Smelt Working Group
March 7, 2016

Meeting Summary

The Working Group reviewed current Delta Smelt distribution, salvage data, and Delta conditions. The Working Group agreed that the relative risk of entrainment to adult Delta Smelt likely has decreased. Members noted that spawning likely is well underway, and adults are most likely holding their positions, rather than continuing migration. In light of this, the group's discussions primarily focused on the entrainment risk to larval Delta Smelt.

The Working Group described the risk of entrainment under the Service-provided advice framework. Under this framework the relative risk of entrainment for OMR flow ranges is discussed and assessed. For the current week, the risk of entrainment of larval Delta Smelt for each of the flow ranges is characterized as follows:

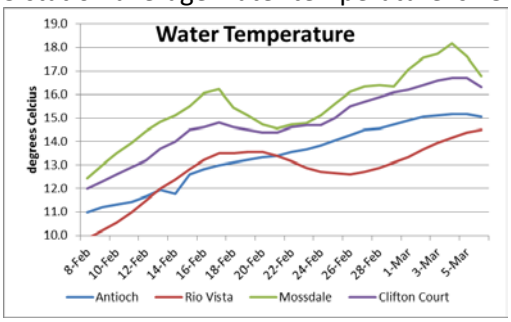
- -1250 to -2000 cfs has a low risk of entrainment,
- -2000 to -3500 cfs has a medium to high risk of entrainment,
- -3500 to -5000 cfs has a high risk of entrainment.

The Working Group is following guidance for entrainment protections from both Action 2 (adult Delta Smelt) and Action 3 (juvenile Delta Smelt). The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions, and will meet again on Monday, March 14, 2016 at 10 am.

Reported Data

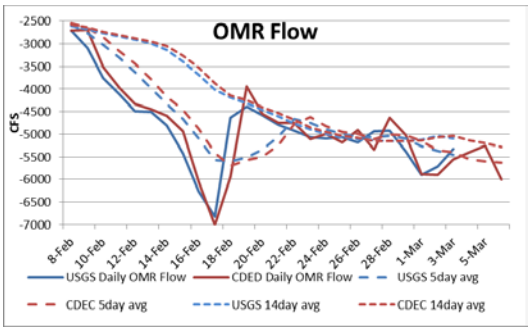
1. Current environmental data
    a. Temperature

    3 station average water temperature is 15.4°C.



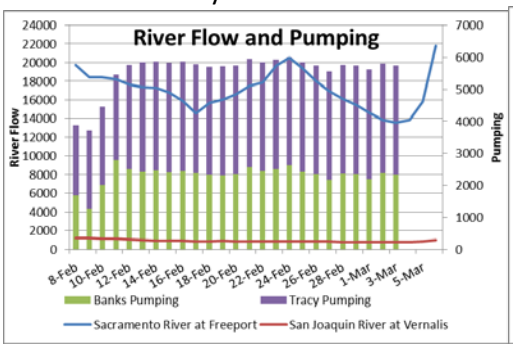
    b. OMR flow

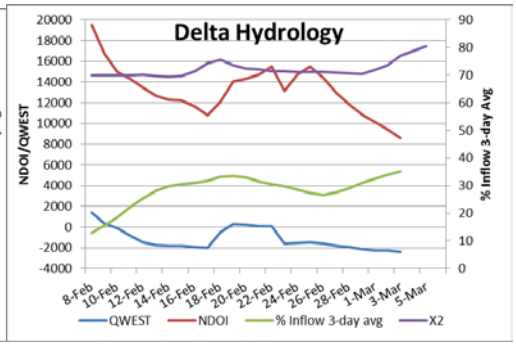
    USGS OMR daily, 5-day, and 14-day average flows on March 3 are -5320, -5452, and -5094 cfs, respectively. The CDEC OMR daily, 5-day, and 14-day average flows for March 6 were -6008, -5622, and -5282 cfs, respectively.



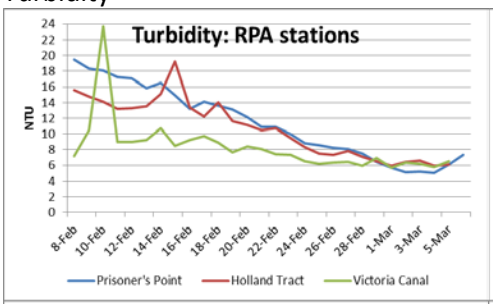
c. River Flows and pumping

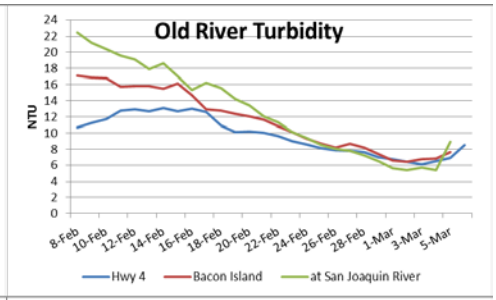
Sacramento River at Freeport flow for March 6 was 21,779 cfs. San Joaquin River at Vernalis river flow for March 6 was 970 cfs. X2 is upstream of 81km. Combined exports are 5730 cfs today.

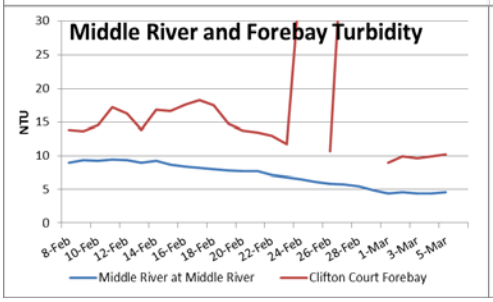


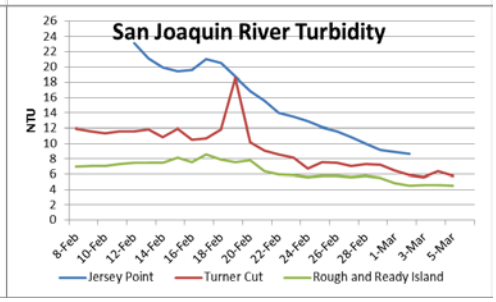


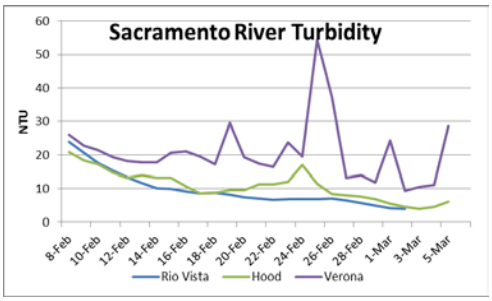
d. Turbidity











2. Delta fish monitoring

CDFW has released the 2015 FMWT indices:
The 2015 Delta Smelt annual FMWT index is 7.
The 2015 Longfin Smelt annual FMWT index is 4.
Both indices are the lowest on record (i.e. since 1967).

Smelt Larva Survey (SLS) #5 was in the field the week of February 29. Sample processing is approximately 68% complete. No Delta Smelt have been detected in the samples processed to date. A total of 101 young of the year Longfin Smelt have been identified, ranging in length from 6-18mm. SLS # 6 is in the field the week of March 14.

Spring Kodiak Trawl #3 is in the field this week. Stations 809, 812, and 815 have been sampled this morning with no Delta Smelt catch.

The first 20-mm survey of the season will commence March 14, and run concurrently with SLS #6.

The Early Warning Survey began November 30.

Early Warning Survey Results, February 15 through 19

Date	Location	Delta Smelt Catch
2/29	Prisoners Point	0
3/1	Jersey Point	0
3/2	Prisoners Point	0
3/3	Jersey Point	0
3/4	Station 902	0

3. Modeling

Particle Tracking modeling (PTM) runs were reviewed (attached).

DWR turbidity modeling was provided by the DCT; however, given the low model accuracy discussed in previous weeks' notes they are not being relied upon for turbidity forecasting.

4. Salvage

No Delta Smelt salvage has occurred since February 22. The cumulative season total of salvaged adult Delta Smelt is 12, which represents 29% of the concern level of the WY 2016 adult Delta Smelt incidental take.

No Longfin Smelt has been observed in salvage sampling at either the federal or state Delta facilities during the current water year.

Larval sampling operations have begun at both the SWP and CVP. No larval Delta Smelt or Longfin Smelt have been detected in the samples processed so far this season.

5. Expected Project Operations

Jones pumping plant is pumping 3400 cfs today. The daily average intake to Clifton Court (CC) is 2330 cfs. Combined pumping is 5730 cfs today. Pumping is constrained by the NMFS and FWS BiOp's RPAs, which limits OMR flow to no more negative than -5000 cfs.

6. Delta Conditions Team

DCT met on March 4; the March 4 DWR turbidity transect data (attached) and a DCT summary (including turbidity forecasting) were provided. The turbidity forecasting model results remain unreliable, and have therefore been distributed but not discussed at the DCT.

7. Assessment of Risk:

<u>BiOp Background</u>

RPA Component 1, Action 2 states, "An action implemented using an adaptive process to tailor protection to changing environmental conditions after Action 1. As in Action 1, the intent is to protect pre-spawning adults from entrainment and, to the extent possible, from adverse hydrodynamic conditions." "The range of net daily OMR flows will be no more negative than -1,250 to -5,000 cfs. Depending on extant conditions specific OMR flows within this range are recommended by the Working Group from the onset of Action 2 through its termination…"

RPA Component 2, Action 3: "The objective of this RPA component (which corresponds to Action 3 in Attachment B), is to improve flow conditions in the Central and South Delta so that larval and juvenile delta smelt can successfully rear in the Central Delta and move downstream when appropriate" (page 282).

The WY 2016 adult Delta Smelt incidental take (IT) is 56, as stated in the Service's December 23, 2015 memo to the Bureau of Reclamation. The concern level is 42. The method to calculate the adult IT is described on p 386 of the 2008 BiOp, with the corrections described in both the February 22, 2013, and December 23, 2015 memos. The alternative approach that the Service presented to the 2015 independent review panel at the Long-term Operation Biological Opinions annual science review will be piloted this year.

The WY 2016 larval/juvenile Delta Smelt incidental take is 392, and the concern level is 261. The method to calculate the larval/juvenile IT is described on p 389, with revision provided in the February 22, 2013 Service memo to the Bureau of Reclamation.

<u>2015 Delta Smelt abundance</u>

The four primary 2015 annual abundance indices for all Delta Smelt life stages are the lowest on record.

	2014	2015
SKT	30.1	13.8
20-mm	1.1	0.3

TNS	0.5	0.0
FMWT	9	7

Discussion

The Working Group concluded that overall risk of entrainment of adult Delta Smelt into the south Delta has decreased. Catch for the early warning survey at Prisoners Point and Jersey Point has been zero since February 25, turbidity levels over most of the southern Delta were below 8 NTUs for the past week, and water temperatures have been gradually increasing. Members do not expect to see detection of adults at the levels seen when catches peaked (>8 at Jersey and >4 at Prisoners at the end of December-beginning of January) in the early warning survey. Given that detections of ripe females in the Early Warning Survey as early as January 16, on February 8 in the Spring Kodiak Trawl Survey, and again at the SWP export facilities on February 18, and the water temperatures since, members indicated that migration likely has tapered off, that spawning is well underway, and that young of the year Delta Smelt are likely present in the system.

The Delta 3-station water temperature surpassed 12^{o}C on February 11 and as of March 6 is 15.4^{o}C. The Working Group discussed that if spawning began in mid-February (concurrence of ripe females and appropriate water temperatures in mid-February), and given the subsequent water temperatures, there is a good chance that at least some larvae are in the system. Members expressed concern that larvae were not detected in last week's SLS 5. A review of the historical survey data, given similar Delta conditions, and smelt maturation data, indicate that young of the year Delta Smelt presence was confirmed in early- to mid-March in previous years (presence confirmed in 2014 and 2015 20-mm survey 1; the first week of March). Should the next SLS Survey #6 have zero catch, the Working Group indicated larval density (much like adult density) may be too low for detection, making risk assessments challenging.

Therefore, members stressed the importance of providing adequate protection for larval fish, even if surveys have zero catch and there is no detection of small larvae or salvage of larvae 20 mm or larger. Additionally, the Working Group does not anticipate sufficient catch of Delta Smelt larvae in the 20mm Survey to determine distribution. Given that the last consistent detections of ripe Delta Smelt were in the lower San Joaquin River, the Working Group assumes spawning occurred, or is occurring, in the lower San Joaquin River, as well as potentially in the Old River corridor.

The earlier life stages of Delta Smelt are at greater risk for entrainment, given that they behave more like a particle than older life stages. Older life stages have greater ability to control their position in the water column. Given data from the past six years, members noted that the typical first detection of larval Delta Smelt is mid-March, while data from the previous two years indicates the first detection to be early March, a shift likely associated with drought conditions and warmer temperatures. Members indicated their expectation that larvae should be detected by next week's SLS.

The Working Group based their risk assessment for larval Delta Smelt on the attached PTM runs. Insertion points were Jersey Point and Prisoner's Point at OMR flows of -5000, -3500, and -1250 cfs. Members stressed the importance of weighing more heavily the results from inserting at Prisoner's Point, given the consistent catch of adults there this year and the hydrologic proximity of that location to the south Delta (as compared to Jersey Point). For OMR flow of -

5000 cfs, more than half of the particles inserted at Prisoners Point were entrained into the South Delta. For an OMR flow of -3500 cfs, slightly less than half of particles inserted at Prisoners Point were entrained into the South Delta. For an OMR flow of -1250 cfs, approximately 25% of particles inserted at Prisoners Point were entrained into the South Delta.

The above discussion points influenced and contributed to all three flow ranges described below:

Advice Framework OMR Level Risk Ranking and Discussion—**Larval Delta Smelt**

- OMR flow of -1250 to -2000 cfs: There is a low risk of entrainment under this flow range. This is the most protective range for larval Delta Smelt.
    - Risk factors: lowest annual indices on record, low likelihood of detection.
    - Salvage: None so far this season, geographic influence of the pumps does not extend to central Delta under this flow range
    - Unknowns: detection ability in salvage and trawl surveys has been severely reduced, given the record low abundance indexes.
    - Persistence of risk: expected to continue at least through March 13.
- OMR flow of -2000 to -3500 cfs: There is a medium to high risk of entrainment under this flow range, given conditions listed below:
    - Risk factors: lowest annual indices on record.
    - Salvage: none so far this season, geographic influence of the pumps not likely to extend to central Delta under this flow range
    - Unknowns: detection ability in salvage and trawl surveys has been severely reduced, given the record low abundance indexes.
    - Persistence of risk: expected to continue at least through March 13.
- OMR flow of -3500 to -5000 cfs: There is a high risk of entrainment under this flow range.
    - Risk factors: lowest annual indices on record.
    - Salvage: none so far this season, geographic influence of the pumps is likely to extend to central Delta under this flow range.
    - Unknowns: detection ability in salvage and trawl surveys has been severely reduced, given the record low abundance indexes.
    - Persistence of risk: expected to continue at least through March 13

Advice Framework OMR Level Risk Ranking and Discussion—**Adult Delta Smelt**

- OMR flow of -1250 to -2000 cfs: There is a low risk of entrainment under this flow range. This is the most protective range for Delta Smelt.
    - Risk factors: lowest annual indices on record, reduced turbidity in the south Delta.
    - Salvage: None since February 22, geographic influence of the pumps does not extend to central Delta under this flow range
    - Unknowns: detection ability in salvage and trawl surveys has been severely reduced, given the record low abundance indexes; low Sacramento River catch densities (unable to assess percentage of population in the lower San Joaquin River).
    - Persistence of risk: expected to continue through remainder of the season
- OMR flow of -2000 to -3500 cfs: There is a low risk of entrainment under this flow range, given conditions listed below:

    - Risk factors: lowest annual indices on record, reduced turbidity in the south Delta.
    - Salvage: none since February 22, geographic influence of the pumps not likely to extend to central Delta under this flow range
    - Unknowns: detection ability in salvage and trawl surveys has been severely reduced, given the record low abundance indexes, low Sacramento River catch densities (unable to assess percentage of population in the lower San Joaquin River).
    - Persistence of risk: expected to continue through remainder of the season.
- OMR flow of -3500 to -5000 cfs: There is a low to medium risk of entrainment under this flow range.
    - Risk factors: lowest annual indices on record, reduced turbidity in the south Delta.
    - Salvage: none since February 22, geographic influence of the pumps is likely to extend to central Delta under this flow range.
    - Unknowns: detection ability in salvage and trawl surveys has been severely reduced, given the record low abundance indexes, low Sacramento River catch densities (unable to assess percentage of population in the lower San Joaquin River).
    - Persistence of risk: expected to continue through remainder of the season

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, March 14, 2016.

WEEKLY ADVICE FOR THE DEPARTMENT OF FISH AND WILDLIFE FOR LONGFIN SMELT

Advice for week of March 7, 2016:
The Smelt Working Group does not have any advice for Longfin Smelt based on recent information.

Longfin Smelt larvae were detected at stations influenced by Barker Slough operations, but based on recent operations (zero exports), no advice is necessary (see #5 below).

Basis for advice:
The 2009 State Water Project 2081 for Longfin Smelt states that advice to WOMT and the DFW Director shall be based on:

1. Adult Salvage – total adult (>=80 mm) Longfin Smelt salvage (SWP+CVP) for December through February > 5 times the Fall Midwater Trawl Longfin Smelt annual abundance index.

2. Adult abundance, distribution or other information indicates that OMR flow advice is warranted.

3. Larva distribution in the Smelt Larva Survey or the 20-mm Survey finds Longfin Smelt larvae present at 8 of 12 central and south Delta sampling stations in 1 survey (809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919; see Figure 1).

4. Larva catch per tow exceeds 15 Longfin Smelt larvae or juveniles in 4 or more of the 12 survey stations listed.

5. During the period January 15 through March 31 of a dry or critically dry water year only, advice for Barker Slough pumping plant operations may be warranted if larval Longfin Smelt are detected at station 716 and other information indicates risk of entrainment.

Discussion of Criteria

1. As of March 6, 2016, no Longfin Smelt has been salvaged for the water year. The **Longfin Smelt adult salvage threshold for advice is 20** based on a Fall Midwater Trawl abundance index of 4 for 2015 (see criterion in #1 above). No advice is warranted based on this criterion.

2. No sampling was conducted in February or so far in March by the Bay Study. January Bay Study sampling detected no Longfin Smelt in the lower San Joaquin or Sacramento rivers. December Bay Study sampling collected no Longfin Smelt in the San Joaquin River. The December Fall Midwater Trawl sampled the region and did not detect Longfin Smelt in the San Joaquin River or the south Delta. Distribution information does not indicate advice is warranted based on this criterion.

3 & 4. The fifth Smelt Larva Survey (SLS) of 2016 was completed during the week of February 29th and sample processing remains incomplete. Only a single Longfin Smelt

larvae was detected at 1 of 12 criteria stations (Table 1, Figure 1). Neither the distribution (Basis for advice #3) nor the catch density (Basis for advice #4) criterion was achieved. Over all, catches of Longfin Smelt larvae were very low.

5. The February 1 water supply index forecast at 50 percent exceedance remains within the "dry" range of water year types, and triggers review of larva distribution and Barker Slough operations. Three larva each were detected at stations 716 and 723 during SLS survey 5 (Table 1, Figure 1). Barker Slough exports dropped to zero on March 2. The current Barker Slough operations are protective of Longfin Smelt.

Current conditions: The Sacramento River flow increased to 22,324 cfs on March 6 and the San Joaquin River at Vernalis was 974 cfs. X2 was about 74 on March 6. Qwest was +2,262 cfs on March 6. On March 6, combined State and federal exports reached almost 5,800 cfs targeting an OMR of -5,000 cfs; this is planned to continue with exports varying with San Joaquin River inflow. Barker Slough exports dropped to 0 cfs on March 2 and have remained at that level since.

Bay Study sampling was not be conducted in February and may not be in March. During January sampling, Bay Study detected no Longfin Smelt within the Delta and Suisun Bay. Chipps Island Trawl sampling has collected very few Longfin Smelt this water year (all adult size): three on February 8th, one each on the 11th and the 12th; eight Longfin Smelt were collected January 13th; two adults on December 18 and the third adult on December 23. In December, a few Longfin Smelt were collected by the Fall Midwater Trawl, one each in Carquinez Strait, Grizzly Bay and just upstream of Chipps Island. These were the first and only collections of Longfin Smelt by the Fall Midwater Trawl this year. Also in December, a single Longfin Smelt was collected by the Bay Study in Carquinez Strait. No Longfin Smelt was collected in the San Joaquin River or south Delta by either survey in December.

The Smelt Larva Survey #5 caught only a single larvae at a single station in the central and south Delta (Table 1), and thus did not achieve either trigger criterion (Criteria 3 & 4 above). Three larva were detected at station 716, the criterion station for potential advice on Barker Slough operations during dry and critical water-year types.

No Longfin Smelt has been salvaged this water year.

Summary of Risk: Risk of entrainment in the south Delta is low due to a positive Qwest and extremely limited detections of larvae in central and south Delta criteria stations. Qwest will likely remain positive for several more days as high runoff enters from eastern Delta tributaries. A moderate likelihood continues of additional larvae hatching in the lower San Joaquin River, but larva numbers are likely to be low (Table 1). We currently have no information indicating much or any spawning in the central or south Delta.

The Barker Slough distribution trigger, that is larvae present at Smelt Larva Survey station 716, was maintained with three larvae, and an addition three larvae at station 723

(Table 1, Figure 1). Nonetheless, Barker Slough exports have stopped as of March 2, so there is no risk of entrainment at this location.

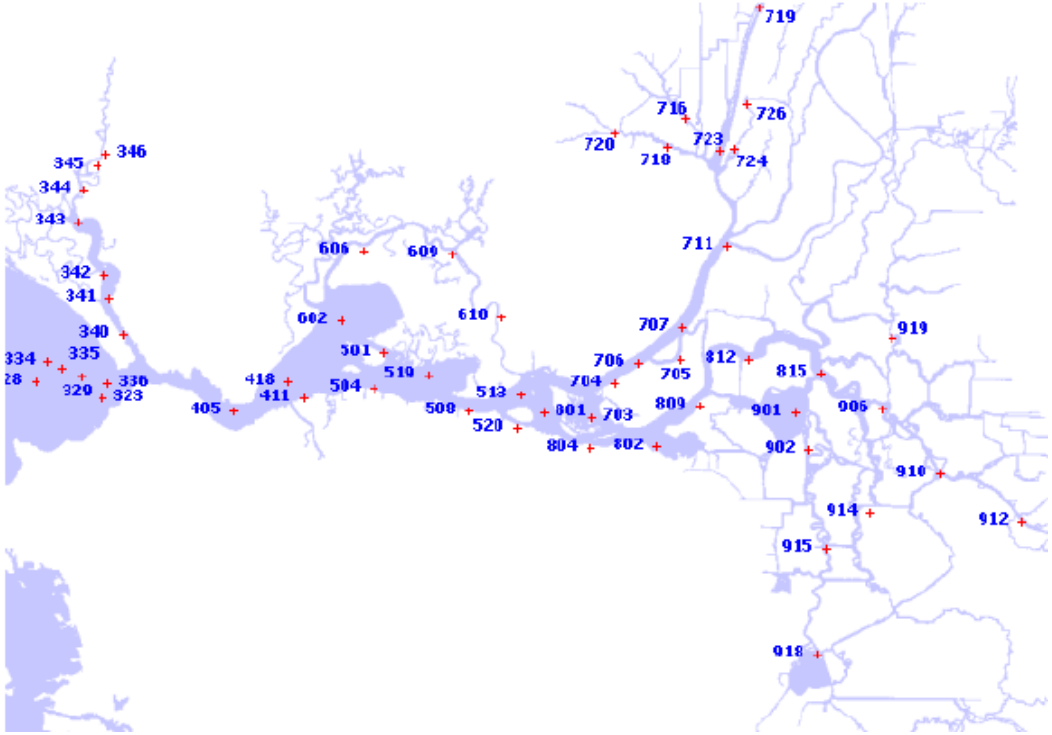
Table 1. Longfin Smelt catch by station in the Smelt Larva Survey 5. Sample processing is incomplete.

Year	Survey #	SLS Station	Sample Status	Species	Smelt Catch
2016	5	340	Not yet processed		
2016	5	342	Not yet processed		
2016	5	343	Not yet processed		
2016	5	344	Not yet processed		
2016	5	345	Not yet processed		
2016	5	346	Not yet processed		
2016	5	347	Not yet processed		
2016	5	348	Not yet processed		
2016	5	349	Not yet processed		
2016	5	405	Not yet processed		
2016	5	411	Not yet processed		
2016	5	418	Not yet processed		
2016	5	501	Not yet processed		
2016	5	504	Processed	Longfin Smelt	1
2016	5	508	Not yet processed		
2016	5	513	Processed	Longfin Smelt	5
2016	5	519	Processed	Longfin Smelt	5
2016	5	520	Processed	Longfin Smelt	3
2016	5	602	Processed		No Smelt Catch
2016	5	606	Processed	Longfin Smelt	15
2016	5	609	Processed	Longfin Smelt	34
2016	5	610	Processed		No Smelt Catch
2016	5	703	Processed	Longfin Smelt	5
2016	5	704	Processed	Longfin Smelt	7
2016	5	705	Processed		No Smelt Catch
2016	5	706	Processed	Longfin Smelt	5
2016	5	707	Processed	Longfin Smelt	12
2016	5	711	Processed		No Smelt Catch
2016	5	716	Processed	Longfin Smelt	3
2016	5	723	Processed	Longfin Smelt	3
2016	5	801	Processed	Longfin Smelt	2
2016	5	804	Processed		No Smelt Catch
2016	5	809	Processed		No Smelt Catch
2016	5	812	Processed	Longfin Smelt	1
2016	5	815	Processed		No Smelt Catch
2016	5	901	Processed		No Smelt Catch
2016	5	902	Processed		No Smelt Catch
2016	5	906	Processed		No Smelt Catch
2016	5	910	Processed		No Smelt Catch
2016	5	912	Processed		No Smelt Catch
2016	5	914	Processed		No Smelt Catch
2016	5	915	Processed		No Smelt Catch
2016	5	918	Processed		No Smelt Catch
2016	5	919	Processed		No Smelt Catch

SWP ITP Criteria Stations

Processing is complete through 3/4/16

Figure 1. DFW's Smelt Larva Survey/20-mm Survey station locations.



Department of Water Resources
Division of Operations and Maintenance
SWP Water Operations Office

Delta Turbidity Conditions Report

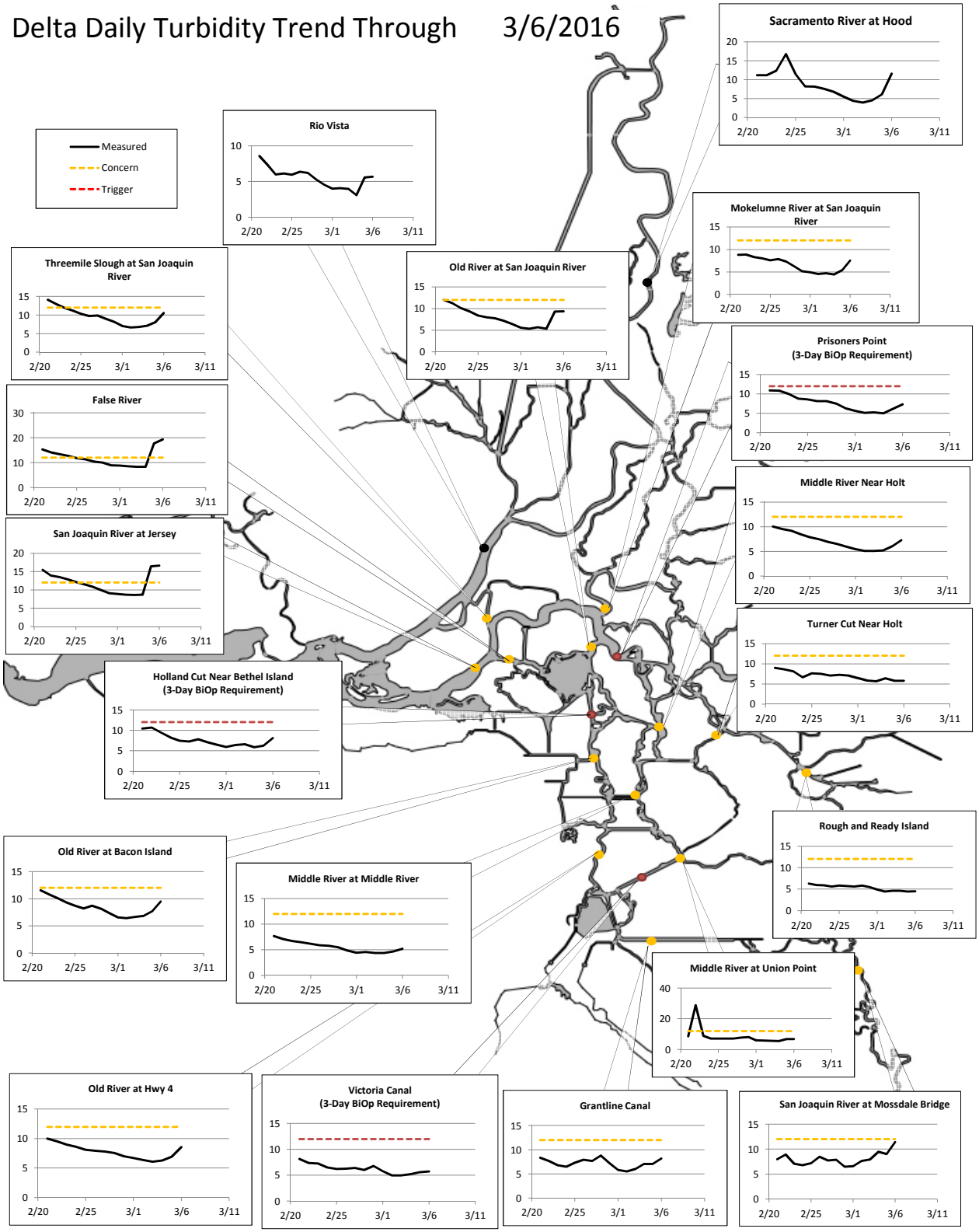
For conditions through: **March 6, 2016**

General Conditions:

Inflows:		
	Freeport	22154 CFS
	Yolo Bypass	2215 CFS
	Vernalis	974 CFS
	Cosumnes	5444 CFS
	Mokelumne	106 CFS
	Calaveras	28 CFS
Exports:		
	Clifton Court	2290 CFS
	Jones	3431 CFS
Other:		
	OMR (Index)	-5022 CFS
	QWEST	2161 CFS
	NDOI	17348 CFS

Missing/Suspect Data:

Delta Daily Turbidity Trend Through 3/6/2016



Old and Middle River turbidity, Mar. 4, 2016

NOTE: Data have not undergone initial quality assurance and quality control procedures.

OSJ @ 10:00
boat: 6.9
CDEC: 4.9; 24h: 4.3-7.9

PPT @ 9:45
boat: 7.8
CDEC: 6.3; 24h: 3.6-12.8

HOL @ 10:30
boat: 7.4
CDEC: 5.8; 24h: 4.9-7.3

HLT:
24h range
4.5 - 7.2

OBI @ 11:00
boat: 8.8
CDEC: 8.0; 24h: 5.5-8.2

MDM:
24h range
3.7 - 5.9

OH4 @ 10:40
boat: 7.3
CDEC: 7.0; 24h: 4.8-7.3

MUP:
24h range
3.8 - 14.3

VCU:
24h range
3.2 - 122.0

GLC @ 12:15
boat: 9.0
CDEC: 6.4; 24h: 3.5-14.8

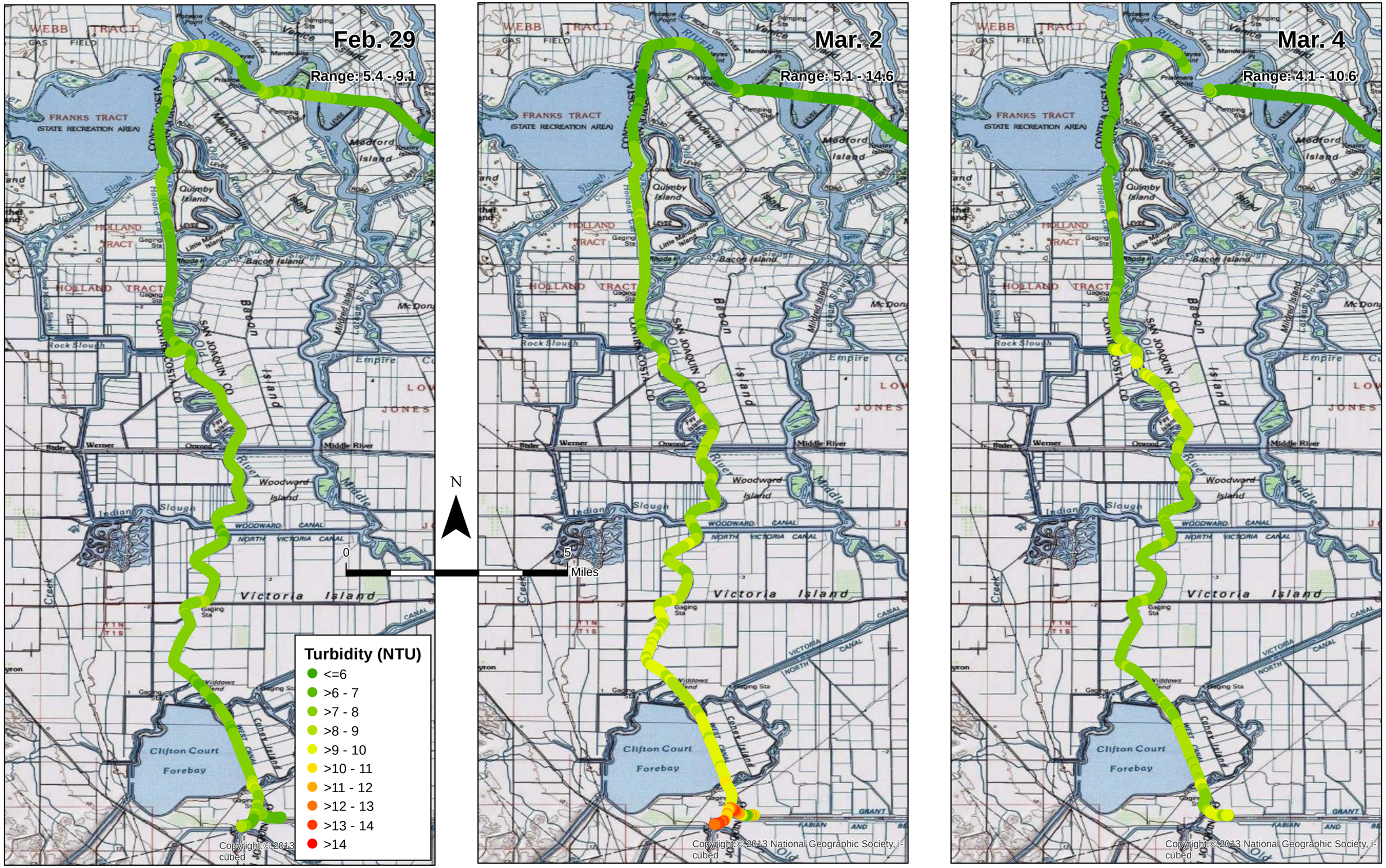
data collected 9:21 - 12:19
FLOOD TIDE

turbidity range: 4.1 - 10.6
winds 5 - 15 mph

turbidity (NTU)
- <=6
- >6 - 7
- >7 - 8
- >8 - 9
- >9 - 10
- >10 - 11
- >11 - 12
- >12 - 13
- >13 - 14
- >14

station	name
GLC	Grantline Canal (USGS)
HLT	Middle River near Holt
HOL	Holland Cut near Bethel Island
MDM	Middle River at Middle River
MOK	Mokelumne River at San Joaquin River
MUP	Middle River at Union Point
OBI	Old River at Bacon Island (USGS)
OH4	Old River at Highway 4
OSJ	Old River at Franks Tract near Terminous
PPT	Prisoners Point
VCU	Victoria Canal near Byron

0 1 2 3 4 Miles


Feb. 29
Range: 5.4 - 9.1
Mar. 2
Range: 5.1 - 14.6
Mar. 4
Range: 4.1 - 10.6
N
0
5
Miles
Turbidity (NTU)
<=6
>6 - 7
>7 - 8
>8 - 9
>9 - 10
>10 - 11
>11 - 12
>12 - 13
>13 - 14
>14
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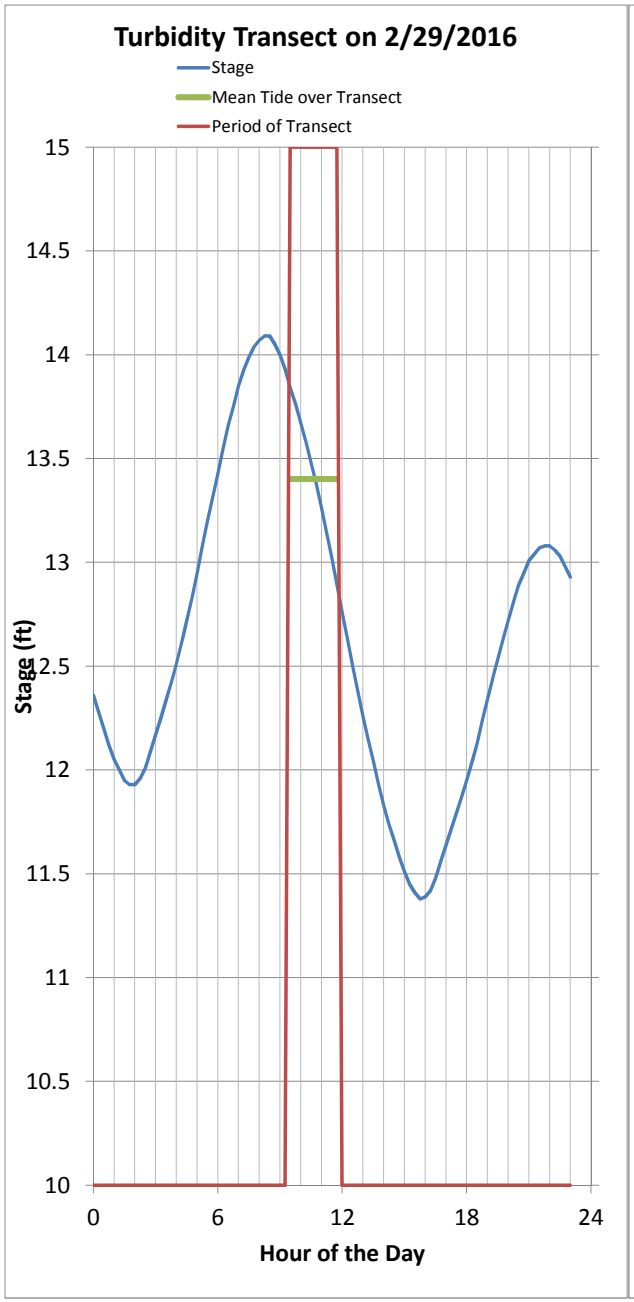
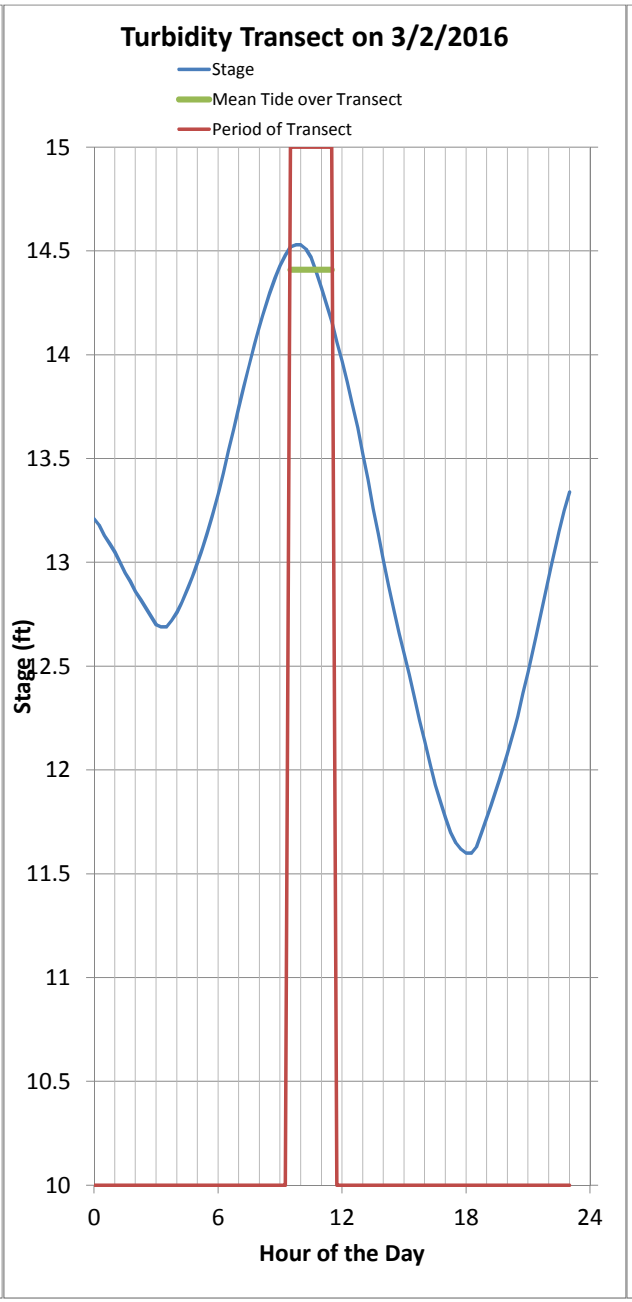
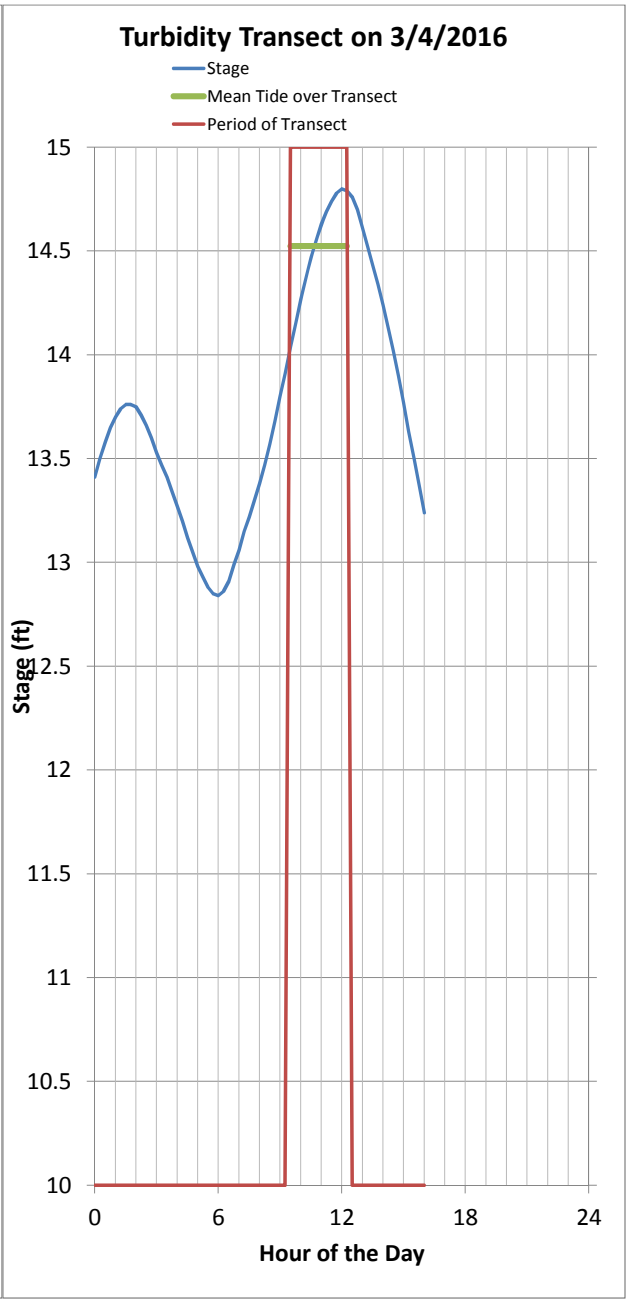
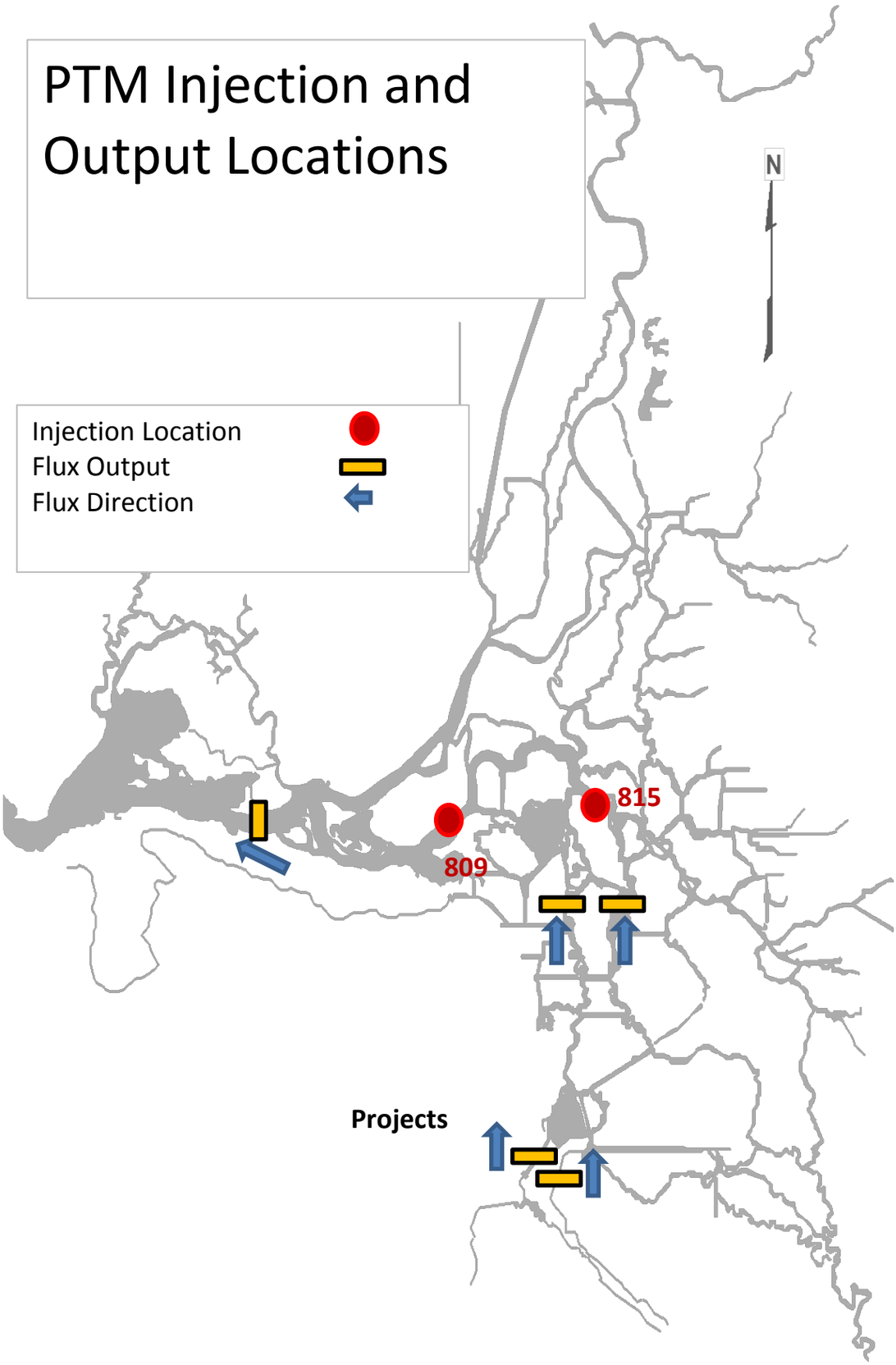
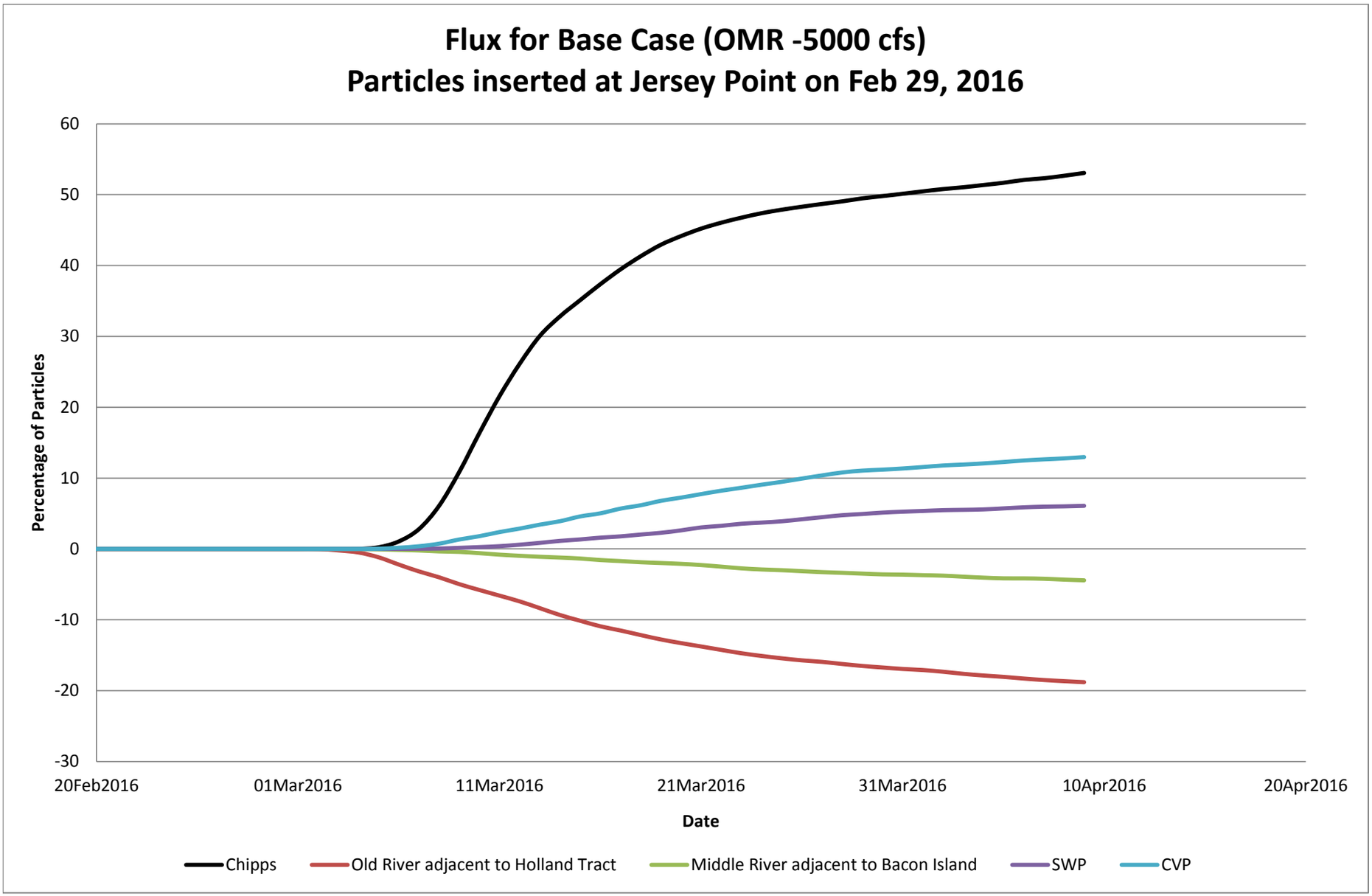
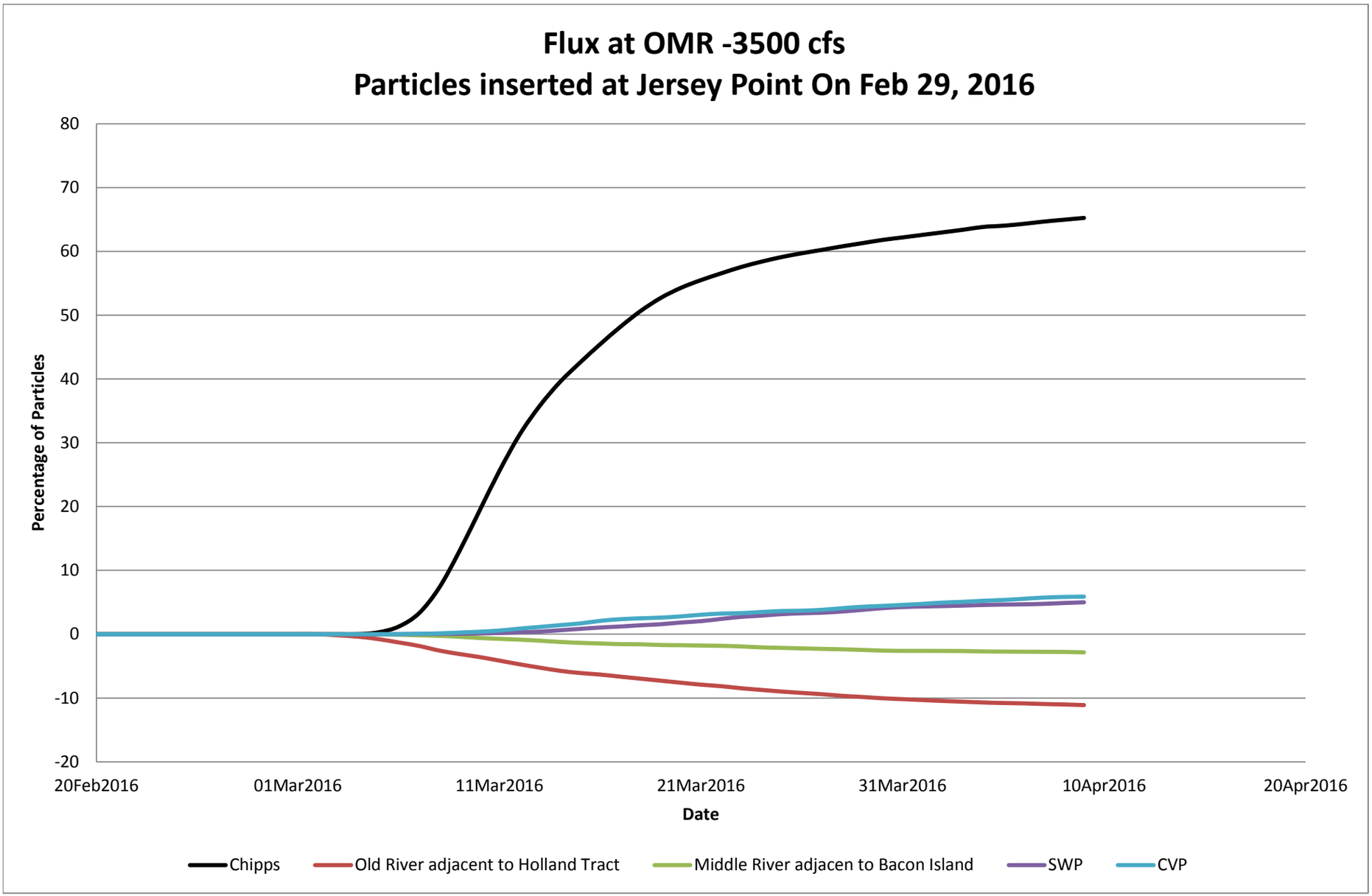

Turbidity Transect on 2/29/2016
Stage
Mean Tide over Transect
Period of Transect
15
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
Stage (ft)
0
6
12
18
24
Hour of the Day

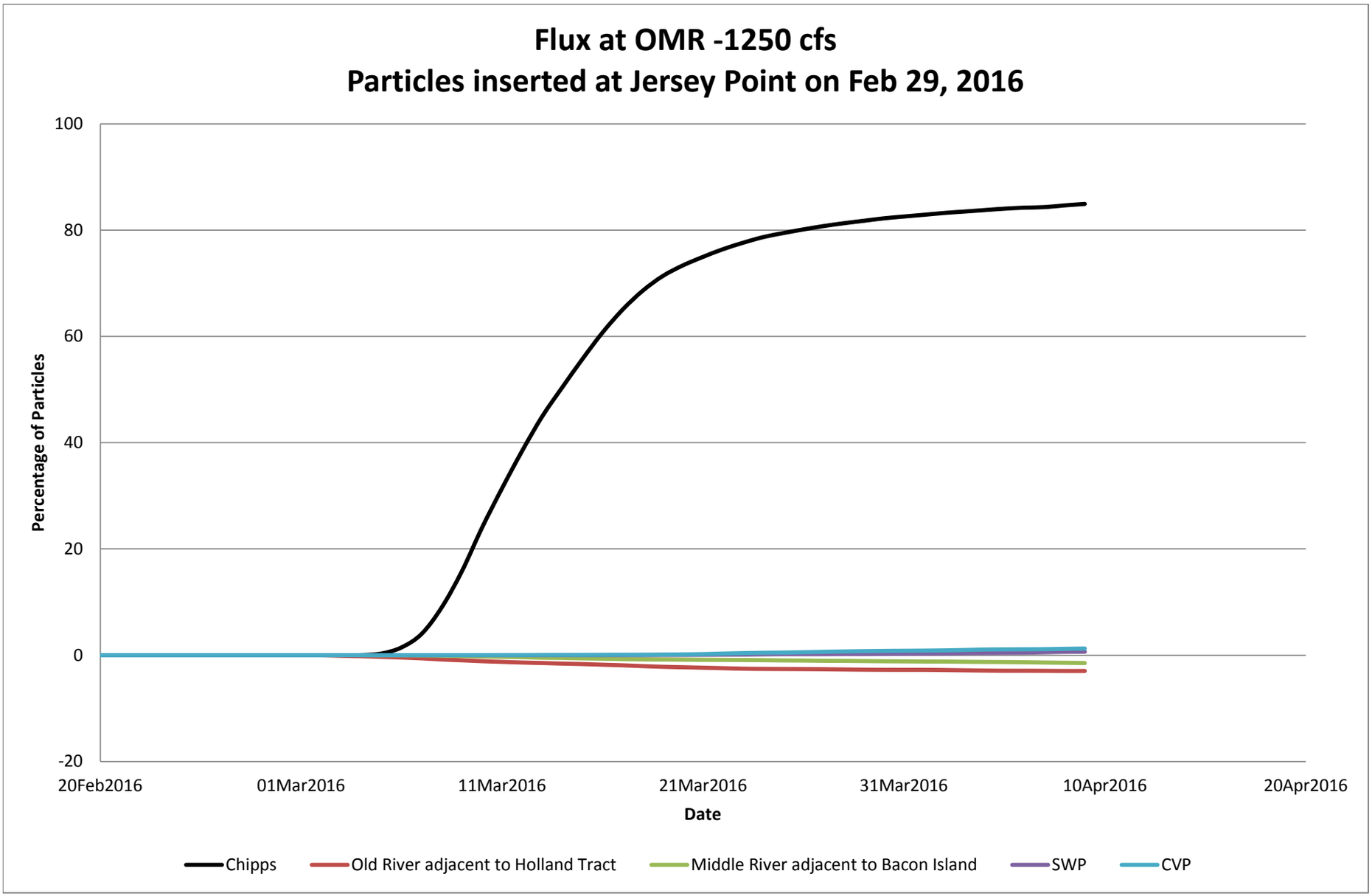

Turbidity Transect on 3/2/2016
Stage
Mean Tide over Transect
Period of Transect
15
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
Stage (ft)
0
6
12
18
24
Hour of the Day

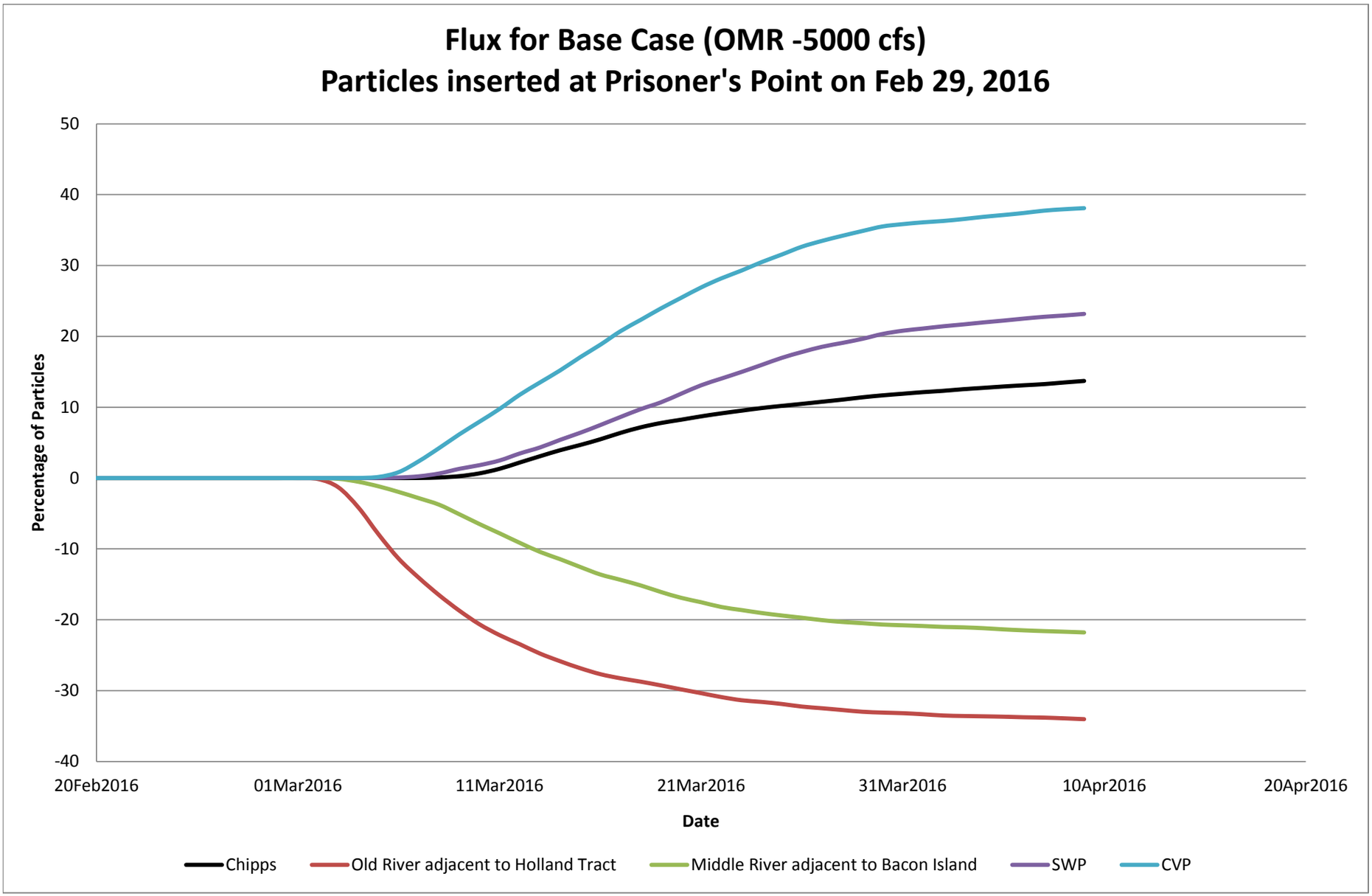

Turbidity Transect on 3/4/2016
Stage
Mean Tide over Transect
Period of Transect
15
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
Stage (ft)
0
6
12
18
24
Hour of the Day

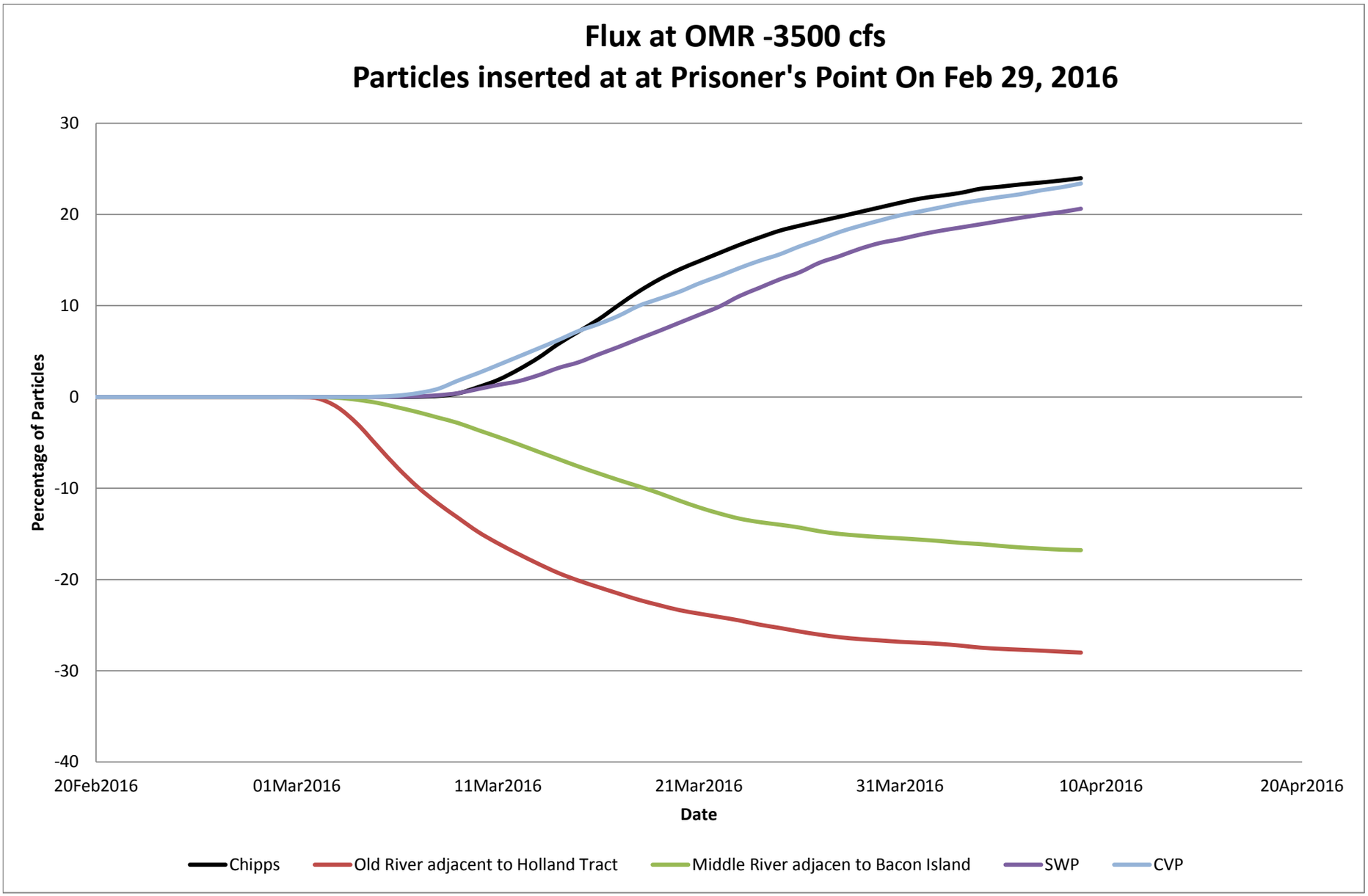

PTM Injection and Output Locations
N
Injection Location
Flux Output
Flux Direction
815
809
Projects

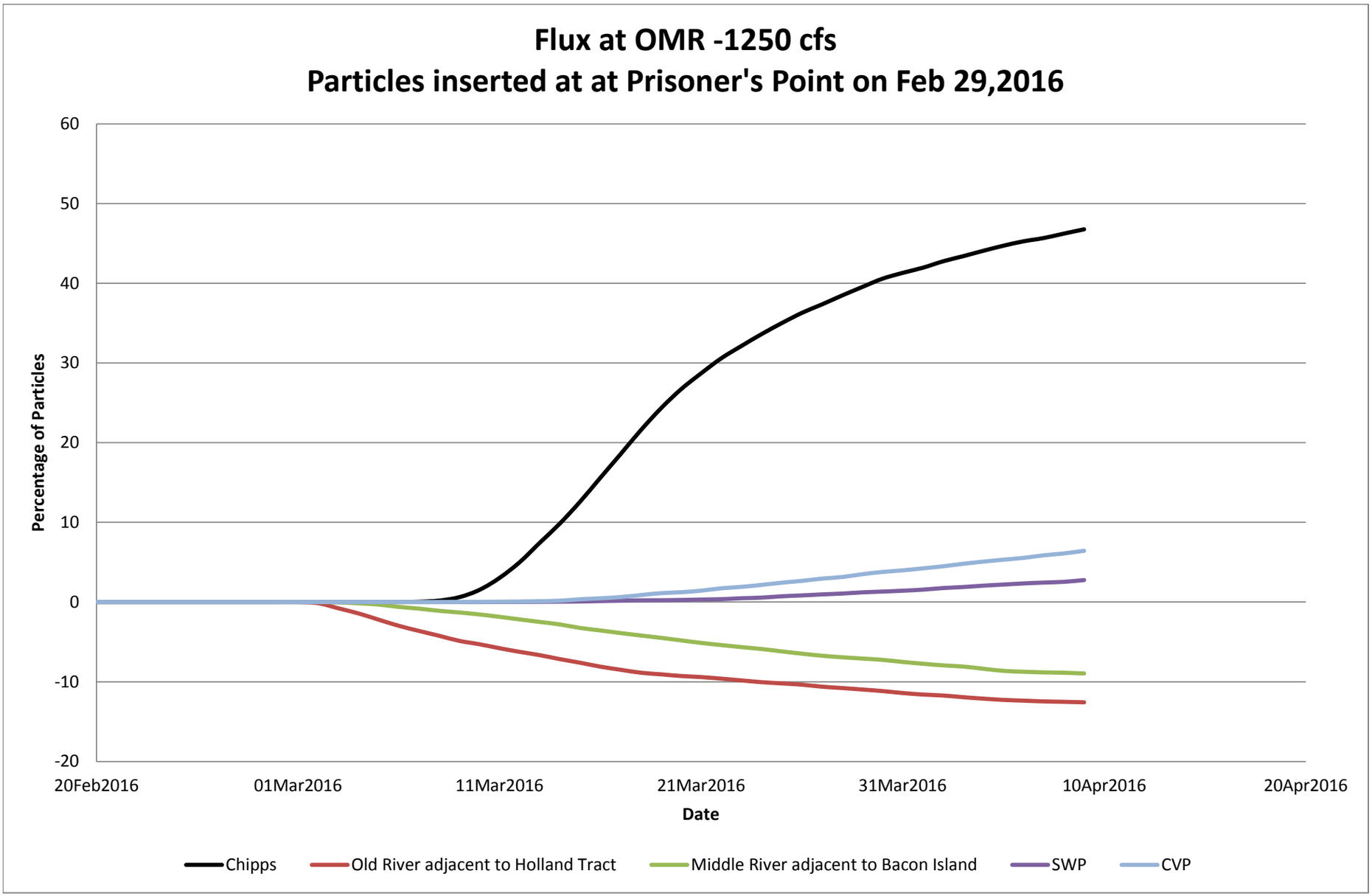

Flux for Base Case (OMR -5000 cfs)
Particles inserted at Jersey Point on Feb 29, 2016
Percentage of Particles
60
50
40
30
20
10
0
-10
-20
-30
20Feb2016
01Mar2016
11Mar2016
21Mar2016
31Mar2016
10Apr2016
20Apr2016
Date
Chipps
Old River adjacent to Holland Tract
Middle River adjacent to Bacon Island
SWP
CVP


Flux at OMR -3500 cfs
Particles inserted at Jersey Point On Feb 29, 2016
Percentage of Particles
80
70
60
50
40
30
20
10
0
-10
-20
20Feb2016
01Mar2016
11Mar2016
21Mar2016
31Mar2016
10Apr2016
20Apr2016
Date
Chipps
Old River adjacent to Holland Tract
Middle River adjacen to Bacon Island
SWP
CVP


Flux at OMR -1250 cfs
Particles inserted at Jersey Point on Feb 29, 2016
Percentage of Particles
100
80
60
40
20
0
-20
20Feb2016
01Mar2016
11Mar2016
21Mar2016
31Mar2016
10Apr2016
20Apr2016
Date
Chipps
Old River adjacent to Holland Tract
Middle River adjacent to Bacon Island
SWP
CVP


Flux for Base Case (OMR -5000 cfs)
Particles inserted at Prisoner's Point on Feb 29, 2016
Percentage of Particles
50
40
30
20
10
0
-10
-20
-30
-40
20Feb2016
01Mar2016
11Mar2016
21Mar2016
31Mar2016
10Apr2016
20Apr2016
Date
Chipps
Old River adjacent to Holland Tract
Middle River adjacent to Bacon Island
SWP
CVP


Flux at OMR -3500 cfs
Particles inserted at at Prisoner's Point On Feb 29, 2016
30
20
10
0
-10
-20
-30
-40
Percentage of Particles
20Feb2016
01Mar2016
11Mar2016
21Mar2016
31Mar2016
10Apr2016
20Apr2016
Date
Chipps
Old River adjacent to Holland Tract
Middle River adjacen to Bacon Island
SWP
CVP


Flux at OMR -1250 cfs
Particles inserted at at Prisoner's Point on Feb 29,2016
Percentage of Particles
60
50
40
30
20
10
0
-10
-20
20Feb2016
01Mar2016
11Mar2016
21Mar2016
31Mar2016
10Apr2016
20Apr2016
Date
Chipps
Old River adjacent to Holland Tract
Middle River adjacent to Bacon Island
SWP
CVP

SWG Weekly Salvage Update

Reporting Period: February 29-March 6, 2016

Prepared by Bob Fujimura on March 7, 2016 - updated at 12:16

Preliminary Results -Subject to Revision

	Daily Salvage								
Species/Life Stage	***29-Feb***	***1-Mar***	***2-Mar***	***3-Mar***	***4-Mar***	***5-Mar***	***6-Mar***	***Trend***	
Adult Delta Smelt									
SWP	0	0	0	0	0	0	0		0
CVP	0	0	0	0	0	0	0		0
TOTAL	0	0	0	0	0	0	0	↘	0.0
CUM TAKE	12	12	12	12	12	12	12		
% of 2016 CL	29%	29%	29%	29%	29%	29%	29%		
Adult Longfin Smelt									
SWP	0	0	0	0	0	0	0		0
CVP	0	0	0	0	0	0	0		0
TOTAL	0	0	0	0	0	0	0	→	0
SWP daily export	4,626	4,352	4,738	4,591	4,385	3,799	4,793	↘	4,469
CVP daily export	6,759	6,802	6,764	6,782	6,763	6,765	6,806	→	6,777
SWP reduced counts	0%	0%	0%	0%	0%	0%	0%	→	0%
CVP reduced counts	0%	0%	0%	0%	0%	0%	0%	→	0%
SWP larval samples	NS	100%	100%	100%	100%	100%	100%		100%
CVP larval samples	NS	100%	100%	100%	100%	100%	100%		100%
DS larvae present - SWP	NS	N	N	NA	NA	NA	NA		
DS larvae present - CVP	NS	N	N	N	N	N	N		
LFS larvae present - SWP	NS	N	N	NA	NA	NA	NA		
LFS larvae present - CVP	NS	N	N	N	N	N	N		

TOTAL = combine daily salvages for CVP+SWP; daily water export = AF; Trend = compared to previous week

NA = not available at the time of this report; NS = not sampled

Reduced counts = percentage of time that routine salvage sample time were less than 30 min per 2 hours of salvage and export operations