

Board Meeting Agenda

Russ Baggerly, Director
Mary Bergen, Director
Bill Hicks, Director

Pete Kaiser, Director
James Word, Director

CASITAS MUNICIPAL WATER DISTRICT
December 11, 2013
3:00 P.M. – DISTRICT OFFICE

Right to be heard: Members of the public have a right to address the Board directly on any item of interest to the public which is within the subject matter jurisdiction of the Board. The request to be heard should be made immediately before the Board's consideration of the item. No action shall be taken on any item not appearing on the agenda unless the action is otherwise authorized by subdivision (b) of ¶54954.2 of the Government Code and except that members of a legislative body or its staff may briefly respond to statements made or questions posed by persons exercising their public testimony rights under section 54954.3 of the Government Code.

1. Public Comments (items not on the agenda – three minute limit).
2. General Manager comments.
3. Board of Director comments.
4. Consent Agenda
 - a. Minutes of the November 27, 2013 Board Meeting.

RECOMMENDED ACTION: Adopt Consent Agenda
5. Bills
6. Resolution awarding a contract to Industrial Coating and Restoration, Inc. in the amount of \$133,000 for the Lake Casitas Recreation Area Water Adventure Coating, Specification 13-369.

RECOMMENDED ACTION: Adopt Resolution
7. Presentation of the 2013 Casitas Water Adventure End of Season Report

RECOMMENDED ACTION: Motion to Receive and File

8. Presentation of the 2013 Robles Fish Passage Facility Progress Report and the 2014 Monitoring and Evaluation Study Plan.
9. Discussion regarding email from Adam Johnson requesting consideration of body contact in Lake Casitas.

RECOMMENDED ACTION: Direction to Staff

Recess Casitas Board Meeting

10. Lake Casitas Improvement Foundation Meeting
 - a. Discussion regarding membership to the board of LCIF.
 - b. Review of the Treasurer's report.
 - c. Discussion regarding any approval of projects and expenditures for the coming year.

Reconvene Casitas Board Meeting

11. Information Items:
 - a. Recreation Area Report for October, 2013.
 - b. Water Consumption Report.
 - c. CFD No. 2013-1 (Ojai) Monthly Cost Analysis.
 - d. Investment Report.
12. Closed Session
 - a. Conference with Legal Counsel – Anticipated Litigation (subdivision (b) of Section 54956.9, Government Code). One case.
 - b. Conference with Legal Counsel -- Existing Litigation (Subdivision (a) of Section 54956.9, Government Code). Name of Case: Golden State Water Company v. Casitas Municipal Water District. Case Number: 56-2013-00433986-CU-WM-VTA.

13. Adjournment

If you require special accommodations for attendance at or participation in this meeting, please notify our office 24 hours in advance at (805) 649-2251, ext. 113. (Govt. Code Section 54954.1 and 54954.2(a).

Minutes of the Casitas Municipal Water District
Board Meeting Held
November 27, 2013

A meeting of the Board of Directors was held November 27, 2013 at Casitas' Office, Oak View, California. Directors Word, Hicks, and Bergen were present. Directors Kaiser and Baggerly were absent. Also present were Steve Wickstrum, General Manager, Rebekah Vieira, Clerk of the Board, and Attorney, John Mathews. There were two staff members and two members of the public in attendance. President Word led the group in the flag salute.

1. Public Comments (items not on the agenda – three minute limit).

None

2. General Manager comments.

Mr. Wickstrum addressed an email requesting consideration for body contact in Lake Casitas. This is something that should be brought to the full attention of the entire board for discussion. The Villanova reservoir will be starting to get its interior coating on Monday.

3. Board of Director comments.

President Word mentioned a notice regarding SB 751 which will be requiring all votes taken to be taken as a roll call votes beginning in 2014. Director Hicks stated that Mr. Wickstrum gave an excellent presentation to AWA. He then requested follow up on a situation of a voucher at the lake. President Word suggested having lake clean up coincide with Earth Day.

4. Consent Agenda ADOPTED

- a. Minutes of the November 13, 2013 Board Meeting.
- b. Recommend approval of a purchase order to New Vision Construction in the amount of \$34,915 for Modifications and Surface Repairs at Picnic Area 1.

On the motion of Director Hicks, seconded by Director Bergen and passed, the Consent Agenda was adopted.

5. Bills APPROVED

Director Hicks questioned a bill which was for a Workers' Compensation scenario. He then questioned the purchase for materials going into inventory with Mr. Wickstrum explaining we have items that are kept in inventory so they are available when needed. Auditor Paul Kaymark added that he reviewed the inventory as part of the annual audit. Director Hicks then questioned the bill for the USGS gauge station.

Mr. Wickstrum explained this has been done for years and the bill is split with the County and City of Ventura

On the motion of Director Hicks, seconded by Director Bergen and passed, the bills were approved.

6. Recommend acceptance of the fiscal year 2012-2013 Comprehensive Annual Financial Report. APPROVED

Paul Kaymark, Senior Manager of Charles Z. Fedak & Company presented the Comprehensive Annual Financial Report and informed the board that it is a clean opinion.

On the motion of Director Bergen, seconded by Director Hicks and passed, the above recommendation was accepted and approved.

7. Community Facilities District No. 2013-01 (Ojai)
a. Ordinance of the Board of Directors of the Casitas Municipal Water District, State of California, Acting in its capacity as the legislative body of Community Facilities District No. 2013-1 (Ojai) of the Casitas Municipal Water District authorizing the levy of a special tax within such district.

ADOPTED

The Title of the Ordinance was read by the Clerk of the Board for the second reading and the Ordinance was offered by Director Bergen, seconded by Director Hicks and passed by the following roll call vote:

AYES:	Directors:	Bergen, Hicks, Word
NOES:	Directors:	None
ABSENT:	Directors:	Baggerly, Kaiser

Ordinance is numbered 13-01.

8. Resolution in support of ACWA's California Water Action Plan

ADOPTED

The Resolution was offered by Director Hicks, seconded by Director Bergen and passed by the following roll call vote:

AYES:	Directors:	Bergen, Hicks, Word
NOES:	Directors:	None
ABSENT:	Directors:	Baggerly, Kaiser

Resolution is numbered 13-39.

9. Recommendation to select Joe Berg of Municipal Water District of Orange County for a Board of Director position with California Urban Water Conservation Council. APPROVED

On the motion of Director Hicks, seconded by Director Bergen and passed, the above recommendation was approved.

10. Recommend appointing a voting delegate for the ACWA General Session Membership Meeting and Elections on Wednesday, December 4, 2013. APPROVED

On the motion of Director Bergen, seconded by Director Hicks and passed, Director Hicks was appointed as the voting delegate.

11. Information Items:

- a. Executive Committee Minutes.
- b. Finance Committee Minutes
- c. Investment Report.

On the motion of Director Hicks, seconded by Director Bergen and passed, the Information Items were received and filed.

President Word moved the meeting to Closed Session at 3:46 p.m.

12. Closed Session

- a. Conference with Legal Counsel – Anticipated Litigation (subdivision (b) of Section 54956.9, Government Code). One case.

President Word moved the meeting back into open session at 3:51 p.m. with Mr. Mathews stating we had a general discussion on item 12 a, and no action was taken.

13. Adjournment

President Word adjourned the meeting at 3:52 p.m.

Mary Bergen, Secretary

A/P Fund

Publication of check register is in compliance with Section 53065.6 of the Government Code which requires the District to disclose reimbursements to employees and/or directors.

000452	A/P Checks:	016724-016759
	A/P Draft to P.E.R.S.	112733
	A/P Draft to State of CA	112732
	A/P Draft to I.R.S.	112731
	Voids:	

000453	A/P Checks:	016760-016857
	A/P Draft to P.E.R.S.	
	A/P Draft to State of CA	
	A/P Draft to I.R.S.	
	Void:	016817-016818

The above numbered checks,
have been duly audited are hereby
certified as correct.

Denise Collin 12/5/13
Denise Collin, Accounting Manager

Signature

Signature

Signature

CERTIFICATION

Payroll disbursements for the pay period ending 11/23/13
Pay Date of 11/27/13
have been duly audited and are
hereby certified as correct.

Signed: Denise Collin 11/25/13
Denise Collin

Signed: _____
Signature

Signed: _____
Signature

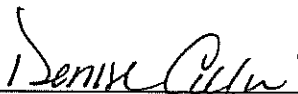
Signed: _____
Signature

CASITAS MUNICIPAL WATER DISTRICT
Payable Fund Check Authorization
Checks Dated 11/21/13-12/5/13
Presented to the Board of Directors For Approval December 11, 2013

Check	Payee			Description	Amount
000452	Payables Fund Account	#	9759651478	Accounts Payable Batch 112713	\$145,006.72
000453	Payables Fund Account	#	9759651478	Accounts Payable Batch 120513	\$626,334.13
					\$771,340.85
000454	Payroll Fund Account	#	9469730919	Estimated Payroll 12/26/13	\$125,000.00
000455	Payroll Fund Account	#	9469730919	Estimated Payroll 1/9/13	\$125,000.00
					\$250,000.00
				Total	\$1,021,340.85

Publication of check register is in compliance with Section 53065.6 of the Government Code which requires the District to disclose reimbursements to employees and/or directors.

The above numbered checks, 000452-000455 have been duly audited is hereby certified as correct.

 12/5/13

 Denise Collin, Accounting Manager

 Signature

 Signature

 Signature

VENDOR SET: 01 Casitas Municipal Water D

BANK: * ALL BANKS

DATE RANGE: 11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
C-CHECK	VOID CHECK	V	12/05/2013			016817		
C-CHECK	VOID CHECK	V	12/05/2013			016818		

* * T O T A L S * *

	NO	INVOICE AMOUNT	DISCOUNTS	CHECK AMOUNT
REGULAR CHECKS:	0	0.00	0.00	0.00
HAND CHECKS:	0	0.00	0.00	0.00
DRAFTS:	0	0.00	0.00	0.00
EFT:	0	0.00	0.00	0.00
NON CHECKS:	0	0.00	0.00	0.00
VOID CHECKS:	2	VOID DEBITS 0.00		
		VOID CREDITS 0.00	0.00	0.00

TOTAL ERRORS: 0

	NO	INVOICE AMOUNT	DISCOUNTS	CHECK AMOUNT
VENDOR SET: 01 BANK: * TOTALS:	2	0.00	0.00	0.00
BANK: * TOTALS:	2	0.00	0.00	0.00

VENDOR SET: 01 Casitas Municipal Water D

BANK: AP ACCOUNTS PAYABLE

DATE RANGE:11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
00010	AIRGAS USA LLC							
I-9021319075	Cutting Gases for Pipelines	R	11/21/2013	141.95		016724		
I-9913597514	Cylinder Rental, Pipelines	R	11/21/2013	30.95		016724		172.90
01703	ARNOLD LAROCHELLE MATTHEWS							
I-39463	Matter#5088-001, 10/13	R	11/21/2013	1,797.00		016725		
I-39464	Matter#5088-012, 10/13	R	11/21/2013	3,270.00		016725		
I-39465	Matter#5088-013, 10/13	R	11/21/2013	453.00		016725		5,520.00
00018	AT & T MOBILITY							
I-829434088X11142013	Monthly Cell PT Biologist	R	11/21/2013	11.26		016726		11.26
00821	BEST BEST & KRIEGER LLP							
I-714123	Matter:8235600002 10/13	R	11/21/2013	53.60		016727		53.60
00032	BIOVIR LABORATORIES, INC							
I-131377	Giardia/Crypto Testing 9/19	R	11/21/2013	396.48		016728		396.48
01616	FRED BRENEMAN							
I-111913	11/10/13-11/23/13	R	11/21/2013	391.00		016729		391.00
00645	CA DEPARTMENT OF PUBLIC HEALTH							
I-111413	Water Hauler Licence Renewal	R	11/21/2013	473.00		016730		473.00
02322	Coast Cart, Inc.							
I-4416	Service Cart EZ 1	R	11/21/2013	132.11		016731		132.11
00061	COMPUWAVE							
I-SB02075183	Adobe Acrobat	R	11/21/2013	155.28		016732		155.28
02034	D.K. Mechanical							
I-2840	Oil Change #81, PL Utility Trk	R	11/21/2013	577.48		016733		577.48
00182	DEWITT PETROLEUM							
I-0036764IN	Gas and Diesel for LCRA	R	11/21/2013	3,810.06		016734		
I-0036993IN	Gas for Main Yard	R	11/21/2013	5,680.29		016734		9,490.35
00086	E.J. Harrison & Sons Inc							
I-1001	Acct#500546088	R	11/21/2013	280.00		016735		280.00
02616	Horst Eickelmann							
I-111413	Camping Fee Refund	R	11/21/2013	25.00		016736		25.00

VENDOR SET: 01 Casitas Municipal Water D
 BANK: AP ACCOUNTS PAYABLE
 DATE RANGE: 11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
00095	FAMCON PIPE & SUPPLY							
	C-C153910 Spool Returned Inv#153862	R	11/21/2013	188.13CR		016737		
	I-153862 Parts to Move Fire Hydrant	R	11/21/2013	715.95		016737		
	I-153900 Parts to Move Fire Hydrant	R	11/21/2013	284.88		016737		812.70
00099	FGL ENVIRONMENTAL							
	I-309992A Wet Chemistry-Total P Diss	R	11/21/2013	1,499.40		016738		
	I-309993A Metals, Total-Mn	R	11/21/2013	160.00		016738		1,659.40
00497	SUSAN McMAHON							
	I-Nov 13 Reimburse Expenses 11/13	R	11/21/2013	517.36		016739		517.36
00151	MEINERS OAKS ACE HARDWARE							
	I-577289 Pipe, Roof Structure Robles	R	11/21/2013	212.66		016740		
	I-581104 Storage Shelves for PL	R	11/21/2013	256.10		016740		468.76
10042	PSR ENVIRONMENTAL SERVICE, INC							
	I-6267 Garage Fuel Tank Testing, DO	R	11/21/2013	2,700.00		016741		
	I-6293 Annual Leak Detection, DO	R	11/21/2013	790.00		016741		
	I-6295 36 Month EVR Test, DO	R	11/21/2013	610.00		016741		4,100.00
02596	Richard L Lofton Company dba							
	I-2489RL Motor Mute for 4M PP	R	11/21/2013	3,278.00		016742		3,278.00
02475	Rutan & Tucker, LLP							
	I-676231 Prof Svcs 10/13	R	11/21/2013	8,138.78		016743		8,138.78
00768	SANTA BARBARA CONTROL SYSTEMS							
	I-87665 Chemtrol Sensors for WP	R	11/21/2013	1,063.50		016744		1,063.50
01623	SCPPOA							
	I-MS1314000013 WP Membership 2013/2014	R	11/21/2013	90.00		016745		90.00
00215	SOUTHERN CALIFORNIA EDISON							
	I-112113 Acct#2237011044	R	11/21/2013	28.83		016746		
	I-112113a Acct#2312811532	R	11/21/2013	51.42		016746		
	I-112113b Acct#2266156405	R	11/21/2013	123.24		016746		
	I-112113c Acct#2157697889	R	11/21/2013	583.17		016746		786.66
00050	STATE OF CALIFORNIA - EDD							
	I-L1273722944 Unemployment Charges	R	11/21/2013	428.00		016747		428.00
00767	STATE WATER RESOURCES CONTROL							
	I-WD-0087405 Aquatic Pesticide Permit	R	11/21/2013	2,062.00		016748		2,062.00

VENDOR SET: 01 Casitas Municipal Water D

BANK: AP ACCOUNTS PAYABLE

DATE RANGE: 11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
01048	VAUGHAN'S INDUSTRIAL REPAIR CO							
I-020232	Rebuild Pump Unit #2 Grand Ave	R	11/21/2013	8,056.76		016749		8,056.76
00256	VENTURA RENTAL CENTER, INC.							
I-1505463	Excavator Rental, North Rice Rd	R	11/21/2013	2,645.50		016750		2,645.50
02583	WageWorks							
I-125AI0280053	FSA Monthly Fee	R	11/21/2013	86.40		016751		86.40
00270	WELLS FARGO BANK							
I-110813a	PH Probe for Fisheries	R	11/21/2013	558.74		016752		
I-110813b	Gear Reducer, Canal	R	11/21/2013	145.72		016752		
I-110813c	Weatherproof Camera for Fish	R	11/21/2013	403.68		016752		
I-110813d	Animal Repellent, Maint	R	11/21/2013	59.97		016752		
I-110813e	XM Receiver for Waterpark	R	11/21/2013	48.25		016752		
I-110813f	Chlorine Analyzer for TP	R	11/21/2013	1,438.07		016752		
I-110813g	Monthly Credit Card Charges	R	11/21/2013	2,799.96		016752		5,454.39
00276	RON YOST							
I-111513	Operator Cert Renewal	R	11/21/2013	60.00		016753		60.00
1	Duane V White							
I-000201311190781	TS Refund	R	11/21/2013	42.50		016754		42.50
00124	ICMA RETIREMENT TRUST - 457							
I-CUI201311250783	457 CATCH UP	R	11/27/2013	634.61		016755		
I-DCI201311250783	DEFERRED COMP FLAT	R	11/27/2013	2,855.76		016755		
I-DI&201311250783	DEFERRED COMP PERCENT	R	11/27/2013	213.83		016755		3,704.20
00180	S.E.I.U. - LOCAL 721							
I-COP201311250783	SEIU 721 COPE	R	11/27/2013	9.50		016756		
I-UND201311250783	UNION DUES	R	11/27/2013	575.50		016756		585.00
00230	UNITED WAY							
I-UWY201311250783	PAYROLL CONTRIBUTIONS	R	11/27/2013	45.00		016757		45.00
00985	NATIONWIDE RETIREMENT SOLUTION							
I-CUN201311250783	457 CATCH UP	R	11/27/2013	864.53		016758		
I-DCN201311250783	DEFERRED COMP FLAT	R	11/27/2013	3,857.84		016758		4,722.37
01960	Moringa Community							
I-MOR201311250783	PAYROLL CONTRIBUTIONS	R	11/27/2013	16.75		016759		16.75

VENDOR SET: 01 Casitas Municipal Water D

BANK: AP ACCOUNTS PAYABLE

DATE RANGE:11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
02586 I-11657	Acacia Erosion Control, Inc. Install Temp Tanks,Villanova	R	12/05/2013	38,680.00		016760		38,680.00
00004 I-A000222300	ACWA/JPIA Dec Health Insurance 2013	R	12/05/2013	113,545.49		016761		113,545.49
00010 I-9021907158 I-9021956440	AIRGAS USA LLC Welding Supplies for Pipelines Welding Supplies for PP	R R	12/05/2013 12/05/2013	54.14 41.53		016762 016762		95.67
00011 I-131100847101	ALERT COMMUNICATIONS Call Center 12/13	R	12/05/2013	228.95		016763		228.95
02575 C-274044a D-274044a I-274044	AMERICAN FLOOR MATS Accrue Use Tax Accrue Use Tax Shower Mating for LCRA	R R R	12/05/2013 12/05/2013 12/05/2013	31.41CR 31.41 418.80		016764 016764 016764		418.80
00029 I-1595024	AMERICAN TOWER CORP Tower Rent, Red Mtn, Rincon Pk	R	12/05/2013	1,620.30		016765		1,620.30
00417 I-7001215681	APPLIED INDUSTRIAL TECHNOLOGY Electrical Contact Cleaner,E&M	R	12/05/2013	116.93		016766		116.93
00014 I-535861 I-536023	AQUA-FLO SUPPLY PVC for Villanova Reservoir Sprinklers for Camp B	R R	12/05/2013 12/05/2013	95.82 49.49		016767 016767		145.31
01666 I-000004857680 I-000004885386	AT & T Local, Regional, Long Distance T-1 Lines C602222128777	R R	12/05/2013 12/05/2013	937.06 899.62		016768 016768		1,836.68
00020 I-52189	AVENUE HARDWARE, INC Wedge Anchors for Dam	R	12/05/2013	39.44		016769		39.44
00021 I-057249	AWA OF VENTURA COUNTY Waterwise Breakfast 11/21/13	R	12/05/2013	100.00		016770		100.00
00679 I-S1979010001	BAKERSFIELD PIPE & SUPPLY INC Rectorseal for Pump Plants	R	12/05/2013	17.81		016771		17.81
02059 I-111813	Berkadia G Interest, Loan#010250001	R	12/05/2013	3,362.50		016772		3,362.50

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
01917	Biomark							
	C-PSI116870a	R	12/05/2013	9.68CR		016773		
	D-PSI116870a	R	12/05/2013	9.68		016773		
	I-PSI116870	R	12/05/2013	190.50		016773		190.50
00032	BIOVIR LABORATORIES, INC							
	I-131499	R	12/05/2013	95.00		016774		95.00
01616	FRED BRENEMAN							
	I-120313	R	12/05/2013	391.00		016775		391.00
00945	CAMCO BREAKER & CONTROLS, INC.							
	I-27696	R	12/05/2013	1,451.25		016776		1,451.25
09907	CARUS PHOSPHATES, INC.							
	I-SLS10029782	R	12/05/2013	20,820.00		016777		20,820.00
00055	CASITAS BOAT RENTALS							
	I-Oct 13 Gas	R	12/05/2013	253.01		016778		
	I-Sep 13 Gas	R	12/05/2013	797.93		016778		1,050.94
00117	CERTEX USA, INC							
	I-1070594500	R	12/05/2013	37.63		016779		37.63
00057	CLEAN SOURCE							
	I-279169900	R	12/05/2013	297.07		016780		297.07
01843	COASTAL COPY							
	I-507290	R	12/05/2013	89.50		016781		
	I-507291	R	12/05/2013	85.31		016781		174.81
00059	COASTAL PIPCO							
	I-S1790756001	R	12/05/2013	192.95		016782		
	I-S1792723002	R	12/05/2013	226.39		016782		
	I-S1792750001	R	12/05/2013	73.52		016782		
	I-S1792990001	R	12/05/2013	26.08		016782		518.94
00061	COMPUWAVE							
	I-SB02075363	R	12/05/2013	937.58		016783		937.58
00062	CONSOLIDATED ELECTRICAL							
	I-9009685743	R	12/05/2013	665.90		016784		
	I-9009685907	R	12/05/2013	60.20		016784		726.10

VENDOR SET: 01 Casitas Municipal Water D
 BANK: AP ACCOUNTS PAYABLE
 DATE RANGE: 11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
00719 I-60040022	CORELOGIC INFORMATION SOLUTION Realquest Subscription	R	12/05/2013	137.50		016785		137.50
01764 I-747190	DataProse, Inc. UB Mailing	R	12/05/2013	1,808.99		016786		1,808.99
00182 I-0037304IN	DEWITT PETROLEUM Diesel for Main Yard	R	12/05/2013	1,037.85		016787		1,037.85
00085 I-353161	DON'S INDUSTRIAL SUPPLIES, INC Ball Valves for Pump Plants	R	12/05/2013	33.46		016788		33.46
00086 I-5543 I-5565	E.J. Harrison & Sons Inc Acct#1C-00053370 Acct#1C00054230	R R	12/05/2013 12/05/2013	114.55 670.00		016789 016789		784.55
10085 C-47750a D-47750a I-47750	ELIFEGUARD, INC. Accrue Use Tax Accrue Use Tax Waterpark Uniforms	R R R	12/05/2013 12/05/2013 12/05/2013	235.13CR 235.13 3,424.36		016790 016790 016790		3,424.36
00091 I-US0130939970	ERNST & YOUNG LLP Acctg Srvcs Progress Billing	R	12/05/2013	489.00		016791		489.00
00095 I-154346	FAMCON PIPE & SUPPLY Repair Service Line	R	12/05/2013	108.04		016792		108.04
10120 I-113013	CHARLES Z. FEDAK & COMPANY Audit Services	R	12/05/2013	2,302.00		016793		2,302.00
00013 C-CM999651 I-9926414	FERGUSON ENTERPRISES INC #1083 Valve Returned, Not Ordered Valves for Waterpark	R R	12/05/2013 12/05/2013	552.60CR 1,311.80		016794 016794		759.20
00099 I-311048A	FGL ENVIRONMENTAL Metals, Total-Mn	R	12/05/2013	70.00		016795		70.00
00103 I-88333 I-88335 I-88339 I-88340 I-88346 I-88347	FRANK'S ROOTER & PUMPING Pump Septic Tank 11/1/13 Pump Septic Tank 11/4/13 Septic Tank Pump 11/8/13 Septic Tank Pump 11/11/13 Septic Tank Pump 11/15/13 Septic Tank Pump 11/18/13	R R R R R R	12/05/2013 12/05/2013 12/05/2013 12/05/2013 12/05/2013 12/05/2013	285.00 380.00 522.50 910.00 427.50 475.00		016796 016796 016796 016796 016796 016796		3,000.00

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
00104	FRED'S TIRE MAN							
I-70310	Tire for Water Buffalo #303	R	12/05/2013	275.97		016797		
I-70733	Alignment #46, TP Truck	R	12/05/2013	79.95		016797		
I-70741	Oil Change for #22, E&M	R	12/05/2013	39.67		016797		
I-70749	2 Tires for #46, TP Truck	R	12/05/2013	344.14		016797		739.73
00106	FRONTIER PAINT							
I-F186590	Paint for WP Building Doors	R	12/05/2013	48.77		016798		48.77
01280	FRY'S ELECTRONICS, INC.							
I-5237019	Adapter, USB Flash Drives, IT	R	12/05/2013	97.16		016799		
I-5242131	Video Card for IT Dept	R	12/05/2013	75.59		016799		172.75
00216	THE GAS COMPANY							
I-112513	Acct#00801443003	R	12/05/2013	1,033.45		016800		
I-112513a	Acct#18231433006	R	12/05/2013	49.76		016800		1,083.21
00115	GRAINGER, INC							
I-9285062700	Grease for LCRA Maint	R	12/05/2013	57.67		016801		
I-9296950877	Contact Cleaner for E&M	R	12/05/2013	29.81		016801		
I-9299702929	Sump Pump, Check Valve for PP	R	12/05/2013	231.92		016801		319.40
00746	GREEN THUMB INTERNATIONAL							
I-459606	Tools for District Garden	R	12/05/2013	118.95		016802		
I-460041	Plants for Waterpark	R	12/05/2013	144.67		016802		263.62
00121	HACH COMPANY							
I-8564707	Lab Supplies	R	12/05/2013	36.61		016803		36.61
02617	Parker Haugen							
I-112213	Camping Fee Refund	R	12/05/2013	50.00		016804		50.00
00596	HOME DEPOT							
I-1040356923	Toilets for B, E, F, & M Camps	R	12/05/2013	2,056.32		016805		2,056.32
00894	HOSE-MAN, INC.							
I-5197646000105	Polyflo Parts for TP	R	12/05/2013	9.61		016806		
I-5197802000105	Hose Parts for TP	R	12/05/2013	28.17		016806		37.78
00126	CAROLE ILES							
I-Nov 13	Reimburse Mileage 11/13	R	12/05/2013	35.60		016807		35.60
02303	Irrigation Association - Certi							
I-676252014	Certification Renewal	R	12/05/2013	100.00		016808		100.00

VENDOR SET: 01 Casitas Municipal Water D

BANK: AP ACCOUNTS PAYABLE

DATE RANGE:11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
00131	JCI JONES CHEMICALS, INC							
I-601190	Chlorine for TP, CM#601260	R	12/05/2013	1,770.00		016809		
I-601496	Chlorine for TP, CM#601536	R	12/05/2013	1,770.00		016809		
I-602052	Chlorine for TP, CM#602081	R	12/05/2013	1,770.00		016809		
I-602653	Chlorine for TP, CM#602672	R	12/05/2013	899.94		016809		
I-602654	Chlorine for TP, CM#602673	R	12/05/2013	1,770.00		016809		7,979.94
01022	KELLY CLEANING & SUPPLIES, INC							
I-10022001	Janitorial Srvcs, LCRA	R	12/05/2013	280.00		016810		280.00
02396	Kemira Water							
I-9017363534	Ferric Sulfate for TP	R	12/05/2013	4,637.60		016811		4,637.60
00328	LIGHTNING RIDGE							
I-11141309	Uniform Shirts for Waterpark	R	12/05/2013	1,219.43		016812		1,219.43
01829	MAC'S AUTO UPHOLSTERY							
I-22484	Repair Truck Seat, #40 TP	R	12/05/2013	151.50		016813		151.50
00145	MAGNUM FENCE & SECURITY, INC.							
I-9824	Parts for Fence Repair, Canal	R	12/05/2013	54.18		016814		54.18
00497	SUSAN McMAHON							
I-Nov 13a	AWWA Course	R	12/05/2013	310.00		016815		310.00
00151	MEINERS OAKS ACE HARDWARE							
I-581266	Fence Stays for Canal	R	12/05/2013	75.24		016816		
I-581652	Asphalt Patch, Showerheads	R	12/05/2013	59.34		016816		
I-581872	Air Compressor for Quagga	R	12/05/2013	88.03		016816		
I-582375	Drywall Screws for PL Show	R	12/05/2013	4.18		016816		
I-582601	Blades, Lumber for LCRA Maint	R	12/05/2013	41.94		016816		
I-582611	Sprinkler Parts for Waterpark	R	12/05/2013	32.14		016816		
I-582612	Potting Mix for Waterpark	R	12/05/2013	10.75		016816		
I-582785	Bit Set, Battery for Maint	R	12/05/2013	31.08		016816		
I-582837	Wood Stakes for Dist Maint	R	12/05/2013	10.58		016816		
I-582920	Blade Jig Set for Fisheries	R	12/05/2013	7.82		016816		
I-582923	Corner Brace, Bolts for Fish	R	12/05/2013	4.62		016816		
I-582936	Trash Bags, Pliers for LCRA	R	12/05/2013	61.14		016816		
I-582992	Plywood for PL Shop Bench	R	12/05/2013	40.13		016816		
I-583013	Keys Made for Engineering	R	12/05/2013	12.81		016816		
I-583324	Toilet Repair Parts, Lock	R	12/05/2013	25.10		016816		
I-583411	Paint Supplies for Waterpark	R	12/05/2013	33.11		016816		
I-583522	Valve Box, Steel for WP	R	12/05/2013	12.31		016816		
I-583570	Heater for TP Facility	R	12/05/2013	62.33		016816		
I-583591	Nozzle, Tubing for Waterpark	R	12/05/2013	31.65		016816		
I-583613	Parts for Irrigation Repair,WP	R	12/05/2013	56.31		016816		
I-583821	Carwax, Compound Rub for TP	R	12/05/2013	8.15		016816		
I-583942	Cement, Primer for WP	R	12/05/2013	13.09		016816		

VENDOR SET: 01 Casitas Municipal Water D

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DATE RANGE:11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
I-583943	Conduit PVC for Waterpark	R	12/05/2013	16.06		016816		
I-583982	Brass Hose Couplings for TP	R	12/05/2013	8.77		016816		
I-584108	Wax Rings,Air Filter for Maint	R	12/05/2013	18.91		016816		
I-584167	Cleaning Supplies for PL Shop	R	12/05/2013	55.75		016816		
I-584324	Garden Shoes, PVC for WP	R	12/05/2013	38.04		016816		
I-584511	Bubble Wrap for Megalers	R	12/05/2013	15.00		016816		
I-584519	Faceshield, Valve Box for WP	R	12/05/2013	10.64		016816		
I-584618	Concrete for Fence Repair	R	12/05/2013	30.01		016816		
I-584701	Bolts & Screws for Ave 2 PP	R	12/05/2013	6.32		016816		
I-584727	Concrete for Canal Fence	R	12/05/2013	30.01		016816		
I-584994	Tissue Holders for Dist Maint	R	12/05/2013	12.19		016816		
I-585567	Lubricant, Brake Cleaner DM	R	12/05/2013	9.66		016816		973.21
00163	OFFICE DEPOT							
I-684313235001	Office Supplies	R	12/05/2013	49.56		016819		49.56
01570	Ojai Auto Supply LLC							
I-293966	Tool Box Supports, #30, E&M	R	12/05/2013	132.14		016820		132.14
00607	OJAI ELECTRIC							
I-071857	New Fixtures Installed, LCRA	R	12/05/2013	1,057.00		016821		1,057.00
00165	OJAI LUMBER CO, INC							
I-1311646510	Redwood Stain for Table Boards	R	12/05/2013	347.42		016822		347.42
00167	OJAI VALLEY FAMILY MEDICAL GRP							
I-111413	DMV Physical	R	12/05/2013	140.00		016823		140.00
00734	ONESOURCE DISTRIBUTORS							
I-S414959901	Faceshield for E & M	R	12/05/2013	214.40		016824		
I-S4160325001	Mercen Fuses for Pump Plants	R	12/05/2013	39.01		016824		
I-S4160325002	Mercen Fuses for Pump Plant	R	12/05/2013	37.80		016824		291.21
00184	POWERSTRIDE BATTERY CO, INC							
I-V583809	Battery for #30, E&M Truck	R	12/05/2013	98.42		016825		98.42
01439	PRECISION POWER EQUIPMENT							
I-2000	Chain for Chainsaws Maint	R	12/05/2013	91.87		016826		
I-2997	Oil for Chain Saws, Dist Maint	R	12/05/2013	21.49		016826		113.36
00857	PT HUENEME MARINE							
I-035493	Single Pully for TP	R	12/05/2013	11.74		016827		11.74

VENDOR SET: 01 Casitas Municipal Water D

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DATE RANGE: 11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
00405	R. J. THOMAS MFG. CO., INC.							
C-00163816a	Accrue Use Tax	R	12/05/2013	199.67CR		016828		
D-00163816a	Accrue Use Tax	R	12/05/2013	199.67		016828		
I-00163816	Campfire Rings & Park Grills	R	12/05/2013	3,448.72		016828		3,448.72
02341	Rave Sports							
C-INV90672a	Accrue Use Tax	R	12/05/2013	279.11CR		016829		
D-INV90672a	Accrue Use Tax	R	12/05/2013	279.11		016829		
I-INV90672	Tubes for Waterpark	R	12/05/2013	4,088.72		016829		4,088.72
10131	RESOURCE ACTION PROGRAMS							
C-113013078981231INa	Accrue Use Tax	R	12/05/2013	403.07CR		016830		
D-113013078981231INa	Accrue Use Tax	R	12/05/2013	403.07		016830		
I-113013078981231IN	Water Education Kits	R	12/05/2013	5,634.00		016830		5,634.00
00892	RICKLY HYDROLOGICAL, INC.							
C-341646a	Accrue Use Tax	R	12/05/2013	10.35CR		016831		
D-341646a	Accrue Use Tax	R	12/05/2013	10.35		016831		
I-341646	Tagline for Fish, Gage for TP	R	12/05/2013	161.79		016831		161.79
00313	ROCK LONG'S AUTOMOTIVE							
I-10314	Repair Shifter #55, Maint	R	12/05/2013	142.51		016832		
I-10320	Replace Fuel Filter, #46, TP	R	12/05/2013	118.13		016832		
I-9921	Replace Radiator for #27, LCRA	R	12/05/2013	197.36		016832		458.00
00314	ROLLS SCAFFOLD & HIGH REACH							
I-6051281S1I	Scaffolding Rental, TP	R	12/05/2013	208.86		016833		208.86
01109	SALVADOR LOERA TRANSPORTATION							
I-15137	Sand & Base for PL Bins	R	12/05/2013	515.00		016834		515.00
00215	SOUTHERN CALIFORNIA EDISON							
I-112613	Acct#2210507034	R	12/05/2013	10,090.34		016835		
I-112713	Acct#2210503702	R	12/05/2013	15,168.08		016835		
I-120313	Acct#2210502480	R	12/05/2013	105,364.92		016835		
I-120313a	Acct#2210505426	R	12/05/2013	1,657.73		016835		
I-120313b	Acct#2237789169	R	12/05/2013	29.37		016835		
I-120313c	Acct#2269631768	R	12/05/2013	23.38		016835		132,333.82
10100	SPECIALTY MARINE, INC							
I-11244	Service Cortez Patrol Boat, 289	R	12/05/2013	1,040.97		016836		1,040.97
02202	Stanley Pest Control							
I-1316	SS Relief #170 Termite Treatme	R	12/05/2013	700.00		016837		700.00

VENDOR SET: 01 Casitas Municipal Water D

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DATE RANGE:11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
00048 I-120113	STATE OF CALIFORNIA State Water Plan Payment	R	12/05/2013	155,053.00		016838		155,053.00
01662 I-02583076	TYLER TECHNOLOGIES, INC. Monthly UB Online Fees	R	12/05/2013	153.00		016839		153.00
00234 I-120213	UNITED WATER CONSERVATION State Water Plan Payment	R	12/05/2013	30,847.50		016840		30,847.50
00247 I-111813	County of Ventura Encroachment Permit#13-0493	R	12/05/2013	230.00		016841		230.00
00257 I-113013 I-113013a	VENTURA RIVER COUNTY WATER Acct#0350100A Acct#0537500A	R R	12/05/2013 12/05/2013	14.70 47.44		016842 016842		62.14
00258 I-147081 I-147559	VENTURA STEEL, INC Steel for Meter Lids Steel Plate for Pump Plant	R R	12/05/2013 12/05/2013	238.87 46.35		016843 016843		285.22
00949 I-120213	CITY OF VENTURA State Water Plan Payment	R	12/05/2013	61,695.00		016844		61,695.00
01101 I-Nov 13	REBEKAH VIEIRA Reimburse Expenses 11/13	R	12/05/2013	482.22		016845		482.22
01396 I-70163225 I-70163226	VULCAN MATERIALS COMPANY Recycle Old Asphalt Cold Mix for Pipelines	R R	12/05/2013 12/05/2013	100.00 679.69		016846 016846		779.69
00630 I-901142 I-903785	WESCO Fuses for Pump Plants Grounding Bussbars for PP	R R	12/05/2013 12/05/2013	10.46 165.99		016847 016847		176.45
1 I-000201311270785	Jason & Eden Arnold UB Refund	R	12/05/2013	0.91		016848		0.91
1 I-000201311270784	David Remedios UB Refund	R	12/05/2013	15.65		016849		15.65
1 I-000201311270786	John R Posthuma Livi UB Refund	R	12/05/2013	44.68		016850		44.68

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
1 I-000201311270787	Isabelle Hurbibe UB Refund	R	12/05/2013	0.90		016851		0.90
1 I-000201311270788	William Evenden UB Refund	R	12/05/2013	294.53		016852		294.53
1 I-000201311270789	Granite Construction UB Refund	R	12/05/2013	45.13		016853		45.13
1 I-000201312020790	Lisa A Franklin TS Refund	R	12/05/2013	127.50		016854		127.50
01325 I-682742	Aflac Worldwide Headquarters Supplemental Insurance 12/13	R	12/05/2013	3,031.58		016855		3,031.58
01898 I-120513	Eric Grabowski Pesticide Applicator License	R	12/05/2013	340.00		016856		340.00
00432 I-120513	Government Finance Officers As Certificate of Achievement	R	12/05/2013	435.00		016857		435.00
00128	INTERNAL REVENUE SERVICE							
I-T1 201311220782	Federal Withholding	D	11/27/2013	47.09		112731		
I-T1 201311250783	Federal Withholding	D	11/27/2013	23,727.66		112731		
I-T3 201311220782	FICA Withholding	D	11/27/2013	82.20		112731		
I-T3 201311250783	FICA Withholding	D	11/27/2013	18,276.96		112731		
I-T4 201311220782	Medicare Withholding	D	11/27/2013	19.22		112731		
I-T4 201311250783	Medicare Withholding	D	11/27/2013	5,279.16		112731		47,432.29
00049	STATE OF CALIFORNIA							
I-T2 201311220782	State Withholding	D	11/27/2013	3.80		112732		
I-T2 201311250783	State Withholding	D	11/27/2013	8,169.48		112732		8,173.28
00187	CALPERS							
I-PBB201311250783	PERS BUY BACK	D	11/27/2013	66.87		112733		
I-PEB201311250783	PEBRA EMPLOYEES PORTION	D	11/27/2013	258.42		112733		
I-PER201311250783	PERS EMPLOYEE PORTION	D	11/27/2013	9,986.20		112733		
I-PRB201311250783	PEBRA EMPLOYER PORTION	D	11/27/2013	258.42		112733		
I-PRR201311250783	PERS EMPLOYER PORTION	D	11/27/2013	12,328.75		112733		22,898.66

VENDOR SET: 01 Casitas Municipal Water D

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DATE RANGE: 11/21/2013 THRU 12/05/2013

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
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* * T O T A L S * *

	NO	INVOICE AMOUNT	DISCOUNTS	CHECK AMOUNT
REGULAR CHECKS:	132	692,836.62	0.00	692,836.62
HAND CHECKS:	0	0.00	0.00	0.00
DRAFTS:	3	78,504.23	0.00	78,504.23
EFT:	0	0.00	0.00	0.00
NON CHECKS:	0	0.00	0.00	0.00
VOID CHECKS:	0	VOID DEBITS	0.00	
		VOID CREDITS	0.00	0.00

TOTAL ERRORS: 0

	NO	INVOICE AMOUNT	DISCOUNTS	CHECK AMOUNT
VENDOR SET: 01 BANK: AP TOTALS:	135	771,340.85	0.00	771,340.85
BANK: AP TOTALS:	135	771,340.85	0.00	771,340.85
REPORT TOTALS:	137	771,340.85	0.00	771,340.85

Casitas Municipal Water District
Reimbursement Disclosure Report (1)
Fiscal Year 2013/14
July 1, 2013-November 30, 2013

<u>Date paid</u>	<u>Board of Director/ Employee</u>	<u>Description</u>	<u>Amount Paid</u>	
07/02/2013	Carol Belsler	Emergency Response Courses	\$	190.00
07/02/2013	Lisa Kolar	DMV Physical	\$	140.00
07/17/2013	Cinnamon McIntosh	Advance for Travel	\$	1,602.00
07/17/2013	Kevin Nguyen	Network Switches, Canned Air for IT Dept	\$	149.00
08/01/2013	Michael Gibson	Waders for Fisheries Department	\$	201.41
08/01/2013	Larry Harris	Refreshments for Graywater Workshop	\$	187.34
08/08/2013	RJ Faddis	Fuel for Rogue, Patrol Boat at LCRA	\$	536.76
08/08/2013	Steve Wickstrum	Photo Canvas	\$	103.14
08/15/2013	Scott Lewis	Airfare to CMWD 7/20/13-7/26/13	\$	311.60
08/15/2013	Scott Lewis	Lodging CMWD 7/20/12-7/26/13	\$	454.25
08/15/2013	Scott Lewis	Car Rental 7/20/13-7/26/13	\$	263.05
08/22/2013	Joel Cox	D3 Certification Renewal	\$	190.00
08/22/2013	John Parlee	Safety Boots	\$	170.00
08/22/2013	Ron Yost	Property Tax Bill for Damtender Residence	\$	547.17
08/26/2013	Troy Garst	Safety Boots	\$	138.68
08/26/2013	Gerardo Herrera	Safety Boots	\$	113.55
08/28/2013	Robert Vasquez	Safety Boots	\$	161.20
09/03/2013	Susan McMahan	Lodging at Aquatic Weed Permit Workshop	\$	141.25
09/03/2013	Susan McMahan	Round Trip Mileage to Workshop	\$	258.77
09/03/2013	Mark Passamani	Flat Repair & Tow, #32, Admin Van	\$	120.00
09/11/2013	Troy Garst	T4 Certificate Renewal	\$	140.00
09/11/2013	Scott Lewis	Lodging CMWD 8/21/13-8/28/13	\$	501.78
09/11/2013	Scott Lewis	Car Rental 8/21/13-8/28/13	\$	421.64
09/11/2013	Luke Soholt	Safety Boots	\$	138.68
10/03/2013	Lisa Barbee	Advance for Calpers Forum	\$	1,107.74
10/03/2013	Eric Grabowski	Safety Boots	\$	170.00
10/10/2013	Scott Lewis	Airfare to CMWD 8/21/13-8/28/13	\$	281.60
10/10/2013	Scott Lewis	Airfare to CMWD 9/23/13-9/28/13	\$	277.21
10/10/2013	Scott Lewis	Lodging CMWD 9/23/13-9/28/13	\$	337.40
10/10/2013	Scott Lewis	Car Rental CMWD 9/23/13-9/28/13	\$	342.94
10/16/2013	Brian Taylor	Water Treatment Techniques Course	\$	114.95
10/22/2013	Suzi Taylor	Lip Balm for Ojai Day	\$	110.00
10/22/2013	Suzi Taylor	Chip Clips for Ojai Day	\$	201.50
10/22/2013	Suzi Taylor	Glow Sticks & Noise Makers for Ojai Day	\$	146.99
10/30/2013	RJ Faddis	Fuel for Rogue, Patrol Boat at LCRA	\$	444.43
11/06/2013	Scott Lewis	Airfare to CMWD 10/21/13-10/25/13	\$	311.60
11/06/2013	Scott Lewis	Lodging CMWD 10/21/13-10/25/13	\$	337.40
11/06/2013	Scott Lewis	Car Rental 10/21/13-10/25/13	\$	413.39
11/08/2013	Joel Cox	Safety Boots	\$	107.50
11/08/2013	Todd Evans	Target Solutions Online Training	\$	229.00
11/13/2013	Tracy Medeiros	Safety Boots	\$	142.96
11/21/2013	Susan McMahan	Registration NALMS Conference 11/1/13	\$	145.00
11/21/2013	Susan McMahan	Lodging NALMS Conference	\$	149.75
11/21/2013	Susan McMahan	Private Vehicle Mileage NALMS Conference	\$	222.61

Note:

1) Reimbursement Disclosure Report prepared pursuant to California Government Code 53065.5

**CASITAS MUNICIPAL WATER DISTRICT
INTEROFFICE MEMORANDUM**

TO: STEVE WICKSTRUM, GENERAL MANAGER
FROM: NEIL COLE, PRINCIPAL CIVIL ENGINEER
SUBJECT: AWARD CONTRACT-LCRA WATER ADVENTURE COATING, SPECIFICATION 13-369
DATE: NOVEMBER 26, 2013

RECOMMENDATION:

It is recommended that the Board of Directors adopt the resolution accepting the proposal submitted by the lowest responsible bidder and award the contract for the construction of the LCRA Water Adventure Coating, Specification 13-369 to Industrial Coating & Restoration, Inc in the amount of \$133,000 for Bid Items 1 through 4 only. It is further recommended that the President of the Board execute the agreement for said work and the Board authorize staff to proceed with the administration of the contract.

BACKGROUND AND DISCUSSION:

The Lazy River has been in operation since 2003. In 2011, the Lazy River coaming (faux rock) was coated. In 2012, the Lazy River was coated. This coating has failed. Casitas has investigated a variety of coatings and lining systems, including plaster, Marlite, Pebbletec, PVC liner and various types of paint. The selected coating system is an epoxy coating specifically formulated for use on pools. This system was selected based on cost, projected life of the coating and the coating's ability to allow the facilities to be drained during the off season. The final color will be white. The project includes sand blasting the lagoon and the water playground area. These areas will be painted by Water Adventure personnel.

The project was advertised through F.W. Dodge and the Casitas web site. One firm visited the site. Two firms submitted a proposal. The bid results are:

FIRM	AMOUNT FOR BID ITEMS 1-4
Industrial Coating & Restoration	\$133,000
Olympus Painting	\$135,000

Industrial Coating & Restoration has completed similar projects for Casitas at the Lazy River. Industrial Coating & Restoration has a current and valid contractor's license and has a satisfactory safety record.

The FY 2013-14 Capital Budget included \$75,000 to complete repairs at the Water Adventure. The construction costs are eligible for 50% reimbursement through the USBR grant.

CASITAS MUNICIPAL WATER DISTRICT

**RESOLUTION AWARDING A CONTRACT
FOR THE LAKE CASITAS RECREATION AREA WATER ADVENTURE COATING
SPECIFICATION 13-369**

WHEREAS, the District invited bids from qualified contractors for the above-referenced project, and

WHEREAS, the District received two bids, with the lowest responsive bid submitted by Industrial Coating and Restoration, Inc. in the sum of \$133,000 for Bid Items 1 through 4 only and

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Casitas Municipal Water District as follows:

1. That the bid from Industrial Coating and Restoration, Inc. in the amount of \$133,000.00 for Bid Items 1-4 be accepted for the Lake Casitas Recreation Area Water Adventure Coating, Specification 13-369 and a contract awarded.
2. That staff is hereby authorized and directed to proceed with the administration of the contract.

ADOPTED this 11th day of December, 2013.

James W. Word
President, Casitas Municipal Water District

ATTEST:

Mary Bergen
Secretary, Casitas Municipal Water District

CASITAS MUNICIPAL WATER DISTRICT

Inter-Office Memorandum

DATE: December 4, 2013

TO: Steve Wickstrum, General Manager

FROM: Aaron Wall, Park Services Officer III

Copy: Carol Belser, Park Services Manager

Re: 2013 Casitas Water Adventure End of Season Report

RECOMMENDATION:

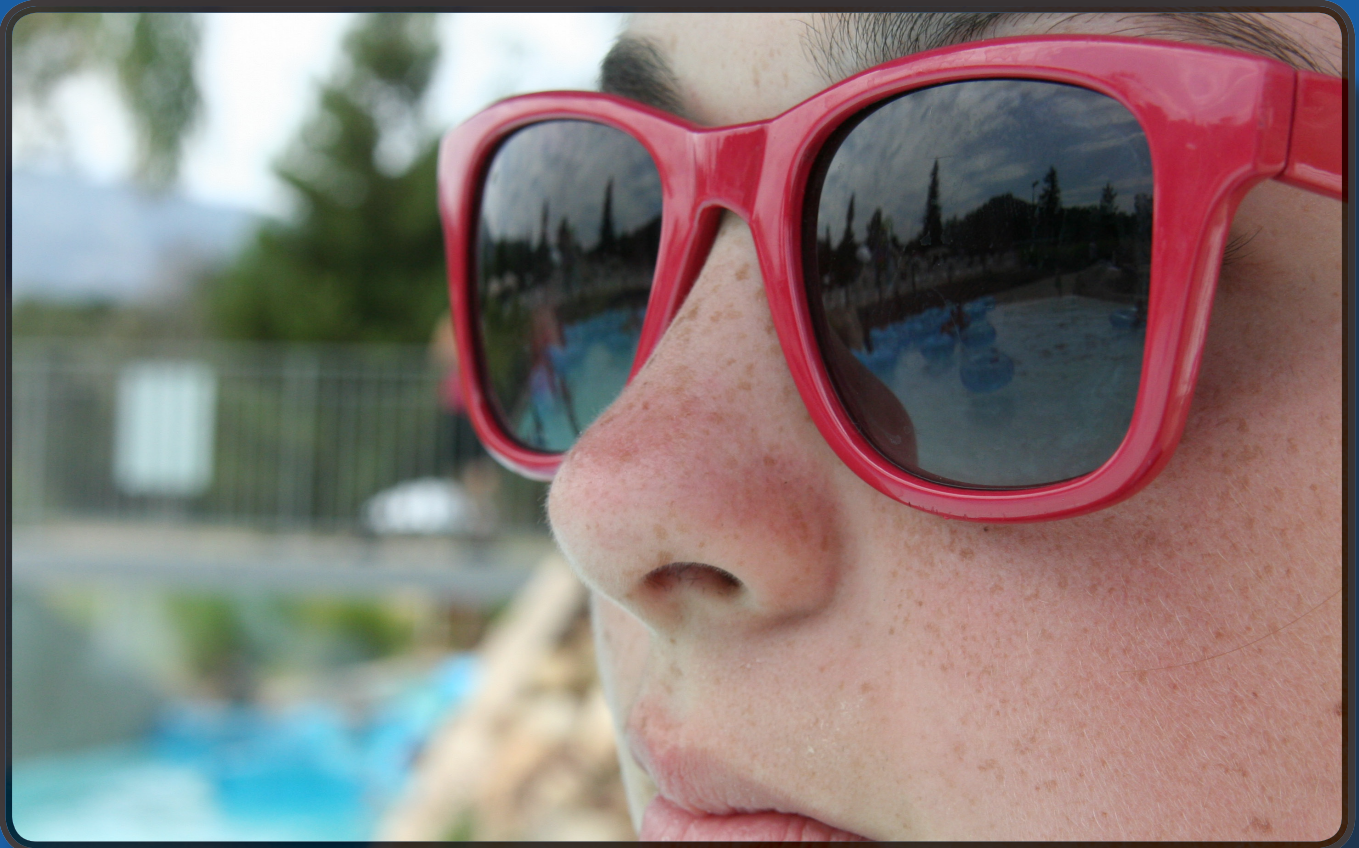
Receive and file.

BACKGROUND AND OVERVIEW:

The attached report summarizes the operational and financial information Casitas Water Adventure 2013 season which spans the 2012 and 2013 fiscal years.

On November 4, 2013 the Recreation Committee reviewed the draft report to be forwarded to the Board of Directors.

CASITAS WATER ADVENTURE



END OF SEASON REPORT
2013



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INTRODUCTION



Introduction

This end of season report summarizes and details the daily operations, goals, financial status and business plan for Casitas Water Adventure (CWA) and updates Casitas Municipal Water District management on how CWA is meeting the set expectations. It also details the many steps and processes required to meet these expectations and produce a successful CWA season.



Executive Summary

In the 2013 season (October 1, 2012 - September 30, 2013) CWA attendance decreased by 2,962 patrons from the previous season. This is believed to be due to the cooler weather. CWA saw an increase in net surplus of \$194,816.40 exceeding last season by \$29,170.27. This increase in net surplus is due to the decrease in Overhead and the decrease in Service and Supply Work Order spending. A large portion of the employees this season were returning staff reducing the training time required to bring employees up to speed. The CWA received another successful audit and permit to operate as an amusement park ride under the Department of Health and Safety with no reportable emergencies in the Lazy River.



FINANCIAL SUMMARY

Revenue	2012	2013	Difference
Snack Bar	\$6,375.00	\$6,371.42	(\$3.58)
Donation Voucher	\$0.00	\$0.00	\$0.00
Group Pass	(\$9,890.00)	(\$9,780.00)	\$110.00
Total Guest Pass	(\$12.00)	(\$444.00)	(\$432.00)
Junior Guards	\$7,420.00	\$5,960.00	(\$1,460.00)
Late Day Pass	\$76,040.00	\$73,992.00	(\$2,048.00)
Lifeguard Training	\$1,800.00	\$3,120.00	\$1,320.00
Locker Fee	\$1,056.00	\$1,272.00	\$216.00
Misc. Revenue	\$0.00	\$0.00	\$0.00
Next Day Pass	(\$2,540.00)	(\$1,771.00)	\$769.00
Promotion	(\$307.00)	\$119.00	\$426.00
Raincheck	(\$4,491.50)	(\$1,259.00)	\$3,232.50
Reservation Fee	\$17,417.50	\$19,546.50	\$2,129.00
Season Pass	\$22,270.00	\$25,329.00	\$3,059.00
Shade Rental Fee	\$10,280.00	\$6,675.00	(\$3,605.00)
Shower Fee	\$16,398.75	\$17,683.75	\$1,285.00
Single Splash Pass	\$715,859.25	\$684,701.00	(\$31,158.25)
Special Event Fee	\$0.00	\$0.00	\$0.00
Water Fitness Pass	\$7,044.00	\$7,980.00	\$936.00
Over/Short	\$65.10	(\$12.25)	(\$77.35)
Total Revenue	\$864,785.10	\$839,483.42	(\$25,301.68)

Expenditures

Salaries and Benefits	\$317,792.51	\$332,261.33	\$14,468.82
Services and supplies	\$138,900.48	\$144,619.68	\$5,719.20
Administrative Overhead	\$156,605.04	\$150,901.51	(\$5,703.53)
Services and supplies W.O.	\$85,840.94	\$16,884.50	(\$68,956.44)
Total Expenses	\$699,138.97	\$644,667.02	(\$54,471.95)

Net Surplus

Net Surplus	\$165,646.13	\$194,816.40	\$29,170.27
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FINANCIAL SUMMARY

Attendance Totals	2012	2013	Difference
Full Days of Operation	83	83	0
Total Days of Operation	83	83	0
Average Daily Attendance	959	923	(36)
Total Attendance	79613	76650	(2,963)

Attendance Sales Averages*

Sunday	925	867	(59)
Monday	916	840	(77)
Tuesday	875	803	(72)
Wednesday	971	850	(121)
Thursday	848	973	125
Friday	1,045	1,135	90
Saturday	1,081	997	(84)

Attendance Spending

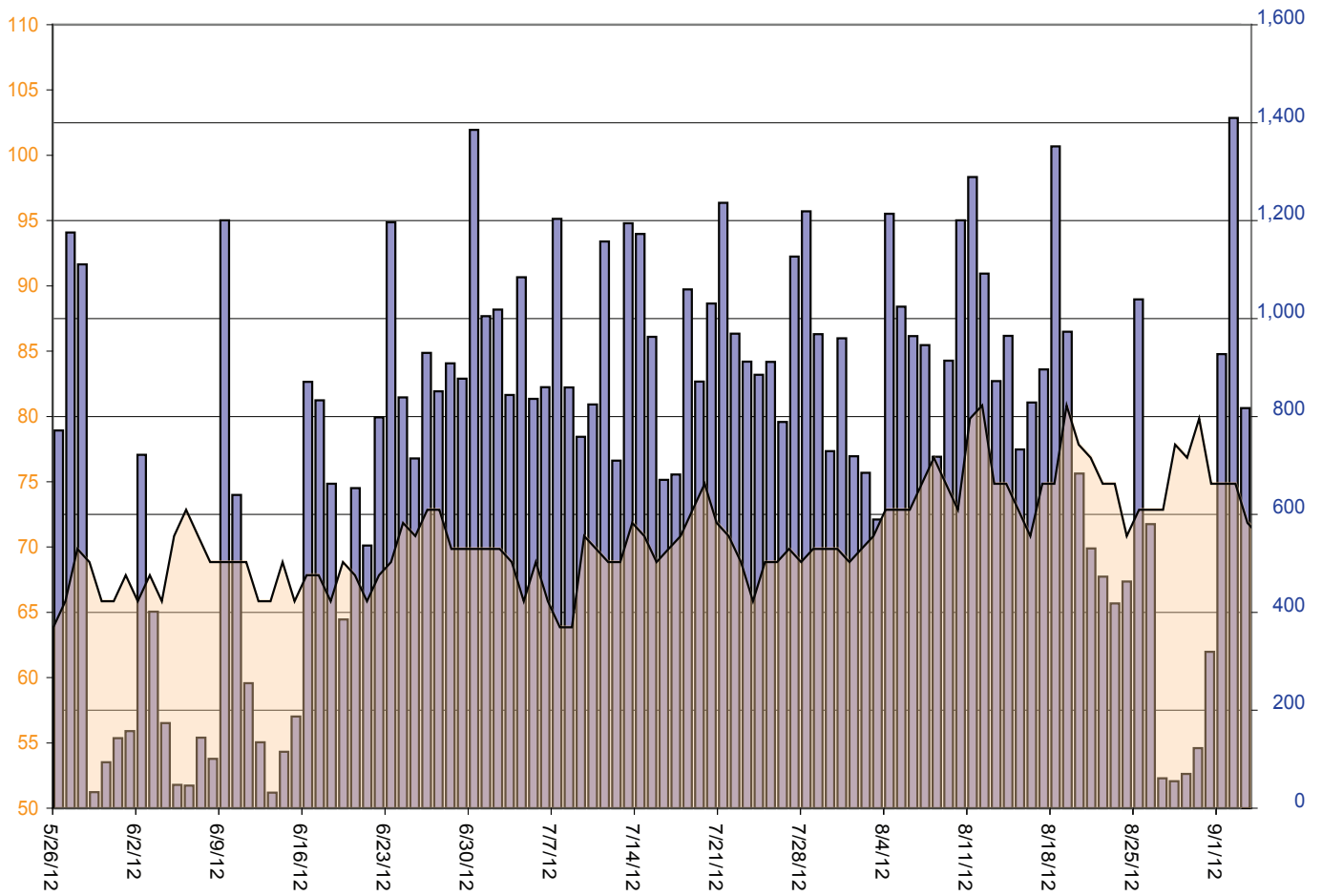
Average Per Capita Revenue	\$10.86	\$10.95	\$0.09
Average Per Capita Expense	\$8.78	\$8.41	(\$0.37)
Average Per Capita Net Surplus	\$2.08	\$2.54	\$0.46
Average Daily Revenue	\$10,419.10	\$10,114.26	(\$304.84)
Average Daily Cost of Operations	\$8,423.36	\$7,767.07	(\$656.29)
Average Daily Net Profit	\$1,995.74	\$2,347.19	\$351.45
Average Hourly Revenue	\$1,424.69	\$1,383.00	(\$41.68)
Average Hourly Cost of Operations	\$1,151.79	\$1,062.05	(\$89.74)
Average Hourly Net Profit	\$272.89	\$320.95	\$48.06

* Attendance generated by date of ticket purchase not park admittance.



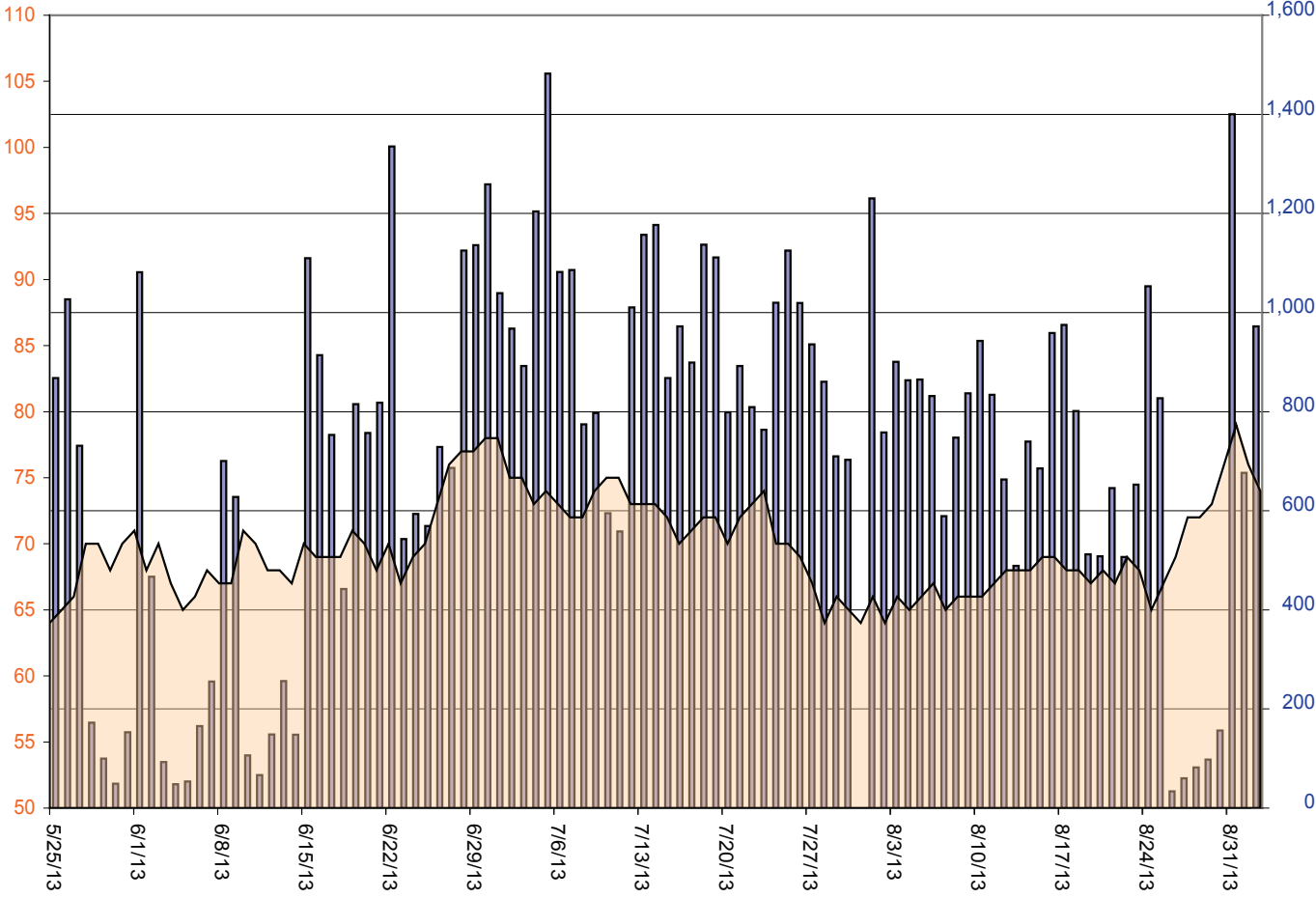
FINANCIAL SUMMARY

2012 Average Daily Temperature with Daily Sales Attendance



FINANCIAL SUMMARY

2013 Average Daily Temperature with Daily Sales Attendance





Live Scan

In the 2013 CWA season the Livescan and background check for all potential employees was successfully implemented.

Each potential employee is now required go to an authorized Livescan fingerprinting facility and pay a rolling fee to be fingerprinted. The background checks are sent directly to Human Resources to be screened prior to hire. This program brings CWA into compliance with local legislation that requires all government employees who supervise children to undergo a background check prior to employment.

Water Play Structure Improvements

In the spring we set out to give the water play structure a face-lift. The colors were becoming dull and the rubber mats were worn away at the base of each slide. It now has a fresh coat of paint and new landing pads. The vibrant yellow, blue, pink, red and green make the structure an aesthetically pleasing focal point in the park.



Splash Pad Improvements

Improvements were made to the Splash Pad this season. The glued in place rubber tiles that lined the floor of this water feature have been phased out in many other parks due to safety and sanitary issues. The tiles were replaced with broom-finish concrete. The new concrete floor requires much less maintenance and allows for easy sanitizing.

Staffing

Staffing for the 2013 season included 74 seasonal part time lifeguards, 4 part time pool technicians and 2 part time aquatic coordinators. The change in classification for lifeguards from part-time to seasonal part-time this season allowed the lifeguards to be free from part-time hours restrictions allowing lifeguards to work up to 40 hours per week for up to 120 days.



Division of Occupational Safety and Health (DOSH)

DOSH performed its two annual inspections of the Lazy River this season. The first inspection is a scheduled walk through and the second is unannounced. Both inspections were successfully passed with no reportable issues.



Programming

Water Aerobics classes were held 6 days a week throughout the summer. A new “Water Track” class was added as a lower intensity alternative to our usual program. The Jr. Lifeguard program consisted of two, three week sessions in which instructors focused on incorporating the educational material into fun and interesting activities.

Water Conservation

In an effort to continue improving water conservation we have been working with the District’s Conservation Specialist to cut down water usage. Many irrigation repairs have been completed around the CWA to make the system more effective. Sections of landscaping have also been replaced with drought tolerant plants. Great progress has been made this year in the ongoing effort to conserve water.



CONCLUSION

A wooden sign with yellow lettering that reads "CASITAS WATER ADVENTURE" and "ENTRANCE" with a yellow arrow pointing to the right. The sign is set against a background of green trees and a blue sky with white clouds.

This has been a rewarding season. Staff at CWA received background checks prior to employment and a higher level of training due to the number of returning, experienced employees. This resulted in a higher level of safety and customer service at CWA.



Off-Season Goals

Progress was made this season but there is always room for improvement. When the lifeguards are sent home for the year and the CWA is closed to the public, work does not stop. Below are four goals for the off season.

Lazy River Resurfacing

The Lazy River has several surfacing issues that impact customer safety and water conservation. We look forward to working with the engineering department to finding a solution to these problems prior to the 2014 season.

Drought Tolerant Landscaping

As part of Casitas Municipal Water District, it is important that we serve as an example to our customers through the continued expansion of drought tolerant landscaping that requires less water. We successfully upgraded several planters with drought tolerant landscaping and plan to continue throughout the CWA.

Division of Occupational Safety and Health

Standardizing CWA to DOSH requirements is an ongoing practice. We look forward to improving safety at CWA to minimize incidents that require medical transport to the hospital.

Increased Group Sales

We are excited to work with local schools and day-care centers to provide school fun days to the local schools in our community increasing group sales at CWA.

2013 Robles Fish Passage Facility Progress Report



Ventura River channel in the Robles Reach upstream of Hwy 150 (top) and Santa Ana Blvd. (bottom) bridges during March of 2013. Due to low precipitation, the river channel was dry throughout the steelhead migration season.

Casitas Municipal Water District
1055 Ventura Avenue
Oak View, California 93022

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1.0 EXECUTIVE SUMMARY

Casitas Municipal Water District (CMWD) is implementing the Robles Fish Passage Facility Project (Robles Fish Facility) described in the Proposed Action of the Bureau of Reclamation's Biological Assessment (BA); (USBOR 2003). The effects of the Robles Fish Facility were analyzed in the Biological Opinion (BO) prepared by the National Marine Fisheries Service (NMFS 2003a). This 2013 Robles Fish Passage Facility Progress Report, as described by the BO, is the culmination of monitoring, evaluation, and operational data collected during the reporting period of 01 July 2012 to 30 June 2013.

The monitoring and evaluation studies related to the Robles Fish Facility conducted during the 2012-2013 reporting period are included in two main sections of this progress report. The Fisheries Monitoring and Evaluation section includes: upstream fish migration impediment evaluation, sandbar monitoring at the mouth of the Ventura River, fish attraction evaluation, fish passage monitoring, downstream fish passage evaluations, and downstream fish migration through the Robles Reach. The Facility Operation section includes: information and data on the facility status, flow observations and control, costs associated with operation and monitoring, assessment of the effectiveness to provide fish passage, recommendations of priorities for future activities, and revisions deemed necessary to the operations.

Because little precipitation occurred during the 2013 migration season, river flows were too low (or non-existent) to collect data and evaluate potential impediments to upstream fish migration. The sandbar at the mouth of the Ventura River was closed for a substantial period of time during the reporting period and provided little opportunity for volitional steelhead passage. A total of only 17 *O. mykiss* were counted in the area upstream and downstream of the Robles Fish Facility during the fish attraction evaluations in 2013. This number likely represents multiple counts of some *O. mykiss* due to smolting rates and migration behavior. During the fish passage season, only 3 fish were documented migrating through the Robles Fish Facility in 2013.

2.0 INTRODUCTION

NOAA Fisheries listed the southern California steelhead, *Oncorhynchus mykiss*, as endangered in 1997 (NMFS 1997) under the Endangered Species Act (ESA, 16 U.S.C. § 1531 et. seq.) of 1973, as amended. Steelhead were organized into stocks (i.e., groups) of evolutionary significant units (ESU) that were considered to be substantially reproductively isolated from other steelhead stocks and were an important part of the evolutionary legacy of the species. The southern California steelhead ESU included, at that time, steelhead populations from the Santa Maria River in San Luis Obispo County south to Malibu Creek in Los Angeles County. The ESU was later extended to the US/Mexican border in San Diego County during 2002 (NMFS 2003b). In a later delineating approach, NOAA Fisheries recognized the anadromous life history form of *O. mykiss* as a distinct population segment (DPS) as described under the ESA (NMFS 2005). The DPS policy differs from the ESU by delineating a group of organisms by “marked separation” rather than “substantial reproductive isolation” as originally listed. In the case of *O. mykiss* of the southern California steelhead ESU, this marked separation between the two life history forms was considered valid because of physical, physiological, ecological, and behavioral factors related to its anadromous life history characteristics. Both resident and anadromous *O. mykiss*, where the two forms co-occur and are not reproductively isolated, are still part of the ESU; however, the anadromous *O. mykiss* (i.e., steelhead) are now part of a smaller subset identified as the southern California steelhead DPS.

Rainbow trout (*O. mykiss*) can be generally organized into four large groupings (Behnke 1992; Scott and Crossman 1973): 1) coastal rainbow trout that extend from northern Baja California to northern Alaska near the Kuskokwim River and also the Kamchatkan Peninsula of northeastern Asia, 2) redband trout of the inland Columbia and Frazer River basins, 3) redband trout of the central valley of California, and 4) trout of the Gulf of California drainages. The taxonomic group of coastal rainbow trout, *O. m. irideus*, exhibit two life history forms; anadromous and resident. The common name for the anadromous life history form is termed steelhead trout and the resident form is generally

termed rainbow trout. Throughout the range of coastal rainbow trout, there is a widespread occurrence of the anadromous life history form (Behnke 1992). There are two general life history patterns exhibited by adult anadromous steelhead when they return from the ocean to spawn in fresh water. The patterns are grouped by either summer or winter spawning runs. There are many exceptions to this pattern, but this general characterization has been used to group steelhead spawning runs by the season in which the peak occurs as they return from the ocean (Busby et al. 1996). Summer steelhead are generally found in river systems that drain from farther inland, such as the Columbia River basin. Winter steelhead runs are typically found in the coastal systems where the river systems are not as large. The winter steelhead life history pattern is the most abundant anadromous life history within the natural range of the species (Busby et al. 1996).

3.0 FISHERIES MONITORING AND EVALUATION

The monitoring and evaluation studies and activities related to the modification of the Robles Facility, as outlined in the BO (NMFS 2003a), were intended to achieve three main objectives:

- I. Monitor Fish Passage Facility operations and performance.
- II. Determine if the Fish Passage Facility functions and operates in such a fashion that migrating steelhead:
 - a. Successfully navigate into and through the facility, and
 - b. Move through the facility in good physical condition.
- III. Determine if the operations at the Robles Diversion are enhancing the opportunity for:
 - a. Adult steelhead to migrate upstream to the Robles Facility, and
 - b. Smolts and kelts to migrate downstream through the Robles Reach.

5-year Reevaluation of Initial Evaluation and Monitoring Activities

As described in the BO, a 5-year reevaluation of the initial fish flow operations would be conducted to determine if monitoring and evaluations have been completed (NMFS 2003a). The initiation of the 5-year period began in 2006, which was the first year the Robles Fish Facility was fully operational. An annual and ongoing reevaluation began after the 2010 fish passage season. Through the Cooperative Decision Making Process, the Robles Biological Committee will review each of the specific evaluations and determine if the original objectives have been addressed and could be discontinued or if additional study would be needed. It is recommended that all aspects of the monitoring and evaluation for the Robles Fish Facility be continued during 2014. Due to the variable water conditions and insufficient numbers of adult and juvenile steelhead, the objectives of the monitoring and evaluation program have not been accomplished. Each aspect of the monitoring and evaluation will be evaluated annually to determine if sufficient information exist to complete each objective.

3.1 Upstream Fish Migration Impediment Evaluation

Introduction

The ability of adult steelhead to swim upstream can be impeded during the migration season at times of low-river flow (NMFS 2003a). Evaluations at shallow water habitat units (i.e., critical riffles) have been commonly used as a method to determine if impediments exist for adult and juvenile steelhead in California rivers (Dettman and Kelley 1986; Bratovich and Kelley 1988; Hager 1996). The Robles Reach, which extends downstream from the Robles Fish Facility approximately 6.5 km (NMFS 2003a) to just upstream of the Santa Ana Boulevard bridge (Appendix 1), is a wide alluvial section of the Ventura River that is composed of active wash deposits of unconsolidated silt, sand, gravel, and boulders (Tan and Jones 2006). Due to this type of channel morphology and geology, alluvial channels like the Robles Reach have high infiltration

rates that cause channel surface flow to rapidly recede and cease shortly after storm events (Cooke et al. 1992).

An initial assessment of potential passage impediments in relation to river discharge was completed by ENTRIX (1999). The physical characteristics of seven potential impediments were evaluated using the Thompson (1972) passage criteria. The Thompson (1972) passage criteria for adult steelhead at critical riffles is a water depth of 0.6 ft for 25% of the total transect width and a continuous portion equal to 10% of the total transect width. ENTRIX (1999) also evaluated the potential impediments using a criteria of 0.5 ft and 0.6 ft depth for 25% of the total width and a total of 8 ft width for both depths. The resulting discharge required was estimated to be between 40 and 65 cfs. There have been several modifications to the Thompson passage criteria by other researchers; Dettman and Kelly (1986) on the Carmel River used a depth of 0.6 ft over a 5 ft continuous section, a criteria of 0.6 ft depth over an 8 ft section was used on the Santa Ynez River (SYRTAC 2000), and Harrison et al. (2006) used a criteria of 0.6 ft depth over a 10 ft section on the Santa Clara River. Thompson's (1972) depth criterion of 0.6 ft was not based on actual migration observations and was never validated as a minimum condition for passage. It has been observed that adult salmonids can successfully move through riffles shallower than the 0.6 ft criterion (Mosley 1982).

The objective of the impediment evaluation is to assess factors that may impede steelhead's ability to migrate to the Robles Fish Facility (NMFS 2003a). Because of the potential for low-river flows to impede upstream fish migration in the Robles Reach, it will be the primary focus of the impediment evaluations (NMFS 2003a).

Methods

Selected channel features that may pose an impediment to upstream passage were to be surveyed multiple times during the fish migration season (January through June) to measure water depth, velocity, and channel width along a transect at each site. The selected sites were planned to be surveyed over a range of discharges from

approximately 30-100 cfs (the upper limit is dependent on the ability to safely conduct the surveys), which is correlated with discharge at the Robles Fish Facility. The number of repeated surveys has been dependent on the number and duration of significant rain events, rate of hydrograph recession, and time constraints due to other aspects of the monitoring and evaluation program. The impediment surveys will most likely be conducted over a period of 3-4 wet years given the natural variation of water conditions. The selected impediment sites will be resurveyed as many times as needed to develop a statistically rigorous data set to evaluate fish passage in relation to Robles Fish Facility discharge.

During the initial phase, the Ventura River was surveyed from the mouth to the Robles Fish Facility (23 km) using standard stream survey techniques and was completed in 2008 (CMWD 2008). This provided physical measurements of all habitat units for the selection process. The survey methodology followed Moore et al. (2002) and was equivalent to a level IV survey as described in the California Salmonid Stream Habitat Restoration Manual (Flosi et al. 2002).

Over the course of three meetings and one conference call between 24 January and 18 June of 2009, the Biological Committee (BC) for the Robles Fish Facility completed an impediment site selection process that culminated in the original selection of eight sites that would be monitored for the impediment evaluation. The BC reviewed physical parameters of the 379 habitat units surveyed and general river characteristics that included: unit type, length, width, water depth, slope, longitudinal location (river km), step height on step units, discharge at Foster Park and the Robles Fish Facility at the time of the surveys, and a river profile for the 23 km of the Ventura River surveyed. Upon completing an initial assessment of this data, a list of potential sites was developed that the BC visited in the field on 27 May 2009 to determine if monitoring was warranted. This data and field assessment included regular BC members Mike Kinsey (BOR), Stan Glowacki (NMFS), Mary Larson (CDFG), and Scott Lewis (CMWD). Mike Gibson (CMWD) and hydrologists Bob Hughes (CDFG) and David Crowder (NMFS) were also involved in this assessment and selection process.

ENTRIX Site Assessments

An effort was made to locate and determine the status of the ENTRIX (1999) study sites during 2009. Because there had been numerous bed-mobilizing runoff events after the study was completed, the status of the sites was unknown and needed to be determined. Based on the site descriptions in the ENTRIX (1999) study report, field surveys were conducted to locate and describe the existing channel conditions at the original site locations. Of the seven sites originally identified by ENTRIX (1999), only four sites were located with any degree of certainty. Of those four sites, all were no longer in the primary low-flow channel. A more detailed description of the ENTRIX sites can be found in a previous progress report (CMWD 2011).

Results

During 2013, dry conditions prevented data collection for the Upstream Fish Migration Impediment Evaluation. Precipitation in the Ventura Basin was 50-60% of normal for the 2013 water year. Daily mean discharge from the Robles Fish Facility ranged from 0 to 13 cfs. There were several very small rain events during the 2013 water year. However, they were not sufficient to create the runoff and discharge needed to conduct the impediment evaluations. Of the total 15.3 inches of precipitation measured in Matilija Canyon (Ventura County site 207c), about 65% occurred before January 2013.

The moderately sized flow event that peaked on 20 March 2011 at approximately 20,000 cfs at the USGS Foster Park gage station, a recurrence interval of about 6 years, significantly altered some impediments sites that necessitated modifications to the monitoring. See CMWD (2011) for a detailed description of the high-flow caused site alterations. A Biological Committee (BC) field trip on 11 January 2012 was conducted to review alterations that occurred and select replacement sites for ones that no longer appeared to be impediments. Regular BC members Ned Gruenhagen (BOR), Rick Bush (NMFS), Mary Larson (CDFG), and Scott Lewis (CMWD) participated in this review and site-selection process; Mike Gibson (CMWD) and hydrologist Bob Hughes

(CDFG) were also involved in this assessment and selection process. Based on this field review, Site 2 was no longer considered a potential impediment. Site 10 and was identified as a replacement site during the January field trip. Site 8, which was originally selected during dry conditions, was not considered as restrictive as other potential sites after evaluating data collected during 2010 and 2011. Consequently, Site 8 was replaced with Site 9 during the January field trip. The complete list of impediment sites that the BC visited and determined to be satisfactory for monitoring during the 2012 season can be found in Appendix 2. However, at the time the new site selections were made (i.e., 11 January 2012), insufficient flows were available to make final site selection or transect placements. During 2013, and 2012, the lack of surface flow did not allow for confirmation of these site changes. As soon as sufficient flows exist, available members of the BC will visit sites 9 and 10. If, after further evaluations with sufficient flows, Site 10 does not appear to be adequate, then Site 8 will continue to be monitored.

Discussion

Flows were inadequate during 2013 to conduct this evaluation and it will be continued once conditions permit.

3.1.1 Sandbar Monitoring

Introduction

The Ventura River, like many other California rivers, frequently develops a seasonal sandbar at the mouth during the late spring or summer that is breached by higher river flows in the late fall or winter. If a sandbar does develop, which occurs more often during dry years, the resulting lagoon can provide important rearing habitat for steelhead juveniles because of the abundant food resources available that can facilitate the physiological and behavioral changes associated with smoltification (Cannata 1998) and can also enhance marine survival (Bond et al. 2008).

The primary objective of the sandbar monitoring is to determine if the criteria for initiation of the fish passage augmentation season have been met (NMFS 2003a). As stipulated in the BO, the fish passage augmentation season will extend from 01 January through 30 June of each year and will commence after the sandbar has been breached at least once during the current year's fish flow operations season. During the fish passage augmentation season, several Robles Fish Facility operation criteria must also be implemented (see NMFS 2003a for a complete list of operational criteria).

Methods

During each sandbar inspection, observations and recordings were made that included: date, time, status of the sandbar, general location of the mouth, tidal stage, water temperature, and discharge at the Robles Fish Facility and the USGS Foster Park gage station. The sandbar was closed on 02 January 2013 and its status was monitored once every two weeks through March and only monthly through June since no surface flow was present at the Robles Fish Facility. Outside of the fish passage augmentation season the sandbar was monitored at least monthly.

Results

During the reporting period, July 2012 through June 2013, the mouth of the Ventura River was inspected 20 times to determine if the sandbar was open or closed. Eleven of the observations occurred during the fish passage augmentation season (01 January to 30 June 2013) and nine were outside of the fish passage augmentation season. The sandbar was open only 12% of the time during the fish passage augmentation season (Appendix 3). At the beginning of the fish passage augmentation season, the sandbar was closed and no volitional passage into the estuary could occur. Only during two inspections was the sandbar open (end of January and middle of March), and the sandbar was closed for the remainder of the 2013 fish passage augmentation season. During the majority of inspections when the sandbar was closed, there was evidence (i.e., wet sand on the lagoon side of the sandbar) that intermittent saltwater intrusions

occurred that overtopped the sandbar. However, these overtoppings were not sufficient to erode the sandbar enough to cause water to exit the lagoon. This occurred for 75% of the closed sandbar observations. When the sandbar was open, the period was brief due to low flows that allowed the sandbar to reform quickly. On the days the sandbar was inspected during the reporting period, the mean daily discharge at the USGS Foster Park gage station ranged from < 1 to 5 cfs and 0 to 10.5 cfs at the Robles Fish Facility. When the sandbar was open, the river was observed exiting from the center of the estuary during the reporting period.

Discussion

The sandbar at the mouth of the Ventura River tends to remain open during average and above average precipitation years and can close at times during years with few significant rain events (Lewis et al. 2010). During 2005 and 2006, the sandbar remained open and did not close until April of 2007 after an extended period of low precipitation (Appendix 4). During 2008, the sandbar was only closed during October and November and reopened in December. During the period that the sandbar was closed in December of 2007, the lagoon had a surface area of 4.7 ha. During an open period in August of 2008, the estuary had a surface area of 2.8 ha, which represents an approximately 70% increase in surface area during periods when the sandbar was closed (Lewis et al. 2010).

The tendency for the sandbar to remain open in all but very dry years is likely due to a few factors. Although the middle reach of the Ventura River goes dry every year, during most years subsurface water continues to flow and eventually begins to resurface just upstream of the confluence with San Antonio Creek and continues to increase slightly proceeding downstream. Additionally, treated effluent water from the Ojai Valley Sanitary District at rkm 7.5 increases the river discharge by approximately 3 cfs. Finally, tributary flow from San Antonio Creek also adds to the Ventura River through a surface or subsurface connection throughout the year. These factors contribute to the water quantity at the mouth of the Ventura River to keep the sandbar from fully forming

and therefore closing the outlet during most years. The status of the sandbar indicates changes in the estuary/lagoon that may help determine potential entry and exit conditions for adult and juvenile steelhead. It appears that passage conditions remain suitable during most seasons when steelhead are likely migrating. However, lagoon conditions optimal for juvenile rearing (i.e., when a sandbar closes and results in an estuary forming a deeper freshwater lagoon; Bond et al. 2008), appear to have been limited during the study period beginning in 2005. The two consecutive years of below-normal precipitation (both about 50-60% of average) have created conditions at the mouth of the Ventura River causing the sandbar to be closed for the majority of the time during the monitoring period. This has occurred even though some surface water has continued to flow into the lagoon (approximately 2-3 cfs during August of 2013). Furthermore, the amount of time the sandbar was closed over this reporting period was the greatest since monitoring began in 2005.

3.2 Fish Attraction Evaluation

Introduction

River discharge has been shown to be one of several key environmental factors initiating and facilitating steelhead and other salmonid adult and juvenile migrations in natural fluvial environments (Shapovalov and Taft 1954; Banks 1969; Spina et al. 2005). As adults and juveniles approach fish passage facilities, sufficient discharge and water velocities become even more important to ensure successful passage through any facility (Clay 1995; Beeman and Maule 2001).

The entrance of the fish ladder at the Robles Fish Facility is located approximately 20 m downstream of the spillway gates and is where fish migrating upstream enter and where fish migrating downstream exit the facility (i.e., two-way passage facility). The downstream end of the ladder is adjacent to a large pool (entrance pool) that was scoured out and has been maintained by high discharges through the spillway gates. The ladder was designed for a maximum discharge at the exit of 170 cfs (50 cfs through

the entire ladder and an additional 120 cfs can be supplemented at the lower end of the ladder). The distance from the entrance pool downstream to the lower most interim rock weir is approximately 200 m. This reach includes all four rock weirs and the facility's low-flow road crossing, which is also the weir used to measure discharge from the Robles Fish Facility. The habitat unit types that can be used by migrants in this reach include the four pools created by the weirs, a glide created by the low flow road crossing, a riffle, and the entrance pool.

The objective of the fish attraction evaluation is to determine if adult or juvenile steelhead are holding immediately downstream of the Robles Fish Facility during the fish passage augmentation season (NMFS 2003a).

Methods

Fish attraction surveys were conducted on a weekly basis during the fish passage season from January through April of 2013. The particular survey methodology used was determined based on water visibility, river discharge, and expected steelhead life history stage present at the time of the survey. Since no *O. mykiss* were observed until April, bank surveys were predominantly used and snorkel surveys were used monthly to validate the bank surveys. Bank surveys were conducted by one or two surveyors in an upstream direction. The surveyors wore polarized sunglasses to reduce water-surface reflection. Snorkel surveys were conducted by one or two surveyors in an upstream direction. All fish species were identified and enumerated to the greatest extent possible permitted by the ambient river conditions and fish densities at the time of each survey. Lengths of each *O. mykiss* were estimated to the nearest cm if only a few individuals (generally < 10) were present. At times of greater *O. mykiss* abundance, they were grouped and assigned to the nearest length (cm) category. In order to collect additional information that may help determine *O. mykiss* upstream and downstream movements through the Robles Fish Facility, an upstream study reach was added for surveying in 2009. The upstream study reach included observations in the screenbay of

the facility and the area immediately upstream of the low-flow fish exit in the forebay. The total distance of this upstream reach was approximately 140 m.

If a BO-defined storm event would have occurred during 2013, video-camera monitoring would have been conducted using a camera positioned at the fish ladder entrance to determine when adult steelhead enter the ladder during the 10 or 12-day ramp down period. However, due to the lack of significant precipitation, the video camera was not installed during 2013 because no BO-defined storm events occurred.

Results

A total of 17 *O. mykiss* were counted from January through April of 2013 in the entire 340 m study reach (Appendix 5), which covered the upstream and downstream reaches. During the 4-month period, a total of 4,220 m were surveyed by either bank or snorkel methods. The water temperatures during the study period ranged from 10 °C in January to 18 °C in April and turbidity was less than 2 NTUs when the surveys were conducted. *O. mykiss* were observed only during April of the survey period and peaked at 7 fish. The discharge at the Robles Fish Facility ranged from 0 to 13 cfs at the time of the surveys. Flowing water remained in the upper portions of the survey reach (<1 cfs) even though no flow was passing over the weir at times before the entire survey reach went dry.

The 200 m reach downstream of the fish facility was surveyed on 14 separate occasions, 9 bank and 5 snorkel surveys. During April, complete surveys could not be conducted due to dry conditions in some of the habitat units. A cumulative total of 2,260 m were surveyed from January through April 2013. A total of 17 *O. mykiss* were observed downstream of the Robles Fish Facility (Appendix 5). The peak count for the downstream reach was 7 *O. mykiss* in mid April. The estimated fork lengths of *O. mykiss* observed ranged from 14 to 24 cm.

The 140 m reach upstream of the facility was surveyed on 14 separate occasions, 10 bank and 4 snorkel surveys. A cumulative total of 1,960 m were surveyed from January through April 2013. No *O. mykiss* were observed in the upstream reach during the survey period.

Discussion

The total count of 17 *O. mykiss* from the downstream reach likely included repeated counts of the same *O. mykiss* over the study period. Because the surveys were conducted weekly, some *O. mykiss* likely remained in the wetted study reach for more than one week and were counted at least one additional time. Without tracking individual *O. mykiss* (e.g., mark/recapture, telemetry, or other tagging studies), the time spent by individual *O. mykiss* in close proximity to the Robles Fish Facility cannot be determined by observation methods alone.

From observational counts alone, the ability to interpret the fine-scale migration behavior of the *O. mykiss* near the Robles Fish Facility is limited. Abundance trends from observations were significantly lower than previous years. For example, a total of 378 *O. mykiss* were counted during 2012. In dry years, like in 2013, the surveyed habitat eventually becomes dry, which occurred in May. On 01 May 2013, NMFS conducted a fish rescue of 14 *O. mykiss* from the entrance pool and released them in North Fork Matilija Creek. Within a few days, the entire study area both upstream and downstream of the Robles Fish Facility was completely dry.

Because little precipitation occurred during the migration season, a surface water connection to the lower Ventura River did not exist during the study period and therefore smolts did not have an opportunity to migrate to the ocean.

The onset of smoltification can be identified by vanishing parr marks, silvering of the body, and darkening of the margins of the fins among other characteristics (Chrisp and Bjornn 1978; Hasler and Scholz 1983; Quinn 2005; Spina et al. 2005). Based on

qualitative observations during the snorkel surveys, it appeared that the *O. mykiss* were going through the smoltification process. During the survey period, 10 *O. mykiss* (59% of all *O. mykiss* observed) were categorized into five classifications that included parr, three transitional phases (T-1, T-2, and T-3), and full smolt, following the methods of Hasler and Scholz (1983). This method has been used successfully to classify smolting steelhead (Allen Scholz, Eastern Washington University, personal communication). All of the classified *O. mykiss* were considered to be in the early to mid smoltification stages (T-1 and T-2).

O. mykiss were not observed until the end of the survey period in April when surface flow was < 1 cfs. Moreover, the surface flow stopped over the Robles measurement weir downstream in the lower study reach on 03 April and the first *O. mykiss* was observed on 10 April (Appendix 6). The limited number of *O. mykiss* that migrated downstream to the Robles Fish Facility in 2013 makes conclusions problematic; however, the fact that *O. mykiss* in early stages of smoltification still migrated downstream as flows were diminishing was noteworthy. A similar pattern of smolt migration occurred during 2009 when the majority of smolts were observed only after the surface flow connection ended in the Robles Reach.

3.3 Fish Passage Monitoring

Introduction

Monitoring of migratory fish moving through fish passage facilities has been conducted using many different methods that include: visual counting, trapping and hand counting, continuous video recording, PIT tagging, radio telemetry, and acoustical telemetry. In each fish passage application, the particular physical and biological conditions (e.g., variable discharge, turbidity, debris, size of facility, and number of fish) usually dictate which method would be most effective. New technologies have been employed to improve fish passage monitoring in turbid conditions specifically. One such monitoring device is the Vaki Riverwatcher® (Riverwatcher). The Riverwatcher has the capability to

operate in greater turbidity than more traditional monitoring equipment. Because of this advertised capability, the Riverwatcher was selected to be used in the Robles Fish Facility by the Technical Advisory Group.

The primary objective of fish passage monitoring is to provide an index of the number of upstream adults and downstream kelts migrating through the Robles Fish Facility (NMFS 2003a). The Riverwatcher was advertised to detect fish down to a fish body depth of about 40 mm (Vaki 2003) and it was not known how well it would work at detecting smolt-sized fish given the debris load of the Ventura River (NMFS 2003a).

Methods

Fish migrating upstream and downstream through the Robles Fish Facility were monitored using the Riverwatcher. The Riverwatcher is located in the fish bypass channel, which is the channel between the fish ladder and fish screens. The Riverwatcher consists of two scanner plates with light diodes that transmit beams of infrared light through the water to a corresponding receiver plate. When a fish swims (or debris drifts) through the infrared light beams, it breaks the light signal and a digital silhouette of the fish is recorded on a computer. Other data recorded when the Riverwatcher scanner is triggered are: date and time, total length (TL) of the fish (from a length/height ratio), swimming speed (m/sec), and direction of the fish movement (upstream or downstream). In addition, the scanner triggers an underwater camera to record a 10-second video clip (25 frames/sec). Only fish swimming upstream can be recorded in the Riverwatcher computer video system because it was designed for one camera, and that camera was placed on the upstream side of the scanner. An additional two cameras were installed in 2008-09 so that video of fish moving downstream could be captured on a digital video recorder (DVR). Both downstream cameras are located upstream of the Riverwatcher scanners in an aluminum tunnel along with the upstream Riverwatcher camera. The downstream digital cameras recorded continuously at 12 frames/sec and captured about 4-5 weeks of data until the DVR data storage drive was full (each week of data required approximately 4 h to

review). These two downstream cameras are independent of the Riverwatcher system and have to be reviewed separately for downstream detections. Once the DVR memory is full, it is exchanged with a second DVR and the data are reviewed before the DVRs have to be exchanged again.

The Riverwatcher scanner and cameras are positioned at the bottom of an aluminum frame (crowder) covered with 1/2 inch aluminum bars, spaced 1 1/2 inches on center resulting in 1-inch spacing between the bars, which directs the fish to swim between the scanner plates. The crowder can be raised and lowered in guide slots of the fish bypass channel with the aid of an A-frame hoist for cleaning or repair. The Riverwatcher is usually operated during the entire flow augmentation season as long as sufficient water elevations in the fish bypass are present and debris and turbidity are low enough so that the crowder will not be damaged and the Riverwatcher will function. The Riverwatcher was operated from 25 January 2013 to 23 April 2013 of the reporting period. During this time, the crowder was removed from the fish bypass channel and cleaned or inspected 12 times. Typically, during times of higher debris, the cleaning and inspections occur multiple times per day, and at times of low debris, cleaning and inspections occur only once every 2-3 days. The lack of storm flows during 2013 reduced the need for frequent crowder cleaning. The crowder was removed for cleaning for a combined total of approximately 3 h during the operation period. The Riverwatcher was operated a total of 89 days, which was 79% of the time the Riverwatcher could have possibly been operated during the fish augmentation period. The first 23 days of January were not monitored due to Riverwatcher repair. An upgraded PC that operates the Riverwatcher and stores data required extensive hardware and software modifications. This work had to be completed via modem from VAKI's Iceland IT department, which took longer than anticipated due to a repair backlog and complications of conducting remote off-site work.

Prior to 2010, each upstream and downstream Riverwatcher detection was reviewed and classified as an adult steelhead, *O. mykiss* non-adult steelhead, other species if identifiable, unknown fish, fish probable, or false detection (see Appendix 7 for detection

classification flow chart). At the request of NMFS, this classification system was modified during the review process of the 2010 progress report. All confirmed *O. mykiss* were classified solely as *O. mykiss*. The classifications were determined by using a combination of the silhouette images, estimated lengths, and video clips. In addition, if larger adult sized *O. mykiss* were detected and a useful video clip was recorded, measurements of eye diameter and standard length (SL) were estimated from the video clip to calculate morphometric ratios that were compared to known steelhead and rainbow trout. A commonly used method is to develop ratios of body measurements for comparison to remove the effects of body size so actual differences can be determined (Strauss and Bond 1990). This is done by comparing SL to the ratio of eye diameter in linear regression. Standard length is the length from the snout to the end of the hypural plate near the end of the fleshy caudal peduncle, which is unaffected by caudal fin deformities (Anderson and Neumann 1996). Before 2010, the adult steelhead classification was used if the fish observed was an *O. mykiss* and displayed the typical characteristics of an anadromous adult steelhead, such as black spotting on dorsal, adipose, and caudal fins, black spotting on dorsal side of body, silvery body, vertical edge to caudal fin, ≥ 38 cm TL (Shapovalov and Taft 1954), and had an eye diameter/SL ratio ≤ 0.045 (CMWD 2008). The new classification method may include juvenile resident, smolts, adult resident, and adult anadromous *O. mykiss* migrating throughout the basin. Conceivably, after more data are collected from the downstream trapping component, or from other Ventura River basin research projects, a more thorough classification system of Riverwatcher detections could be used. The “fish unknown” classification was used if a detection was identified to be a fish based on video evidence, but further classification could not be determined due to high turbidity or an inadequate amount of the fish captured within the camera’s field of view. The “fish probable” classification was used if no fish was observed in the video, but the silhouette was similar to that of a typical fish silhouette confirmed by video evidence. Even with reasonably good video coverage, smaller fish were still able to pass through the Riverwatcher undetected by the video cameras. This occurs if fish swim very close, high, or low relative to the cameras. In addition, this can happen if a fish swims upstream through the scanners but stops before entering the video field of view. High

turbidity can also obscure the video detection and identification of fish. The “false detection” classification was used when no fish was observed in the video and the silhouette was not similar to that of a typical fish silhouette. Because false detections tended to occur frequently during higher discharges, when turbidity and debris also were high, it was likely that most false detections during these periods are caused by debris, high turbidity, and water turbulence. During low-flow periods (<10 cfs), which was the case during 2013, surface water turbulence was likely the cause of most false detections. When turbidity exceeds about 100 NTUs, hundreds of false detections can occur per hour. Once the turbidity falls below about 25-30 NTUs, then the Riverwatcher is fully functional (Table 1). When the Riverwatcher is fully functional, the scanner and video systems are functioning sufficiently to detect and confirm fish that can be detected.

Table 1. Riverwatcher operational status over a range of water turbidity (NTUs).

Turbidity (NTU)	Riverwatcher status
> 200	Not functional
100-200	Many false detections
30-100	Scanner functional, but unable to confirm with video
< 30	Video grid detectable
0-30	Riverwatcher fully functional

Results

During the 2013 fish migration season, the Riverwatcher recorded 43 total detections, of which 10 were upstream and 33 were downstream (Appendix 9). Of the total downstream detections, only 3 (9%) were determined to be fish and all were classified as unknown fish (i.e., video confirmation, but not species ID). Of the total 10 upstream detections, all were considered to be false detections from debris, turbulence, or air bubbles. The mean date for the downstream migrating fish was 17 April (Appendix 8).

Detections of the 3 unknown fish all occurred on 17 April. The detections occurred in the morning about 06:30 h and at 17:40 h (Appendix 9). The lengths of the three

detections were 20, 19, and 15 cm. The software program that operates the Riverwatcher estimates the TL of a fish detection based on a ratio of height to length (Vaki 2003). This ratio can be changed depending on available data for the target species. Based on morphometric measurements of *O. mykiss* mortalities over the last several years, an *O. mykiss* height to TL ratio was estimated to be 5.1:1 for fish ranging from about 10 to 28 cm. During a validation and calibration pilot study, it was estimated that the Riverwatcher was underestimating the test fish heights by about 10 mm. A correction was added to the TL to height ratio to calibrate it to the known fish heights. This correction was used to estimate the TL of Riverwatcher detections from January through June of 2010. However, the resulting TL estimates appeared to be over estimated when compared to known *O. mykiss* lengths that were measured in 2009. It was decided that a more accurate method would be to use a regression model to convert Riverwatcher estimated fish heights to lengths. Again, from the morphometric measurements, a sigmoid regression was conducted to develop a best-fit model for converting the Riverwatcher fish heights to total lengths ($TL = 687.68 / (1 + \exp(-(D - 50.78)/23.97)) / 10$, $p\text{-value} < 0.0001$, $R^2 = 0.99$, $n = 59$, $D = \text{body depth}$). This regression model will continue to be refined as more data become available.

The physical river conditions of temperature, turbidity, and discharge were similar at the time of fish detections since they occurred on the same day (Appendix 9). The mean water temperature recorded during the time migrating fish were detected was approximately 13 °C. The mean turbidity levels at the time of passage was about 1 NTU. The discharge from the Robles Fish Facility at the time of passage was 0.0 cfs. This was recorded at the measurement weir but there was still nominal flow through the ladder.

Discussion

There were an estimated 40 false detections recorded by the Riverwatcher. They were likely due to debris, low-flow surface turbulence, and settings of the Riverwatcher to detect smaller fish. This number of false detections was considerably less for 2013 than

in previous years. Given the low flow conditions, few false detections would be expected. For the 2013 season, the minimum height remained at 28 mm so that a large number of false detections could be eliminated while still attempting to detect steelhead smolts. Based on available data from the Ventura Basin, a height of 28 mm was determined to be similar to some of the smallest steelhead smolts expected to emigrate downstream through the Robles Fish Facility. This height corresponds to 146 mm TL and 139 mm FL. *O. mykiss* mortalities found and measured during the course of ongoing field monitoring efforts (subsequently turned over to NMFS) were all larger than 146 mm TL. The estimated fish detection rate from the validation pilot study and the comparison of snorkel counts to Riverwatcher detections both indicate that 78-88% of smolt sized *O. mykiss* are not detected by the Riverwatcher. During the 2009 validation pilot study, larger sized fish (i.e., height > 60 mm) appeared to be detected nearly 100% of the time. This height is equal to about 300 mm TL and is larger than what would be expected for smolts migrating downstream through the Riverwatcher. Before a detection rate correction could be applied to downstream detections, more data would need to be collected on detection efficiency. The highly variable results from the pilot study were not sufficient to develop a reliable correction factor. Like the detection efficiency, the fish heights estimated by the Riverwatcher were also highly variable and the true error could not be determined. The data collected to date indicates that the Riverwatcher is unable to reliably detect emigrating steelhead smolts; given the manufacture's operational recommendations, these results should not be surprising. Additional Riverwatcher validation/calibration tests were conducted during the summer of 2011 in an attempt to further identify the operation limitations of the Riverwatcher. The results of all other Riverwatcher validation/calibration will be provided in a stand-alone report and distributed to the Biological Committee prior to 2014.

From observations made over the last several years, and those made during the two validation pilot studies, *O. mykiss* juveniles do not move through the fish crowder and Riverwatcher quickly. *O. mykiss* tend to swim downstream and back upstream repeatedly before ultimately moving in one direction. This lack of uniform and rapid directional movement is also supported by observations during fish attraction monitoring

where *O. mykiss* have been observed repeatedly swimming in and out of the fish ladder on both the upstream and downstream ends. Also, *O. mykiss* that appeared to be the same fish (based on video and length estimates) have been observed on video swimming back and forth through the fish crowder. *O. mykiss* juveniles were observed holding in areas for extended periods of time before either moving downstream or back upstream, which is commonly found in all salmonid smolts (Quinn 2005). Early smolt transformation stages of *O. mykiss* were observed during the fish attraction surveys. Because the smolt migration rate is positively correlated with the smoltification process (Quinn 2005), some holding and lack of rapid downstream migration would be expected for *O. mykiss* in early to middle stages of smolting.

3.4 Downstream Fish Passage Evaluations

Introduction

Passage evaluations of salmonids migrating through fish passage facilities have been conducted throughout the western United States for many years. Methods to determine if a facility is operating as designed and not causing harm to the intended fish species vary. Early work typically entailed trapping and tagging fish before entering a facility and recapturing them after exiting. Trapping and visual inspections for injuries, PIT tagging, radio telemetry, and acoustical telemetry has been conducted extensively as well.

There are two objectives for the downstream fish passage evaluation. The first objective is to determine if downstream migrants are successfully passing through the Robles Fish Facility. The second objective is to capture and examine steelhead smolts and kelts and determine if injuries are caused by downstream passage through the Robles Facility (NMFS 2003a).

Methods

Due to low precipitation and discharge, trapping was not conducted during 2013 and no data were collected for the Downstream Passage Evaluation. For a full description of evaluation methods, see CMWD (2011).

3.5 Downstream Fish Migration through the Robles Reach

Introduction

When the number of fish physically handled in a study is of concern, such as with an endangered species, radio telemetry can be a useful method over others like extensive trapping (Hockersmith et al. 2000). Telemetry migration information of steelhead smolts in the Ventura River would allow for the determination of survival, travel time and rates through select reaches, migration relative to river discharge, habitat use, and passage success through critical riffles. By tracking the tagged fish until the batteries die, it is anticipated that downstream migration can be monitored all the way to the Ventura River estuary/lagoon and could provide important data on estuary rearing and emigration behavior.

The purpose of the downstream migration evaluation is to determine how successful smolts are at migrating through the Robles Reach (NMFS 2003). Because of the limited number of steelhead smolts likely passing downstream through the facility, a pilot study using radio telemetry was used for evaluations.

Due to low precipitation, trapping was not conducted during 2013 and no data were collected for the Downstream Fish Migration through the Robles Reach. For a full description of evaluation methods, see CMWD (2011).

4.0 ROBLES FACILITY OPERATIONS

4.1 Facility Status

The Robles Fish Passage Facility started the 2012-2013 season in a fully functional mode, with the Fish Ladder Flow meter requiring verification after the transducers were adjusted. The 2012-2013 season was characterized by a below average rainfall year as measured at Casitas Dam; 12.35 inches of rain were measured at Casitas Dam. This is compared to the average annual rainfall at the dam of 24.06 inches. This was the second consecutive year with below average rainfall. No peak flow events as defined by the BA/BO occurred during the Fish Flow Operations Season. No water diversions occurred. No water was downloaded from Lake Matilija. Lake Matilija remained in spill condition the entire year. The measurement weir had flows on and off throughout the winter with the last flow over the weir recorded in April. The entrance pool loss surface water in May. The Ventura River did not have surface flow continuity at any point during the year. The highest daily mean flow measured at the Robles Fish Passage measurement weir was 13 cfs on January 24, 2013.

The 2012 Report identified several projects to be completed during the summer and fall. The principal projects were:

- Modify the diffuser panel in the auxiliary water system.
- Align the fish passage flow meter transducers.
- Adjust interim weir three if flow stops in the weir section of the river.
- Modify the differential level sensors at the fish ladder entrance to individually read water levels.

A brief description of each project and the project's status is listed below:

Modify the diffuser panel in the auxiliary water system-Casitas completed the approved modification to the first diffuser panel in the auxiliary system. Insufficient

flows were available this year to determine if the modifications improved the flow through the system.

Align the fish passage flow meter transducers-The transducers were aligned using a factory provided laser. Insufficient flows were available to determine if the alignment improved the accuracy of this flow meter.

Adjust interim weir three to improve fish passage-This work was completed. Some additional fine-tuning may be needed once the weirs are re-watered with winter rains.

Modify the differential level sensors at the fish ladder entrance to individually read water levels-Casitas is continuing work with the instrumentation engineer to record the fish ladder entrance pool level.

4.2 Flow Observations and Control

Flow and level measurement devices are located at various locations within the Robles Fish Passage Facility. The primary points of measuring and recording stream flows entering, flowing through, and leaving the Robles Fish Passage Facility are:

- Matilija Creek at Matilija Hot Springs – located approximately 2,100 feet downstream of Matilija Dam – good rating for low to moderate flows – operated by Casitas Municipal Water District, formerly a USGS station.
- Matilija Dam Stage Bubbler-Located at the dam, this gage provides the lake elevation. Under high flows, the dam acts as a weir. This is the primary flow measurement location under high flows and to determine if a peak has occurred.
- North Fork Matilija Creek – located approximately 3,000 feet upstream of its confluence with Matilija Creek – good rating for low to moderate flows – operated by the Ventura County Watershed District.

- Robles-Casitas Diversion Canal – located on the diversion canal approximately 1,300 feet downstream of the Robles headworks – trapezoidal channel with a good rating for flows up to 600 cfs.
- Ventura River near Meiners Oaks (VRNMO) – located approximately 540 feet downstream of the Robles Fish Passage spillway – concrete weir section – good rating to 70 cfs, use of equations above 70 cfs with poor ratings above 1000 cfs (no verifications at higher flows). **This is the most reliable flow measurement for the fish passage and downstream releases with a 50-year plus history.** This site was formerly a USGS site.
- Fish Ladder-A 4 path flow meter by Accusonics located near the Riverwatcher. This flow meter has not been accurate since the installation of the replacement Vaki shroud. **This flow measurement device was functional during the 2012-13 season but the readings were not verified.**
- Auxiliary Water Supply-An American Sigma flow meter. This meter has not provided reliable readings. Troubleshooting the problem is problematic because of infrequent flows necessitating the use of the auxiliary (attraction flow) flow system and because NMFS interpretation of the BO does not allow the system to be dewatered for inspections. The problem is believed to be “sloshing” in the pipe. Modifications to the auxiliary water supply system were approved and implemented for the 2012-2013 season. However, there were insufficient flows available to determine if the modifications improved the accuracy of the meter readings.

All of the instruments can suffer from inaccuracies from time to time. The inaccuracies can be caused by clogging of bubbler lines, electronic creep, debris accumulating on sensors, changes to the measured cross sections, human interactions and equipment problems. For this reason, the data is verified against field measurements and observations. The information gathered from each of these locations has been reduced to the daily reporting of flows in the form of average cubic-feet per second. The spreadsheets are in Appendix 10, entitled “Ventura River Flow Assessment for the Robles Fish Passage Facility – FY 12-13”. Since no BO defined peaks occurred during

the season, no 15-minute flows for storm peaks, as previously requested by NMFS, are included in the report.

The fish screens remained in place for the entire year.

No storm peaks occurred this year that triggered BA/BO required supplemental flow releases. The river had no surface flow continuity. Surface flow at no time met the adult steelhead passage requirements. This is the third season since Robles Fish Passage Facility was completed that there were insufficient flows for adult steelhead to migrate up or downstream and the fourth season without a BO defined peak flow event. This is the first time since the construction of the Fish Passage Facility that there has not been a BO defined peak flow event in consecutive years.

4.3 Costs Associated with Operation and Monitoring

The BA/BO specified that the District provide the costs that are associated with the activity. The following is a summary of the direct costs incurred by the District during the 2012-13 fiscal years:

- **Fisheries Monitoring:**

Salaries & Benefits	\$340,898
Equipment/Material	<u>\$ 67,552</u>
	\$408,450

- **Facility Operations:**

Salaries & Benefits	\$ 65,698
Equipment/Materials	\$ 13,921
Outside Contracts	\$ 0
Utilities	\$ 1,899
Permit	<u>\$ 1,086</u>
	\$82,604

- **Capital Improvements:**

No capital improvements were made during this fiscal year.

4.4 Assessment of the Effectiveness to Provide Fish Passage

Casitas has entered into an agreement with HydroScientific West to complete the first phase of the performance (hydraulic) testing. Performance testing of the fish screen was completed March 24 and 25, 2011.

Because of inadequate flows, no additional performance testing was completed during the 2012-2013 season. Casitas priorities for 2013-2014 season includes completing flow measurements in the spillway-entrance box channel and completing flow measurements at the auxiliary water screen in the entrance box. Both of these measurements require flows of 671 CFS for a minimum of 24 hours to complete.

Additionally, Casitas has purchased a Hach (Marsh-McBirney) FH 950 flow meter to assist in obtaining flow measurements in the fish ladder under the criteria specified in the BO. These measurements can be completed under relatively low flow conditions.

All performance testing will be completed in general accordance with the NMFS approved Performance Evaluation Program and Biological Committee recommendations.

4.5 Recommendations Regarding the Prioritization of Future Activities

The District has completed its eighth season with the fish passage fully operational. Several projects have been identified to improve the functionality and reliability of the system. Other items require repairs. The summer and fall work list includes:

- Final adjustment of interim weir three if needed once re-watered.
- Modify the differential level sensors at the fish ladder entrance to individually read water levels.

4.6 Recommendations on any Revisions Deemed Necessary to the Operations

Casitas continues to recommend that the construction of the 15-weir portion of the project be put on hold at least until the Matilija Dam Removal Project is completed. Preliminary plans for the High Flow Sediment Bypass and High Flow Fish Passage require this area to be graded to new elevations. The existing temporary weir system has proven to be passable by adult *O. mykiss*.

5.0 LITERATURE CITED AND BIBLIOGRAPHY

- Adams, N. S., D. W. Rondorf, S. D. Evans, and J. E. Kelly. 1998. Effects of surgically and gastrically implanted radio transmitters on growth and feeding behavior of juvenile Chinook salmon. *Transaction of the American Fisheries Society*, 127:128-136.
- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 477-482 in B. R. Murphy and D. W. Willis, editors. *Fisheries techniques*, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Ando, D., T. Kitamura, and S. Mizuno. 2005. Quantitative analysis of body silvering during smoltification in masu salmon using chromameter. *North American Journal of Aquaculture*, 67:160-166.
- Banks, J. W. 1969. A review of the literature on the upstream migration of adult salmonids. *Journal of Fish Biology*, 1:85-136.
- Beeman, J. W., and A. G. Maule. 2001. Residence time and diel passage distribution of radio-tagged juvenile spring Chinook salmon and steelhead in a gatewell and fish collection channel of a Columbia River dam. *North American Journal of Fisheries Management*, 21:455-463.
- Beeman, J. W., D. W. Rondorf, M. E. Tilson, and D. A. Venditti. 1995. A nonlethal measure of smolt status of juvenile steelhead based on body morphology. *Transactions of the American Fisheries Society* 124:764-769.
- Behnke, R. J. 1992. Native trout of western North America. *American Fisheries Society Monograph* 6.
- Bond, M. H., A. A. Hayes, G. V. Hanson, and R. B. MacFarlane. 2008. Marine survival of steelhead (*Oncorhynchus mykiss*) enhanced by a seasonally closed estuary. *Canadian Journal of Fisheries and Aquatic Sciences*, 65: 2242-2252.
- Bratovich, P. M., and D. W. Kelley. Investigation of salmon and steelhead in Lagunitas Creek, Marin County, California. Volume 1. Migration, spawning, embryo incubation and emergence, juvenile rearing, emigration. Marin Municipal Water District. Corte Madera, California.
- Brown, R. S., S. J. Cooke, W. G. Anderson, and R. S. McKinley. 1999. Evidence to challenge the "2% rule" for biotelemetry. *North American Journal of Fisheries Management*, 19:867-871.

- Busby, P. B., T. C. Wainwright, G. J. Bryant, L. J. Lierheimer, R. S. Waples, F. W. Waknitz, and Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. National Marine Fisheries Service. NOAA technical memorandum NMFS-NWFSC-27, August 1996.
- Cannata, S. T. 1998. Observations of steelhead trout (*Oncorhynchus mykiss*), coho salmon (*O. kisutch*) and water quality of the Navarro River estuary/lagoon, May 1996 to December 1997. Draft report, Humboldt State University Foundation. Humboldt, CA.
- Chrisp, E. Y., and T. C. Bjornn. 1978. parr-smolt transformations and seaward migration of wild and hatchery steelhead trout in Idaho. Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. Final project report F-49-R.
- Clay, H. C. 1995. Design of fishways and other fish facilities, 2nd edition. CRC Press, Inc., Boca Raton, FL.
- Cooke, R. U., A. Warren, and A. S. Goudie. 1992. Desert geomorphology. UCL Press, London.
- CMWD. 2005. 2005 progress report for the Robles Diversion Fish Passage Facility. Casitas Municipal Water District, Oak View, CA.
- CMWD. 2006. 2006 progress report for the Robles Diversion Fish Passage Facility. Casitas Municipal Water District, Oak View, CA.
- CMWD. 2007. 2007 progress report for the Robles Diversion Fish Passage Facility. Casitas Municipal Water District, Oak View, CA.
- CMWD. 2008. 2008 progress report for the Robles Diversion Fish Passage Facility. Casitas Municipal Water District, Oak View, CA.
- CMWD. 2009. 2009 progress report for the Robles Diversion Fish Passage Facility. Casitas Municipal Water District, Oak View, CA.
- CMWD. 2010. 2010 progress report for the Robles Diversion Fish Passage Facility. Casitas Municipal Water District, Oak View, CA.
- CMWD, Wood Rogers, and ENTRIX Inc. 2002. Preliminary draft technical memorandum of operation constraint assessment of the Robles Fish Passage Facility. Prepared for US Bureau of Reclamation.
- Dauble, D. D., T. L. Page, and W. Hanf. 1989. Spatial distribution of juvenile salmonids in the Hanford Reach, Columbia River. Fishery Bulletin, 87:775-790.

- Dettman, D. H., and D. W. Kelley. 1986. Assessment of the Carmel River steelhead resource, Volume 1. biological investigations. Monterey Peninsula Water Management District, Monterey, CA.
- ENTRIX. 1999. Evaluations of natural passage barriers on the Ventura River downstream of Robles Diversion. ENTRIX, Walnut Creek, CA.
- ENTRIX. 2000. Results of fish passage monitoring at the Vern Freeman diversion facility Santa Clara River, 1994-1998. ENTRIX, Walnut Creek, CA.
- Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 2002. California salmonid stream habitat restoration manual, Volume I, 3rd edition. California Department of Fish and Game. Inland Fisheries Division, Sacramento, CA.
- Hagar, J. 1996. Salinas River steelhead status and migration flow requirements. Monterey County Water Resources Agency. Salinas, California.
- Haner, P. V., J. C. Faler, R. M. Schrock, D. W. Rondorf, and A. G. Maule. 1995. Skin reflectance as a nonlethal measure of smoltification for juvenile salmonids. *North American Journal of Fisheries Management*, 15:814-822.
- Hockersmith, E. E., W. D. Muir, S. G. Smith, B. P. Sandford, N. S. Adams, J. M. Plumb, R. W. Perry, and D. W. Rondorf. 2000. Comparative performance of sham radio-tagged and PIT-tagged juvenile salmon. US Army Corps of Engineers, Walla Walla District.
- Harrison, L. R., E. A. Keller, E. Kelley, and L. A. K. Mertes. 2006. Minimum flow requirements for southern steelhead passage on the lower Santa Clara River, CA. University of California, Santa Barbara.
- Hasler, A. D., and A. T. Scholz. 1983. Olfactory imprinting and homing in salmon. Springer-Verlag, New York.
- Jepsen, N., L. E. Davis, C. B. Schreck, and B. Siddens. 2001. The physiological response of Chinook salmon smolts to two methods of radio-tagging. *Transactions of the American Fisheries Society* 130:495-500.
- Leopold, L. B., M. G. Wolman, and J. P. Miller. Fluvial processes in geomorphology. W. H. Freeman and Company, San Francisco.
- Lewis, S. D. 2001. Movements of hatchery steelhead smolts in Lake Billy Chinook and Squaw Creek during 2000. Portland General Electric. Portland, Oregon.
- Lewis, S. D. 2002. Movements of hatchery steelhead smolts in Lake Billy Chinook and Squaw Creek during 2001. Portland General Electric. Portland, Oregon.

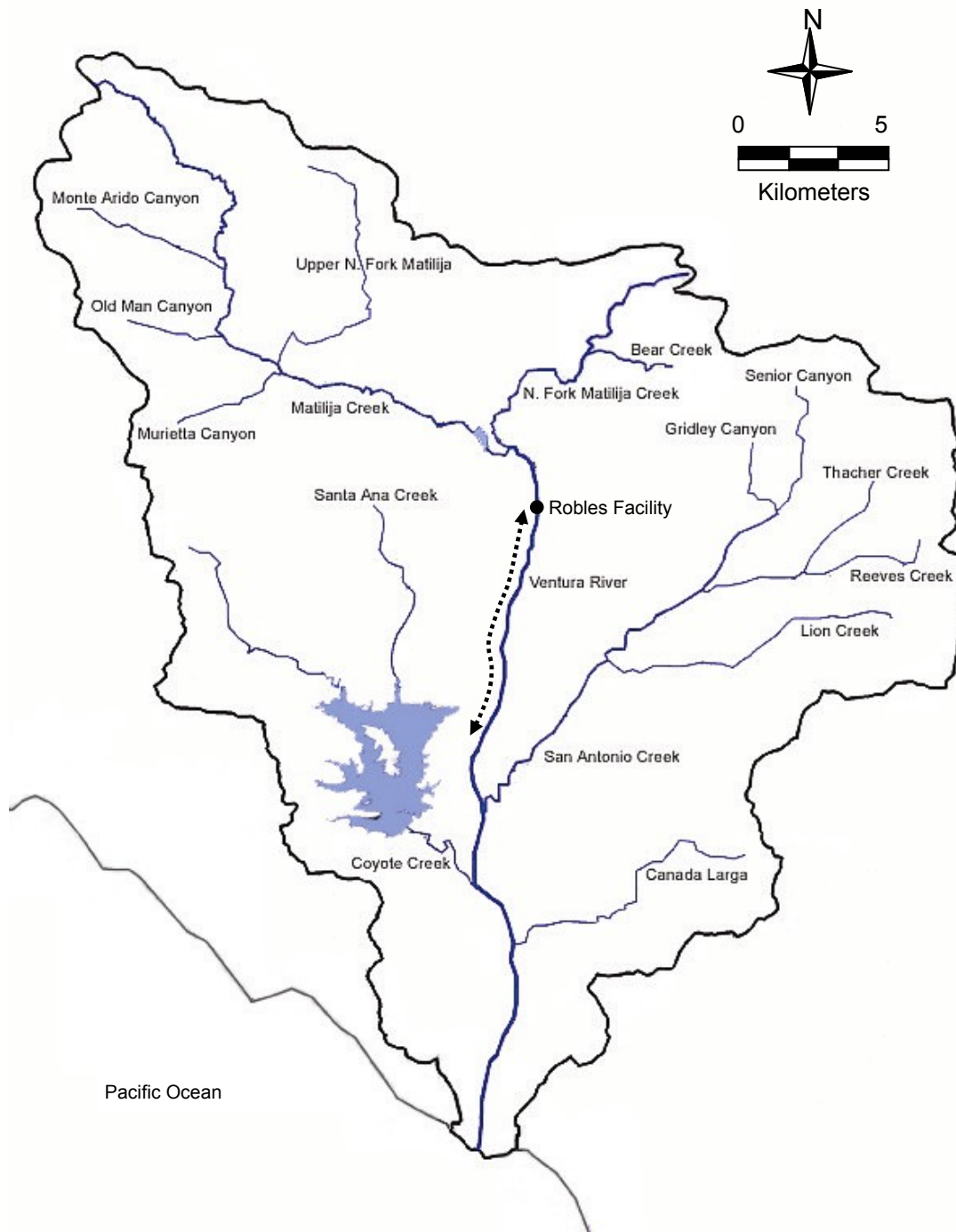
- Lewis, S. D. 2003. Movements of hatchery steelhead smolts in Lake Billy Chinook and Squaw Creek during 2002. Portland General Electric. Portland, Oregon.
- Lewis, S. D. M. W. Gibson J. L. Switzer. 2010. Ventura River basin *Oncorhynchus mykiss irideus* monitoring, evaluation, and research: 2010 annual program report. Casitas Municipal Water District, Oak View, California.
- Matthews, K. R., and N. H. Berg. 1997. Rainbow trout responses to water temperature and dissolved oxygen stress in two southern California stream pools. *Journal of Fish Biology*, 50:50-67.
- Matthews, K. R., N. H. Berg, D. L. Azuma, and T. R. Lambert. 1994. Cool water formation and trout habitat use in a deep pool in the Sierra Nevada, California. *Transactions of the American Fisheries Society*, 123:549-564.
- Moore, K., K. Jones, and J. Dambacher. 2002. Methods for stream habitat surveys, Version 12.1. Oregon Department of Fish and Wildlife, Aquatic Inventories Project, Natural Production Program, Corvallis, OR.
- Mosley, M. P. 1982. Critical depths for passage in braided river, Canterbury, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, Vol. 16:351-357.
- National Marine Fisheries Service. 1997. Endangered and Threatened Species: Listing of Several Evolutionary Significant Units (ESUs) of West Coast Steelhead. Federal Register, 50 CFR Parts 222 and 227 [Docket No. 960730210-7193-02; I.D. 050294D] RIN 0648-XX65. Vol. 62, page 43937.
- National Marine Fisheries Service. 2003a. Biological opinion for the Robles diversion fish passage facility, Ventura River, CA. Protected Resource Division, Southwest Region, March 31, 2003.
- National Marine Fisheries Service. 2003b. Endangered and Threatened Species: Range Extension for Endangered Steelhead in Southern California. Federal Register, 50 CFR Part 224 [Docket No. 001025296-2079-02; I.D. 072600A] RIN 0648-AO05. Vol. 67 page 21586.
- National Marine Fisheries Service. 2005. Endangered and Threatened Species: Request for Comment on Alternative Approach to Delineating 10 Evolutionarily Significant Units of West Coast *Oncorhynchus mykiss*. 50 CFR Parts 223 and 224 [Docket No. 040525161-5274-05; I.D. No. 052104F] RIN No. 0648-AR93. Vol. 70 page 67130.
- National Marine Fisheries Service. 2009. Letter addressed to Scott Lewis (Casitas Municipal Water District) addressing the downstream fish passage evaluation. Letter dated 28 April 2009, SWR/2002/1871:SCG.

- Quinn, T, H. 2005. The behavior and ecology of pacific salmon and trout. American Fisheries Society, Bethesda, Maryland.
- Scott, W. B. and E. J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Ottawa, Bulletin 184.
- Shapovalov, L. and A. C. Taft. 1954. The life histories of the steelhead rainbow trout (*Salmo gairdneri gairdneri*) and silver salmon (*Oncorhynchus kisutch*), with special reference to Waddell Creek, California, and recommendations regarding their management. State of California Department of Fish and Game, fish bulletin No. 98.
- Spina, A. P., M. A. Allen, and M. Clarke. 2005. Downstream migration, rearing abundance, and pool habitat associations of juvenile steelhead in the lower main stem of a south-central California stream. North American Journal of Fisheries Management, 25:919-930.
- Stoecker, M. 2010. North Fork Matilija Creek adult steelhead below Ojai Quarry barriers. Letter sent on 30 March 2010 about adult steelhead observations, 5 p.
- Strauss, R. E., and C. E. Bond. 1990. Taxonomic methods: In Schreck C. B. and P. B. Moyle, editors. Methods for fish biology. AFS, Bethesda, Maryland.
- Summerfelt, R. C., and L. S. Smith. 1990. Anesthesia, surgery, and related techniques. Pages 213-272 in C. B. Schreck and P. B. Moyle, editors. Methods for Fish Biology. American Fisheries Society, Bethesda, Maryland.
- SYRTAC (Santa Ynez River Technical Advisory Committee). 1999. Adult steelhead passage flow analysis for the Santa Ynez River. Santa Ynez River Consensus Committee, Santa Barbara, CA.
- SYRTAC (Santa Ynez River Technical Advisory Committee). 2000. Lower Santa Ynez River fish management plan. Santa Ynez River Consensus Committee, Santa Barbara, CA.
- Tan, S. S., and T. A. Jones. 2006. Geologic map of the Matilija 7.5' quadrangle Ventura County, California: a digital database. Version 1.0, Los Angeles, CA.
- Thompson, K. 1972. Determining stream flows for fish life. Pacific Northwest River Basins Commission, instream flow requirements workshop. Portland, Oregon. Proceedings: 31-50.
- U.S. Bureau of Reclamation. 2003. Revised biological assessment for diversion operations and fish passage facilities at the Robles Diversion, Ventura River, CA. South-Central California Area Office, February 21, 2003.

Vaki. 2003. User manual for Riverwatcher. Vaki Aquaculture Systems Ltd., Iceland.

Wagner, H. H., R. L. Wallace, and H. J. Campbell. 1963. The seaward migration and return of hatchery-reared steelhead trout, *Salmo gairdneri* Richardson, in the Alsea River, Oregon. Transactions of the American Fisheries Society, 92(3):202-210.

6.0 APPENDIXES



Appendix 1. Basin map of the Ventura River. The Robles Fish Passage Facility is identified by the black dot and the Robles Reach is identified by the dashed line downstream of the Robles Facility.

Appendix 2. Summary data of impediments sites selected for upstream fish migration impediment evaluations selected or assessed by the Biological Committee during January 2012.

Site No.	Latitude (N)	Longitude (W)	km	Habitat Type ^a	Site Description	Length (m)	Slope (%)	Percent Substrate ^b						Active Channel Width (m)	
								SO	SD	GR	CB	BD	BR		
10 ^c	34.365265°	119.311082°	11	RI	Near Casitas Springs at bottom of levy										
3-2	34.373789°	119.308417°	12	RB	Near Casitas Springs at top of levy	22.0	3.7	10	5	10	65	10	0	27.0	
4	34.384743°	119.310030°	14	RI	0.5 km upstream of San Antonio Cr. confluence	23.8	5.0	0	0	0	15	85	0	27.9	
5-2	34.396095°	119.309537°	15	RI	0.4 km downstream of Santa Ana Blvd. bridge	8.4	7.0	0	5	5	45	45	0	50.6	
6-1	34.411318°	119.301491°	17	CB	1.4 km upstream of Santa Ana Blvd. bridge	26.1	5.0	0	0	0	65	35	0	33.8	
9	34.426708°	119.301831°	19	RB	0.2 km upstream of Hwy 150 bridge										
7	34.438184°	119.299528°	20	RB	1.1 km upstream of Hwy 150 bridge	31.6	2.0	5	0	10	40	45	0	65.9	
8 ^e	34.454189°	119.293143°	22	CB	1.2 km downstream of Robles Fish Facility	9.2	10.0	0	0	10	45	45	0	32.4	

^aThe habitat types are: RB = rapid with protruding boulders, RI = riffle, and CB = cascade over boulders.

^bThe substrate types are: SO = silt and organics, SD = sand, GR = gravel, CB = cobble, BD = boulders, and BR = bedrock.

^cSite 10 was selected to replace Site 2.

^dInsufficient discharge prevented site characterization during 2012 and 2013.

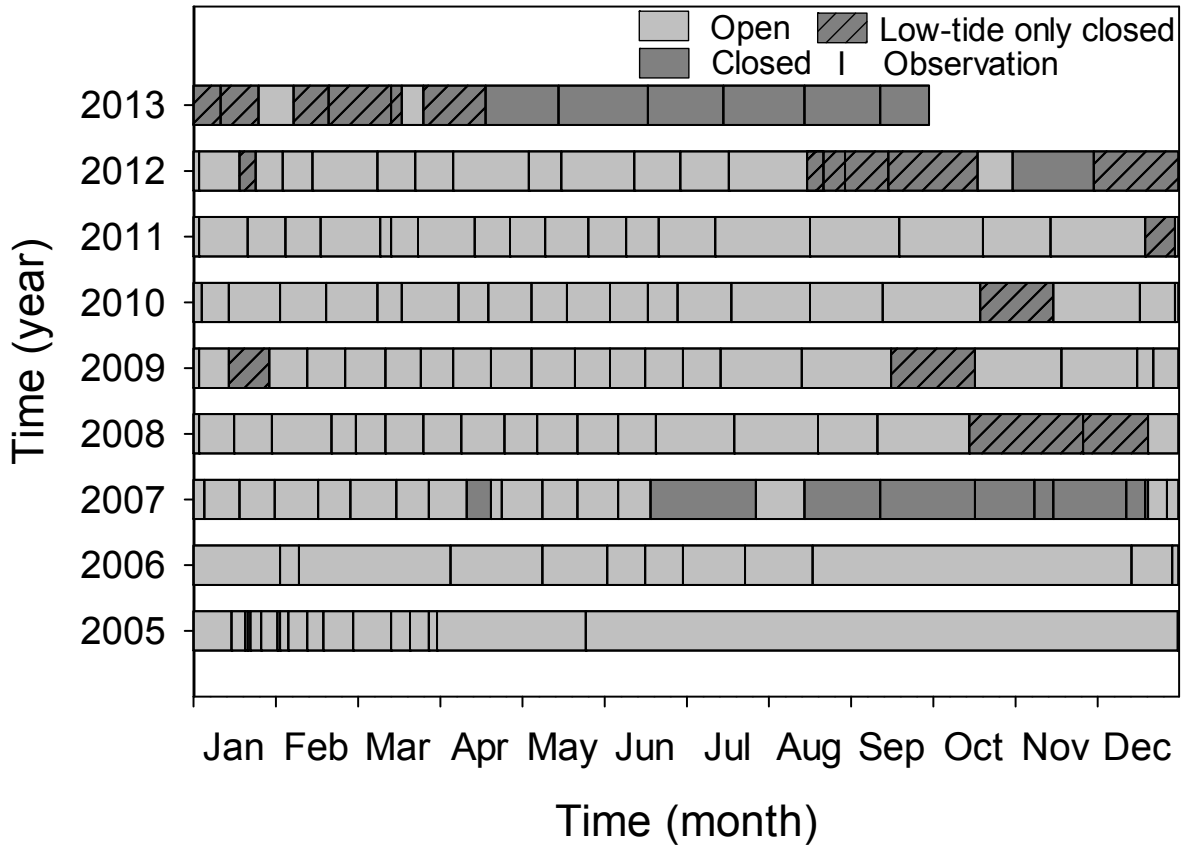
^eSite 8 will only be monitored if Site 10 is determined to be unsuitable after sufficient flows have occurred.

Appendix 3. Ventura River sandbar monitoring data from July 2012 through June 2013.

Date	Sandbar Breached (Y/N)	Time (24h)	Tide Height (ft)	Tidal State	High Tide		Low Tide		Mean Daily Discharge at Foster ^a (cfs)	Mean Daily Discharge at Robles (cfs)	Notes
					Time (24h)	Height (ft)	Time (24h)	Height (ft)			
07/17/2012	Y	10:00	3.72	slack	10:09	3.73	3:46	-0.39	4.7	0	Open in center
08/15/2012	N ^b	9:40	4.11	slack	9:30	4.11	14:38	1.99	2.4	0	If breached, center
08/21/2012	N ^b	12:30	5.41	slack	12:29	5.41	19:09	0.99	1.5	0	If breached, center
08/29/2012	N ^b	20:40	6.20	slack	20:40	6.20	3:29	-0.46	1.3	0	If breached, center
09/14/2012	N ^b	9:21	4.99	slack	9:08	5.00	15:01	1.06	0.8	0	If breached, center
10/17/2012	Y	11:30	6.41	ebb	10:40	6.64	17:51	-0.73	0.4	0	Open in center
10/30/2012	N	11:05	5.35	ebb	9:41	5.91	16:48	-0.06	0.2	0	If breached, center
11/29/2012	N ^b	11:30	4.02	ebb	8:46	5.90	16:10	-0.35	0.3	0	If breached, center
12/31/2012	N ^b	12:15	4.06	ebb	10:12	5.31	17:26	-0.17	0.3	0.9	If breached, center
01/02/2013	N ^b	10:30	4.14	flood	11:35	4.34	0:57	2.34	0.2	0.7	If breached, center
01/11/2013	N ^b	8:55	6.79	ebb	8:19	6.90	15:30	-1.74	0.2	<0.1	If breached, center
01/25/2013	Y	15:45	-0.46	flood	21:20	3.82	15:03	-0.61	0.4	10.5	Open in center
02/07/2013	N ^b	10:28	3.44	ebb	7:27	6.38	14:32	-1.42	0.2	4.9	If breached, center
02/20/2013	N ^b	9:59	1.88	ebb	19:38	3.36	13:07	0.18	0.5	5.9	If breached, center
03/15/2013	N ^b	9:50	2.24	flood	12:34	3.53	6:35	0.40	1.1	0.8	If breached, center
03/19/2013	Y	18:30	2.90	flood	19:09	2.93	11:34	0.95	0.7	0.7	Open in center
03/27/2013	N ^b	10:30	4.77	ebb	10:09	4.81	16:12	0.30	0.6	<0.1	If breached, center
04/19/2013	N	13:54	1.17	flood	18:57	3.77	12:10	0.70	0.5	0	If breached, center
05/16/2013	N	9:45	0.68	flood	16:24	3.42	8:58	0.59	2.0	0	If breached, center
06/18/2013	N	8:35	2.39	ebb	5:59	3.09	11:21	1.57	0.5	0	If breached, center

^aUSGS gauging station number 11118500, downstream of Foster Park.

^bSandbar was closed at low tide and but intermittent saltwater sandbar overtopping intrusions occurred during some high tides.



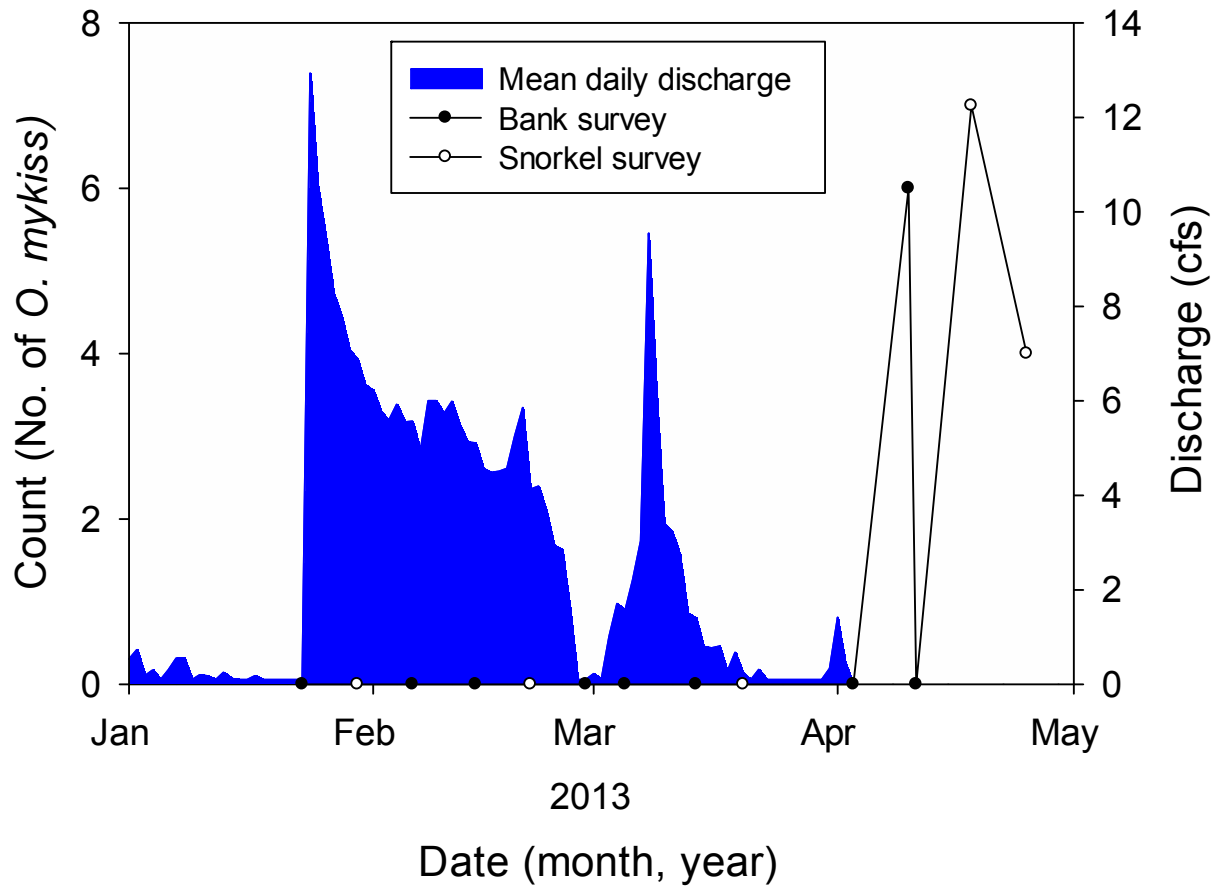
Appendix 4. Sandbar status at the mouth of the Ventura River from 2005 through September of 2013. Each observation is indicated by vertical lines and the sandbar status was assumed to remain in the same until the next observation.

Appendix 5. Fish attraction counts at the Robles Fish Facility, January-April of 2013.

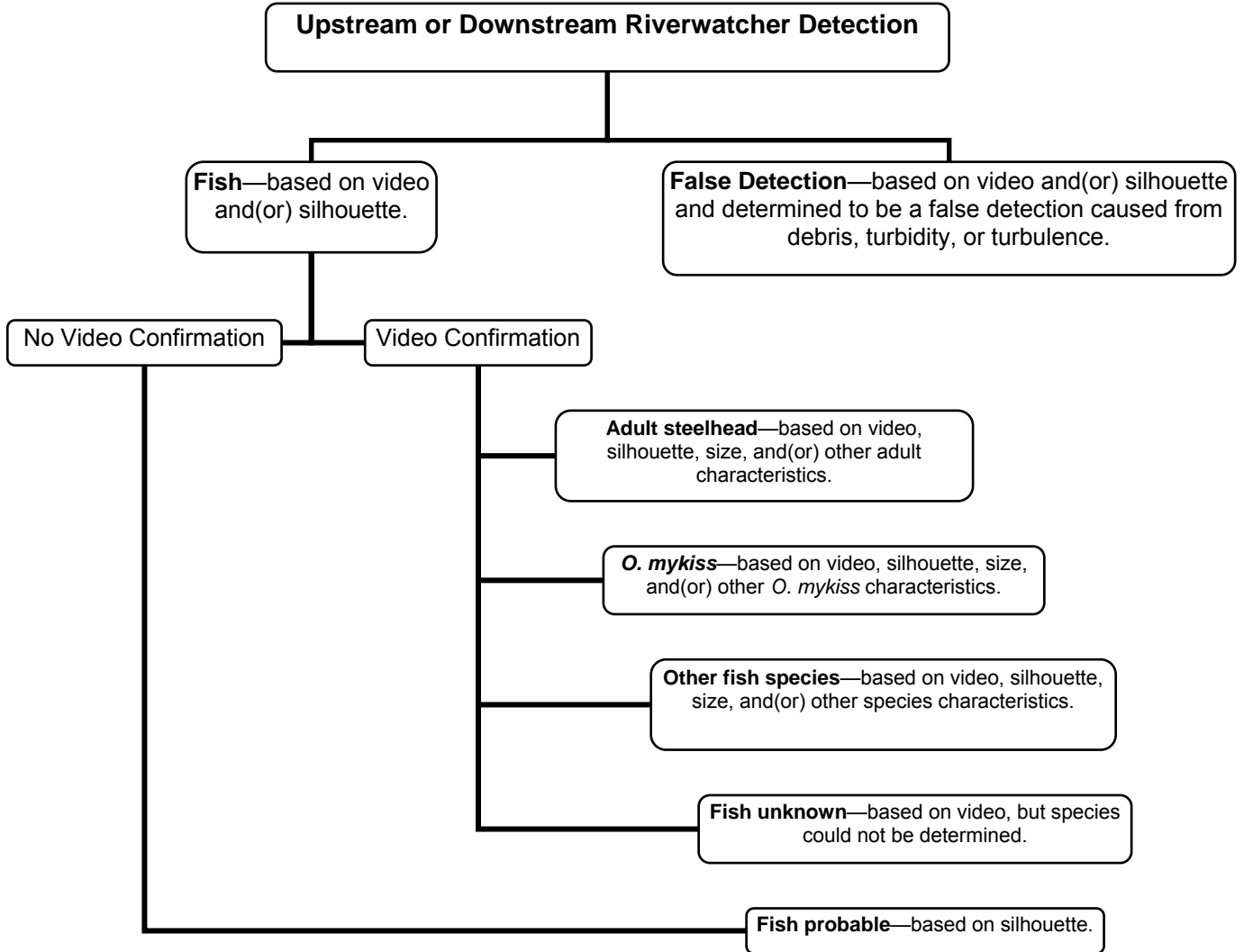
Date	Method	Direction	Length (m)	Temp. (°C)	Turbidity (NTU)	Robles		Species ^a	Count
						Discharge (CFS)			
01/23/2013	Bank	Downstream	200	11	1	<0.1		NFO	0
01/23/2013	Bank	Upstream	140	11	1	<0.1		NFO	0
01/30/2013	Snorkel	Downstream	200	10	2	6.9		NFO	0
01/30/2013	Snorkel	Upstream	140	10	2	6.9		NFO	0
02/06/2013	Bank	Downstream	200	13	1	5.6		NFO	0
02/06/2013	Bank	Upstream	140	13	1	5.6		NFO	0
02/14/2013	Bank	Downstream	200	13	1	5.1		NFO	0
02/14/2013	Bank	Upstream	140	13	1	5.1		NFO	0
02/21/2013	Snorkel	Downstream	200	12	0	4.1		NFO	0
02/21/2013	Snorkel	Upstream	140	12	0	4.1		NFO	0
02/28/2013	Bank	Downstream	200	15	1	<0.1		NFO	0
02/28/2013	Bank	Upstream	140	15	1	<0.1		NFO	0
03/05/2013	Bank	Downstream	200	14	1	1.6		NFO	0
03/05/2013	Bank	Upstream	140	14	1	1.6		NFO	0
03/14/2013	Bank	Downstream	200	15	1	1.4		NFO	0
03/14/2013	Bank	Upstream	140	15	1	1.4		NFO	0
03/20/2013	Snorkel	Downstream	200	15	1	0.2		NFO	0
03/20/2013	Snorkel	Upstream	140	15	1	0.2		NFO	0
04/03/2013 ^b	Bank	Downstream	130	15	1	0.0		NFO	0
04/03/2013	Bank	Upstream	140	15	1	0.0		NFO	0
04/10/2013 ^b	Bank	Downstream	130	18	2	0.0		OMY	6
04/10/2013	Bank	Upstream	140	18	2	0.0		NFO	0
04/11/2013 ^b	Bank	Downstream	130	13	1	0.0		NFO	0
04/11/2013	Bank	Upstream	140	13	1	0.0		NFO	0
04/18/2013 ^b	Snorkel	Downstream	35	17	2	0.0		OMY	7
04/18/2013	Snorkel	Upstream	140	17	2	0.0		NFO	0
04/25/2013 ^b	Snorkel	Downstream	35			0.0		OMY	4
04/25/2013	Bank	Upstream	140			0.0		NFO	0
		Upstream	1,960					Upstream	0
		Downstream	2,260					Downstream	17
		Total	4,220					Total	17

^aOMY = *O. mykiss* and NFO = no fish observed.

^bPartial survey due to dry habitat units.



Appendix 6. Total count of *O. mykiss* observed during fish attraction surveys during the fish passage season from January through April 2013 at the Robles Facility.



Appendix 7. Riverwatcher detection classification flow chart that outlines the pathways for upstream and downstream detections.

Appendix 8. Summary of Riverwatcher detections classified as fish probable and *O. mykiss* from January through June of 2013.

	Upstream	Downstream
<i>O. mykiss</i>	0	0
Fish, non <i>O. mykiss</i>	0	0
Fish, unknown	0	3
Fish, probable	0	0
False detections	10	30
Total	10	33
Mean date - <i>O. mykiss</i>	n/a	n/a
Mean date - fish, non <i>O. mykiss</i>	n/a	n/a
Mean date - fish, unknown	n/a	17 Apr
Mean date - fish, probable	n/a	n/a
Mean time - <i>O. mykiss</i> (24h)	n/a	n/a
Mean time - fish, non <i>O. mykiss</i> (24h)	n/a	n/a
Mean time - fish, unknown (24h)	n/a	10:17
Mean time - fish, probable (24h)	n/a	n/a
Mean length - <i>O. mykiss</i> (cm)	n/a	n/a
Mean length - fish, non <i>O. mykiss</i> (cm)	n/a	n/a
Mean length - fish, unknown (cm)	n/a	18
Mean length - fish, probable (cm)	n/a	n/a
Mean daily temperature - <i>O. mykiss</i> (°C)	n/a	n/a
Mean daily temperature - fish, non <i>O. mykiss</i> (°C)	n/a	n/a
Mean daily temperature - fish, unknown (°C)	n/a	13.5
Mean daily temperature - fish, probable (°C)	n/a	n/a
Mean daily turbidity - <i>O. mykiss</i> (NTU)	n/a	n/a
Mean daily turbidity - fish, non <i>O. mykiss</i> (NTU)	n/a	n/a
Mean daily turbidity - fish, probable (NTU)	n/a	n/a
Mean daily turbidity - fish, unknown (NTU)	n/a	1
Mean daily turbidity - false detections (NTU)	2	1
Mean daily discharge - <i>O. mykiss</i> (cfs)	n/a	n/a
Mean daily discharge - fish, non <i>O. mykiss</i> (cfs)	n/a	n/a
Mean daily discharge - fish, probable (cfs)	n/a	n/a
Mean daily discharge - fish, unknown (cfs)	n/a	0
Mean daily discharge - false detections (cfs)	2.3	0.3

Appendix 9. Date, time, TL, direction, discharge, turbidity, and temperature at time of all Riverwatcher detections that were determined to be fish. Discharge was measured at the measurement weir.

Date	Time (24h)	Fish Category	Total Length (cm)	Direction	Mean Daily Discharge (cfs)	Mean Daily Turbidity (NTU)	Mean Daily Temperature (°C)
4/17/2013	6:35	Fish, unknown	20	Down	0	1	13.5
4/17/2013	6:35	Fish, unknown	19	Down	0	1	13.5
4/17/2013	17:43	Fish, unknown	15	Down	0	1	13.5

Appendix 10. Monthly flow summary for Robles Fish Facility, water year 2012-2013.

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Jul-12	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1	1	0	1	0.5	0	0	0	0	0
2	1	0	2	0.5	0	0	0	0	0
3	2	0	2	0.4	0	0	0	0	0
4	1	1	2	0.5	0	0	0	0	0
5	1	1	2	0.4	0	0	0	0	0
6	1	1	2	0.5	0	0	0	0	0
7	1	0	2	0.3	0	0	0	0	0
8	1	0	2	0.2	0	0	0	0	0
9	1	0	1	0.2	0	0	0	0	0
10	1	0	1	0.2	0	0	0	0	0
11	1	0	1	0.2	0	0	0	0	0
12	1	0	2	0.2	0	0	0	0	0
13	1	0	1	0.2	0	0	0	0	0
14	1	0	1	0.2	0	0	0	0	0
15	1	0	1	0.2	0	0	0	0	0
16	1	0	1	0.2	0	0	0	0	0
17	1	0	1	0.2	0	0	0	0	0
18	1	0	1	0.1	0	0	0	0	0
19	1	0	2	0.1	0	0	0	0	0
20	1	0	1	0.1	0	0	0	0	0
21	1	0	1	0.1	0	0	0	0	0
22	1	0	1	0.1	0	0	0	0	0
23	1	0	1	0.1	0	0	0	0	0
24	1	0	1	0.1	0	0	0	0	0
25	1	0	1	0.1	0	0	0	0	0
26	1	0	1	0.1	0	0	0	0	0
27	1	0	1	0.1	0	0	0	0	0
28	1	0	1	0.1	0	0	0	0	0
29	1	0	1	0.1	0	0	0	0	0
30	1	0	1	0.1	0	0	0	0	0
31	1	0	1	0.1	0	0	0	0	0
Totals	33	13	46		0	0	0	0	0

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Aug-12	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1	1	0	1	0.1	0	0	0	0	0
2	1	0	1	0.1	0	0	0	0	0
3	1	0	1	0.1	0	0	0	0	0
4	1	0	1	0.1	0	0	0	0	0
5	1	0	1	0.1	0	0	0	0	0
6	1	0	1	0.1	0	0	0	0	0
7	1	0	1	0.1	0	0	0	0	0
8	1	0	1	0.1	0	0	0	0	0
9	1	0	1	0.1	0	0	0	0	0
10	1	0	1	0.1	0	0	0	0	0
11	1	0	1	0.1	0	0	0	0	0
12	1	0	1	0.1	0	0	0	0	0
13	1	0	1	0.1	0	0	0	0	0
14	1	0	1	0.1	0	0	0	0	0
15	1	0	1	0.1	0	0	0	0	0
16	0	0	1	0.1	0	0	0	0	0
17	0	0	1	0.1	0	0	0	0	0
18	1	0	1	0.1	0	0	0	0	0
19	1	0	1	0.1	0	0	0	0	0
20	1	0	1	0.1	0	0	0	0	0
21	1	0	1	0.1	0	0	0	0	0
22	1	0	1	0.1	0	0	0	0	0
23	1	0	1	0.1	0	0	0	0	0
24	1	0	1	0.1	0	0	0	0	0
25	1	0	1	0.1	0	0	0	0	0
26	1	0	1	0.1	0	0	0	0	0
27	0	0	1	0.1	0	0	0	0	0
28	0	0	1	0.1	0	0	0	0	0
29	0	0	1	0.1	0	0	0	0	0
30	0	0	1	0.1	0	0	0	0	0
31	0	0	1	0.1	0	0	0	0	0
Totals	18	10	28		0	0	0	0	0

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Sep-12	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1	0	0	1	0.1	0	0	0	0	0
2	0	0	1	0.1	0	0	0	0	0
3	0	0	1	0.1	0	0	0	0	0
4	0	0	1	0.1	0	0	0	0	0
5	0	0	1	0.1	0	0	0	0	0
6	1	0	1	0.1	0	0	0	0	0
7	1	0	1	0.1	0	0	0	0	0
8	1	0	1	0.1	0	0	0	0	0
9	1	0	1	0.1	0	0	0	0	0
10	1	0	2	0.1	0	0	0	0	0
11	1	0	1	0.1	0	0	0	0	0
12	1	0	1	0.1	0	0	0	0	0
13	1	0	1	0.1	0	0	0	0	0
14	1	0	1	0.1	0	0	0	0	0
15	0	0	1	0.1	0	0	0	0	0
16	0	0	1	0.1	0	0	0	0	0
17	0	0	1	0.1	0	0	0	0	0
18	0	0	1	0.1	0	0	0	0	0
19	0	0	1	0.1	0	0	0	0	0
20	0	0	1	0.1	0	0	0	0	0
21	0	0	1	0.1	0	0	0	0	0
22	0	0	1	0.1	0	0	0	0	0
23	0	0	1	0.1	0	0	0	0	0
24	1	0	1	0.1	0	0	0	0	0
25	1	0	1	0.1	0	0	0	0	0
26	1	0	1	0.1	0	0	0	0	0
27	1	0	1	0.1	0	0	0	0	0
28	1	0	1	0.1	0	0	0	0	0
29	1	0	1	0.1	0	0	0	0	0
30	0	0	1	0.1	0	0	0	0	0
Totals	17	8	25		0	0	0	0	0

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Oct-12	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1	0	0	1	0.1	0	0	0	0	0
2	0	0	1	0.1	0	0	0	0	0
3	0	0	1	0.1	0	0	0	0	0
4	0	0	1	0.1	0	0	0	0	0
5	0	0	1	0.1	0	0	0	0	0
6	0	0	1	0.1	0	0	0	0	0
7	1	0	1	0.1	0	0	0	0	0
8	1	0	1	0.1	0	0	0	0	0
9	1	0	1	0.1	0	0	0	0	0
10	1	0	1	0.1	0	0	0	0	0
11	1	0	1	0.1	0	0	0	0	0
12	1	0	1	0.1	0	0	0	0	0
13	1	0	1	0.1	0	0	0	0	0
14	1	0	1	0.1	0	0	0	0	0
15	1	0	1	0.1	0	0	0	0	0
16	0	0	1	0.1	0	0	0	0	0
17	1	0	1	0.1	0	0	0	0	0
18	1	0	1	0.1	0	0	0	0	0
19	1	0	1	0.1	0	0	0	0	0
20	1	0	1	0.1	0	0	0	0	0
21	1	1	1	0.1	0	0	0	0	0
22	1	1	1	0.1	0	0	0	0	0
23	1	1	1	0.1	0	0	0	0	0
24	1	1	2	0.1	0	0	0	0	0
25	1	1	2	0.1	0	0	0	0	0
26	1	1	2	0.1	0	0	0	0	0
27	1	1	1	0.1	0	0	0	0	0
28	1	0	1	0.1	0	0	0	0	0
29	1	0	1	0.1	0	0	0	0	0
30	1	1	1	0.1	0	0	0	0	0
31	1	1	1	0.1	0	0	0	0	0
Totals	21	13	34		0	0	0	0	0

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Nov-12	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1	1	1	1	0.0	0	0	0	0	0
2	1	1	2	0.0	0	0	0	0	0
3	1	1	2	0.0	0	0	0	0	0
4	1	1	1	0.0	0	0	0	0	0
5	1	1	1	0.0	0	0	0	0	0
6	1	1	1	0.0	0	0	0	0	0
7	1	1	2	0.0	0	0	0	0	0
8	1	1	1	0.0	0	0	0	0	0
9	1	1	2	0.0	0	0	0	0	0
10	2	1	2	0.0	0	0	0	0	0
11	1	1	2	0.0	0	0	0	0	0
12	1	1	2	0.0	0	0	0	0	0
13	1	1	2	0.0	0	0	0	0	0
14	1	1	2	0.0	0	0	0	0	0
15	1	1	2	0.0	0	0	0	0	0
16	1	1	2	0.0			0	0	0
17	6	2	8	0.0			0	0	0
18	2	1	3	0.0			0	0	0
19	1	1	2	0.0			0	0	0
20	1	1	2	0.0			0	0	0
21	1	1	2	0.0			0	0	0
22	1	1	2	0.0			0	0	0
23	1	1	2	0.0			0	0	0
24	1	1	2	0.0			0	0	0
25	1	1	2	0.0			0	0	0
26	1	1	2	0.0			0	0	0
27	1	1	2	0.0			0	0	0
28	1	1	2	0.0			0	0	0
29	4	2	6	0.7	10	10	0	10	0
30	3	2	5	0.7	7	7	0	7	0
Totals	41	28	69		17	17	0	17	0

No Data Available

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Dec-12	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1	2	2		0.10	1	1	0.00	1.00	0.00
2	2	1		0.10	1	1	0.00	1.00	0.00
3	2	1		0.10	1	1	0.00	1.00	0.00
4	2	1		0.10	1	1	0.00	1.00	0.00
5	2	1		0.10	1	1	0.00	1.00	0.00
6	2	1		0.10	1	1	0.00	1.00	0.00
7	2	1		0.10	1	1	0.00	1.00	0.00
8	2	1		0.10	1	1	0.00	1.00	0.00
9	2	1		0.10	1	1	0.00	1.00	0.00
10	2	1		0.10	1	1	0.00	1.00	0.00
11	2	1		0.10	1	1	0.00	1.00	0.00
12	2	1		0.20	6	6	0.00	6.00	0.00
13	4	2		0.10	3	3	0.00	3.00	0.00
14	3	1		0.10	1	1	0.00	1.00	0.00
15	3	1		0.10	1	1	0.00	1.00	0.00
16	3	1		0.10	1	1	0.00	1.00	0.00
17	3	1		0.10	1	1	0.00	1.00	0.00
18	3	1		0.16	1	1	0.00	1.13	0.00
19	2	1		0.16	0	0	0.00	0.00	0.00
20	2	1		0.16	0	0	0.00	0.00	0.00
21	2	1		0.18	0	0	0.00	0.00	0.00
22	3	1		0.20	0	0	0.00	0.00	0.00
23	3	1		0.21	0	0	0.00	0.02	0.00
24	4	2		0.21	5	5	0.00	5.13	0.00
25	3	1		0.20	2	2	0.00	2.20	0.00
26	3	1		0.20	1	1	0.00	1.20	0.00
27	3	1		0.19	1	1	0.00	0.91	0.00
28	3	1		0.33	0	0	0.00	0.00	0.00
29	3	1		0.78	2	2	0.00	1.81	0.00
30	3	1		0.74	1	1	0.00	1.28	0.00
31	3	1		0.69	1	1	0.00	0.89	0.00
Totals	80	38	0		39	39	0	39	0

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Jan-13	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1	3	1	4	0.71	1	1	0	1	0
2	3	1	4	0.67	1	1	0	1	0
3	3	1	4	0.68	0	0	0	0	0
4	3	1	4	0.65	0	0	0	0	0
5	3	1	4	0.67	0	0	0	0	0
6	3	1	4	0.68	0	0	0	0	0
7	3	1	5	0.80	1	1	0	1	0
8	3	1	4	0.88	1	1	0	1	0
9	3	1	4	0.88	0	0	0	0	0
10	3	1	5	0.90	0	0	0	0	0
11	3	1	4	0.86	0	0	0	0	0
12	3	1	4	0.81	0	0	0	0	0
13	3	1	4	0.86	0	0	0	0	0
14	3	1	4	0.87	0	0	0	0	0
15	3	1	4	0.87	0	0	0	0	0
16	3	1	4	0.85	0	0	0	0	0
17	3	1	5	0.84	0	0	0	0	0
18	3	1	4	0.69	0	0	0	0	0
19	3	1	4	0.60	0	0	0	0	0
20	3	1	4	0.67	0	0	0	0	0
21	3	1	4	0.83	0	0	0	0	0
22	3	1	4	0.84	0	0	0	0	0
23	3	1	4	0.88	0	0	0	0	0
24	8	5	13	2.34	13	13	0	13	0
25	6	2	8	1.79	11	11	0	11	0
26	6	2	8	1.67	9	9	0	9	0
27	5	2	7	1.54	8	8	0	8	0
28	5	2	7	1.43	8	8	0	8	0
29	5	2	7	1.38	7	7	0	7	0
30	5	2	6	1.37	7	7	0	7	0
31	5	2	6	1.32	6	6	0	6	0
Totals	114	46	161		73	73	0	73	0

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
Feb-13	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1	5	2	6	1.35	6	6	0	6	0
2	5	1	6	1.30	6	6	0	6	0
3	5	1	6	1.28	6	6	0	6	0
4	5	1	6	1.27	6	6	0	6	0
5	5	1	6	1.25	6	6	0	6	0
6	5	1	6	1.22	6	6	0	6	0
7	5	1	6	1.18	5	5	0	5	0
8	5	1	6	1.27	6	6	0	6	0
9	5	1	6	1.27	6	6	0	6	0
10	5	1	6	1.25	6	6	0	6	0
11	5	1	6	1.25	6	6	0	6	0
12	5	1	6	1.19	5	5	0	5	0
13	5	1	6	1.18	5	5	0	5	0
14	5	1	6	1.19	5	5	0	5	0
15	5	1	6	1.16	5	5	0	5	0
16	5	1	6	1.14	4	4	0	4	0
17	5	1	6	1.13	5	5	0	5	0
18	5	1	6	1.15	5	5	0	5	0
19	5	1	6	1.20	5	5	0	5	0
20	5	1	6	1.25	6	6	0	6	0
21	4	1	6	1.13	4	4	0	4	0
22	4	1	6	1.09	4	4	0	4	0
23	4	1	6	1.10	4	4	0	4	0
24	4	1	5	1.03	3	3	0	3	0
25	4	1	6	1.03	3	3	0	3	0
26	4	1	6	0.96	2	2	0	2	0
27	4	1	5	0.81	0	0	0	0	0
28	4	1	5	0.82	0	0	0	0	0
Totals	128	38	166		128	128	0	128	0

Ventura River Flow Assessment Water Year 2012 - 2013

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Mar-13	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1		1	1	0.89	0	0	0	0	0
2		1	1	0.80	0	0	0	0	0
3		1	1	0.95	1	1	0	1	0
4		1	1	0.99	2	2	0	2	0
5		1	1	0.99	2	2	0	2	0
6		1	1	1.04	2	2	0	2	0
7		1	1	1.07	3	3	0	3	0
8		2	2	1.63	10	10	0	10	0
9		2	2	1.28	6	6	0	6	0
10		2	2	1.08	3	3	0	3	0
11		2	2	1.06	3	3	0	3	0
12		2	2	1.06	3	3	0	3	0
13		1	1	0.99	2	2	0	2	0
14		1	1	0.98	1	1	0	1	0
15		1	1	0.93	1	1	0	1	0
16		1	1	0.93	1	1	0	1	0
17		1	1	0.91	1	1	0	1	0
18		1	1	0.91	0	0	0	0	0
19		1	1	0.93	1	1	0	1	0
20		1	1	0.90	0	0	0	0	0
21		1	1	0.87	0	0	0	0	0
22		1	1	0.87	0	0	0	0	0
23		1	1	0.76	0	0	0	0	0
24		1	1	0.76	0	0	0	0	0
25		1	1	0.68	0	0	0	0	0
26		1	1	0.52	0	0	0	0	0
27		1	1	0.53	0	0	0	0	0
28		1	1	0.60	0	0	0	0	0
29		1	1	0.74	0	0	0	0	0
30		1	1	0.72	0	0	0	0	0
31		1	1	0.83	0	0	0	0	0
Totals	0	39	39		42	42	0	42	0

No Data Available

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Apr-13	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1		1	1	0.95	1	1	0	1	0
2		1	1	0.82	0	0	0	0	0
3		1	1	0.76	0	0	0	0	0
4		1	1	0.75	0	0	0	0	0
5		1	1	0.75	0	0	0	0	0
6		1	1	0.74	0	0	0	0	0
7		1	1	0.67	0	0	0	0	0
8		1	1	0.72	0	0	0	0	0
9		1	1	0.62	0	0	0	0	0
10		1	1	0.44	0	0	0	0	0
11		1	1	0.18	0	0	0	0	0
12		1	1	0.23	0	0	0	0	0
13		1	1	0.30	0	0	0	0	0
14		1	1	0.36	0	0	0	0	0
15		1	1	0.56	0	0	0	0	0
16		1	1	0.71	0	0	0	0	0
17		1	1	0.60	0	0	0	0	0
18		1	1	0.49	0	0	0	0	0
19		1	1	0.41	0	0	0	0	0
20		1	1	0.33	0	0	0	0	0
21		1	1	0.32	0	0	0	0	0
22		1	1	0.32	0	0	0	0	0
23		1	1	0.38	0	0	0	0	0
24		1	1	0.45	0	0	0	0	0
25		1	1	0.49	0	0	0	0	0
26		1	1	0.41	0	0	0	0	0
27		1	1	0.30	0	0	0	0	0
28		1	1	0.19	0	0	0	0	0
29		1	1	0.18	0	0	0	0	0
30		1	1	0.20	0	0	0	0	0
Totals	0	25	25		2	2	0	2	0

No Data Available

Ventura River Flow Assessment Water Year 2012 - 2013

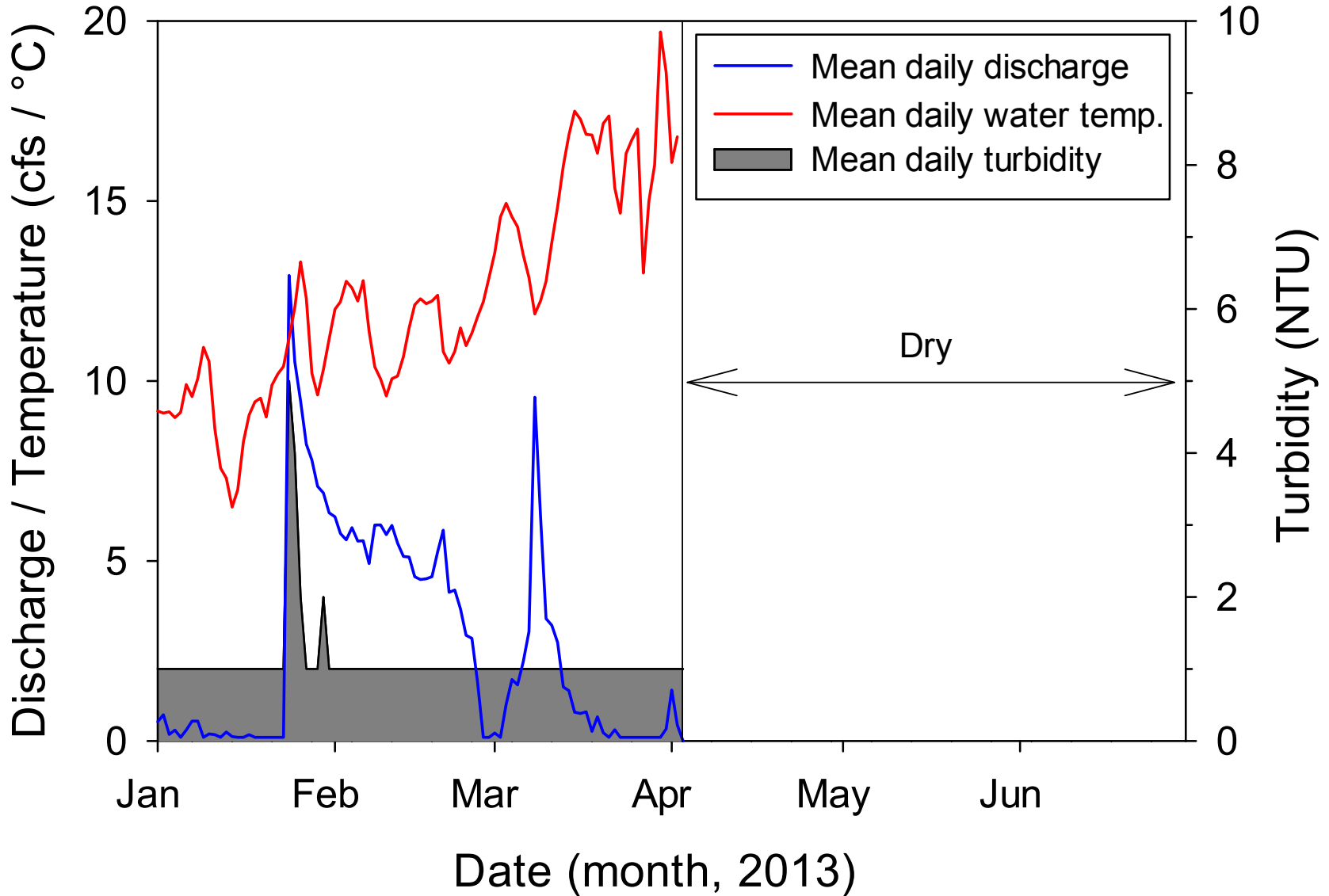
	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
May-13	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1		1	1	0.37	0	0	0	0	0
2		1	1	0.23	0	0	0	0	0
3		1	1	0.16	0	0	0	0	0
4		1	1	0.14	0	0	0	0	0
5		1	1	0.18	0	0	0	0	0
6		1	1	0.38	0	0	0	0	0
7		1	1	0.51	0	0	0	0	0
8		1	1	0.42	0	0	0	0	0
9			0	0.35	0	0	0	0	0
10			0	0.19	0	0	0	0	0
11			0	0.17	0	0	0	0	0
12			0	0.16	0	0	0	0	0
13			0	0.13	0	0	0	0	0
14			0	0.10	0	0	0	0	0
15			0	0.10	0	0	0	0	0
16			0	0.10	0	0	0	0	0
17			0	0.09	0	0	0	0	0
18			0	0.07	0	0	0	0	0
19			0	0.04	0	0	0	0	0
20			0	0.05	0	0	0	0	0
21			0	0.00	0	0	0	0	0
22			0	0.02	0	0	0	0	0
23			0	0.01	0	0	0	0	0
24			0	0.01	0	0	0	0	0
25			0	0.01	0	0	0	0	0
26			0	0.01	0	0	0	0	0
27			0	0.01	0	0	0	0	0
28			0	0.00	0	0	0	0	0
29			0	0.00	0	0	0	0	0
30			0	0.00	0	0	0	0	0
31			0	0.00	0	0	0	0	0
Totals	0	6	6		0	0	0	0	0

No Data Available

**Ventura River Flow Assessment
Water Year 2012 - 2013**

	(1)	(2)	(1)+(2)		(3)	(4)	(5)	(4)+(5)	(5) X 1.98
	Source Stream Daily Flows				Robles Facility Daily Flows				
	Matilija Ck	North Fork	Sum of Creek	Forebay	Fishway	VRNMO	Diversion	Total Inflow	Robles
Jun-13	D/S Dam	Matilija Ck	Flows	Avg. Depth	Ladder	Weir	Canal		Diversion
	(cfsd)	(cfsd)	(cfsd)	(ft)	(cfsd)	(cfsd)	(cfsd)	(cfsd)	(AF)
1			0	0.00	0	0	0	0	0
2			0	0.00	0	0	0	0	0
3			0	0.00	0	0	0	0	0
4			0	0.00	0	0	0	0	0
5			0	0.00	0	0	0	0	0
6			0	0.00	0	0	0	0	0
7			0	0.00	0	0	0	0	0
8			0	0.00	0	0	0	0	0
9			0	0.00	0	0	0	0	0
10			0	0.00	0	0	0	0	0
11			0	0.00	0	0	0	0	0
12			0	0.00	0	0	0	0	0
13			0	0.00	0	0	0	0	0
14			0	0.00	0	0	0	0	0
15			0	0.00	0	0	0	0	0
16			0	0.01	0	0	0	0	0
17			0	0.00	0	0	0	0	0
18			0	0.00	0	0	0	0	0
19			0	0.00	0	0	0	0	0
20			0	0.00	0	0	0	0	0
21			0	0.00	0	0	0	0	0
22			0	0.00	0	0	0	0	0
23			0	0.00	0	0	0	0	0
24			0	0.01	0	0	0	0	0
25			0	0.00	0	0	0	0	0
26			0	0.00	0	0	0	0	0
27			0	0.00	0	0	0	0	0
28			0	0.00	0	0	0	0	0
29			0	0.01	0	0	0	0	0
30			0	0.01	0	0	0	0	0
Totals	0	0	0		0	0	0	0	0

No Data Available



Appendix 11. Mean daily discharge, water temperature, and turbidity from the Robles Fish Facility during the 2013 fish passage season.

2014 Monitoring and Evaluation Study Plan for the Robles Fish Passage Facility and Related Studies



Photo of the Ventura River lagoon on 18 June 2013 with the sandbar closed. During the previous 12-months, the sandbar was closed approximately 88% of the time and represented the longest period of significant bar formation since monitoring began in 2005.

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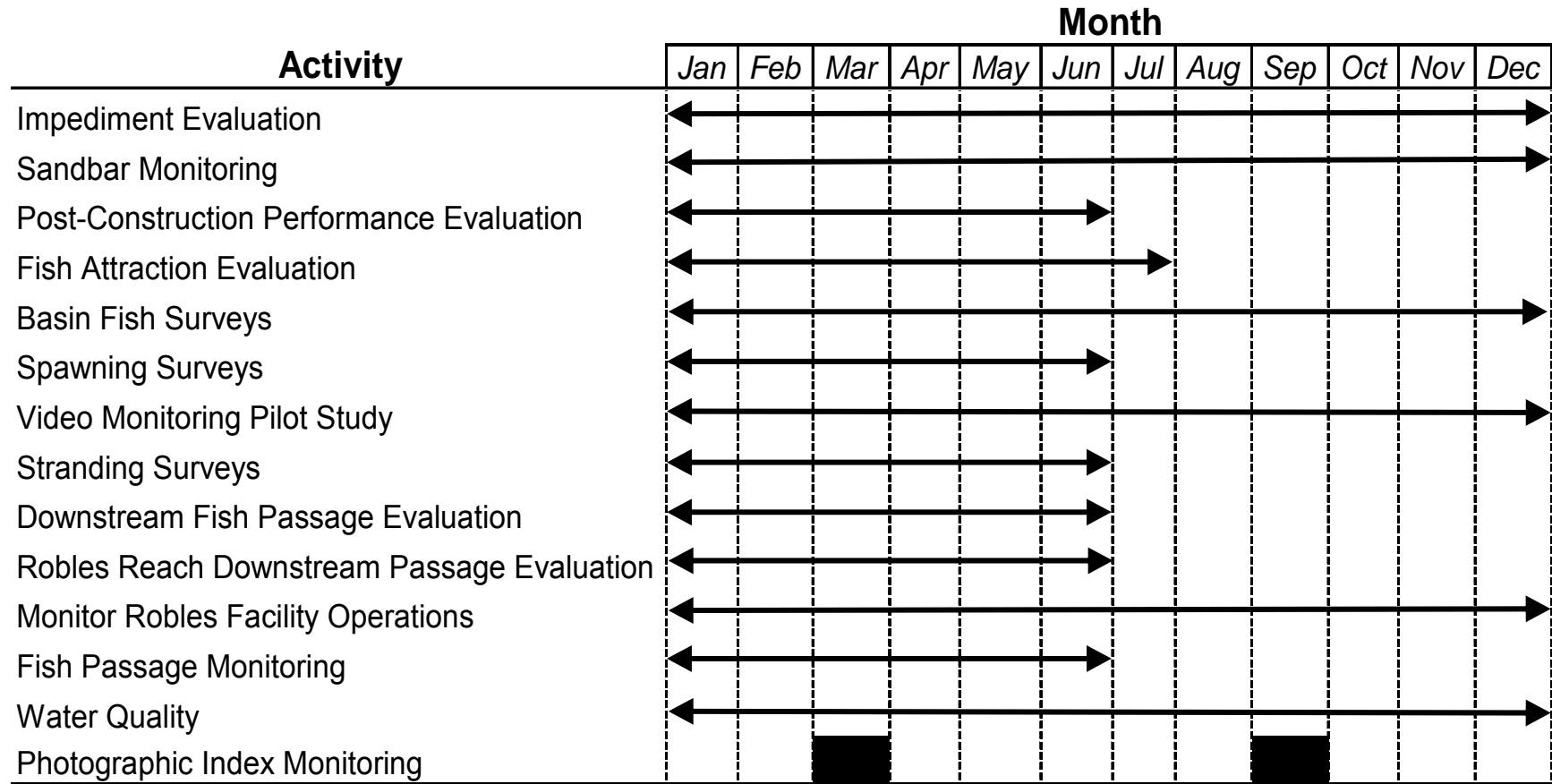
1.0 INTRODUCTION

As described in the Biological Opinion (BO) for the Robles Fish Facility (NMFS 2003), the annual monitoring and evaluation study plan is intended to identify the Robles Fish Facility activities, or other associated studies to be accomplished for a given year. The 2014 study plan includes activities related to the physical conditions in the Ventura River and the biological responses to those conditions. This study plan also includes aspects of the Casitas Fisheries Program monitoring plan in the form of extended study periods of BO required monitoring and evaluations and additional studies described in section 6.0 of this plan. The approximate timeline of these activities is identified in Table 1.

The monitoring, evaluations, and activities related to the modifications of the Robles Fish Facility, as outlined in the BO (NMFS 2003), were intended to achieve three main objectives:

- I. Monitor Fish Passage Facility operations and performance.
- II. Determine if the Fish Passage Facility functions and operates in such a fashion that migrating steelhead:
 - a. Successfully navigate into and through the facility, and
 - b. Move through the facility in good physical condition.
- III. Determine if the operations at the Robles Diversion are enhancing the opportunity for:
 - a. Adult steelhead to migrate upstream to the Robles Facility, and
 - b. Smolts and kelts to migrate downstream through the Robles Reach.

Table 1. Approximate timeline for activities associated with the 2014 monitoring and evaluation study plan.



2.0 UPSTREAM FISH MIGRATION IMPEDIMENT EVALUATION

Introduction

The ability of adult steelhead to swim upstream can be impeded during the migration season at times of low flow (NMFS 2003). Evaluations at shallow water habitat units (i.e., critical riffles) are commonly used to determine if impediments exist for adult and juvenile steelhead in California rivers (Dettman and Kelley 1986; Bratovich and Kelley 1988; Hager 1996). The Robles Reach was defined in the BO as the reach extending downstream 4 miles (6.5 km) from the Robles Fish Facility (Figure 1). The Robles Reach is a wide alluvial section of the Ventura River that is composed of active wash deposits of unconsolidated silt, sand, gravel, and boulders (Tan and Jones 2006). Due to this channel morphology and geology, alluvial channels like the Robles Reach have high infiltration rates that cause channel surface flow to rapidly recede and cease relatively quickly after storm events (Cooke et al. 1992).

An initial assessment of potential passage impediments in relation to river discharge was completed by ENTRIX (1999); seven sites were identified in, and downstream of, the BO-defined Robles Reach. The physical characteristics of the seven potential impediments were compared to the Thompson (1972) passage criteria. The Thompson (1972) passage criteria for adult steelhead at critical riffles is a water depth of 0.6 ft for 25% of the total transect width and a continuous portion equal to 10% of the width. The impediments were evaluated for criteria of 0.5 ft and 0.6 ft depths for 25% of transect widths and also for a total of 8 ft widths for both depths (ENTRIX 1999). The resulting discharge required to meet these criteria was estimated to be between 40 and 65 cfs. There have been several modifications to the Thompson passage criteria by other researchers; Dettman and Kelly (1986) on the Carmel River used a 0.6 depth over a 5 ft continuous section, on the Santa Ynez River a criteria of 0.6 ft depth over an 8 ft section was used (SYRTAC 2000), and Harrison et al. (2006) used a criteria of 0.6 ft depth over a 10 ft section on the Santa Clara River.

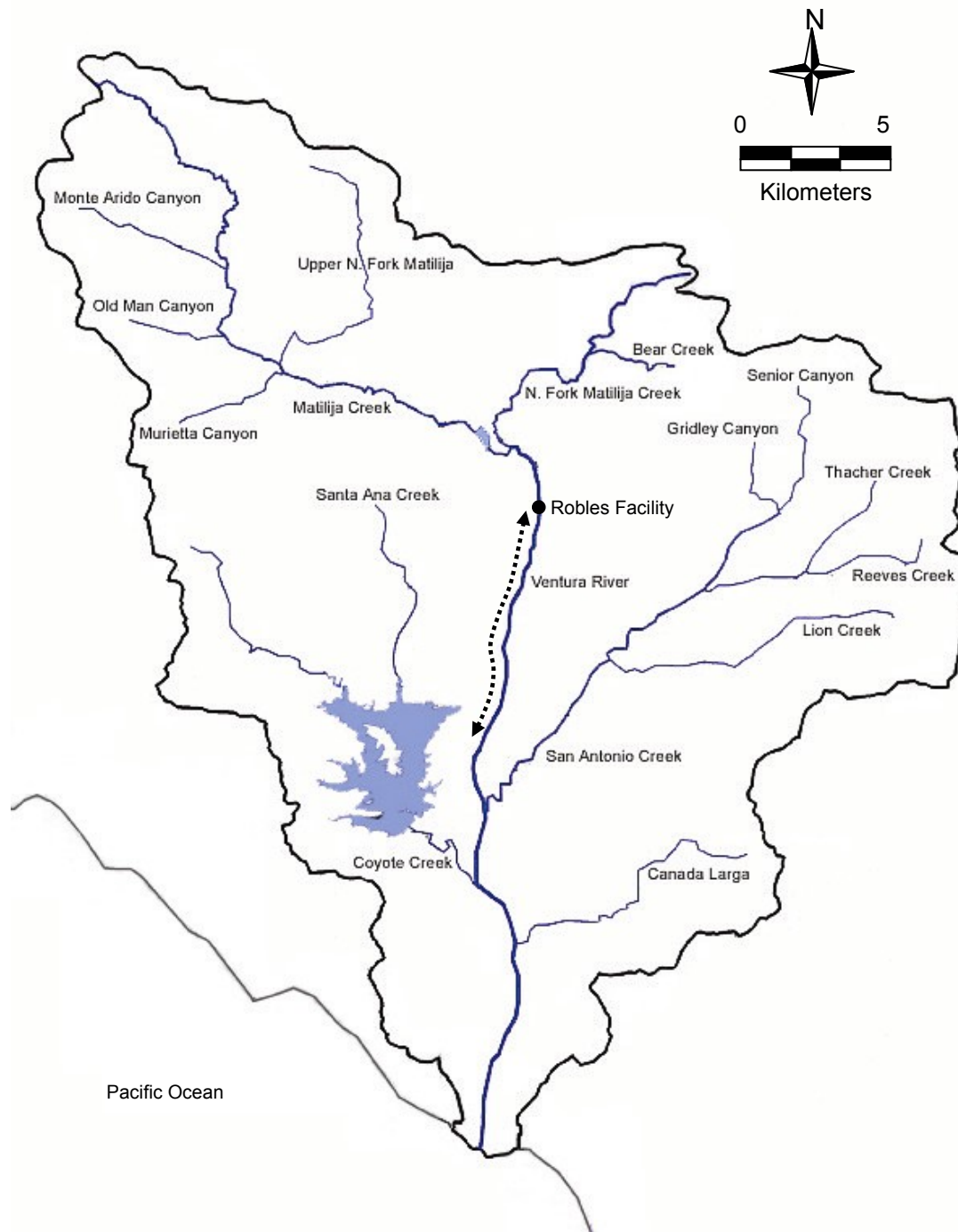


Figure 1. Basin map of the Ventura River. The Robles Fish Passage Facility is identified by the round black dot and the Robles Reach is identified by the dashed arrowed line downstream of the facility.

Thompson's (1972) depth criterion was based on fish body measurements and not on actual migration observations or data, and it has been observed that adult salmonids can successfully move through shallower riffles (Mosley 1982). The final evaluation of potential impediments will use one of the aforementioned criteria or a yet to be determined criteria that will be developed through the Cooperative Decision Making Process as described in the BO.

The objective of the upstream fish migration impediment evaluation is to assess factors that may impede steelhead's ability to migrate to the fish passage facility (NMFS 2003). Because of the potential for low flows to impede upstream fish migration, the Robles Reach will be the primary focus of the impediment evaluations (NMFS 2003).

Methods

Selected features that may pose an impediment to upstream passage will be surveyed multiple times during the fish migration season (January through June) to measure water depth, velocity, and channel width along a transect at each site. The selected sites (Table 2) will be surveyed over a range of discharges from approximately 20-100 cfs (the upper limit will be dependent on the ability to safely conduct the surveys), which could be correlated with discharge at the Robles Fish Facility. The number of repeated surveys will be dependent on the number and duration of significant rain events in a given year, rate of hydrograph recession, and time constraints due to other aspects of the monitoring and evaluation program. Because fewer samples have been collected at higher flows (e.g. from 80-100 cfs) during 2010 and 2011 (no data were collected during 2012 and 2013) greater effort will be made in 2014 to obtain measurements at higher flows. The impediment surveys will most likely be conducted over a period of 3-4 wet years given the natural variation of water conditions. The selected impediment sites will be resurveyed as many times as needed to develop a statistically rigorous data set to evaluate fish passage conditions. To provide data for the selection process, the Ventura River was surveyed from the mouth to the Robles Fish Facility (23 km) using standard stream survey techniques (CMWD 2008).

Table 2. Summary data of impediments sites selected for upstream fish migration impediment evaluations during 2014.

Site No.	Latitude (N)	Longitude (W)	km	Habitat Type ^a	Site Description	Length (m)	Slope (%)	Percent Substrate ^b						Active Channel Width (m)
								SO	SD	GR	CB	BD	BR	
10 ^c	34.365265°	119.311082°	11	RI	Near Casitas Springs at bottom of levy			TBD ^d						
3-2	34.373789°	119.308417°	12	RB	Near Casitas Springs at top of levy	22.0	3.7	10	5	10	65	10	0	27.0
4	34.384743°	119.310030°	14	RI	0.5 km upstream of San Antonio Cr. confluence	23.8	5.0	0	0	0	15	85	0	27.9
5-2	34.396095°	119.309537°	15	RI	0.4 km downstream of Santa Ana Blvd. bridge	8.4	7.0	0	5	5	45	45	0	50.6
6-1	34.411318°	119.301491°	17	CB	1.4 km upstream of Santa Ana Blvd. bridge	26.1	5.0	0	0	0	65	35	0	33.8
9	34.426708°	119.301831°	19	RB	0.2 km upstream of Hwy 150 bridge			TBD ^d						
7	34.438184°	119.299528°	20	RB	1.1 km upstream of Hwy 150 bridge	31.6	2.0	5	0	10	40	45	0	65.9
8 ^e	34.454189°	119.293143°	22	CB	1.2 km downstream of Robles Fish Facility	9.2	10.0	0	0	10	45	45	0	32.4

^aThe habitat types are: RB = rapid with protruding boulders, RI = riffle, and CB = cascade over boulders.

^bThe substrate types are: SO = silt and organics, SD = sand, GR = gravel, CB = cobble, BD = boulders, and BR = bedrock.

^cSite 10 was selected to replace Site 2.

^dInsufficient discharge prevented site characterization during 2012.

^eSite 8 will only be monitored if Site 10 is considered inadequate for monitoring purposes after sufficient flows have occurred.

The methodology followed Moore et al. (2002) and was equivalent to a level IV survey described in the CA Salmonid Stream Habitat Restoration Manual (Flosi et al. 2002).

Over the course of three meetings and one conference call between 24 January and 18 June of 2009, the Biological Committee (BC) for the Robles Fish Facility completed an impediment site selection process that culminated in the selection of eight sites that would be monitored for the impediment evaluation. The BC reviewed physical parameters of the 376 habitat units surveyed and general river characteristics that included: unit type, length, width, water depth, unit slope, longitudinal location (river km), height on step units, discharge at Foster Park and the Robles Fish Facility at the time of the surveys, and a river profile for the 23 km of the Ventura River surveyed. Upon completing an initial assessment of these data, a list of potential sites was developed that the BC then visited in the field on 27 May 2009 to determine if monitoring was warranted. This data and field assessment was conducted by regular BC members Mike Kinsey (BOR), Stan Glowacki (NMFS), Mary Larson (CDFG), and Scott Lewis (CMWD). Mike Gibson (CMWD) and hydrologists Bob Hughes (CDFG) and David Crowder (NMFS) were also involved in this assessment and selection process.

The moderately sized flow event that peaked on 20 March 2011 at approximately 20,000 cfs at the USGS Foster Park gage station (a recurrence interval of about 6 years) significantly altered some impediments sites necessitating modifications to the monitoring. A BC field trip on 11 January 2012 was conducted to review alterations that occurred and select replacement sites for ones that no longer appeared to be impediments. Regular BC members Ned Gruenhagen (BOR), Rick Bush (NMFS), Mary Larson (CDFG), and Scott Lewis (CMWD) participated in this review and selection process of sites; Mike Gibson (CMWD) and hydrologist Bob Hughes (CDFG) were also involved in this assessment and selection process. Site 2 was no longer considered a potential impediment and was replaced with Site 10 that was identified during the January field trip. Site 8, which was originally selected during dry conditions, was not considered to be as restrictive as other potential sites after evaluating data collected during 2010 and 2011. Site 8 will be replaced with Site 9, which was identified during

the January field trip. The complete list of impediment sites that the BC visited and determined to be satisfactory for monitoring during the 2014 season can be found in Table 2. However, at the time of the new site selections, insufficient flows were available to make final site selection or transect placements. As soon as sufficient flows exist, available members of the BC will visit sites 9 and 10 to evaluate them. If after further evaluation, Site 10 appears to be inadequate, then Site 8 will continue to be monitored during the 2014 season. To provide a qualitative visual assessment of selected sites during periods of higher discharge (>50 cfs), a short video will be taken at sites that are conducive to such an assessment. It is believed that sites 5-1, 6-2, 7, and 9 can be assessed using video; other sites have vegetation and geomorphic limitations to make video useful.

2.1 Sandbar Monitoring

Introduction

The Ventura River, like many other California rivers, can develop a seasonal sandbar at the mouth during summer through fall that is breached by higher river flows in the late fall or winter. From 2005 through 2013 of the fish augmentation season, the sandbar only briefly form in April of 2007 and extensively during 2013 (CMWD 2013). If a sandbar does develop, which occurs more often during dry years like the previous two, the resulting lagoon can provide important rearing habitat for steelhead juveniles. This happens because abundant food resources are available to facilitate physiological and behavioral changes associated with smoltification (Cannata 1998). The resulting smolt condition after lagoon rearing appears to enhance marine survival due to increased size of smolts at ocean entry (Bond et al. 2008).

The primary objective of the sandbar monitoring at the mouth of the Ventura River will be to determine if criteria for initiation of the fish passage augmentation season have been met (NMFS 2003). This will be done by observing the timing and frequency of sandbar breaching during the augmentation season. The BO states the fish passage

augmentation season will run from 01 January through 30 June of each year and will commence after the sandbar has been breached at least once during the current year's fish flow operations season.

Methods

Beginning in mid-December, weekly surveys will be conducted to determine the status of the river/ocean connection. This will be done to anticipate the conditions prior to the start of the fish passage augmentation season. If the sandbar has been breached as of 01 January, signaling the start of the fish passage augmentation season, the sandbar will be monitored once every two weeks for the remainder of the fish passage season. If the sandbar has not been breached, it will also be monitored once every two weeks until a storm event (as defined in the BO) occurs. At that time, the sandbar will be monitored daily to determine when it has been breached. If the sandbar does not breach following a storm event, it will again be monitored every two weeks until the next storm event occurs. If the storm event breaches the sandbar, it will be monitored once every two weeks for the remainder of the fish passage season. From 01 July through 31 December, the sandbar will be monitored at least once per month to provide river/ocean connection status and information for within and among year variation.

During each sandbar inspection, observations and recordings will be made that included: date, time, status of the sandbar, general location of the mouth, tidal state and stage, water temperature, discharge from the USGS gage at Foster Park (station # 11118500), and discharge at the Robles Fish Facility.

Discharge measurements will be taken periodically, if time allows, over a range of river flows to determine any general trends between the USGS gage station, or any other upstream gage station, and the discharge at the mouth. Discharge from the Ojai Valley Sanitary District treatment plant will be included in calculations to account for the additional water added to the lower river reach (which is typically 2-3 cfs). These discharge measurements will be taken to better understand what determines the timing

and frequency of the sandbar breaching and forming events. Measurements of the estuary/lagoon surface area and depth will also be collected 2-3 times per year to correlate with sandbar breaching and discharge; this may be useful to determine potential steelhead rearing capacity. The surface area measurements will be conducted during March and September of each year. If the sandbar has not formed before the September sampling event, and it subsequently forms during the year, the area will be measured for a third time.

3.0 EVALUATE FISH MOVEMENT THROUGH THE PASSAGE FACILITY

3.1 *Water Velocity and Depth Validation Evaluation*

The intent of the water velocity and depth validation evaluation program is to determine if the conditions throughout the Robles Fish Facility are suitable for upstream and downstream migrating steelhead (NMFS 2003). The post-construction performance evaluation study plan (Rodgers 2006) has been completed and implementation initiated. Casitas entered into an agreement with HydroScientific West to complete the first phase of the hydraulic testing, which began during 2010. Performance test plans will be continued and will be completed as flows allow (see Rodgers 2006 for complete list of facility components to be tested). The 2014 data collection will focus on components that can be completed during lower flows (e.g., entrance pool, entrance gates, and rock weirs).

3.2 *Fish Attraction Evaluation*

Introduction

River discharge has been shown to be one of several key environmental factors initiating and facilitating steelhead and other salmonid adult and juvenile migrations in natural fluvial environments (Shapovalov and Taft 1954; Banks 1969; Spina et al. 2005). As adults and juveniles approach fish passage facilities, proper discharge and water

velocities are important to ensure successful passage through any facility (Clay 1995; Beeman and Maule 2001).

The entrance of the fish ladder at the Robles Fish Facility is located approximately 20 m downstream of the spillway gates and is where fish migrating upstream enter and where fish migrating downstream exit the facility. The downstream end of the ladder is adjacent to a large pool (entrance pool) that was scoured out and maintained by high discharges through the spillway gates. Maximum discharge at the exit of the ladder is 171 cfs (50 cfs through the entire ladder and an additional 121 cfs at the lower end of the ladder through the auxiliary water system). The distance from the entrance pool to the lower most interim rock weir downstream is approximately 200 m. This reach includes all four rock weirs and the facility's low flow road crossing, which is also the discharge measurement weir. The habitat unit types that can be used by migrants in this reach includes four pools created by the weirs, a long glide created by the low flow road crossing, a small riffle, and the large entrance pool. This reach immediately downstream of the Robles Fish Facility is the area of interest and where fish attraction evaluations will be conducted.

The objective of the fish attraction evaluation is to determine if adult or juvenile steelhead are holding immediately downstream of the Robles Fish Facility during the fish passage augmentation season (NMFS 2003).

Methods

There will be three separate methods employed to determine the presence of *O. mykiss* for the fish attraction evaluations. The methods will include: 1) a bank/snorkel survey on a weekly basis during the fish passage season, 2) post-storm underwater video monitoring at the fish ladder entrance during the ramp-down period, and 3) post-storm bank/snorkel surveys in the entrance pool during the ramp-down period.

The weekly season-long bank/snorkel surveys will be conducted throughout the fish passage season from January through June of 2014. The particular survey methodology used will be determined based on water visibility, river discharge, and expected steelhead life history stage at the time of the survey. From January through March, when the vast majority of adults are expected to be migrating upstream (Shapovalov and Taft 1954), bank surveys will be the predominant method used. Snorkel surveys will be the predominant method used from March through the remainder of the fish passage season when steelhead smolts are expected to be migrating downstream (Shapovalov and Taft 1954; Spina et al. 2005). Bank surveys will be conducted by one or two surveyors in an upstream direction. The surveyors will wear polarized sunglasses to reduce water surface reflection. Snorkel surveys will be conducted by one or two surveyors in an upstream direction.

All fish species will be identified and enumerated to the greatest extent possible allowed by river conditions and fish densities at the time of the surveys. When possible, the TL of *O. mykiss* will be estimated to the nearest cm. If environmental conditions, fish densities, or time constraints make it impractical, then *O. mykiss* will be grouped into five categories that correspond to life history stages. The categories will be: 0-5 cm (fry), 6-13 cm (parr), 14-28 cm (smolt), 29-37 cm (rainbow adult, large smolt, or small adult steelhead), and 38+ cm (large adult rainbow trout or adult steelhead). These categories may be changed as more data are gathered that help refine life history stages. In addition to the downstream surveys, upstream observations will also be conducted in the screenbay and area immediately upstream of the low-flow fish exit in the forebay. The distance covered by this survey will be approximately 140 m. If an adult steelhead is observed during the Fish Attraction surveys, additional observations will be made by conducting 2 surveys each day for 7 days or until the steelhead passes through the ladder or moves out of the study reach.

The post-storm underwater video monitoring will be conducted once a BO defined storm event occurs. After a storm event occurs, a video camera will be installed at the entrance of the fish ladder to determine when adult steelhead are entering the ladder

during the 10 or 12-day ramp down period. The video camera will be mounted on a bracket adjacent to the fish ladder entrance so it can be lowered into place to provide monitoring following a storm event. The camera will be installed within 24 hours past the storm peak, or as soon as conditions will allow so that equipment is not damaged. The camera will be positioned near the bottom of the entrance where adult steelhead are more likely to be migrating. The camera will be angled to capture as much of the lower portion of the entrance as the field of view will provide while still allowing for identification of any adult steelhead. The camera will be connected to a DVR that can record for the entire 10 or 12-day augmentation period. It is not known how successful this monitoring activity will be since it has not been conducted prior to 2014. Video monitoring changes may be necessary after it has been attempted during the first storm event. If this method and data allow, summaries will be done to make comparisons to Riverwatcher data.

Post-storm bank/snorkel surveys will be conducted in the entrance pool during the ramp-down period. This will consist of daily surveys during the 10 or 12-day augmentation period. Beginning the day after a BO defined peak event, a Secchi visibility will be measured in the entrance pool. It is anticipated that the turbidity will be too high initially after the peak to conduct snorkel surveys. Therefore, bank surveys will be conducted until the visibility is determined to be sufficiently to effectively detect *O. mykiss*. Based on previous Secchi measurements during post-storm events, the change to snorkel surveys will likely occur around a visibility of about 1 m. The amount of water released may cause unsafe conditions for snorkeling. If storm flows occur in 2014, the discharge that snorkel surveys can safely be conducted will be determined.

3.3 *Stranding Surveys*

After a BO defined storm event (i.e., 150 cfs and a doubling of flow from previous 3 days), and the discharge downstream of the Robles Fish Facility recedes from 50 cfs to 30 cfs, a bank survey will be conducted in the Robles Reach after the transition has been made. This survey will be done to determine if any steelhead have become

stranded, or may become stranded, and help determine steelhead migration success through the Robles Reach. The location of any steelhead will be recorded and revisited to determine stranding potential. Habitat surveys (as described in section 2.0) will be reviewed to identify potential holding areas (based on literature-described holding habitat) where steelhead may become stranded and thereby will decrease the time required to complete the stranding survey. It is anticipated the stranding survey will take approximately 1-2 days to complete per storm event and will be logistically incorporated into other monitoring activities.

3.4 Downstream Fish Passage Evaluation

Introduction

Passage evaluations of migrating salmonid through fish passage facilities have been conducted throughout the western United States for many years. Determining if a facility is operating as designed and not causing harm to the intended fish species has been evaluated using many different methods. Early work typically entailed trapping fish and tagging them before entering a facility and recapturing them after exiting and visually inspecting the fish for injuries. Radio telemetry, acoustical telemetry, and PIT tagging have been conducted extensively in recent years.

There are two objectives for the downstream fish passage evaluation. The first objective is to determine if steelhead are successfully passing through the Robles Fish Facility. The second objective is to capture and examine steelhead smolts and kelts and determine if there are any injuries that may have been caused by downstream passage through the Robles Fish Facility (NMFS 2003).

Methods

A weir trap will be operated approximately 100 m downstream of the Robles Fish Facility. The weir trap will consist of a live-box (120 cm on all sides) with an internal

fyke situated in the center of the channel and thalweg. The holding live-box will be constructed out of PVC pipe for the internal frame and covered with plastic fencing with 1.3-cm diagonal openings. The inside of the live-box will be entirely covered with netting with 6-mm holes (1/4 inch) to minimize any injuries while in the trap and during fish removal. A plastic fence (3-cm openings) supported by T-bar fence posts will extend upstream on both sides of the live-box at 30° angles into the river channel and end at the left bank. Near the right bank a gap of approximate 1 m will remain so adult steelhead can pass upstream by the trap location. Two-meter deflector wings will be positioned approximately 14 m upstream of the fencing to guide shore-oriented fish toward the center of the channel (Figure 2). Even though steelhead smolts migrate primarily in the thalweg where velocities are highest (Kemp et al. 2005), these deflectors will increase the probability of any shore-oriented smolts directed towards the thalweg. To confirm flow conditions are suitable for capture, water velocity will be measured at 1-m intervals on the upstream side of the weir and trap at 30-75 cfs.

Since the vast majority of downstream steelhead migrants are expected to be captured from mid-March through mid-June (Shapovalov and Taft 1954; Dettman and Kelley 1986), the trap will be operated from mid-March through June or until water temperatures exceeded a daily mean of 22°C, which could negatively impact captured fish (SYRTAC 1999). In addition, if the surface water connection in the Robles Reach is lost during the trapping period, the trap will not be operated.

The trap is intended to be operated only at lower river flows when it would be effective at capturing downstream migrants. The upper limit of river flow operation will be determined after the first year of operation when flow conditions exist. Because base flow conditions are more likely to be used for downstream passage by steelhead (NMFS 2003), a weir trap was chosen for this evaluation.

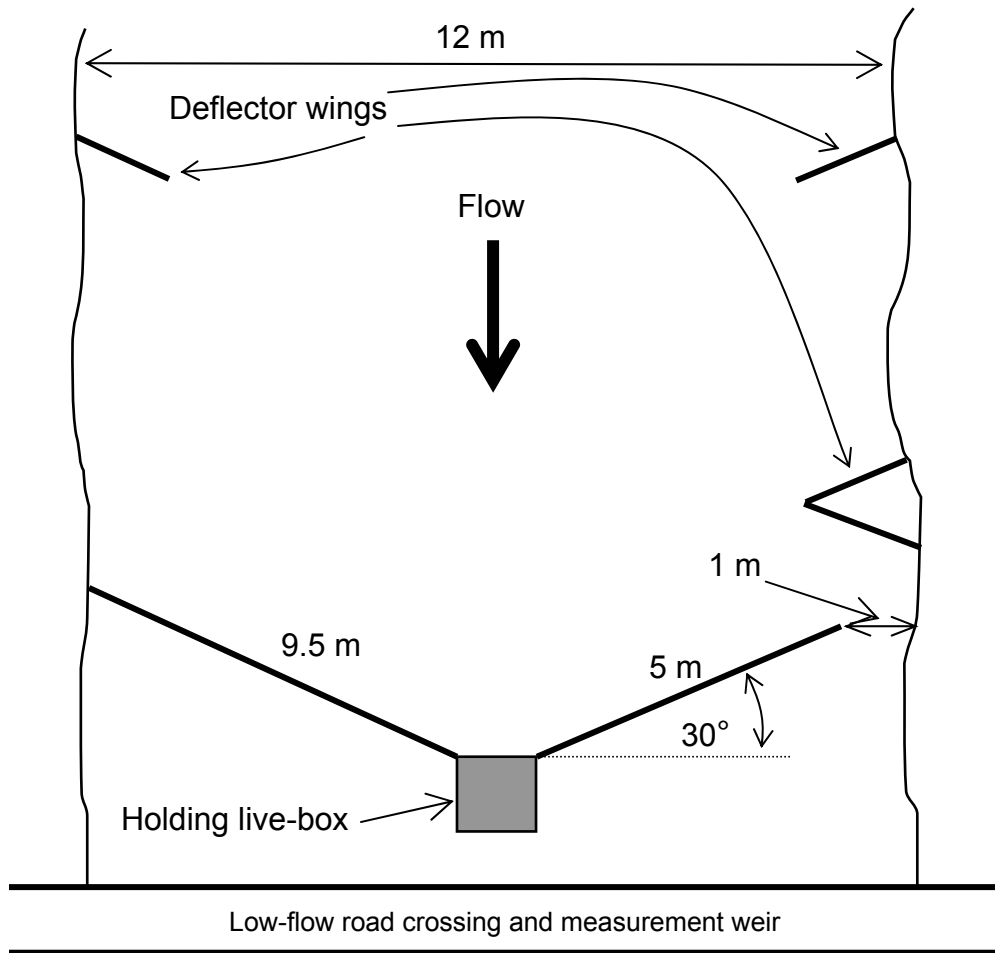


Figure 2. Top view of downstream migrant smolt trap layout in the Ventura River below the Robles Fish Facility.

When the trap is operational, it will be checked twice per day (in the morning and late afternoon). During 2009, 95% of the downstream migrating *O. mykiss* were detected by the Riverwatcher in the morning from 02:00-06:00 h (CMWD 2009). Data to be collected will include: fork length (mm), weight (g), and a subsample of scale and tissue samples for aging and genetic analysis. Fish that are to be handled will be put into an aerated container with a solution of tricaine methanesulfonate (MS-222) and Stress Coat[®]. The anesthesia MS-222 is registered by the US Food and Drug Administration for use with food fish (Summerfelt and Smith 1990). The level of anesthesia needed is generally stage 2-4, which is a deep sedation to a total loss of equilibrium (Summerfelt and Smith 1990). To achieve a short induction time of 3-4 minutes, as recommended by Summerfelt and Smith (1990), a concentration of 60-100 mg/L of MS-222 will be

used. This concentration allows for a recovery time of less than 5 minutes (Summerfelt and Smith 1990), but from previous experience, anesthetized steelhead smolts will most likely recover in less than 3 minutes (Lewis 2001, 2002, and 2003). Stress Coat[®] is a synthetic slime coating that replaces the natural secreted slime that is lost during capture and handling of fish. It will be added to both the anesthetizing and recovery containers at the manufacture's recommended concentration of 0.25 ml/L.

Prior to the operation of the downstream weir trap, an annual fish handling training class is conducted with the seasonal fisheries technicians and full-time biologists. This training class will be conducted with hatchery rainbow trout and all techniques and procedures are practiced until the fisheries personnel are fully proficient. Additionally, annual training will occur with all aspects of the monitoring and evaluation program so all personnel are proficient at each task that they may be assigned.

Scale loss will be assessed by examining captured fish and estimating scale loss over three zones on each side of the fish. The three zones will be: 1) the caudal zone included the area above and below the lateral line from the caudal fin to the posterior end of the dorsal fin, 2) the dorsal zone will include the area anterior of the caudal zone to the operculum and above the lateral line, and 3) the ventral zone will include the area anterior of the caudal zone to the operculum and below the lateral line (Marine and Gorman 2005). The percentage of scale loss in each zone will be estimated and then weighted by each zone's area proportional to the total area of all six zones. Summing of the resulting weighted scale loss will yield the total area of each fish with scale loss. Any physical injury will be noted and categorized among the fins, skin, eyes, and head. Within each anatomical category, there are from four to six types of injuries that could be documented. In general, the scale loss and physical injury methods followed those of Marine and Gorman (2005) and McNabb et al. (1998).

Monitoring of smolts at Robles Fish Facility will only be conducted with one weir trap initially to determine if there are any significant physical injuries or scale loss occurring. During 2011, a large percentage of captured smolts incurred small (2 x 5 mm) nose

injuries during the trapping season. It was assumed that this was caused from handling during removal from the trap based on observations during capture, location of injuries, and shape of injuries relative to the trap material. To confirm this assumption, a trap handling experiment was conducted during 2012. The results from the experiment found that the addition of netting with 6-mm holes to the inside of the trap minimized the nose injury. However, if significant scale loss or physical injuries are occurring that can not be attributed to trapping, and the Robles Biological Committee deems it necessary, then a second trap will be installed and operated upstream of the Robles Fish Facility. If an upstream trap is operated in the future, steelhead will be captured, marked, and released before they enter the Robles Fish Facility. Any recaptured smolts in the trap downstream of the facility will be used to determine if injuries are the result of facility passage or trapping.

Captured smolts will also be PIT tagged and released approximately 500 m upstream of the Robles Fish Facility. To ensure PIT tagged smolts are released during the period of active downstream migration, smolts will be tagged at a ratio of 1:2 (i.e., for every 2 smolts radio tagged, see section 4.0, there will be 1 smolt PIT tagged). No smolt will receive both tags. This will be done to determine condition and travel rate for any recaptured fish in the trap. A PIT tag antenna was installed in the fish crowder in 2009 that could also provide information about intra-ladder passage behavior. Additionally, the recapture rate will be calculated to estimate trap efficiency. This can be used to determine if enough fish are being captured to provide useful information (NMFS 2003).

4.0 DOWNSTREAM FISH MIGRATION THROUGH THE ROBLES REACH

Introduction

When the number of fish to be physically handled in a study is a concern, as with an endangered species, the method of radio telemetry can be a useful method over others like extensive trapping and handling (Hockersmith et al. 2000). Telemetry migration information of steelhead smolts in the Ventura River would allow for the determination of

survival, travel times and rates through select reaches, migration relative to river discharge, habitat use, and passage success through critical riffles. By tracking the fish until the transmitter batteries die, it is anticipated that downstream migration can be monitored all the way to the Ventura River estuary/lagoon, which could also provide important data on estuary rearing.

The purpose of the downstream migration evaluation is to determine how successful smolts are at migrating through the Robles Reach (NMFS 2003). Because of the limited number of steelhead smolts most likely passing downstream through the facility at this time, a pilot study using radio telemetry will be used for evaluations.

Methods

During the estimated smolt migration period of mid-March through mid-June, up to 18 steelhead smolts captured in the weir trap downstream of the Robles Fish Facility will be tagged with radio transmitters. Half ($n = 9$) will be released downstream of the weir trap and half will be released 500 m upstream of the facility. Only steelhead smolts that exhibit steelhead smolt characteristics and are in good physical condition will be tagged. The smolting characteristics include: increased skin reflectance, larger heads, slimmer bodies, longer caudal peduncle, loss of parr marks, and darker margins of the dorsal and caudal fins (Beeman et al. 1995; Haner et al. 1995; Ando et al. 2005). These characteristics have been used in southern California to identify steelhead smolts migrating downstream (Spina et al. 2005).

The radio transmitters used will be manufactured by Advanced Telemetry Systems (ATS) and will have transmitter radio frequencies ranging from 149.000 to 150.999 MHz and a pulse rate of 30 per minute and a pulse width of 18 ms. Each tag will have a unique radio frequency so that individual fish, if needed, could be tracked during their downstream migration.

It was originally estimated, that at the most, 1-2 tags would be lost due to regurgitation during the 2011 study period; Hockersmith et al. (2000) measured a short-term regurgitation rate of 1.3% using the gastric method, Adams et al. (1998) measured a regurgitation rate of 4.2%, and Jepson et al. (2001) measured a 5.0% regurgitation rate. Beyond the 30-40 day study period, the regurgitation rate was expected to increase substantially. However, the first year revealed a much higher regurgitation rate (62%) than expected. Consequently, an alternative radio tag attachment method is needed to ensure sufficient data collection given the limited number of smolts and variable annual trapping opportunities.

During the 2012 BC committee meeting, the high loss of gastric tags was discussed and it was acknowledged that tag loss limited data collection of smolt migration. Consequently, alternatives to gastric tagging were discussed and externally attached tags were reasoned to be a method to ensure tag retention starting in 2013.

The external transmitters will weigh 1.9 g and have an expected operational life of about 58 days. The dimensions of the ATS tag (model number F1920) will be 16 mm long and 8 mm in diameter. The ratio of tag weight to steelhead weight in the air will be $\leq 5\%$, which will ensure that physiological stress will be minimized (Jepsen et al. 2001) and swimming performance will not be altered (Brown et al. 1999). Based on the expected sizes of captured smolts, estimated from steelhead smolts captured during 2011, the maximum tag-to-weight ratio will be closer to approximately 3%. The steelhead will be anesthetized with a solution of MS-222 and placed on a Stress Coat[®] soaked foam pad dorsal side up and the tag will be attached externally just below the dorsal fin (Winter 1983). Two hypodermic needles will be inserted through the musculature immediately below the dorsal fin. The radio tag will have two stainless steel wires (attached to the tag by the manufacture) that are inserted into the needle tips, the needles will then be pulled back through the musculature thereby leaving the attachment wires passing through the musculature. Each wire will have a small plastic washer and crimp placed on it and the excess removed. This attachment procedure will take about 1.5 minutes to complete (Lewis 2001). The fish will be allowed to fully

recover to assure they are behaving normally before released for migration tracking; typical recovery occurs in approximately 3 minutes based on previous steelhead radio telemetry studies (Lewis 2001, 2002, and 2003).

This method of attaching radio transmitters allows quicker recovery and resumption of normal activity (Winter 1983). Externally tagged smolts will be able to resume normal feeding habits immediately. The external attachment will allow for greater detection ranges and may enhance data collection. This method does have some drawbacks that must be considered. The external attachment requires the insertion of hypodermic needles that will break the epidermis and make the fish susceptible to bacterial, fungal, or viral infections. During a test of this tag attachment method, 10 steelhead smolts were tagged and held in a hatchery circular tank for 51 days and no tags were lost and no mortalities occurred (Lewis 2001).

After tagging and recovery, the steelhead will be released into the first rock weir pool downstream of the trap or 500 m upstream of the Robles Fish Facility. Tagged steelhead will be located on a daily basis as they migrate downstream for the first week after release and then at least weekly until the batteries die, the fish is lost, the fish enters the ocean, the tag is lost, or the fish is found dead. Mobile tracking will be done using an ATS radio telemetry receiver and 3-element Yagi antennae. Initial broad scanning will be accomplished from locations at higher elevations above the river channel accessed by a vehicle driven on roads near the river. Once the general location of a tagged steelhead has been found, the final location will be determined on foot. This method will yield locations of ± 10 m (Lewis 2001). All determined locations will be recorded on a map, with GPS locations if accessible, and a field datasheet. Every reasonable effort will be made to determine the final location of each radio tagged steelhead. If any mortality occurs, the cause of the mortality will be determined if possible. If a tagged smolt has not moved for more than a week, or two detections, then a more detailed effort will be undertaken with snorkeling, if needed, to determine if the tag was lost or mortality occurred. Two fixed stations will be located in the Robles Reach, one near the downstream end of the reach (upstream of Santa Ana Blvd.

bridge) and one near the middle of the reach (upstream of Hwy 150 bridge). These will be used to more precisely determine travel rates of tagged fish through the Robles Reach than mobile tracking.

Using the method of radio telemetry to monitor migration through the Robles Reach will provide more usable information while using fewer fish to gather that information; compared to using an additional trap at the downstream end of the Robles Reach. It is estimated that no more than one steelhead mortality will occur due to the method and this initial sample size

5.0 LONG-TERM MONITORING COMPONENTS

5.1 *Monitor Robles Facility Operations*

To document that the Robles Diversion Dam and Fish Passage Facility are operated as outlined in the BO (NMFS 2003), data will be collected using built-in automated sensory equipment for the Robles forebay inflow, diversion flow, fish ladder flow, auxiliary water flow, and spill flow. This information will be reported along with projected flow release schedules and actual releases for BO-defined storm events. This data will be graphed for hourly data for 3 days prior to every storm event, 10-12 days during the flow augmentation period, and 1 day after the augmentation period for a total of up to 16 days for each storm event.

5.2 *Fish Passage Monitoring*

Introduction

Monitoring of migratory fish through passage facilities has been conducted using many different methods that include: visual counting, trapping and hand counting, continuous video recording, PIT tagging, radio telemetry, and acoustical telemetry. In each fish passage application, the particular physical and biological conditions (e.g., variable discharge, turbidity, debris, size of facility, and number of fish) usually dictate which

method would be most effective. Newer technologies have been employed to improve fish passage monitoring in turbid conditions specifically. One such monitoring device is the Vaki Riverwatcher[®] (Riverwatcher). The Riverwatcher has the capability to operate in greater turbidity than more traditional monitoring methods. Because of this advertised capability, the Technical Advisory Group selected the Riverwatcher as the monitoring method for the Robles Fish Facility.

The primary objective of fish passage monitoring is to provide an index of upstream adults and downstream kelts migrating through the Robles Fish Facility (NMFS 2003). The Riverwatcher was advertised to detect fish down to a fish body depth of about 40 mm (Vaki 2003). However, it was not known how well it would work for smolt-sized fish given the debris load in the Ventura River (NMFS 2003).

Methods

Upstream and downstream migrating fish will be monitored with the use of the Riverwatcher as they pass through the Robles Fish Facility. The Riverwatcher is located in the fish bypass channel, which is the channel between the fish ladder and fish screens. The Riverwatcher consists of two scanner plates with light diodes that transmit beams of infrared light through the water to a corresponding receiver plate. When a fish swims (or debris drifts) through the infrared light beams, it breaks the light signal and a silhouette of the fish is recorded on a computer. In addition, the scanner triggers an underwater camera to record a 10-second video clip (25 frames/sec). Presently, only fish swimming upstream can be recorded in the Riverwatcher computer system because it was only designed for one camera, and that camera is located on the upstream side of the scanner. Two additional cameras have been installed so that video of downstream fish can be captured on a digital video recorder (DVR). A third camera will be added near the scanner plates before the start of the 2014 passage season to help identify possible causes for false detections by the Riverwatcher. The downstream digital cameras record continuously at 12 frames/sec and capture about 2-3 weeks of data until the DVR data storage drive is full (each week of data requires

approximately 4 h to review). These two downstream cameras are independent of the Riverwatcher and will have to be reviewed separately for downstream detections. Once the DVR memory is full, it will be exchanged with a second DVR and the data will be reviewed before the DVRs have to be exchanged again. Other data recorded when the Riverwatcher scanner is triggered will be: date and time, length of the fish (from a length/height ratio), swimming speed (m/sec), and direction of the fish movement (upstream or downstream). The Riverwatcher scanner is positioned at the bottom of an aluminum frame covered with 1/2 inch aluminum bars (crowder), spaced 1 1/2 inches on center resulting in 1 inch spacing between the bars, which directs the fish to swim between the scanner plates. The crowder can be raised and lowered in guide slots of the fish bypass channel with the aid of an A-frame hoist for cleaning or repair. The Riverwatcher will be operated during the entire flow augmentation season as long as sufficient water elevations in the fish bypass are present and debris and turbidity are low enough so that the crowder will not be damaged and the Riverwatcher will function. During periods of higher debris, cleaning and inspections will occur multiple times per day, at times of low debris, cleaning and inspections only occur every 2-3 days.

Prior to 2010, each upstream and downstream Riverwatcher detection was reviewed and classified as an adult steelhead, *O. mykiss* non-adult steelhead, other species if fish are identifiable, fish unknown, fish probable, or false detection (Figure 3). At the request of NMFS, this classification system was modified during the review process of the 2010 report. All confirmed *O. mykiss* will be classified solely as *O. mykiss*. The classifications will be determined by using the combination of silhouette images, estimated lengths, and video clips. In addition, if larger adult sized *O. mykiss* are detected, a measurement of eye diameter and standard length (SL) will be estimated from the video clip to calculate morphometric ratios that will be compared to known steelhead and rainbow trout. A commonly used method is to develop ratios of body measurements for comparison so that the effects of body size can be removed and actual differences can be determined (Strauss and Bond 1990).

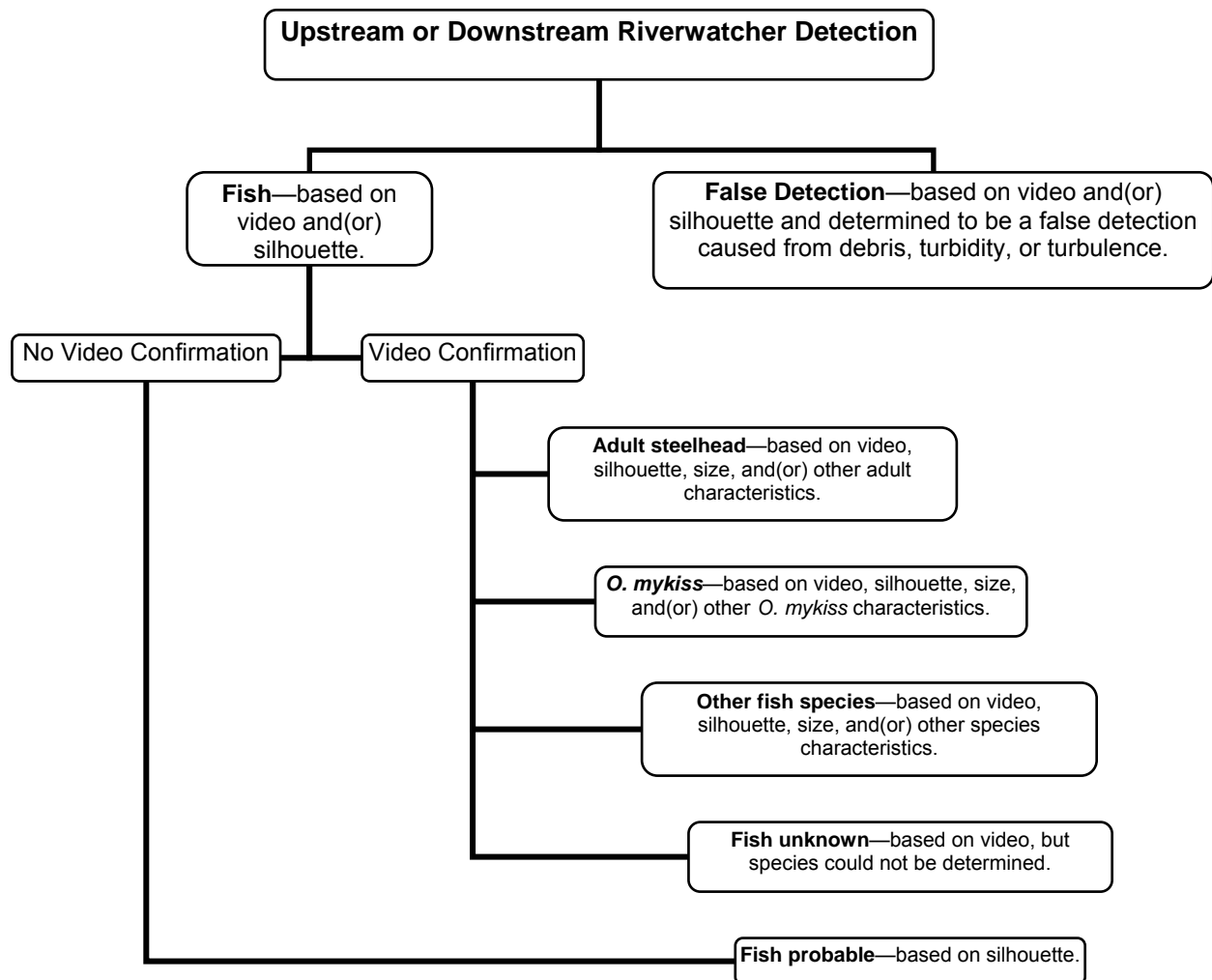


Figure 3. Riverwatcher detection classification flow chart that outlines the pathways to classifying upstream and downstream detections.

This will be accomplished by comparing SL to the ratio of eye diameter and SL in linear regression. Standard length is the length from the snout to the end of the hypural plate near the end of the fleshy caudal peduncle, which is unaffected by caudal fin deformities (Anderson and Neumann 1996). Before 2010, the adult steelhead classification was used if the fish observed was an *O. mykiss* and displays the typical characteristics of an adult steelhead; such as black spotting on dorsal, adipose, and caudal fins; black spotting on dorsal side of body; slivery body; vertical posterior edge to caudal fin; and the size is similar to other confirmed adult steelhead in the region. *O. mykiss* non-adult steelhead classification will be used if the fish observed is an *O. mykiss* and displays the characteristics of a resident *O. mykiss*: lobed caudal fins and darker color. Because

of the difficulty in distinguishing between resident and anadromous *O. mykiss* of smaller sizes, no further classifications will be used for *O. mykiss*. Even though many of the *O. mykiss* documented will likely be smolting, the uncertainty of classification remains. Conceivably, after more data has been collected from the downstream trapping component of the monitoring and evaluation, a more detailed classification of Riverwatcher detections can be made in the future. The fish unknown classification will be used if the detection can be identified to be a fish based on video evidence, but the species identity cannot be determined due to high turbidity or the fish not swimming through the camera field of view. The fish probable classification will be used if no fish can be observed in the video, but the silhouette is similar to that of a typical fish silhouette based on previous experience.

Even with reasonably good video coverage, fish are still able to pass through the Riverwatcher undetected by the video cameras (CMWD 2009). This can occur if the fish swim very close, high, or low to the cameras. In addition, this can happen if an upstream fish swims through the scanners then stops before entering the video field of view. High turbidity can also obscure the video detection and identification of fish. The false detection classification will be used when no fish is observed in the video and the silhouette is not similar to that of a typical fish silhouette based on previous experience. Since false detections frequently occur during higher discharges when turbidity and debris are also high, it is likely that most false detections will be caused by debris, high turbidity, and water turbulence. When turbidity exceeds about 100 NTUs, there can be hundreds of false detections per hour. It is not until turbidity falls below about 25-30 NTUs that the Riverwatcher is fully functional (Table 3). If the Riverwatcher becomes nonfunctional due to malfunctions, the BC will be notified by email within 24 hrs after standard troubleshooting has been completed and the issue cannot be corrected.

Table 3. Riverwatcher operational status for a given water turbidity.

Turbidity (NTU)	Riverwatcher status
> 200	Not functional
100-200	Many false detections
30-100	Scanner operational, but unable to confirm with video
< 30	Video grid detectable
0-30	Riverwatcher fully functional

To validate measurement estimates for smaller fish by the Riverwatcher, a pilot study was conducted during 2009 to determine the difference between test fish that were first measured by hand and then allowed to swim through the Riverwatcher (CMWD 2009). Continued experimentations were also conducted in 2011 to better understand the Riverwatcher limitations as they relate to fish height measurement error, detection efficiencies, and possible methods for corrections or calibrations.

6.0 ADDITIONAL MONITORING STUDIES

6.1 *O. mykiss* Presence/Absence Surveys

In addition to the fish attraction monitoring, *O. mykiss* presence/absence surveys will be conducted in the Ventura River mainstem between the Robles Fish Facility and the Ventura River mouth and San Antonio Creek. Surveys will also be conducted upstream of the Robles Fish Facility in Matilija and North Fork Matilija creeks. These additional sites will be surveyed using both bank and snorkeling methods (depending on water conditions and expected life history stage) but will be conducted primarily after storm events for adults and during the rest of the year for smolts, parr, and fry. Methods to estimate fish size and numbers will be the same as those used in the fish attraction evaluation. A total of 14 sites will be monitored and both pool and riffle habitat at each site will be included (Table 4). These additional surveys will be done in an attempt to determine if adult steelhead are entering the Ventura River, migrating upstream, holding and spawning locations, and if they are successfully passing through the Robles Fish Facility. Additionally, juvenile *O. mykiss* (smolts and residents) will be documented to

determine spatial and temporal patterns. During the fall before significant winter rain occurs, the estuary/lagoon will be snorkel surveyed monthly, if conditions allow, from October through December to determine if any juveniles have moved downstream to use the potential rearing habitat before migrating to the ocean.

Table 4. *O. mykiss* presence/absence survey index sites in the Ventura Basin.

Site No.	Location	River km	Site	Lat.	Long.	Length (m)	Width (m)
1	Ventura River	0.9	Main Street pool	34.16875	-119.18532	25.1	10.0
		0.9	Main Street riffle	34.16896	-119.18546	34.0	8.0
2	Ventura River	9.4	Foster Park pool 1	34.21141	-119.18474	25.0	15.4
		10.0	Foster Park pool 2	34.21304	-119.18592	46.0	16.0
		10.1	Foster Park riffle	34.21184	-119.18527	45.0	11.0
3	Ventura River	13.0	San Antonio conf. pool 1	34.22825	-119.18451	33.0	22.0
		13.0	San Antonio conf. riffle	34.22805	-119.18453	42.0	14.0
		12.9	San Antonio conf. pool 2	34.21184	-119.18527	50.0	10.0
4	Ventura River	18.8	Hwy 150 pool 1	34.25584	-119.18132	43.3	14.0
		18.8	150 pool 2	34.25612	-119.18075	49.5	9.0
		18.7	Hwy 150 riffle	34.25540	-119.18157	43.6	11.0
5	Ventura River	22.1	Land Cons. pool 1	34.27204	-119.17589	50.1	19.1
		22.2	Land Cons. pool 2	34.27268	-119.17578	48.6	15.1
		22.1	Land Cons. Riffle	34.27245	-119.17590	44.6	18.8
6	Ventura River	23.2	Robles weir pools	34.27782	-119.17435	58.7	19.0
		23.3	Robles glide	34.27817	-119.17440	78.3	17.3
		23.4	Robles entrance pool	34.27866	-119.17440	39.8	21.8
		23.4	Fish ladder entrance box	34.27866	-119.17440	15.0	3.0
		23.5	Robles screenbay	34.27890	-119.17466	42.2	13.5
		23.5	Robles forebay	34.27900	-119.17433	33.0	17.2
7	San Antonio Cr.	0.2	Lower San Antonio pool 1	34.22852	-119.18325	16.0	6.0
		0.2	Lower San Antonio riffle	34.22858	-119.18342	20.2	3.5
		0.4	Lower San Antonio pool 2	34.22862	-119.18394	40.0	6.0
8	San Antonio Cr.	9.4	Upper San Antonio riffle	34.25943	-119.15056	25.0	5.0
		9.5	Upper San Antonio pool	34.25960	-119.15055	19.8	5.5
9	NF Matilija Cr.	0.1	Lower NF pool 1	34.29104	-119.18063	7.3	13.3
		0.1	Lower NF pool 2	34.29119	-119.18083	7.9	10.9
		0.2	Lower NF riffle	34.29112	-119.18120	17.8	8.0
10	NF Matilija Cr.	6.6	Upper NF pool	34.30572	-119.16513	29.0	9.0
		6.6	Upper NF riffle	34.30557	-119.16517	33.1	7.5
11	Matilija Cr.	0.3	Lower Matilija pool	34.28975	-119.18108	21.1	24.7
		0.3	Lower Matilija riffle	34.28979	-119.18092	15.9	8.0
12	Matilija Cr.	2.1	Upper Matilija pool	34.29513	-119.18962	89.4	13.7

Cont.		2.1	Upper Matilija riffle	34.29538	-119.19025	51.0	9.0
14	San Antonio Cr.	4.4	Frasier St. pool	34.24171	-119.16902	12.8	13.8
		4.4	Frasier St. riffle	34.24174	-119.16895	30.8	5.9
15	Ventura River	8.5	Bedrock pool	34.20723	-119.17960	50.0	17.0
		8.5	Bedrock pool riffle	34.20740	-119.17976	37.0	6.0

The sites were initially selected based on ease of access, coverage of basin, and presumed chance of detecting *O. mykiss*. However, after all habitat surveys have been completed, site selection may also be based on quantitative measurements that will identify high-quality habitats used for *O. mykiss* juvenile rearing and adult holding.

6.2 Adult Index Spawning Surveys

Spawning surveys will be conducted throughout the Ventura Basin that is accessible to adult steelhead and in the upper basin where only resident rainbow trout can spawn. Nineteen index sites or reaches will be used that were subjectively selected (Table 5) with small to medium size gravel that are suitable for steelhead spawning (Shapovalov and Taft 1954; Orcutt et al. 1961). During 2008, the spawning index sites selected were initially distributed broadly within the basin to capture general spawning locations and timing. These same sites will be used in 2014 and better sites added if observed. Three additional longer reaches will be included in 2014; these were added in 2011 to incorporate previously surveyed discrete sites. Four additional sites were added to capture quality spawning areas. This initial information will be used to establish long-term index sites to capture population trends. The spawning surveys will be conducted biweekly from January through June, or until no further spawning is observed, and observations will be made at sites to identify and count *O. mykiss* redds; redds will be identified by typical characteristics (Orcutt et al. 1961; Chapman 1988). Once a redd has been identified, physical measurements similar to those recorded by Zimmerman and Reeves (2000) will be collected to characterize the redd. Pit and tailspill lengths will be measured from the upstream end to the downstream end of each, respectively. Redd width will be measured at the widest point of the tailspill (Figure 4). Water depth will be measured at four locations: in the pit, adjacent to the pit, upstream of the pit, and

at the tailspill. The surface median (D_{50}) and maximum substrate size of each redd tailspill and will be estimated for all redds observed. All adjacent measurements will be taken on the thalweg side of each redd. Photos and GPS locations will also be recorded for all redds identified. This information will help determine steelhead spawning habitat selection characteristics.

Table 5. *O. mykiss* spawning index sites in the Ventura Basin.

Site No.	Unit	Location	River km	Description	Lat.	Long.	Length (m)	Width (m)	Spawning Area (m ²)
24	1	Ventura River	0.8	Main St. Bridge	34.28085	-119.30862	220.0	10.0	480
2	1	Ventura River	7.9	Near Treatment Plant	34.34030	-119.29782	90.0	18.0	1,620
	2		8.1	Near Treatment Plant	34.34208	-119.29849	39.0	20.0	780
4	1	Ventura River	15.5	Near Santa Ana Blvd bridge	34.39950	-119.30853	26.7	8.0	214
5	1	Ventura River	18.7	Upstream of Hwy 150	34.42641	-119.30227	18.0	10.0	180
6	1	Ventura River	22.1	Land Conservancy pool tailout	34.45334	-119.29309	18.1	19.5	353
	2		22.2	Land Conservancy pool tailout	34.45445	-119.29298	16.3	14.7	240
7	1	Ventura River	23.3	Robles-1st weir pool	34.46334	-119.29061	15.4	23.9	368
	2		23.4	Robles-tailout of entrance pool	34.46436	-119.29045	18.2	21.9	399
8	1	Ventura River	23.6	Upstream of Robles forebay	34.47414	-119.29068	14.0	5.0	95
	2		24.3	Upstream of Robles forebay	34.46504	-119.29032	6.2	15.4	480
12	1	NF Matilija Cr.	0.7	Lower NF Matilija Cr.	34.48825	-119.30525	41.0	9.0	369
13	1	NF Matilija Cr.	6.6	Downstream of Wheeler Gorge	34.50911	-119.27501	23.0	8.0	184
	2		6.6	Downstream of Wheeler Gorge	34.50960	-119.27528	22.3	8.0	178
14	1	Matilija Cr.	1.9	Lake Matilija delta	34.49000	-119.31446	26.2	14.6	383
	2		2.2	Upstream of Lake Matilija	34.49198	-119.31645	15.0	10.0	150
15	1	Matilija Cr.	8.4	End of Matilija Road	34.50456	-119.37449	20.0	19.0	380
16	1	NF Matilija Cr.	4.1	Near Wheeler's Springs	34.50826	-119.28955	6.1	8.1	49
17	1	Ventura River	9.3	DS of Foster to US reach	34.35069	-119.30463	1750	11	19,250
18	1	Ventura River	12.3	Casitas Springs	34.37354	-119.30877	60	12	960
	2		12.7	Casitas Springs	34.37712	-119.30721	230	9	2070
19	1	San Antonio Cr.	0.0	Mouth to end of Old Cr. Rd. reach	34.38030	-119.30738	2160	8	17,280
20	1	San Antonio Cr.	4.2	DS to US of Frasier St.	34.40197	-119.28237	180	8	1,440
21	1	San Antonio Cr.	7.8	Camp Comfort reach	34.42493	-119.26110	690	5	3,450
22	1	San Antonio Cr.	9.5	Upper San Antonio Cr. reach	34.43269	-119.25087	640	5	3,200
23	1	NF Matilija Cr.	0.1	Lower NF Matilija Cr.	34.48520	-119.30118	120	6	720
Total =									56,992

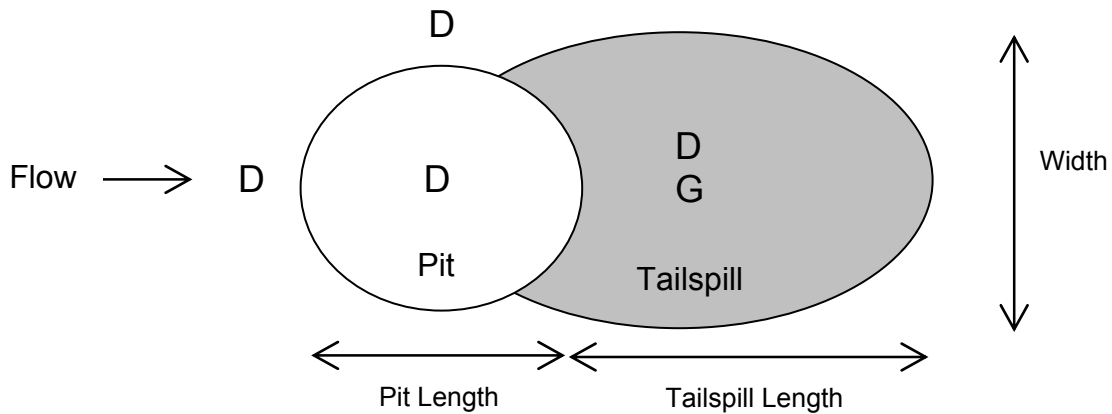


Figure 4. Diagram of measurements to be collect on all identified *O. mykiss* redds. (D) = locations of depth measurements and (G) = location of gravel substrate sampling.

6.3 Underwater Video Monitoring

As time allows, a pilot study of an underwater video monitoring system will continue to be conducted to determine if remote monitoring for adults or smolts is feasible within the Ventura River or tributaries. The monitoring system will be placed at selected locations when water conditions are suitable to record fish rearing, holding, or migrating. The system will consist of an underwater video camera attached to a DVR that can record for 6-8 hours at a time. The system will be powered by a 12 volt DC battery so the system could be placed anywhere within the basin. The video will be reviewed to determine presence or absence and relative numbers of steelhead, if present. If this pilot study is successful, it may be expanded and developed into a more quantitative monitoring tool. This is the same system that will be used at the fish ladder entrance during post-storm observations.

6.4 Ambient Water Quality Monitoring

In order to fully evaluate several aspects of the monitoring and evaluation program, water quality data will be collected throughout the Ventura River basin (Table 6). Water temperatures will be recorded at 12 locations throughout the Ventura River basin. The locations will include the Ventura River mouth and mainstem, Coyote Creek, San

Table 6. Water quality monitoring sites and sampling summary.

Site Number	Site Description	Site Location ^a	Sampling Method ^b	Sampling Type ^c	Frequency
1	Estuary	V 0.3 km	Multiparameter	Grab profile	Monthly
2	Main St. Bridge	V 1.0 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
3	Foster Park	V 9.7 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
4	Santa Ana Blvd Bridge	V 15.5 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
5	Hwy 150 Bridge	V 18.7 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
6	Robles Dam	V 23.5 km	Temperature Multiparameter Turbidity	Continuous Grab Continuous	30 min Monthly Hourly
7	North Fork Matilija	N 1.3 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
8	Below Matilija Dam	M 1.0 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
9	Above Matilija Dam	M 2.1 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
10	Middle Matilija	M 8.5 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
11	Lower San Antonio	S 0.3 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
12	Middle San Antonio	S 9.5 km	Temperature Multiparameter	Continuous Grab	30 min Monthly
13	Lower Coyote	C 0.4 km	Temperature Multiparameter	Continuous Grab	30 min Monthly

^aSite location is identified by the river system and kilometers from its confluence. C = Coyote Creek, M = Matilija Creek, N = North Fork Matilija Creek, S = San Antonio Creek, V = Ventura River.

^bTemperature data will be collected using programmable loggers. Multiparameter water quality probe will collect water quality data including: temperature, dissolved oxygen, conductivity, salinity, pH, turbidity (separate meter). Turbidity data will be collected using a programmable logger.

^cContinuous samples will be collected at the identified frequency. Grab samples are collected once at the identified frequency. Grab profile samples are collected once at the identified frequency at 0.5 m intervals from surface to bottom.

Antonio Creek, North Fork Matilija Creek, and Matilija Creek upstream and downstream of Matilija Dam. The loggers will record at 30-min intervals. Monthly grab samples will also be collected at the same locations with a multiprobe that will record: dissolved oxygen, pH, conductivity, salinity, TDS, and temperature. A monthly water quality profile will also be collected in the estuary/lagoon. The profile will be collected at approximately the mid-point of the estuary/lagoon and will have at least four depths recorded. A continuous turbidity probe will also be installed in the Robles Facility fish bypass near the Riverwatcher. It will record water turbidity at 1-hr intervals when the bypass is operational. Turbidity measurements will also be collected at several sites upstream, downstream, and within the Robles Fish Facility to ensure the continuous probe is located in a position that will be representative of the turbidity in the Ventura River. All locations will be monitored if sufficient water is present.

6.5 Photographic Index Sites

Photographic index sites will be established throughout the Ventura River basin to monitor general changes of the stream channel morphology, water conditions, and riparian zones. There will be a total of 14 sites where an upstream and downstream photo will be taken (Table 7). The sites will be re-visited twice per year, during March and September.

Table 7. Photographic monitoring sites within the Ventura River basin.

Site Number	Site Description	Site Location ^a	Photo Direction	Frequency
1	Train bridge in estuary, east bank	V 0.3 km	Downstream	Biannual
2	Train bridge in estuary, west bank	V 0.3 km	Upstream Downstream	Biannual
3	Main Street Bridge	V 1.0 km	Upstream Downstream	Biannual
4	Shell Road Bridge	V 5.2 km	Upstream Downstream	Biannual
5	Casitas Vista Road Bridge (Foster Park)	V 9.7 km	Upstream Downstream	Biannual
6	Santa Ana Boulevard Bridge	V 15.5 km	Upstream Downstream	Biannual
7	Highway 150 Bridge	V 18.7 km	Upstream Downstream	Biannual
8	Robles Fish Passage Facility	V 23.5 km	Downstream	Biannual
9	Camino Cielo Road Bridge	V 25.7 km	Upstream Downstream	Biannual
10	Highway 33 Bridge at NF Matilija USGS Gauging Station	N 1.3 km	Upstream Downstream	Biannual
11	End of North Matilija Road	M 8.5 km	Upstream Downstream	Biannual
12	Highway 33 Bridge near Old Creek Road	S 0.3 km	Upstream Downstream	Biannual
13	Creek Road near Creek Lane	S 9.5 km	Upstream Downstream	Biannual
14	Santa Ana Road Bridge	C 0.4 km	Upstream Downstream	Biannual

^aSite location is identified by the river or tributary system and kilometers from its confluence. C = Coyote Creek, M = Matilija Creek, N = North Fork Matilija Creek, S = San Antonio Creek, V = Ventura River.

7.0 LITERATURE CITED

- Adams, N. S., D. W. Rondorf, S. D. Evans, and J. E. Kelly. 1998. Effects of surgically and gastrically implanted radio transmitters on growth and feeding behavior of juvenile Chinook salmon. *Transaction of the American Fisheries Society*, 127:128-136.
- Ando, D., T. Kitamura, and S. Mizuno. 2005. Quantitative analysis of body silvering during smoltification in masu salmon using chromameter. *North American Journal of Aquaculture*, 67:160-166.
- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 477-482 in B. R. Murphy and D. W. Willis, editors. *Fisheries techniques*, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Banks, J. W. 1969. A review of the literature on the upstream migration of adult salmonids. *Journal of Fish Biology*, 1:85-136.
- Beeman, J. W., and A. G. Maule. 2001. Residence time and diel passage distribution of radio-tagged juvenile spring Chinook salmon and steelhead in a gateway and fish collection channel of a Columbia River dam. *North American Journal of Fisheries Management*, 21:455-463.
- Beeman, J. W., D. W. Rondorf, M. E. Tilson, and D. A. Venditti. 1995. A nonlethal measure of smolt status of juvenile steelhead based on body morphology. *Transactions of the American Fisheries Society* 124:764-769.
- Boughton D. A., and 13 co-authors. 2007. Viability criteria for steelhead of the South-Central and Southern California Coast. NOAA Technical Memorandum NMFS. NOAA-TM-NMFS-SWFSC-407.
- Bratovich, P. M., and D. W. Kelley. Investigation of salmon and steelhead in Lagunitas Creek, Marin County, California. Volume 1. Migration, spawning, embryo incubation and emergence, juvenile rearing, emigration. Marin Municipal Water District. Corte Madera, California.
- Brown, R. S., S. J. Cooke, W. G. Anderson, and R. S. McKinley. 1999. Evidence to challenge the "2% rule" for biotelemetry. *North American Journal of Fisheries Management*, 19:867-871.
- Cannata, S. P. 1998. Observations of steelhead trout (*Oncorhynchus mykiss*), coho salmon (*O. kisutch*) and water quality of the Navarro River estuary/lagoon May 1996 to December 1997. Draft report, Humboldt State University Foundation.

- Chapman, D. W. 1988. Critical review of variables used to define effects of fines in redds of large salmonids. *Transactions of the American Fisheries Society* 117(1):1-21.
- Clay, H. C. 1995. *Design of fishways and other fish facilities*, 2nd edition. CRC Press, Inc., Boca Raton, FL.
- CMWD. 2008. 2008 progress report for the Robles Diversion Fish Passage Facility. Casitas Municipal Water District, Oak View, CA.
- CMWD. 2009. 2009 Robles Fish Passage Facility progress report. Casitas Municipal Water District, Oak View, CA.
- CMWD. 2013. 2013 Robles Fish Passage Facility progress report. Casitas Municipal Water District, Oak View, CA.
- Cooke, R. U., A. Warren, and A. S. Goudie. 1992. *Desert geomorphology*. UCL Press, London.
- Dettman, D. H., and D. W. Kelley. 1986. *Assessment of the Carmel River steelhead resource, Volume 1. biological investigations*. Monterey Peninsula Water Management District, Monterey, CA.
- ENTRIX. 1999. *Evaluations of natural passage barriers on the Ventura River downstream of Robles Diversion*. ENTRIX, Walnut Creek, CA.
- ENTRIX. 2000. *Results of fish passage monitoring at the Vern Freeman diversion facility Santa Clara River, 1994-1998*. ENTRIX, Walnut Creek, CA.
- Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 2002. *California salmonid stream habitat restoration manual, Volume I, 3rd edition*. California Department of Fish and Game. Inland Fisheries Division, Sacramento, CA.
- Gallagher, S. P., and C. M. Gallagher. 2005. *Discrimination of Chinook salmon, Coho salmon, and steelhead redds and evaluation of the use of redd data for estimating escapement in several unregulated stream sin Northern California*. *North American Journal of Fisheries Management*, 25:284-300.
- Garrison, P. S. 2022. *2001-2002 annual report: Trinity River tributaries winter-rin steelhead spawning survey report, project 1d1*. CDFG.
- Hagar, J. 1996. *Salinas River steelhead status and migration flow requirements*. Monterey County Water Resources Agency. Salinas, California.

- Haner, P. V., J. C. Faler, R. M. Schrock, D. W. Rondorf, and A. G. Maule. Skin reflectance as a nonlethal measure of smoltification for juvenile salmonids. *North American Journal of Fisheries Management*, 15:814-822.
- Harrison, L. R., E. A. Keller, E. Kelley, and L. A. K. Mertes. 2006. Minimum flow requirements for southern steelhead passage on the lower Santa Clara River, CA. University of California, Santa Barbara.
- Hockersmith, E. E., W. D. Muir, S. G. Smith, B. P. Sandford, N. S. Adams, J. M. Plumb, R. W. Perry, and D. W. Rondorf. 2000. Comparative performance of sham radio-tagged and PIT-tagged juvenile salmon. US Army Corps of Engineers, Walla Walla District.
- Jepsen, N., L. E. Davis, C. B. Schreck, and B. Siddens. 2001. The physiological response of Chinook salmon smolts to two methods of radio-tagging. *Transactions of the American Fisheries Society* 130:495-500.
- Kelsch, S. W., and B. Shields. 1996. Care and handling of sampled organisms. Pages 157-145 in B. R. Murphy and D. W. Willis, editors. *Fisheries techniques*, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Kemp, P. S., M. H. Gessel, and J. G. Williams. 2005. Fine-scale behavioral responses of Pacific salmonid smolts as they encounter divergence and accelerated of flow. *Transactions of the American Fisheries Society* 134:390-394.
- Lewis, S. D. 2001. Movements of hatchery steelhead smolts in Lake Billy Chinook and Squaw Creek during 2000. Portland General Electric. Portland, Oregon.
- Lewis, S. D. 2002. Movements of hatchery steelhead smolts in Lake Billy Chinook and Squaw Creek during 2001. Portland General Electric. Portland, Oregon.
- Lewis, S. D. 2003. Movements of hatchery steelhead smolts in Lake Billy Chinook and Squaw Creek during 2002. Portland General Electric. Portland, Oregon.
- Lewis, S. D. 2008. 2008 monitoring and evaluation study plan for the Robles Fish Passage Facility and related studies. Casitas Municipal Water District, Oak View, CA.
- Marine, K. R., and M. Gorman. 2005. Monitoring and evaluation for the A-Canal fish screen and bypass facility; scale loss and physical injury test, 2005. Bureau of Reclamation, Klamath Falls, OR.
- McNabb, C. D., C. R. Liston, and S. M. Borthwick. 1998. In-plant biological evaluation of the Rd Bluff Research Pumping Plant on the Sacramento River in Northern California: 1995 and 1996. Red Bluff Research Pumping Plant Report Se4arries, volume 3. US Bureau of Reclamation, Denver, CO.

- Moore, K., K. Jones, and J. Dambacher. 2002. Methods for stream habitat surveys, Version 12.1. Oregon Department of Fish and Wildlife, Aquatic Inventories Project, Natural Production Program, Corvallis, OR.
- Mosley, M. P. 1982. Critical depths for passage in braided river, Canterbury, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, Vol. 16:351-357.
- National Marine Fisheries Service. 2003. Biological opinion for the Robles diversion fish passage facility, Ventura River, CA. Protected Resource Division, Southwest Region, March 31, 2003.
- Nolan, K. M., and R. R. Shields. 2000. Measurements of stream discharge by wading. *Water Resources Investigations Report 00-4036*. United States Geological Survey.
- Orcutt, D. R., B. R. Pulliam, and A. Arp. 1968. Characteristics of steelhead trout redds in Idaho streams. Bureau of Commercial Fisheries, Boise, Idaho.
- Rodgers, W. 2006. Robles Diversion Dam fish screen and fishway project; post-construction evaluation program. Wood Rodgers Engineering, Sacramento, CA.
- Spina, A. P., M. A. Allen, and M. Clarke. 2005. Downstream migration, rearing abundance, and pool habitat associations of juvenile steelhead in the lower main stem of a south-central California stream. *North American Journal of Fisheries Management*, 25:919-930.
- Strauss, R. E., and C. E. Bond. 1990. Taxonomic methods: In Schreck C. B. and P. B. Moyle, editors. *Methods for fish biology*. AFS, Bethesda, Maryland.
- Summerfelt, R. C., and L. S. Smith. 1990. Anesthesia, surgery, and related techniques. Pages 213-272 in C. B. Schreck and P. B. Moyle, editors. *Methods for Fish Biology*. American Fisheries Society, Bethesda, Maryland.
- SYRTAC (Santa Ynez River Technical Advisory Committee). 1999. Adult steelhead passage flow analysis for the Santa Ynez River. Santa Ynez River Consensus Committee, Santa Barbara, CA.
- SYRTAC (Santa Ynez River Technical Advisory Committee). 2000. A review of effects of warm water temperature on steelhead/rainbow trout. Santa Ynez River Consensus Committee, Santa Barbara, CA.

- Shapovalov, L. and A. C. Taft. 1954. The life histories of the steelhead rainbow trout (*Salmo gairdneri gairdneri*) and silver salmon (*Oncorhynchus kisutch*), with special reference to Waddell Creek, California, and recommendations regarding their management. State of California Department of Fish and Game, fish bulletin No. 98.
- Tan, S. S., and T. A. Jones. 2006. Geologic map of the Matilija 7.5' quadrangle Ventura County, California: a digital database. Version 1.0, Los Angeles, CA.
- Thompson, K. 1972. Determining stream flows for fish life. Pacific Northwest River Basins Commission, instream flow requirements workshop. Portland, Oregon. Proceedings: 31-50.
- Vaki. 2003. User manual for the Riverwatcher fishcounter. Vaki Aquaculture Systems Ltd., Iceland.
- Winter, J. D. 1983. Underwater biotelemetry. In: Fisheries techniques, L. A. Nielsen and D. L. Johnson, editors. American Fisheries Society. Bethesda, Maryland.
- Zimmerman, C. E., and G.H. Reeves. 2000. Population structure of sympatric anadromous and non-anadromous *Oncorhynchus mykiss*: evidence from spawning surveys and otolith microchemistry. Canadian Journal of Fisheries and Aquatic Sciences 57:2152-2162.



mailto:casitaswater@casitaswater.com

Fwd: Lake Casitas: People for Swimming, Skiing, Fishing, and Water Activities

Russ Baggerly <rbaggerly@casitaswater.com>
To: Steve Wickstrum <swickstrum@casitaswater.com>

Mon, Nov 25, 2013 at 8:24 AM

----- Forwarded message -----

From: **Adam Johnson** <adamj1722@yahoo.com>
Date: Sat, Nov 23, 2013 at 4:39 PM
Subject: Lake Casitas: People for Swimming, Skiing, Fishing, and Water Activities
To: mbergen@casitaswater.com, jword@casitaswater.com, pkaiser@casitaswater.com, bhicks@casitaswater.com, rbaggerly@casitaswater.com

Casitas Municipal Water District Board of Directors,

I represent a group, Lake Casitas: People for Swimming, Skiing, Fishing, and Water Activities. We have over 2,800 supporters, mainly located in the Ventura and Ojai area. Our group would like the Board to revisit and amend the "no body contact with water" policy to allow swimming and skiing on the Lake. Our reasoning is outlined below:

Community Support:

With over 2,800 supporters on our Facebook page "Lake Casitas: People for Swimming, Skiing, Fishing, and Water Activities", there is a tremendous amount of community support for change. To put this level of support in perspective, the Casitas Municipal Water District has about 550 supporters, Ojai Flow has about 1,000, and the Lake Casitas Water adventure park has about 1,200. Of course, these sites have been in existence for years and "Lake Casitas: People for Swimming, Skiing, Fishing, and Water Activities" has only been around for approximately four months. Please visit the site for yourself and read the hundreds of comments in support of our movement.

The Filtration System Can Support Body Contact:

Our research shows the existing filtration system can handle body contact with water. As per the Lake Casitas Resource Management Plan document "the capabilities of the current water filtration system to handle the additional burden of body contact were called into question. The system was shown to exceed current regulatory standards, and would probably be sufficient enough to mitigate body contact pollution as well". If the system can handle body contact with water, stakeholders should be able to use the facility.

Locals Subsidize, but Don't Have Full Access to Lake:

Local tax and rate payers subsidize the operation of the recreation area. As per the most recent annual financial statement document, the recreation area operates at a loss, approximately \$330,000. The loss includes approximately \$30,000 for fish planting. Local ratepayers subsidize the recreation facility with their water bills and special property tax assessments. However, those that subsidize the operation are not allowed to swim and ski in the lake. How many rate and tax payers would like to swim in the lake compared to those who fish? As long as locals are subsidizing the recreation facilities, they should be able to swim and ski in the lake.

Issue Hasn't Been Addressed for 17-years:

According to our group's research the issue hasn't been adequately addressed for many years. When we reached out to The Casitas Municipal Water District about the policy we were told, "in 1996 a 22-person Citizen Advisory Committee established by the board investigated alternative lake uses to include body contact with

water." This was a long time ago. In addition, we have reviewed Board Meeting Minutes for the Casitas Municipal Water district from 2007 until present. Upon review we have not seen a meaningful discussion on the "no body contact with water" policy other than in the 2/28/2007 minutes when President Baggerly tabled the item. Since Casitas Municipal Water District hasn't investigated the issue for 17-years, we believe it is time to explore again.

Other Notable Reasons to Change Policy:

- We have received hundreds of comments in support of change including 44 replies in support when the question was asked, "What would being able to swim at Lake Casitas mean to you"? Sample reply from Charyl Mankin "It would mean that I would be able to swim again! I cannot walk over sand to get to the ocean, or climb over rocks. I really need that kind of exercise for my health, to be able to swim would be a huge help. And yeah, local money stays local." Please visit our site to see the support for yourself.

-It appears attendance is down year over year. Opening the lake to swimming and skiing could help reverse the trend.

-The Lake Casitas Resource Management Plan and Environmental Impact report prepared by the US Department of the Interior over a 10-year period outlines how swimming and skiing would be possible.

-It appears the Lake promotes drinking and boating, yet doesn't allow skiing. Please visit Facebook page for details.

-It is ironic that there is a gas station on the Lake, yet swimming isn't allowed because it might cause pollution.

-We have been contacted by 5 separate local community members that would like to run for a position on the Board to facilitate change. The community is asking for a change to the policy.

-Common sense tells me that fish pollute water with their fish excrement. Lake Casitas spent \$30,000 on fish in the most recent year – a lot of fish. How is it that the filtration system can handle this, but cannot handle swimming?

The Casitas Municipal District has been willing to support the community when appropriate as demonstrated by the most recent Ojai Flow initiative. Based on the vast community support and the reasons noted above, we respectfully ask that the Casitas Municipal Water District Board allow swimming and skiing and Lake Casitas.

Thank you,

Adam Johnson on behalf of
Lake Casitas: People for Swimming, Skiing, Fishing, and Water Activities

LAKE IMPROVEMENT FOUNDATION

DATE	FROM	DEPOSIT	PYMTS	BALANCE
10/01/1997	Tanaka Bait & Tackle	500.00		\$500.00
10/01/1998	Oak View Civic Council	50.00		\$550.00
10/01/1998	Tanaka Bait & Tackle	1,250.00		\$1,800.00
09/01/1999	Tanaka Bait & Tackle	1,700.00		\$3,500.00
09/01/1999	Rotary Club of Ojai West	500.00		\$4,000.00
12/01/1999	Suzi Lydick	250.00		\$4,250.00
01/01/2000	Bill Hicks	300.00		\$4,550.00
05/01/2000	Pat Weinberger		487.99	\$4,062.01
06/01/2000	Cash Contributions	34.00		\$4,096.01
06/01/2000	James Word	15.00		\$4,111.01
06/01/2000	Ronald Paul	45.00		\$4,156.01
06/01/2000	Doris Harbison	15.00		\$4,171.01
?????	Unknown Entry	212.54		\$4,383.55
08/14/2002	Secretary of State		20.00	\$4,363.55
04/21/2003	American Bass Association	1,155.00		\$5,518.55
06/26/2003	American Bass Association	1,025.00		\$6,543.55
06/30/2004	Interest Transfer for Year	127.08		\$6,670.63
06/30/2004	Memorial for Jim Loeble		177.04	\$6,493.59
12/23/2003	Elaine Paul	100.00		\$6,593.59
07/01/2003	Affinity Group	250.00		\$6,843.59
06/30/2005	Santa Barbara Monumental Co.		283.08	\$6,560.51
09/23/2005	Interest Transfer for Year	159.68		\$6,720.19
08/18/2005	Secretary of State		20.00	\$6,700.19
01/25/2006	The Tax Specialists		500.00	\$6,200.19
06/30/2006	Interest Transfer for Year	233.55		\$6,433.74
02/06/2007	Norm Smith / Family Fishing		500.00	\$5,933.74
09/12/2007	State of California		20.00	\$5,913.74
12/26/2007	Roger Snowbarger	100.00		\$6,013.74
03/14/2008	Kenneth Wayne McFeeters	50.00		\$6,063.74
03/14/2008	Wells Hall	100.00		\$6,163.74
03/14/2008	David C. Regan	100.00		\$6,263.74
03/19/2008	Ojai Electric	100.00		\$6,363.74
03/19/2008	Ventura Wholesale Electric Inc.	15.00		\$6,378.74
03/24/2008	Coordinated Wire Rope	200.00		\$6,578.74
07/18/2008	Night Fishing Tournament	1170.00		\$7,748.74
08/22/2008	Contest for Fair Booth LCRA	300.00		\$8,048.74
09/09/2008	Night Fishing Tournament	1305.00		\$9,353.74
09/09/2008	Night Fishing Tournament	1350.00		\$10,703.74
09/10/2008	Moonlight Fishing	990.00		\$11,693.74
10/09/2008	Visions in Time Foundation	500.00		\$12,193.74
10/21/2008	Night Fishing Tournament	1215.00		\$13,408.74
10/21/2008	Night Fishing Tournament	900.00		\$14,308.74
10/30/2008	Reclass to Revenue Re: Rob, Pirates Festival		500.00	\$13,808.74
12/18/2008	Moonlight Fishing	510.00		\$14,318.74
02/01/2009	Okuma Fishing Tackle		858.00	\$13,460.74
02/01/2009	Okuma Fishing Tackle		683.18	\$12,777.56
02/01/2009	Okuma Fishing Tackle		333.19	\$12,444.37

02/01/2009	Okuma Fishing Tackle		482.63	\$11,961.74
02/01/2009	Okuma Fishing Tackle		107.25	\$11,854.49
04/01/2009	Casitas Park Store		1250.00	\$10,604.49
04/01/2009	Casitas Park Store		1250.00	\$9,354.49
05/08/2009	State of California		20.00	\$9,334.49
06/17/2009	Night Fishing Tournament	1,440.00		\$10,774.49
06/17/2009	Night Fishing Tournament	1,035.00		\$11,809.49
07/28/2009	Donation	510.00		\$12,319.49
08/18/2009	Donation Shelly M. Reyes	990.00		\$13,309.49
08/27/2009	Donation West Coast Christian Anglers	420.00		\$13,729.49
09/22/2009	Donation Shelly M. Reyes	855.00		\$14,584.49
09/22/2009	Donation Shelly M. Reyes	810.00		\$15,394.49
09/29/2009	Donation West Coast Christian Anglers	570.00		\$15,964.49
02/22/2010	Donation Kiwanis Club	500.00		\$16,464.49
02/22/2010	Donation Firemans Assoc. Charity Fund	606.00		\$17,070.49
03/15/2010	Check 4569 Okuma Fishing Tackle		985.07	\$16,085.42
03/15/2010	Check 4717 Coordinated Wire Rope		374.19	\$15,711.23
03/19/2010	Check 4770 Sysco Food Services of LA		2249.63	\$13,461.60
03/20/2010	Check 4648 Harbor Freight		21.60	\$13,440.00
03/25/2010	Check 4725 Erics Tackle		593.99	\$12,846.01
03/25/2010	Petty Cash Family Fishing Day		43.11	\$12,802.90
06/29/2010	Donation Shelly M. Reyes	900.00		\$13,702.90
03/09/2011	Importation Permit / Fish Planting		45.25	\$13,657.65
03/23/2011	Rainbow Trout / Kids Fishing Day		7500.50	\$6,157.15
03/24/2011	Food for Kids Fishing Day / Water Spring Alpine		239.60	\$5,917.55
03/24/2011	Food for Kids Fishing Day / Hot Dog Buns		315.90	\$5,601.65
05/09/2011	State of California		20.00	\$5,581.65
05/10/2011	LCIF Night Fishing	400.00		\$5,981.65
06/15/2011	Jim Reyes	925.00		\$6,906.65
08/29/2011	Money Order	500.00		\$7,406.65
10/18/2011	Daniel & Megan Merchant	155.00		\$7,561.65
10/18/2011	Kevin Caruso	255.00		\$7,816.65
02/22/2012	Flora Gardens - Replace Lobal Oak Tree		80.43	\$7,736.22
02/24/2012	Harbor Freight - Ties for Kids Fishing Day		8.54	\$7,727.68
06/15/2012	Donation - Richard Tauber	494.00		\$8,221.68
08/06/2012	Donation - Richard Tauber	416.00		\$8,637.68
08/10/2012	Donation - Richard Tauber	338.00		\$8,975.68
08/10/2012	Donation - Richard Tauber	105.00		\$9,080.68
08/14/2012	Donation - Richard Tauber	494.00		\$9,574.68
09/04/2012	Donation - Richard Tauber	100.00		\$9,674.68
09/04/2012	Donation - Richard Tauber	338.00		\$10,012.68
09/04/2012	Donation - Richard Tauber	520.00		\$10,532.68
12/19/2012	Live Rainbow Trout		2101.80	\$8,430.88
12/01/2012	Live Rainbow Trout		2101.80	\$6,329.08
04/04/2013	State of California		20.00	\$6,309.08
05/02/2013	Donation - Richard Tauber	1,120.00		\$7,429.08
05/08/2013	Donation - Richard Tauber	1,120.00		\$8,549.08
06/27/2013	Donation - Richard Tauber	1,120.00		\$9,669.08
07/24/2013	Donation - Richard Tauber	1,120.00		\$10,789.08
09/09/2013	Donation - Richard Tauber	1,120.00		\$11,909.08
09/18/2013	Dockside Products - Rowing Dock for LCRA		8000.00	\$3,909.08

CASITAS MUNICIPAL WATER DISTRICT
LAKE CASITAS RECREATION AREA

DATE: November 19, 2013

TO: Steve Wickstrum, General Manager

FROM: Carol Belser, Park Services Manager

SUBJECT: Recreation Area Monthly Report for October 2013

Visitation Numbers

The following is a comparison of visitations* for October 2013:

	October 2012	October 2013	Sept. 2013
Visitor Days	37,060	32,424	49,872
Camps	3,518	3,592	3,737
Cars	9,265	8,106	12,468
Boats	183	165	177
Kayaks & Canoes	7	7	4

Fiscal Year to Date Visitation	
2012/2013	277,168
2013/2014	253,444
% Change	-8.559

*The formulas for calculating the above attendance figures derived from the daily cash reports are as follows:

Visitor Days = Daily vehicles + 30 minute passes X 3 + café passes + attendance at special events + annual vehicle decals + replacement decals + campsites occupied + extra vehicles X 4

Camps = Campsites occupied + extra vehicles

Cars = Daily vehicles + 30 minute passes X 3 + café passes + attendance at special events + annual vehicle decals + replacement decals + campsites occupied + extra vehicles

Boats = Daily boats + overnight boats + annual decals + replacement decals

Kayaks & Canoes = Daily kayaks and canoes + overnight kayaks and canoes + annual kayaks and canoes

Boating

There were 12 cables sold for new inspections, 13 were re-inspected and a total of 386 boats were retagged. Two boats failed the first inspection.

Night fishing from shore was October 18 and 19.

Administration

Astronomy night to view the comet ISON was scheduled for October 12 with 8 attending. Recreation staff attended Ojai Day with a manned display booth in Libbey Park. The Comets hosted a Float Fly October 18, 19 and 20.

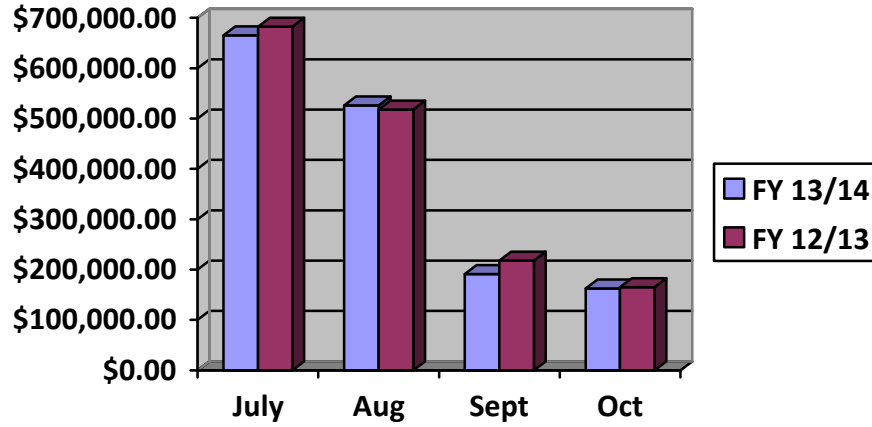
Incidents

Incidents in the month of October that required assistance from outside agencies included four injuries due to falls, possible stroke victim and two separate dog fights resulting in one owner injury.

Revenue Reporting

The figures below illustrate all Lake Casitas Recreation Area’s revenue collected in the respective month (operations, concessions, Water Adventure, etc.) per the District’s Financial Summary generated by the Finance Manager.

LCRA TOTAL REVENUE





Consumption Report

Water Sales FY 2013-2014 (Acre-Feet)

Classification	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Month to Date		
													2013 / 2014	2012 / 2013	
													Total	Total	
AD Ag-Domestic	514	537	499	636	428									2614	2422
AG Ag	401	433	499	414	383									2130	2350
C Commercial	101	92	135	69	62									459	425
DI Interdepartmental	20	5	32	4	21									82	90
F fire	0	0	0	1	0									1	0
I Industrial	1	3	1	2	1									8	12
OT Other	41	34	36	26	29									166	162
R Residential	286	77	252	135	220									970	957
RS - P Resale Pumped	134	183	197	164	122									800	234
RS - G Resale Gravity	515	545	620	659	684									3023	1935
TE Temporary	1	1	30	12	1									45	8
Total	2014	1910	2301	2,122	1951	0	0	0	0	0	0	0	0	10,298	8,595
Total 2012/2013	1237	1537	2344	1755	1722	952	541	760	845	1053	1427	1933		N/A	16106

Casitas Municipal Water District
CFD No. 2013-1 (Ojai) - Monthly Cost Analysis
2013/2014



12/04/2013

	<u>Services & Suplies</u>	<u>Legal Fees</u>	<u>Labor Expense</u>	<u>Other Services</u>	<u>Total Expenses</u>
2011/2012	<i>0.00</i>	<i>42,560.00</i>	<i>11,098.37</i>	<i>0.00</i>	<i>53,658.37</i>
2012/2013	<i>831.82</i>	<i>223,462.77</i>	<i>14,836.68</i>	<i>0.00</i>	<i>239,131.27</i>
July	0.00	0.00	227.71	0.00	227.71
August	0.00	1,334.44	0.00	0.00	1,334.44
September	0.00	51,690.69	864.99	0.00	52,555.68
October	0.00	2,730.00	1,081.24	0.00	3,811.24
November	0.00	11,408.78	535.86	0.00	11,944.64
December					0.00
January					0.00
Feburary					0.00
March					0.00
April					0.00
May					0.00
June					0.00
Total Cost YTD	<u><i>0.00</i></u>	<u><i>67,163.91</i></u>	<u><i>2,709.80</i></u>	Total Cost YTD	<u><i>69,873.71</i></u>
Total Project Cost	<u><u><i>831.82</i></u></u>	<u><u><i>333,186.68</i></u></u>	<u><u><i>28,644.85</i></u></u>	Total: Ojai Flow	<u><u><i>362,663.35</i></u></u>

**CASITAS MUNICIPAL WATER DISTRICT
TREASURER'S MONTHLY REPORT OF INVESTMENTS
12/04/13**

Type of Invest	Institution	CUSIP	Date of Maturity	Adjusted Cost	Current Mkt Value	Rate of Interest	Date of Deposit	% of Portfolio	Days to Maturity
*TB	Federal Farm CR BK	31331VK96	06/30/2014	\$952,625	\$953,060	5.650%	04/01/2013	6.15%	206
*TB	Federal Home Loan Bank	313379EE5	06/14/2019	\$1,386,064	\$1,332,923	1.625%	10/03/2012	8.61%	1990
*TB	Federal Home Loan Bank	3133XFKF2	06/11/2021	\$724,790	\$670,398	5.625%	01/16/2013	4.33%	2707
*TB	Federal Home Loan Bank	3133XKTV7	06/13/2014	\$957,788	\$958,160	4.875%	04/01/2013	6.19%	189
*TB	Federal Home Loan Bank	3133XLWN1	09/12/2014	\$965,730	\$965,898	5.250%	04/01/2013	6.24%	278
*TB	Federal Home Loan Bank	3133XSP930	12/13/2013	\$700,287	\$700,532	3.125%	07/01/2010	4.52%	9
*TB	Federal Home Loan Bank	3133XWNB10	06/12/2015	\$709,399	\$727,636	2.875%	07/01/2010	4.70%	548
*TB	Federal Home Loan Bank	3134A4VG60	11/17/2015	\$738,469	\$780,137	4.750%	07/19/2010	5.04%	703
*TB	Federal Home Loan Bank	3134G34WJ	08/28/2014	\$998,141	\$998,515	0.375%	04/01/2013	6.45%	264
*TB	Federal Home Loan MTG Corp	3135G0ES80	11/15/2016	\$691,721	\$697,889	1.375%	03/12/2012	4.51%	1061
*TB	Federal Home Loan MTG Corp	3137EABA60	11/17/2017	\$1,143,845	\$1,154,690	5.125%	01/03/2012	7.46%	1423
*TB	Federal Home Loan MTG Corp	3137EACD90	07/28/2014	\$706,503	\$712,691	3.000%	07/01/2010	4.60%	234
*TB	Federal Home Loan MTG Corp	3137EADB2	01/13/2022	\$209,512	\$193,938	2.375%	02/11/2013	1.25%	2919
*TB	Federal Natl MTG Assn	31398AYY20	09/16/2014	\$707,453	\$715,813	3.000%	07/01/2010	4.62%	282
*TB	US Treasury Inflation Index NTS	912828JE10	07/15/2018	\$1,132,876	\$1,190,231	1.375%	07/06/2010	7.69%	1661
*TB	US Treasury Notes	912828JW10	12/31/2013	\$700,192	\$700,686	1.500%	07/01/2010	4.53%	27
*TB	US Treasury Notes	912828LZ10	11/30/2014	\$704,155	\$713,454	2.125%	07/01/2010	4.61%	356
*TB	US Treasury Inflation Index NTS	912828MF40	01/15/2020	\$1,117,833	\$1,179,374	1.375%	07/01/2010	7.62%	2201
Accrued Interest					\$138,356				
Total in Gov't Sec. (11-00-1055-00&1065)				\$15,247,382	\$15,484,382			84.34%	
*CD	GE Capital - CD Draper, UT		09/27/2023	\$245,000	\$241,516	3.25%			
*CD	GE Capital - CD Salt Lake City, UT		09/27/2023	\$245,000	\$239,490	3.15%			
*CD	Goldman Sachs - CD New York, NY		10/30/2023	\$224,000	\$220,790	3.25%			
Total Certificates of Deposit: (11.13506)				\$714,000	\$701,796			3.82%	
**	LAIF as of: (11-00-1050-00)		N/A	\$445	\$445	0.26%	Estimated	0.00%	
***	COVI as of: (11-00-1060-00)		N/A	\$2,172,542	\$2,172,542	0.38%	Estimated	11.83%	
TOTAL FUNDS INVESTED				\$18,134,369	\$18,359,164			100.00%	
Total Funds Invested last report				\$18,140,154	\$18,396,955				
Total Funds Invested 1 Yr. Ago				\$14,501,445	\$14,878,365				
****	CASH IN BANK (11-00-1000-00) EST.			\$2,379,376	\$2,379,376				
	CASH IN Western Asset Money Market			\$5	\$5	0.010%			
TOTAL CASH & INVESTMENTS				\$20,513,750	\$20,738,545				
TOTAL CASH & INVESTMENTS 1 YR AGO				\$18,205,494	\$18,582,414				
*CD	CD - Certificate of Deposit								
*TB	TB - Federal Treasury Bonds or Bills								
**	Local Agency Investment Fund								
***	County of Ventura Investment Fund								
	Estimated interest rate, actual not due at present time.								
****	Cash in bank								

No investments were made pursuant to subdivision (i) of Section 53601, Section 53601.1 and subdivision (i) Section 53635 of the Government Code.
All investments were made in accordance with the Treasurer's annual statement of investment policy.