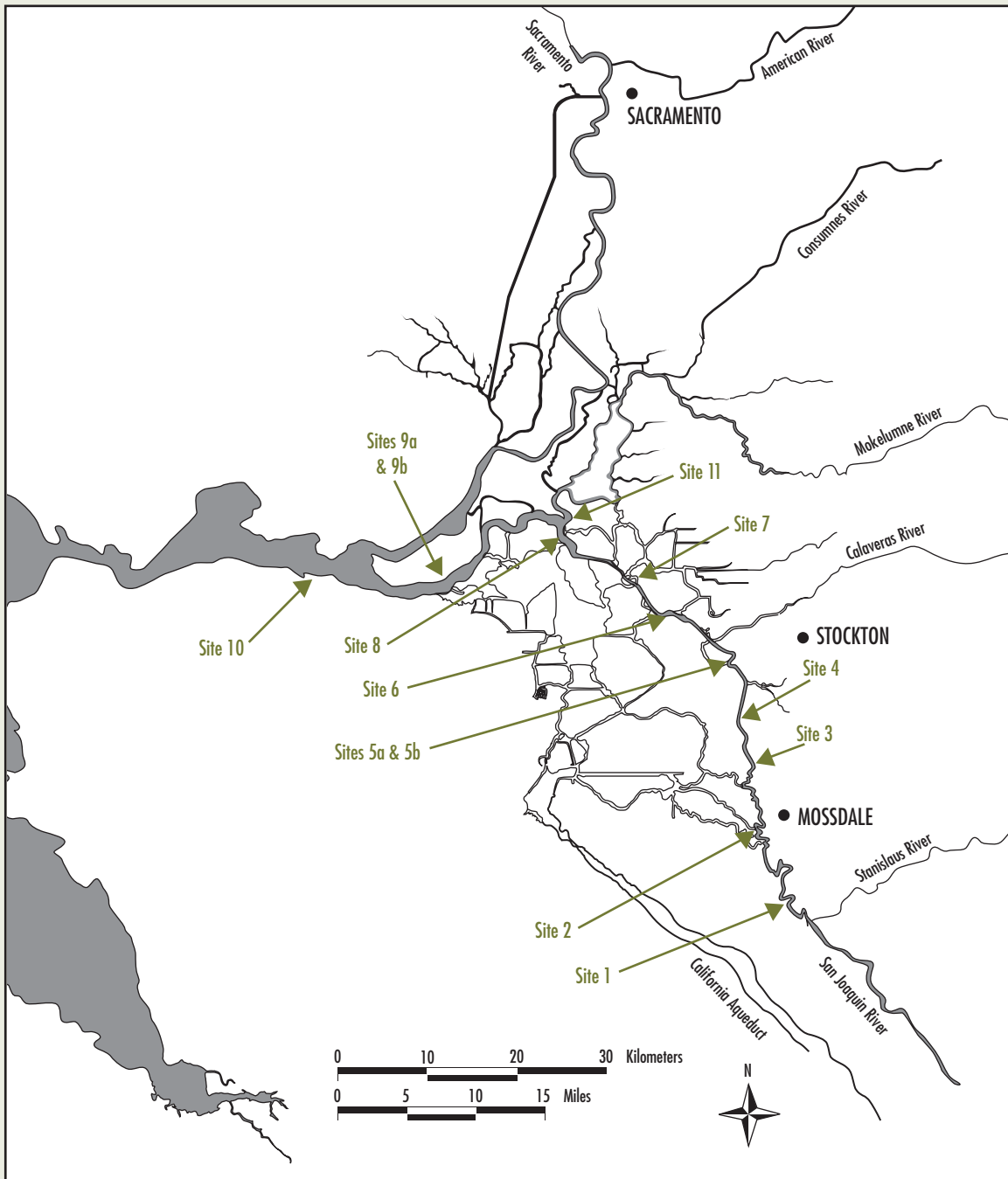




## APPENDIX C

### *Chinook Salmon Survival Investigations*

C-1. WATER TEMPERATURE MONITORING LOCATIONS DURING THE VAMP 2003 EXPERIMENT  
SACRAMENTO-SAN JOAQUIN ESTUARY

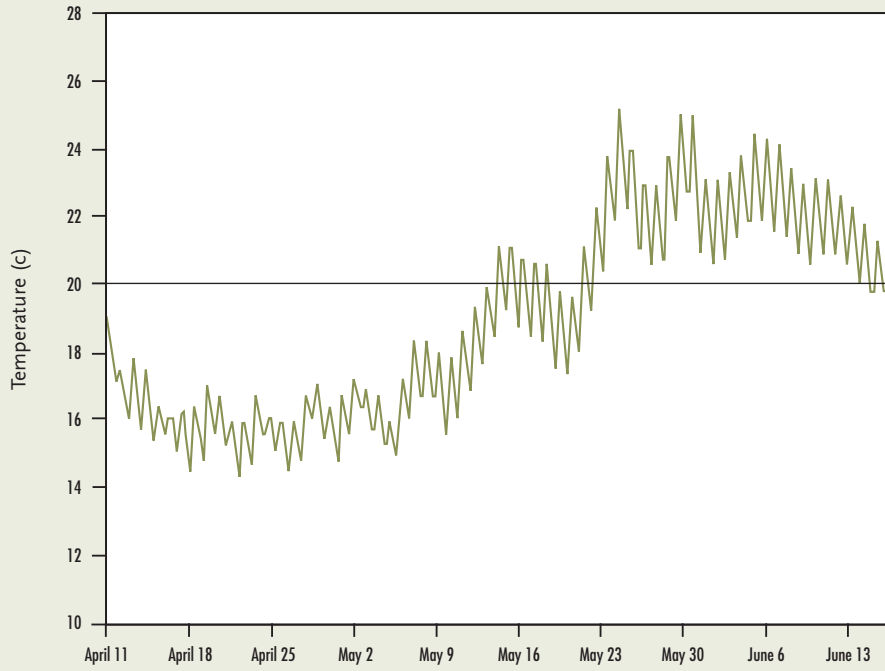


C-1. VAMP 2003 WATER TEMPERATURE MONITORING LOCATIONS

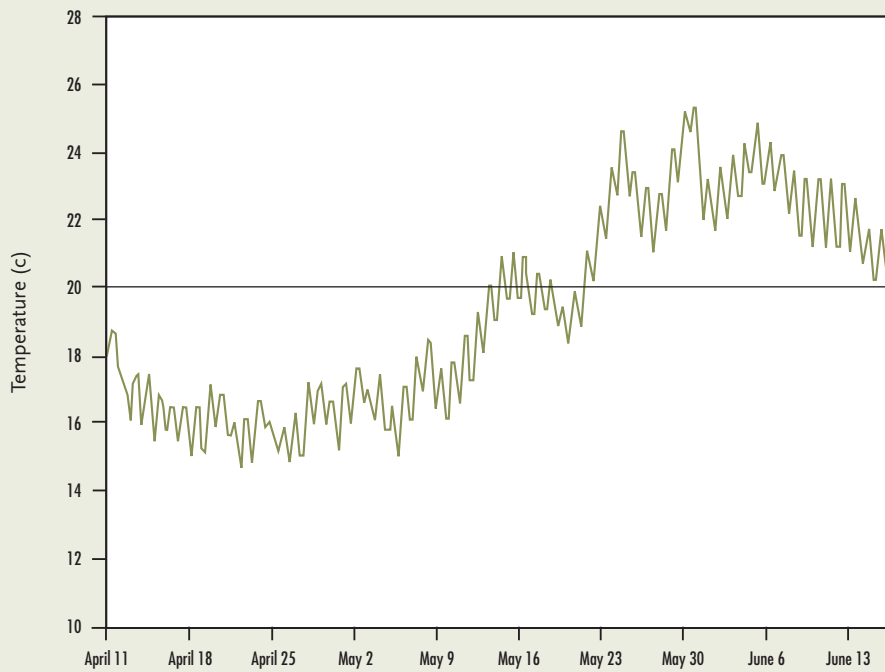
Temperature Monitoring Location	Latitude	Longitude	Distance from Durham Ferry (mi)	Date Deployed	Date Retrieved	Notes
Merced River Hatchery-1			n/a	March 21	April 23	In river April 21
Merced River Hatchery-1			n/a	March 21	April 30	In river April 28
1 Durham Ferry	N 37 41.381	W 121 15.657	n/a	April 11	June 15	Logger was buried in silt when retrieved
2 Mossdale	N 37 47.180	W 121 18.425	11.2	April 11	June 15	3-1/2 feet below surface
3 Dos Reis	N 37 49.808	W 121 18.665	16.4	April 11	June 15	3 feet below surface
4 DWR Monitoring Station	N 37 51.869	W 121 19.376	19.4	April 11	June 15	3 feet below surface
5a Confluence-Top	N 37 56.818	W 121 20.285	26.5	April 11	Logger Malfunction	3 feet below surface
5b Confluence-Bottom	N 37 56.818	W 121 20.285	26.5	April 11		Located on bottom
6 Downstream of Channel Marker 30	N 37 59.776	W 121 25.569	33.3	April 11	June 15	3 feet below surface
7 1/2 mile Upstream of Channel Marker 13	N 38 01.940	W 121 28.769	37.3	April 11	June 15	3 feet below surface
8 Downstream of Channel Marker 36	N 38 04.522	W 121 34.413	44.7	April 11	June 15	3 feet below surface
9a Jersey Point USGS Gauging Station-top	N 38 03.172	W121 41.637	56	April 11	Logger Lost	3 feet below surface
10 Chipps Island	N 38 03.084	W 121 55.463	71.5	April 11	June 15	4-1/2 feet below surface
11 Mokelumne River-Lighthouse Marina	N 38 06.334	W 121 34.213	40	April 11	June 15	Under pier in 3 feet of water

## C-2. WATER TEMPERATURE MONITORING

### Site 1 • Durham Ferry

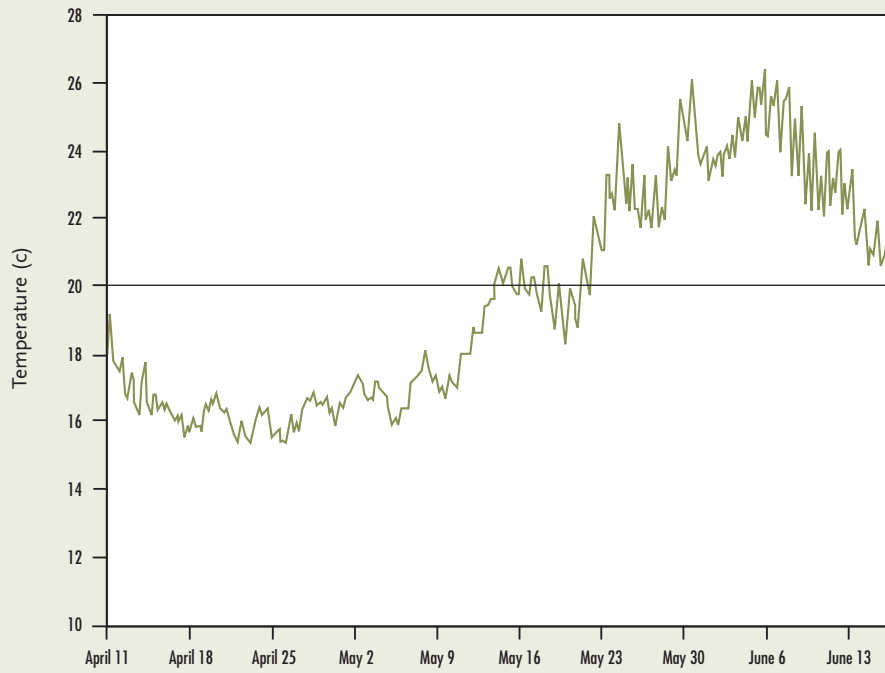


### Site 2 • Mossdale

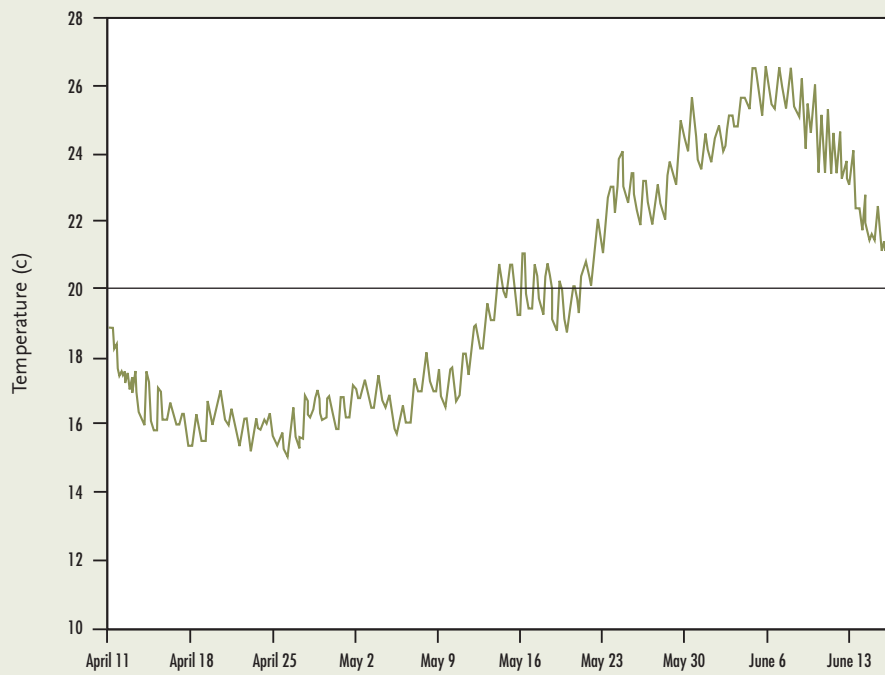


## C-2. WATER TEMPERATURE MONITORING

Site 3 • Dos Reis

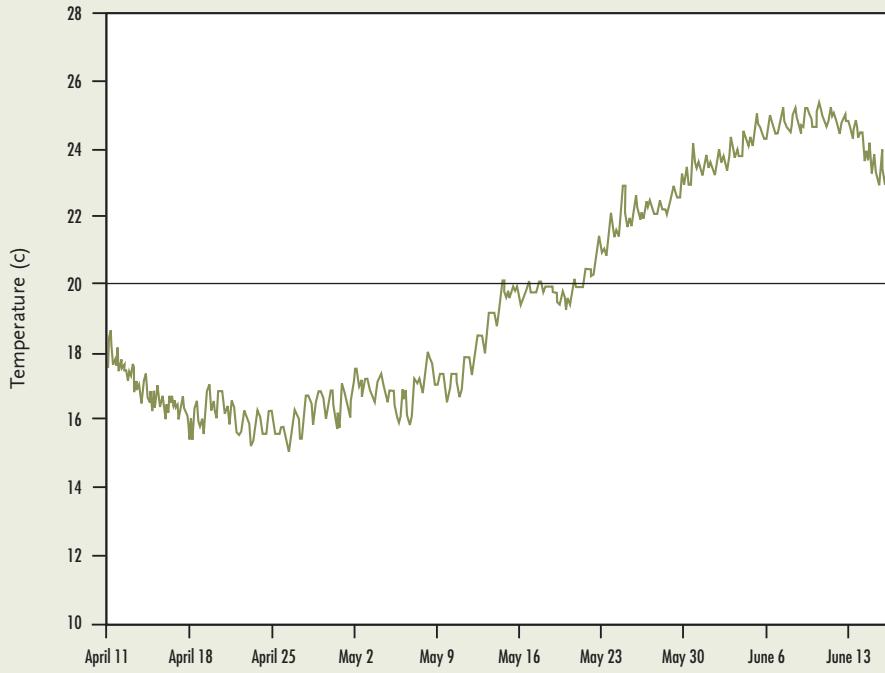


Site 4 • DWR Monitoring Station

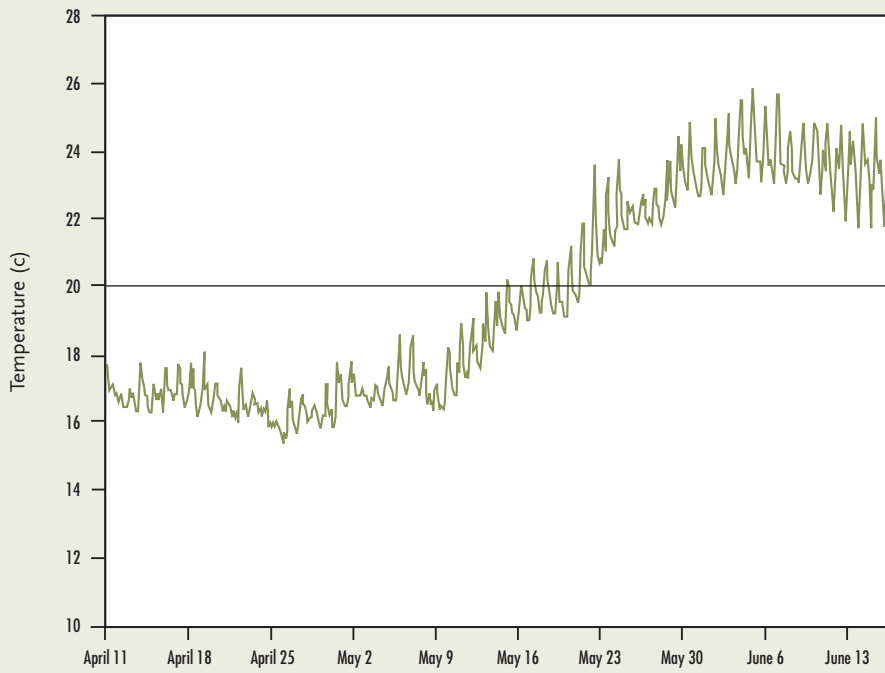


## C-2. WATER TEMPERATURE MONITORING

### Site 5b • Confluence-Bottom

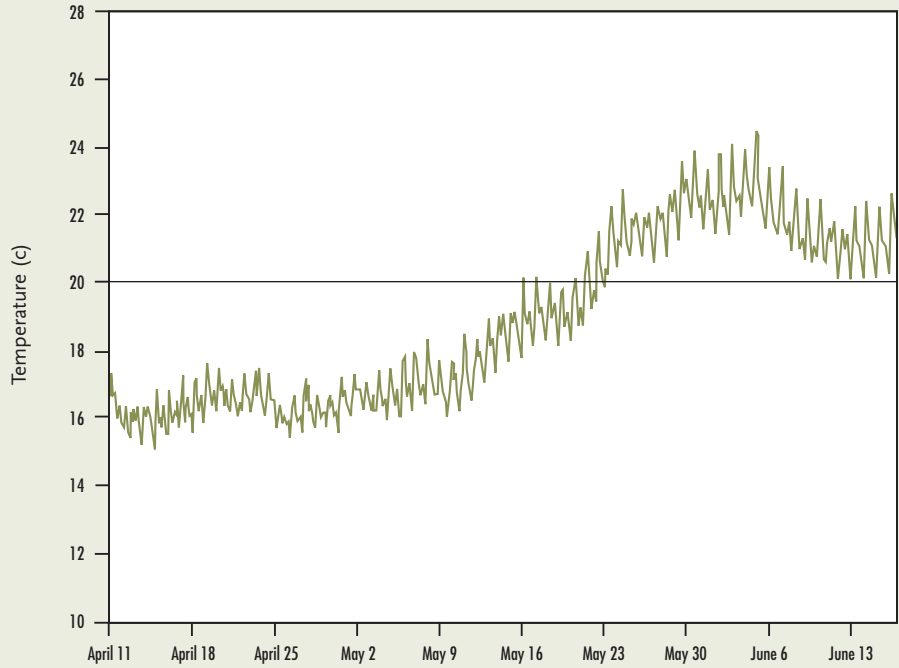


### Site 6 • Downstream of Channel Marker 30

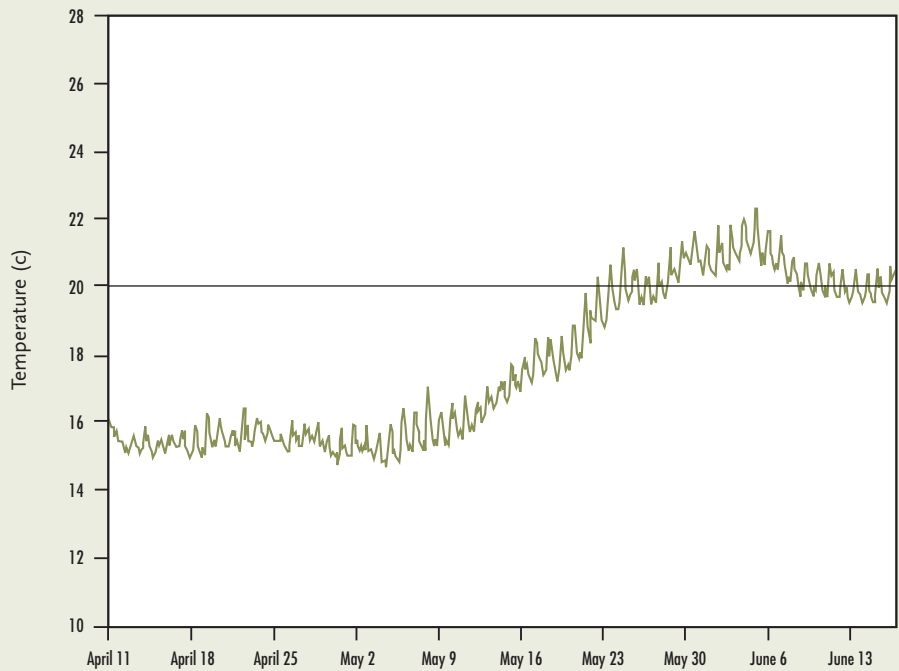


## C-2. WATER TEMPERATURE MONITORING

### Site 7 • 1/2 Mile Upstream of Channel Marker 13

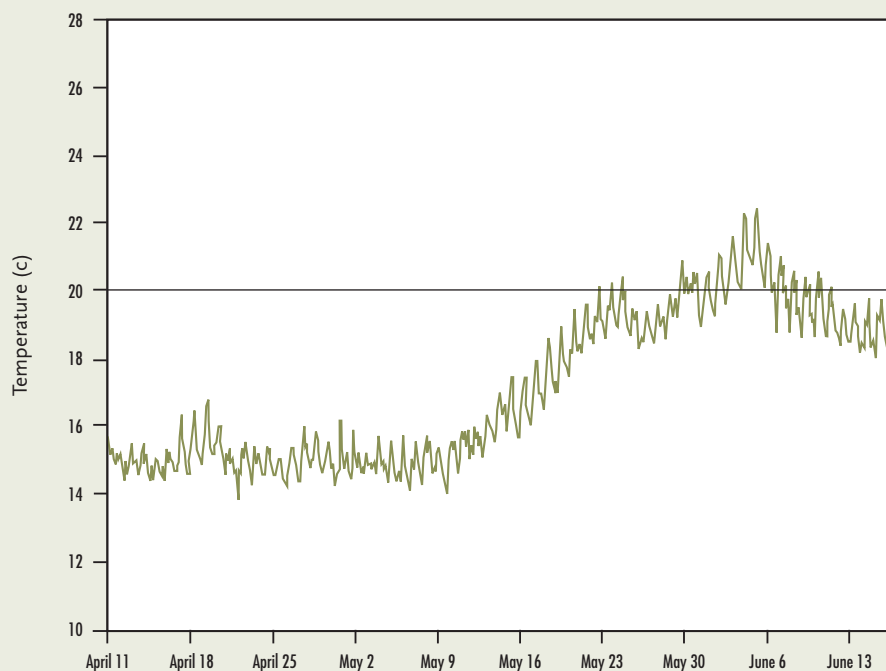


### Site 8 • Downstream of Channel Marker 36



## C-2. WATER TEMPERATURE MONITORING

### Site 10 • Chipps Island



## C-3. RESULTS OF NET PEN SAMPLING

### a. Conducted After First Set Juvenile Chinook Salmon Releases, VAMP 2003

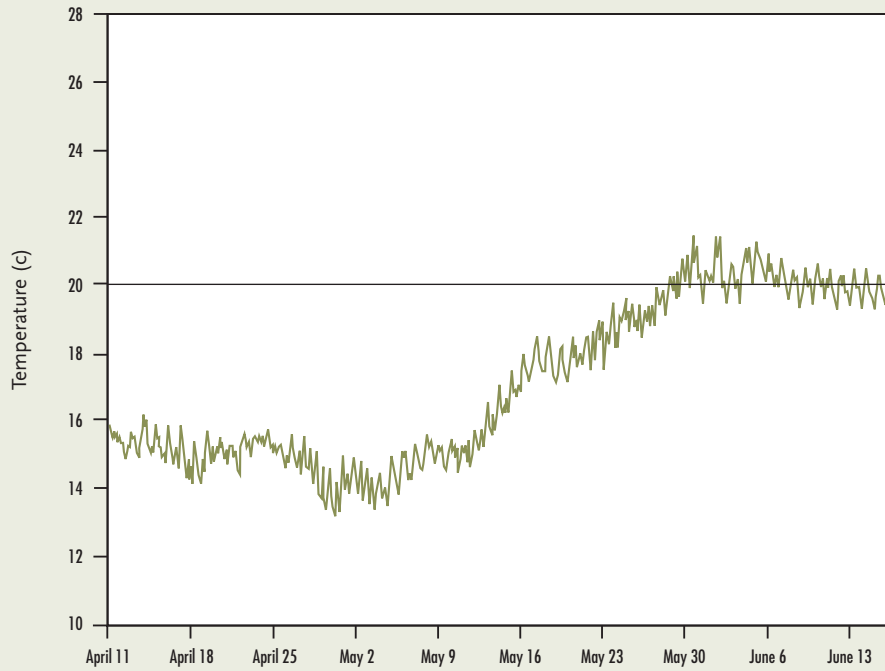
	Release Date	Release Location and Number	Coded-wire tag codes(s)	Number in sample	Mean fork length (and range in mm)	Mean weight (and range in g)	Mean scale loss (and range in %)
Samples at 00 Hours	21 Apr	Durham Ferry I <sup>1</sup>	06-02-82 06-02-83 06-27-42	50	85 (72-96)	6.6 (4.2-9.2)	9 (3-25)
	22 Apr	Mossdale I	06-27-43 06-27-48	25 25	86 (74-101) 88 (78-92)	6.9 (4.3-12.1) 7.0 (4.5-9.2)	3 (1-6) 3 (1-8)
	25 Apr	Jersey Point I	06-27-44	25	89 (77-98)	7.5 (4.9-9.9)	3 (2-6)
Samples at 48 Hours	21 Apr	Durham Ferry I <sup>1,2</sup>	06-02-82 06-02-83 06-27-42	265	86 (68-99)	6.7 (3.3-10.3)	11 (5-30)
	22 Apr	Mossdale I <sup>2</sup>	06-27-43 06-27-48	234 267	88 (72-104) 85 (65-99)	7.2 (3.7-12.0) 7.1 (3.0-10.7)	8 (4-15) 7 (3-15)
	25 Apr	Jersey Point I <sup>2</sup>	06-27-44	200	88 (69-103)	7.5 (2.7-11.3)	4 (2-10)

<sup>1</sup> Coded-wire tag codes for Durham Ferry releases were combined at the hatchery, so reported values are for all three tag codes.

<sup>2</sup> Color, fin hemorrhaging, eye appearance, and gill color were assessed from the first 25 fish for Mossdale and Jersey Point releases at 48 hours. These characteristics were assessed using the first 50 fish from the first Durham Ferry release at 48 hours.



Site 1 • Mokelumne River



Color (% normal)	Fin Hemorrhaging (% none)	Eye appearance (% normal)	Gill color (% normal)	Missing adipose fin clips (%)	Partial adipose fin clips (%)	Number of mortalities	Other deformities and comments
98	100	100	100	0	10	0	2 fish had ragged dorsal fins
100	100	100	100	4	8	0	1 fish with stunted pectoral fin and partial operculum
100	100	100	100	0	0	0	
100	100	100	96	0	0	0	
100	100	98	100	1.5	9.4	1	2 fish with caudal fin rot, 1 fish with left eye missing, 5 fish with ragged fins, 1 fish with partial operculum
100	100	96	96	1.7	10.7	1	1 fish with a split dorsal fin, 2 fish with a partial operculum
100	100	100	96	0.4	1.9	0	
100	100	100	96	0.0	0.5	7	26 additional fish were released on 4/27/03 without being measured

**C-3. RESULTS OF NET PEN SAMPLING**

**b. Conducted After Second Set Juvenile Chinook Salmon Releases, VAMP 2003**

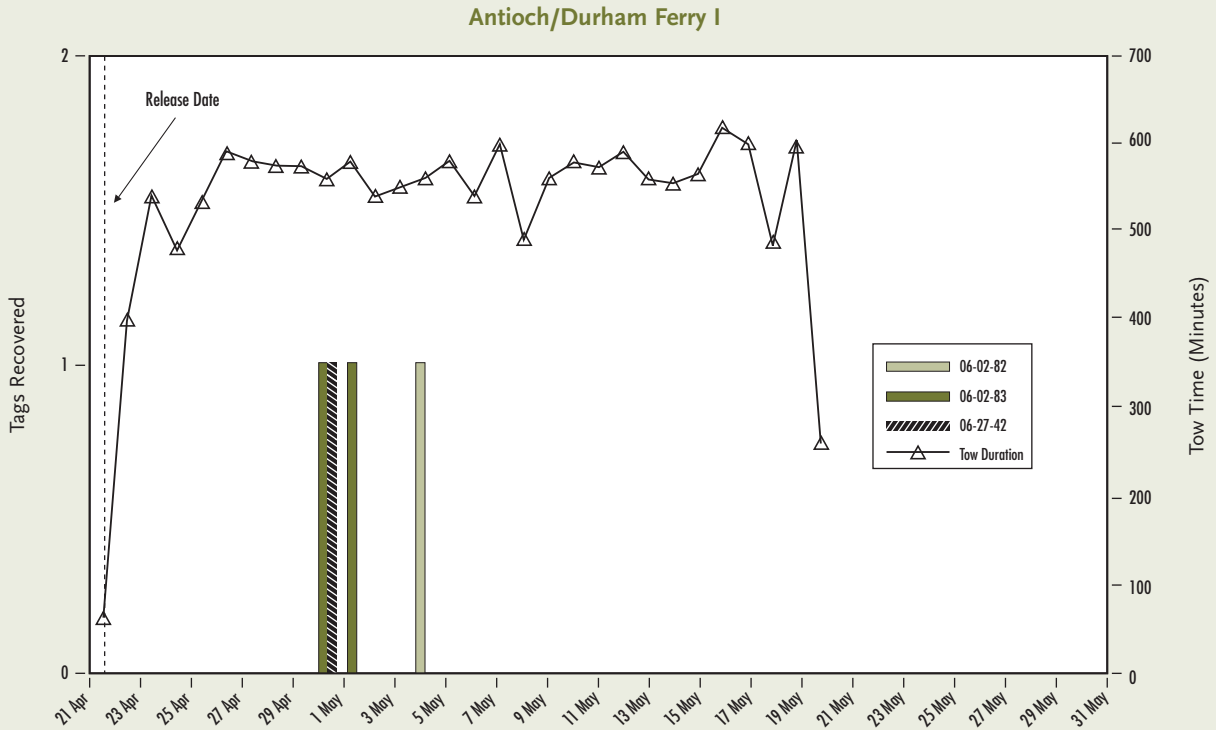
	Release Date	Release Location and Number	Coded-wire tag codes(s)	Number in sample	Mean fork length (and range in mm)	Mean weight (and range in g)	Mean scale loss (and range in %)
Samples at 00 Hours	28 Apr	Durham Ferry II <sup>1</sup>	06-27-45 06-27-46 06-27-47	50	87 (73-93)	6.9 (3.7-8.4)	14 (3-35)
	29 Apr	Mossdale II	06-27-49 06-27-50	25 25	86 (78-92) 88 (78-92)	7.0 (4.4-9.7) 7.3 (4.8-8.7)	12 (5-35) 12 (3-25)
	2 May	Jersey Point II	06-27-51	25	88 (79-97)	7.3 (5.0-9.5)	19 (10-35)
Samples at 48 Hours	28 Apr	Durham Ferry II <sup>1,2</sup>	06-27-45 06-27-46 06-27-47	358	87 (73-100)	6.9 (3.6-10.4)	3 (1-5)
	29 Apr	Mossdale II <sup>2</sup>	06-27-49 06-27-50	33 144	89 (73-98) 88 (70-102)	7.5 (3.9-9.4) 7.3 (3.8-10.4)	10 (5-20) 14 (5-30)
	2 May	Jersey Point II <sup>2</sup>	06-27-51	236	90 (71-102)	7.8 (4.0-11.3)	4 (2-10)

<sup>1</sup> Coded-wire tag codes for Durham Ferry releases were combined at the hatchery, so reported values are for all three tag codes.

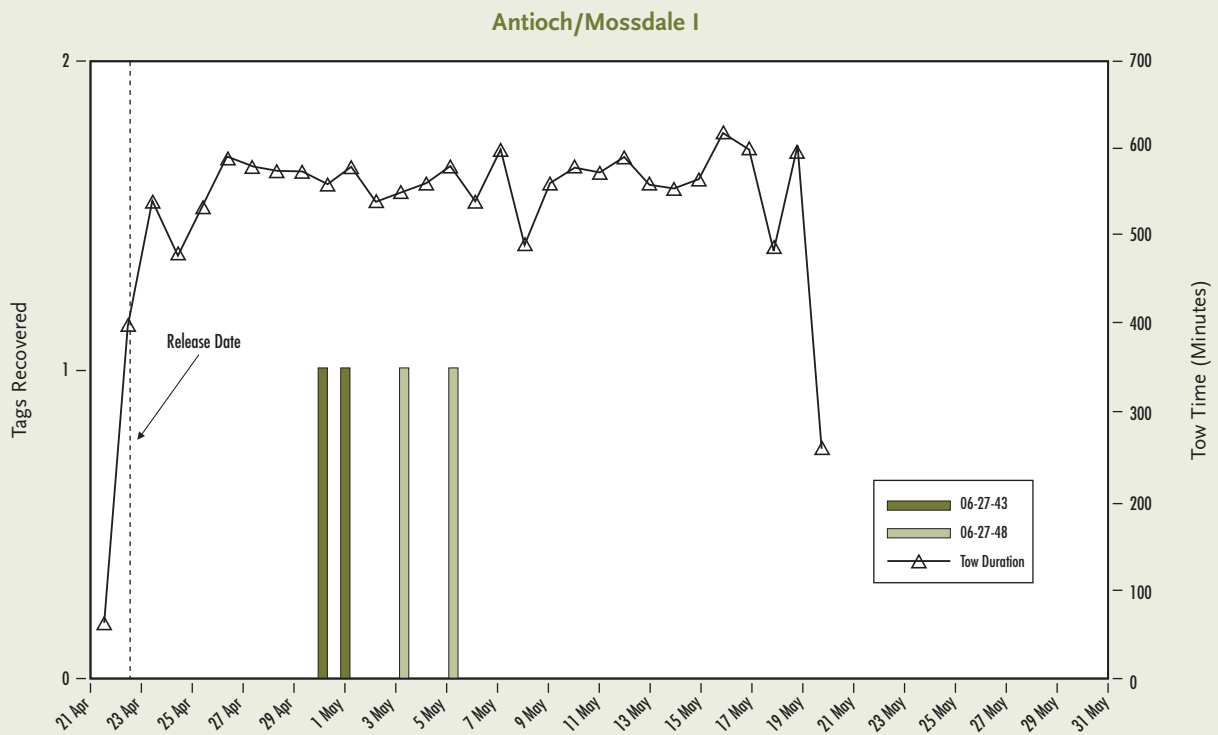
<sup>2</sup> Color, fin hemorrhaging, eye appearance, and gill color were assessed from the first 25 fish for Mossdale and Jersey Point releases at 48 hours. These characteristics were assessed using the first 49 fish from the second Durham Ferry release at 48 hours.

**C-4. VAMP 2003 CODED-WIRE TAG RECOVERIES**

The following graphs are of coded-wire tagged juvenile chinook salmon, from the two sets of VAMP 2003, releases recovered during trawling at Antioch. No coded-wire tagged juveniles were recovered at Antioch from the second Durham Ferry release (on April 28, 2003) or the second Mossdale release (on April 29, 2003).

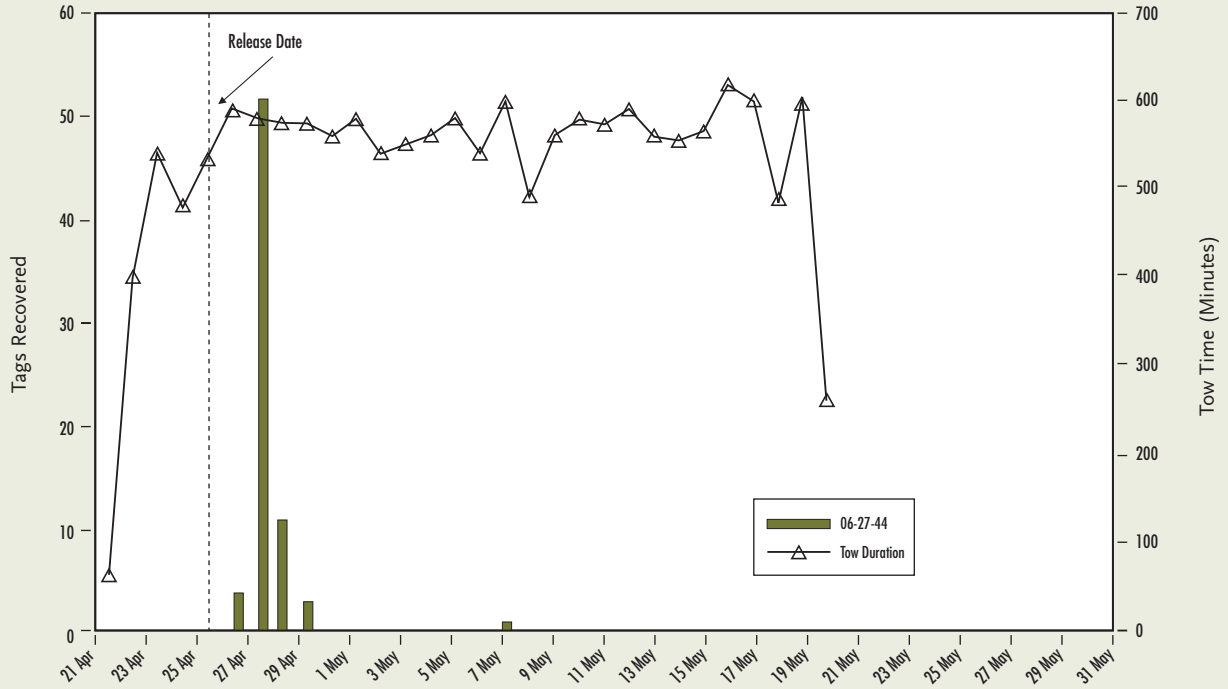


Color (% normal)	Fin Hemorrhaging (% none)	Eye appearance (% normal)	Gill color (% normal)	Missing adipose fin clips (%)	Partial adipose fin clips (%)	Number of mortalities	Other deformities and comments
100	100	98	98	2	2	0	
100	100	100	88	0	8	0	left eye was missing
100	100	96	100	4	0	0	
100	100	100	88	4	8	0	
100	100	100	98	0.0	1.7	2	small holes in net pen may have allowed fish to escape
100	100	100	100	0	0	0	
100	100	100	100	0.7	3.5	0	
100	100	100	100	0.8	3.4	0	

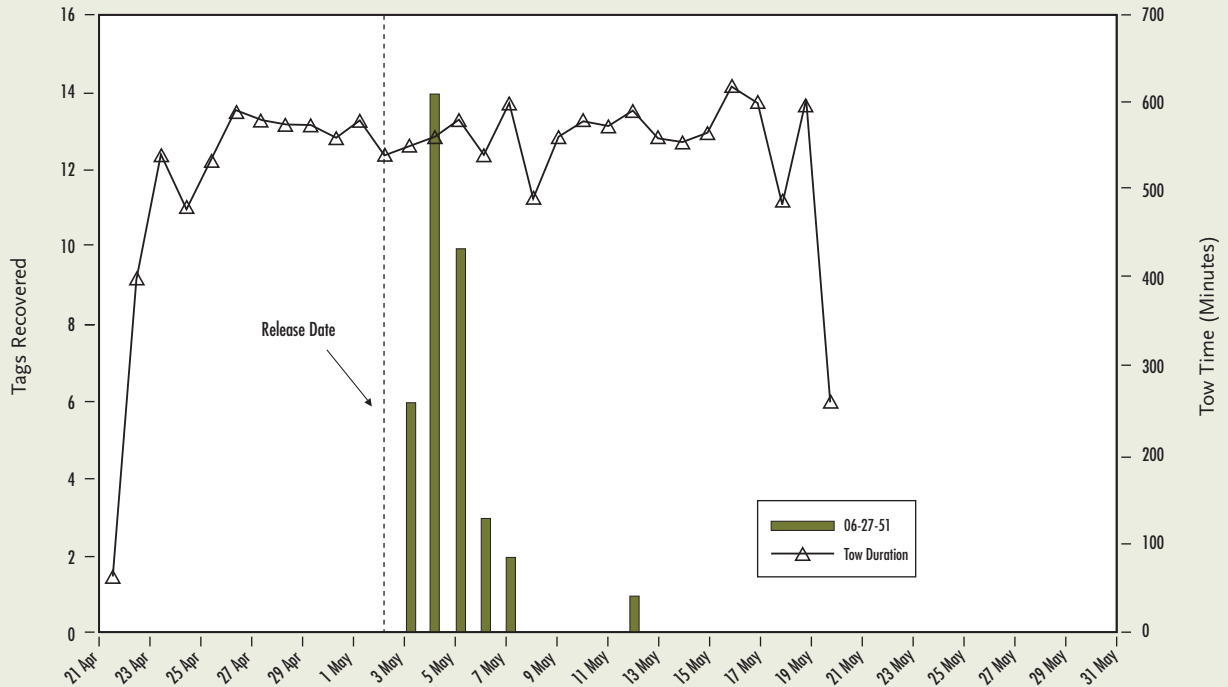


C-4. VAMP 2003 CODED-WIRE TAG RECOVERIES

Antioch/Jersey Point I



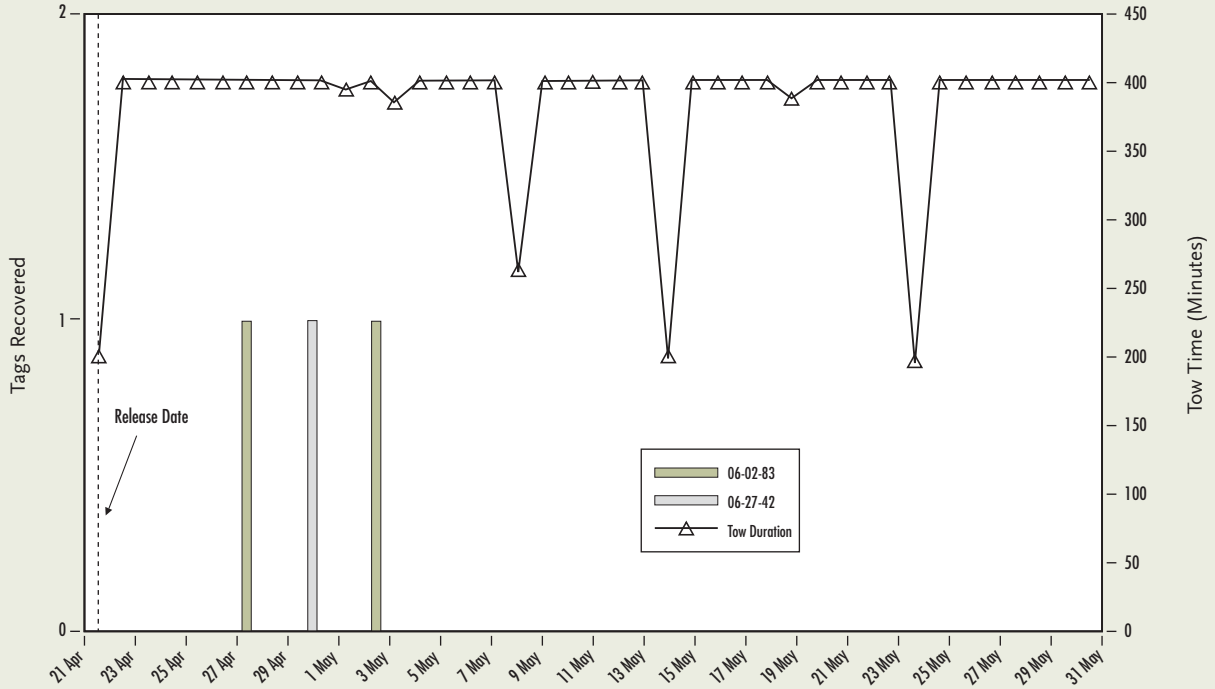
Antioch/Jersey Point II



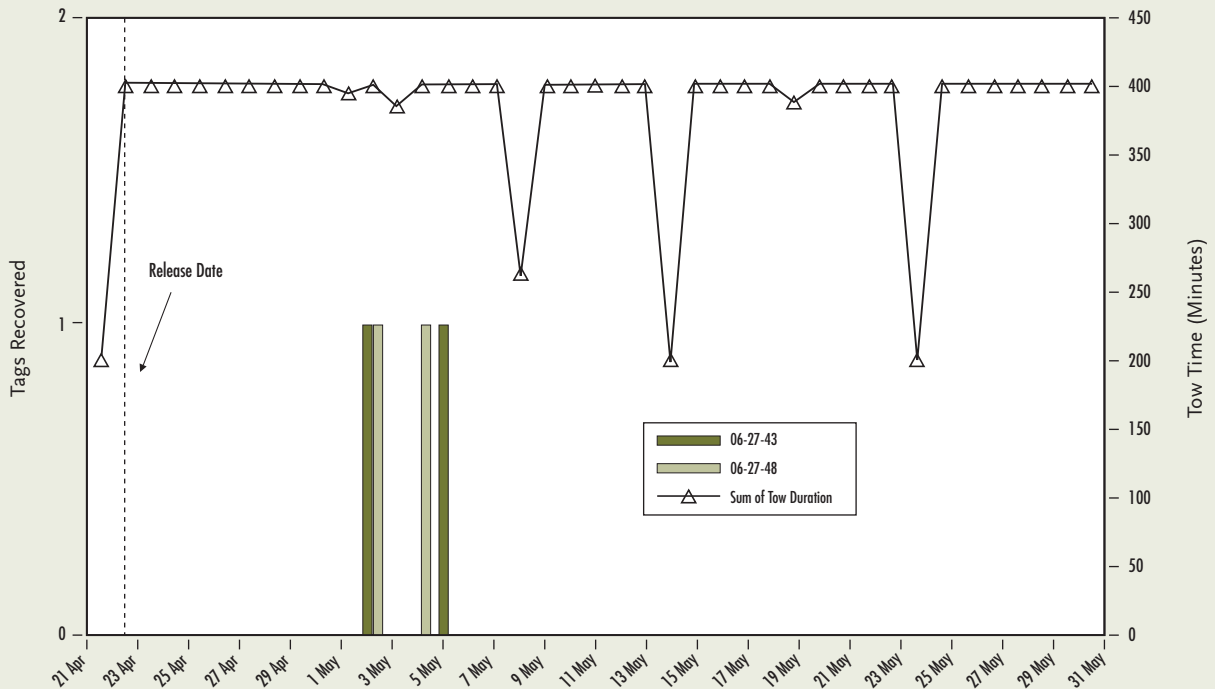
### C-4. VAMP 2003 CODED-WIRE TAG RECOVERIES

The following graphs are of coded-wire tagged juvenile chinook salmon, from the two sets of VAMP 2003, releases recovered during trawling at Chipps Island. No coded-wire tagged juveniles were recovered at Chipps Island from the second Durham Ferry release (on April 28, 2003).

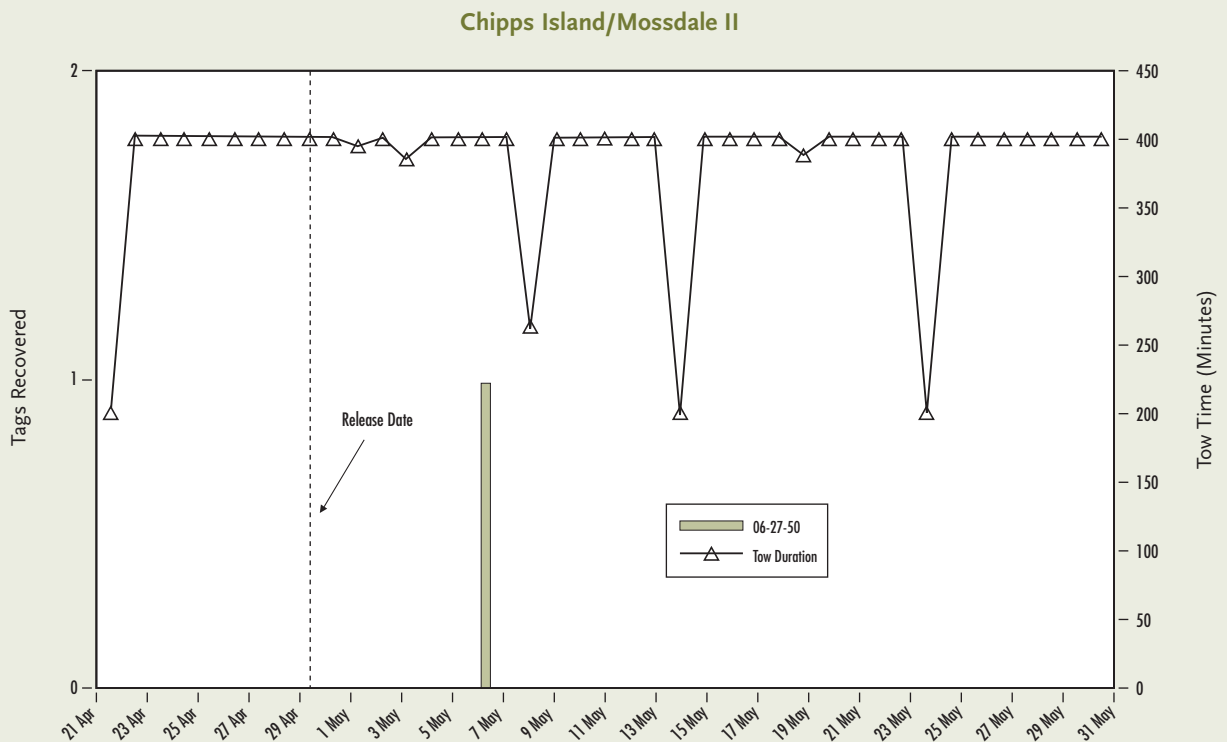
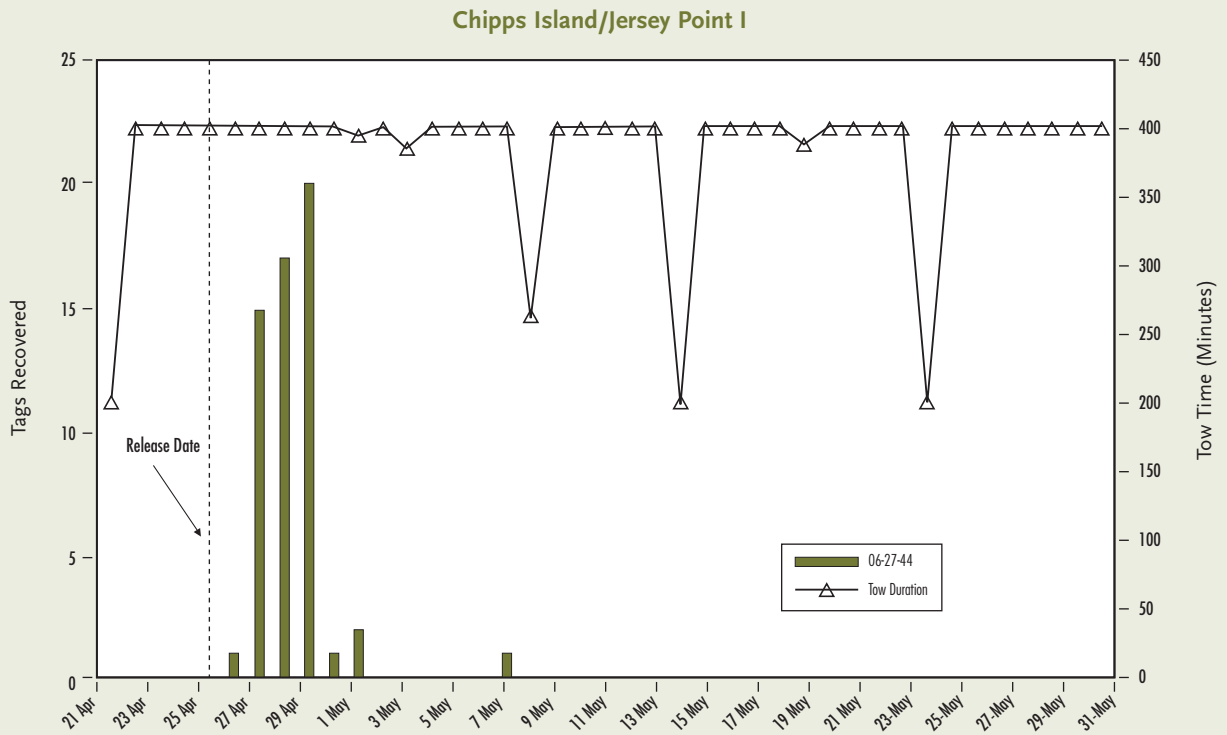
#### Chipps Island/Durham Ferry I



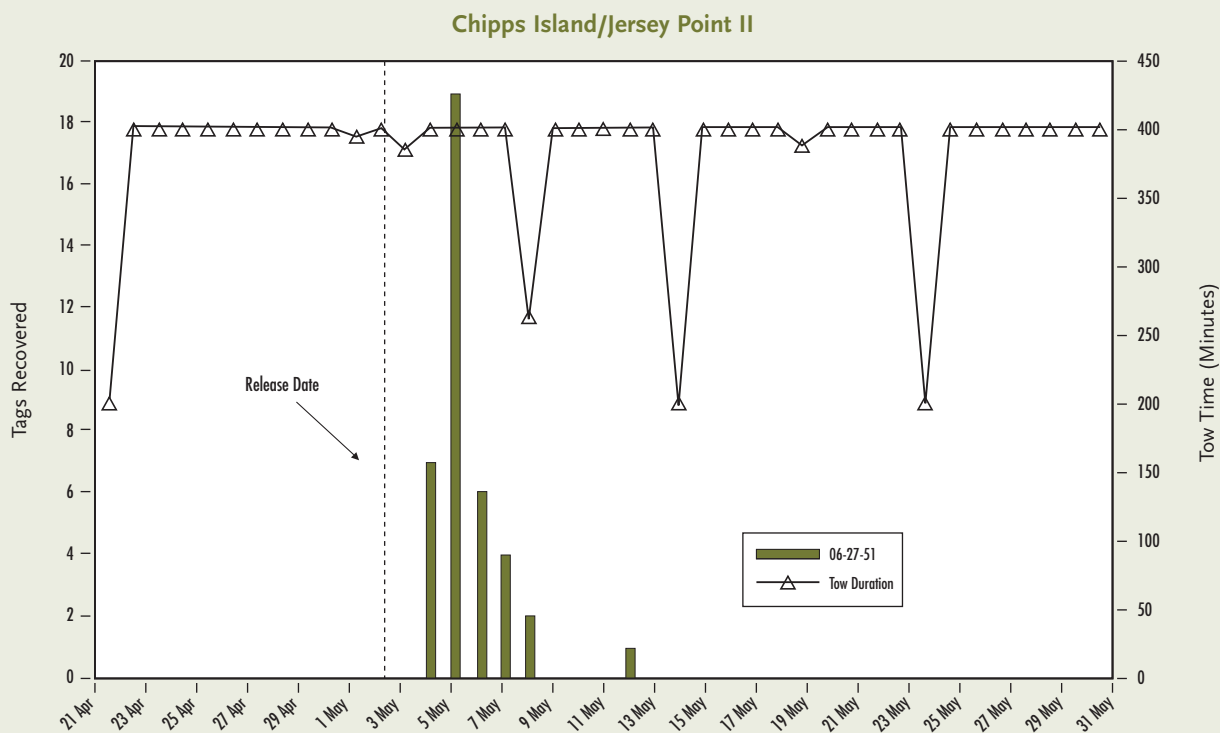
#### Chipps Island/Mossdale I



C-4. VAMP 2003 CODED-WIRE TAG RECOVERIES



### C-4. VAMP 2003 CODED-WIRE TAG RECOVERIES



**C-5. RECOVERY TIMING OF CWT RELEASED AS  
SAN JOAQUIN TRIBUTARY STUDIES IN 2003**

	Tag code	Release Site/Release Stock	Release Date	Antioch			Chippis Island		
				First day recovered	Last day recovered	Days at large	First day recovered	Last day recovered	Days at large
Merced River	06-44-89	Merced River Fish Facility	4/13/03	4/24/03	4/27/03	14	4/25/03	4/25/03	12
	06-44-90	Merced River Fish Facility		4/26/03	4/26/03	13	4/23/03	4/23/03	10
	06-44-91	Merced River Fish Facility		4/26/03	5/04/03	21	—	—	—
	06-44-92	Merced River Fish Facility		—	—	—	4/29/03	4/29/03	16
	Total			4/24/03	5/04/03	21	4/23/03	4/29/03	16
	06-44-93	Hatfield State Park (lower Merced)	4/16/03	4/24/03	4/27/03	11	4/24/03	4/26/03	10
	06-44-94	Hatfield State Park (lower Merced)		4/25/03	5/03/03	17	4/26/03	4/26/03	10
	06-44-95	Hatfield State Park (lower Merced)		4/23/03	4/26/03	10	4/25/03	5/05/03	19
	Total			4/23/03	5/03/03	17	4/24/03	5/05/03	19
	06-44-96	Merced River Fish Facility	4/25/03	—	—	—	—	—	—
	06-44-97	Merced River Fish Facility		—	—	—	—	—	—
	06-44-98	Merced River Fish Facility		5/11/03	5/11/03	16	—	—	—
	06-44-99	Merced River Fish Facility		—	—	—	—	—	—
	Total			5/11/03	5/11/03	16	—	—	—
06-45-64	Hatfield State Park (lower Merced)	4/29/03	—	—	—	—	—	—	
06-45-65	Hatfield State Park (lower Merced)		—	—	—	5/07/03	5/10/03	11	
06-45-66	Hatfield State Park (lower Merced)		5/12/03	5/12/03	13	—	—	—	
Total			5/12/03	5/12/03	13	5/07/03	5/10/03	11	
06-27-77	Merced River Fish Facility	5/04/03	—	—	—	5/20/03	5/20/03	16	
06-27-78	Merced River Fish Facility		—	—	—	—	—	—	
06-44-49	Merced River Fish Facility		5/18/03	5/18/03	14	5/17/03	5/17/03	13	
06-44-50	Merced River Fish Facility		—	—	—	5/15/03	5/18/03	14	
Total			5/18/03	5/18/03	14	5/15/03	5/20/03	16	
06-45-46	Hatfield State Park (lower Merced)	5/07/03	—	—	—	5/17/03	5/17/03	10	
06-45-47	Hatfield State Park (lower Merced)		5/15/03	5/17/03	10	—	—	—	
06-45-72	Hatfield State Park (lower Merced)		—	—	—	5/15/03	5/15/03	8	
Total			5/15/03	5/17/03	10	5/15/03	5/17/03	10	
Stanislaus River	06-45-67	Knight's Ferry	4/25/03	5/17/03	5/17/03	22	—	—	—
	06-45-68	Knight's Ferry		—	—	—	5/11/03	5/11/03	16
	06-45-69	Knight's Ferry		5/04/03	5/04/03	9	—	—	—
	Total			5/04/03	5/17/03	22	5/11/03	5/11/03	16
	06-45-70	Two Rivers	4/27-4/28/03	5/05/03	5/05/03	8	—	—	—
06-45-71	Two Rivers	5/07/03		5/12/03	15	—	—	—	
Total		5/05/03		5/12/03	15	—	—	—	