and total counts of Chinook, steelhead, coho, fish that could be identified only as adult salmonids, and other large bodied fish that could not be identified.

Healdsburg						
Week	Number of days reviewed	Chinook	Steelhead	Coho	Unidentified Salmonids	Unidentified fish species
9/1	-	-	-	-	-	-
9/8	-	-	-	-	-	-
9/15	7.0	0	0	0	0	0
9/22	7.0	0	0	0	0	0
9/29	6.9	0	0	0	1	0
10/6	6.0	2	1	0	0	0
10/13	6.8	40	0	0	12	0
10/20	1.3	1	0	0	0	0
10/27	6.7	77	0	0	25	0
11/3	6.8	52	0	0	9	0
11/10	6.6	54	1	8	22	0
11/17	6.8	26	1	1	3	0
11/24	6.3	12	0	1	2	0
12/1	3.0	20	0	2	2	0
Total	**71**	**284**	**3**	**12**	**76**	**0**

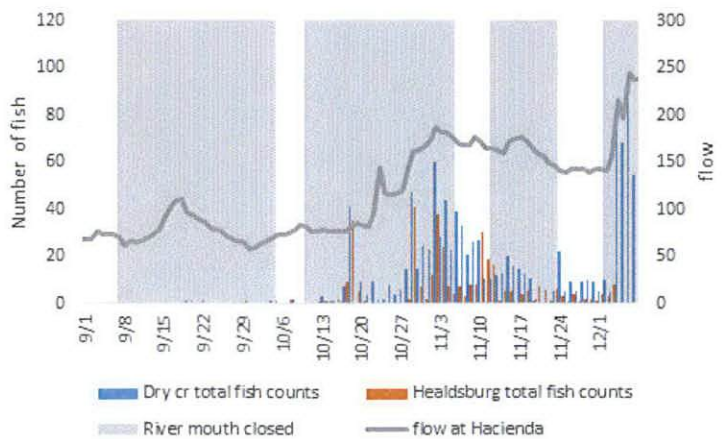


Figure 3. The total number of fish (all species combined) observed at Dry Creek and at Healdsburg shown with flow at the USGS Hacienda Bridge (Guerneville) gaging station. Shaded portions of the figure represent periods when the river mouth was closed.