



Weekly Assessment for Delta Operations on ESA and CESA-listed Salmonids and Osmerids including Current Delta Hydrologic Conditions

Last updated: Monday, May 18, 2026

Executive Summary

ESA and CESA-listed Salmonids

- Entrainment management season is active.
- Annual Loss: 45 (0.43% of annual loss threshold) natural winter-run, 58 (4.45% of annual loss threshold) hatchery winter-run (Sac River), 259 (4.90%) natural steelhead, 1898 (29.01% of annual loss threshold) hatchery steelhead, 1075 (48.90% of annual loss threshold) spring-run surrogate yearlings (Coleman Late-Fall), and 0 (0.00% of annual loss threshold) spring-run surrogate YOY (Feather River Spring-Run).
- Single-year Incidental Take Limit (ITL) Status: 45 (0.76% of 5,922 ITL) natural winter-run; 58 (4.46% of 1,301 ITL) hatchery winter-run (Sac River); 2 (3.85% of 52 ITL) hatchery winter-run (Battle Creek); 259 (4.90% of 5,294 ITL) natural steelhead.
- Spring-run surrogate ITL status (0.5% per release group, BiOp Table 184): YOY - Feather River Hatchery (2026-03-18): 0 (0% of 4,927 ITL); YOY - Feather River Hatchery (2026-03-19): 0 (0% of 5,245 ITL); YOY - Feather River Hatchery (2026-03-23): 0 (0% of 2,441 ITL); Yearling - Coleman NFH (2025-11-13): 9 (1.21% of 717 ITL); Yearling - Coleman NFH (2025-11-17): 0 (0% of 376 ITL); Yearling - Coleman NFH (2025-12-17): 774 (33.02% of 2,344 ITL); Yearling - Coleman NFH (2025-12-22): 257 (84.64% of 304 ITL); Yearling - Coleman NFH (2026-01-08): 35 (12.26% of 286 ITL).
- LAD winter-run presence in the Delta is decreasing based on historical Chipps Island Trawl monitoring.
- Steelhead presence in the Delta is decreasing based on historical Chipps Island Trawl monitoring.

ESA and CESA-listed Osmerids

- Delta smelt were most recently detected at Suisun Marsh.
- No longfin smelt salvage has been observed this water year.
- Turbidity in the central/south Delta is moderate.
- Temperature in the south Delta is increasing.

Current Delta Hydrologic Conditions

Operational and Regulatory Conditions

The current controlling factor is OMR(-5000) with SWP exports restricted to SJR I/E.

Current Conditions

Most recent inflow at Freeport in the Sacramento River and Vernalis in the San Joaquin River is 11,233 and 2,339 cfs respectively. Most recent Jersey Point Flow (JPF) is 277 cfs. Most recent 1-day, 5-day, and 14-day OMRI measurements were -3,349, -2,565, and -1,693 cfs, respectively, and most recent export data were 3,551 cfs for Jones Pumping Plant and 1,734 cfs for Henry O. Banks Pumping Plant.

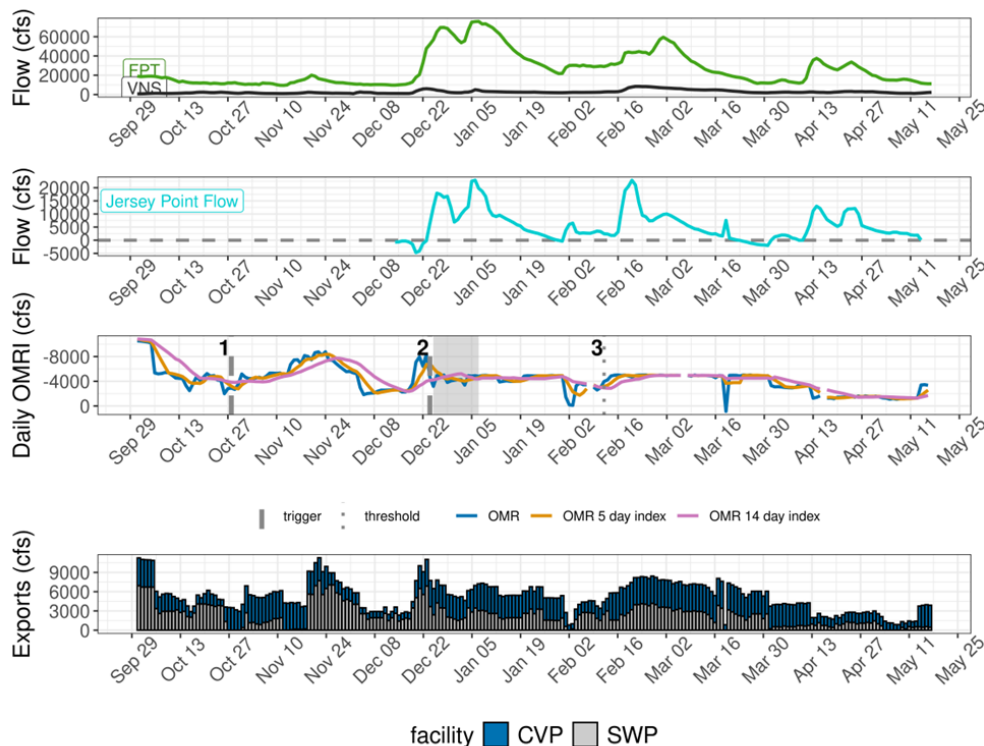


Figure 1: Operations and Action Summary, WY 2026. The numbers and lines in the OMRI plot indicate different triggers and thresholds (see Table 1), with shading representing specific action periods. Dashed and dotted vertical lines represent

triggered actions and thresholds, respectively. OMRI data (colored lines) calculated by SacPAS, Freeport (FPT) and Vernalis (VNS) flow data from CDEC, Jersey Point Flow (JPF) from DWR, and CVP (TRP) and SWP (HRO) exports data from CDEC.

Figure 1 depicts three stacked graphs. The first two are line charts depicting flow and daily OMRI in cfs for OMR, and OMR 5- and 14-day indexes. The last chart is a bar graph depicting exports in cfs through the Central Valley Project and State Water Project facilities. The x-axis for all three graphs list September 29 – early May.

Table 1: Summary of Actions and Triggers, WY 2026

Label	Action	Date Triggered	Date Implemented	Number Days Implemented	Regulation
1	DCC Gate Closure	10/28/2025	10/30/2025	Ongoing	DCC gates
2	First Flush	12/24/2025	12/25/2025	14 days	Entrainment Management
3	Offramp temperature threshold	2/12/2026	N/A	3 consecutive days	Delta Smelt, Adult Entrainment, no action taken WY26

Zone of Influence

Zone of Influence (ZOI) analysis is discussed in detail in the December 22 assessment. Current conditions were queried from most recent Freeport flow data on the Sacramento River and Vernalis flow data on the San Joaquin river from [SacPAS](#). Forecasted flows were queried from short range deterministic flows provided by the [California Nevada River Forecast Center](#).

Current conditions at Freeport and Vernalis indicate that delta hydrology falls within the 'lomed' category. Forecasted conditions averaged across the next 7 days falls within the 'lomed' category.

The altered channel length for the current "lomed" hydrology is 24, 36 and 84 kilometers (km) across OMR bins of -2000, -3500 and -5000 respectively. The altered channel length for forecasted "lomed" hydrology is 24, 36 and 84 kilometers (km) across OMR bins of -2000, -3500 and -5000 respectively.

Change in altered channel length between OMR levels is 60 km for current conditions and 60 km for forecasted conditions indicating that ZOI impacts across OMR scenarios would not change between current and forecasted conditions. Across the nine hydrology bins, changes in altered channel length across OMR scenarios are moderate (between 25th and 75th percentiles) for both current and forecasted hydrology.

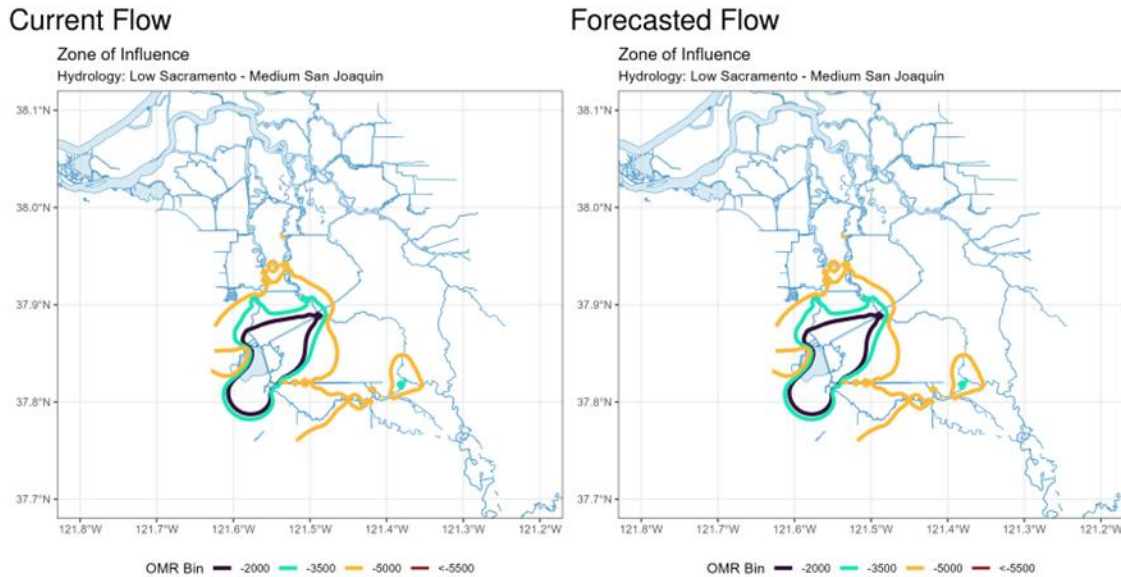


Figure 2: Modeled Zone of Influence at different OMRI scenarios based on current inflow hydrology (left) and forecasted inflow hydrology (right) from the Sacramento River and San Joaquin River

Figure 2 contains two maps of current and forecasted flow for the zone of influence. Each map contains lines of different colors depicting OMRI Bin -2000, -3500, -500, and less than -5500 modeling scenarios.

Assessment for Delta Operations on Salmonids

For more detailed data on salmonid conditions in the Delta see corresponding webpage on [SacPAS](#).

Natural Winter-run Chinook

Juvenile Production Estimate

The Juvenile Production Estimate for winter-run is 1,057,452 for the current water year.

Current Status

Delta Entry Timing - Historically, as of May 17, 100% of length-at-date (LAD) winter-run have entered the Delta based on Knights Landing RST catch, 100% have exited the Delta based on Chipps Island Trawl Catch, and 100% of DNA confirmed winter-run have been salvaged.

Table 2: Average percent of annual emigrating population for unclipped LAD winter-run captured at monitoring locations and salvaged at Delta facilities for the past 10 years.

Species	Red Bluff Diversion Dam	Tisdale RST	Knights Landing RST	Sac Trawl (Sherwood)	Chippis Island Trawl	Salvage
Chinook, LAD Winter-run, Unclipped	100%	100%	100%	100%	100%	100%
Chinook, DNA Winter-run, Unclipped (Water Year)	NA	NA	NA	NA	NA	100%

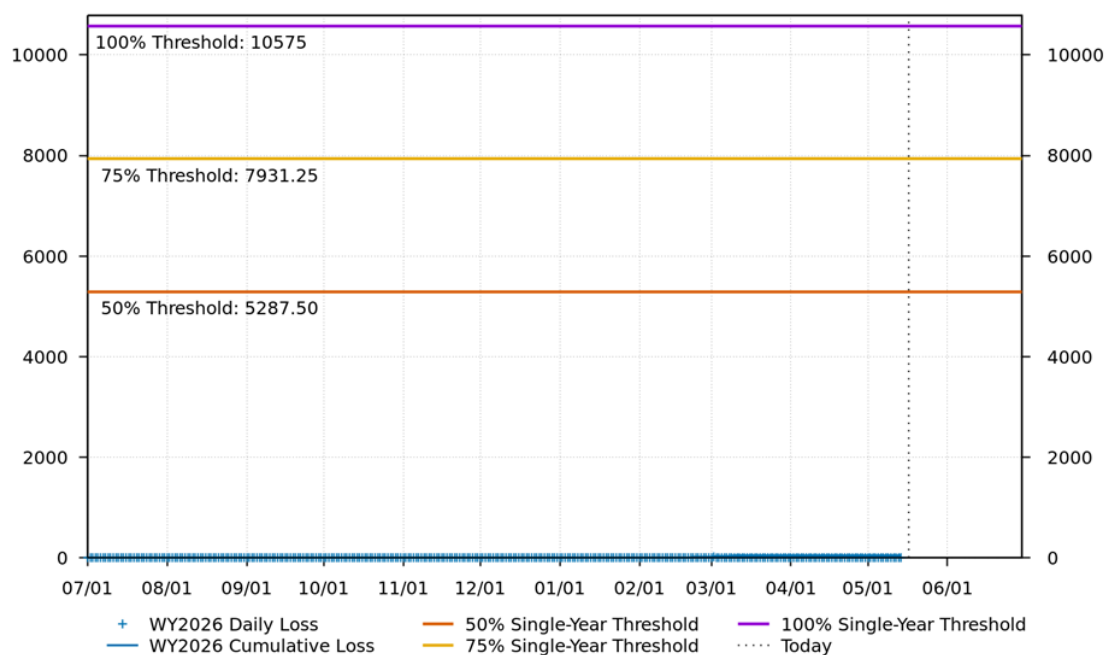
Red Bluff Diversion Dam Passage Estimate - As of May 06 estimated passage to date of LAD winter-run at Red Bluff Diversion is approximately 4.18 million fish. Note that outmigration timing overlaps with spring-run migrating fish, and true winter-run abundance likely differs from these estimates.

Delta Monitoring - Total catch of LAD winter-run at RSTs at Delta Entry (Tisdale, Knights Landing, Lower Sacramento River) between May 03 and May 10 is 0 individuals. Total catch at Sacramento Trawl and Beach Seines in the delta between May 04 and May 15 is 0 individuals. Total catch at Delta Exit at Chippis Island between May 04 and May 15 is 0 individuals.

Annual Loss

The annual loss threshold for natural winter-run is 1% of the JPE or 10,575 fish. The single-year incidental take limit (ITL) is 0.56% of the JPE (5,922 fish) or 0.36% on a 3-year rolling average (BiOp Table 184). As of May 17, cumulative loss of genetically confirmed winter-run is 45 or 0.43% of the annual loss threshold. Cumulative loss in the past 7 days has been 0.

WY2026 Natural DNA Winter-run Chinook Loss
Cumulative Loss to date: 45.42
Cumulative Loss percent of Threshold: 0.43%



Winter-run based on genetic sampling.

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Figure 3. Cumulative loss of natural-origin winter-run for WY 2026. Cumulative loss is based on genetically confirmed winter-run captured in salvage or length-at-date winter-run in which genetic confirmation was unable to be obtained.

Figure 3 displays daily and cumulative winter-run Chinook loss based on genetic sampling for Water Year 2026. Points represent daily estimated loss and the line shows cumulative loss over time, with a vertical dashed line indicating the current date. The 100% threshold: 10575, 75% threshold: 7931.25, and 50% threshold: 5287.50 are shown as horizontal lines. As of May 18, 2026, the cumulative loss to date is 45.42, and the cumulative loss percent of the threshold is 0.43%.

STARS

The Delta STARS Model is an individual-based simulation model that predicts survival, travel time, and routing of juvenile salmon migrating through the Sacramento–San Joaquin River Delta. This model gives insight into survival and routing patterns of winter-run based on most current conditions.

As of February 15, overall through delta STARS estimated survival probability (with 80% credible intervals) is 0.66 (0.62-0.7) placing it in the 73rd percentile of historical STARS survival estimates for the month of February (WYs 2018-2025). STARS estimated routing and survival probabilities (with 80% credible intervals) into the interior delta are 0.12 (0.1-0.13) and 0.44 (0.33-0.54), respectively, corresponding to the 37th and 63rd percentiles of historical February estimates (WYs 2018-2025).

Overall Survival: Median survival of daily cohorts for all routes combined
Delta STARS Model -
Predicted Natural Winter-run Chinook Daily Cohorts Passage, Knights Landing to Chipps Island

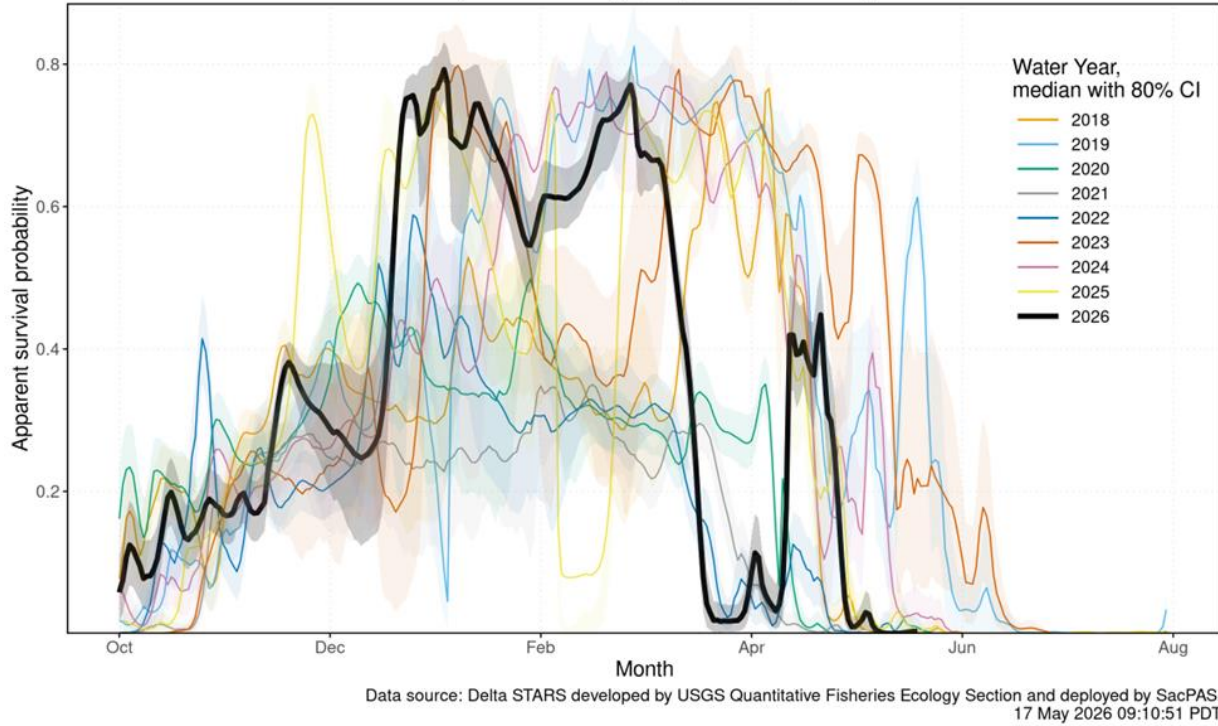


Figure 4: Estimated overall winter-run survival from Knights Landing to Chipps Island. Black line indicates the current water-year, and other colored lines correspond to past water years.

Figure 4 is a line graph depicting median survival of daily cohorts for all routes combined from Knights Landing to Chipps Island. Survival is shown by water year for 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, and 2026, with different-colored lines from October to August and an 80% confidence interval.

Interior Delta Route-specific Survival Probability: Median survival of daily cohorts using the Interior Delta STARS Model - Predicted Natural Winter-run Chinook Daily Cohorts Passage, Knights Landing to Chipps Island

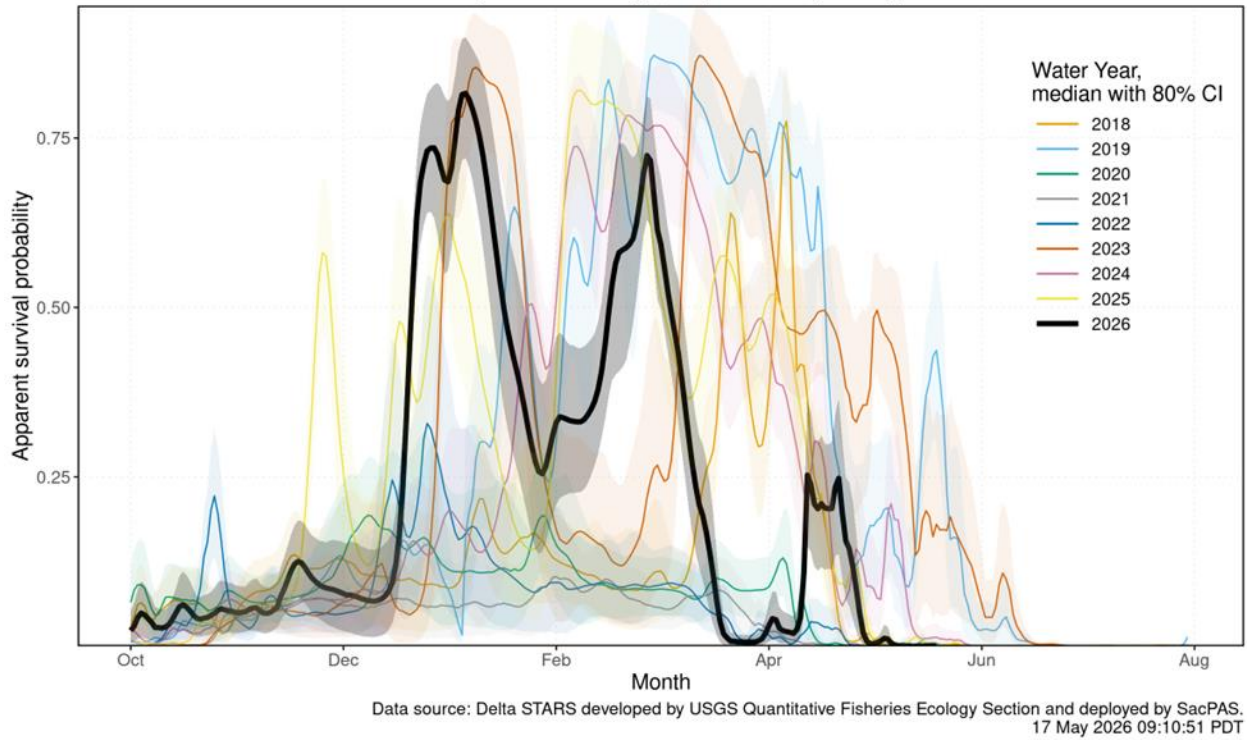


Figure 5: Estimated survival from Knights Landing to Chipps Island of simulate winter-run cohorts that route through the interior delta. Black line indicates the current water-year, and other colored lines correspond to past water years.

Figure 5 is a line graph depicting median survival of daily cohorts using the Interior Delta routes from Knights Landing to Chipps Island. Survival is shown by water year for 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, and 2026, with different-colored lines from October to August with an 80% confidence interval.

Interior Delta Route-specific Probability: Proportion of daily cohorts using the Interior Delta route
 Delta STARS Model -
 Predicted Natural Winter-run Chinook Daily Cohorts Passage, Knights Landing to Chipps Island

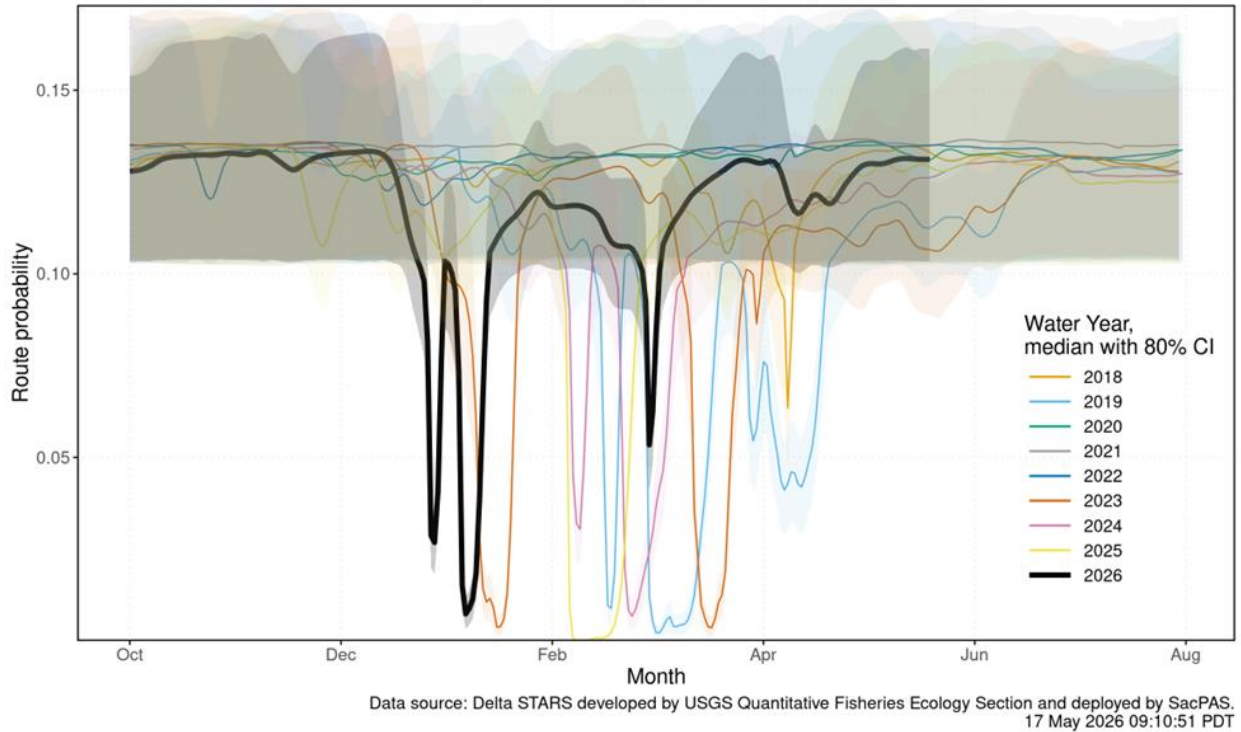


Figure 6: Estimated probability of winter-run routing into the interior Delta. Black line indicates the current water-year, and other colored lines correspond to past water years.

Figure 6 is a line graph depicting survival probability for winter-run Chinook daily cohorts using the Interior Delta routes from Knights Landing to Chipps Island. The survival is shown by water year for 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, and 2026, with different-colored lines from October to August with an 80% confidence interval.

Hatchery Winter-run Chinook – Sacramento River

Hatchery Releases

Livingston Stone National Fish Hatchery released a total of 466,344 winter-run Chinook salmon (February 18). All fish were 100% CWT-marked production fish released at the Sacramento River at John F. Reginato River Access. Release details are shown in the table below and available on SacPAS.

Table 3. Livingston Stone NFH winter-run Chinook salmon releases into the Sacramento River in Water Year 2026. Data sourced from SacPAS.

Release Date	Hatchery	Release Site	Release Type	Fish Released	% CWT Marked	CWT Tagcodes
February 18, 2026	Livingston Stone NFH	Sacramento River at John F. Reginato River Access	Production	466,344	100%	053800 056770 056788 056789

Juvenile Production Estimate

The Juvenile Production Estimate for hatchery winter-run (Sacramento River releases) is 130,096 for Livingston Stone releases. The annual loss threshold is 1% of the JPE (1,301 fish), which is the same as the single-year ITL (BiOp Table 184).

Annual Loss

As of May 18, cumulative loss of Livingston Stone hatchery fish (Sacramento River releases) is 58 or 4.45% of the annual loss threshold (which equals the single-year ITL). Cumulative loss in the past 7 days has been 0.

Hatchery Winter-run Chinook – Battle Creek

Hatchery Releases

Livingston Stone National Fish Hatchery released a total of 207,067 winter-run Chinook salmon into Battle Creek (February 19). Release details are available on SacPAS.

Table 4. Livingston Stone NFH winter-run Chinook salmon releases into Battle Creek in Water Year 2026. Data sourced from SacPAS.

Release Date	Hatchery	Release Site	Release Type	Fish Released	% CWT Marked	CWT Tagcodes
February 19, 2026	Coleman NFH	North Fork Battle Creek Manton CA	Jumpstart	207,067	100%	056769

Juvenile Production Estimate

The Juvenile Production Estimate for hatchery winter-run released into Battle Creek is 5,186 based on 207,067 fish released. The single-year incidental take limit (ITL) is 1.0% of the JPE (52 fish) or 0.8% on a 3-year rolling average (BiOp Table 184).

Incidental Take

As of May 18, cumulative loss of Livingston Stone hatchery fish (Battle Creek releases) is 2 or 4.47% of the single-year ITL (52 fish). Cumulative loss in the past 7 days has been 0.

Natural-origin Central Valley Steelhead

Current Status

Delta Entry Timing - Historically, as of May 17, 91% of CCV steelhead have entered the Delta based on Knights Landing RST catch, 88% have exited the Delta based on Chipps Island Trawl Catch, and 90% have been salvaged.

Table 5. Average percent of annual emigrating population for unclipped CCV steelhead captured at monitoring locations and salvaged at Delta facilities for the past 10 years.

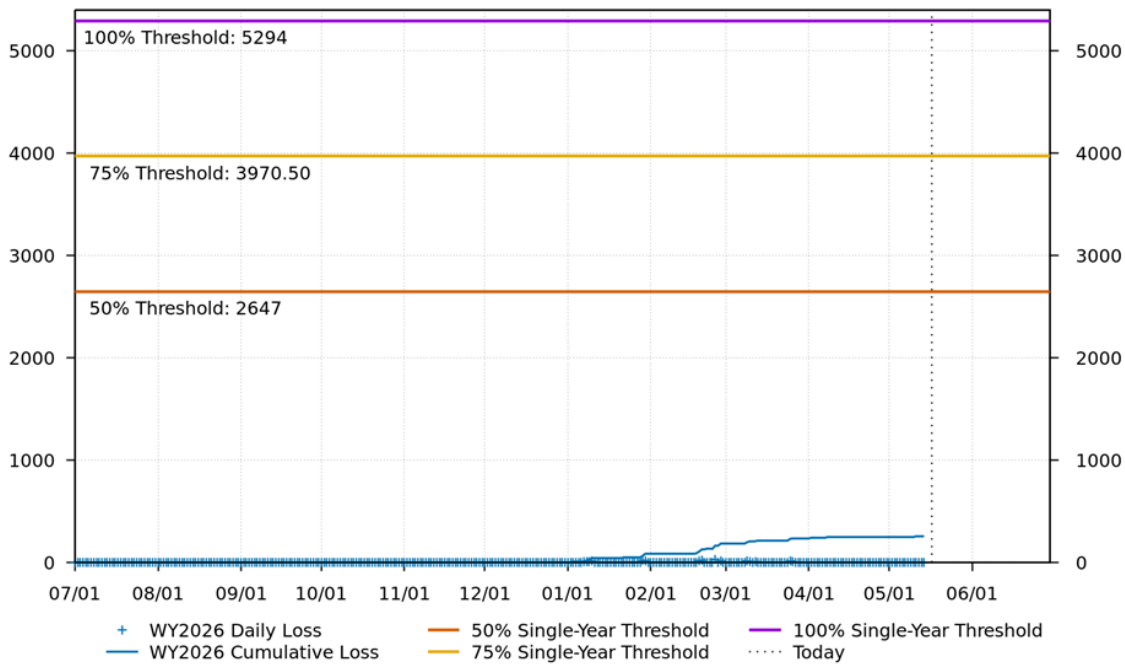
Species	Chipps Island Trawl	Knights Landing RST	Red Bluff Diversion Dam	Sac Trawl (Sherwood)	Salvage	Tisdale RST
Steelhead, Unclipped	88%	80%	25%	91%	90%	82%

Delta Monitoring - Total catch of unclipped steelhead at RSTs at Delta Entry (Tisdale, Knights Landing, Lower Sacramento River) between May 03 and May 10 is 1 individuals. Total catch at Sacramento Trawl and Beach Seines in the delta between May 04 and May 15 is 0 individuals. Total catch at Delta Exit at Chipps Island between May 04 and May 15 is 0 individuals.

Annual Loss

As of May 17, cumulative loss of unclipped steelhead is 256 or 4.84% of the single-year incidental take limit (ITL). There is no annual loss threshold for natural steelhead. The single-year ITL is 5,294 juveniles or 2,319 juveniles as a 3-year rolling average (BiOp Table 184). Cumulative loss in the past 7 days has been 3.

WY2026 Natural Steelhead Loss
Cumulative Loss to date: 256.48
Cumulative Loss percent of Threshold: 4.84%



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Figure 7: Cumulative loss of natural-origin steelhead for WY 2026. The 5,294 line represents the single-year incidental take limit (ITL), not a loss threshold.

Figure 7 displays daily and cumulative natural steelhead loss based on genetic sampling for Water Year 2026. Points represent daily estimated loss and the line shows cumulative loss over time, with a vertical dashed line indicating the current date. Horizontal lines represent the 100% single-year threshold of 5,294, 75% threshold of 3970.50, and 50% threshold of 2647. As of May 18, 2026, cumulative loss to date is 256.48 fish, representing 4.84% of the threshold.

Hatchery-origin Central Valley Steelhead

Surrogate Releases

There have been a total of 10 releases totaling 1,618,274 steelhead in Water Year 2026. JPE for the hatchery releases as of today is 654,130 based on estimated survivals using forecasted water year types (see details in table below). The annual loss threshold, equal to 1% of the JPE, is currently 6,541, but is subject to change with additional steelhead releases.

Table 6. Summary of steelhead hatchery releases in Water Year 2026. JPE calculated using hatchery-specific survival estimates to Delta entry from release location.

Hatchery	Date of Release	Number Released	Estimated Survival	Juvenile Production Estimate
NIM	2025-11-10	233,109	72%	167,838
Coleman	2025-12-15	555,720	38%	211,174
Coleman	2025-12-17	90,019	38%	34,207
FRH	2026-01-06	371,250	36%	133,650
FRH	2026-01-09	123,750	36%	44,550
MOK	2026-02-17	39,130	25%	9,783
MOK	2026-02-18	39,131	25%	9,783
MOK	2026-03-18	41,550	27%	11,219
MOK	2026-03-19	42,150	27%	11,381
MOK	2026-04-16	83,110	25%	20,778

Table 7: Hatchery-specific survival estimates used for JPE calculations.

Hatchery	Survival Estimate	Source
Coleman NFH	0.205 – 0.433	Sandstrom et al. 2020
Feather River Hatchery	0.09 – 0.45	Kurth 2013
Nimbus Hatchery	0.62 – 0.83	Brodsky et al. 2020
Mokelumne River Hatchery	0.25 – 0.33	Del Real et al. 2012

Total loss of hatchery-origin steelhead is 1892 or 28.93% of the annual loss threshold. Note that hatchery origin of salvaged fish cannot be determined at this time and salvage is based on the assumption of similar routing and survival probabilities of individual hatchery releases.

WY2026 Hatchery Steelhead Loss
Cumulative Loss to date: 1892.25
Cumulative Loss percent of Threshold: 28.93%

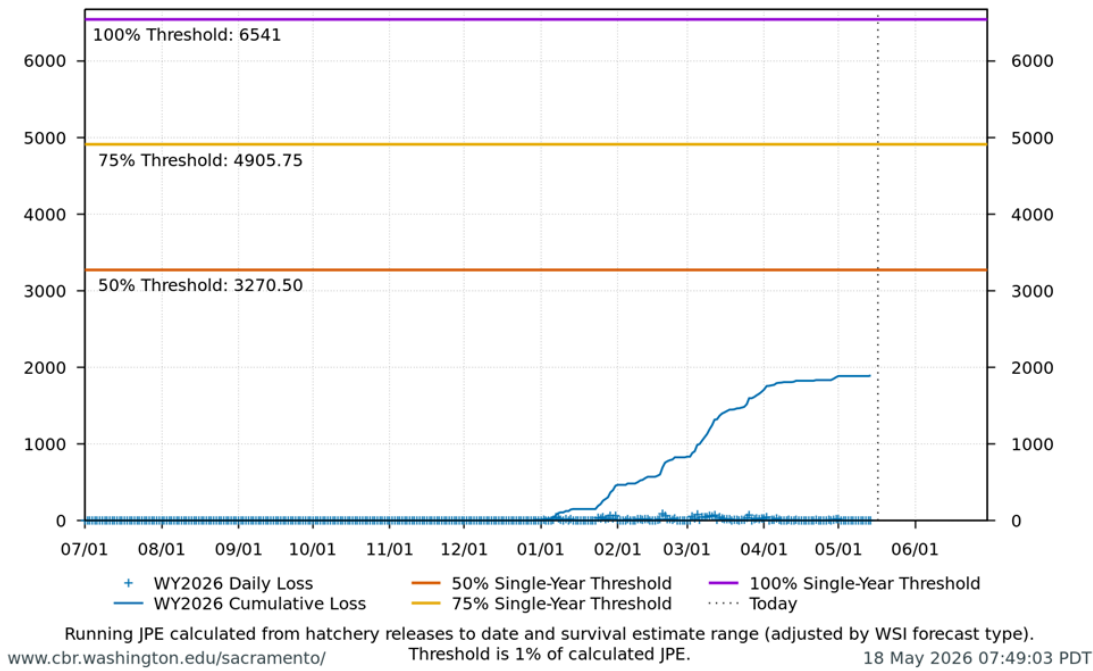


Figure 8: Cumulative loss of hatchery steelhead for WY 2026.

Figure 8 displays daily and cumulative hatchery steelhead loss for Water Year 2026. Points represent daily estimated loss and the line shows cumulative loss over time, with a vertical dashed line indicating the current date. Horizontal lines represent the 100% single-year threshold of 6,541, 75% threshold of 4905.75, and 50% threshold of 3270.50. As of May 18, 2026, cumulative loss to date is 1892.25 fish, representing 28.93% of the threshold.

Spring-run Chinook

Current Status

Delta Entry Timing - Historically, as of May 17, 100% of LAD spring-run have entered the Delta based on Knights Landing RST catch, 99% have exited the Delta based on Chipps Island Trawl Catch, and 89% have been salvaged.

Table 8: Average Percent of annual emigrating population for LAD Spring-run Chinook Salmon captured at the following locations and salvaged at Delta facilities for the past 10 years.

Species	Red Bluff Diversion Dam	Tisdale RST	Knights Landing RST	Sac Trawl (Sherwood)	Chipps Island Trawl	Salvage
Chinook, LAD Spring-run, Unclipped	99%	100%	100%	100%	99%	89%

Red Bluff Diversion Dam Passage Estimate - As of May 06 estimated passage to date of LAD spring-run at Red Bluff Diversion is approximately 0.95 million fish. Note that outmigration timing overlaps with winter-run and fall-run outmigration, and true spring-run abundance likely differs from these estimates.

Delta Monitoring - Total catch of LAD spring-run at RSTs at Delta Entry (Tisdale, Knights Landing, Lower Sacramento River) between May 03 and May 10 is 0 individuals. Total catch at Sacramento Trawl and Beach Seines in the delta between May 04 and May 15 is 2 individuals. Total catch at Delta Exit at Chipps Island between May 04 and May 15 is 80 individuals.

Spring-run Surrogate Releases

A total of 3,327,812 spring-run surrogate fish have been released in Water Year 2026, with an estimated Juvenile Production Estimate (JPE) of 1,130,892 fish entering the Delta. This includes 805,323 Coleman Late-Fall Run Chinook yearlings (JPE: 219,852) released from Coleman National Fish Hatchery across 12 coded-wire tag groups, and 2,522,489 Feather River Hatchery Spring-Run young-of-year (JPE: 911,040) across 7 coded-wire tag groups. See details in table below.

Table 9: Spring-run Chinook Salmon Surrogate Releases (all Coleman Late-Fall releases, both production and experimental).

Hatchery	Release Date	Stock	Life Stage	Type	CTW Released	ITL (0.5%)	Loss	CWT Codes
Feather River Hatchery	2026-03-18	Spring-Run	YOY	Production	985,324	4,927	0	063227, 063229
Feather River Hatchery	2026-03-19	Spring-Run	YOY	Production	1,048,948	5,245	0	063036, 063236
Feather River Hatchery	2026-03-23	Spring-Run	YOY	Production	488,217	2,441	0	062858, 063234
Coleman NFH	2025-11-13	Late-Fall	Yearling	Production	143,346	717	9	056808, 056809
Coleman NFH	2025-11-17	Late-Fall	Yearling	Experimental	75,119	376	0	056810
Coleman NFH	2025-12-17	Late-Fall	Yearling	Production	468,876	2,344	774	053700, 056806, 056811, 056812, 056814, 056815, 056817
Coleman NFH	2025-12-17	Late-Fall	Yearling	Experimental	60,873	304	257	056813
Coleman NFH	2026-01-08	Late-Fall	Yearling	Experimental	57,109	286	35	056816

Annual Loss

The annual loss threshold (Action 5) is 1% of the JPE entering the Delta, tracked cumulatively but separately for yearlings and young-of-year. Yearling surrogates (Coleman Late-Fall): the threshold is 2,199 fish; as of May 17, cumulative loss is 1,075 fish or 48.90% of the threshold. YOY surrogates (Feather River Spring-Run): the threshold is 9,110 fish; as of May 17, cumulative loss is 0 fish or 0.00% of the threshold. The single-year incidental take limit (ITL) is 0.5% of the estimated number of each surrogate release group (BiOp Table 184). ITL status by release group: YOY - Feather River Hatchery (2026-03-18, Production): 0 loss of 4,927 ITL (0%); YOY - Feather River Hatchery (2026-03-19, Production): 0 loss of 5,245 ITL (0%); YOY - Feather River Hatchery (2026-03-23, Production): 0 loss of 2,441 ITL (0%); Yearling - Coleman NFH (2025-11-13, Production): 9 loss of 717 ITL (1.21%); Yearling - Coleman NFH (2025-11-17, Experimental): 0 loss of 376 ITL (0%); Yearling - Coleman NFH (2025-12-17, Production): 774 loss of 2,344 ITL (33.02%); Yearling - Coleman NFH (2025-12-22, Experimental): 257 loss of 304 ITL (84.64%); Yearling - Coleman NFH (2026-01-08, Experimental): 35 loss of 286 ITL (12.26%).

Loss Prediction and Trajectories

The following figures display the current loss predictor model outputs for winter-run Chinook salmon and steelhead.

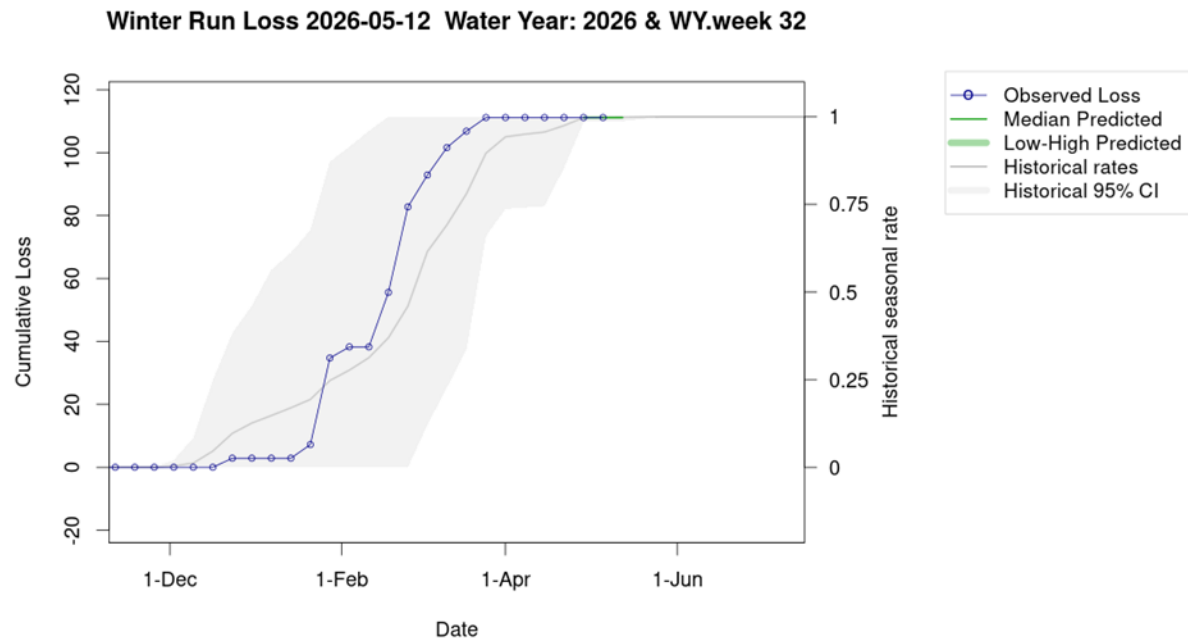


Figure 9: Estimates of winter-run Chinook loss generated by Loss and Salvage Predictor tool.

Figure 9 displays observed cumulative winter-run Chinook loss for Water Year 2026 through May 12, 2026, compared with predicted and historical loss patterns. Points represent observed cumulative loss, while the green line shows the median predicted loss and the shaded green band represents the low-high predicted range. Historical seasonal loss rates and the historical 95% confidence interval are shown in gray for comparison. Observed cumulative loss remains within the predicted and historical ranges during this early portion of the water year.

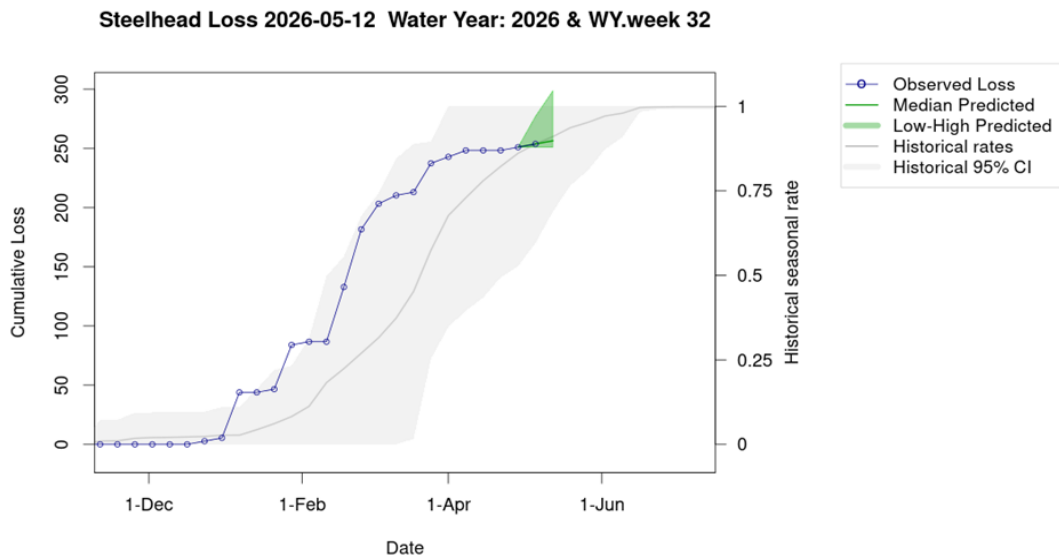


Figure 10: Estimates of steelhead loss generated by Loss and Salvage Predictor tool.

Figure 10 displays observed cumulative winter-run steelhead loss for Water Year 2026 through May 12, 2026, compared with predicted and historical loss patterns. Points represent observed cumulative loss, while the green line shows the median predicted loss and the shaded green band represents the low-high predicted range. Historical seasonal loss rates and the historical 95% confidence interval are shown in gray for comparison. Observed cumulative loss remains within the predicted and historical ranges during this early portion of the water year.

Evaluation

1. What is the probability of exceeding natural or hatchery winter-run Chinook Salmon loss thresholds in the upcoming week?
 - a. **LOW RISK:** Natural winter-run cumulative loss is currently 0.43% of the threshold.
 - b. **LOW RISK:** Hatchery winter-run (Sac River) cumulative loss is currently 4.45% of the threshold.
 - c. **LOW RISK:** Hatchery winter-run (Battle Creek) cumulative loss is currently 4.47% of the threshold.
2. What is the probability of exceeding spring-run Chinook salmon surrogate yearling loss thresholds in the upcoming week?
 - a. **LOW RISK:** Spring-run surrogate yearlings (Coleman Late-Fall) cumulative loss is currently 48.90% of the threshold.
 - b. **LOW RISK:** Spring-run surrogate YOY (Feather River Spring-Run) cumulative loss is currently 0.00% of the threshold.

3. What is the probability of exceeding natural or hatchery steelhead loss thresholds in the upcoming week?
 - a. **LOW RISK:** Natural steelhead cumulative loss is currently 4.90% of the threshold.
 - b. **LOW RISK:** Hatchery steelhead cumulative loss is currently 29.01% of the threshold.

Weekly Assessment for Delta Operations on ESA and CESA-listed Osmerids

Operational and Regulatory Conditions

- See current Weekly Fish and Water Operations Outlook document.
- Additional information also available on the [SacPAS SMT page](#).

Delta smelt

Biological

- **Delta smelt life stages detected in surveys:**
- **Abundance estimate:** 2034 (95% CL: 162 to 8,959) as of the week of March 23–27, 2026
- **Releases:** A total of 163,349 cultured Delta smelt have been released for WY 2026. The most recent release of 24,606 fish occurred in Sacramento River at Rio Vista on Dec 16, 2025.
- **Delta smelt count:** 44 adult Delta smelt and 30 juvenile Delta smelt have been detected this water year. See Table 10 for recent detections, Figure 11 for spatial distribution, and Figure 12 for temporal distribution.
- **Delta smelt salvage:** 1 Delta smelt has been salvaged, and the cumulative seasonal salvage is 4.

Notes

- EDSM is currently in phase 2 (20-mm); detections are marked as *Hypomesus* sp. until genetic verification is returned, which may be 4-6 weeks delay. As a result, 'recent catch' in this assessment may be low until genetic verification has occurred.
- Since there are few recent detections of Delta smelt, estimation of distribution within the Delta is limited.
- As mentioned in EDSM reporting, fork length ranges reported for Delta smelt and longfin smelt life stages are defined by permit reporting purposes and are not intended to delineate cohorts or distinguish from hatchery or wild origin. See Table 10 caption for fork-length ranges for age groups of Delta smelt.

- See [SacPAS SMT Page](#) for additional details on releases and detection in surveys and salvage.
- Historical salvage trends can be found at: [SacPAS Salvage Timing](#)

Table 10: Delta smelt detections in the last 2 weeks. Fork Length > 58mm = Adult, Fork Length 20-58mm = Juvenile, Fork Length < 20mm = Larva.

Survey	Date	Region	Stratum	Life Stage	Catch
N/A	N/A	N/A	N/A	N/A	N/A

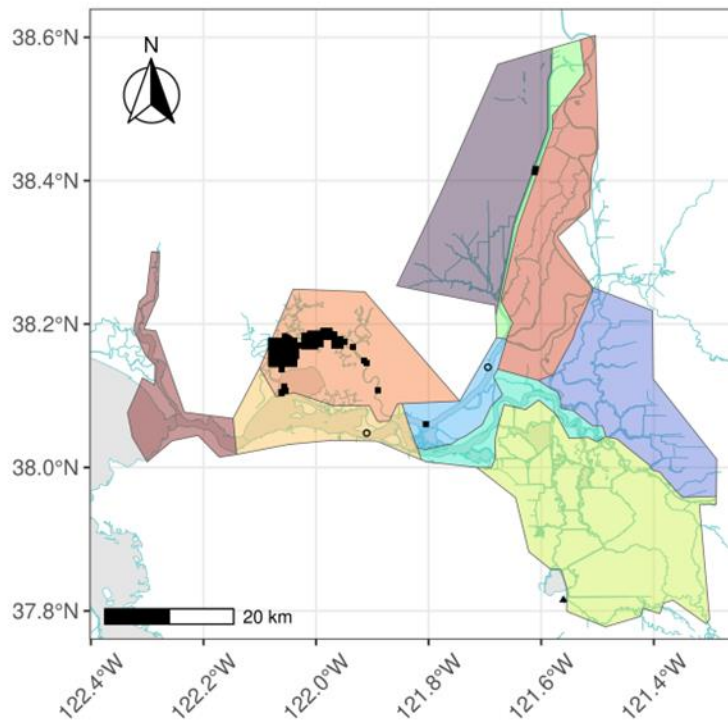
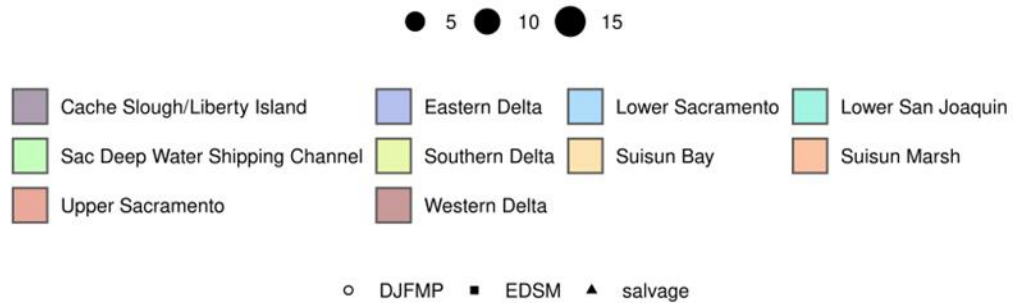


Figure 11: Delta smelt distribution for WY 2026.

Figure 11 shows monitoring locations across the Sacramento–San Joaquin Delta. Colored polygons represent Delta regions, including Cache Slough/Liberty Island, Eastern Delta, Lower Sacramento, Lower San Joaquin, Sacramento Deep Water Shipping Channel, Southern Delta, Suisun Bay, Suisun Marsh, Upper Sacramento, and Western Delta. Symbols indicate sampling locations for DJFMP and EDSM monitoring programs, with symbol size representing relative sample counts.

Table 11: Delta smelt water year totals by life stage

Survey	Region	Life Stage	Total
DJFMP	N/A	Adult	1
DJFMP	North	Juvenile	1
EDSM	North	Adult	2
EDSM	West	Adult	40
EDSM	West	Juvenile	29
Salvage	South	Adult	1

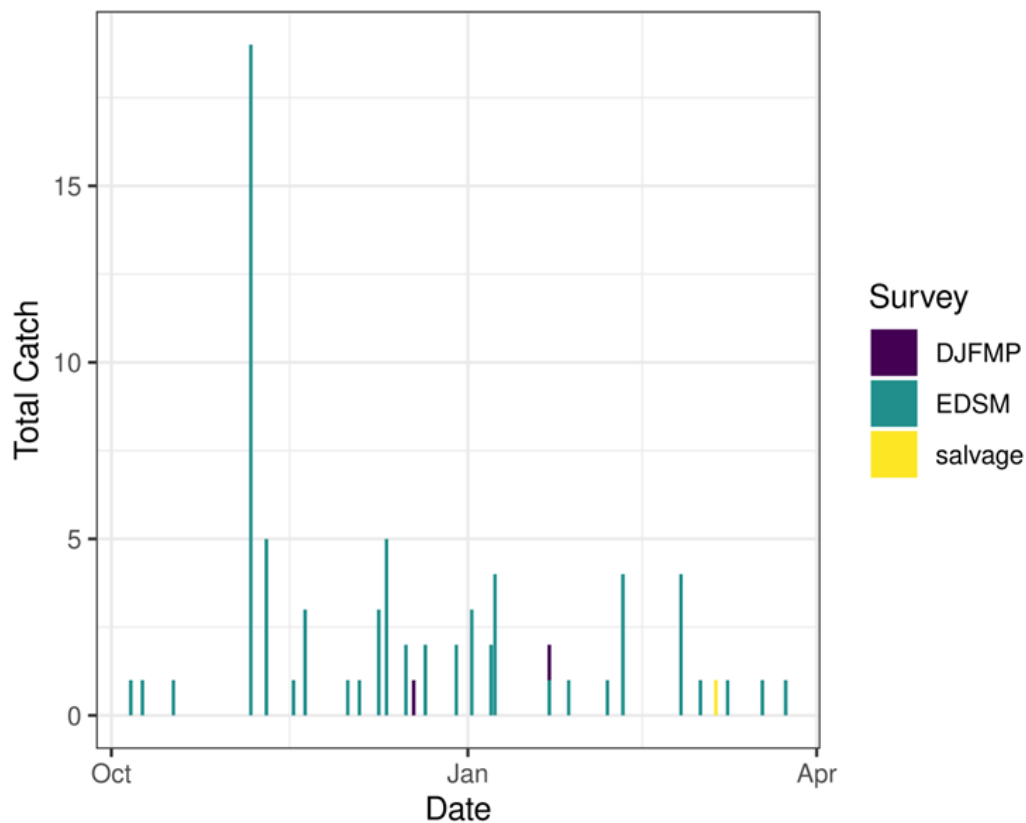


Figure 12: Time series of Delta smelt catch, WY 2026

Figure 12 displays total catch observations over time from October through April for three survey programs: DJFMP, EDSM, and Salvage. Bars represent total catch recorded on individual sampling dates, with colors distinguishing the survey type. The figure shows that most detections occurred during EDSM surveys, with relatively few observations from DJFMP sampling.

Environmental

First Flush

- Implemented 12/25/25-1/7/26

Real-time Assessment Thresholds

Adult Delta smelt

- Adult delta smelt action off-ramped 02/12/2026.
- No adult Delta smelt actions were taken in WY 2026.
- See [Bay-Delta Live](#) for recent Delta-wide turbidity conditions.

Larval/juvenile Delta smelt

- **Threshold:** After the onset of spawning, if JPF < 0 cfs AND turbidity is ≥ 12 FNU in the south Delta AND PTM modeling indicates the action would avoid $\geq 5\%$ entrainment of Delta smelt population after 30 days
 - **12-station South Delta Turbidity:** The most recent average turbidity was 3.6 FNU as of May 13, 2026.

Evaluation

Delta smelt

1. After the start of entrainment management, is JPF < 0 and is daily average turbidity ≥ 12 FNU in the OMR corridor (stations OBI, HOL, and OSJ)?
 - a. The adult Delta smelt entrainment action is not active and no action was taken in WY26.
2. Has the average water temperature at Jersey Point or Rio Vista not exceeded 53.6° F (12° C) for 3 consecutive days and/or has this action already been taken during WY 2026?
 - a. Temperature at Jersey Point exceeded the threshold on February 12th, 2025. Jersey Point 3-day average temperature was 12.05°C on February 10th, 12.09°C on February 11th, and 12.13°C on February 12th.
3. What is the evidence for the onset of Delta smelt spawning?
 - a. Upstream migration for Delta smelt occurs between December and March and in response to “first flush” conditions (Sommer et al., 2011; Grimaldo et al. 2009; 2021). Historically, detections of ripe Delta smelt began in January and peaked in February and March and the majority of Delta Smelt spawning occurs at 11-15° C (but can occur from 8-18° C) (Damon et al. 2016). Based on [historical monitoring data](#) from the past few years, first detection of larvae in the Central and South Delta has typically occurred by mid to late March. The large majority of Delta

smelt recaptures continue to be from Suisun Marsh close to where fish were releases in the fall. Spawning is most likely completed due to increased water temperatures.

4. After the onset of spawning, have the following conditions occurred: JPF < 0 cfs, average turbidity is ≥ 12 FNU in the south Delta, and PTM modeling indicates the action would avoid $\geq 5\%$ entrainment of the Delta smelt population at facilities after 30 days?
 - a. Moderate to high turbidity has been observed at some stations in the South and Central Delta over the past several days. However, the spatial and temporal pattern of turbidity is most consistent with short-term wind-driven turbidity rather than sustained turbidity conditions associated with Delta Smelt entrainment risk. Elevated turbidity appeared to move eastward through the system over the last several days in a pattern consistent with strong westerly wind conditions, and turbidity spikes observed at individual stations in the Central and South Delta were generally short-lived and not persistent across the broader region. The most recent available 11-station average turbidity in the South Delta was 3.6 FNU on May 12, 2026 (station 918 could not be sampled due to bridge clearance issues), which remains below the ≥ 12 FNU threshold required to trigger the action. Because updated 12-station turbidity data were not available this week, the most recent available values were used to inform this assessment. Turbidity conditions will continue to be monitored to ensure observed patterns remain consistent with the short-term wind-driven process described above.

In addition to turbidity, the action also considers other criteria including JPF and PTM modeling. JPF may be <0 cfs for portions of this week. However, PTM results for neutrally buoyant particles injected at Chipps Island (using the most recent adult detections as a proxy for potential larval locations) showed 0% particle entrainment at both facilities under OMRI scenarios of -2,000, -3,500, and -5,000 cfs this week and next week, indicating very low entrainment risk if larvae were present. No Delta Smelt larvae have been captured in SLS or 20-mm surveys to date in WY2026 (pending genetic results from the EDSM 20-mm survey). Based on currently available turbidity data and PTM modeling results, the conditions required to initiate the larval and juvenile Delta Smelt entrainment action are not met.

Longfin smelt

Biological

- **Longfin smelt life stages detected in surveys:** Juvenile, Larva

- **Longfin smelt count:** 475 adult, 1325 juvenile, and 9547 larval longfin smelt have been detected this water year. See Table 12 for recent detections, Figure 13 for spatial distribution, and Figure 14 for temporal distribution.
- **Longfin smelt salvage:** 0 longfin smelt have been salvaged, and the cumulative seasonal salvage is 0.

Table 12: Longfin smelt detections in the last 2 weeks. Fork Length > 84mm = Adult, Fork Length 20-84mm = Juvenile, Fork Length < 20mm = Larva.

Survey	Date	Region	Stratum	Life Stage	Catch
EDSM 20-mm	2026-05-06	Far West	Suisun Bay	Juvenile	2
EDSM 20-mm	2026-05-06	Far West	Suisun Bay	Larva	1
EDSM 20-mm	2026-05-06	West	Suisun Bay	Juvenile	3

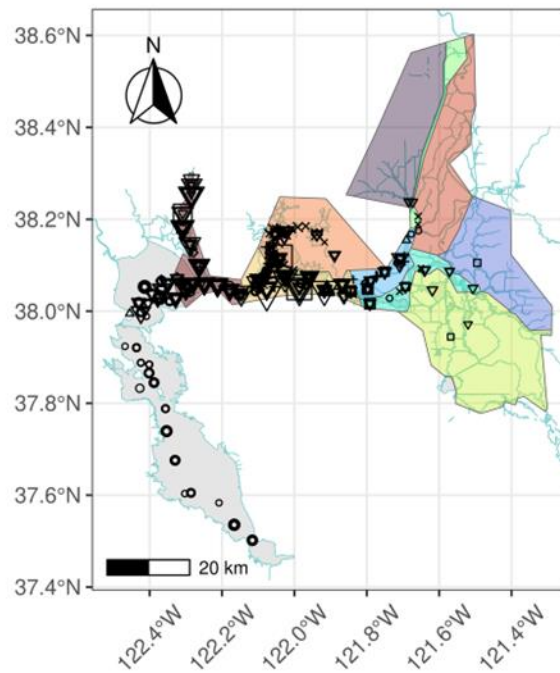
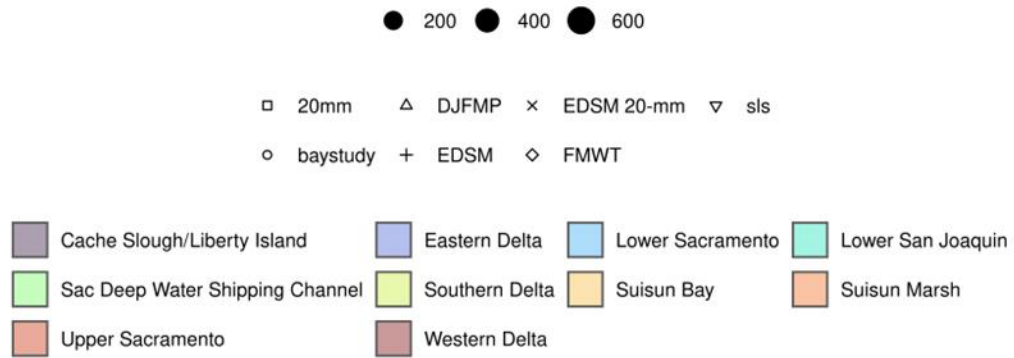


Figure 13: Longfin Smelt Distribution for WY 2026

Figure 13 shows monitoring locations across the Sacramento–San Joaquin Delta and surrounding areas. Colored polygons represent Delta regions, including Cache Slough/Liberty Island, Eastern Delta, Lower Sacramento, Lower San Joaquin, Sacramento Deep Water Shipping Channel, Southern Delta, Suisun Bay, Suisun Marsh, Upper Sacramento, and Western Delta. Symbols indicate sampling locations from multiple monitoring programs (Bay Study, DJFMP, EDSM, FMWT, and SLS), with symbol size representing relative sample counts.

Table 13: Longfin smelt water year totals by life stage

Survey	Region	Life Stage	Total
20mm	Far West	Larva	270
20mm	North	Larva	13
20mm	South	Larva	17
20mm	West	Larva	710
DJFMP	Bay	Juvenile	1
DJFMP	N/A	Adult	267

Survey	Region	Life Stage	Total
DJFMP	N/A	Juvenile	31
DJFMP	NA	Adult	1
EDSM	Far West	Adult	24
EDSM	Far West	Juvenile	100
EDSM	North	Adult	1
EDSM	North	Juvenile	1
EDSM	West	Adult	83
EDSM	West	Juvenile	204
EDSM 20-mm	Far West	Juvenile	5
EDSM 20-mm	Far West	Larva	7
EDSM 20-mm	North	Larva	4
EDSM 20-mm	South	Larva	2
EDSM 20-mm	West	Juvenile	146
EDSM 20-mm	West	Larva	735
FMWT	Bay	Adult	1
FMWT	Bay	Juvenile	14
FMWT	Far West	Adult	2
FMWT	Far West	Juvenile	14
FMWT	West	Adult	4
FMWT	West	Juvenile	18
FMWT	NA	Adult	2
FMWT	NA	Juvenile	28
baystudy	Bay	Adult	53
baystudy	Bay	Juvenile	624
baystudy	Far West	Adult	27
baystudy	Far West	Juvenile	111
baystudy	North	Adult	3
baystudy	North	Juvenile	1
baystudy	West	Adult	7
baystudy	West	Juvenile	24
sls	Bay	Larva	448
sls	Far West	Larva	4274
sls	North	Larva	91
sls	South	Larva	54
sls	West	Larva	2531
sls	NA	Juvenile	3
sls	NA	Larva	391

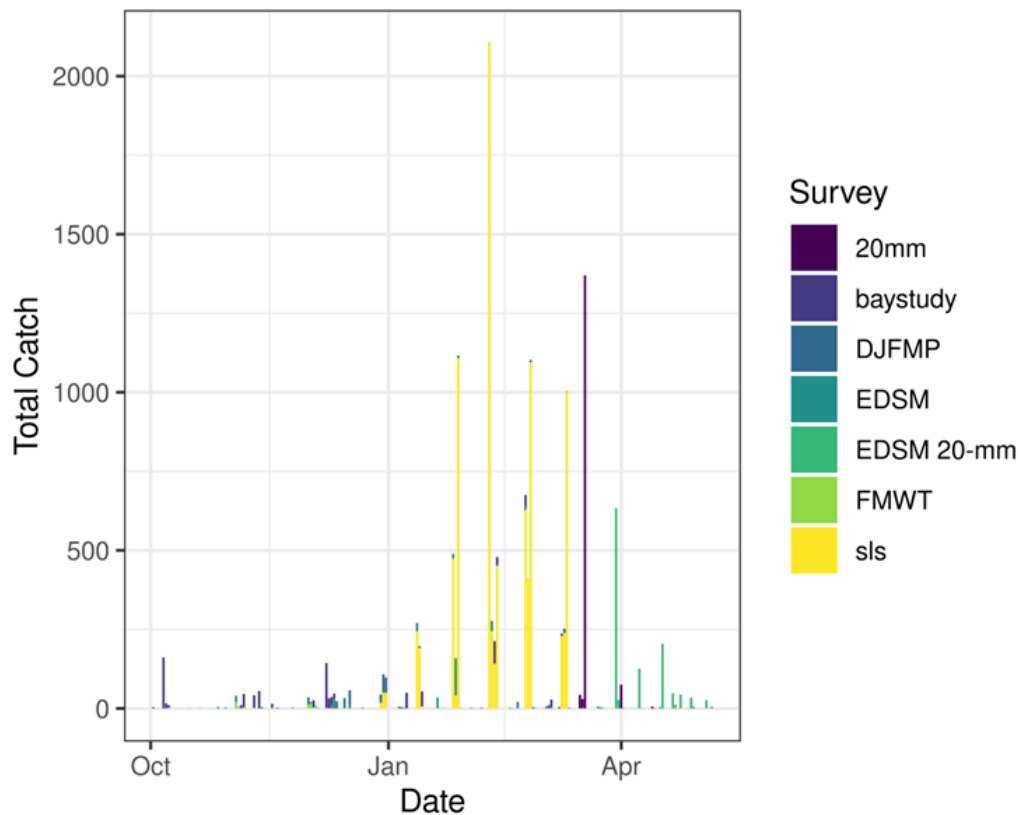


Figure 14: Time series of longfin smelt catch, WY 2026

Figure 14 displays total catch observations over time from October through April for multiple survey programs, including Bay Study, DJFMP, EDSM, and SLS. Bars represent total catch recorded on individual sampling dates, with colors distinguishing the survey type. The figure shows higher catch totals during Bay Study surveys in October and increased observations across DJFMP and EDSM, and SLS in January and February.

Real-time Assessment Thresholds

Start of Entrainment Management (Adult Longfin Smelt)

- This action was not taken in WY26.

Adult longfin smelt

- **Threshold:** JPF < 0 cfs, annual loss is on a trajectory to exceed 5% of the adult population abundance, and reduced exports will reduce entrainment in the south Delta
 - Daily average JPF: 277 cfs as of May 17, 2026
 - Adult abundance (Age 1+ LFS index): 2479.2 fish
 - 5% of abundance + 1: 125.0
 - Water year total adult longfin smelt salvage = 0

Larval/juvenile longfin smelt

- **Threshold:** JPF < 0 cfs AND population model demonstrates need to reduce entrainment to avoid population decline
 - Daily average JPF: 277 cfs as of May 17, 2026

Evaluation

Longfin smelt:

1. If JPF < 0, what is the trajectory of annual loss of adult longfin smelt and is it likely to exceed 5% of the adult population estimate? Is South Delta entrainment expected to decrease due to a reduction in export pumping?
 - a. While JPF may decrease to < 0 cfs during this week, no adult longfin smelt have been detected in salvage this water year and so conditions are not met for the adult longfin smelt entrainment protection action.
2. For larval and juvenile longfin smelt, if JPF < 0 cfs, do particle tracking models show a moderate to high difference in particle fates across different OMRI scenarios? Does Zone of Influence modeling show moderate to high changes in hydrodynamic footprint across different OMRI scenarios? Are these effects anticipated to cause a population decline?
 - a. JPF may decrease to < 0 cfs this week. However, PTM and Zone of Influence modeling indicate a low risk of entrainment for the larval and juvenile Longfin Smelt population. The Longfin smelt larval population and PTM analysis projects low entrainment relative to estimated abundance* for this week. The model shows the estimated entrainment for this week is estimated to be <0.1% for the -2,000, -3,500, and -5,000 cfs OMRI scenarios. In addition, PTM for surface-oriented particles injected at both Chipps Island and Jersey Point show 0-0.1% entrainment at the projects for this week for OMRI of -2,000, -3,500, and -5,000 cfs.

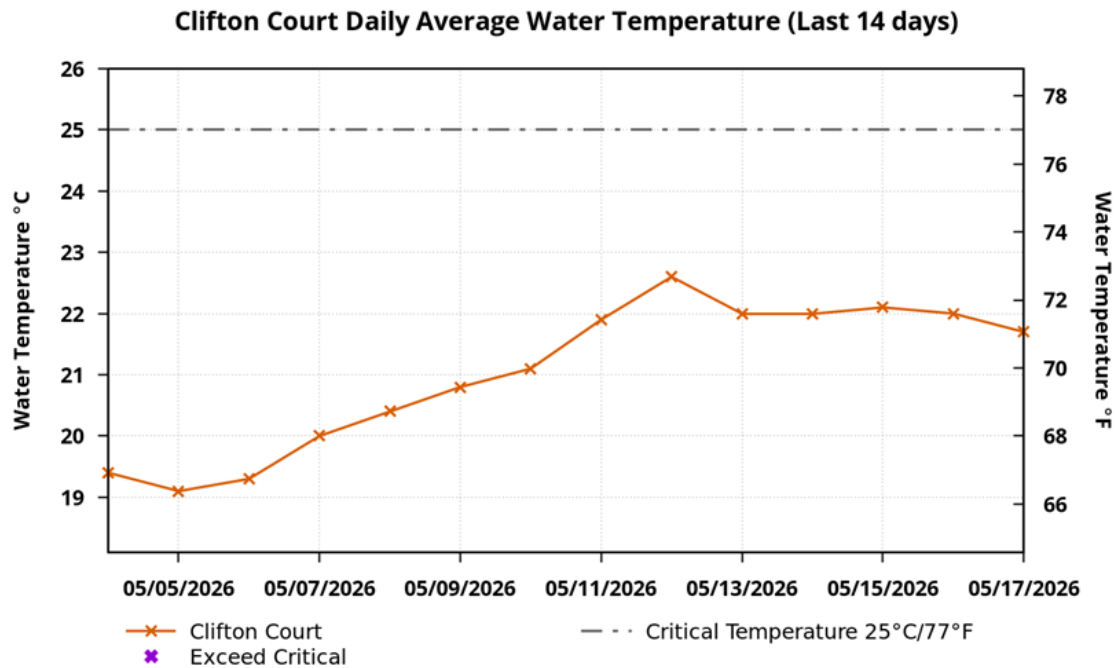
Please note that due to processing/posting time for 20-mm survey data results, larval longfin smelt abundance for this model is being calculated from completed SLS survey data, and has not yet been updated to use 20-mm data. As a result, data from this model should be interpreted with caution.

- b. Zone of Influence modeling indicates high differences in the hydrodynamic footprint across OMRI scenarios; however, the Zone of Influence does not extend into the western or far western regions where the majority of Longfin Smelt larvae and juveniles have been detected. Therefore, these effects are not anticipated to result in a population decline.

3. Is there additional information or other analyses that should be considered in this evaluation?
 - a. Additional information may be discussed if needed at the DAT call.

End of smelt Entrainment Management

- **Threshold:** $CLC \geq 25^{\circ} C (77^{\circ} F)$ for 3 consecutive days OR June 30
 - Clifton Court Temperature: 22.1, 22, 21.7° C as of May 17, 2026



Preliminary data from CDEC; subject to revision.

www.cbr.washington.edu/sacramento/
18 May 2026 07:35:01 PDT

Figure 15: Clifton Court Daily Average Water Temperature (Last 14 Days)

Figure 15 shows the daily average water temperatures from May 5 to May 17, 2026. Water temperatures gradually increased from about 19°C (66°F) to a peak near 22.6°C (73°F) before leveling slightly below 22°C (72°F), remaining below the critical temperature threshold of 25°C (77°F) indicated by a dashed horizontal line.

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Appendix A: Delta Real-Time Forecast Summary

Date: 05/18/2026

Forecast Period: 05/12/2026 – 06/02/2026

Forecast Week 1: 05/12/2026 – 05/18/2026

Forecast Week 2: 05/19/2026 – 05/25/2026

Forecast Week 3: 05/26/2026 – 06/02/2026

Contents

- Common Assumptions
- Reclamation Forecast Flow and Export Data
- Delta Export Zone of Influence
- PTM (Particle Tracking Model) Results
 - a. Neutrally Buoyant Particles (NP)
 - b. Surface Oriented Particles (PP)
- ECO-PTM (Ecological Particle Tracking Model)
- Longfin Smelt Larval Population and PTM Analysis

Common Assumptions

The model run results cover the period May 12, 2026 through June 01, 2026 and are based on the following assumptions established by DWR:

1. CCFB Gates are operating to Priority 1.
2. The Delta Cross Channel gates are currently closed. Starting May 22, they will be open on weekends and closed on weekdays.
3. Suisun Marsh Salinity Control flashboards are in. All three gates are in the open position. On May 18 and 19, they will be closed for maintenance.
4. San Joaquin River flow at Vernalis is at 1160 cfs at the beginning of the forecast period and is estimated to increase to 2200 cfs by the end of the forecast period.
5. San Joaquin River EC at Vernalis is at 539 umhos/cm at the beginning of the forecast period and is estimated to decrease to 292 umhos/cm at the end of the forecast period.

6. Sacramento River flow at Freeport is at 13260 cfs at the beginning of the forecast period and is expected to decrease to 11150 cfs by the end of the forecast period.
7. CCFB inflow is at 594 cfs at the beginning of the forecast period and is expected to increase to 2200 cfs by the end of the forecast period.
8. Export at Jones Pumping Plant is at 881 cfs at the beginning of the forecast period and is expected to increase to 4200 cfs to the end the forecast period.
9. The Middle River barrier gates will be in intermediate tidal operation starting May 15.
10. The Old River near Tracy barrier gates will be in intermediate tidal operation starting May 29.

As shown in the next section, assumptions 4 and 6 have been updated based on Reclamation forecast data, and assumption 8 and exports at Banks Pumping Plant have been modified to include four different forecast scenarios at an Old and Middle River (OMR) index of -6,250 cfs, -5,000 cfs, -3,500 cfs, and -2,000 cfs.

Reclamation Forecast Flow and Export Data

Table 1. Weekly Averaged Forecasted Flow Data and Flow Bins

Forecast Week	Sacramento River at Freeport (cfs)	Sac Flow Bin	San Joaquin River at Vernalis (cfs)	SJR Flow Bin	Delta Inflow Bin
Week 1: 05/12/2026 – 05/18/2026	13,798	med	1,985	med	medmed
Week 2: 05/19/2026 – 05/25/2026	13,127	lo	2,000	med	lomed
Week 3: 05/26/2026 – 06/02/2026	13,000	lo	2,000	med	lomed

Key:

cfs = cubic feet per second Sac = Sacramento River SJR = San Joaquin River

Table 2. Weekly Averaged CVP and SWP Exports by OMR Bin

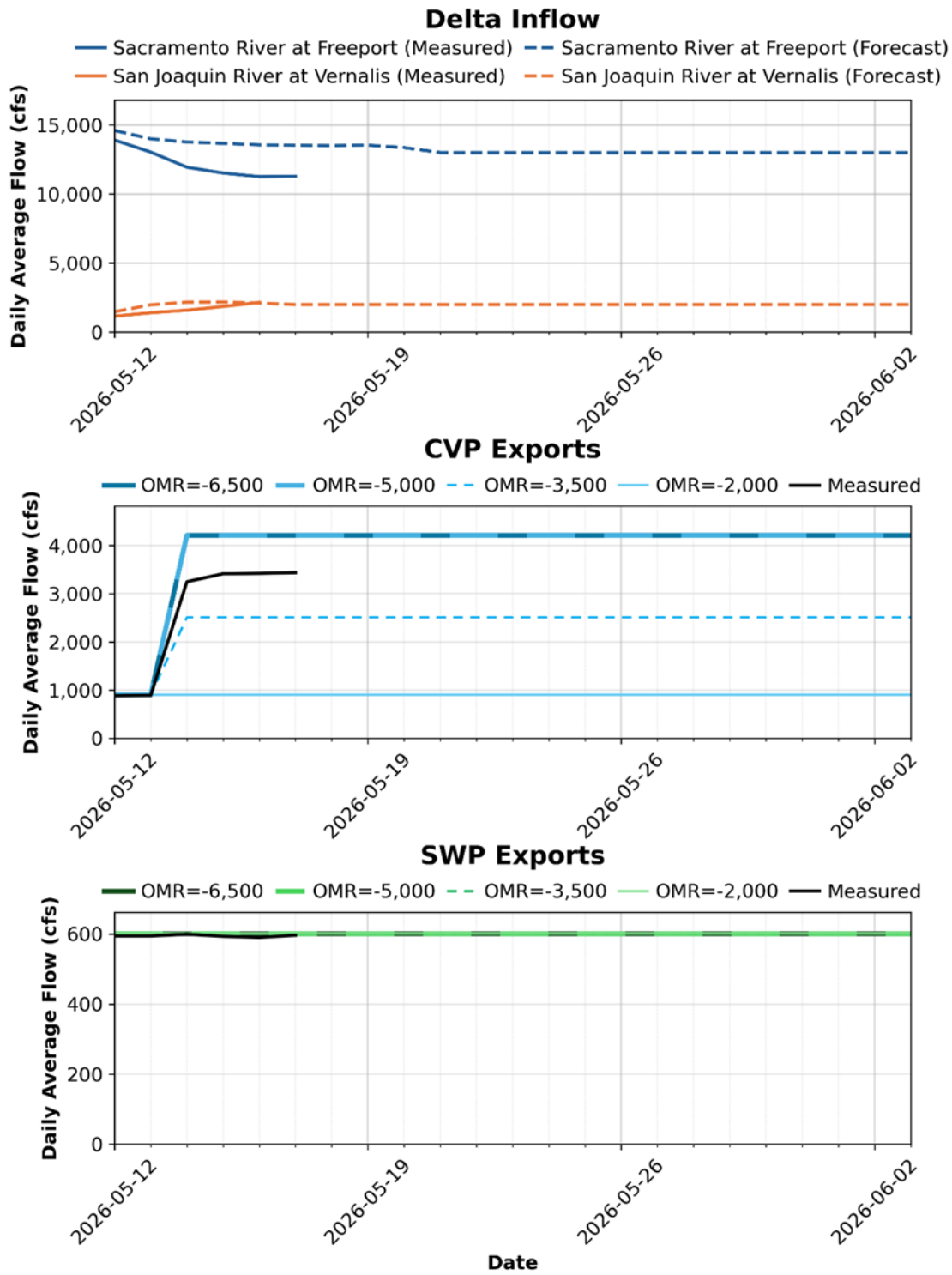
Week	OMR Bin (cfs)	CVP Exports (cfs)	SWP Exports (cfs)	Total Exports (cfs)	CVP Exports (% of total)	SWP Exports (% of total)
Week 1: 05/12/2026 - 05/18/2026	-6,500	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	3,263	601	3,864	84%	16%
Week 1: 05/12/2026 - 05/18/2026	-3,500	2,047	601	2,648	77%	23%
Week 1: 05/12/2026 - 05/18/2026	-2,000	902	601	1,503	60%	40%
Week 2: 05/19/2026 - 05/25/2026	-6,500	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	4,208	601	4,809	88%	12%
Week 2: 05/19/2026 - 05/25/2026	-3,500	2,505	601	3,106	81%	19%
Week 2: 05/19/2026 - 05/25/2026	-2,000	902	601	1,503	60%	40%
Week 3: 05/26/2026 - 06/02/2026	-6,500	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 06/02/2026	-5,000	4,208	601	4,809	88%	12%
Week 3: 05/26/2026 - 06/02/2026	-3,500	2,505	601	3,106	81%	19%
Week 3: 05/26/2026 - 06/02/2026	-2,000	902	601	1,503	60%	40%

Key:

cfs = cubic feet per second CVP = Central Valley Project OMR = Old and Middle River SWP = State Water Project

Notes:

- One pumping unit is currently out of service at Jones Pumping Plant until August 2026. The current maximum pumping rate at Jones Pumping Plant (CVP Exports) is 4,200 cfs.
- Per the State Water Project (SWP) Incidental Take Permit (ITP) 8.12.1, the State is required to curtail exports April 1 through May 31. This change in exports is expected to persist for the two-month period unless Vernalis flows change. This is reflected in the forecast SWP exports starting on April 1.
- From April 11 to mid-May CVP exports will be reduced to roughly 900 cfs due to D-1641.
- The OMR bin for all three weeks reflects the OMR levels at the end of Week 1. OMR levels on the first day of the forecast during Week 1 are similar for the three scenarios, but after about May 12 CVP exports are no longer restricted by D-1641 and exports increase, creating a larger range of OMR forecasts. There is still a low probability an OMR of -6,500 cfs would be realized, so that scenario is omitted from this assessment.

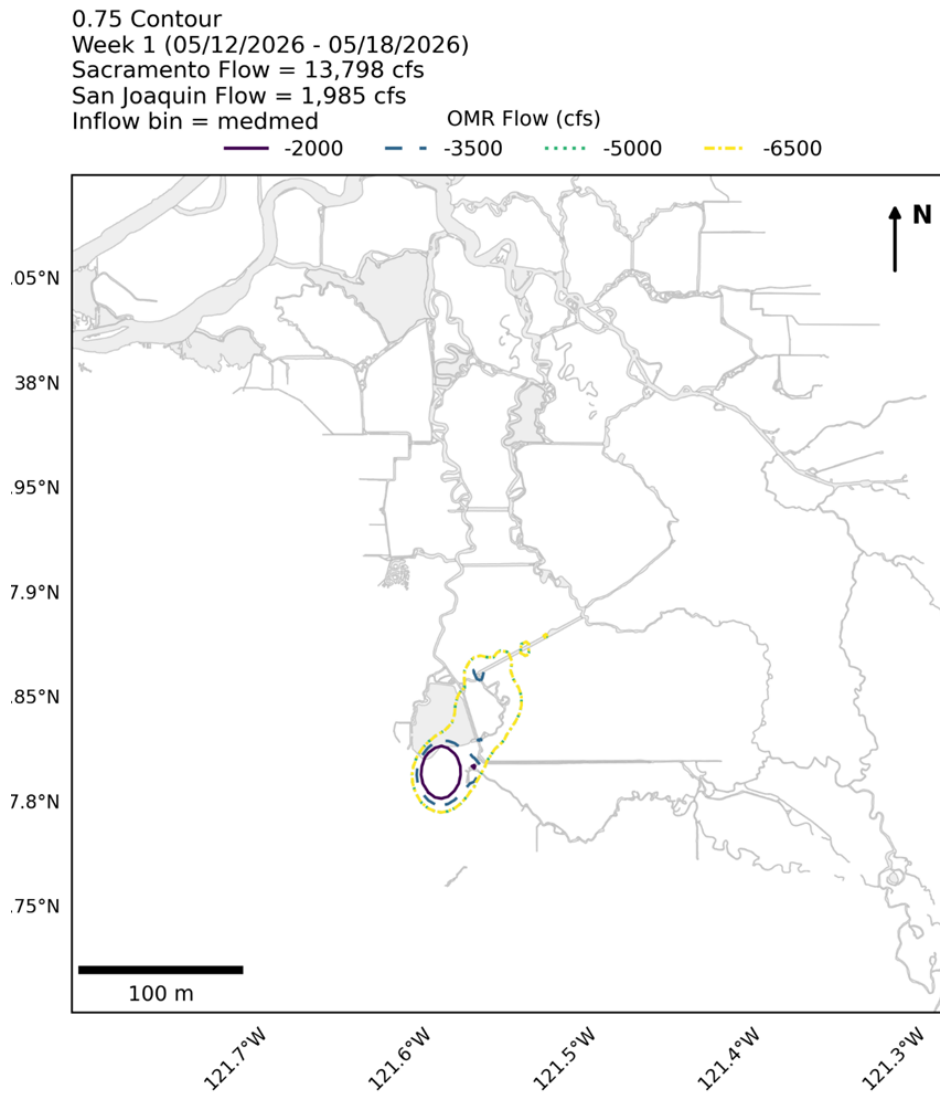


Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

Figure 1: Daily Average Flow for Measured and Forecasted Delta Inflow, CVP Exports, and SWP Exports

Figure 1 depicts three stacked line graphs showing measured and forecasted Delta inflow, CVP exports, and SWP exports in cubic feet per second (cfs) from May through early-June 2026. The top

graph shows Sacramento River and San Joaquin River inflows steadily declining over time, while the lower two graphs show CVP and SWP export flows under different OMR scenarios.

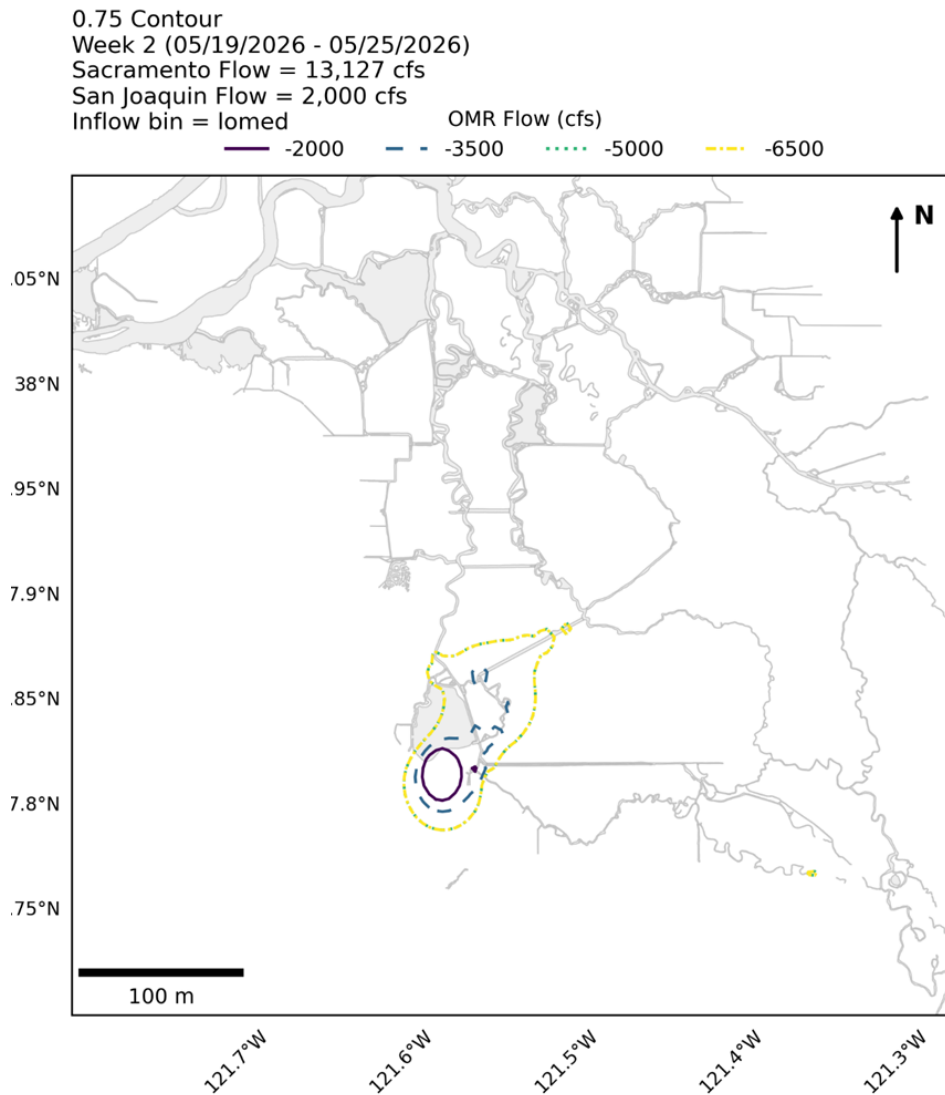


Note: Contours indicate the proportional overlap of hourly average velocity Gaussian KDEs for a 1-week period from DSM2 hydro simulations with and without Delta exports active. DSM2 nodes that were sufficiently different from neighboring nodes to create isolated contours at several OMR flows were removed (nodes 146, 147, 148, 206, 242, 246, 432, 433, 434).

Key: cfs = cubic feet per second, OMR = Old and Middle River

Figure 2: Delta Export Zone of Influence Week 1

Figure 2 is a map of the Delta showing different zone of influences at different OMR flow rates: -2,000, -3,500, -5,000, and -6,250 in different colors and line styles. The map was developed using a 0.75 contour during week 1 (May 12 - 18 2026) with Sacramento River flow at 13,798 cfs, San Joaquin River flow at 1,985, and medmed inflow bin.

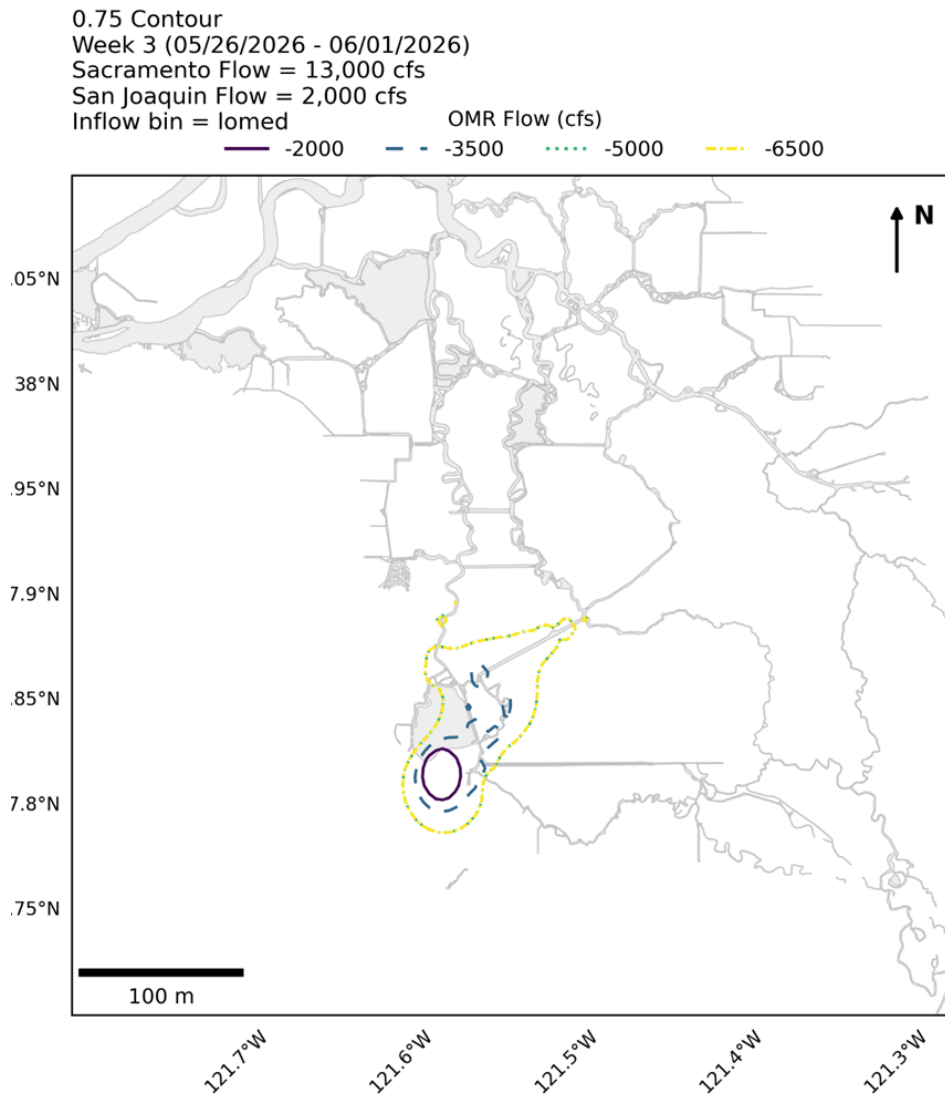


Note: Contours indicate the proportional overlap of hourly average velocity Gaussian KDEs for a 1-week period from DSM2 hydro simulations with and without Delta exports active. DSM2 nodes that were sufficiently different from neighboring nodes to create isolated contours at several OMR flows were removed (nodes 146, 147, 148, 206, 242, 246, 432, 433, 434).

Key: cfs = cubic feet per second, OMR = Old and Middle River

Figure 3: Delta Export Zone of Influence Week 2

Figure 3 is a map of the Delta showing different zone of influences at different OMR flow rates: -2,000, -3,500, -5,000, and -6,250 in different colors and line styles. The map was developed using a 0.75 contour during week 2 (May 19 – 25 2026) with Sacramento River flow at 13,127 cfs, San Joaquin River flow at 2,000, and lomed inflow bin.



Note: Contours indicate the proportional overlap of hourly average velocity Gaussian KDEs for a 1-week period from DSM2 hydro simulations with and without Delta exports active. DSM2 nodes that were sufficiently different from neighboring nodes to create isolated contours at several OMR flows were removed (nodes 146, 147, 148, 206, 242, 246, 432, 433, 434).

Key: cfs = cubic feet per second, OMR = Old and Middle River

Figure 4: Delta Export Zone of Influence Week 3

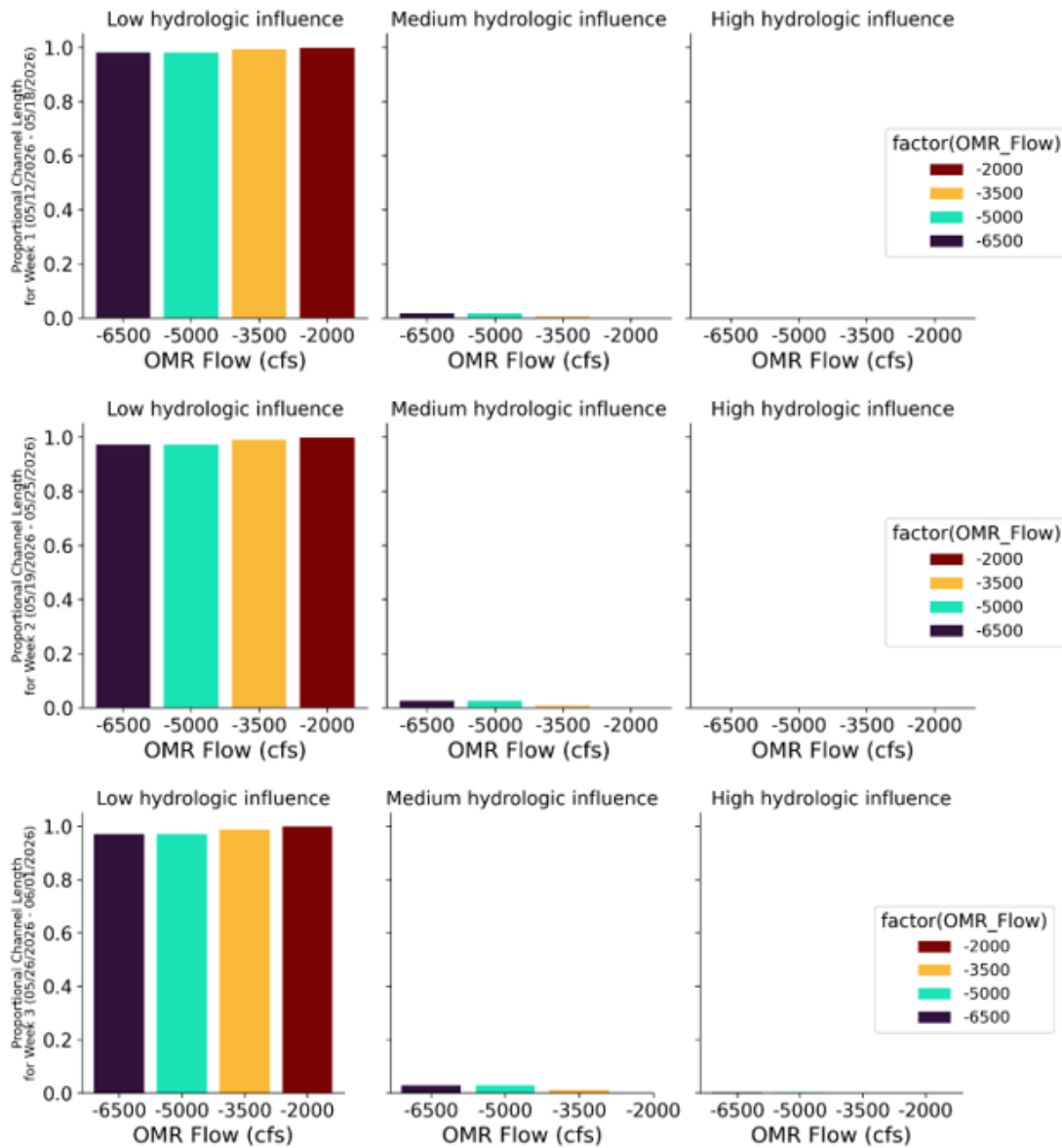
Figure 4 is a map of the Delta showing different zone of influences at different OMR flow rates: -2,000, -3,500, -5,000, and -6,250 in different colors and line styles. The map was developed using a 0.75 contour during week 2 (May 26 – June 1, 2026) with Sacramento River flow at 13,000 cfs, San Joaquin River flow at 2,000, and lomed inflow bin.

Table 3. Proportion of DSM2 Channel Length with Hydrologic Alteration from Pumping

Weekly Model Run	OMR Bin (cfs)	Sum Channel Length with Low HA (miles)	Channel Length with Low HA (%)	Sum Channel Length with Medium HA (miles)	Channel Length with Medium HA (%)	Sum Channel Length with High HA (miles)	Channel Length with High HA (%)
Week 1: 05/12/2026 – 05/18/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 – 05/18/2026	-5,000	660.91	98.1%	11.88	1.8%	0.85	0.1%
Week 1: 05/12/2026 – 05/18/2026	-3,500	669.23	99.3%	3.57	0.5%	0.85	0.1%
Week 1: 05/12/2026 – 05/18/2026	-2,000	672.07	99.8%	0.73	0.1%	0.85	0.1%
Week 2: 05/19/2026 – 05/25/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 – 05/25/2026	-5,000	655.99	97.3%	17.55	2.6%	0.85	0.1%
Week 2: 05/19/2026 – 05/25/2026	-3,500	668.19	99.1%	5.35	0.8%	0.85	0.1%
Week 2: 05/19/2026 – 05/25/2026	-2,000	672.81	99.8%	0.73	0.1%	0.85	0.1%
Week 3: 05/26/2026 – 06/02/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 – 06/02/2026	-5,000	654.08	97.0%	18.73	2.8%	1.58	0.2%
Week 3: 05/26/2026 – 06/02/2026	-3,500	665.95	98.7%	7.59	1.1%	0.85	0.1%
Week 3: 05/26/2026 – 06/02/2026	-2,000	673.54	99.9%	0.00	0.0%	0.85	0.1%

Notes: Sum channel length includes the length of channels within the Delta that have a calculated hydrologic alteration level falling within each category

Key: HA = hydrologic alteration OMR = Old and Middle River



Key: cfs = cubic feet per second, OMR = Old and Middle River

Figure 5: Proportional DSM2 Channel Length Altered from Pumping by Hydrologic Influence Category, Weeks 1–3

Figure 5 consists of nine bar charts showing proportional channel length across low, medium, and high hydrologic influence conditions under OMR flow scenarios ranging from -2,000 to -6,500 cfs for Weeks 1–3. Only the low hydrologic influence panels contain bars, with all OMR scenarios showing proportional channel lengths near 1.0, the medium hydrologic influence panels below 0.1 and the high hydrologic influence panels contains no displayed values.

PTM (Particle Tracking Model) Results

PTM Flux Evaluation Period: 05/12/2026 – 06/02/2026

Particles Injected: 05/12/2026

PTM Injection and Flux Locations

- = Injection Point (DSM2 node)
- ▭ = Flux Location
- ← = Reference Flux Direction

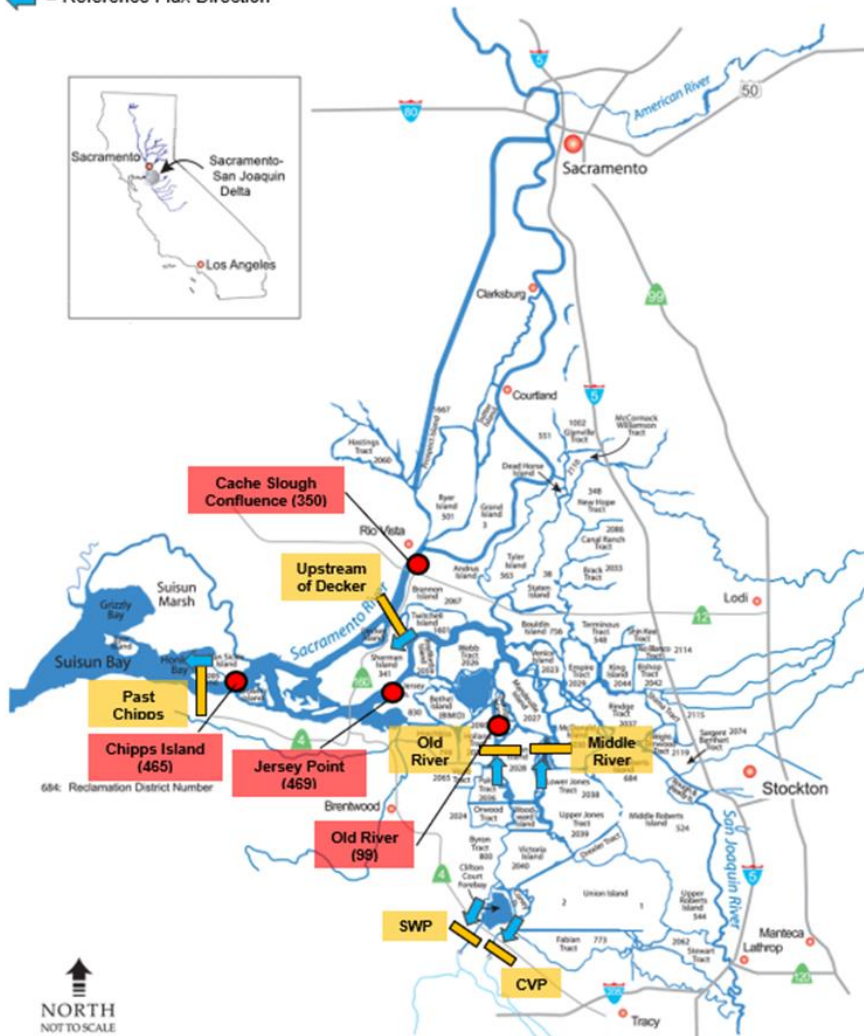


Figure 6: Map of PTM-Injection and Flux Locations

Figure 6 is a map of the Sacramento-San Joaquin Delta showing PTM injection points, flux locations, and reference flux directions used in the particle tracking model analysis. The map identifies major DSM2 injection nodes, including Cache Slough Confluence, Chipps Island, Jersey Point, and Old River, along with key flux monitoring locations such as Upstream of Decker, Middle River, CVP, and SWP.

Neutrally Buoyant Particles (NP)

Table 4. Neutral Particle Fate (percent flux across boundary) for Particles Injected at Chipps (DSM2 Node 465)

Week	OMR Flow Bin	Past Chipps	Upstream of Decker	Unresolved in Central Delta	Unresolved in OMR corridor	CVP Entrainment	SWP Entrainment
Week 1: 05/12/2026 - 05/18/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	67.5	0.0	32.5	0.0	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-3,500	71.4	0.0	28.6	0.0	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-2,000	75.1	0.0	24.9	0.0	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	73.5	0.1	26.5	0.0	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-3,500	81.9	-0.1	18.2	0.1	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-2,000	84.2	0.1	15.8	0.0	0.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 0/02/2026	-5,000	86.2	0.6	13.8	0.0	0.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-3,500	89.8	0.4	10.3	0.1	0.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-2,000	93.1	0.4	6.9	0.0	0.0	0.0

Note: values between 0.0 and 0.1 are indicated with <0.1

Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

Table 5. Neutral Particle Fate (percent flux across boundary) for Particles Injected at Cache Slough (DSM2 Node 350)

Week	OMR Flow Bin	Past Chipps	Upstream of Decker	Unresolved in Central Delta	Unresolved in OMR corridor	CVP Entrainment	SWP Entrainment
Week 1: 05/12/2026 - 05/18/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	4.8	67.3	95.6	0.3	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-3,500	5.4	65.8	94.8	0.2	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-2,000	6.0	67.3	94.2	0.2	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	29.8	70.9	72.1	1.3	0.5	0.1
Week 2: 05/19/2026 - 05/25/2026	-3,500	35.8	73.2	64.8	0.4	0.0	0.1
Week 2: 05/19/2026 - 05/25/2026	-2,000	40.0	72.5	60.6	0.6	0.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 0/02/2026	-5,000	52.0	75.1	51.3	1.0	2.2	0.1
Week 3: 05/26/2026 - 0/02/2026	-3,500	60.4	78.0	40.7	0.9	0.1	0.1
Week 3: 05/26/2026 - 0/02/2026	-2,000	69.1	77.4	31.5	0.6	0.0	0.0

Note: values between 0.0 and 0.1 are indicated with <0.1

Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

Table 6. Neutral Particle Fate (percent flux across boundary) for Particles Injected at Jersey Point (DSM2 Node 469)

Week	OMR Flow Bin	Past Chipps	Upstream of Decker	Unresolved in Central Delta	Unresolved in OMR corridor	CVP Entrainment	SWP Entrainment
Week 1: 05/12/2026 - 05/18/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	2.4	20.9	97.9	0.3	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-3,500	2.8	20.8	97.2	0.0	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-2,000	2.8	19.0	97.3	0.0	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	19.4	27.3	82.8	1.8	0.4	0.0
Week 2: 05/19/2026 - 05/25/2026	-3,500	23.8	27.3	77.5	1.2	0.1	0.0
Week 2: 05/19/2026 - 05/25/2026	-2,000	32.1	26.2	68.1	0.2	0.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 0/02/2026	-5,000	41.0	33.4	63.4	2.2	2.1	0.1
Week 3: 05/26/2026 - 0/02/2026	-3,500	52.4	32.0	49.9	1.2	1.1	0.0
Week 3: 05/26/2026 - 0/02/2026	-2,000	62.3	30.3	38.5	0.7	0.0	0.0

Note: values between 0.0 and 0.1 are indicated with <0.1

Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

Table 7. Neutral Particle Fate (percent flux across boundary) for Particles Injected at Old River (DSM2 Node 99)

Week	OMR Flow Bin	Past Chipps	Upstream of Decker	Unresolved in Central Delta	Unresolved in OMR corridor	CVP Entrainment	SWP Entrainment
Week 1: 05/12/2026 - 05/18/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	0.0	1.1	32.8	53.4	13.7	0.1
Week 1: 05/12/2026 - 05/18/2026	-3,500	0.0	0.9	47.5	52.5	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-2,000	0.0	0.8	67.9	32.1	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	0.4	2.7	24.1	29.1	44.8	1.7
Week 2: 05/19/2026 - 05/25/2026	-3,500	0.9	3.6	35.3	35.9	26.9	1.0
Week 2: 05/19/2026 - 05/25/2026	-2,000	1.4	5.0	60.4	38.0	0.1	0.0
Week 3: 05/26/2026 - 0/02/2026	-6,500	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 0/02/2026	-5,000	2.9	4.8	20.1	21.9	51.9	3.3
Week 3: 05/26/2026 - 0/02/2026	-3,500	5.8	6.1	28.3	26.8	36.4	2.7
Week 3: 05/26/2026 - 0/02/2026	-2,000	13.5	9.3	46.8	36.7	2.7	0.2

Note: values between 0.0 and 0.1 are indicated with <0.1

Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

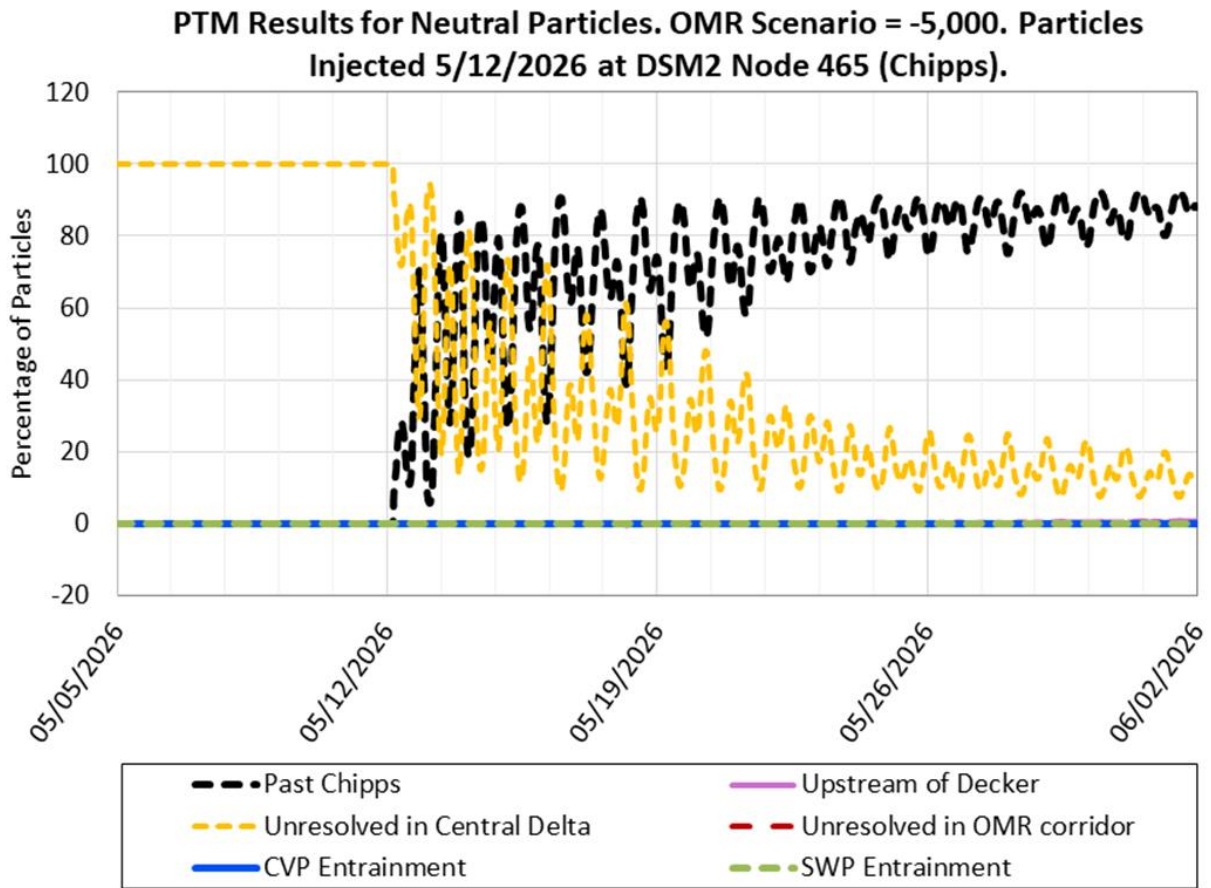


Figure 7: PTM Results for Neutral Particles. OMR Scenario 5,000 cfs. Particles Injected **5/12/2026** at DSM2 Node 465 (Chipps)

Figure 7 is a line graph showing the percentage of neutral particles over time from May 5 to June 02, 2026, injected on May 12, 2026 at DSM2 Node 465 (Chipps) under the OMR scenario of -5,000 cfs. Past Chipps (black) rapidly increases to approximately 95–100% by early May and remains dominant through the end of the period, while Unresolved in Central Delta (yellow) declines from 100% to near 0%. CVP entrainment, SWP entrainment, Upstream of Decker, and Unresolved in OMR corridor remain near 0% throughout the simulation.

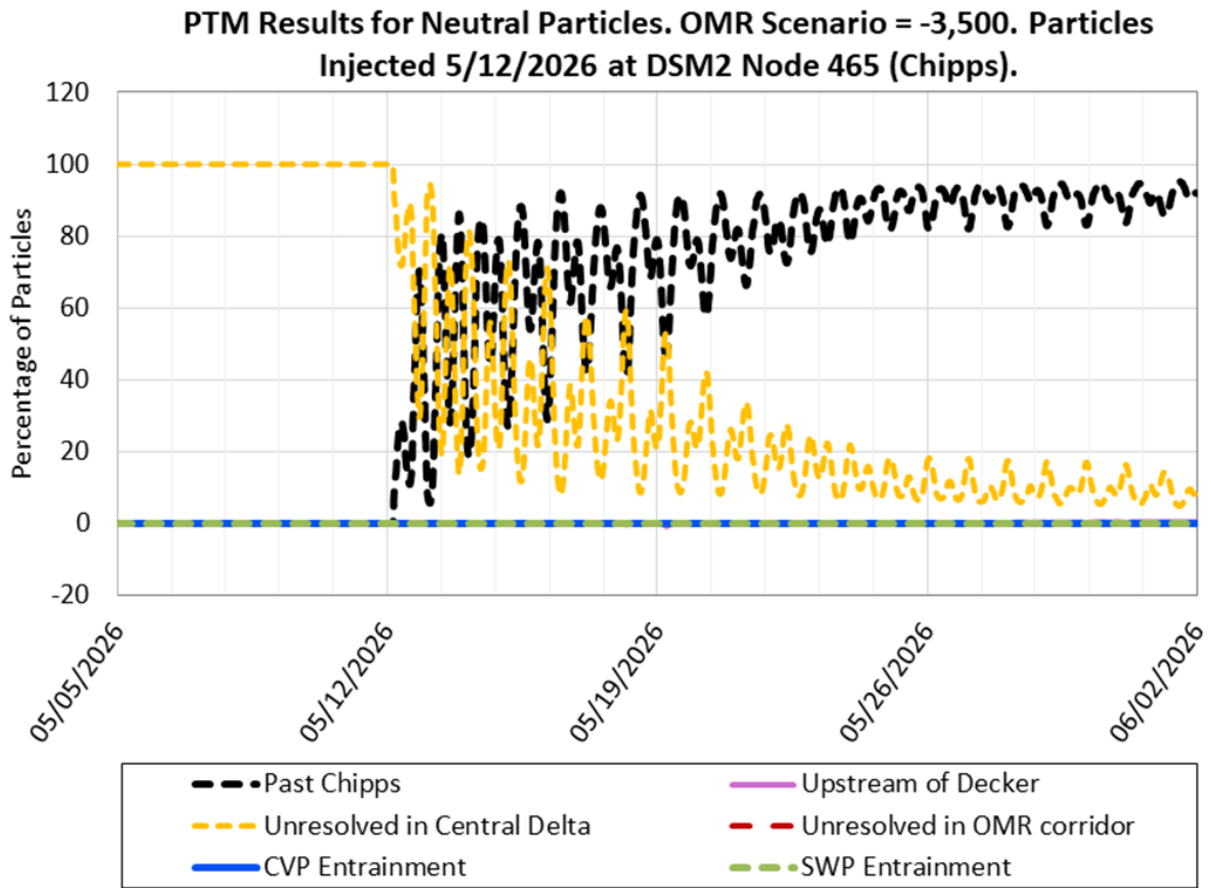


Figure 8: PTM Results for Neutral Particles. OMR Scenario -3,500 cfs. Particles Injected **5/12/2026** at DSM2 Node 465 (Chippis)

Figure 8 is a line graph showing the percentage of neutral particles over time from May 5 to June 02, 2026, injected on May 12, 2026 at DSM2 Node 465 (Chippis) under the OMR scenario of -3,500 cfs. Past Chippis (black) rapidly increases to approximately 95–100% by early May and remains dominant through the end of the period, while Unresolved in Central Delta (yellow) declines from 100% to near 0%. CVP entrainment, SWP entrainment, Upstream of Decker, and Unresolved in OMR corridor remain near 0% throughout the simulation.

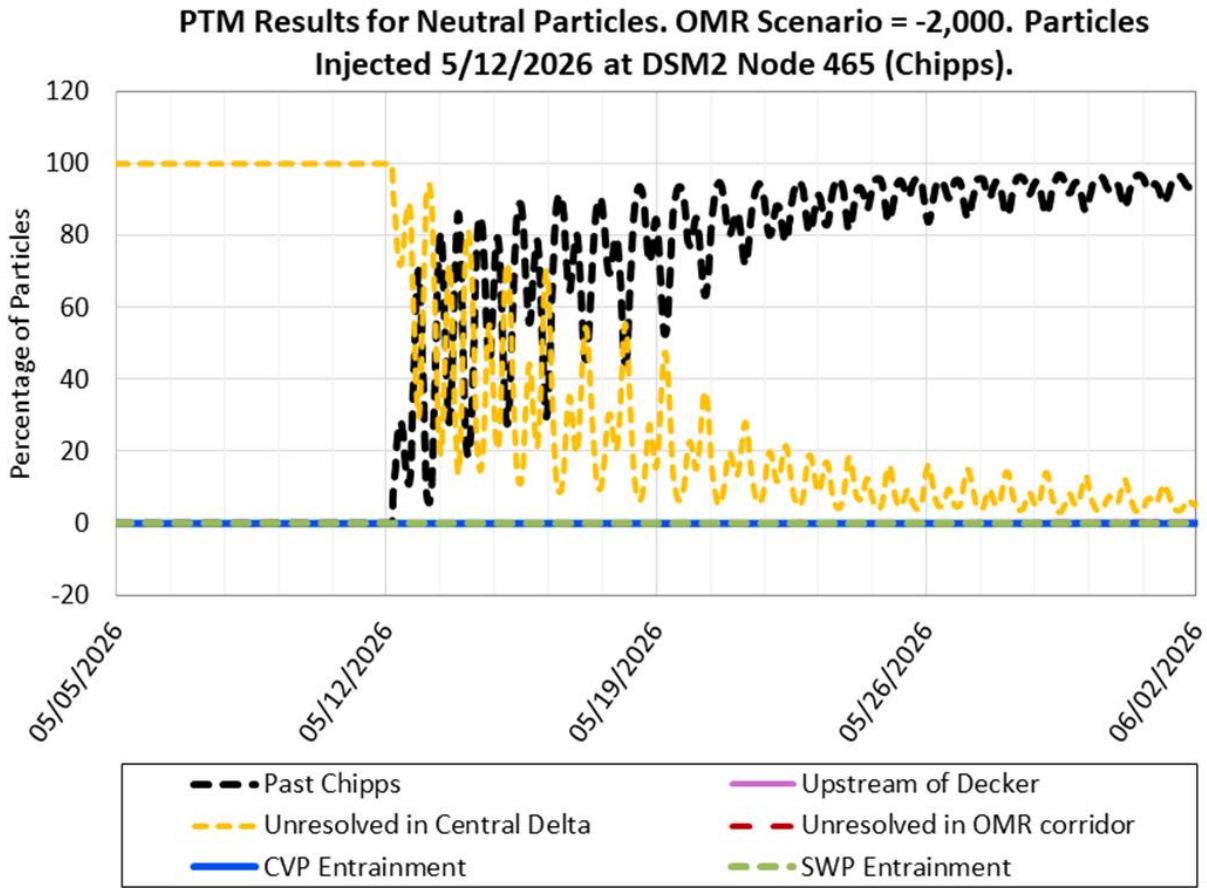


Figure 9: PTM Results for Neutral Particles at Chippis Island, OMR Scenario -2,000 cfs. Particles Injected **05/12/2026** at DSM2 Node 465 (Chippis)

Figure 9 is a line graph showing the percentage of neutral particles over time from May 5 to June 02, 2026, injected on May 12, 2026 at DSM2 Node 465 (Chippis) under the OMR scenario of -2,000 cfs. Past Chippis (black) rapidly increases to approximately 95–100% by early May and remains dominant through the end of the period, while Unresolved in Central Delta (yellow) declines from 100% to near 0%. CVP entrainment, SWP entrainment, Upstream of Decker, and Unresolved in OMR corridor remain near 0% throughout the simulation.

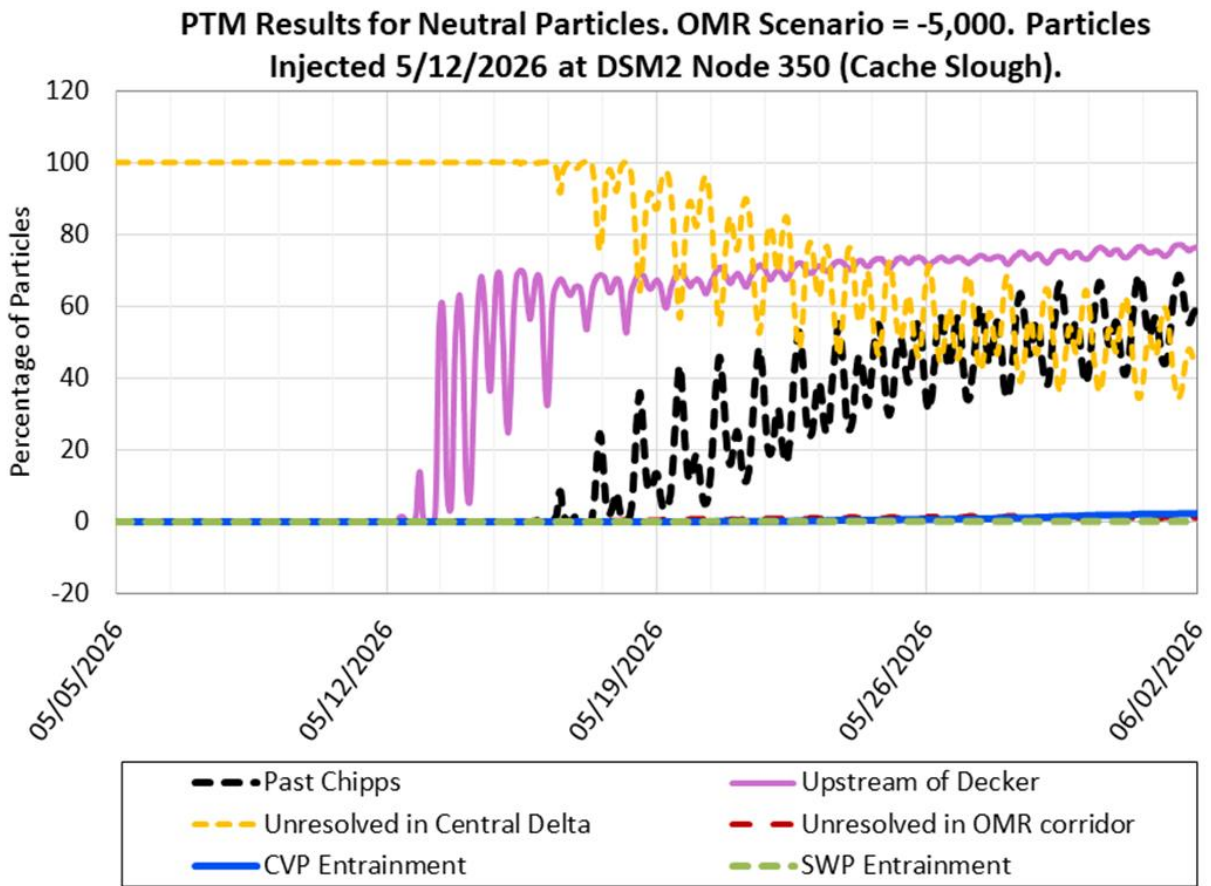


Figure 10: PTM Results for Neutral Particles. OMR Scenario -5,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 350 (Cache Slough)

Figure 10 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 350 (Cache Slough). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (purple), Past Chipps (black), and Unresolved in Central Delta (yellow) showing the most notable particle percentages across the evaluation period.

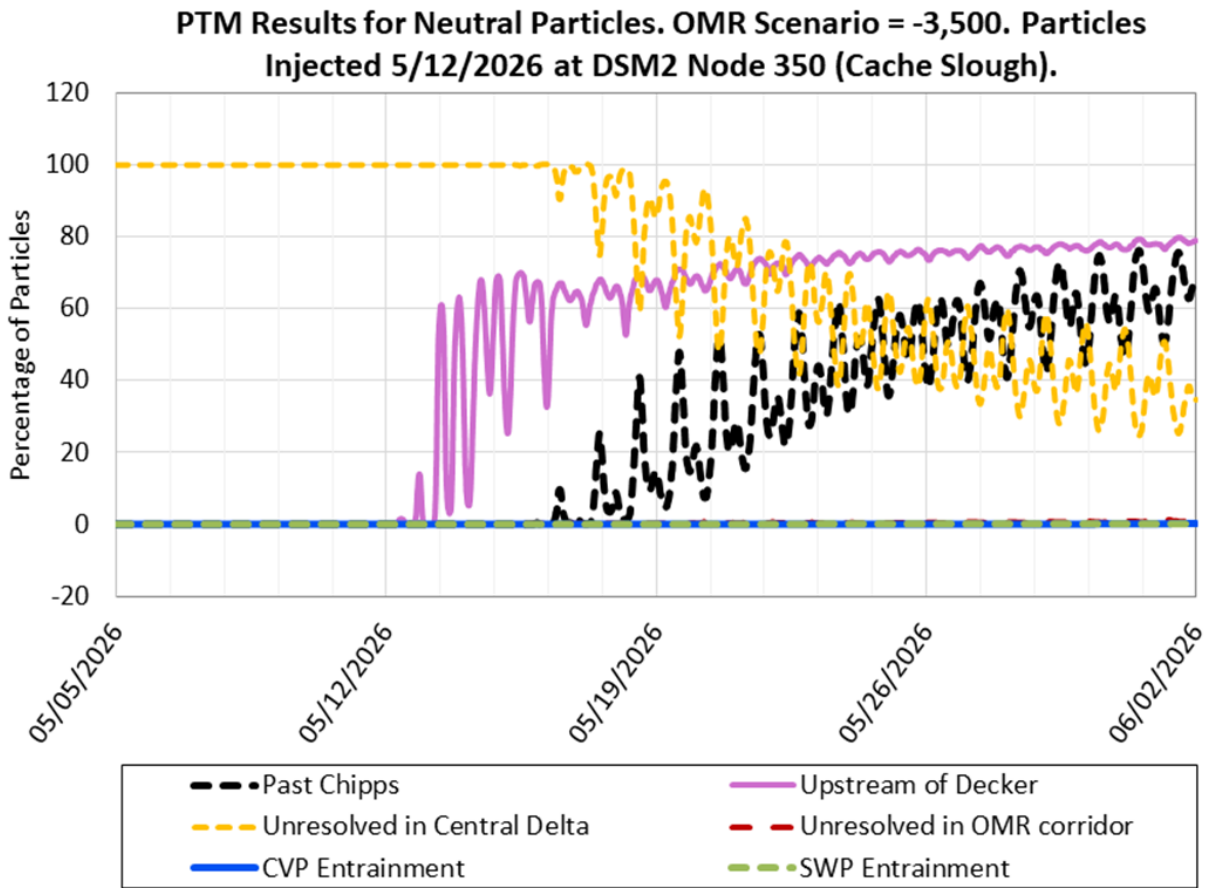


Figure11: PTM Results for Neutral Particles. OMR Scenario -3,500 cfs. Particles Injected 05/12/2026 at DSM2 Node 350 (Cache Slough)

Figure 11 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 350 (Cache Slough). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (purple), Past Chipps (black), and Unresolved in Central Delta (yellow) showing the most notable particle percentages across the evaluation period.

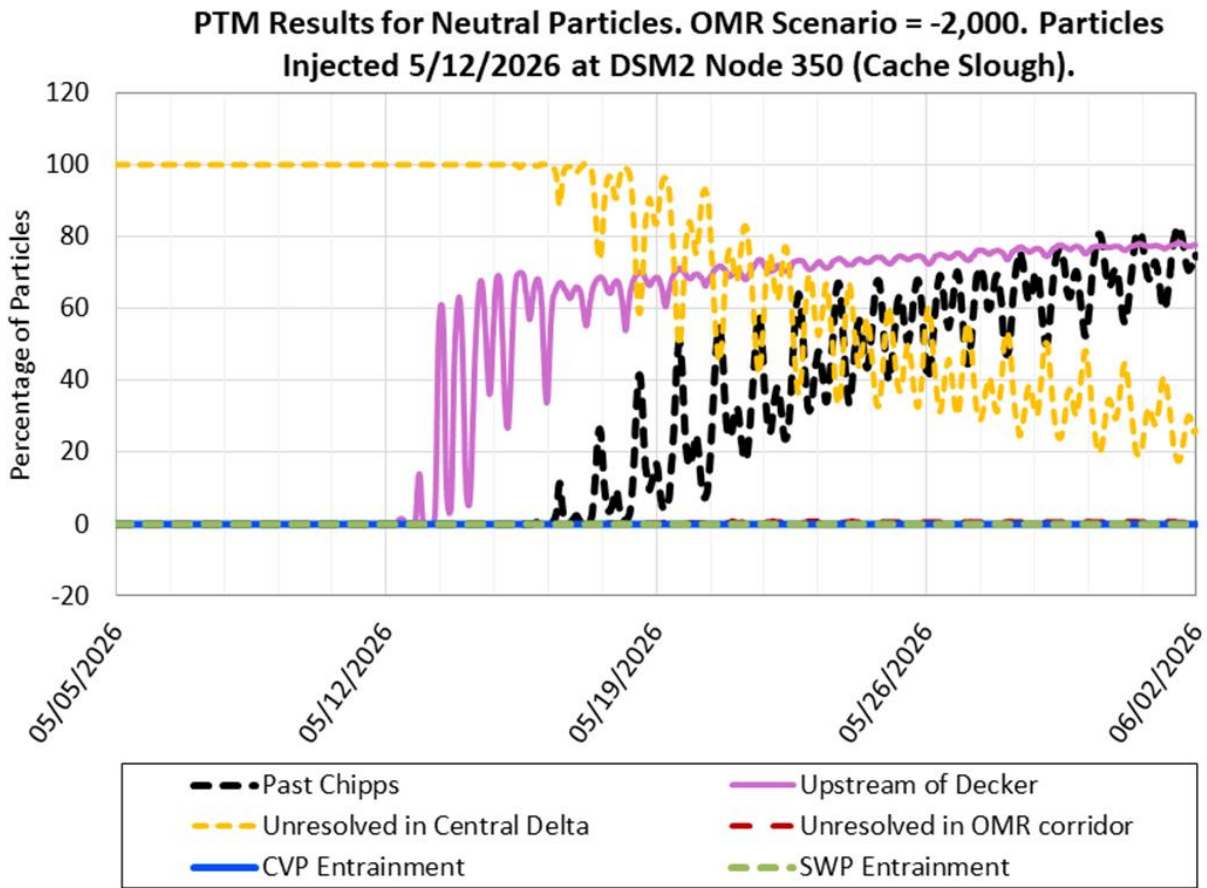


Figure 12: PTM Results for Neutral Particles. OMR Scenario -2,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 350 (Cache Slough)

Figure 12 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 350 (Cache Slough). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (purple), Past Chipps (black), and Unresolved in Central Delta (yellow) showing the most notable particle percentages across the evaluation period.

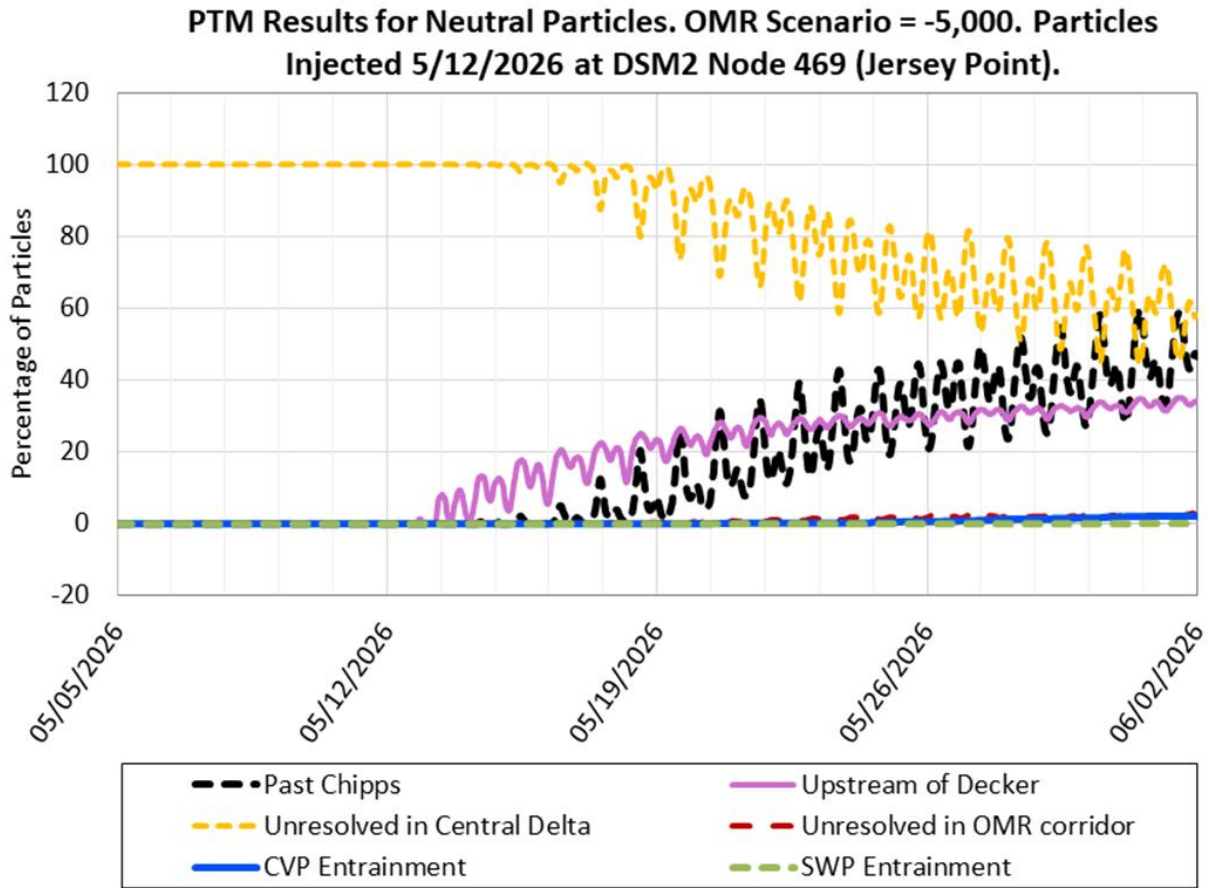


Figure 13: PTM Results for Neutral Particles. OMR Scenario -5,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 469 (Jersey Point)

Figure 13 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 469 (Jersey Point). Six flux locations are represented by different colored dashed lines, with Past Chipps (black), Unresolved in Central Delta (yellow), and Upstream of Decker (purple) showing the most notable particle percentages across the evaluation period.

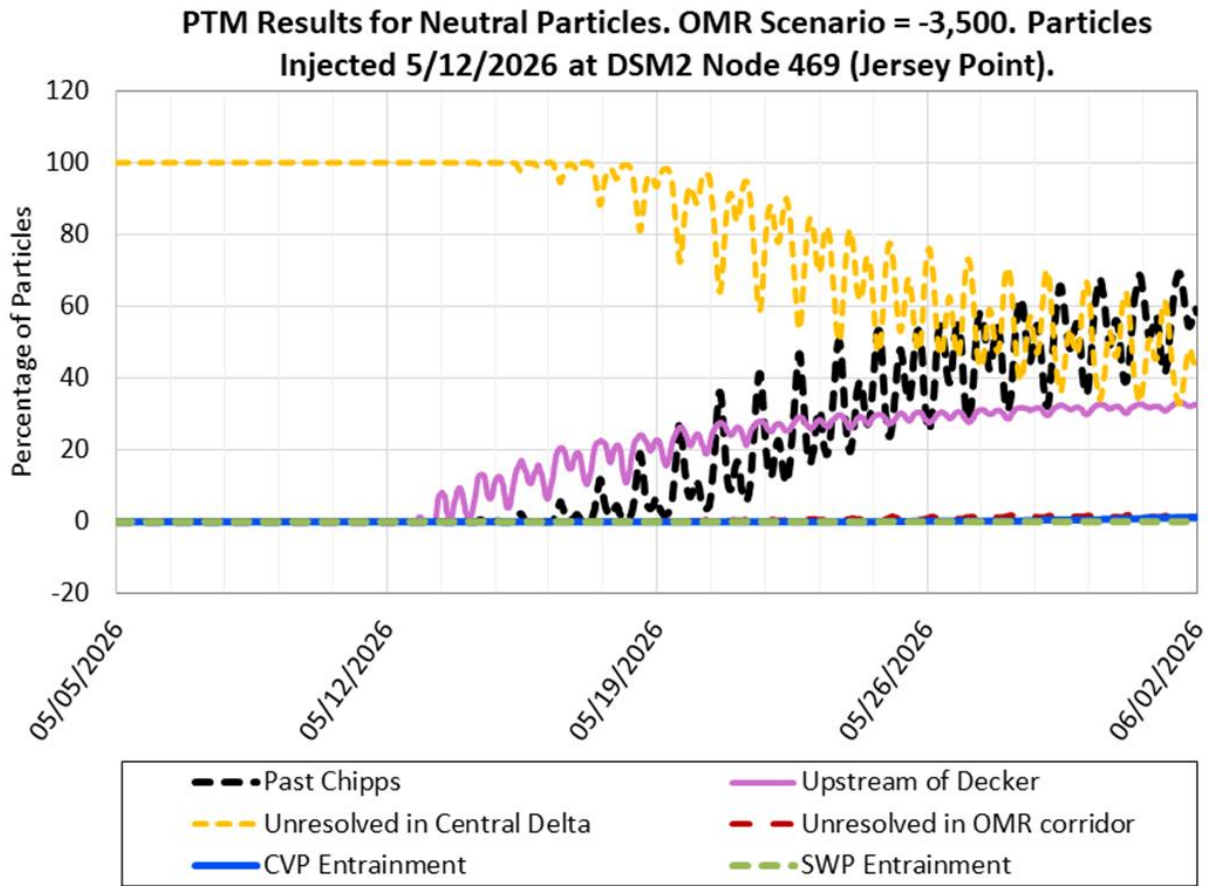


Figure 14: PTM Results for Neutral Particles. OMR Scenario -3,500 cfs. Particles Injected 05/12/2026 at DSM2 Node 469 (Jersey Point)

Figure 14 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 469 (Jersey Point). Six flux locations are represented by different colored dashed lines, with Past Chipps (black), Unresolved in Central Delta (yellow), and Upstream of Decker (purple) showing the most notable particle percentages across the evaluation period.

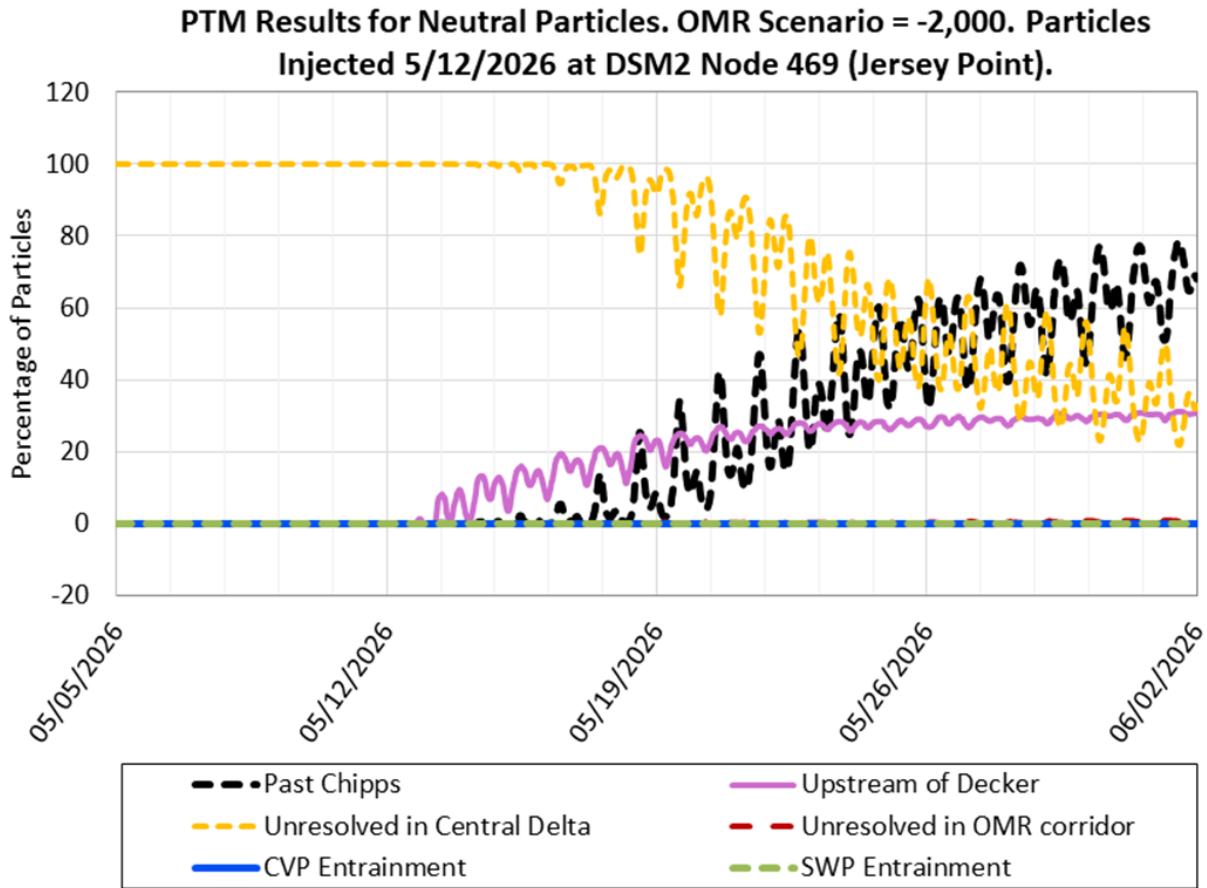


Figure 15: PTM Results for Neutral Particles. OMR Scenario -2,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 469 (Jersey Point)

Figure 15 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 469 (Jersey Point). Six flux locations are represented by different colored dashed lines, with Past Chipps (black), Unresolved in Central Delta (yellow), and Upstream of Decker (purple) showing the most notable particle percentages across the evaluation period.

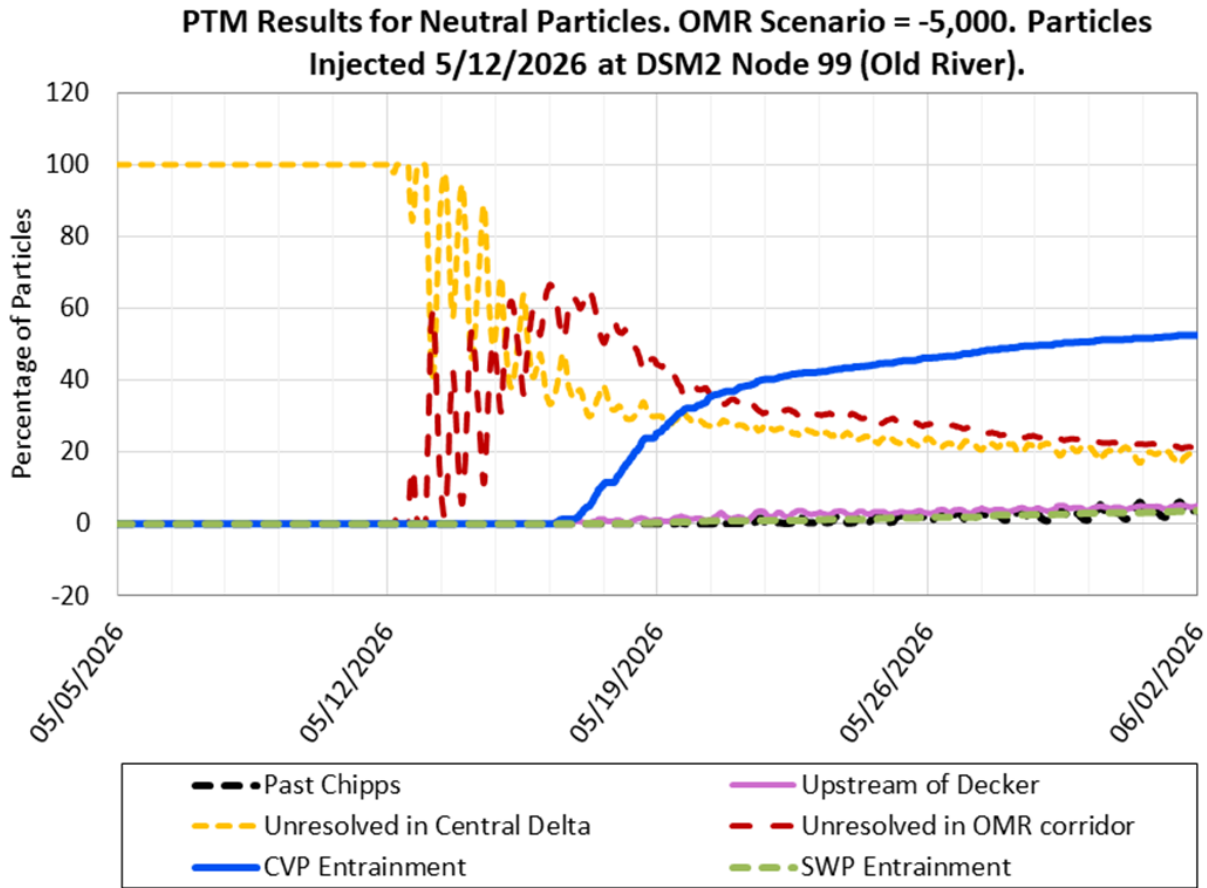


Figure 16: PTM Results for Neutral Particles. OMR Scenario -5,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 99 (Old River)

Figure 16 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 99 (Old River). Six flux locations are represented by different colored dashed lines, with Unresolved in Central Delta (yellow), Unresolved in OMR corridor (red), and CVP entrainment (blue) showing the highest particle percentages across the evaluation period, while Past Chipps (black), SWP entrainment (green), and Upstream of Decker (purple) remain comparatively lower.

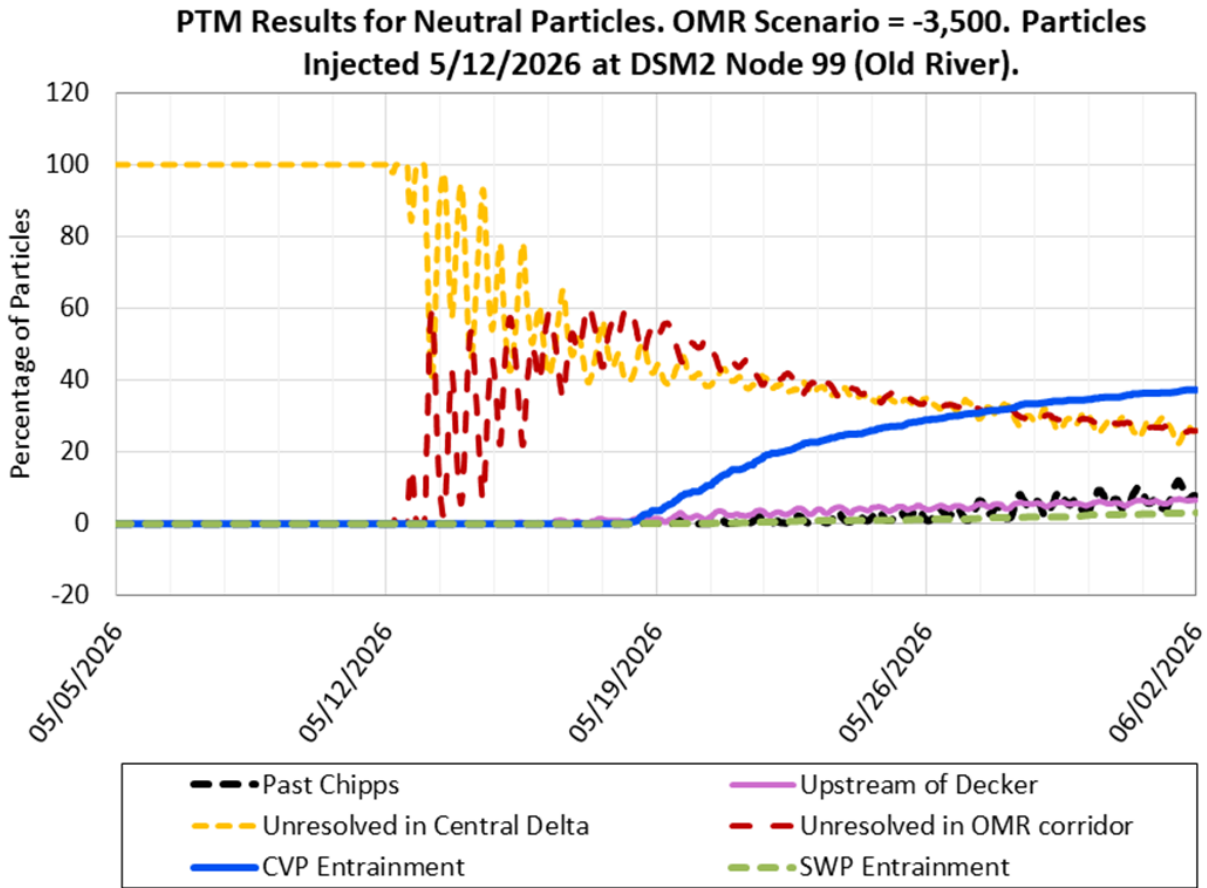


Figure 17: PTM Results for Neutral Particles. OMR Scenario -3,500 cfs. Particles Injected 05/12/2026 at DSM2 Node 99 (Old River)

Figure 17 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 99 (Old River). Six flux locations are represented by different colored dashed lines, with Unresolved in Central Delta (yellow), Unresolved in OMR corridor (red), and CVP entrainment (blue) showing the highest particle percentages across the evaluation period, while Past Chipps (black), SWP entrainment (green), and Upstream of Decker (purple) remain comparatively lower.

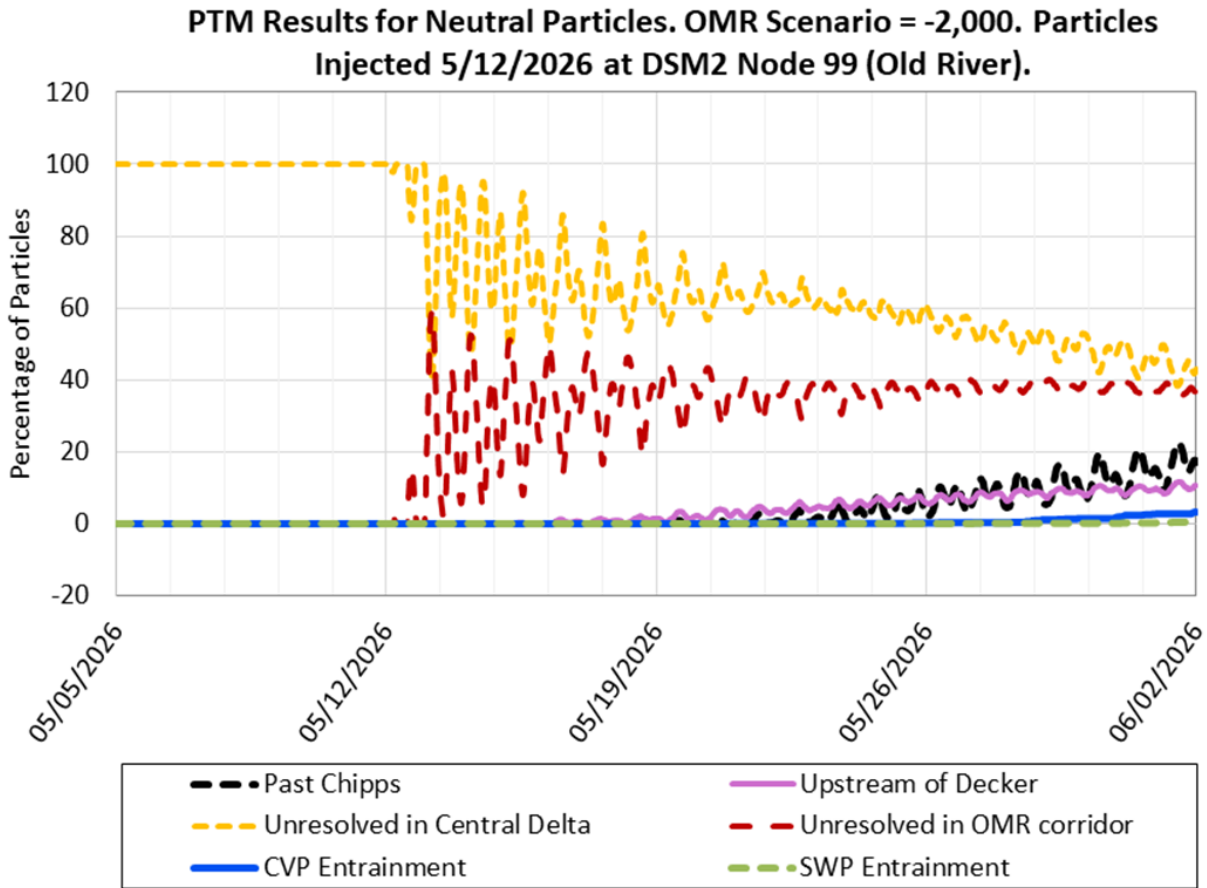


Figure 18: PTM Results for Neutral Particles. OMR Scenario -2,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 99 (Old River)

Figure 18 is a line graph showing the percentage of neutral particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 99 (Old River). Six flux locations are represented by different colored dashed lines, with Unresolved in Central Delta (yellow), Unresolved in OMR corridor (red) showing the highest particle percentages across the evaluation period, while Past Chipps (black), CVP entrainment (blue), SWP entrainment (green), and Upstream of Decker (purple) remain comparatively lower.

Surface Oriented Particles (PP)

Table 8. Surface Oriented Particle Fate (percent flux across boundary) for Particles Injected at Chipps (DSM2 Node 465)

Week	OMR Flow Bin	Past Chipps	Upstream of Decker	Unresolved in Central Delta	Unresolved in OMR corridor	CVP Entrainment	SWP Entrainment
Week 1: 05/12/2026 - 05/18/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	78.1	<0.1	21.9	0.0	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-3,500	80.5	0.1	19.5	0.0	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-2,000	82.0	-0.1	18.0	0.0	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	87.1	0.3	13.0	0.0	0.1	0.0
Week 2: 05/19/2026 - 05/25/2026	-3,500	88.4	0.0	11.6	0.0	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-2,000	90.4	-0.2	9.6	0.0	0.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 0/02/2026	-5,000	93.2	0.4	6.9	0.0	0.1	0.0
Week 3: 05/26/2026 - 0/02/2026	-3,500	95.8	0.1	4.2	0.0	0.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-2,000	95.7	-0.1	4.3	0.0	0.0	0.0

Note: values between 0.0 and 0.1 are indicated with <0.1

Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

Table 9. Surface Oriented Particle Fate (percent flux across boundary) for Particles Injected at Cache Slough (DSM2 Node 350)

Week	OMR Flow Bin	Past Chipps	Upstream of Decker	Unresolved in Central Delta	Unresolved in OMR corridor	CVP Entrainment	SWP Entrainment
Week 1: 05/12/2026 - 05/18/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	13.0	63.2	87.1	0.1	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-3,500	14.2	64.3	85.8	0.0	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-2,000	17.9	65.0	82.1	0.0	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	42.3	69.6	59.9	1.4	0.8	0.0
Week 2: 05/19/2026 - 05/25/2026	-3,500	47.2	71.0	53.6	0.6	0.2	0.0
Week 2: 05/19/2026 - 05/25/2026	-2,000	51.8	71.7	48.7	0.5	0.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 0/02/2026	-5,000	64.5	74.5	39.4	0.9	3.0	0.0
Week 3: 05/26/2026 - 0/02/2026	-3,500	72.3	76.0	28.9	0.4	0.7	0.1
Week 3: 05/26/2026 - 0/02/2026	-2,000	77.3	75.0	23.4	0.6	0.0	0.0

Note: values between 0.0 and 0.1 are indicated with <0.1

Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

Table 10. Surface Oriented Particle Fate (percent flux across boundary) for Particles Injected at Jersey Point (DSM2 Node 469)

Week	OMR Flow Bin	Past Chipps	Upstream of Decker	Unresolved in Central Delta	Unresolved in OMR corridor	CVP Entrainment	SWP Entrainment
Week 1: 05/12/2026 - 05/18/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	8.0	20.3	92.4	0.4	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-3,500	8.5	20.9	91.8	0.3	0.0	0.0
Week 1: 05/12/2026 - 05/18/2026	-2,000	10.9	20.1	89.3	0.2	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	35.1	25.8	68.4	2.0	1.4	0.1
Week 2: 05/19/2026 - 05/25/2026	-3,500	39.9	24.5	62.0	1.5	0.4	0.0
Week 2: 05/19/2026 - 05/25/2026	-2,000	46.6	24.7	54.4	0.9	0.1	0.0
Week 3: 05/26/2026 - 0/02/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 0/02/2026	-5,000	57.8	30.9	49.1	2.8	3.9	0.1
Week 3: 05/26/2026 - 0/02/2026	-3,500	67.1	28.5	36.6	1.9	1.7	0.1
Week 3: 05/26/2026 - 0/02/2026	-2,000	78.3	26.9	22.8	0.9	0.1	0.0

Note: values between 0.0 and 0.1 are indicated with <0.1

Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

Table 11. Surface Oriented Particle Fate (percent flux across boundary) for Particles Injected at Old River (DSM2 Node 99)

Week	OMR Flow Bin	Past Chipps	Upstream of Decker	Unresolved in Central Delta	Unresolved in OMR corridor	CVP Entrainment	SWP Entrainment
Week 1: 05/12/2026 - 05/18/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 1: 05/12/2026 - 05/18/2026	-5,000	0.1	1.0	38.2	37.1	24.4	0.2
Week 1: 05/12/2026 - 05/18/2026	-3,500	0.1	1.5	47.2	49.4	3.3	0.1
Week 1: 05/12/2026 - 05/18/2026	-2,000	0.3	1.7	64.5	35.2	0.0	0.0
Week 2: 05/19/2026 - 05/25/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 2: 05/19/2026 - 05/25/2026	-5,000	2.3	3.5	29.7	21.9	44.5	1.7
Week 2: 05/19/2026 - 05/25/2026	-3,500	2.8	4.3	36.0	32.3	27.7	1.2
Week 2: 05/19/2026 - 05/25/2026	-2,000	5.0	5.7	53.1	40.9	0.9	0.1
Week 3: 05/26/2026 - 0/02/2026	-6,250	N/A	N/A	N/A	N/A	N/A	N/A
Week 3: 05/26/2026 - 0/02/2026	-5,000	7.9	5.8	19.8	18.1	50.8	3.4
Week 3: 05/26/2026 - 0/02/2026	-3,500	11.7	8.0	25.1	25.2	35.3	2.8
Week 3: 05/26/2026 - 0/02/2026	-2,000	18.8	10.2	38.5	37.0	4.6	1.0

Note: values between 0.0 and 0.1 are indicated with <0.1

Key: CVP = Central Valley Project, OMR = Old and Middle River, SWP = State Water Project

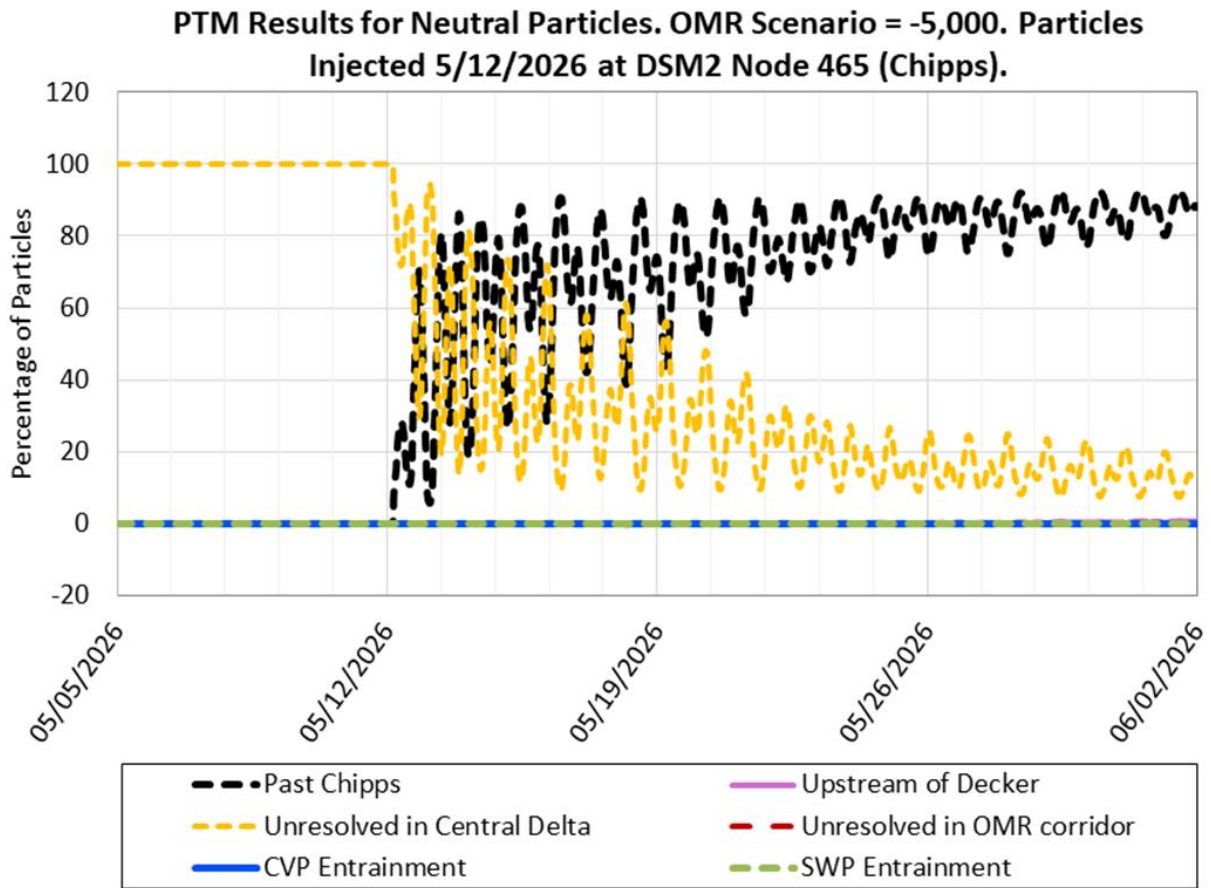


Figure 19. PTM Results for Surface Oriented Particles. OMR Scenario -5,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 465 (Chipps)

Figure 19 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 465 (Chipps). Six flux locations are represented by different colored dashed lines, with Past Chipps (black) rapidly increasing to nearly 100% by early May, while Unresolved in Central Delta (yellow) declines from 100% to near 0% over the evaluation period. The remaining flux locations remain near 0% throughout the period.

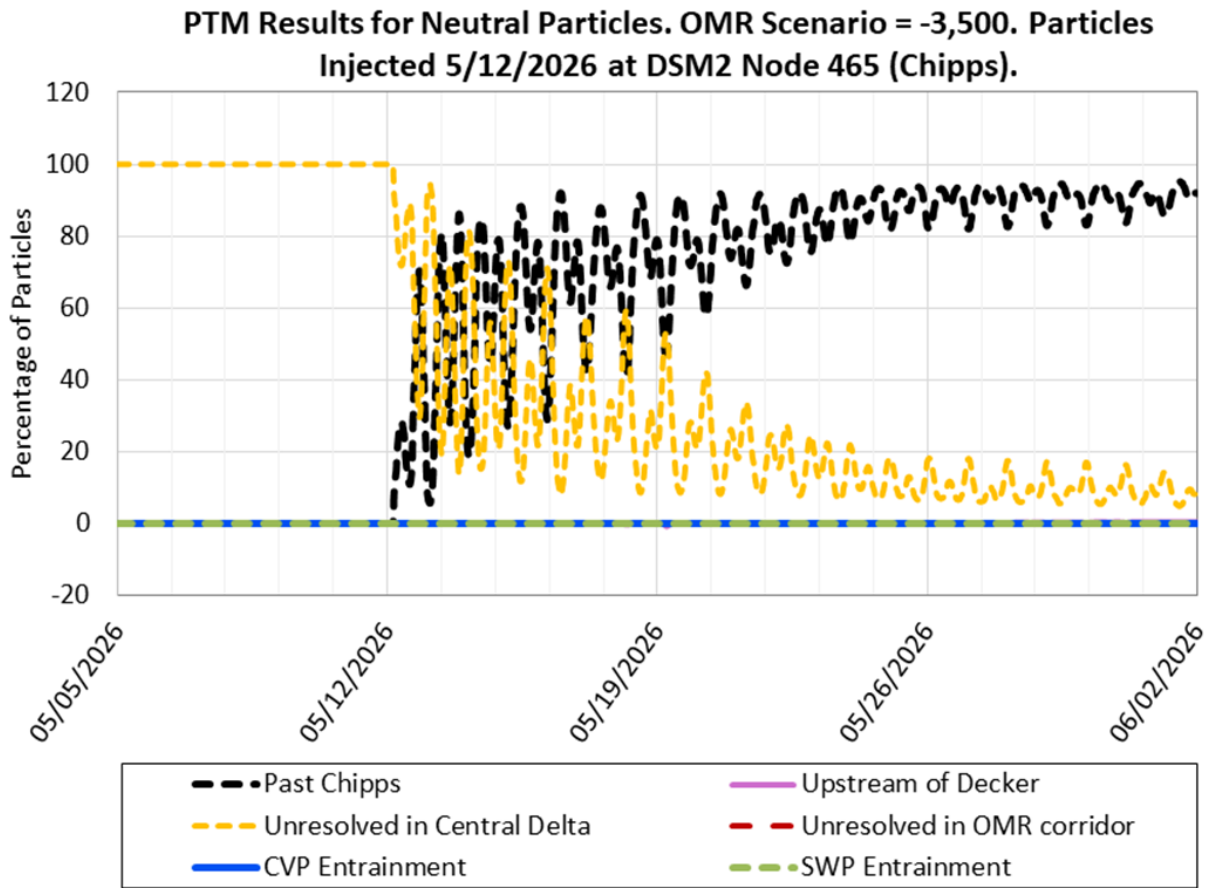


Figure 20. PTM Results for Surface Oriented Particles. OMR Scenario -3,500 cfs. Particles Injected 05/12/2026 at DSM2 Node 465 (Chipps)

Figure 20 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 465 (Chipps). Six flux locations are represented by different colored dashed lines, with Past Chipps (black) rapidly increasing to nearly 100% by early May, while Unresolved in Central Delta (yellow) declines from 100% to near 0% over the evaluation period. The remaining flux locations remain near 0% throughout the period.

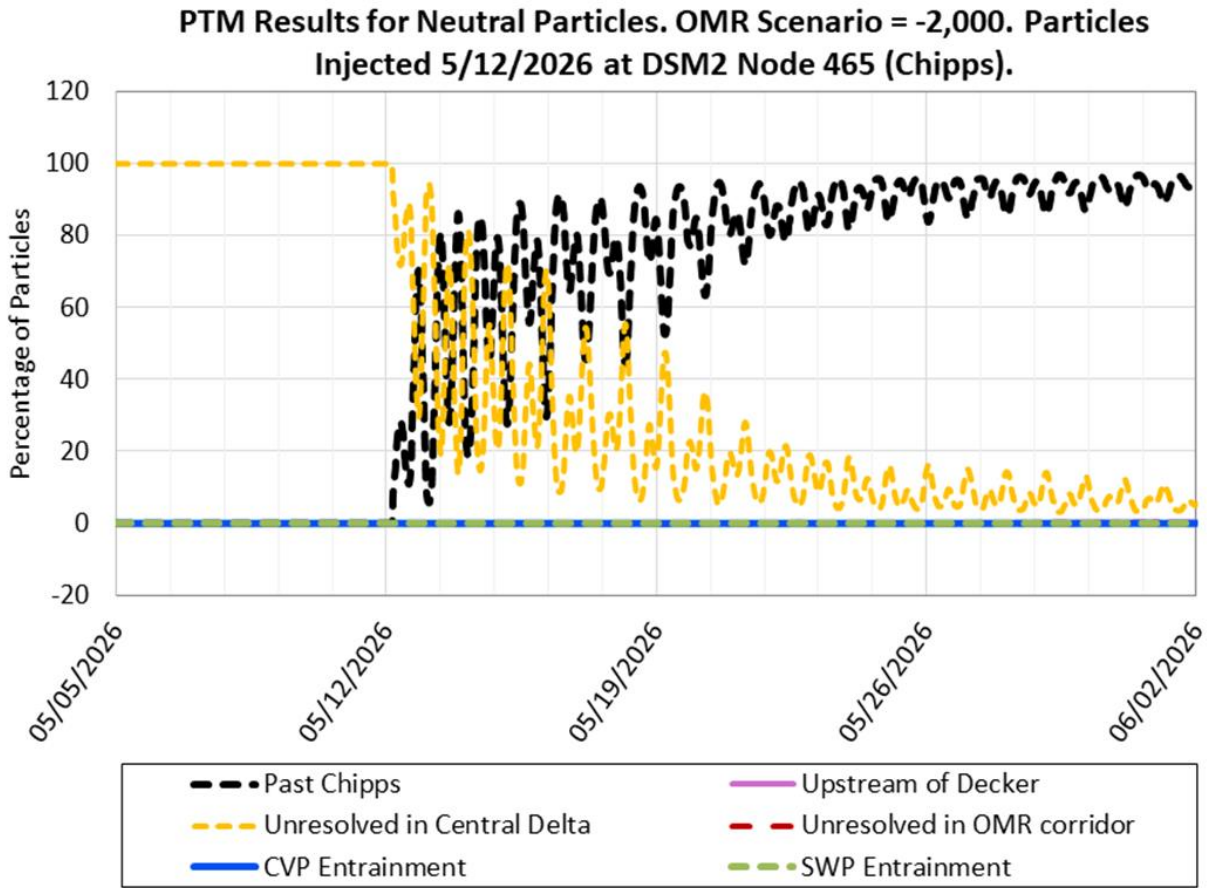


Figure 21. PTM Results for Surface Oriented Particles. OMR Scenario -2,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 465 (Chippis)

Figure 21 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 465 (Chippis). Six flux locations are represented by different colored dashed lines, with Past Chippis (black) rapidly increasing to nearly 100% by early May, while Unresolved in Central Delta (yellow) declines from 100% to near 0% over the evaluation period. The remaining flux locations remain near 0% throughout the period.

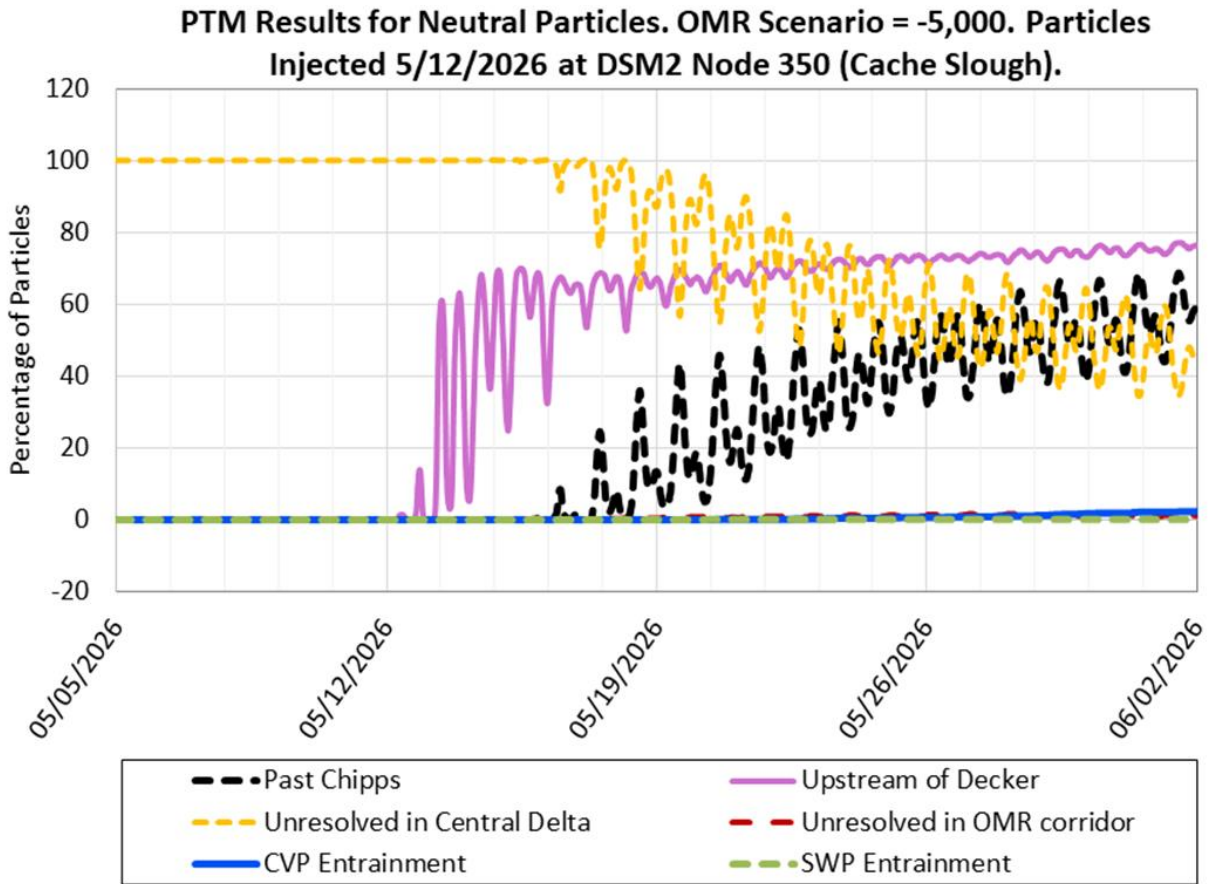


Figure 22. PTM Results for Surface Oriented Particles. OMR Scenario -5,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 350 (Cache Slough)

Figure 22 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 350 (Cache Slough). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (pink) rapidly increasing to approximately 70% by mid-May and remaining elevated, while Past Chipps (black) gradually rises to nearly 70% by late-May. Unresolved in Central Delta (yellow) declines from 100% to approximately 30–40% over the evaluation period, while the remaining flux locations remain near 0% throughout the period.

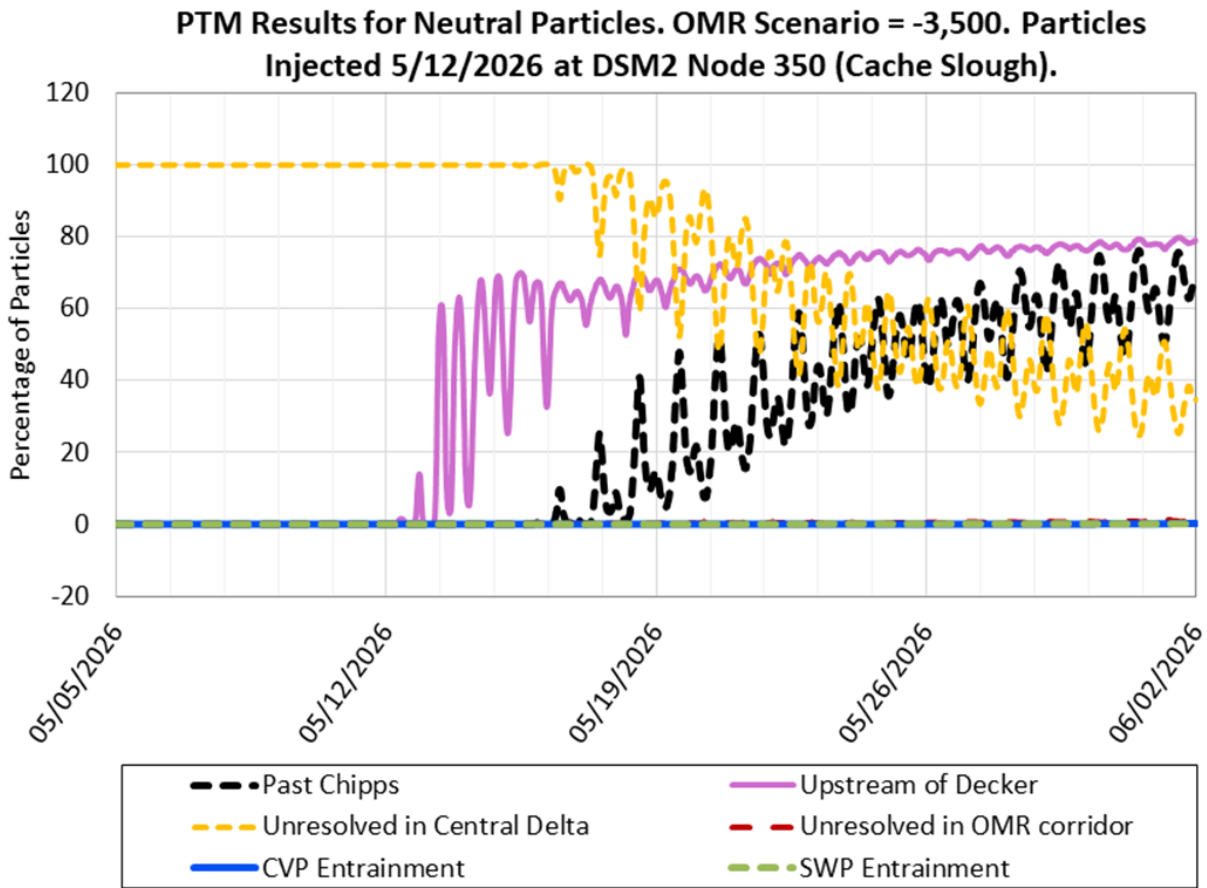


Figure 23. PTM Results for Surface Oriented Particles. OMR Scenario -3,500 cfs. Particles Injected 05/12/2026 at DSM2 Node 350 (Cache Slough)

Figure 23 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 350 (Cache Slough). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (pink) rapidly increasing to approximately 80% by mid-May and remaining elevated, while Past Chipps (black) gradually rises to nearly 80% by early-June. Unresolved in Central Delta (yellow) declines from 100% to approximately 30-40% over the evaluation period, while the remaining flux locations remain near 0% throughout the period.

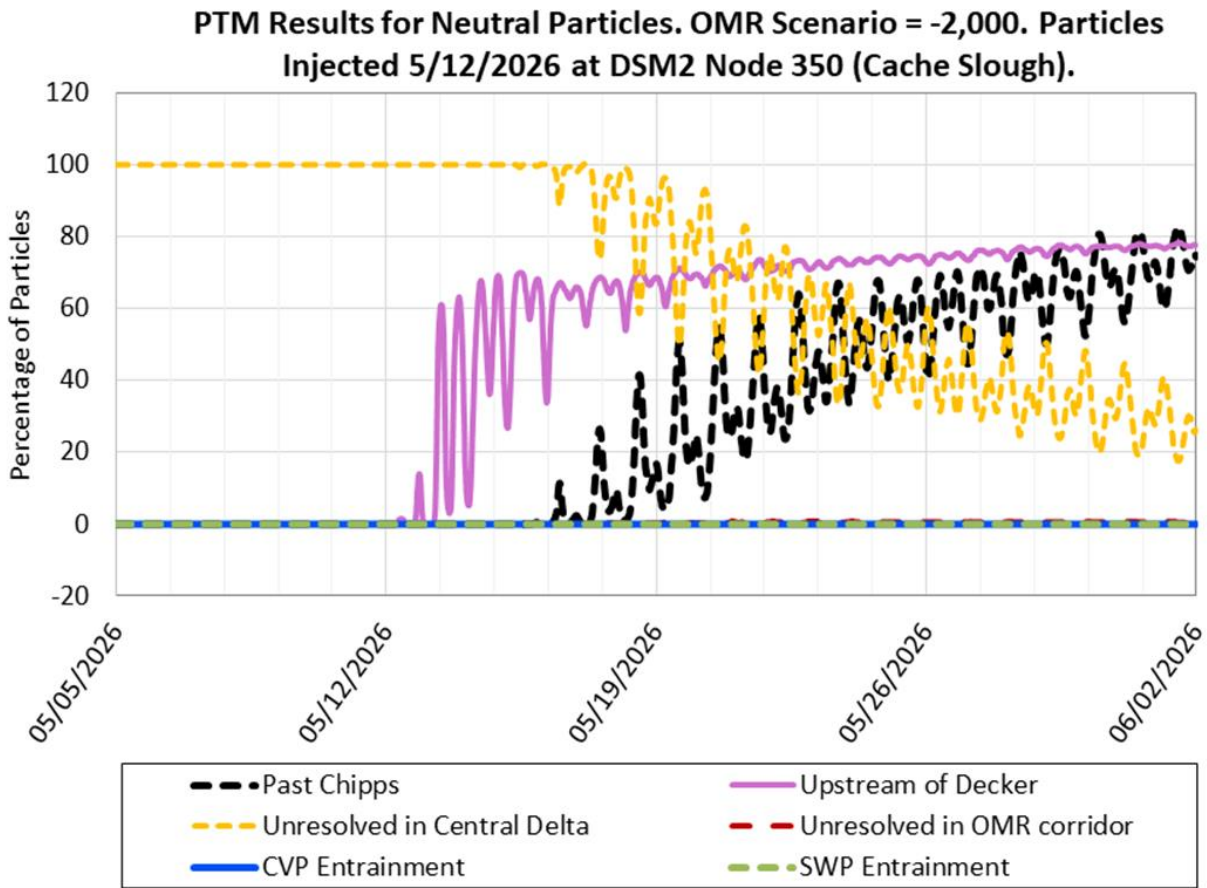


Figure 24. PTM Results for Surface Oriented Particles. OMR Scenario -2,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 350 (Cache Slough)

Figure 24 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 350 (Cache Slough). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (pink) rapidly increasing to approximately 80% by mid-May and remaining elevated, while Past Chipps (black) gradually rises to nearly 80% by early-June. Unresolved in Central Delta (yellow) declines from 100% to approximately 20-30% over the evaluation period, while the remaining flux locations remain near 0% throughout the period.

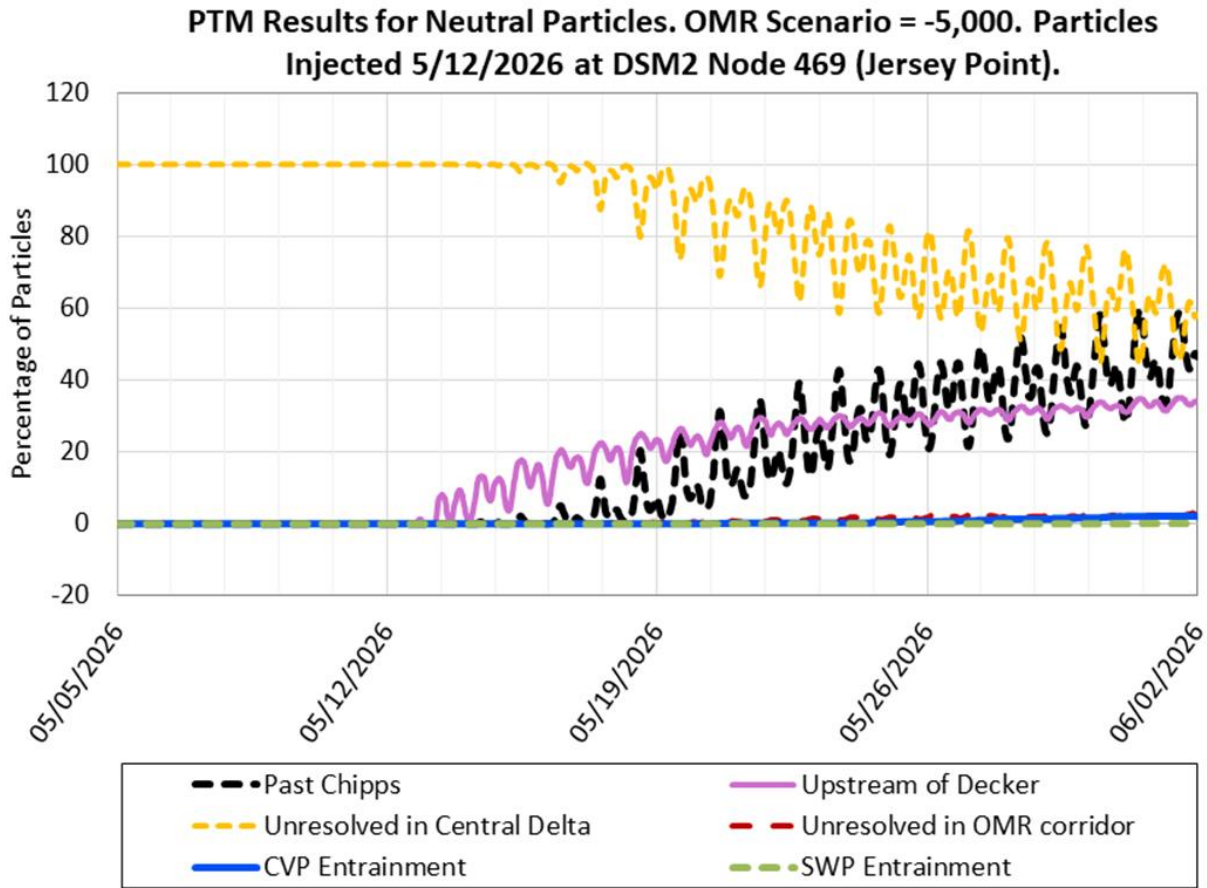


Figure 25. PTM Results for Surface Oriented Particles. OMR Scenario -5,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 469 (Jersey Point)

Figure 25 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 469 (Jersey Point). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (pink) gradually increasing to approximately 30% by mid-May and remaining elevated, while Past Chipps (black) gradually rises to nearly 60% by late-May. Unresolved in Central Delta (yellow) declines from 100% to approximately 40-60% over the evaluation period, while the remaining flux locations remain near 0% throughout the period.

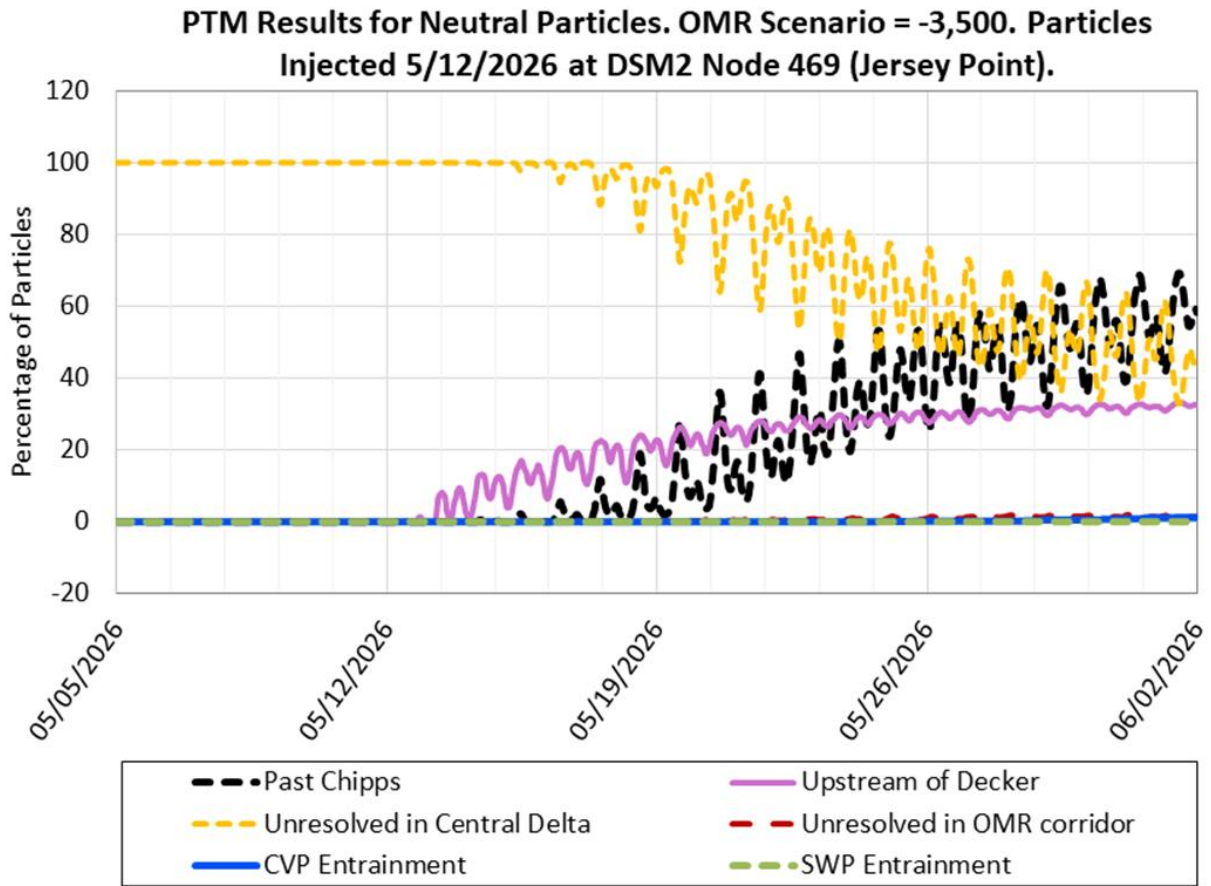


Figure 26. PTM Results for Surface Oriented Particles. OMR Scenario -3,500 cfs. Particles Injected 05/12/2026 at DSM2 Node 469 (Jersey Point)

Figure 26 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 469 (Jersey Point). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (pink) gradually increasing to approximately 30% by mid-May and remaining elevated, while Past Chipps (black) gradually rises to nearly 60% by late-May. Unresolved in Central Delta (yellow) declines from 100% to approximately 40-60% over the evaluation period, while the remaining flux locations remain near 0% throughout the period.

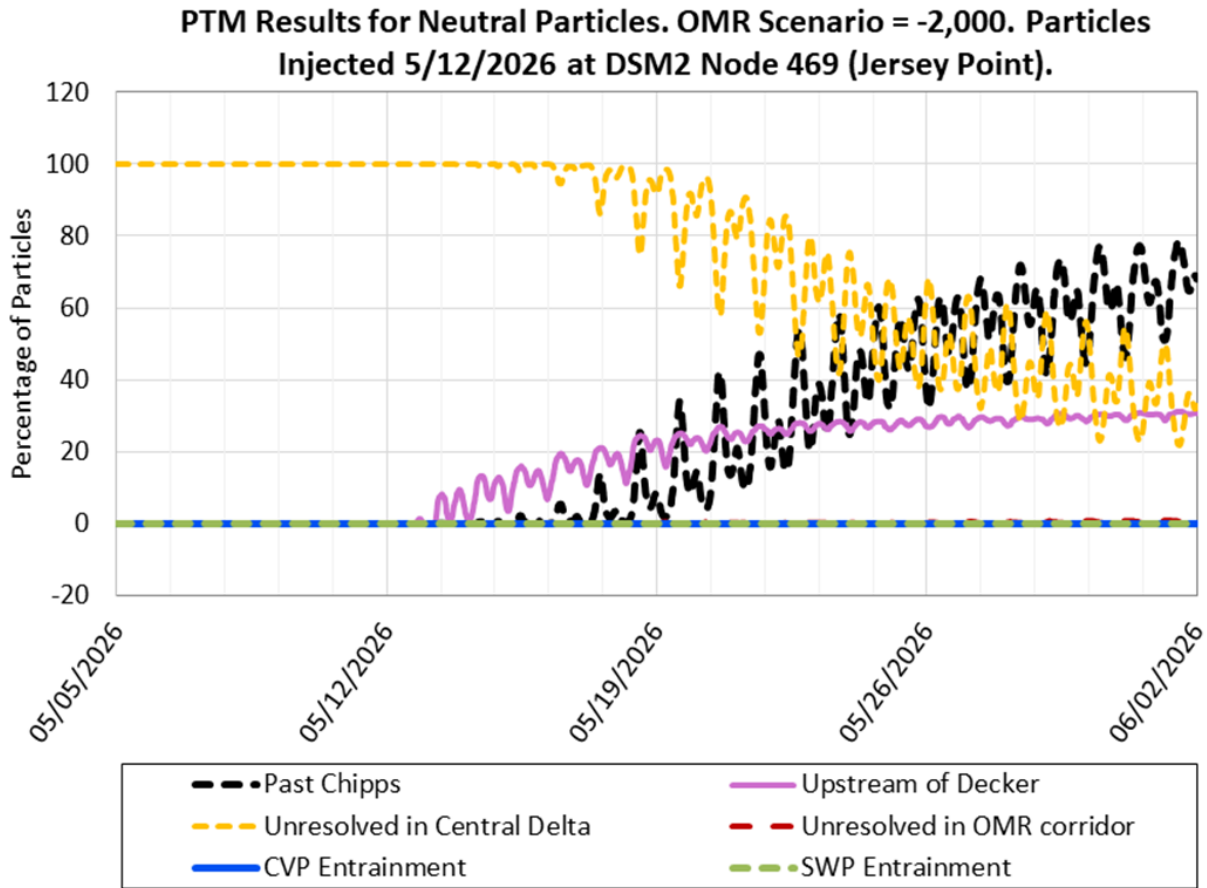


Figure 27. PTM Results for Surface Oriented Particles. OMR Scenario -2,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 469 (Jersey Point)

Figure 27 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 469 (Jersey Point). Six flux locations are represented by different colored dashed lines, with Upstream of Decker (pink) gradually increasing to approximately 30% by mid-May and remaining elevated, while Past Chipps (black) gradually rises to nearly 60% by late-May. Unresolved in Central Delta (yellow) declines from 100% to approximately 40-60% over the evaluation period, while the remaining flux locations remain near 0% throughout the period.

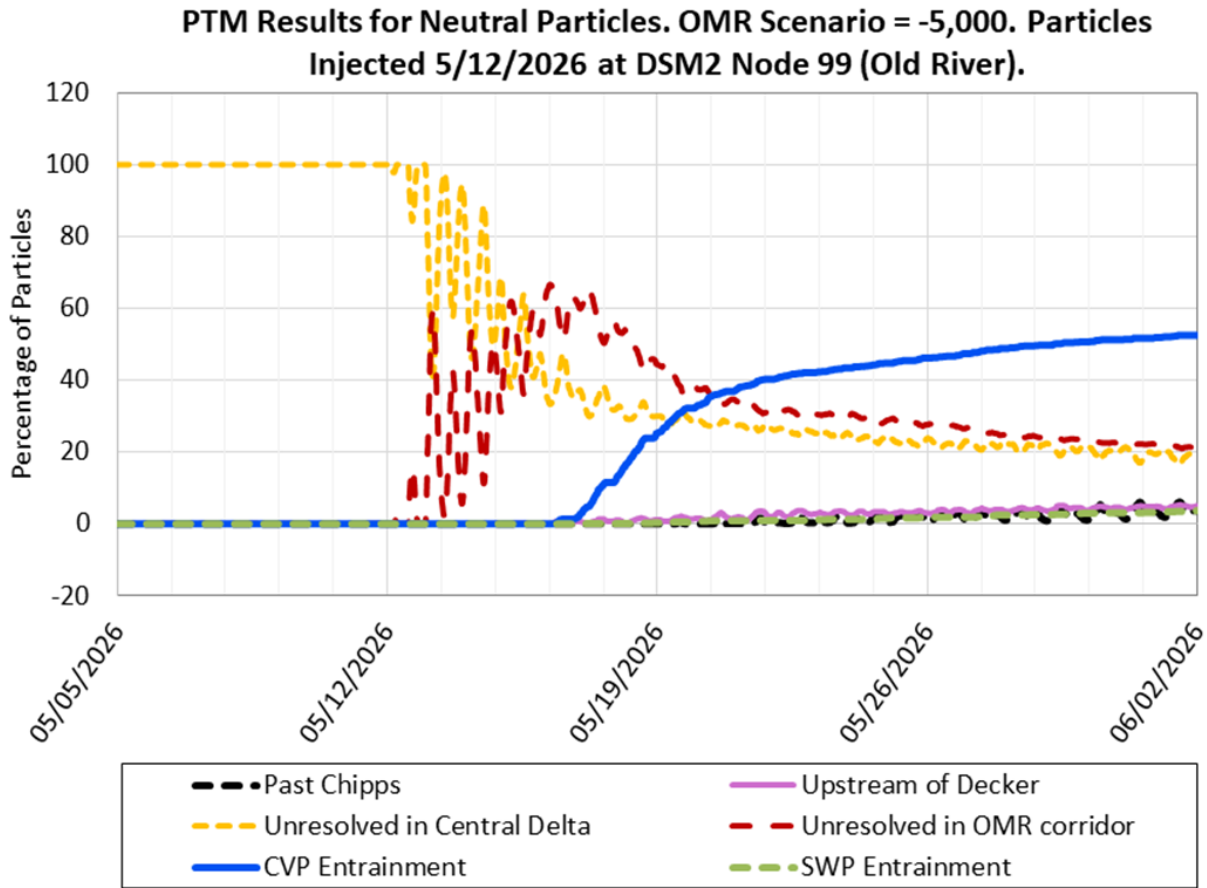


Figure 28. PTM Results for Surface Oriented Particles. OMR Scenario -5,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 99 (Old River)

Figure 28 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 99 (Old River). Six flux locations are represented by different colored dashed lines, with Unresolved in Central Delta (yellow) declining from approximately 100% to 20% over the evaluation period, while Unresolved in OMR corridor (red) rises rapidly to approximately 40–60% in mid-May and declines to approximately 20% over the evaluation period. CVP Entrainment (blue) rapidly raises to approximately 50% in mid-May and continues gradually increasing over the evaluation period. Past Chipps (black), Upstream of Decker (pink), and SWP Entrainment (green) remain near 0% with a minor increase in early June.

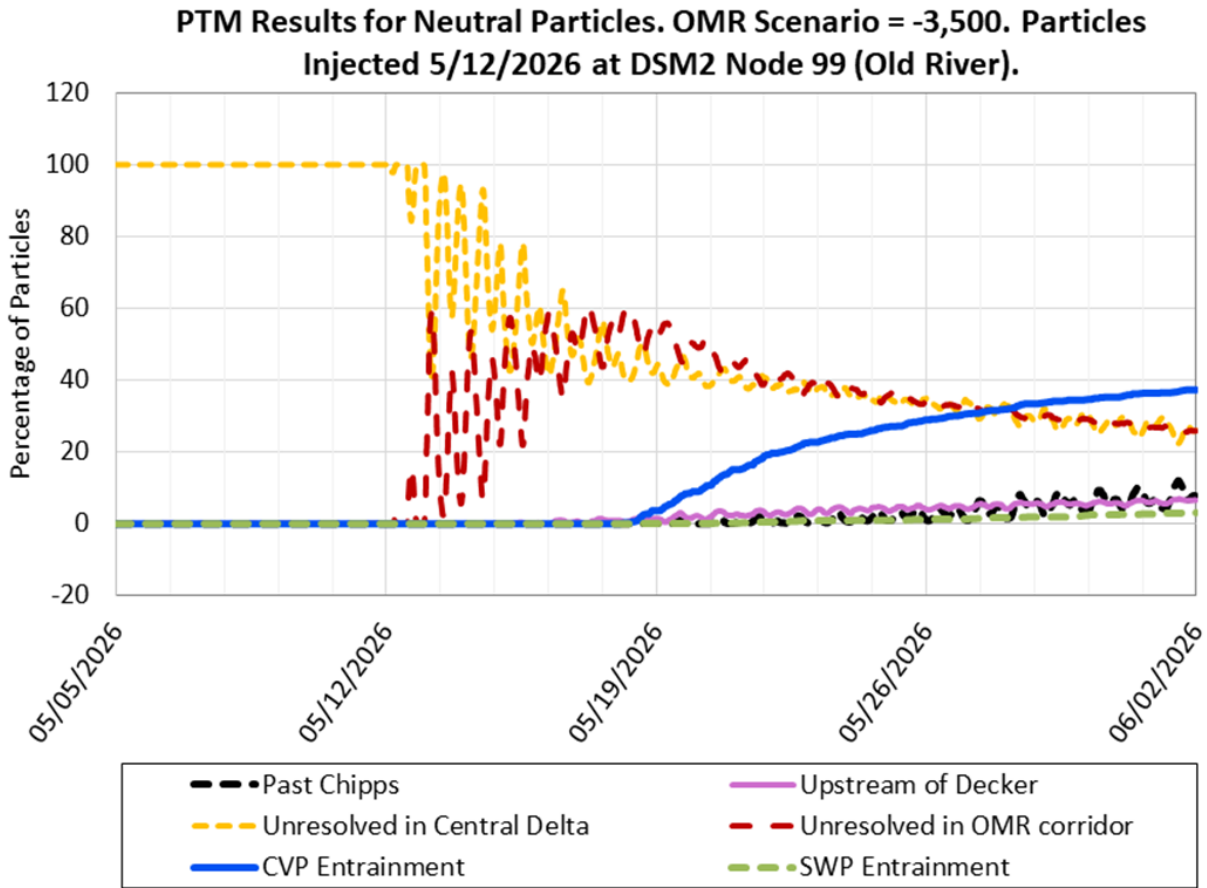


Figure 29. PTM Results for Surface Oriented Particles. OMR Scenario -3,500 cfs. Particles Injected 05/12/2026 at DSM2 Node 99 (Old River)

Figure 29 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 99 (Old River). Six flux locations are represented by different colored dashed lines, with Unresolved in Central Delta (yellow) declining from approximately 100% to 20% over the evaluation period, while Unresolved in OMR corridor (red) rises rapidly to approximately 40–60% in mid-May and declines to approximately 20% over the evaluation period. CVP Entrainment (blue) rapidly raises to approximately 40% in mid-May. Past Chipps (black), Upstream of Decker (pink), and SWP Entrainment (green) remain near 0% with a minor increase in early June.

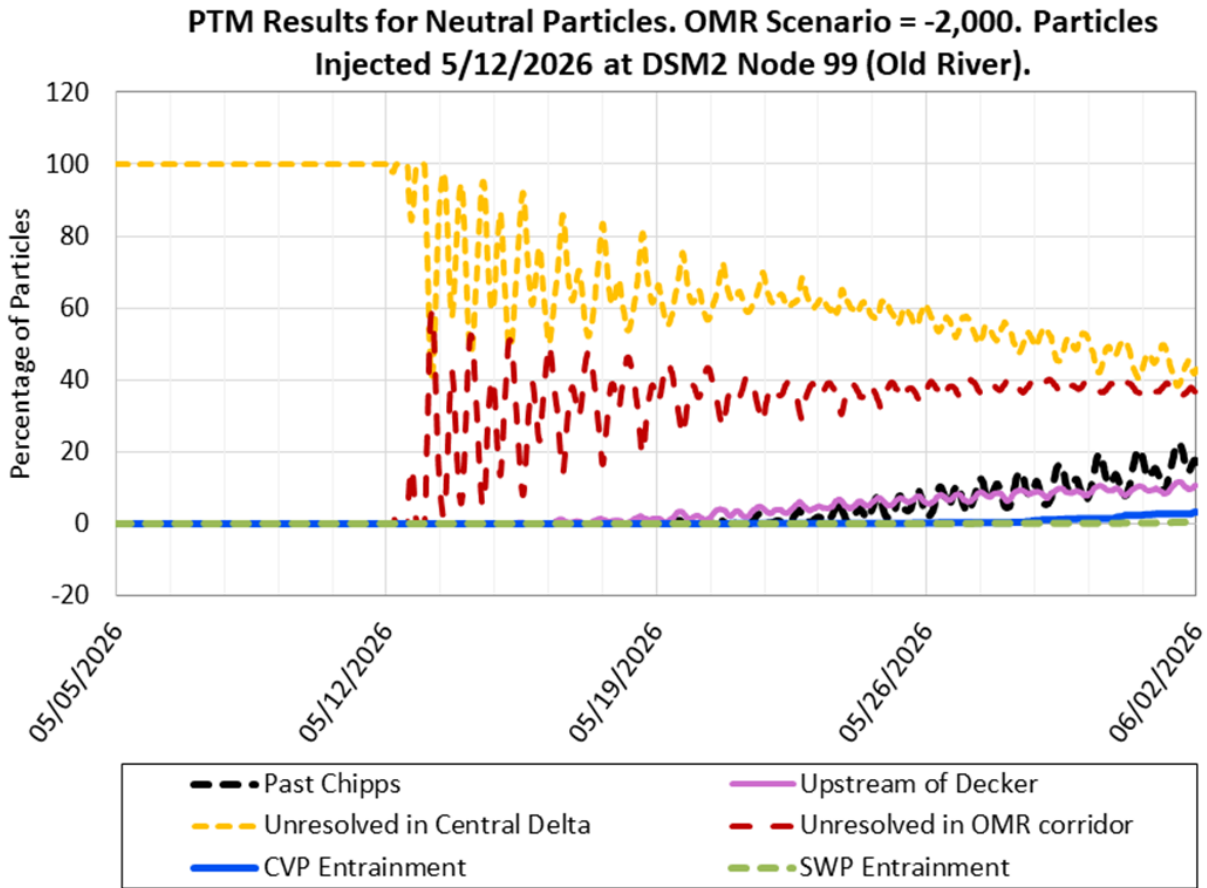


Figure 30. PTM Results for Surface Oriented Particles. OMR Scenario -2,000 cfs. Particles Injected 05/12/2026 at DSM2 Node 99 (Old River)

Figure 30 is a line graph showing the percentage of surface oriented particles over time from May 5 to June 2, 2026, injected on May 12, 2026 at DSM2 Node 99 (Old River). Six flux locations are represented by different colored dashed lines, with Unresolved in Central Delta (yellow) declining from approximately 100% to 40% over the evaluation period, while Unresolved in OMR corridor (red) rises rapidly to approximately 40–45% and remains elevated through early June. Past Chipps (black), CVP Entrainment (blue), Upstream of Decker (pink), and SWP Entrainment (green) gradually increase over time, reaching approximately 20%, 15%, 10%, and 5%, respectively, by the end of the evaluation period.

ECO-PTM (Ecological Particle Tracking Model)

ECO-PTM Results Evaluation Period: 05/12/2026 – 06/02/2026

Particles Injected: 02/10/2026

Injection Location: Sacramento River at Freeport

Table 12. Salmon Particle Route Ratio After 3 Weeks (Ending 06/02/2026)

OMR Flow Bin	Sutter Slough Route	Steamboat Slough Route	Sacramento River (SS) Route	Sacramento River (GEO) Route	Georgiana Slough Route
-6,500	N/A	N/A	N/A	N/A	N/A
-5,000	0.10	0.08	0.81	0.76	0.23
-3,500	0.10	0.08	0.81	0.76	0.23
-2,000	0.10	0.09	0.81	0.76	0.22

Note: Salmon particle route ratio for the Sacramento River (SS) Route reflects particles inserted at Freeport that are not routed through either Sutter Slough or Steamboat Slough. Salmon particle route ratio for the Sacramento River (GEO) Route reflects particles inserted at Freeport that are not routed through either Sutter Slough, Steamboat Slough, Georgiana Slough, or the Delta Cross Channel (when operational).

Key: cfs = cubic feet per second, OMR = Old and Middle River

Table 13. Salmon Particle Route-Specific Survival After 3 Weeks (Ending 06/02/2026)

OMR Flow Bin	Sutter Slough Route	Steamboat Slough Route	Sacramento River Route	Georgiana Slough Route	All Routes Combined
-6,500	N/A	N/A	N/A	N/A	N/A
-5,000	40%	50%	42%	22%	38%
-3,500	43%	55%	46%	25%	42%
-2,000	39%	51%	42%	30%	40%

Key: cfs = cubic feet per second, OMR = Old and Middle River

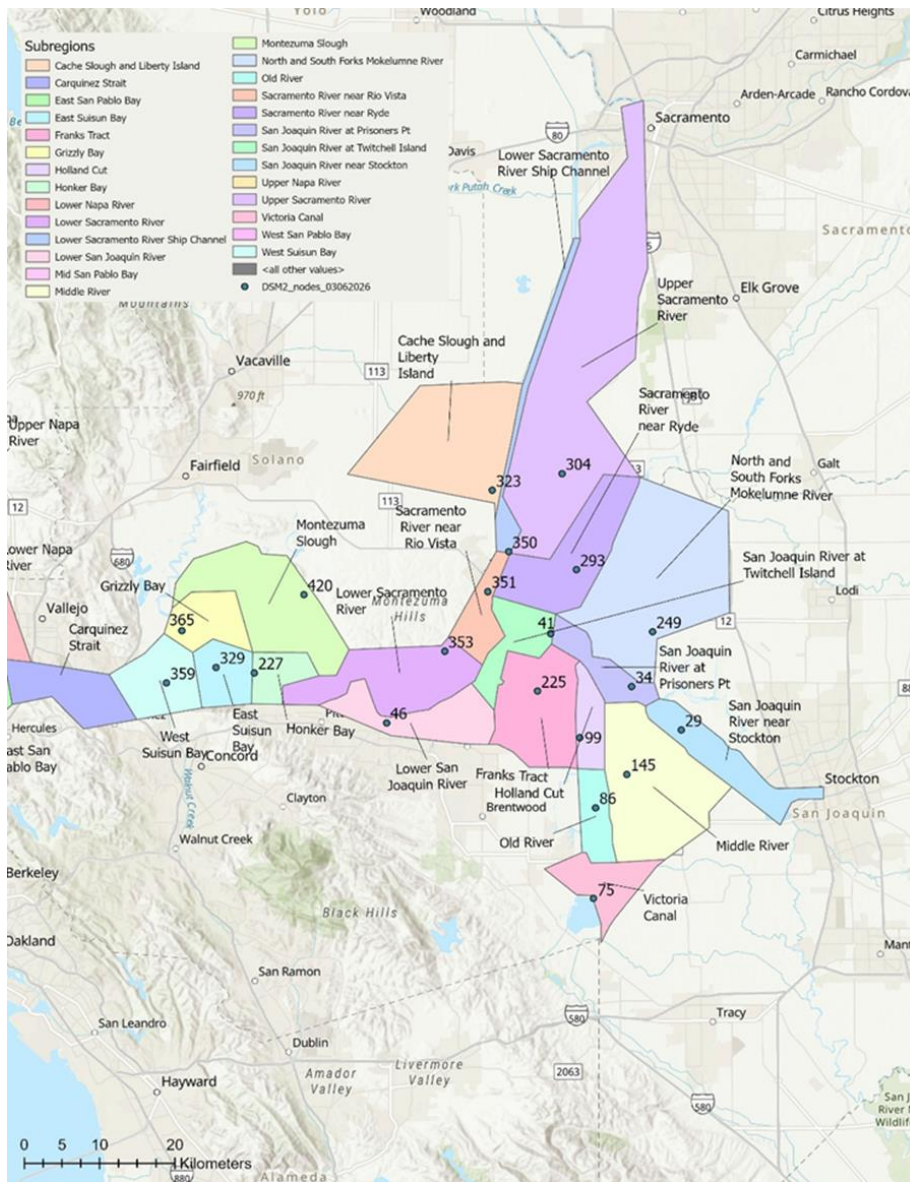
Longfin Smelt Larval Population and PTM Analysis

PTM Results Evaluation Period: 05/12/2026 – 06/02/2026

Particles Injected: 05/12/2026

PTM Injection Location: node(s) within each Delta Region identified in map below

PTM Analysis Method: LFS larva abundance is estimated in each Enhanced Delta Smelt Monitoring (EDSM) program subregion. Cumulative particle flux into CVP and SWP facilities is represented in PTM by one injection location per subregion (31). LFS larva entrainment is estimated by multiplying the LFS subregion abundance by cumulative particle flux into CVP and SWP facilities from the corresponding subregion injection point. LFS entrainment from each subregion is added together and reported at the LFS Region scale (32).



Note: No DSM2 nodes are west of the West Suisun Bay subregion, so the furthest west node in the DSM2 domain is used to represent particle entrainment for all subregions west of West Suisun Bay.

Figure 31: DSM2 PTM Regions in the Sacramento-San Joaquin Delta

Figure 31 is a map of the Sacramento-San Joaquin Delta showing the seven DSM2 PTM regions — Sacramento/North Delta, Eastern Delta, Lower San Joaquin, Lower Sacramento, South Delta, Suisun, and Western Delta — each distinguished by a different color. DSM2 channels and node locations are also displayed, with node numbers labeled throughout the map.

Notes:

- Regional and Delta-wide longfin smelt (LFS) larval population is estimated using SLS survey data from Survey 6 (3/9/2026 – 3/11/2026) and volumetric expansion methods developed by the Six-Agency Monitoring Survey Design Team. As of 04/21/2026, all SLS survey catch data has been processed (Table 14). CDFW has transitioned from the SLS to the 20-mm survey to collect distribution data for post larval-juvenile Longfin Smelt. As of 05/12/2026, processing of the 20mm Survey 1 data is at 51% complete, heavily biased to the eastern and southern Delta. Due to the lack of processed 20mm data from any of the more westerly regions, any proportional entrainment estimates would be strongly biased upward, and SLS Survey 6 data is used to estimate proportional entrainment risk for this assessment.

Table 14. Percent of Smelt Larva Survey Sample Results Processed as of 04/21/2026

SLS Survey Number	Survey Date	Eastern Delta	Lower Sacramento	Lower San Joaquin	Sacramento/North Delta	South Delta	Suisun	Western Delta
1	12/29/2025	100%	100%	100%	100%	100%	100%	100%
2	1/12/2026	100%	100%	100%	100%	100%	100%	100%
3	1/26/2026	100%	100%	100%	100%	100%	100%	100%
4	2/9/2026	100%	100%	100%	100%	100%	100%	100%
5	2/23/2026	100%	100%	100%	100%	100%	100%	100%
6	3/9/2026	100%	100%	100%	100%	100%	100%	100%

Key: SLS = Smelt Larva Survey

The DSM2 node used as an injection point, EDSM subregion, and LFS Region for reporting are shown in Table 15.

Table 15. DSM2 Injection Node, EDSM Subregion, and LFS Region

DSM2 Injection Node	EDSM Subregion	LFS Region
329	East Suisun Bay	Suisun
365	Grizzly Bay	Suisun
227	Honker Bay	Suisun
420	Montezuma Slough	Suisun
359	West Suisun Bay	Suisun
359	Carquinez Strait	Western Delta
359	Upper Napa River	Western Delta
359	Lower Napa River	Western Delta
359	East San Pablo Bay	Western Delta
359	West San Pablo Bay	Western Delta
359	Mid San Pablo Bay	Western Delta
353	Lower Sacramento River	Lower Sacramento

DSM2 Injection Node	EDSM Subregion	LFS Region
351	Sacramento River near Rio Vista	Lower Sacramento
350	Lower Sacramento River Ship Channel	Sacramento/ North Delta
293	Sacramento River near Ryde	Sacramento/ North Delta
323	Cache Slough and Liberty Island	Sacramento/ North Delta
304	Upper Sacramento River	Sacramento/ North Delta
249	North and South Forks Mokelumne River	East
46	Lower San Joaquin River	Lower San Joaquin
41	San Joaquin River at Twitchell Island	Lower San Joaquin
34	San Joaquin River at Prisoners Point	Lower San Joaquin
225	Franks Tract	South Delta
99	Holland Cut	South Delta
86	Old River	South Delta
29	San Joaquin River near Stockton	South Delta
145	Middle River	South Delta
75	Victoria Canal	South Delta

Table 16. LFS Entrainment Estimate using PTM with Surface Oriented Particles: Week 1 ending 05/18/2026

OMR (cfs)	Combined Exports (cfs)	Region Metric	West	Suisun	Sacramento/ North Delta	Lower San Joaquin	Lower Sacramento	South Delta	East	Total (#)	Total (%)
N/A	N/A	LFS Larva Abundance (Survey 5: 2/23/2026)	117,633,687	145,677,478	304,865	4,078,739	3,695,676	0	0	271,390,445	N/A
-6,500	N/A	PTM Entrained (%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-5,000	3,864	PTM Entrained (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
-3,500	2,648	PTM Entrained (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
-2,000	1,503	PTM Entrained (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
-6,500	N/A	LFS Larva Entrained (#)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-5,000	3,864	LFS Larva Entrained (#)	0	0	0	0	0	0	0	0	0.0%
-3,500	2,648	LFS Larva Entrained (#)	0	0	0	0	0	0	0	0	0.0%
-2,000	1,503	LFS Larva Entrained (#)	0	0	0	0	0	0	0	0	0.0%

Notes:

Values between 0.0 and 0.1 are indicated with <0.1

The PTM entrained (%) value reflects the total entrained particles from all subregions within an LFS Region divided by the estimated LFS Region abundance.

Key:

cfs = cubic feet per second LFS = longfin Smelt

OMR = Old and Middle River

Table 17. LFS Entrainment Estimate using PTM with Surface Oriented Particles: Week 2 ending 05/25/2026

OMR (cfs)	Combined Exports (cfs)	Region Metric	West	Suisun	Sacramento/ North Delta	Lower San Joaquin	Lower Sacramento	South Delta	East	Total (#)	Total (%)
N/A	N/A	LFS Larva Abundance (Survey 5: 2/23/2026)	117,633,687	145,677,478	304,865	4,078,739	3,695,676	0	0	271,390,445	N/A
-6,500	N/A	PTM Entrained (%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-5,000	4,809	PTM Entrained (%)	0	0	0.4	3.2	0.4	0	0	N/A	N/A
-3,500	3,106	PTM Entrained (%)	0	0	0	0.8	<0.1	0	0	N/A	N/A
-2,000	1,503	PTM Entrained (%)	0	0	0	<0.1	0	0	0	N/A	N/A
-6,500	N/A	LFS Larva Entrained (#)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-5,000	4,809	LFS Larva Entrained (#)	0	0	1,219	130,067	13,510	0	0	144,796	<0.1%
-3,500	3,106	LFS Larva Entrained (#)	0	0	0	30,958	808	0	0	31,766	<0.1%
-2,000	1,503	LFS Larva Entrained (#)	0	0	0	650	0	0	0	650	<0.1%

Notes:

Values between 0.0 and 0.1 are indicated with <0.1

The PTM entrained (%) value reflects the total entrained particles from all subregions within an LFS Region divided by the estimated LFS Region abundance.

Key:

cfs = cubic feet per second LFS = longfin Smelt

OMR = Old and Middle River

Table 18. LFS Entrainment Estimate using PTM with Surface Oriented Particles: Week 3 ending 06/02/2026

OMR (cfs)	Combined Exports (cfs)	Region Metric	West	Suisun	Sacramento/ North Delta	Lower San Joaquin	Lower Sacramento	South Delta	East	Total (#)	Total (%)
N/A	N/A	LFS Larva Abundance (Survey 5: 2/23/2026)	117,633,687	145,677,478	304,865	4,078,739	3,695,676	0	0	271,390,445	N/A
-6,500	N/A	PTM Entrained (%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-5,000	4,809	PTM Entrained (%)	0	0	1.4	8.3	1.1	0	0	N/A	N/A
-3,500	3,106	PTM Entrained (%)	0	0	0.4	3.1	0.4	0	0	N/A	N/A
-2,000	1,503	PTM Entrained (%)	0	0	0.1	0.2	0	0	0	N/A	N/A
-6,500	N/A	LFS Larva Entrained (#)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-5,000	4,809	LFS Larva Entrained (#)	0	0	4,268	337,842	39,660	0	0	381,770	0.10%
-3,500	3,106	LFS Larva Entrained (#)	0	0	1,219	127,593	14,721	0	0	143,534	<0.1%
-2,000	1,503	LFS Larva Entrained (#)	0	0	305	6,932	0	0	0	7,237	<0.1%

Notes:

Values between 0.0 and 0.1 are indicated with <0.1

For locations with multiple DSM2 nodes indicated, the PTM entrained (%) value reflects the average across all nodes

Key:

cfs = cubic feet per second LFS = longfin Smelt

OMR = Old and Middle River

**Average PTM Results by Injection Region for Position Oriented
Particles Entrained at CVP and SWP. OMR Scenario = -5,000.
Particles Injected 5/12/2026.**

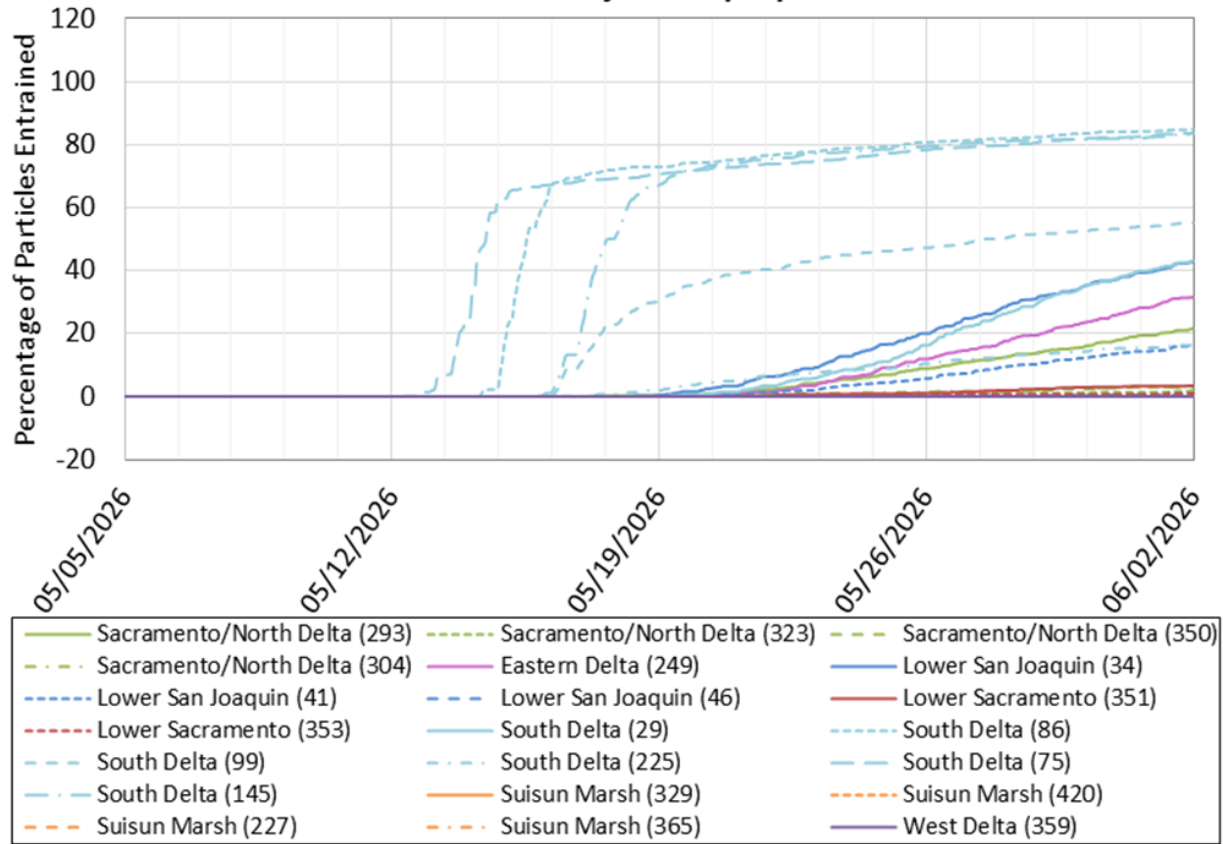


Figure 33: Average PTM Results by Injection Region for Position Oriented Particles Entrained at CVP and SWP, OMR Scenario -5,000 cfs. Particles Injected 05/12/2026.

Figure 33 is a line graph showing the average percentage of position oriented particles entrained at CVP and SWP over time from May 5 to June 2, 2026, injected on May 12, 2026, grouped by seven DSM2 injection regions. South Delta (light blue) shows the highest entrainment, rising to approximately 80% by mid-May, while Lower San Joaquin (blue), Eastern Delta (pink), Lower Sacramento (red), Suisun Marsh (orange), and all other regions remain below approximately 50% throughout the evaluation period.

**Average PTM Results by Injection Region for Position Oriented
Particles Entrained at CVP and SWP. OMR Scenario = -3,500.
Particles Injected 5/12/2026.**

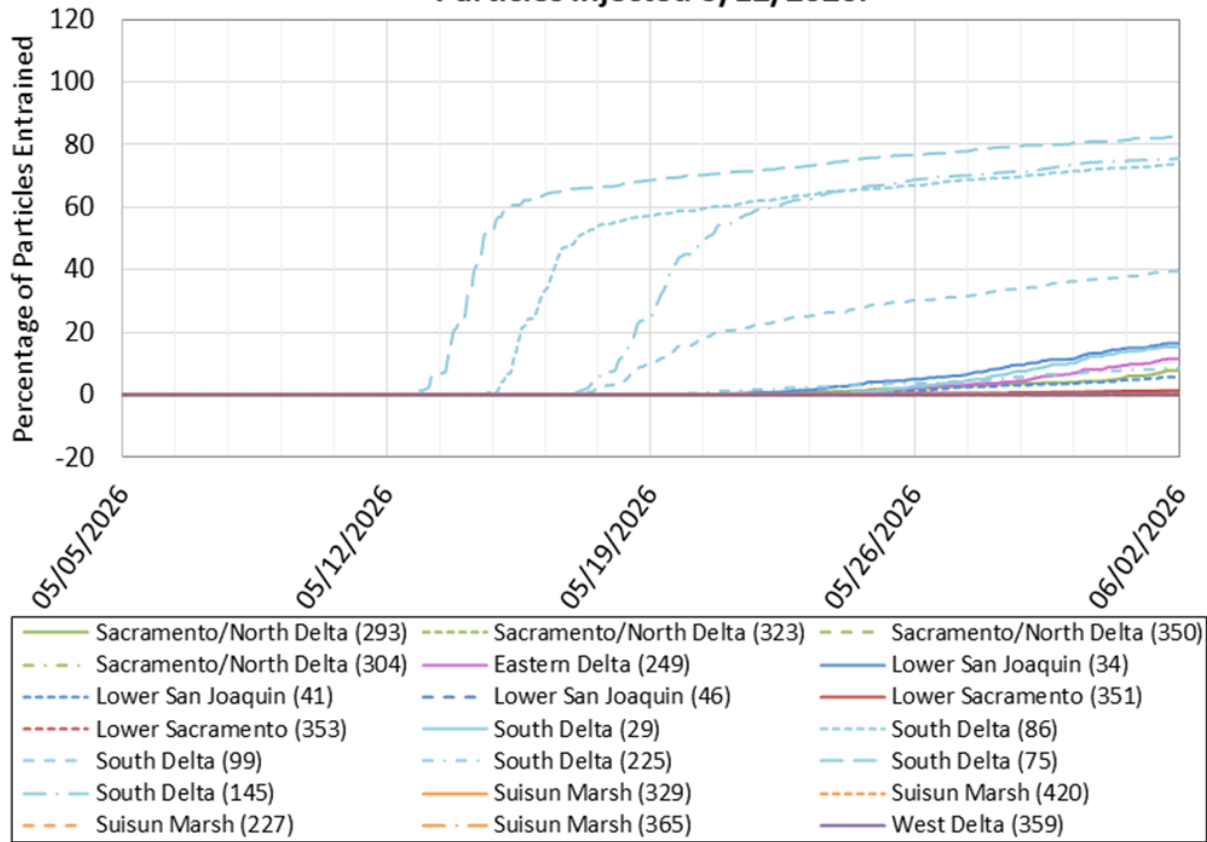


Figure 34: Average PTM Results by Injection Region for Position Oriented Particles Entrained at CVP and SWP, OMR Scenario -3,500 cfs. Particles Injected 05/12/2026.

Figure 34 is a line graph showing the average percentage of position oriented particles entrained at CVP and SWP over time from May 5 to June 2, 2026, injected on May 12, 2026, grouped by seven DSM2 injection regions. South Delta (light blue) shows the highest entrainment, rising to approximately 80% by mid-May, while Lower San Joaquin (blue), Eastern Delta (pink), Lower Sacramento (red), Suisun Marsh (orange), and all other regions remain below approximately 20% throughout the evaluation period.

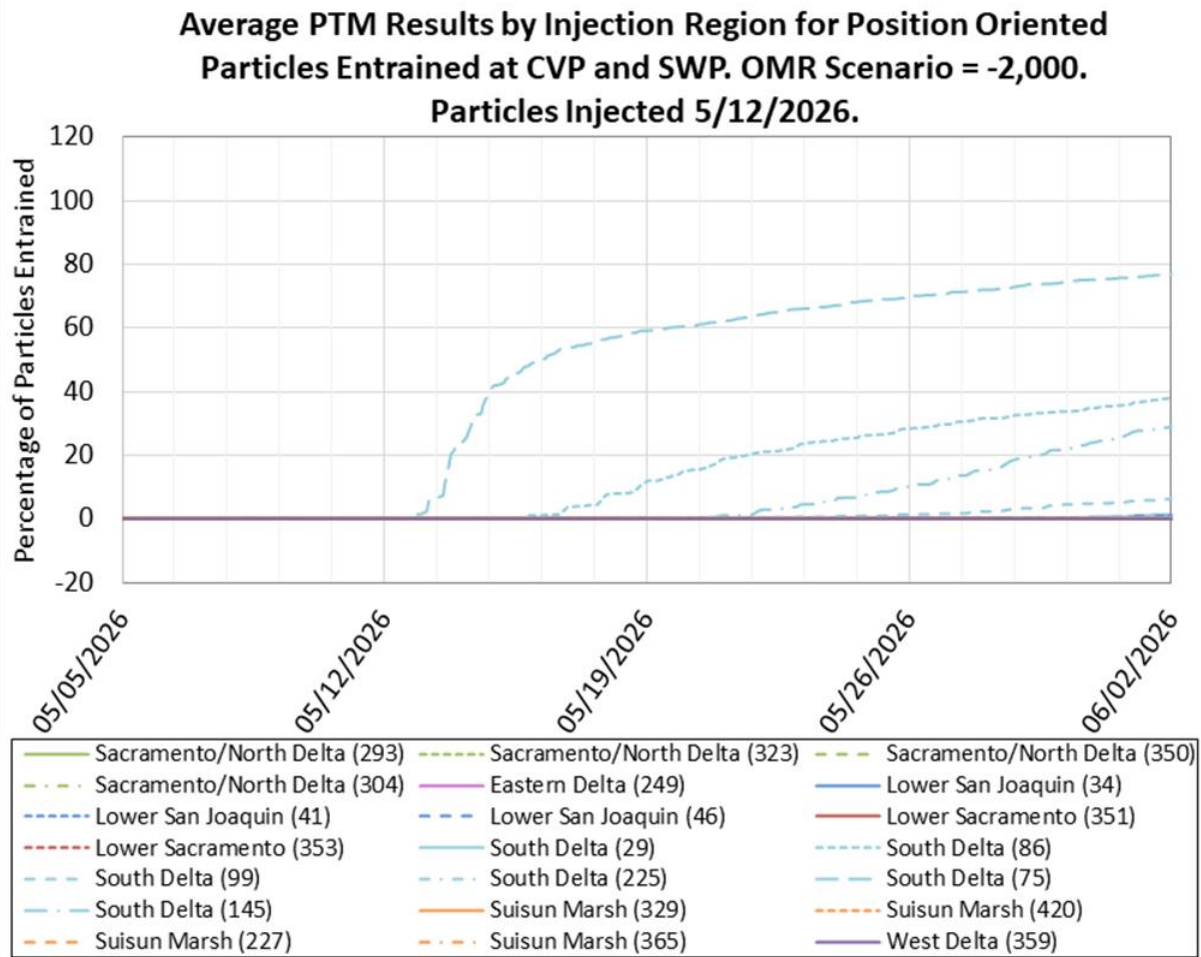


Figure 35: Average PTM Results by Injection Region for Position Oriented Particles Entrained at CVP and SWP, OMR Scenario -2,000 cfs. Particles Injected 05/12/2026.

Figure 35 is a line graph showing the average percentage of position oriented particles entrained at CVP and SWP over time from May 5 to June 2, 2026, injected on May 12, 2026, grouped by seven DSM2 injection regions. South Delta (light blue) shows the highest entrainment, rising to approximately 80% by mid-May, while Lower San Joaquin (blue), Eastern Delta (pink), Lower Sacramento (red), Suisun Marsh (orange), and all other regions remain below approximately 20% throughout the evaluation period.