

Smelt Working Group
January 16, 2018

Meeting Summary

The Working Group reviewed current Delta conditions, survey data, current water project operations, and forecasted weather. Current weather conditions are overcast, and precipitation is forecasted starting this Thursday. Flows in the Sacramento and San Joaquin Rivers are expected to slightly increase as a result of the upcoming rain. Based on Delta conditions, the forecasted weather, and the lack of recent detections of Delta Smelt from surveys within the entrainment risk area, the SWG concluded that the risk for Delta Smelt and Longfin Smelt entrainment is low.

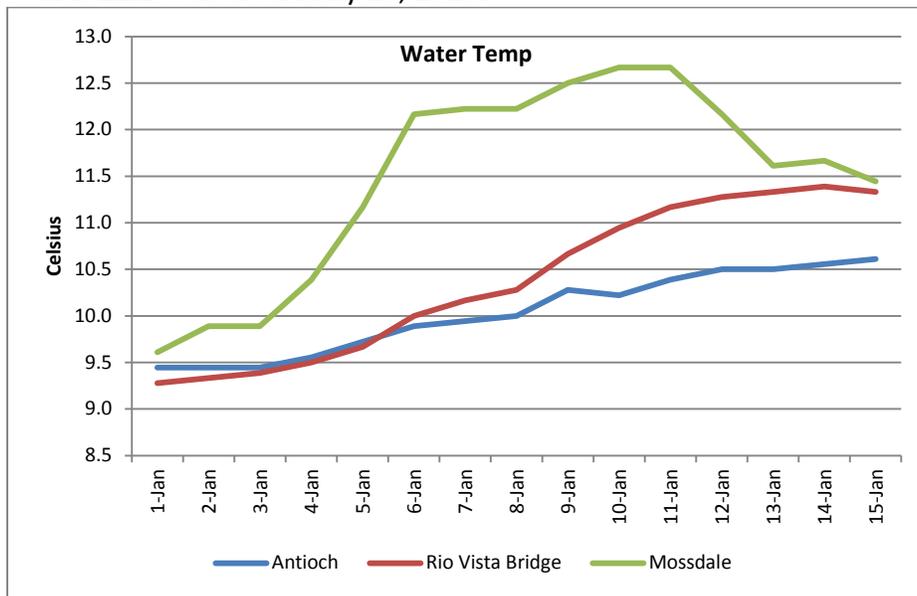
The Working Group does not believe that a recommendation under Action 1 or Action 2 (adult pre-spawning Delta Smelt) is necessary to protect Delta Smelt at this time. The Working Group will continue to monitor Delta Smelt survey and salvage data, Delta conditions, and this week's forecasted precipitation and turbidity. The group will meet again next Monday, January 22, 2018 at 1000 hours.

Reported Data

1. **Current environmental data**

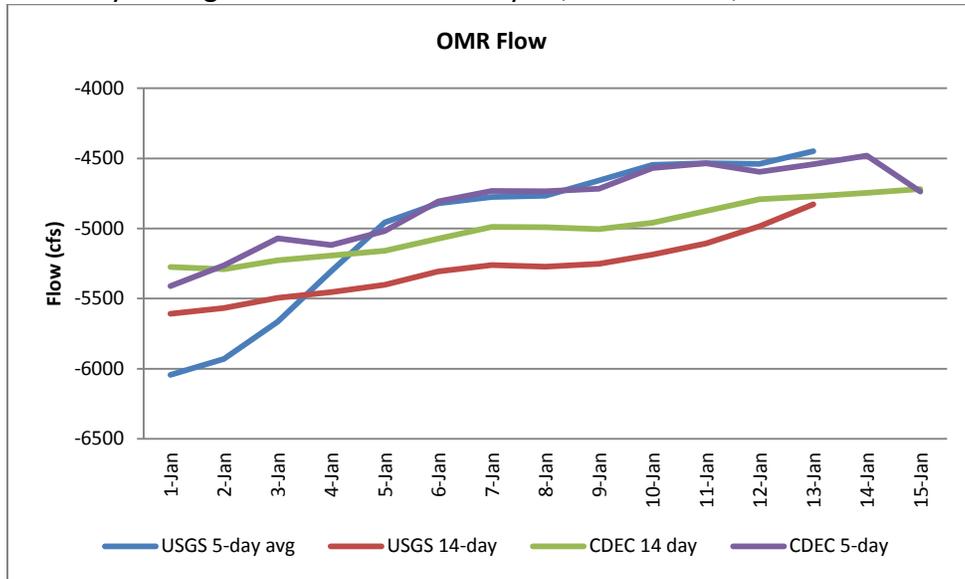
a. **Temperature**

Daily averages of the 3 Delta Stations (Antioch, Rio Vista Bridge, and Mossdale) was 11.1°C as of January 15, 2018.



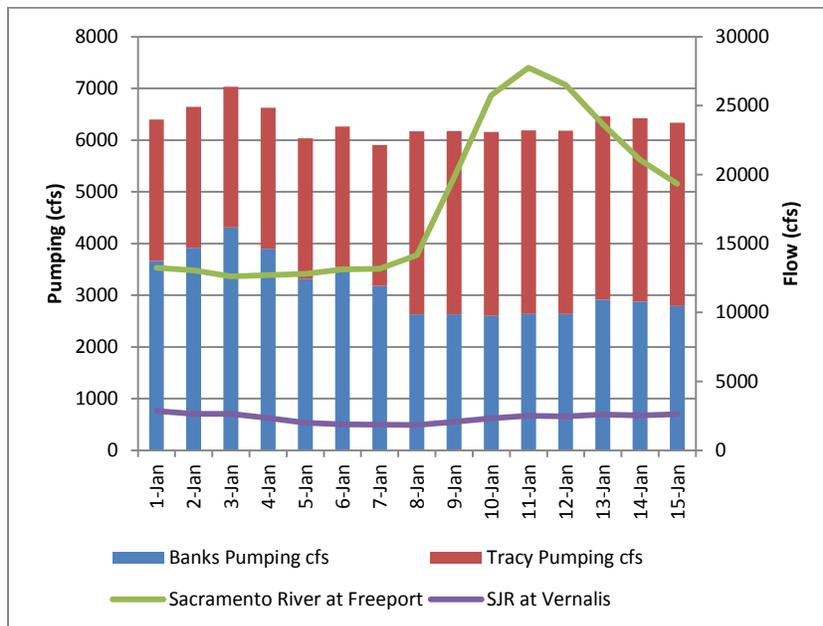
b. OMR flow

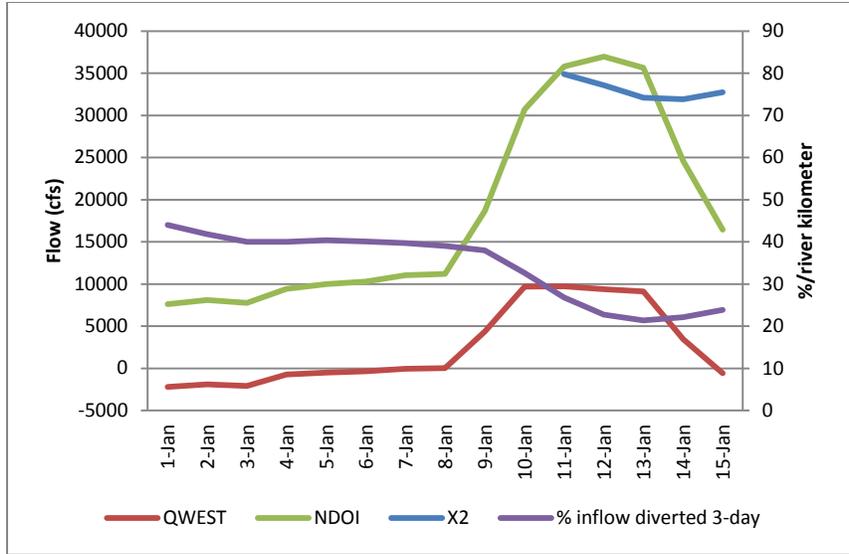
The CDEC daily average OMR flow for January 15, 2018 was -5,170 cfs. USGS daily average OMR flow for January 13, 2018 was -4,620 cfs.



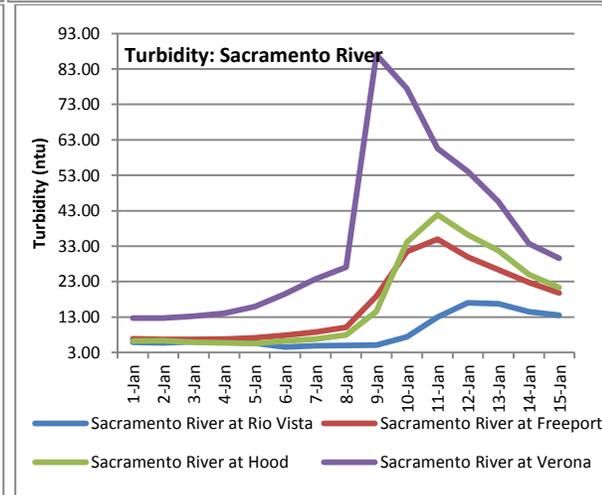
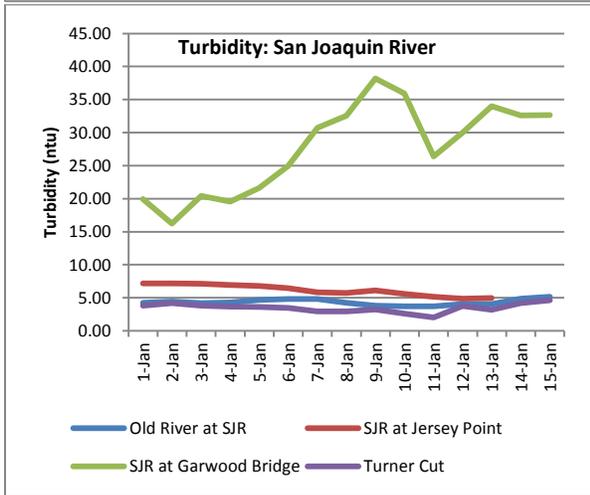
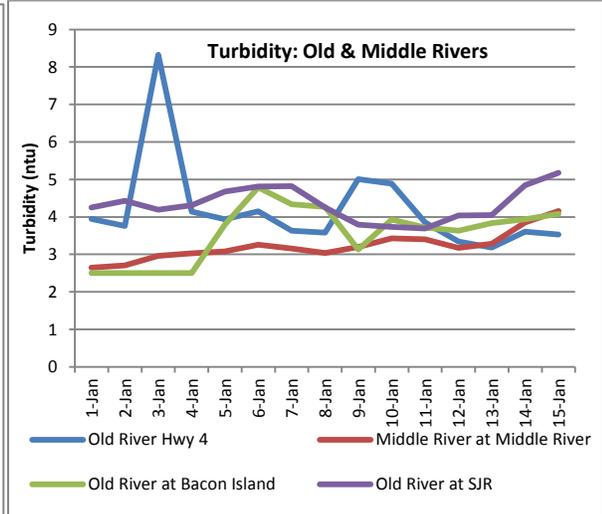
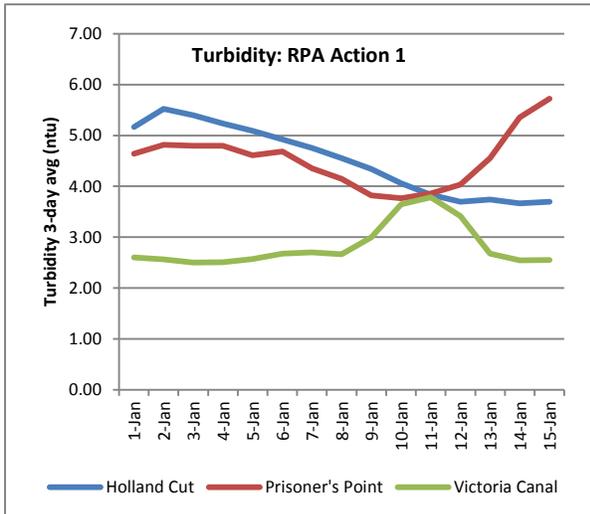
c. River flows and pumping

Sacramento River at Freeport flow for January 15, 2018 was approximately 19,331 cfs and expected to stay near 20,000 cfs later in the week due with the upcoming storm event. San Joaquin River at Vernalis flow for January 15, 2018 was approximately 2,629 cfs. X2, which had been upstream of 81 km from November 23, 2017 through January 10, 2018, was at 75.47 km as of January 15, 2018.





d. Turbidity



2. Delta fish monitoring

Smelt Larva Survey #1's (SLS) samples have been fully processed, and 96 Longfin Smelt and no Delta Smelt larvae were collected. SLS #2 is in the field again this week and will continue through Thursday. Spring Kodiak Trawl #1 (SKT), the first of the season, was completed last week and detected 10 pre-spawning Delta Smelt and one Longfin Smelt.

Enhanced Delta Smelt Monitoring (EDSM) was in the field last week and will be in the field this week. Last week, 1 Delta Smelt and 2 Longfin Smelt were detected. Complete EDSM catch reports are publicly available [here](#).

3. Modeling

Last week, one member had requested modeling for particle tracking at the lower Sacramento and San Joaquin Rivers at Stations 707 and 801. However, upon further coordination with DWR, it was determined that the modeling was not necessary at this time. For this coming week, another particle tracking model may be requested later in the week if OMR flows become significantly more negative and depending on this week's SLS detections in the San Joaquin River.

4. Salvage

No adult or juvenile stages of Delta Smelt and Longfin Smelt have been observed in salvage so far this season (WY 2018).

5. Expected Project Operations

Combined pumping for the Banks and Tracy pumping facilities on January 15, 2018 was 6,338 cfs, and Net Delta Outflow on January 15, 2018 was 16,454 cfs. Pumping is currently restricted by NMFS RPA Action IV.2.3, which was initiated on January 1, 2018. Index OMR values will be maintained at around -5,000 cfs to comply with the RPA, which is the current controlling factor on Delta operations. A WIIN Act flex in response to the upcoming storm event could decrease OMR flows to -6,250 cfs later in the week, but no decision has been made yet by the project operators.

Ambient temperatures are anticipated to remain cool through the week. Precipitation is expected to start on Thursday.

6. Delta Conditions Team

The DCT met last week and did not have any recommendations for the SWG this week.

7. DWR Turbidity Transects

No turbidity transects have been performed to date. Turbidity at Holland's Cut, Prisoner's Point, and Victoria Canal have all remained well under 8 NTU despite last week's storm event. As this week's forecasted rain is expected to be milder than the previous week's, the SWG agreed that turbidity transects are not required at this time. The group will continue to monitor turbidity in anticipation of the rain.

8. Biological Opinion Background:

RPA Component 1, Action 1: “Low-entrainment risk period: Delta Smelt salvage has historically been low between December 1 and December 19, even during periods when first flush conditions (i.e., elevated river inflow and turbidity) occurred. During the low-entrainment risk period, the SWG shall determine if the information generated by physical (i.e. turbidity and river inflow) and biological (e.g., salvage, DFG trawls) monitoring indicates that Delta Smelt are vulnerable to entrainment or are likely to migrate into a region where future entrainment events may occur. If this occurs, the Service shall require initiation of Action 1 as described in Attachment B. Action 1 shall require the Projects to maintain OMR flows no more negative than -2,000 cfs (14-day average) with a simultaneous 5-day running average flow no more negative than -2,500 cfs to protect adult Delta Smelt for 14 days.” (page 281).

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 (and the general guidelines below) specific 4 OMR flows within this range are recommended by the Working Group from the onset of Action 2 through its termination...”

The timing of Action 2 is immediately after Action 1. Before this date (in time for operators to implement the flow requirement) the SWG will recommend specific requirement OMR flows based on salvage and on physical and biological data on an ongoing basis. If Action 1 is not implemented, the SWG may recommend a start date for the implementation of Action 2 to protect adult Delta Smelt. (BiOp page 352).

9. Assessment of Risk Discussion

Delta Smelt Detections

Last week, SKT #1 caught 9 pre-spawning Delta Smelt in the lower Sacramento River and 1 Delta Smelt in Montezuma Slough. SLS #1 did not detect any larval Delta Smelt, and EDSM detected 1 adult Delta Smelt in Suisun Marsh. None of the detected fish were within close proximity to the pumping facilities. No fish salvaged as yet this season (WY 2018).

Longfin Smelt Detections

Last week, SKT #1 caught 1 Longfin Smelt in Montezuma Slough. SLS #1 detected 96 larval Longfin Smelt from two weeks ago, and EDSM detected 2 adult Longfin Smelt last week in Suisun Marsh, which are not in close proximity to the pumping facilities. No fish salvaged as yet this season (WY 2018).

General discussion

Conditions in the Delta are currently overcast with precipitation forecasted on Thursday. The river flows are expected to rise slightly near the end of the week. As last week's storm event did not cause significant turbidity increases at stations within the entrainment risk area, this week's milder storm event is unlikely to result in significant elevations in turbidity. The SWG will continue to monitor turbidity levels and flow levels closely.

Recent Delta Smelt detections have been outside of the entrainment risk area. The group agreed that turbidity is low throughout the system and that there is no evidence of Delta Smelt moving into the San Joaquin River. One group member asked if Longfin Smelt presence and entrainment could be used as a proxy for Delta Smelt entrainment risk. Another group member responded that Longfin Smelt would not be a good proxy because Longfin Smelt move and spawn regardless of turbidity conditions, and the Longfin spawning season is currently in full swing, whereas the Delta Smelt spawning season has likely not yet begun.

The SWG determined that no recommendation was necessary this week for the protection of Delta Smelt.

10. Other Items

Several group members asked again if the SWG would be asked to weigh in on WIIN Act flex operations. The FWS responded that the process is still under development at the Director's level and that the SWG would unlikely be asked to weigh in on this week's WIIN proposal.

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

Advice for week of January 16, 2018:

The Smelt Working Group has no advice for Longfin Smelt

Current water year type for the Sacramento River is above normal, which does not trigger concern for Barker Slough risk of entrainment (see Basis for advice #5 below). Nonetheless, no larvae were detected at station 716, which suggests low current risk of entrainment.

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 20mm 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 January 14, 2018, no Longfin Smelt have been salvaged for the water year. See current conditions discussion below. The 2017 Fall Midwater Trawl Survey annual abundance index for Longfin Smelt is 141, so the salvage threshold is 705. Advice is not warranted based on this criterion.
2. There is no new midwater or otter trawl sampling information. December Bay Study and Fall Midwater Trawl sampling collected no Longfin Smelt in the San Joaquin River or south Delta. December Bay Study and Fall Midwater Trawl did detect Longfin Smelt in the Sacramento River as high as station 750 (Bay Study) and 703 (FMWT), both adjacent to Sherman Lake, indicating that Longfin Smelt adults are entering the Delta. Presence of adult Longfin Smelt in the Sacramento River increases concern, but the lack of detection of Longfin Smelt in the central or south Delta makes advice unwarranted.

3 & 4. The second Smelt Larva Survey (SLS) of 2018 begins today. The first SLS of 2018 detected Longfin Smelt larvae at only two of 12 central and south Delta criteria stations and neither of the catches exceeded 15 (Table 1). Based on these criteria, no advice is warranted.

5. Criteria begin January 15th and only go into effect during dry and critical water years. Water year 2018 is classified above normal as of January 1 (<http://cdec.water.ca.gov/cgi-progs/iodir/WSI>). Nonetheless, no Longfin Smelt larvae were detected at station 716, and only a single larva at station 723 (proximal to 716; Table 1), so risk remains low.

Current conditions: As of January 15, Sacramento River at Freeport was 19,131 cfs and the San Joaquin was at 2,629 cfs. Clifton Court exports were 2,889 cfs and Tracy exports will target 3,549 cfs. The OMR index was -4952. Qwest for January 15 was -569 cfs, which is favorable for tidal dispersion downstream of LFS larvae detected in the lower San Joaquin River.

In December, Longfin Smelt were collected in the lower Sacramento River by both Bay Study and Fall Midwater Trawl. These collections indicate the start of the spawning migration and likely spawning: temperature at Rio Vista declined below the 12-13°C spawning threshold during the first week in December. During SLS 1, larvae were present in the lower Sacramento and San Joaquin rivers indicate the start of hatching (Table 1); more is expected. SLS #2 starts today. The number of adults entering the Delta is expected to increase into and through January. No Longfin Smelt have been salvaged this water year.

Summary of Risk: Risk of entrainment is low due no salvage or adult detection in the central or south Delta and to minimal detection of larvae in the central or south Delta.

Table 1. Longfin Smelt Larva catch by station in the Smelt Larva Survey, #1. Sample processing is complete.

Year	Survey #	SLS Station	Turbidity (NTU)	Sample Status	Species	Smelt Catch	Min Length	Max Length	Mean Length
2018	1	340	67.2	Processed		No Smelt Catch			
2018	1	342	47.4	Processed		No Smelt Catch			
2018	1	343	17.4	Processed		No Smelt Catch			
2018	1	344	12.5	Processed		No Smelt Catch			
2018	1	345	10.3	Processed		No Smelt Catch			
2018	1	346	11.3	Processed		No Smelt Catch			
2018	1	347	13.8	Processed		No Smelt Catch			
2018	1	348	33.9	Processed		No Smelt Catch			
2018	1	349	18.8	Processed		No Smelt Catch			
2018	1	405	24.4	Processed	Longfin Smelt	1	7	7	7
2018	1	411	12.9	Processed		No Smelt Catch			
2018	1	418	14.8	Processed	Longfin Smelt	1	6	6	6
2018	1	501	17.2	Processed	Longfin Smelt	3	6	7	6.333333
2018	1	504	10.7	Processed	Longfin Smelt	2	6	6	6
2018	1	508	12.9	Processed	Longfin Smelt	34	5	8	6.205882
2018	1	513	10.7	Processed	Longfin Smelt	11	5	9	6.454545
2018	1	519	13.5	Processed	Longfin Smelt	5	5	6	5.8
2018	1	520	15.2	Processed	Longfin Smelt	1	7	7	7
2018	1	602	11.8	Processed	Longfin Smelt	3	6	7	6.333333
2018	1	606	61.2	Processed		No Smelt Catch			
2018	1	609	48.9	Processed	Longfin Smelt	4	6	7	6.25
2018	1	610	19.4	Processed	Longfin Smelt	2	6	7	6.5
2018	1	703	10.5	Processed	Longfin Smelt	1	7	7	7
2018	1	704	11	Processed	Longfin Smelt	1	7	7	7
2018	1	705	8	Processed	Longfin Smelt	2	6	6	6
2018	1	706	13.1	Processed	Longfin Smelt	4	5	6	5.75
2018	1	707	8.1	Processed	Longfin Smelt	6	5	7	6
2018	1	711	6.9	Processed	Longfin Smelt	1	7	7	7
2018	1	716	5.8	Processed		No Smelt Catch			
2018	1	723	8.2	Processed	Longfin Smelt	1	6	6	6
2018	1	801	9.3	Processed	Longfin Smelt	6	6	7	6.333333
2018	1	804	9.3	Processed	Longfin Smelt	2	6	8	7
2018	1	809	6.6	Processed	Longfin Smelt	4	6	8	6.5
2018	1	812	6.5	Processed	Longfin Smelt	1	7	7	7
2018	1	815	6.8	Processed		No Smelt Catch			
2018	1	901	6.6	Processed		No Smelt Catch			
2018	1	902*	5.6	Processed		No Smelt Catch			
2018	1	906	4.9	Processed		No Smelt Catch			
2018	1	910	17.2	Processed		No Smelt Catch			
2018	1	912	3.6	Processed		No Smelt Catch			
2018	1	914	3.3	Processed		No Smelt Catch			
2018	1	915	4.4	Processed		No Smelt Catch			
2018	1	918	5.5	Processed		No Smelt Catch			
2018	1	919	3.9	Processed		No Smelt Catch			

Barker ITP

SWP ITP Criteria Stations

Processing is complete through 01/12/2018

*Reduced tow time