

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 3/27/12 at 9:00 a.m.

Objective: Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will coordinate the work of other technical teams. DOSS notes and advice can be found at: <http://www.swr.noaa.gov/ocap/doss.htm>

DWR: Mike Ford, Andy Chu, Edmund Yu, Kevin Reece, Angela Llaban, Brian Giorgi

FWS: Leigh Bartoo, Roger Guinee, Craig Anderson

NMFS: Barbara Rocco, Bruce Oppenheim, Barb Byrne, Jeff Stuart, Garwin Yip

Reclamation: Russ Yaworsky

DFG: Bob Fujimura, Jason Roberts

EPA, SWRCB, USGS: not present

Agenda

1. Fish monitoring
2. Current operations
3. PTM results for OMR flows starting April 1

Action Item [1/3/12]: Review the DOSS section of the annual review report and provide responses regarding implementation of recommendations. **Carry. See discussions below.**

3/27/12: The group attempted to meet but could not schedule a common time. They will try to schedule a meeting together for Wednesday, 3/28/12.

Action Item [1/17/12]: DWR, Reclamation, NMFS, and DFG will meet to discuss how best to include CWT information in available salvage databases, both going forward and perhaps retrospectively. Bob Fujimura, DFG, agreed to lead this effort and provide a list of what needs to be revised. **Carry. No update on 3/27/12.**

Action Item [3/20/12]: One wild steelhead salvaged at the CVP last had an orange dorsal tag (dyed). Israel will follow up with the Cramer Fish Science people, who have traps on the Stanislaus, but didn't know who works on the Merced and Tuolumne Rivers. NMFS could contact the people who get the monitoring permits. **Delete. See discussion below.**

3/27/12: Israel brought this up to the people who attended the SOG and other meetings with no definitive answers. He suggested that someone follow up with the Merced and Tuolumne River monitors.

Sarah McCulloch (DFG) spoke with Tim Heynes, DFG, about the dye marking of RBT on the Stanislaus and he said that someone was marking RBT with orange isomar tags but that no one knows who is doing it.

Fish Monitoring: The following table presents fish monitoring data. Unless otherwise noted, reported sizes are fork length. No data were received before the conference call from Speegle at FWS. See: <http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm>.

Location	Chippis Is. Midwater Trawl	Sacramento Kodiak Trawl	Mossdale Kodiak Trawl	Beach Seines	Knights Landing RST	Tisdale Weir RST
Sample Date	3/20, 23	3/19, 21, 23	3/19, 20, 22	3/19–3/22	3/19–3/26	3/19–3/26
Total Catch	34	236	1	645	787	1,727
FR		168		561	735	1,675
WR	7	8			1	2
SR	1	35	1	72	51	48
LFR						
Ad-Clipped Chinook	7	10				
DS	9 (66-74; no expression)	11 (62-71 mm; 4 expressed)		2 (64 & 66 mm, no expression)		
Splittail	1	1		9		
Longfin	1					
SH (ad-clip)	8	3		1		2
SH (wild)						
W. Temp. (avg. °F)	53.6	52.3	56.8	53.4	54.0	51.0
Flows (avg. cfs)					11,615	9,781
Turbidity (avg. NTU)					31.7	25.6
WR/LFR Avg. CPUE					0.003	0.005
FR/SR Avg. CPUE					3.96	6.17

Key: FR = Fall run; LFR = Late-fall run; SR = Spring run; WR = Winter run; SH = Steelhead; DS = Delta smelt; LFS = Longfin smelt; SPTL = Splittail, CPUE = catch per unit of effort, ACT = acoustical tag

There are still some winter-run Chinook coming into the Delta (8 at the Sacramento trawl) and some that are leaving the Delta (7 at the Chipps Island trawl). The number of non-clipped steelhead has increased at the salvage facilities. The loss density for non-clipped steelhead increased to >3.0 fish/TAF on 3/20/12, further increased to >5.0 fish/TAF on 3/24/12, and peaked at 6.14 fish/TAF on 3/25/12. Also note that the first juvenile Chinook of the year (in the spring-run size range) was observed at the Mossdale trawl (San Joaquin River).

Fish Salvage Data (3/19–3/25): Reports are also posted at <ftp://ftp.delta.dfg.ca.gov/salvage>: and you can locate the table under folder “DOSS salvage tables” (you can also try <http://www.dfg.ca.gov/delta/apps/salvage/Default.aspx>) and click on “salvage FTP site”.

Chinook salmon¹: Winter-run-sized ad-clipped Chinook salmon were salvaged at the CVP (weekly expanded salvage = 26) and SWP (weekly expanded salvage = 8). Winter-run-sized non-clipped Chinook were salvaged at the CVP (weekly expanded salvage = 162) and SWP (weekly expanded salvage = 45). Spring-run-sized non-clipped Chinook were salvaged at the CVP (weekly expanded salvage = 32) and SWP (weekly expanded salvage = 4). Fall-run-sized non-clipped were salvaged at the SWP (weekly expanded salvage = 4), but not at the CVP. The water-year (10/1/2011 to present) salvage totals of all races of Chinook salmon at the CVP are 235 ad-clipped (loss = 180) and 464 non-clipped (loss = 373). The water-year salvage totals of all races of Chinook salmon at the SWP are 205 ad-clipped (loss = 912) and 298 non-clipped (loss = 1,305)

The second stage loss density trigger of 5.0 fish/TAF was exceeded 4 out of last 11 days of reporting (8.0 on 3/20, 9.6 on 3/21, 6.8 on 3/23, and 6.9 fish/TAF on 3/24).

Last week, most of the non-clipped Chinook that were salvaged were winter-run size. The water-year total salvaged non-clipped winter run = 677; total combined loss = 1,571, which is about 48% of the total winter-run Chinook salmon incidental take limit. A second pulse of winter-run is being observed at the salvage facilities right now so we may not yet be at the peak of salvage at the fish facilities.

We are currently in the OMR flow management action response during which 3 consecutive days for the Chinook loss density to be below the criteria are required to relax the OMR flows. Sunday, 3/25/12, was the first day of that 3-day period, with a loss density of 1.1 fish/TAF. Although not yet confirmed, preliminary results show that the loss-density on Monday (3/26/12) was most likely less than 5.0 fish/TAF.

Steelhead: Ad-clipped steelhead were salvaged at the CVP (weekly expanded salvage = 73) and SWP (weekly expanded salvage = 6). Non-clipped steelhead were salvaged at the CVP (weekly expanded salvage = 18) and SWP (weekly expanded salvage = 40). The water-year salvage totals of steelhead at the CVP are 259 ad-clipped and 39 non-clipped. The water-year salvage totals of steelhead at the SWP are 89 ad-clipped and 56 non-clipped. Steelhead also need to be monitored closely because they are beginning to increase in salvage. Loss density of steelhead at the fish facilities peaked on 3/25 at 6.14 fish/TAF. The first stage trigger for steelhead loss density in RPA Action IV.2.3 is 8.0 fish/TAF.

Delta smelt: Delta smelt were salvaged at the CVP (weekly expanded salvage = 4), but not at the SWP. The water-year salvage total of delta smelt at the CVP is 106; the total at the SWP is 92. No larval delta smelt <20 mm FL were reported in larval fish samples through 3/25/12 at the CVP and through 0900 hours on 3/22/2012 at the SWP.

Longfin smelt: Longfin smelt were salvaged at the CVP (weekly expanded salvage = 73) and SWP (weekly expanded salvage = 712). The water-year salvage total of longfin smelt at the CVP is 149; the total at the SWP is 906. Larval longfin smelt were found in larval fish samples

¹ Race of clipped salmon is determined solely by length of the fish at date criteria on date of salvage and should be treated as preliminary and may be subject to change when Reclamation and FWS reports the tag information on race.

at the CVP from 3/19 to 3/25/2012 and at the SWP from 1500 hours on 3/15/2012 to 0900 hours on 3/22/2012.

Splittail: No splittail were salvaged at either facility. The water-year salvage total of splittail at the CVP is 243; and 3,830 at the SWP.

White sturgeon: No white sturgeon were salvaged at either facility. The water-year salvage total of white sturgeon at the CVP is 64. No white sturgeon have been salvaged at the SWP this water year.

Green sturgeon: No green sturgeon have been salvaged at either facility this water year.

Coded Wire Tagged (CWT) Salvage and Loss (see table below)

Coleman Hatchery Late-Fall Run and Livingston Stone Winter-Run Chinook Loss at the Delta Fish Facilities, 2011/2012

Release Date	CWT Race	Release Site	Release Type	Confirmed Loss	Number Released	Total Entering Delta	% Loss ¹	First Concern Level	Second Concern Level	Date of First Loss	Date of Last Loss
12/16/2011	LF	Battle Creek	Production	117.70	394,700	n/a	0.030	n/a	n/a	1/11/2012	3/4/2012
12/23/2011	LF	Battle Creek	Spring Surrogate	2.92	62,400	n/a	0.005	0.5%	1.0%	1/18/2012	1/31/2012
1/3/2012	LF	Battle Creek	Production	583.65	448,600	n/a	0.130	n/a	n/a	1/19/2012	3/25/2012
1/13/2012	LF	Battle Creek	Spring Surrogate	52.17	80,800	n/a	0.065	0.5%	1.0%	1/31/2012	2/18/2012
1/20/2012	LF	Battle Creek	Spring Surrogate ²	97.16	20,000	n/a	0.486	n/a	n/a	1/30/2012	3/6/2012
2/9/2012	W	Redding	Production	0.00	194,000	96,525	0.000	0.5%	1.0%	-	-

For Chinook lost 10/1/2011 through 3/25/2012

SWP coded-wire tags read 10/1/2011 through 3/25/2012

CVP coded-wire tags read 10/1/2011 through 3/25/2012

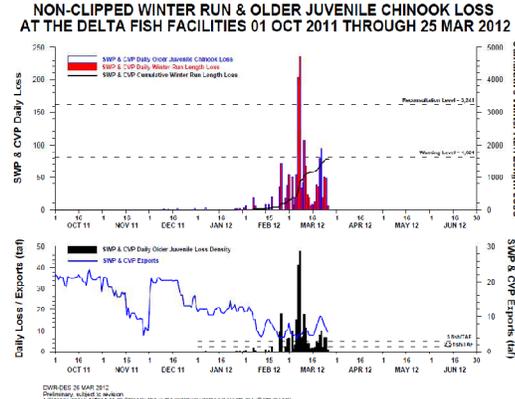
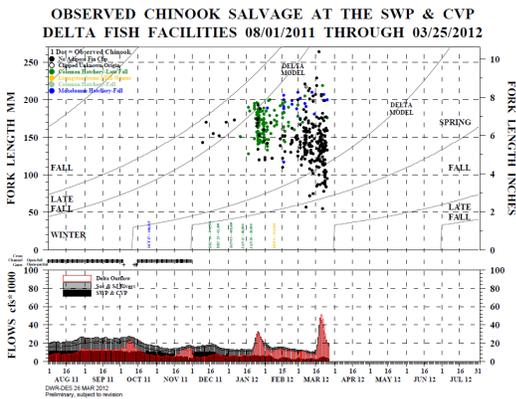
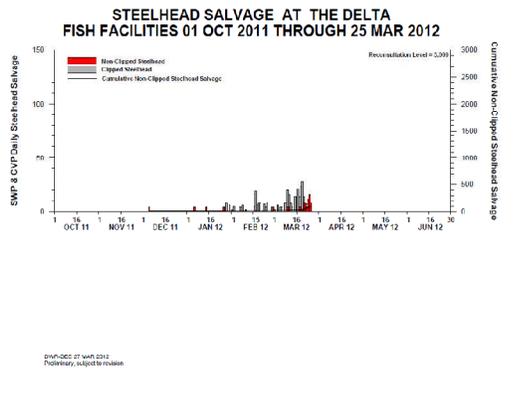
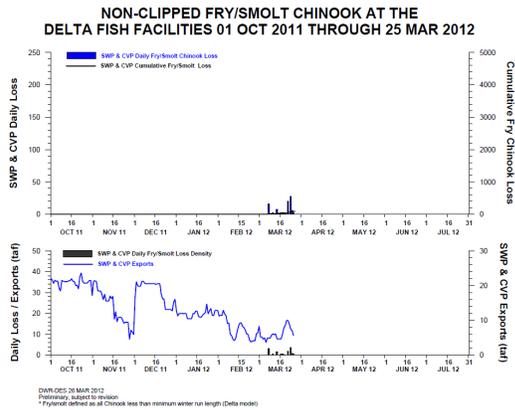
¹LF % Loss = (Confirmed Loss/Number Released)*100; W % Loss = (Confirmed Loss/Total Entering Delta)*100

²Because of the equipment malfunction that stranded a large proportion of the release in the gravel, this 3rd surrogate release is tracked for monitoring and information only and not for compliance with Action IV.2.3.

DWR-DES Revised 3/26/2012

Preliminary, subject to revision

Llaban presented some new graphs (see below) for steelhead, non-clipped fry/smolts, and clipped and non-clipped winter-run and older juvenile Chinook. There was no salvage of spring-run surrogates or winter-run hatchery Chinook. The percent loss is still less than 0.5% for all surrogate release groups. Late-fall Chinook from the second production release (1/3/12) from Coleman National Fish Hatchery were salvaged at the CVP. Some fall-run Chinook from the Mokelumne River were salvaged at both facilities. According to FWS CWT data sheets, none of the winter-run releases has shown up at any monitoring station. It should take only about 2 weeks for the fish to get from Redding to the Delta; however, in a drier water year, there is increased loss from predation and other factors and it takes them longer to emigrate with lower flows. The Mokelumne River Hatchery fall-run Chinook are remaining in the Delta since their release on 10/7/11 and are still showing up at the facilities (size range approximately 200 mm indicating yearling at release).



Operations (3/26/12)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	1,000 (tomorrow at 2,000 and 2,500 cfs on 3/29)	Jones Pumping Plant	2,500 (reduced to 1,000 tomorrow to target -2500 cfs OMR)
Reservoir Releases (cfs)			
Feather - Oroville	1,750	American - Nimbus	1,100
		Sacramento - Keswick	3,250
		Stanislaus - Goodwin	300 (Pulse flow will begin on 4/5/12)
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	987	San Luis (CVP)	761 (79)
Oroville	2,877	Shasta	3,579
New Melones		Folsom	622
Delta Operations			
DCC	Closed as of 12/1/11	Sacramento River at Freeport (cfs)	18,114
Outflow Index (cfs)	19,000	San Joaquin River (cfs) at	1,765

		Vernalis	
Total Delta Inflow (cfs)	21,422	OMR (daily) (cfs)	
Water Temperature (°F)		OMR 5 day (cfs)	-2,400
X2 (km)	65 (East of Port Chicago)	OMR 14 day (cfs)	-2,364
E/I (%)	16.1 (3-d avg)		

¹N/A means that the USGS data were not available; preliminary estimates based on Hutton equation to fill in the gaps.

Weather forecast: A significant increase in precipitation is forecast for this week in the northern half of the Central Valley. Freeport flows might go back up to the range of 30,000-40,000 cfs.

X2: DWR was asked about the projected X2 days in April. The initial assessment shows that the projects may be required to meet approximately 29 X2 days at Chipps Island in April, which can also be met through the carryover days accrued during March. Similarly, if X2 is triggered at Port Chicago, some carryover days from March can be used for April. In addition, with OMR criteria being more restrictive to the project exports in April, the likelihood of X2 days being met by EC will be very high.

Smelt Working Group (SWG) update: Current conditions are protective enough for delta smelt. No change in operations is necessary. SWG will meet again on 3/30/12 to address the concern that larvae delta smelt are being picked up in the surveys in the Sacramento River. SWG will have another recommendation on Friday. Given the current operational conditions, there is no concern for longfin. There was an increase at SWP to >100 longfin/day. The incidental take permit does not have a fixed take limit for larval or juvenile longfin smelt; however, there is a take limit for adults (i.e., 2,385 based on 5 times the index). Neither facility has observed any adults yet this year. Only under unusual hydraulic situations would the longfin take limit be realized. An OMR flow of -5,000 cfs is considered protective of juvenile longfin and anything more positive would be more protective.

Joint Stipulation OMR Technical Memo: Particle Tracking Model (PTM) results were sent to NMFS on March 26, 2012, in support of OMR management pursuant to the Joint Stipulation Technical Memorandum dated March 16, 2012 (tech memo). Byrne (NMFS) sent the initial results to DOSS on Monday (3/26/12). DWR modeled eight scenarios, summarized in the “Scenario Summary Table” on page 2 of the PTM data attachment. Based on expected hydrology and the latest information about the Stanislaus release schedule, DOSS based its OMR decision for the first week of April on scenarios A–D, which modeled 1,500 cfs at Vernalis.

Three possible refinements in evaluating the modeling results were identified and discussed by DOSS:

- (1) calculating the PTM screening criterion using particle fates at something other than 28 days, if not many particles have resolved fates by 28 days,

The tech memo used cumulative particle fate measured at the end of 28 days in the base formula for the PTM screening criterion, but allowed for the timeframe used to calculate the criterion to be amended through DOSS advice. Because <20% of the particles had reached any fate by 28 days in Scenarios A–C, NMFS requested information to calculate the PTM screening criterion at 84 days, and also on the day by which (for each scenario) 50% of the particles had resolved

fates. DOSS acknowledged that fish do not behave like particles, and emphasized that calculating the PTM screening criterion based on particle fates measured at 28–84 days does not suggest that steelhead take that long to migrate through the Delta. The point of the PTM runs is to compare hydrodynamics under different conditions. Particle fate is one way to compare scenarios, and DOSS discussed the merits of using fates measured at the same time (e.g., 28 vs. 84 days) or at the same “level of progression (e.g., the time at which a certain fraction, such as 50%, of particles have resolved fates). In recognition that DOSS needs to provide advice today for operations per the joint stipulation for the first week of April, DOSS agreed to (a) for the OMR level advised for April 1–7, calculate the PTM screening criterion based on particle fates reported at 28 days, and (b) request feedback from the DWR modelers regarding the timeframe used to calculate the PTM screening criterion used to compare scenarios. DOSS will consider using an alternative timeframe to calculate the PTM screening criterion on next week’s DOSS call rather than using the PTM model simulations based on 28 days that were received from DWR on 3/26/12 and not consider amending that requirement until next week.

(2) establishing a sideboard such that the most positive OMR scenario is that which results from the minimum exports for health and safety (1,500 cfs combined), rather than the most positive end of the OMR adaptive range, -1,250 cfs; and

The PTM results show that less than the minimum 1,500 cfs health-and-safety standard of combined exports would be required to attain an OMR of -1,250 cfs. DWR was concerned that the results implied that less than combined exports of 1,500 cfs were a possible operational scenario, and suggested that the OMR of -1,250 cfs scenario be replaced with a scenario with the OMR results from 1,500 cfs combined exports. DOSS suggested that the additional PTM runs not be done because: (a) results would not be available until probably the end of the day, after DOSS and WOMT had met; (b) the tech memo does not require modeling any specific export or OMR flow, but rather, three OMR levels within the adaptive range; (c) the results most likely would not change the resulting OMR that DOSS would advise; and (d) NMFS committed to reiterating in its determination that the minimum combined exports is 1,500 cfs for health and safety, regardless of the results from the PTM runs. The general consensus from DOSS was that for the PTM model runs for next week’s DOSS meeting, the most positive OMR scenario be what is generated by 1,500 cfs in combined exports.

(3) rounding of the target OMR flow to the nearest 100 cfs rather than 250 cfs.

NMFS included a rounding process for OMR specification in the tech memo (round to the nearest 250 cfs) in recognition that while the linear interpolation process (as described in Table 2b of the tech memo) specified a very precise OMR (e.g., the -1,846 cfs on p. 13 of the PTM data attachment), the PTM approach comparing different operational scenarios to a baseline scenario was not intended to capture hydrodynamic differences at that level of precision. In combination with the flexibility in achieving a target OMR flow, that is, no more than 25% more negative than the target requirement flow for the 5-day average flow, rounding in the positive direction to the nearest 100 cfs increment provides a reasonable level of precision in capturing modeled differences between operational scenarios. DOSS agreed to round in the positive direction, in the direction hypothesized to provide greater protection to San Joaquin basin steelhead. The precise OMR target based on interpolation of the PTM results was -1,846 cfs; the rounded OMR target level is thus -1,800 cfs, based on the adjusted rounding process.

DOSS advice to WOMT and NMFS:

Action IV.2.3 on OMR flow management: DOSS advises continuing to target no more negative than -2,500 cfs OMR flows until there are 3 consecutive days of combined older juvenile Chinook loss density below 5.0 fish/TAF. If Monday's (3/26/12) and Tuesday's (3/27/12) combined loss densities are below 5.0 fish/TAF, the projects may relax the OMR flows as early as Wednesday 3/28/12.

Joint stipulation and technical memorandum in lieu of Action IV.2.1: Per the process described in the tech memo, and the data for Scenarios A–D provided by DWR in Attachment 1, DOSS advises that, from April 1 to April 7, 2012, the projects be managed to an OMR level of -1,800 cfs. The 5-day running average of OMR flow during this period shall be no more than 25% more negative than -1,800 cfs (i.e., -2,250 cfs). DOSS also advises that the OMR flow value should be rounded to the nearest 100 cfs in the positive direction.

Next meeting: The next regular DOSS conference call will be on 4/3/12 at 9:00 a.m.

PRELIMINARY RESULTS, SUBJECT TO REVISIONS

PTM Simulation Results Using DSM2

Prepared by:
Delta Compliance & Modeling Section
Operations Control Office
Division of Operations & Maintenance

Prepared for:
DOSS in regards to the “Technical Memorandum to Guide
Adaptive Management of OMR during April and May 2012 for the
Protection of listed San Joaquin Basin Steelhead”

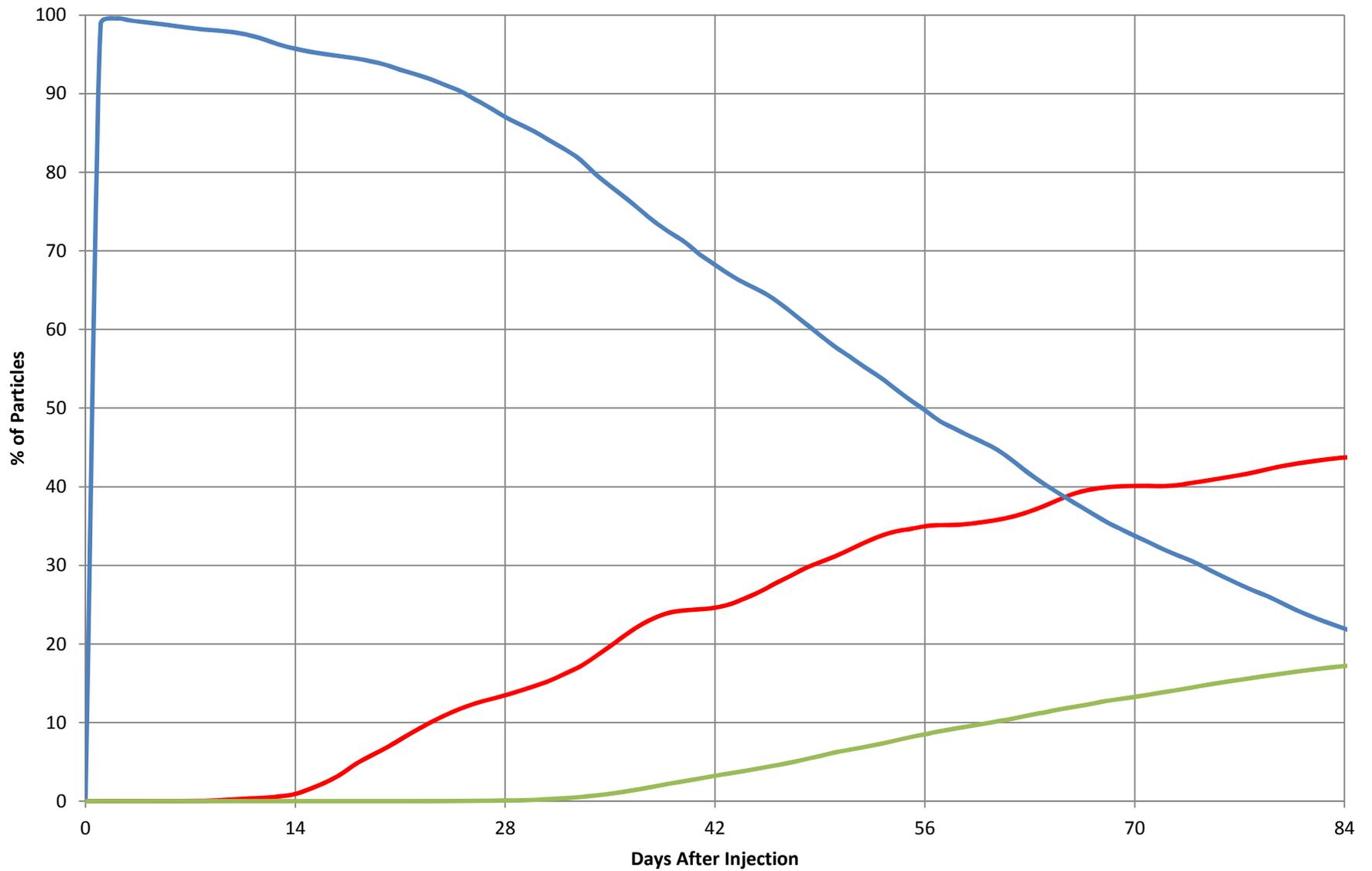
March 26, 2012

Scenario Summary Table

Scenario ID	Control (I:E or OMR)	SJR at Vernalis	Combined Exports	OMR (Index)	OMR (DSM2)	HOR Barrier
A	1 to 1	1500	1500	-976	-1050	Out
B	-1250	1500	1090	-1248	-1147	In
C	-2000	1500	1850	-1963	-1837	In
D	-3500	1500	3450	-3467	-3294	In
E	1 to 1	2500	2500	-1416	-1475	Out
F	-1250	2500	1175	-1249	-1091	In
G	-2000	2500	1950	-1978	-1804	In
H	-3500	2500	3550	-3482	-3263	In

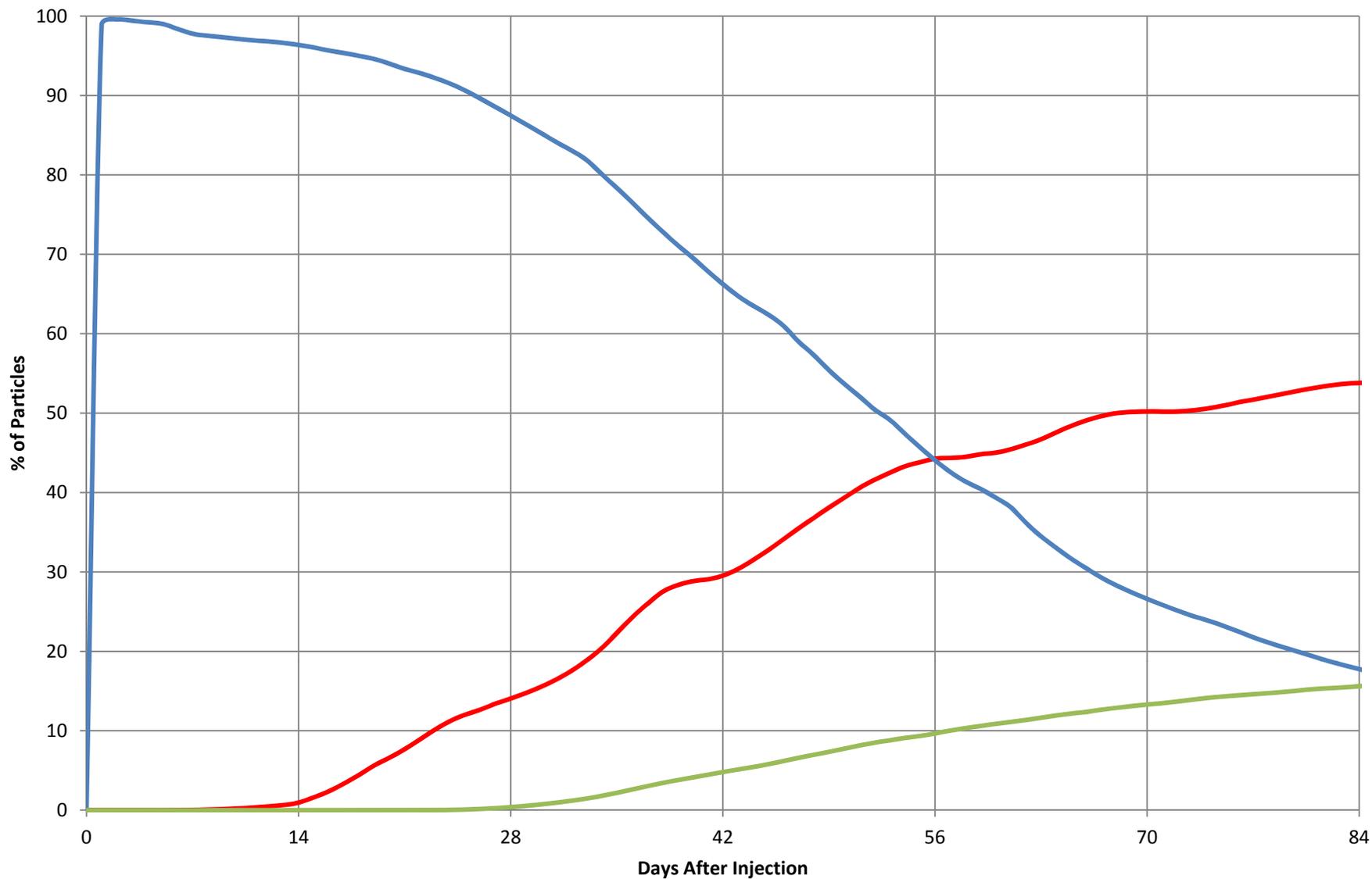
Time Series Graphs

Scenario A



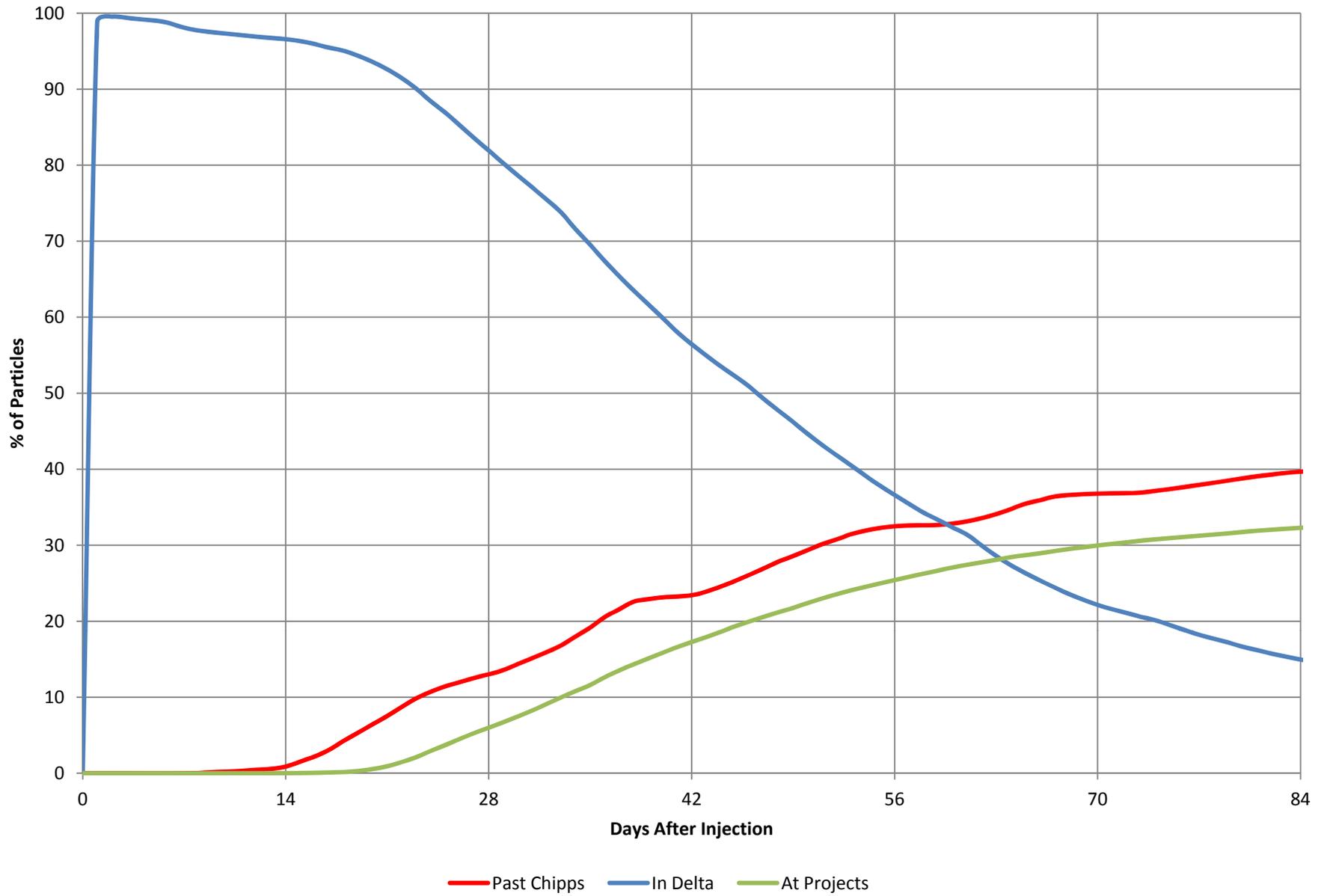
— Past Chipps — In Delta — At Projects

Scenario B

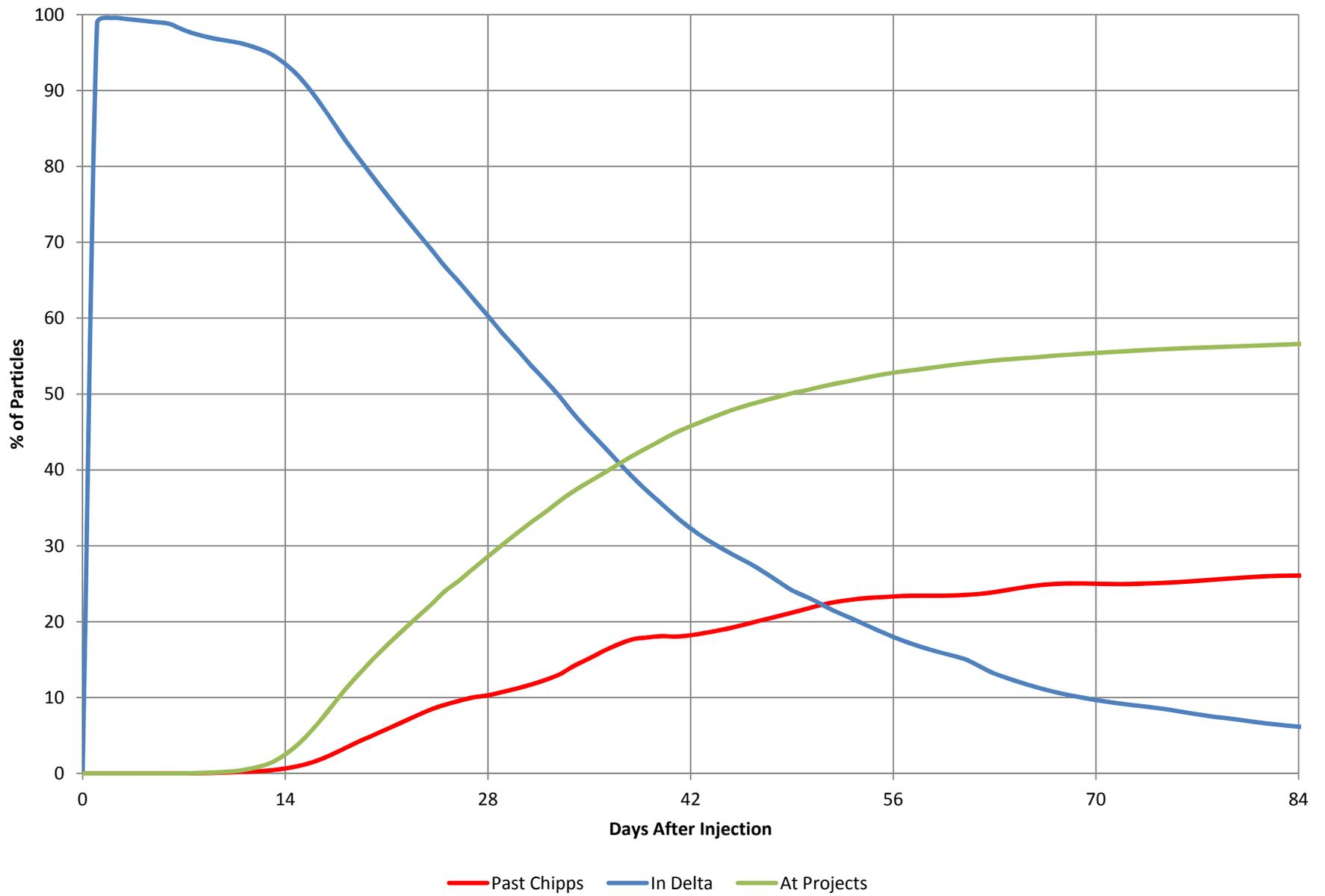


— Past Chipps — In Delta — At Projects

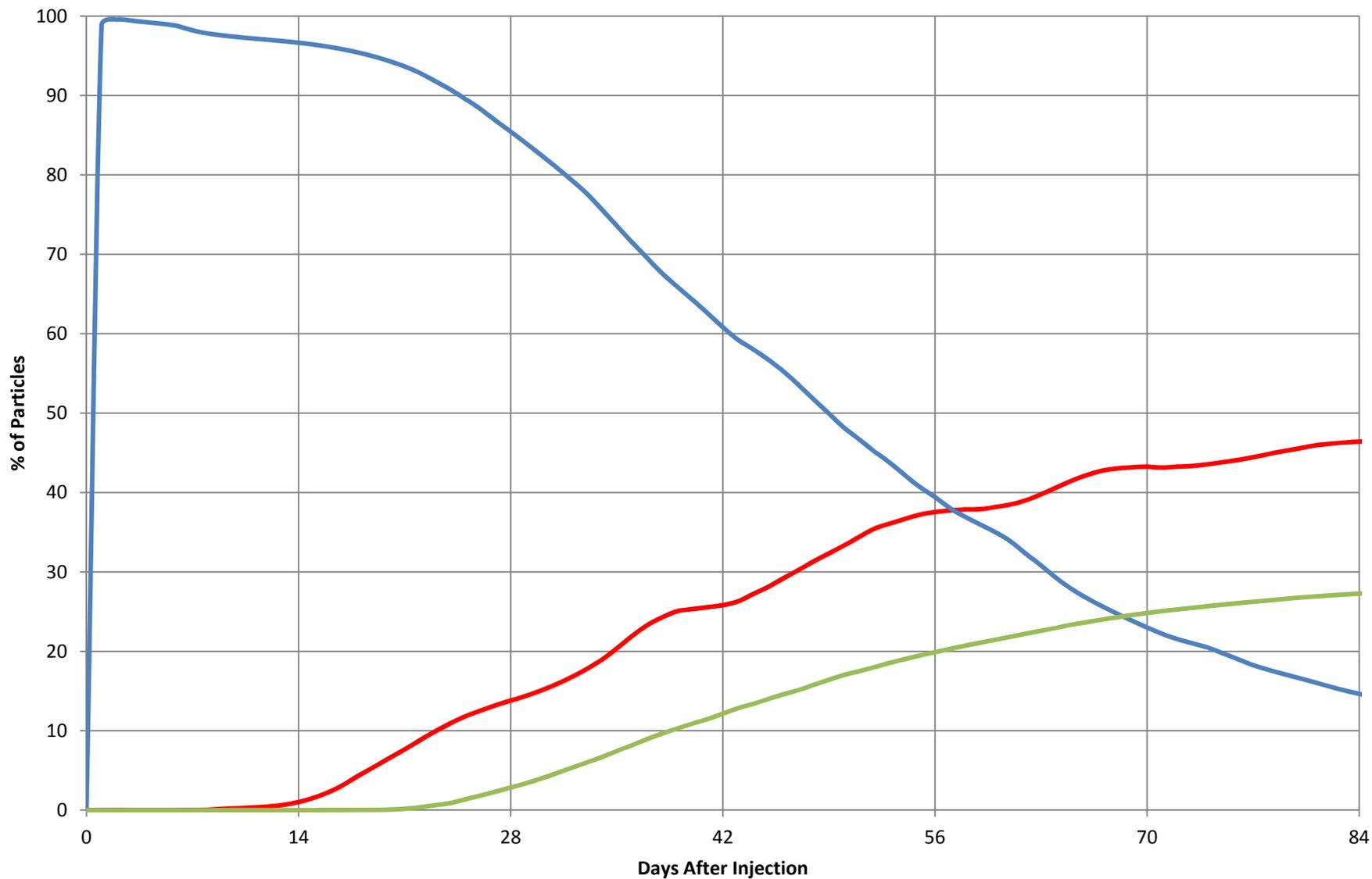
Scenario C



Scenario D

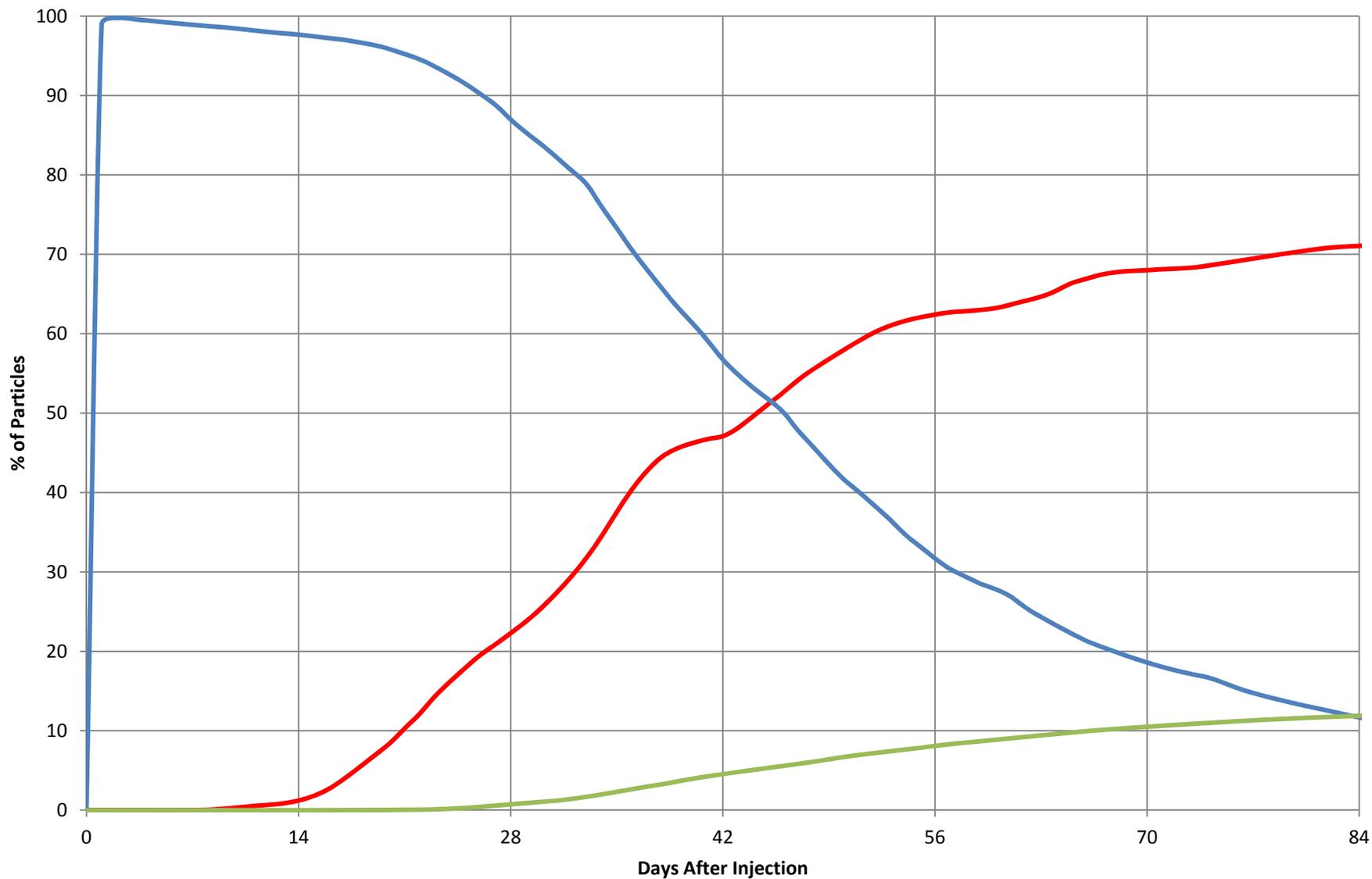


Scenario E



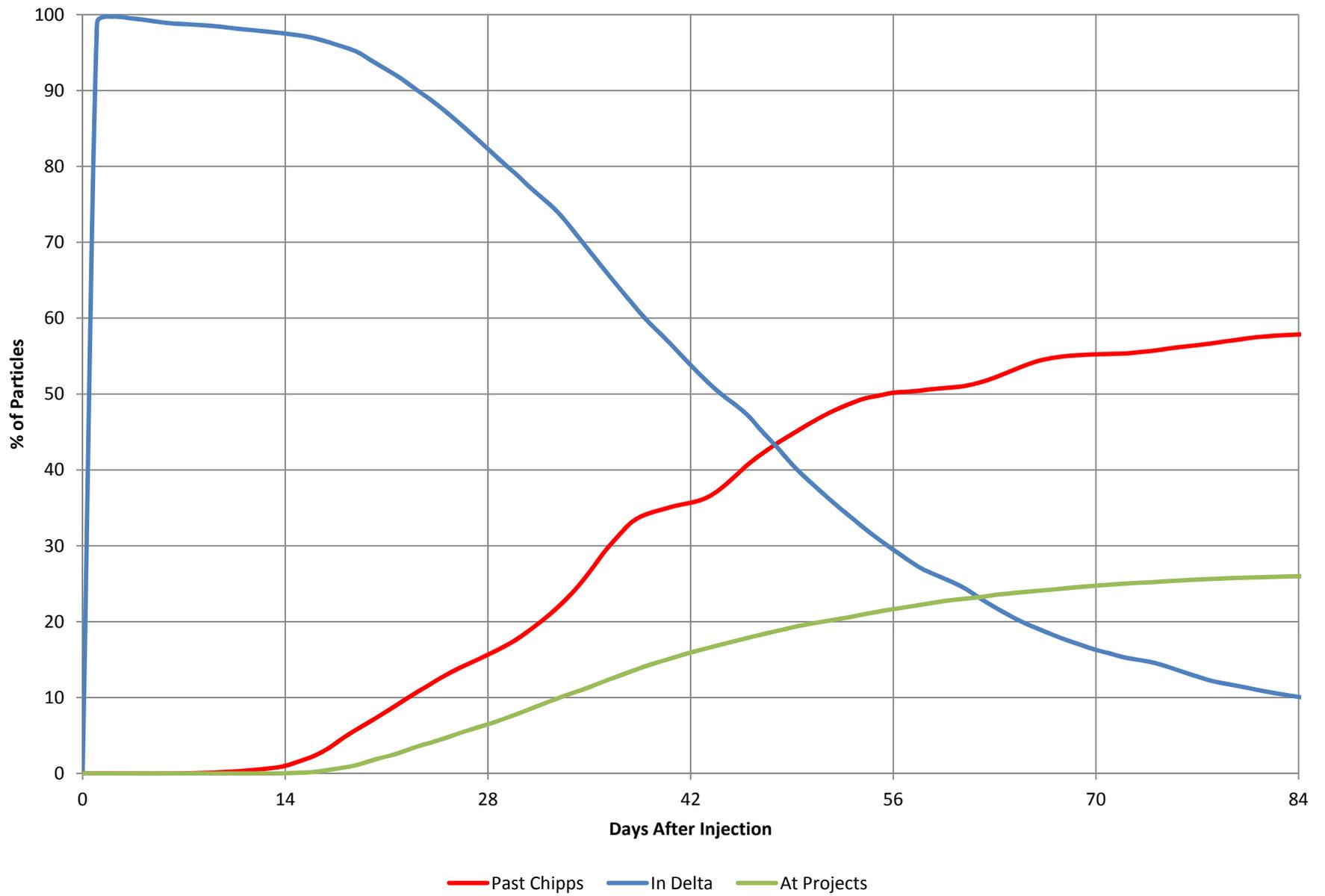
— Past Chipps — In Delta — At Projects

Scenario F

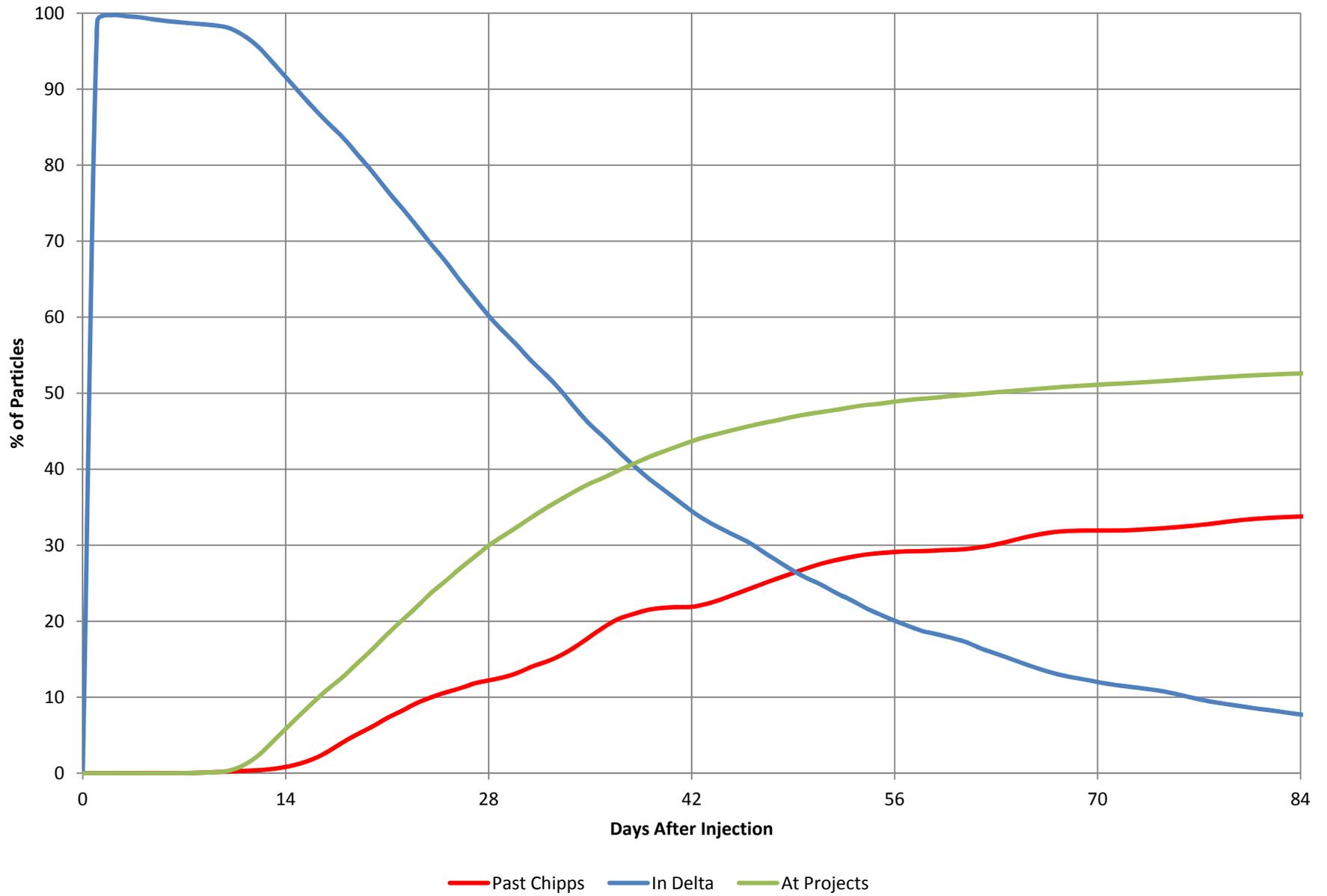


— Past Chipps — In Delta — At Projects

Scenario G



Scenario H

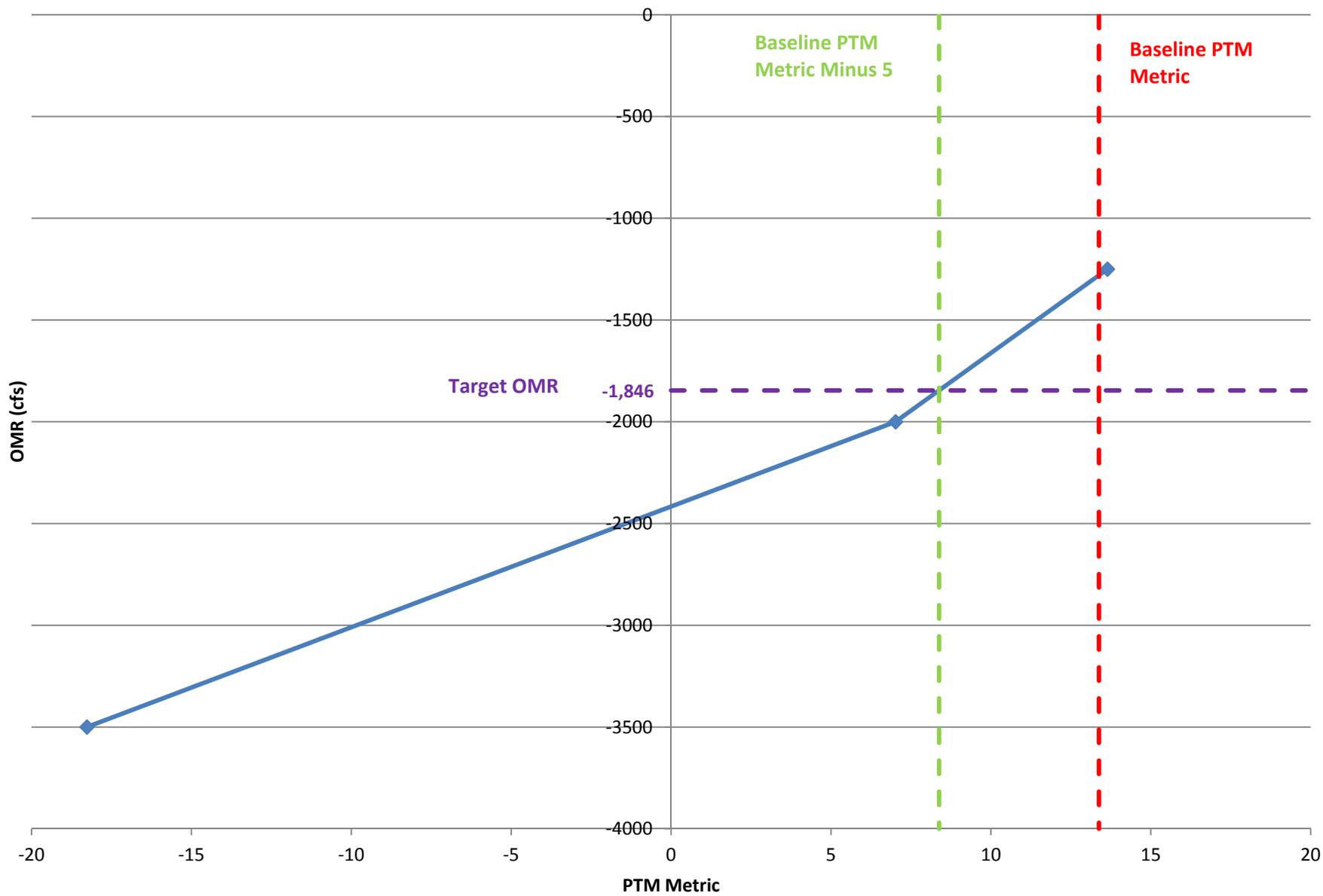


Result Summary

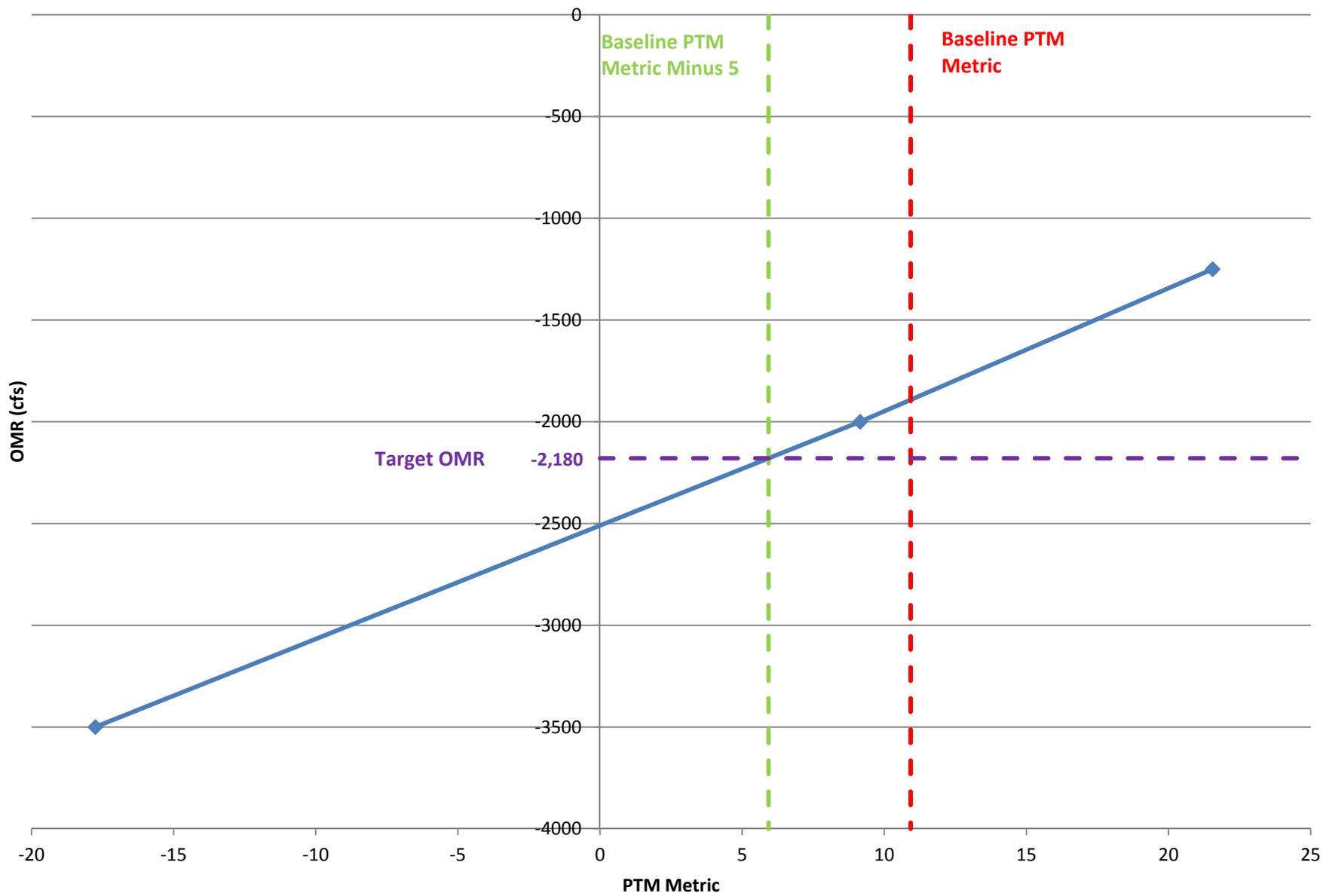
Scenario ID	% past Chipps at 28 days	% to CVP at 28 days	% to SWP at 28 days	PTM metric at 28 days
A	13	0	0	13
B	14	0	0	14
C	13	3	3	7
D	10	13	16	-18
E	14	1	2	11
F	22	1	0	22
G	16	4	3	9
H	12	15	15	-18

PTM metric = % past Chipps at 28 days - % to CVP at 28 days - % to SWP at 28 days

OMR Flows and PTM Metric with San Joaquin River at 1500 cfs

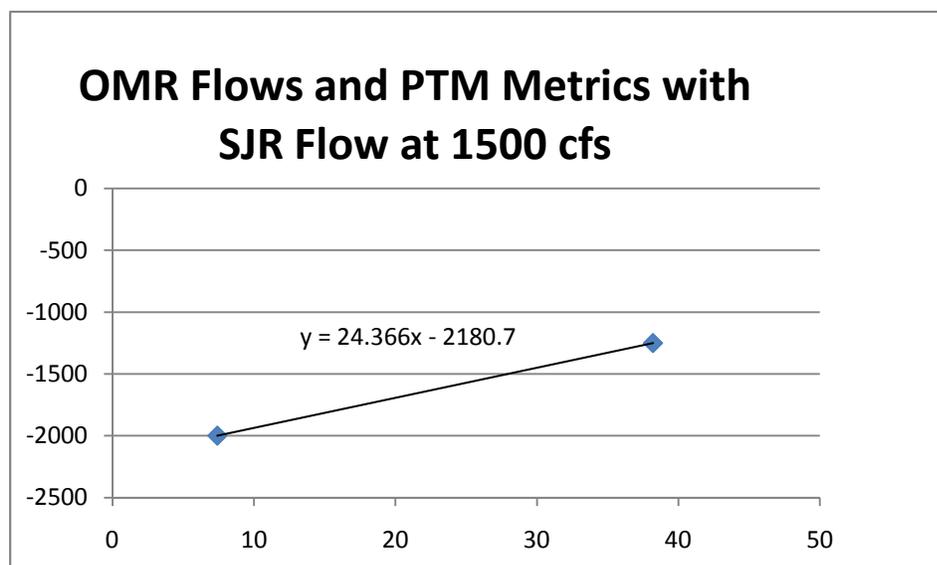
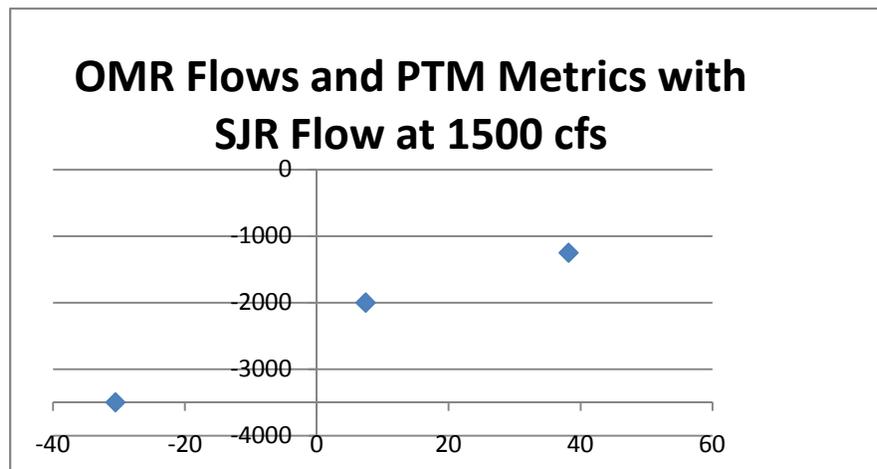


OMR Flows and PTM Metric with San Joaquin River at 2500 cfs



Scenario ID	% past Chipps at 84 days	% to CVP at 84 days	% to SWP at 84 days	PTM metric at 84 days	
A	44	6	11	27	
B	54	12	4	38	-1250
C	40	12	20	7	-2000
D	26	24	33	-31	-3500
E	46	5	23	19	
F	71	7	4	59	-1250
G	58	11	15	32	-2000
H	34	24	29	-19	-3500

Baseline PTM metric (Scenario A) – 5 = 22. Based on equation in second graph, the OMR associated with that PTM metric is: $24.366 \times 22 - 2180.7 = -1645$, or (rounded to the nearest 250 cfs increment), -1,750.



Scenario ID	No. of Days to 50%	% past Chippis at 50%	% to CVP at 50%	% to SWP at 50%	PTM Metric at 50%	
A	56	35	3	5	26	
B	53	42	7	2	34	-1250
C	47	27	8	12	6	-2000
D	33	13	16	20	-23	-3500
E	49	32	3	13	16	
F	47	54	4	4	46	-1250
G	45	39	8	10	22	-2000
H	34	17	18	20	-20	-3500

Baseline PTM metric (Scenario A) – 5 = 21. Based on equation in second graph, the OMR associated with that PTM metric is: $27.402 \times 21 - 2173.3 = -1598$, or (rounded to the nearest 250 cfs increment), -1,500.

