Appendix I, Old and Middle River Flow Management

Attachment I.7 ECO-PTM

I.7.1 Model Overview

ECO-PTM is an enhanced version of the particle tracking model (PTM) that includes user-imparted swimming behaviors for the simulated neutrally buoyant particles (Pope et al. in review). The PTM is a module of the Delta Simulation Model 2 (DSM2) that uses hydrodynamics simulated by DSM2 to simulate the movement of neutrally buoyant particles in the Delta. The DSM2 model, in turn, relies on hydrological inputs generated by CalSim (CalSim II or 3). Additional swimming behaviors assigned to the neutrally buoyant particles in ECO-PTM include upstream or downstream movement, holding behaviors, and swimming velocity at 15-minute intervals; these behaviors were parameterized by calibrating ECO-PTM to observed travel time data through multiple reaches in the Delta from acoustic telemetry studies on Chinook salmon smolts. ECO-PTM also includes probabilistic particle routing at several junctions along the mainstem of the Sacramento River (i.e., Sutter Bypass, Steamboat Slough, DCC, and Georgiana Slough), informed by observed routing data from acoustic telemetry studies on Chinook salmon smolts. Furthermore, the model characterizes the following particles fates: proportional routing through either the Sutter Bypass, Steamboat Slough, DCC, Georgiana Slough, or mainstem Sacramento River, travel times through each route based on the timing of both entry into each reach and exit past Chipps Island (i.e., only particles that exit the Delta are included), and survival. Survival for each reach is modeled using an XT model, in which survival is modeled as a function of travel time and reach length, that was parameterized using estimated survival from acoustic telemetry data.

I.7.2 Methods

I.7.2.1 Model Runs

ECO-PTM was run by releasing 9600 particles from Sacramento River at Freeport at the start of each month between December and March under the DSM2-Hydro conditions for that month.

ECO-PTM was used to estimate routing and survival for each inflow bin and OMR bin using modeled monthly CalSim 3 scenarios: EXP1, EXP3, NAA, Alternative 1, four phases of Alternative 2 (Alternative 2 With TUCP Without VA, Alternative 2 Without TUCP Without VA, Alternative 2 Without TUCP Delta VA, Alternative 2 Without TUCP Systemwide VA), Alternative 3, and Alternative 4.

Junctions included: Sutter Slough, Steamboat Slough, Sacramento River, Georgiana Slough, the Delta Cross Channel, and combined (for survival estimates only). Sacramento / San Joaquin Inflow and OMR bins were used as groupings for predicted routing and survival values. For detailed information on Sacramento / San Joaquin Inflow and OMR bins, refer to Appendix I – Old and Middle River Flow Management.

The following model outputs were summarized for each modeled scenario and reach: routing and survival grouped by OMR bin and by Inflow bin.

I.7.2.2 Model Capacity and Assumptions

ECO-PTM (Wang 2019) is an individual-based juvenile salmon migration model that tracks the movement of individual fish particles as they migrate through the Delta. The model is developed at California Department of Water Resources (DWR), in collaboration with the US Geological Survey (USGS).

The model incorporates three key aspects of salmon migration: swimming, routing, and survival.

- **Swimming Behavior:** The swimming behavior simulated the tidal confusion (swimming in the opposite direction toward the ocean), diel holding (resting during the day), selective tidal stream transport (holding during flood tides), and differential swimming velocities at different times for different juvenile salmonids.
- **Routing Behavior:** At junctions, the model employs hydrodynamic data and other factors to calculate routing probabilities the salmon might take. Three models are implemented:
    - *Statistical Model based on the Critical Streakline Entrainment Zone:* This model considers the fish distribution across the channel, streakline location, and fish positions relative to the streakline. This model is used at Georgiana Slough Junction when the flows entering the junction are greater than 14,000cfs.
    - *Generalized Linear Model (GLM):* This model considers the flow rate, flow rate change, and flow direction in the Sacramento River and the diversion flows. The model is applied to the Georgiana Slough junction when the incoming flow rate is less than 14,000cfs and also to Delta Cross Channel (DCC).
    - *Similarly Structured GLM:* This is used applied to the Sutter Slough and Stream Slough.
- The **survival behavior** module uses an XT predator-prey model that associates the survival of migration juvenile salmon as a function of both distance traveled (X) and travel time (T).

The ECO-PTM model was calibrated using acoustic telemetry data from 17 groups of juvenile Chinook salmon released into the Delta between 2007 and 2011. A stochastic optimization tool, Particle Swarm Optimization, is used to calibrate the swimming behavior parameters. The goal of the calibration was to understand how travel time, migration routing, and survival vary among reaches in the Delta.

Currently, the ECO-PTM model is calibrated for the north delta area, but not for the south delta area.

ECO-PTM modeling results serve as a proxy for juvenile Salmonids, particularly Chinook salmon.

I.7.2.3 Code and Data Repository

Data (DSM2 Hydro result file as input files, model parameter input files, python code to run the ECO-PTM model, python code to postprocess ECO-PTM results, and result files) are available upon request.

I.7.3 Results

I.7.3.1 BA narrative

Mean December through March routing estimates are highest in the Sacramento River compared with Sutter, Steamboat, or Georgiana slough routes and ranged from 50% (OMR bin -5,000 under Alternative 2 without TUCP Delta VA) to 64% (OMR bin -2,000 under Alternative 2 with TUCP without VA) and from 41% (Inflow bin "hihi" under the No Action Alternative and all phases of Alternative 2) to 70% (Inflow bin "lohi" under all phases of Alternative 2 except Alternative 2 without TUCP All VA). Mean December through March survival estimates are highest through Steamboat Slough followed by the Sacramento River in all OMR bins for the No Action Alternative and all four phases of Alternative 2 ranging from 46% (OMR bin -2,000 under Alternative 2 without TUCP without VA and with TUCP without VA) to 58% (OMR bin -5,000 under Alternative 2 without TUCP Delta VA and without TUCP All VA) and from 40% (Inflow bin "lohi" Alternative 2 without TUCP All VA) to 67% (Inflow bin "hihi" the No Action Alternative and Alternative 2 without TUCP without VA and without TUCP Delta VA). Projections for mean December through March routing and survival through the Delta Cross Channel are 0% because the Delta Cross Channel gates remain closed during that period.

I.7.3.1.1 Routing, OMR Bins (Table I.7-1, Figure I.7-1 through Figure I.7-4):

The Sacramento River route had the greatest estimated route entrainment for all OMR bins. For the least negative OMR bin (-2,000), mean routing estimates through the Sacramento River ranged from 57% (Alternative 2 without TUCP Delta VA and without TUCP All VA) to 64% (Alternative 2 with TUCP without VA). For the most negative OMR bin (-5,500), mean routing estimates through the Sacramento River ranged from 60% (No Action Alternative, all phases of Alternative 2 except Alternative 2 without TUCP Delta VA) to 61% (Alternative 2 without TUCP Delta VA). For the -5,500 and -2,000 OMR bins, mean routing estimates are greater through Georgiana Slough than Sutter and Steamboat sloughs across all phases of Alternative 2 and the No Action Alternative both (range 11% - 18%) and across all phases of Alternative 2 except Alternative 2 without TUCP All VA (range 10% - 16%), respectively. For the -5,000 OMR bin, mean routing estimates follow an opposite pattern and are greater through Steamboat and Sutter sloughs than Georgiana Slough across all phases of Alternative 2 and the No Action Alternative (range 13% - 19%). for OMR bin -3,500, the highest and lowest mean routing estimates for Steamboat, Sutter, and Georgiana slough vary among alternatives and do not have a clear pattern like the other four OMR bins (range 14% - 17%).

I.7.3.1.2 Survival, OMR Bins (Table I.7-3, Figure I.7-9 through Figure I.7-12):

Mean through-Delta survival estimates were similar across alternatives for all OMR bins except -2,000 where there is more variation. Mean survival estimates through Steamboat Slough for the least negative OMR bin (-2,000) ranged from 46% (Alternative 2 without TUCP without VA and with TUCP without VA) to 52% (Alternative 2 without TUCP All VA). Mean survival estimates through Steamboat Slough for the most negative OMR bin (-5,500) were similar across all alternatives and ranged from 48% - 49%. For OMR bin -5,500, mean survival estimates are greater or equal through the Sacramento River compared to Sutter Slough and Georgiana Slough under all phases of Alternative and the No Action Alternative ranging from 20%-21% (Georgiana Slough) to 40%-42% (Sacramento River and Sutter Slough). For OMR bin -5,000, mean survival estimates are greater through the Sacramento River compared to Sutter Slough and Georgiana Slough for all phases of Alternative and the No Action Alternative ranging from 25%-27% (Georgiana Slough) and 49%-50% (Sutter Slough) to 52%-54% (Sacramento River). For OMR bin -3,500, mean survival estimates are greater through the Sacramento River compared to Sutter Slough and Georgiana Slough under all phases of Alternative and the No Action Alternative ranging from 24%-25% (Georgiana Slough) to 45%-51% (Sacramento River and Sutter Slough). For OMR bin -2,000, mean survival estimates are greater or equal through the Sacramento River compared to Sutter Slough and Georgiana Slough for all phases of Alternative and the No Action Alternative from 18%-22% (Georgiana Slough) to 37%-46% (Sacramento River and Sutter Slough).

I.7.3.1.3 Routing, Inflow Bins (Table I.7-5, Figure I.7-17 through Figure I.7-25):

For Inflow bin "hihi" (high inflow from both Sacramento River and San Joaquin River), mean routing estimates through the Sacramento River was 41% under the No Action Alternative and all phases of Alternative 2. For Inflow bin "lolo" (low inflow from both Sacramento River and San Joaquin River), mean routing estimates through the Sacramento River ranged from 64% (No Action Alternative and Alternative 2 without TUCP without VA and with TUCP without VA) to 65% (Alternative 2 without TUCP Delta VA and without TUCP All VA). For Inflow bin "hilo" (high inflow from Sacramento River and low inflow from San Joaquin River), mean routing estimates through the Sacramento River was 50% under the No Action Alternative and all phases of Alternative 2. For Inflow bin "lohi" (low inflow from Sacramento River and high inflow from San Joaquin River), mean routing estimates through the Sacramento River ranged from 69% (No Action Alternative and Alternative 2 without TUCP All VA) to 70% (Alternative 2 without TUCP without VA, with TUCP without VA, and without TUCP Delta VA). Excluding Sacramento River, Under No Action Alternative and all phases of Alternative 2, when inflow from the Sacramento River is high (Inflow bins "hihi", "hilo", and "himed"), mean routing is greatest in the Sacramento River and greater into Sutter and Steamboat sloughs than Georgiana Slough. Excluding Sacramento River, Under No Action Alternative and all phases of Alternative 2, when inflow from the Sacramento River is medium or low (Inflow bins "medlo", "medmed", "medhi", "lolo", "lomed", and "lohi"), mean routing is greatest in the Sacramento River and Georgiana Slough is greater than Sutter or Steamboat sloughs. For Georgiana Slough, the lowest routing was estimated in the Inflow bin "hihi" and is equal for the No Action Alternative and all phases of Alternative 2 (9%) while the greatest routing (19%) is in the Inflow bin "lomed" for No Action Alternative and all phases of Alternative 2 and the Inflow bin "medlo" under the No Action Alternative. For Sutter Slough, the lowest routing is in Inflow bin "lohi" under the No Action Alternative and all phases of Alternative 2 (range 8%-9%) while the greatest routing is in Inflow

"hihi" for No Action Alternative and all phases of Alternative 2 (24%). For Steamboat Slough, the lowest routing is in Inflow bin "lohi" under the No Action Alternative and all phases of Alternative 2 (range 7-8%) while the greatest routing is in Inflow "hihi" for Alternative 2 without TUCP without VA (27%).

I.7.3.1.4 Survival, Inflow Bins (Table I.7-7, Figure I.7-35 through Figure I.7-43):

For Steamboat Slough, mean survival estimates for Inflow bin "hihi" (high inflow from both Sacramento River and San Joaquin River) ranged from 66% (Alternative 2 with TUCP without VA, and without TUCP without VA) to 67% (No Action Alternative, Alternative 2 without TUCP without VA, and without TUCP Delta VA). For Steamboat Slough, mean survival estimates for Inflow bin "lolo" (low inflow from both Sacramento River and San Joaquin River) ranged from 45% (Alternative 2 without TUCP All VA) to 46% (No Action Alternative and remaining three phases of Alternative 2). For Steamboat Slough, mean survival estimates for Inflow bin "hilo" (high inflow from Sacramento River and low inflow from San Joaquin River) ranged from 59%-60% under the No Action Alternative and all phases of Alternative 2. For Steamboat Slough, mean survival estimates for Inflow bin "lohi" (low inflow from Sacramento River and high inflow from San Joaquin River) ranged from 40% (Alternative 2 without TUCP All VA) to 41% (No Action Alternative and three other phases of Alternative 2). When inflow from the Sacramento River is high (Inflow bins "hihi", "hilo", and "himed"), mean survival is greatest through Steamboat Slough, then Sutter Slough or the Sacramento River, and lowest through Georgiana Slough in the No Action Alternative and all phases of Alternative 2. When inflow from the Sacramento River is medium or low (Inflow bins "medlo", "medmed", "medhi", "lolo", "lomed", and "lohi"), mean survival is greatest in Steamboat Slough, then Sacramento River and Sutter Slough routes, and Georgiana Slough mean survival is the lowest in the No Action Alternative and all phases of Alternative 2. In Sutter Slough, the lowest survival is in Inflow bin "lohi" under Alternative 2 without TUCP with VA and without TUCP Delta VA (30%) while the greatest survival is in "hihi" for Alternative 2 without TUCP without VA (59%). In the Sacramento River, the lowest survival is in Inflow bin "lohi" under the No Action Alternative (27%), while the greatest survival is in "hihi" for No Action, Alternative 2 without TUCP without VA, without TUCP Delta VA, and without TUCP All VA (64%). In the Georgiana Slough route, the lowest survival is in Inflow bin "lohi" under Alternative 2 without TUCP without VA (12%), while the greatest survival is in "hihi" for all four phases of Alternative 2 (33%). For through-Delta survival, the lowest mean survival is in “lohi” under No Action Alternative and 4 phases of Alternative 2 (27%), while the greatest mean survival is in “hihi” under 3 of the 4 phases of Alternative 2 excluding Alternative 2 with TUCP without VA (61%).

For discussion purposes, ECO-PTM modeling results serve as a proxy for juvenile Salmonids.

Under all OMR bin conditions, the median routing of particles through the Sacramento River route remains relatively consistent (about 55% to 65% for the No Action Alternative and four phases of Alternative 2). Under all OMR conditions, the median routing of particles through Sutter Slough, Steamboat Slough, and Georgiana Slough remains consistent but lower (about 10% to 20% for the No Action Alternative and four phases of Alternative 2). These results suggest varying OMR conditions may have a small impact on the percent of particles routed through the discussed Delta pathways. Under model conditions, the median percent of particles routed through the Sacramento River is consistently higher than the median percent of particles routed through other routes.

Under all OMR bin conditions, the median survival of particles through the Steamboat Slough route and Sacramento River route remain higher than Sutter Slough and Georgiana Slough. However, median survival of particles through Sutter Slough, Steamboat Slough, and Georgiana Slough remains relatively close in value. These results suggest varying OMR conditions may have an impact on the survival percent of particles. Under model conditions, the median percent survival of particles routed through Georgiana Slough is consistently lower than the median percent survival of particles routed through other routes.

I.7.3.2 EIS narrative

I.7.3.2.1 Routing, OMR Bins (Table I.7-2, Figure I.7-5 through Figure I.7-8):

Under OMR bin -5,500 conditions, mean predicted Sutter Slough routing ranged from 55% greater (Alternative 1, 17% routing) to 2% lower (Alternative 2 without TUCP Delta VA, 10% routing) compared with the No Action Alternative.

Under OMR bin -5,000 conditions, mean predicted Sutter Slough routing ranged from 23% greater (Alternative 3, 20% routing) to 18% lower (Alternative 1, 13% routing) compared with the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted Sutter Slough routing ranged from 7% lower (Alternative 2 with TUCP without VA, 15% routing) to 23% lower (Alternative 1, 12% routing) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean predicted Sutter Slough routing ranged from 21% greater (Alternative 2 without TUCP All VA, 13% routing) to 8% lower (Alternative 2 with TUCP without VA and Alternative 4, 10% routing) compared with the No Action Alternative.

Under OMR bin -5,500 cfs conditions, mean predicted Steamboat Slough routing ranged from 63% greater (Alternative 1, 18% routing) compared with the No Action Alternative to 1% greater (Alternative 2 without TUCP All VA and Alternative 3, 11% routing) compared with the No Action Alternative.

Under OMR bin -5,000 cfs conditions, mean predicted Steamboat Slough routing ranged from 25% greater (Alternative 3, 23% routing) to 26% lower (Alternative 1, 13% routing) compared with the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted Steamboat Slough routing ranged from 4% lower (Alternative 2 with TUCP without VA, 17% routing) to 30% lower (Alternative 1, 12% routing) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean predicted Steamboat Slough routing ranged from 29% greater (Alternative 2 without TUCP All VA, 14% routing) to 12% lower (Alternative 4, 10% routing) compared with the No Action Alternative.

Under OMR bin -5,500 cfs conditions, mean predicted Sacramento River routing ranged from 16% less (Alternative 1, 50% routing) compared with the No Action Alternative to equal to (Alternative 3, all phases of Alternative 2, 60% routing) the No Action Alternative.

Under OMR bin -5,000 cfs conditions, mean predicted Sacramento River routing ranged from 7% greater (Alternative 1, 56% routing) to 11% lower (Alternative 3, 46% routing) compared with the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted Sacramento River routing ranged from 10% greater (Alternative 1, 57% routing) to 2% greater (Alternative 2 without TUCP without VA and with TUCP without VA, 53% routing) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean predicted Sacramento River routing ranged from 3% greater (Alternative 4, 64% routing) to 9% lower (Alternative 2 without TUCP All VA, 57% routing) compared with the No Action Alternative.

Under OMR bin -5,500 cfs conditions, mean predicted Georgiana Slough routing ranged from 34% lower (Alternative 1, 12% routing) compared with the No Action Alternative to equal to (Alternative 2 with TUCP without VA and Alternative 2 without TUCP Delta VA, 18% routing) the No Action Alternative.

Under OMR bin -5,000 cfs conditions, mean predicted Georgiana Slough routing ranged from 18% lower (Alternative 3, 11% routing) compared with the No Action Alternative to equal to (Alternative 1, 14% routing) the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted Georgiana slough routing ranged from 12% greater (Alternative 4, 16% routing) to 10% lower (Alternative 1, 13% routing) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean predicted Georgiana Slough routing ranged from 5% greater (Alternative 2 with TUCP without VA, 16% routing) to 26% lower (Alternative 1, 11% routing) compared with the No Action Alternative.

I.7.3.2.2 Survival, OMR Bins (Table I.7-4, Figure I.7-13 through Figure I.7-16):

Under OMR bin -5,500 cfs conditions, mean predicted Sutter Slough survival ranged from 19% greater (Alternative 1, 49% survival) to equal to (Alternative 2 without TUCP Delta VA, 41% survival) the No Action Alternative.

Under OMR bin -5,000 cfs conditions, mean predicted Sutter Slough survival ranged from 10% greater (Alternative 3, 53% survival) to 14% lower (Alternative 1, 42% survival) compared with the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted Sutter Slough survival ranged from 1% lower (Alternative 2 without TUCP without VA and with TUCP without VA, 46% survival) to 16% lower (Alternative 1, 39% survival) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean predicted Sutter Slough survival ranged from 14% greater (Alternative 3, 43% survival) to 2% lower (Alternative 4, 37% survival) compared with the No Action Alternative.

Under OMR bin -5,500 cfs conditions, mean predicted Steamboat Slough survival ranged from 18% greater (Alternative 1, 57% survival) compared with the No Action Alternative to equal to (Alternative 2 without TUCP All VA and Alternative 3, 48% survival) the No Action Alternative.

Under OMR bin -5,000 cfs conditions, mean predicted Steamboat Slough survival ranged from 9% greater (Alternative 3, 62% survival) to 10% lower (Alternative 1, 51% survival) compared with the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted Steamboat Slough survival ranged from 1% lower (Alternative 2 with TUCP without VA, 55% survival) to 12% lower (Alternative 1, 49% survival) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean predicted Steamboat Slough survival ranged from 12% greater (Alternative 2 without TUCP All VA, 53% survival) to 3% lower (Alternative 2 with TUCP without VA and with TUCP without VA, 46% survival) compared with the No Action Alternative.

Under OMR bin -5,500 cfs conditions, mean predicted Sacramento River survival ranged from 23% greater (Alternative 1, 52% survival) to 2% lower (Alternative 3, 41% survival) compared with the No Action Alternative.

Under OMR bin -5,000 cfs conditions, mean predicted Sacramento River survival ranged from 12% greater (Alternative 3, 59% survival) to 17% lower (Alternative 1, 43% survival) compared with the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted Sacramento River survival ranged from 1% lower (Alternative 2 with TUCP without VA, 51% survival) to 22% lower (Alternative 1, 40% survival) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean predicted Sacramento River survival ranged from 20% greater (Alternative 2 without TUCP All VA, 47% survival) to 5% lower (Alternative 2 with TUCP without VA, 37% survival) compared with the No Action Alternative.

Under OMR bin -5,500 cfs conditions, mean predicted Georgiana Slough survival ranged from 29% greater (Alternative 1, 26% survival) to 2% lower (Alternative 2 with TUCP without VA and Alternative 2 without TUCP without VA, 20% survival) compared with the No Action Alternative.

Under OMR bin -5,000 cfs conditions, mean predicted Georgiana Slough survival ranged from 12% greater (Alternative 3, 28% survival) to 12% lower (Alternative 1, 22% survival) compared with the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted Georgiana Slough survival ranged from 22% lower (Alternative 1, 20% survival) to 3% lower (Alternative 2 with TUCP without VA and with TUCP without VA, 25% survival) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean predicted Georgiana Slough survival ranged from 27% greater (Alternative 2 without TUCP Delta VA, 23% survival) to 3% lower (Alternative 4, 18% survival) compared with the No Action Alternative.

Under OMR bin -5,500 cfs conditions, mean predicted through Delta survival ranged from 25% greater (Alternative 1, 48% survival) to equal to (Alternative 2 with TUCP without VA, Alternative 2 without TUCP Delta VA, Alternative 2without TUCP All VA and Alternative 3, 39% survival) the No Action Alternative.

Under OMR bin -5,000 cfs conditions, mean predicted through Delta survival ranged from 13% greater (Alternative 3, 55% survival) to 17% lower (Alternative 1, 40% survival) compared with the No Action Alternative.

Under OMR bin -3,500 cfs conditions, mean predicted through Delta survival ranged from 2% lower (Alternative 2 with TUCP without VA, 47% survival) to 22% lower (Alternative 1, 37% survival) compared with the No Action Alternative.

Under OMR bin -2,000 cfs conditions, mean through Delta survival ranged from 18% greater (Alternative 2 without TUCP All VA, 43% survival) to 4% lower (Alternative 2 with TUCP without VA, 35% survival) compared with the No Action Alternative.

I.7.3.2.3 Routing, Inflow Bins (Table I.7-6, Figure I.7-26 through Figure I.7-34):

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted Sutter Slough routing ranged from 1% greater (Alternative 1 and Alternative 3, under “hilo”, 17%; Alternative 1 and Alternative 3, under “hihi”) to 3% lower (Alternative 3, under “himed”, 19%) compared with the No Action Alternative.

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted Sutter Slough routing ranged from 1% greater (Alternative 3 and 4, under “medmed”, 13%) to 6% lower (Alternative 1, under “medlo”, 11%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted Sutter Slough routing ranged from 1% greater (Alternative 3, under “lohi”, 9%) to 16% lower (Alternative 1, under “lohi”, 7%) compared with the No Action Alternative.

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted Steamboat Slough routing ranged from 1% greater (Alternative 1, Alternative 2 with TUCP without VA and Alternative 3, under “hihi”, 27%; Alternative 3, under “hilo”, 21%) to 2% lower (Alternative 2 without TUCP without VA and Alternative 3, under “himed”, 22%; Alternative 2 without TUCP All VA under “hilo”, 20%) compared with the No Action Alternative.

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted Steamboat Slough routing ranged from 2% greater (Alternative 2 without TUCP All VA and Alternative 4, under “medhi”, 15%; Alternative 3, under “medmed”, 14%) to 16% lower (Alternative 1, under “medlo”, 11%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted Steamboat Slough routing ranged from 5% greater (Alternative 3, under “lomed”, 9%) to 26% lower (Alternative 1, under “lohi”, 8%) compared with the No Action Alternative.

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted Sacramento River routing ranged from 17% greater (Alternative 2 without TUCP without VA, under “hihi”, 48%) to 1% lower (Alternative 1 and Alternative 3, under “hihi”, 41%; Alternative 4 under “himed”, 47%) compared with the No Action Alternative.

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted Sacramento River routing ranged from 25% greater (Alternative 2 without TUCP without VA, under “medlo”, 70%) to 1% lower (Alternative 1 and Alternative 4, under “medmed”, 55%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted Sacramento River routing ranged from 3% greater (Alternative 2 without TUCP without VA, under “lomed”, 64%) to 9% lower (Alternative 1 and Alternative 2 without TUCP without VA, under “lohi”, 63%) compared with the No Action Alternative.

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted Georgiana Slough routing ranged from 33% greater (Alternative 2 without TUCP without VA, under “hilo”, 17%) to 6% lower (Alternative 3, under “hilo”, 12%) compared with the No Action Alternative.

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted Georgiana Slough routing ranged from 2% greater (Alternative 2 without TUCP Delta VA, under “medmed”, 19%) to 31% lower (Alternative 1, under “medlo”, 13%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted Georgiana Slough routing ranged from 30% greater (Alternative 2 with TUCP without VA, under “lohi”, 19%) to 48% lower (Alternative 2 without TUCP without VA, under “lolo”, 9%) compared with the No Action Alternative.

I.7.3.2.4 Survival, Inflow Bins (Table I.7-8, Figure I.7-44 through Figure I.7-52):

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted Sutter Slough survival ranged from 1% greater (Alternative 1 and Alternative 4 under “hihi”, 59%; Alternative 2 with TUCP without VA, under “hilo”, 52%) to 2% lower (Alternative 2 without TUCP All VA, under “himed”, 52%) compared with the No Action Alternative.

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted Sutter Slough survival ranged from 4% greater (Alternative 2 without TUCP without VA, under “medhi”, 45%) to 5% lower (Alternative 1, under “medlo”, 40%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted Sutter Slough survival ranged from 8% greater (Alternative 4, under “lohi”, 33%) to 8% lower (Alternative 1,

under “lomed”, 33%; and Alternative 2 without TUCP All VA under “lohi”, 28%) compared with the No Action Alternative.

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted Steamboat Slough survival ranged from 1% lower (Alternative 2 with TUCP without VA,without TUCP Delta VA,without TUCP All VA and Alternative 3, under “himed”, 61%) compared with the No Action Alternative to equal to the No Action Alternative (all other alternatives in other inflow bins).

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted Steamboat Slough survival ranged from 2% greater (Alternative 1 and Alternative 2 without TUCP without VA, under “medhi”, 54%; Alternative 3 under “medlo”) to 4% lower (Alternative 1, under “medlo”, 48%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted Steamboat Slough survival ranged from 6% greater (Alternative 2 without TUCP without VA, under “lohi”, 42%) to 6% lower (Alternative 2 without TUCP All VA, under “lohi”, 38%) compared with the No Action Alternative.

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted Sacramento River survival ranged from 1% lower (Alternative 2 without TUCP Delta VA, Alternative 2 without TUCP All VA and Alternative 3, under “himed”, 58%) compared with the No Action Alternative to equal to the No Action Alternative (all alternatives, under all other bins, 57-64%).

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted Sacramento River survival ranged from 3% greater (Alternative 2 without TUCP without VA, under “medhi”, 48%) to 17% lower (Alternative 1, under “medlo”, 38%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted Sacramento River survival ranged from 9% greater (Alternative 2 without TUCP without VA, under “lohi”, 29%) to 16% lower (Alternative 1, under “lolo”, 32%) compared with the No Action Alternative.

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted Georgiana Slough survival ranged from 3% greater (Alternative 2 without TUCP All VA, under “hilo”, 29%; Alternative 4, under “himed”, 30%) to 5% lower (Alternative 1, under “hilo”, 26%) compared with the No Action Alternative.

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted Georgiana Slough survival ranged from 14% greater (Alternative 2 with TUCP without VA, under “medhi”, 24%) to 7% lower (Alternative 1, under “medlo”, 20%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted Georgiana Slough survival ranged from 5% greater (Alternative 2 without TUCP All VA, under “lomed”, 19%) to 28% lower (Alternative 1, under “lohi”, 13%) compared with the No Action Alternative.

Under high Sacramento inflow bins (“hihi, “himed”, and “hilo”), mean predicted through-Delta survival ranged from 2% lower (Alternative 2 without TUCP without VA and Alternative 3, under “himed”, 55%) compared with the No Action Alternative to equal to the No Action Alternative (Alternative 1, all four phases of Alternative 2, Alternative 3, and Alternative 4, under “hihi”, 60-61%; Alternative 4 under “himed”, 56%; all four phases of Alternative 2, Alternative 3 and Alternative 4, under “hilo”, 53%).

Under medium Sacramento inflow bins (“medhi”, “medmed”, “medlo”), mean predicted through-Delta survival ranged from 4% greater (Alternative 2 without TUCP without VA, under “medhi”, 44%) to 14% lower (Alternative 1, under “medlo”, 35%) compared with the No Action Alternative.

Under low Sacramento inflow bins (“lohi”, “lomed”, “lolo”), mean predicted through-Delta survival ranged from 7% greater (Alternative 2 without TUCP without VA, under “lohi”, 29%) to 15% lower (Alternative 1, under “lolo”, 30%) compared with the No Action Alternative.

I.7.3.3 Tables

Table I.7-1. Mean December through March route-specific percent routing by OMR bin for NAA, EXP1, EXP3, and four phases of Alternative 2. Note that NA values result from no data falling into that OMR bin (BA scenarios).

Reach	OMR Bin	NAA	EXP1	EXP3	Alt2woTUCPwoVA	Alt2wTUCPwoVA	Alt2woTUCPDeltaVA	Alt2woTUCPAllVA
Sutter Slough	-2000	11%	NA	NA	10%	11%	13%	14%
Sutter Slough	-3500	16%	NA	NA	15%	15%	14%	14%
Sutter Slough	-5000	16%	NA	NA	17%	17%	17%	17%
Sutter Slough	-5500	11%	NA	NA	11%	11%	11%	11%
Steamboat Slough	-2000	11%	NA	NA	10%	10%	14%	15%
Steamboat Slough	-3500	17%	NA	NA	17%	17%	16%	16%
Steamboat Slough	-5000	18%	NA	NA	19%	19%	19%	19%
Steamboat Slough	-5500	11%	NA	NA	12%	12%	11%	11%
Sacramento River	-2000	62%	NA	NA	63%	64%	57%	57%
Sacramento River	-3500	52%	NA	NA	53%	53%	54%	54%
Sacramento River	-5000	52%	NA	NA	51%	51%	50%	51%
Sacramento River	-5500	60%	NA	NA	60%	60%	61%	60%
Georgiana Slough	-2000	15%	NA	NA	16%	16%	16%	15%
Georgiana Slough	-3500	15%	NA	NA	16%	16%	16%	16%
Georgiana Slough	-5000	14%	NA	NA	13%	13%	13%	13%
Georgiana Slough	-5500	18%	NA	NA	18%	18%	18%	18%
Delta Cross Channel	-2000	0%	NA	NA	0%	0%	0%	0%
Delta Cross Channel	-3500	0%	NA	NA	0%	0%	0%	0%
Delta Cross Channel	-5000	0%	NA	NA	0%	0%	0%	0%
Delta Cross Channel	-5500	0%	NA	NA	0%	0%	0%	0%

Table I.7-2. Mean December through March route-specific percent routing by OMR bin for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4. Percent difference from NAA is in parentheses. Note that NA values result from no data falling into that OMR bin (EIS scenarios).

Reach	OMR Bin	NAA	Alt1	Alt2woTUCP woVA	Alt2wTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
Sutter Slough	-2000	11%	13 (13%)	10 (-8%)	11 (-6%)	13 (16%)	13 (21%)	13 (17%)	10 (-8%)
Sutter Slough	-3500	16%	12 (-23%)	15 (-7%)	15 (-8%)	14 (-11%)	14 (-11%)	13 (-17%)	14 (-12%)
Sutter Slough	-5000	16%	13 (-18%)	17 (10%)	17 (9%)	17 (8%)	17 (8%)	20 (23%)	16 (2%)
Sutter Slough	-5500	11%	17 (55%)	11 (1%)	11 (1%)	10 (-2%)	11 (-1%)	11 (2%)	12 (13%)
Steamboat Slough	-2000	11%	12 (11%)	10 (-9%)	10 (-8%)	13 (19%)	14 (29%)	14 (24%)	10 (-14%)
Steamboat Slough	-3500	17%	12 (-30%)	17 (-4%)	16 (-5%)	16 (-9%)	16 (-7%)	15 (-16%)	16 (-11%)
Steamboat Slough	-5000	18%	13 (-26%)	20 (10%)	20 (9%)	19 (8%)	20 (9%)	23 (25%)	18 (2%)
Steamboat Slough	-5500	11%	18 (63%)	11 (2%)	12 (2%)	12 (2%)	11 (1%)	11 (1%)	13 (15%)
Sacramento River	-2000	62%	57 (-8%)	63 (2%)	63 (2%)	58 (-7%)	57 (-9%)	57 (-8%)	64 (3%)
Sacramento River	-3500	52%	57 (10%)	53 (2%)	53 (2%)	54 (4%)	54 (4%)	57 (9%)	54 (4%)
Sacramento River	-5000	52%	56 (7%)	50 (-4%)	50 (-4%)	50 (-4%)	50 (-4%)	46 (-11%)	51 (-1%)
Sacramento River	-5500	60%	50 (-16%)	60 (0%)	60 (0%)	60 (0%)	60 (0%)	60 (0%)	58 (-3%)
Georgiana Slough	-2000	15%	11 (-26%)	16 (5%)	16 (3%)	16 (4%)	15 (0%)	16 (2%)	16 (2%)
Georgiana Slough	-3500	15%	13 (-10%)	16 (7%)	16 (8%)	16 (9%)	16 (7%)	15 (5%)	16 (12%)
Georgiana Slough	-5000	14%	14 (0%)	13 (-7%)	13 (-7%)	13 (-6%)	13 (-6%)	11 (-18%)	14 (-1%)
Georgiana Slough	-5500	18%	12 (-34%)	18 (-1%)	18 (0%)	18 (0%)	18 (-1%)	17 (-2%)	17 (-7%)
Delta Cross Channel	-2000	0%	6 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	-3500	0%	5 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	-5000	0%	4 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	-5500	0%	3 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)

Table I.7-3. Mean December through March route-specific percent survival by OMR bin for NAA, EXP1, EXP3, and four phases of Alternative 2. Note that NA values for EXP1 and EXP3 result from no data falling into that OMR bin (BA scenarios).

Reach	OMR Bin	NAA	EXP1	EXP3	Alt2woTUCPwoVA	Alt2wTUCPwoVA	Alt2woTUCPDeltaVA	Alt2woTUCPAllVA
Sutter Slough	-2000	37%	NA	NA	37%	37%	41%	42%
Sutter Slough	-3500	47%	NA	NA	46%	46%	45%	45%
Sutter Slough	-5000	49%	NA	NA	49%	49%	50%	50%
Sutter Slough	-5500	41%	NA	NA	41%	41%	40%	41%
Steamboat Slough	-2000	47%	NA	NA	46%	46%	51%	52%
Steamboat Slough	-3500	56%	NA	NA	56%	55%	54%	54%
Steamboat Slough	-5000	57%	NA	NA	57%	57%	58%	58%
Steamboat Slough	-5500	48%	NA	NA	48%	49%	49%	48%
Sacramento River	-2000	39%	NA	NA	37%	37%	45%	46%
Sacramento River	-3500	51%	NA	NA	51%	51%	49%	49%
Sacramento River	-5000	52%	NA	NA	53%	53%	54%	53%
Sacramento River	-5500	42%	NA	NA	42%	42%	42%	41%
Georgiana Slough	-2000	18%	NA	NA	18%	18%	22%	22%
Georgiana Slough	-3500	25%	NA	NA	24%	24%	24%	24%
Georgiana Slough	-5000	25%	NA	NA	27%	26%	26%	27%
Georgiana Slough	-5500	20%	NA	NA	20%	20%	20%	21%
Delta Cross Channel	-2000	0%	NA	NA	0%	0%	0%	0%
Delta Cross Channel	-3500	0%	NA	NA	0%	0%	0%	0%
Delta Cross Channel	-5000	0%	NA	NA	0%	0%	0%	0%
Delta Cross Channel	-5500	0%	NA	NA	0%	0%	0%	0%
Combined	-2000	37%	NA	NA	35%	35%	42%	43%
Combined	-3500	48%	NA	NA	47%	47%	45%	45%
Combined	-5000	49%	NA	NA	50%	50%	51%	50%
Combined	-5500	39%	NA	NA	39%	39%	38%	38%

Table I.7-4. Mean December through March route-specific percent survival by OMR bin for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4. Percent difference from NAA is in parentheses. Note that NA values result from no data falling into that OMR bin (EIS scenarios).

Reach	OMR Bin	NAA	Alt1	Alt2woTUCPwoVA	Alt2wTUCPwoVA	Alt2woTUCPDeltaVA	Alt2woTUCPAllVA	Alt3	Alt4
Sutter Slough	-2000	37%	40 (7%)	37 (-1%)	37 (0%)	40 (7%)	42 (13%)	43 (14%)	37 (-2%)
Sutter Slough	-3500	47%	39 (-16%)	46 (-1%)	45 (-3%)	45 (-4%)	45 (-3%)	43 (-8%)	44 (-5%)
Sutter Slough	-5000	49%	42 (-14%)	50 (4%)	50 (3%)	50 (3%)	50 (3%)	53 (10%)	48 (-1%)
Sutter Slough	-5500	41%	49 (19%)	41 (1%)	42 (3%)	41 (0%)	41 (0%)	43 (4%)	43 (5%)
Steamboat Slough	-2000	47%	50 (6%)	46 (-3%)	46 (-2%)	51 (7%)	53 (12%)	52 (9%)	46 (-2%)
Steamboat Slough	-3500	56%	49 (-12%)	55 (-1%)	55 (-2%)	54 (-4%)	54 (-3%)	52 (-7%)	54 (-4%)
Steamboat Slough	-5000	57%	51 (-10%)	58 (3%)	58 (3%)	58 (2%)	58 (3%)	62 (9%)	57 (0%)
Steamboat Slough	-5500	48%	57 (18%)	49 (1%)	50 (3%)	49 (1%)	48 (0%)	48 (0%)	51 (5%)
Sacramento River	-2000	39%	40 (3%)	37 (-5%)	38 (-3%)	45 (13%)	47 (20%)	46 (17%)	38 (-3%)
Sacramento River	-3500	51%	40 (-22%)	51 (-1%)	51 (-2%)	49 (-4%)	50 (-3%)	47 (-9%)	49 (-4%)
Sacramento River	-5000	52%	43 (-17%)	54 (4%)	54 (3%)	54 (3%)	54 (3%)	59 (12%)	53 (0%)
Sacramento River	-5500	42%	52 (23%)	42 (0%)	43 (2%)	42 (0%)	42 (0%)	41 (-2%)	44 (5%)
Georgiana Slough	-2000	18%	20 (8%)	19 (2%)	19 (1%)	23 (27%)	23 (25%)	22 (21%)	18 (-3%)
Georgiana Slough	-3500	25%	20 (-22%)	25 (-3%)	24 (-4%)	24 (-6%)	24 (-5%)	23 (-10%)	24 (-6%)
Georgiana Slough	-5000	25%	22 (-12%)	27 (6%)	26 (4%)	27 (6%)	27 (5%)	28 (12%)	26 (2%)
Georgiana Slough	-5500	20%	26 (29%)	20 (-2%)	20 (-2%)	20 (1%)	20 (1%)	21 (6%)	21 (5%)
Delta Cross Channel	-2000	0%	7 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	-3500	0%	6 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	-5000	0%	5 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	-5500	0%	6 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Combined	-2000	37%	38 (3%)	35 (-4%)	36 (-3%)	41 (12%)	43 (18%)	42 (16%)	36 (-3%)
Combined	-3500	48%	37 (-22%)	47 (-2%)	46 (-3%)	45 (-5%)	46 (-4%)	43 (-9%)	45 (-5%)
Combined	-5000	49%	40 (-17%)	51 (4%)	51 (4%)	50 (3%)	51 (4%)	55 (13%)	49 (0%)
Combined	-5500	39%	48 (25%)	39 (0%)	40 (2%)	39 (0%)	39 (0%)	39 (0%)	41 (6%)

Table I.7-5. Mean December through March route-specific percent routing by Inflow bin for NAA, EXP1, EXP3, and four phases of Alternative 2. Note that NA values result from no data falling into that Inflow bin (BA scenarios).

Reach	Inflow Bin	NAA	EXP1	EXP3	Alt2woTUCP woVA	Alt2wTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
Sutter Slough	lolo	10%	10%	10%	10%	10%	10%	10%
Sutter Slough	lomed	10%	10%	10%	10%	10%	10%	10%
Sutter Slough	lohi	9%	NA	10%	8%	8%	8%	8%
Sutter Slough	medlo	12%	12%	12%	12%	12%	12%	12%
Sutter Slough	medmed	13%	12%	13%	12%	12%	12%	12%
Sutter Slough	medhi	14%	13%	15%	14%	14%	14%	14%
Sutter Slough	hilo	17%	17%	17%	17%	17%	17%	17%
Sutter Slough	himed	19%	19%	18%	19%	19%	19%	19%
Sutter Slough	hihi	24%	24%	24%	24%	24%	24%	24%
Steamboat Slough	lolo	10%	10%	10%	10%	10%	10%	10%
Steamboat Slough	lomed	9%	8%	9%	9%	8%	8%	9%
Steamboat Slough	lohi	7%	NA	9%	8%	7%	7%	8%
Steamboat Slough	medlo	14%	13%	13%	13%	13%	13%	13%
Steamboat Slough	medmed	14%	13%	15%	14%	14%	14%	14%
Steamboat Slough	medhi	15%	15%	16%	15%	15%	15%	15%
Steamboat Slough	hilo	20%	19%	20%	20%	20%	20%	20%
Steamboat Slough	himed	22%	22%	22%	22%	22%	22%	22%
Steamboat Slough	hihi	26%	27%	27%	27%	26%	26%	26%
Sacramento River	lolo	64%	66%	64%	64%	64%	65%	65%
Sacramento River	lomed	63%	68%	63%	63%	63%	63%	63%
Sacramento River	lohi	69%	NA	65%	70%	70%	70%	69%
Sacramento River	medlo	56%	57%	57%	57%	56%	57%	57%
Sacramento River	medmed	55%	57%	55%	55%	55%	55%	55%
Sacramento River	medhi	54%	54%	54%	54%	54%	54%	54%
Sacramento River	hilo	50%	52%	51%	50%	50%	50%	50%

Reach	Inflow Bin	NAA	EXP1	EXP3	Alt2woTUCPwoVA	Alt2wTUCPwoVA	Alt2woTUCPDeltaVA	Alt2woTUCPAllVA
Sacramento River	himed	48%	49%	48%	48%	48%	48%	48%
Sacramento River	hihi	41%	40%	41%	41%	41%	41%	41%
Georgiana Slough	lolo	17%	16%	17%	17%	17%	17%	17%
Georgiana Slough	lomed	19%	15%	17%	19%	19%	19%	19%
Georgiana Slough	lohi	15%	NA	17%	14%	14%	14%	15%
Georgiana Slough	medlo	19%	18%	17%	18%	18%	18%	18%
Georgiana Slough	medmed	18%	18%	17%	18%	18%	19%	19%
Georgiana Slough	medhi	17%	17%	16%	17%	17%	17%	17%
Georgiana Slough	hilo	13%	12%	13%	13%	13%	13%	13%
Georgiana Slough	himed	11%	11%	11%	12%	12%	12%	11%
Georgiana Slough	hihi	9%	9%	9%	9%	9%	9%	9%
Delta Cross Channel	lolo	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	lomed	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	lohi	0%	NA	0%	0%	0%	0%	0%
Delta Cross Channel	medlo	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	medmed	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	medhi	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	hilo	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	himed	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	hihi	0%	0%	0%	0%	0%	0%	0%

Table I.7-6. Mean December through March route-specific percent routing by Inflow bin for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4. Percent difference from NAA is in parentheses. Note that NA values result from no data falling into that Inflow bin (EIS scenarios).

Reach	Inflow Bin	NAA	Alt1	Alt2woTUCP woVA	Alt2wTUCP wo VA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
Sutter Slough	lolo	10%	9 (-11%)	10 (0%)	10 (0%)	10 (0%)	10 (0%)	10 (0%)	10 (0%)
Sutter Slough	lomed	10%	9 (-6%)	10 (-3%)	10 (-1%)	10 (-2%)	10 (-2%)	10 (0%)	10 (-1%)
Sutter Slough	lohi	9%	7 (-16%)	8 (-5%)	8 (-7%)	9 (-1%)	8 (-11%)	9 (1%)	8 (-5%)
Sutter Slough	medlo	12%	11 (-6%)	12 (-1%)	12 (-1%)	12 (-2%)	12 (-3%)	12 (-1%)	12 (-1%)
Sutter Slough	medmed	13%	12 (-1%)	12 (-1%)	12 (-1%)	12 (-1%)	13 (0%)	13 (1%)	13 (1%)
Sutter Slough	medhi	14%	14 (0%)	14 (-1%)	14 (-1%)	14 (-1%)	14 (-1%)	14 (0%)	14 (0%)
Sutter Slough	hilo	17%	17 (1%)	17 (1%)	17 (1%)	17 (0%)	17 (-1%)	17 (1%)	17 (1%)
Sutter Slough	himed	19%	19 (-1%)	19 (-2%)	19 (-2%)	19 (-1%)	19 (-2%)	19 (-3%)	19 (0%)
Sutter Slough	hihi	24%	24 (1%)	24 (0%)	24 (0%)	24 (0%)	24 (0%)	24 (1%)	24 (0%)
Steamboat Slough	lolo	10%	9 (-11%)	10 (0%)	10 (0%)	10 (0%)	10 (0%)	10 (0%)	10 (0%)
Steamboat Slough	lomed	9%	8 (-14%)	9 (-2%)	8 (-5%)	8 (-4%)	9 (-1%)	9 (5%)	8 (-5%)
Steamboat Slough	lohi	7%	5 (-26%)	7 (-2%)	8 (3%)	8 (4%)	8 (2%)	8 (2%)	8 (2%)
Steamboat Slough	medlo	14%	11 (-16%)	13 (0%)	13 (-1%)	13 (0%)	13 (-3%)	13 (0%)	13 (-2%)
Steamboat Slough	medmed	14%	14 (-3%)	14 (-1%)	14 (0%)	14 (0%)	14 (0%)	14 (2%)	14 (2%)
Steamboat Slough	medhi	15%	15 (1%)	15 (1%)	15 (1%)	15 (0%)	15 (2%)	15 (1%)	15 (2%)
Steamboat Slough	hilo	20%	20 (-1%)	20 (0%)	20 (-1%)	20 (-1%)	20 (-2%)	21 (1%)	20 (0%)
Steamboat Slough	himed	22%	22 (-1%)	22 (-2%)	22 (-1%)	22 (-1%)	22 (-1%)	22 (-2%)	22 (1%)
Steamboat Slough	hihi	26%	27 (1%)	26 (0%)	27 (1%)	26 (0%)	26 (0%)	27 (1%)	26 (0%)
Sacramento River	lolo	64%	62 (-3%)	41 (-36%)	65 (0%)	64 (0%)	65 (0%)	65 (1%)	64 (0%)
Sacramento River	lomed	63%	63 (0%)	64 (3%)	63 (1%)	63 (0%)	63 (0%)	63 (0%)	63 (1%)
Sacramento River	lohi	69%	63 (-9%)	63 (-9%)	70 (0%)	70 (0%)	70 (0%)	69 (0%)	70 (1%)
Sacramento River	medlo	56%	57 (2%)	70 (25%)	56 (1%)	56 (1%)	57 (2%)	56 (1%)	57 (1%)
Sacramento River	medmed	55%	55 (-1%)	56 (2%)	55 (0%)	55 (0%)	55 (0%)	55 (0%)	55 (-1%)
Sacramento River	medhi	54%	54 (0%)	55 (3%)	54 (1%)	54 (1%)	54 (0%)	54 (1%)	54 (0%)

Reach	Inflow Bin	NAA	Alt1	Alt2woTUCPwoVA	Alt2wTUCPwo VA	Alt2woTUCPDeltaVA	Alt2woTUCPAllVA	Alt3	Alt4
Sacramento River	hilo	50%	50 (0%)	54 (8%)	50 (0%)	50 (1%)	50 (0%)	50 (1%)	50 (0%)
Sacramento River	himed	48%	48 (0%)	50 (4%)	48 (0%)	48 (0%)	48 (1%)	48 (1%)	47 (-1%)
Sacramento River	hihi	41%	41 (-1%)	48 (17%)	41 (0%)	41 (0%)	41 (0%)	41 (-1%)	41 (0%)
Georgiana Slough	lolo	17%	11 (-36%)	9 (-48%)	17 (-1%)	17 (-1%)	17 (-2%)	17 (-1%)	17 (0%)
Georgiana Slough	lomed	19%	16 (-12%)	17 (-9%)	19 (1%)	19 (2%)	19 (1%)	18 (-2%)	19 (0%)
Georgiana Slough	Lohi	15%	11 (-25%)	19 (30%)	15 (1%)	14 (-3%)	15 (4%)	14 (-3%)	14 (-3%)
Georgiana Slough	medlo	19%	13 (-31%)	14 (-22%)	18 (-1%)	18 (-2%)	18 (-2%)	18 (-3%)	18 (-2%)
Georgiana Slough	Medmed	18%	16 (-10%)	18 (0%)	19 (1%)	19 (2%)	18 (1%)	18 (-2%)	18 (1%)
Georgiana Slough	Medhi	17%	16 (-5%)	18 (6%)	17 (-3%)	17 (-2%)	17 (-1%)	17 (-4%)	17 (-1%)
Georgiana Slough	Hilo	13%	13 (-1%)	17 (33%)	13 (-2%)	13 (-1%)	13 (3%)	12 (-6%)	12 (-3%)
Georgiana Slough	Himed	11%	12 (4%)	12 (12%)	12 (4%)	11 (3%)	11 (3%)	12 (6%)	11 (0%)
Georgiana Slough	Hihi	9%	9 (-1%)	12 (31%)	9 (0%)	9 (1%)	9 (0%)	9 (-2%)	9 (0%)
Delta Cross Channel	Lolo	0%	11 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	Lomed	0%	4 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	Lohi	0%	13 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	Medlo	0%	7 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	Medmed	0%	3 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	Medhi	0%	1 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	Hilo	0%	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	Himed	0%	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	hihi	0%	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)

Table I.7-7. Mean December through March route-specific percent survival by Inflow bin for NAA, EXP1, EXP3, and four phases of Alternative 2. Note that NA values result from no data falling into that Inflow bin (BA scenarios).

Reach	Inflow Bin	NAA	EXP1	EXP3	Alt2woTUCP woVA	Alt2wTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
Sutter Slough	lolo	36%	34%	35%	36%	36%	36%	36%
Sutter Slough	lomed	36%	37%	36%	34%	35%	34%	35%
Sutter Slough	lohi	31%	NA	38%	30%	31%	30%	33%
Sutter Slough	medlo	42%	40%	41%	42%	41%	41%	41%
Sutter Slough	medmed	43%	41%	43%	43%	43%	42%	43%
Sutter Slough	medhi	44%	44%	44%	43%	44%	45%	44%
Sutter Slough	hilo	52%	50%	52%	52%	52%	51%	51%
Sutter Slough	himed	53%	52%	53%	52%	53%	53%	53%
Sutter Slough	hihi	58%	59%	59%	59%	58%	58%	58%
Steamboat Slough	lolo	46%	44%	45%	46%	46%	46%	45%
Steamboat Slough	lomed	47%	47%	47%	46%	46%	45%	46%
Steamboat Slough	lohi	41%	NA	49%	41%	41%	41%	40%
Steamboat Slough	medlo	50%	49%	50%	50%	50%	49%	50%
Steamboat Slough	medmed	52%	49%	53%	53%	52%	52%	52%
Steamboat Slough	medhi	53%	50%	53%	53%	53%	53%	54%
Steamboat Slough	hilo	60%	59%	60%	59%	60%	59%	59%
Steamboat Slough	himed	62%	61%	61%	61%	61%	62%	61%
Steamboat Slough	hihi	67%	67%	67%	67%	66%	67%	66%
Sacramento River	lolo	37%	35%	37%	37%	37%	37%	37%
Sacramento River	lomed	39%	36%	40%	38%	39%	38%	38%
Sacramento River	lohi	27%	NA	38%	28%	28%	28%	28%
Sacramento River	medlo	45%	44%	45%	45%	45%	45%	44%
Sacramento River	medmed	47%	44%	48%	48%	48%	48%	47%
Sacramento River	medhi	46%	45%	48%	47%	47%	47%	47%
Sacramento River	hilo	57%	56%	57%	56%	57%	56%	57%
Sacramento River	himed	59%	58%	58%	59%	58%	59%	58%

Reach	Inflow Bin	NAA	EXP1	EXP3	Alt2woTUCPwoVA	Alt2wTUCPwoVA	Alt2woTUCPDeltaVA	Alt2woTUCPAllVA
Sacramento River	hihi	64%	64%	64%	64%	63%	64%	64%
Georgiana Slough	lolo	18%	18%	18%	18%	19%	19%	18%
Georgiana Slough	lomed	18%	18%	19%	19%	19%	20%	19%
Georgiana Slough	lohi	18%	NA	20%	12%	13%	15%	16%
Georgiana Slough	medlo	21%	21%	21%	21%	22%	21%	21%
Georgiana Slough	medmed	23%	22%	23%	22%	22%	22%	22%
Georgiana Slough	medhi	21%	25%	22%	22%	22%	22%	23%
Georgiana Slough	hilo	28%	28%	29%	27%	27%	28%	29%
Georgiana Slough	himed	29%	29%	28%	29%	28%	28%	29%
Georgiana Slough	hihi	32%	33%	33%	33%	33%	33%	33%
Delta Cross Channel	lolo	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	lomed	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	lohi	0%	NA	0%	0%	0%	0%	0%
Delta Cross Channel	medlo	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	medmed	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	medhi	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	hilo	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	himed	0%	0%	0%	0%	0%	0%	0%
Delta Cross Channel	hihi	0%	0%	0%	0%	0%	0%	0%
Combined	lolo	35%	33%	34%	35%	35%	35%	34%
Combined	lomed	36%	34%	37%	35%	36%	35%	35%
Combined	lohi	27%	NA	36%	27%	27%	27%	27%
Combined	medlo	41%	40%	41%	41%	41%	41%	40%
Combined	medmed	43%	41%	44%	43%	43%	43%	43%
Combined	medhi	43%	42%	44%	43%	43%	43%	43%
Combined	hilo	53%	52%	53%	52%	53%	52%	53%
Combined	himed	55%	54%	55%	55%	55%	55%	55%
Combined	hihi	60%	61%	61%	61%	60%	61%	61%

Table I.7-8. Mean December through March route-specific percent survival by Inflow bin for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4. Percent difference from NAA is in parentheses. Note that NA values result from no data falling into that Inflow bin (EIS scenarios).

Reach	Inflow Bin	NAA	Alt1	Alt2woTUCP woVA	Alt2wTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
Sutter Slough	lolo	36%	34 (-5%)	36 (1%)	36 (0%)	36 (1%)	36 (0%)	36 (-1%)	36 (1%)
Sutter Slough	lomed	36%	33 (-8%)	35 (-4%)	34 (-7%)	34 (-6%)	35 (-4%)	36 (0%)	36 (-1%)
Sutter Slough	lohi	31%	32 (4%)	32 (5%)	31 (1%)	32 (3%)	28 (-8%)	31 (-1%)	33 (8%)
Sutter Slough	medlo	42%	40 (-5%)	42 (-1%)	42 (-1%)	42 (0%)	42 (0%)	42 (0%)	42 (-1%)
Sutter Slough	medmed	43%	42 (-2%)	43 (0%)	43 (0%)	42 (-1%)	43 (-1%)	43 (0%)	43 (-1%)
Sutter Slough	medhi	44%	44 (1%)	45 (4%)	43 (0%)	44 (1%)	45 (2%)	45 (3%)	45 (2%)
Sutter Slough	hilo	52%	52 (0%)	52 (0%)	52 (1%)	51 (0%)	52 (0%)	52 (0%)	52 (0%)
Sutter Slough	himed	53%	53 (-1%)	53 (-1%)	53 (-1%)	53 (-1%)	52 (-2%)	53 (-1%)	53 (0%)
Sutter Slough	hihi	58%	59 (1%)	59 (0%)	58 (0%)	58 (0%)	58 (0%)	58 (0%)	59 (1%)
Steamboat Slough	lolo	46%	45 (-2%)	46 (0%)	46 (0%)	46 (0%)	46 (0%)	45 (-1%)	46 (0%)
Steamboat Slough	lomed	47%	45 (-2%)	46 (-1%)	46 (-1%)	45 (-2%)	46 (-2%)	46 (-2%)	47 (1%)
Steamboat Slough	lohi	41%	42 (4%)	43 (6%)	42 (2%)	39 (-4%)	38 (-6%)	41 (0%)	40 (-2%)
Steamboat Slough	medlo	50%	48 (-4%)	50 (0%)	50 (0%)	50 (1%)	50 (0%)	51 (2%)	50 (0%)
Steamboat Slough	medmed	52%	52 (-2%)	53 (0%)	53 (1%)	52 (0%)	52 (0%)	53 (0%)	52 (0%)
Steamboat Slough	medhi	53%	54 (2%)	54 (2%)	52 (-1%)	52 (-1%)	53 (0%)	52 (-2%)	53 (0%)
Steamboat Slough	hilo	60%	60 (0%)	60 (0%)	60 (0%)	59 (0%)	60 (0%)	60 (0%)	59 (0%)
Steamboat Slough	himed	62%	62 (0%)	62 (0%)	62 (-1%)	61 (-1%)	61 (-1%)	61 (-1%)	62 (0%)
Steamboat Slough	hihi	67%	67 (0%)	67 (0%)	67 (0%)	66 (0%)	66 (0%)	66 (0%)	67 (0%)
Sacramento River	lolo	37%	32 (-16%)	37 (-1%)	37 (-1%)	37 (0%)	37 (-1%)	37 (-1%)	37 (-1%)
Sacramento River	lomed	39%	35 (-11%)	39 (-2%)	39 (-2%)	38 (-3%)	38 (-4%)	38 (-4%)	40 (0%)
Sacramento River	lohi	27%	25 (-5%)	29 (9%)	28 (6%)	27 (2%)	27 (0%)	28 (7%)	26 (-1%)
Sacramento River	medlo	45%	38 (-17%)	45 (0%)	45 (0%)	45 (0%)	45 (-1%)	46 (2%)	45 (-1%)
Sacramento River	medmed	47%	45 (-5%)	48 (0%)	48 (1%)	47 (0%)	47 (0%)	48 (1%)	47 (0%)
Sacramento River	medhi	46%	47 (2%)	48 (3%)	46 (-1%)	46 (0%)	47 (1%)	46 (0%)	47 (1%)
Sacramento River	hilo	57%	57 (0%)	57 (0%)	57 (0%)	57 (0%)	57 (0%)	57 (0%)	57 (0%)
Sacramento River	himed	59%	59 (0%)	59 (0%)	59 (0%)	59 (-1%)	58 (-1%)	58 (-1%)	59 (0%)
Sacramento River	hihi	64%	64 (0%)	64 (0%)	64 (0%)	63 (0%)	64 (0%)	64 (0%)	64 (0%)

Reach	Inflow Bin	NAA	Alt1	Alt2woTUCP woVA	Alt2wTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
Georgiana Slough	lolo	18%	16 (-12%)	19 (3%)	18 (0%)	19 (2%)	19 (1%)	18 (0%)	18 (0%)
Georgiana Slough	lomed	18%	17 (-7%)	19 (3%)	19 (4%)	19 (2%)	19 (5%)	19 (3%)	19 (4%)
Georgiana Slough	lohi	18%	13 (-28%)	18 (4%)	15 (-11%)	17 (-5%)	14 (-19%)	13 (-25%)	17 (-6%)
Georgiana Slough	medlo	21%	20 (-7%)	21 (-4%)	21 (-4%)	21 (-2%)	21 (-2%)	21 (0%)	22 (0%)
Georgiana Slough	medmed	23%	23 (0%)	23 (1%)	23 (2%)	22 (-1%)	23 (1%)	23 (1%)	23 (2%)
Georgiana Slough	medhi	21%	23 (8%)	23 (7%)	24 (14%)	22 (6%)	22 (6%)	22 (6%)	22 (6%)
Georgiana Slough	hilo	28%	26 (-5%)	27 (-2%)	27 (-3%)	28 (2%)	29 (3%)	28 (-1%)	27 (-1%)
Georgiana Slough	himed	29%	29 (-2%)	29 (-1%)	29 (-2%)	29 (-1%)	28 (-3%)	29 (-2%)	30 (3%)
Georgiana Slough	hihi	32%	33 (0%)	33 (2%)	32 (0%)	33 (2%)	33 (1%)	33 (0%)	32 (-1%)
Delta Cross Channel	lolo	0%	14 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	lomed	0%	6 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	lohi	0%	14 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	medlo	0%	14 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	medmed	0%	6 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	medhi	0%	2 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	hilo	0%	1 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	himed	0%	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Delta Cross Channel	hihi	0%	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)
Combined	lolo	35%	30 (-15%)	35 (0%)	35 (0%)	35 (0%)	35 (0%)	34 (-1%)	35 (0%)
Combined	lomed	36%	32 (-10%)	35 (-2%)	35 (-2%)	35 (-3%)	35 (-3%)	35 (-2%)	36 (1%)
Combined	lohi	27%	24 (-10%)	29 (7%)	28 (4%)	27 (1%)	26 (-3%)	27 (3%)	27 (-1%)
Combined	medlo	41%	35 (-14%)	41 (-1%)	41 (-1%)	41 (0%)	41 (-1%)	42 (2%)	41 (0%)
Combined	medmed	43%	41 (-4%)	43 (0%)	43 (1%)	43 (-1%)	43 (0%)	44 (1%)	43 (0%)
Combined	medhi	43%	44 (2%)	44 (4%)	43 (1%)	43 (1%)	43 (2%)	43 (1%)	43 (2%)
Combined	hilo	53%	53 (-1%)	53 (0%)	53 (0%)	53 (0%)	53 (0%)	53 (0%)	53 (0%)
Combined	himed	55%	55 (-1%)	55 (-1%)	55 (-1%)	55 (-1%)	55 (-2%)	55 (-2%)	56 (0%)
Combined	hihi	60%	61 (0%)	61 (0%)	61 (0%)	60 (0%)	60 (0%)	61 (0%)	61 (0%)

I.7.3.4 Figures

I.7.3.4.1 ROUTING, OMR BINS

BA

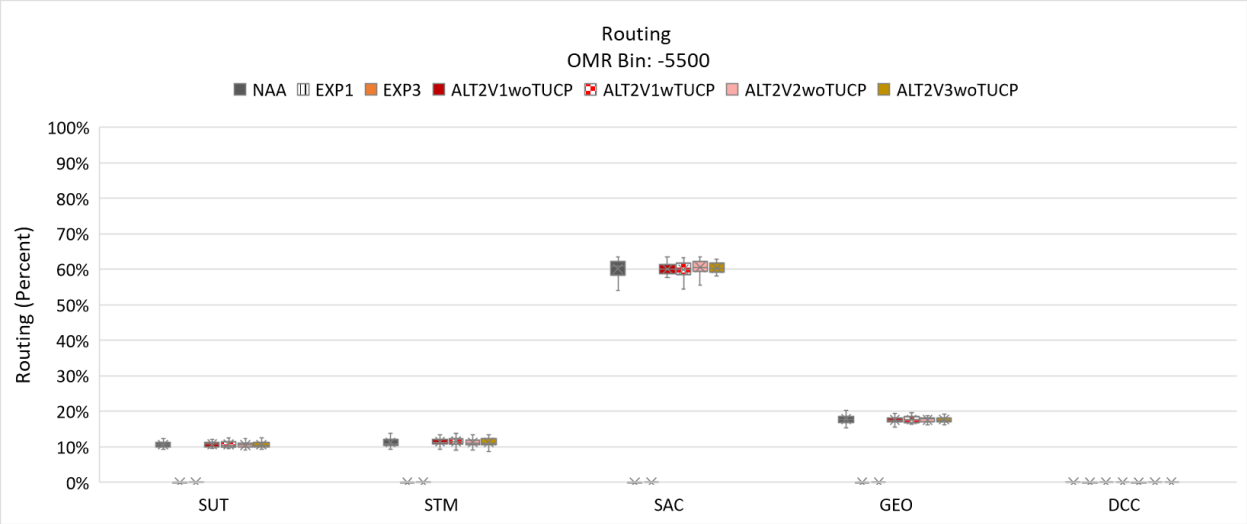

Figure I.7-1. Box and whisker of mean December through March route-specific percent routing by OMR bin -5,500 for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

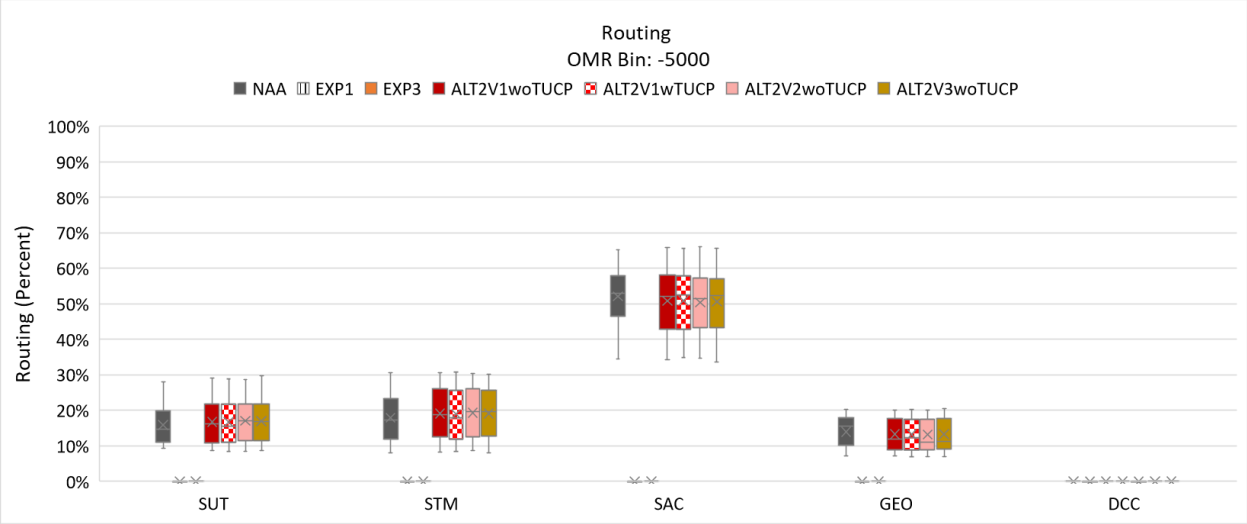

Figure I.7-2. Box and whisker of mean December through March route-specific percent routing by OMR bin -5,000 for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

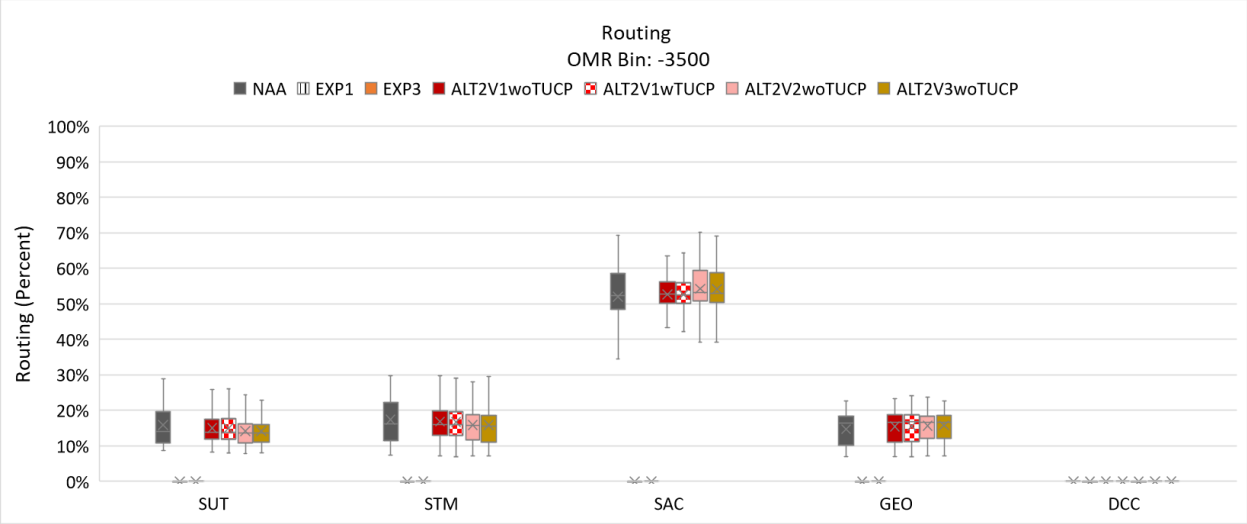

Figure I.7-3. Box and whisker of mean December through March route-specific percent routing by OMR bin -3,500 for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

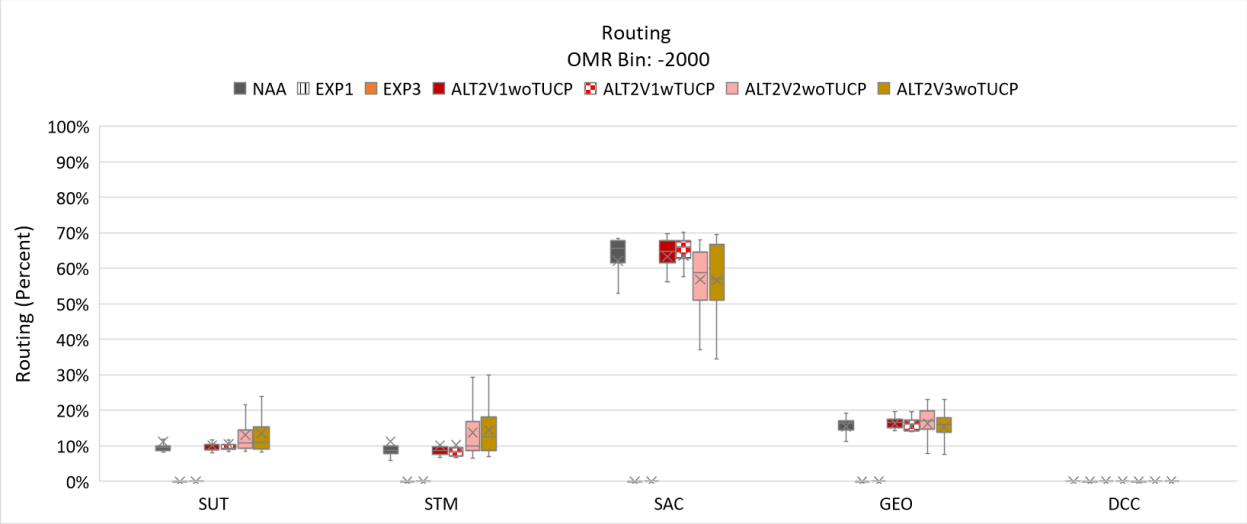

Figure I.7-4. Box and whisker of mean December through March route-specific percent routing by OMR bin -2,000 for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

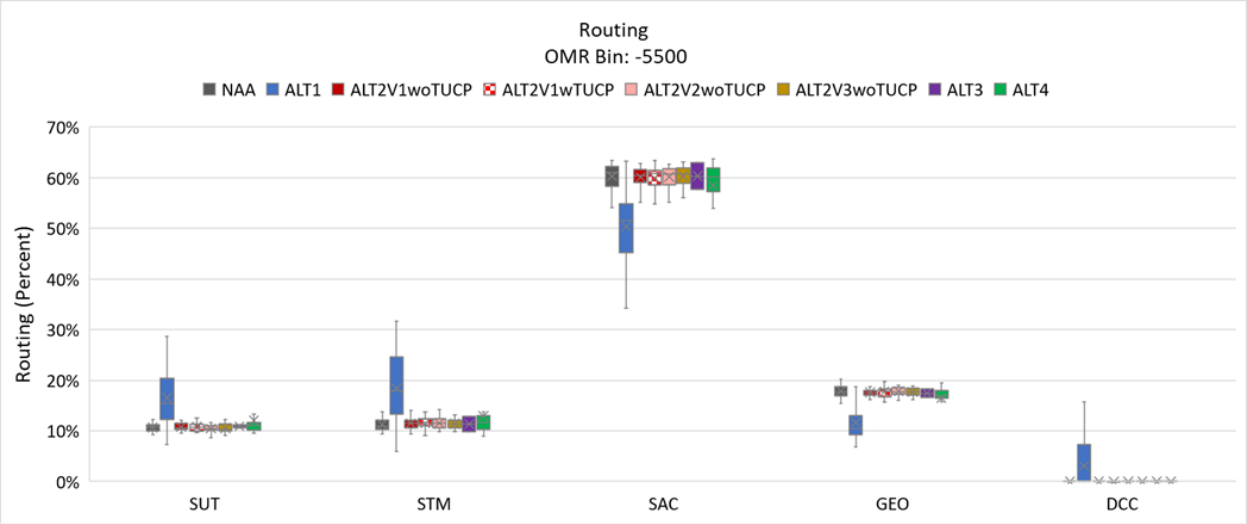

Figure I.7-5. Box and whisker of mean December through March route-specific percent routing by OMR bin -5,500 for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

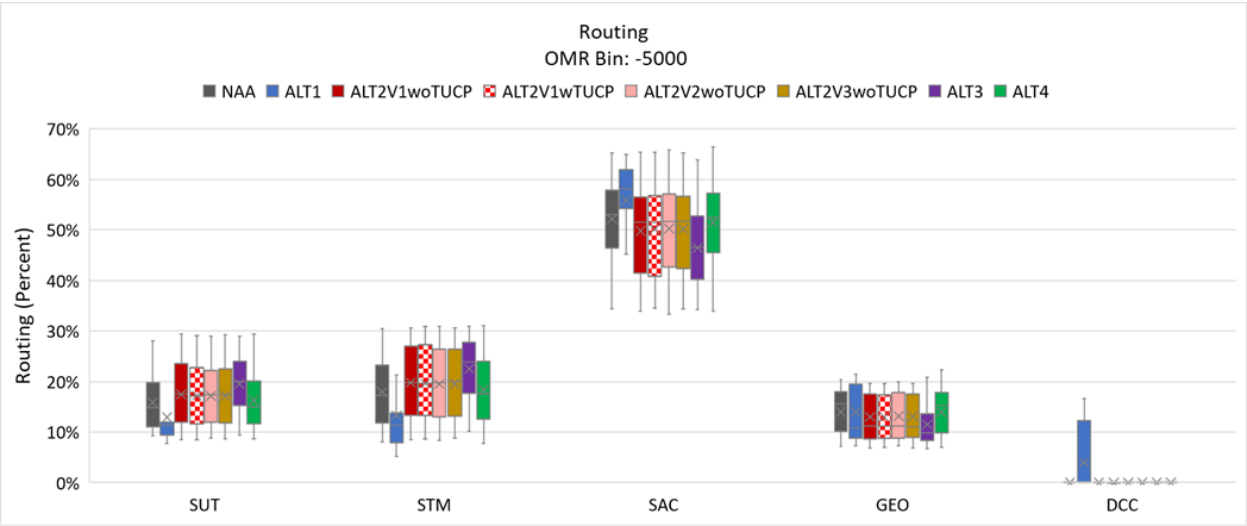

Figure I.7-6. Box and whisker of mean December through March route-specific percent routing by OMR bin -5,000 for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

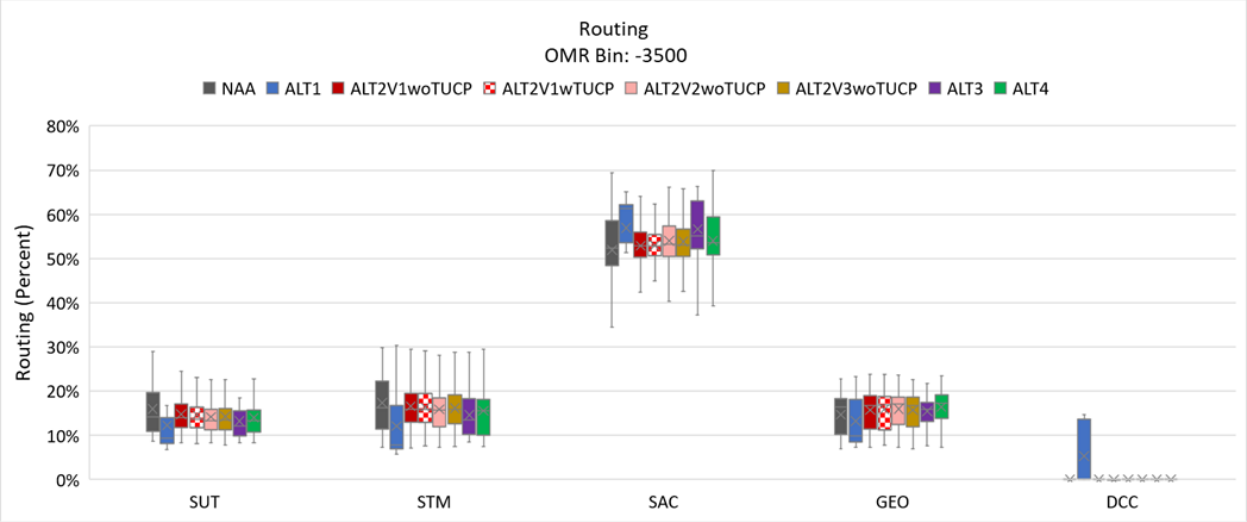

Figure I.7-7. Box and whisker of mean December through March route-specific percent routing by OMR bin -3,500 for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

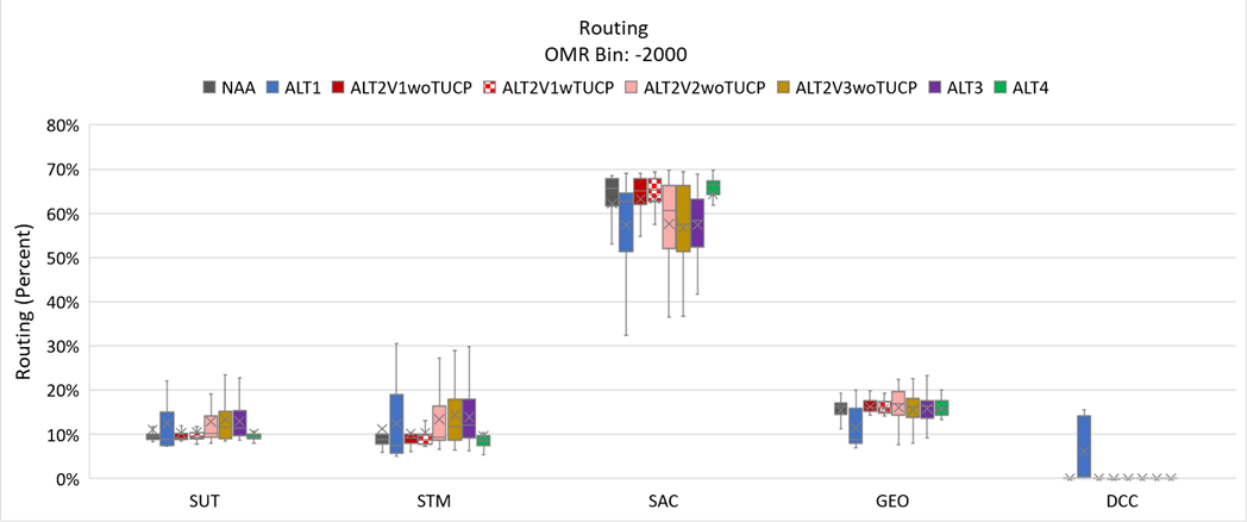

Figure I.7-8. Box and whisker of mean December through March route-specific percent routing by OMR bin -2,000 for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

I.7.3.4.2 SURVIVAL, OMR BINS

BA

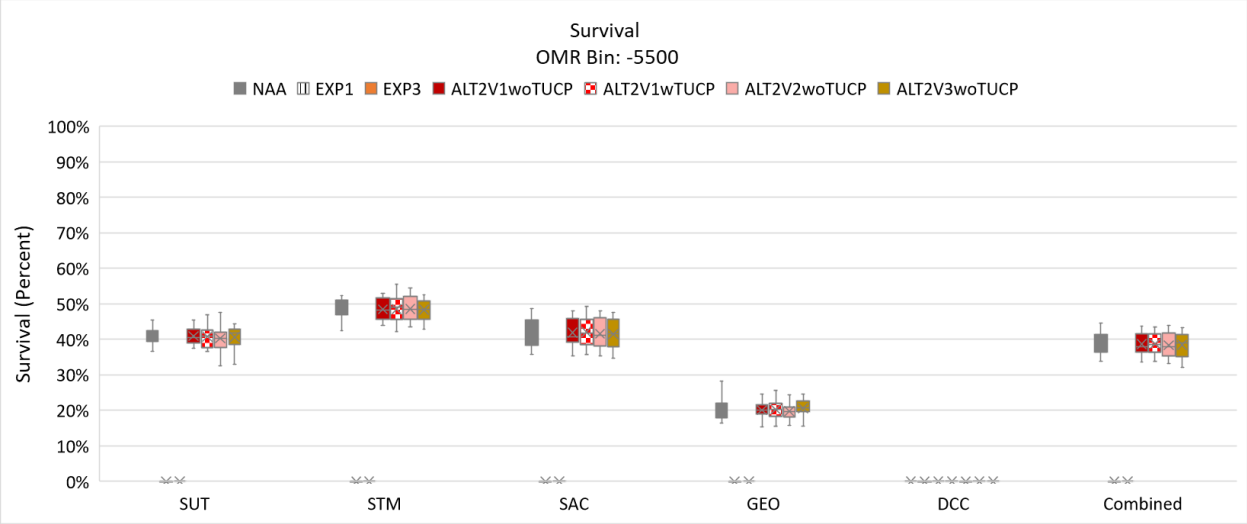

Figure I.7-9. Box and whisker of mean December through March route-specific percent survival by OMR bin -5,500 for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

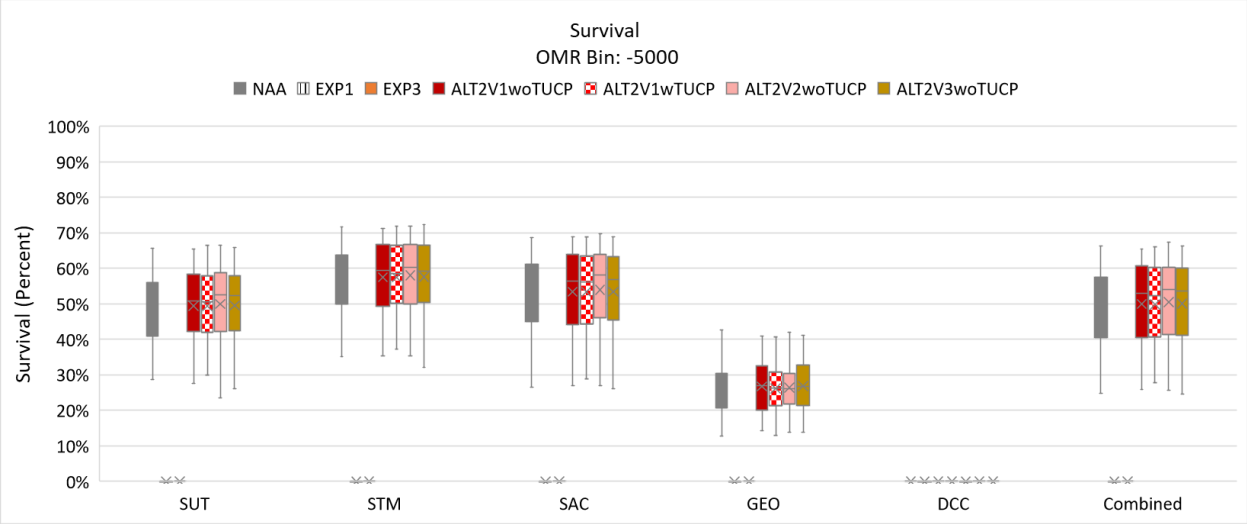

Figure I.7-10. Box and whisker of mean December through March route-specific percent survival by OMR bin -5,000 for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

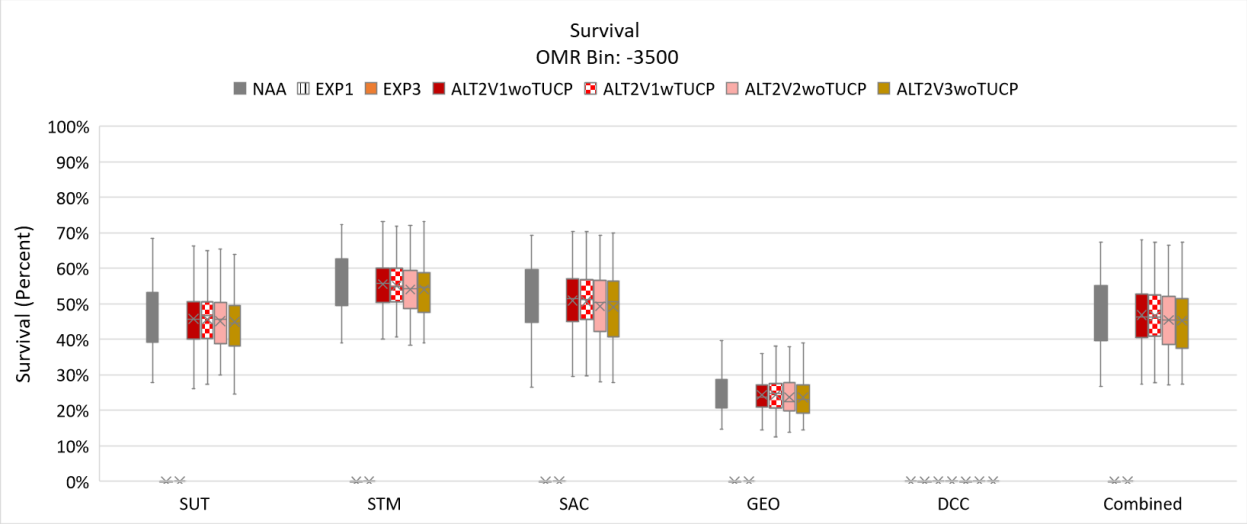

Figure I.7-11. Box and whisker of mean December through March route-specific percent survival by OMR bin -3,500 for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

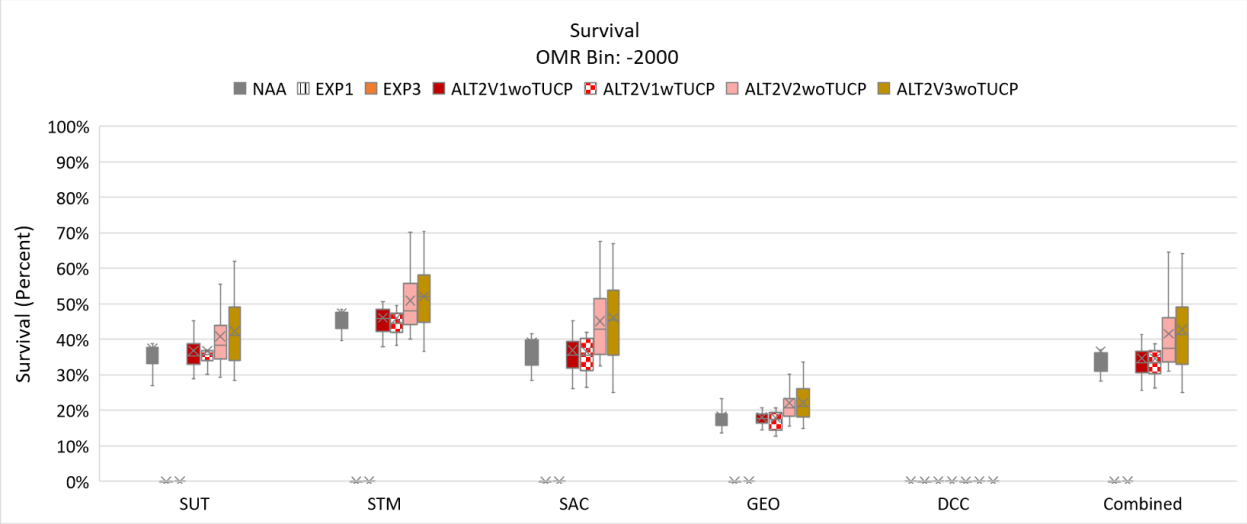

Figure I.7-12. Box and whisker of mean December through March route-specific percent survival by OMR bin -2,000 for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

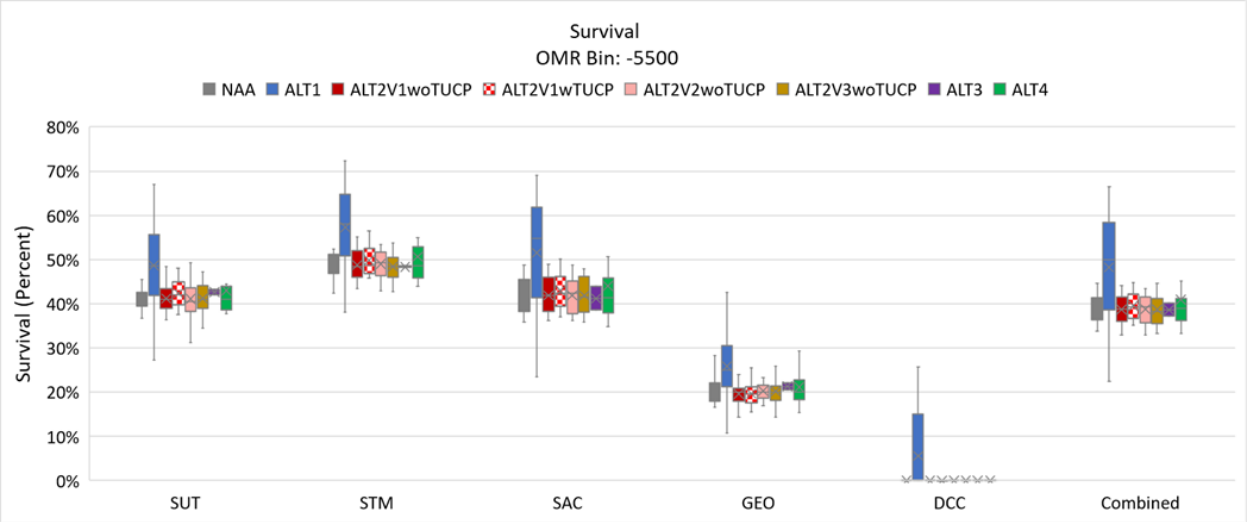

Figure I.7-13. Box and whisker of mean December through March route-specific percent survival by OMR bin -5,500 for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

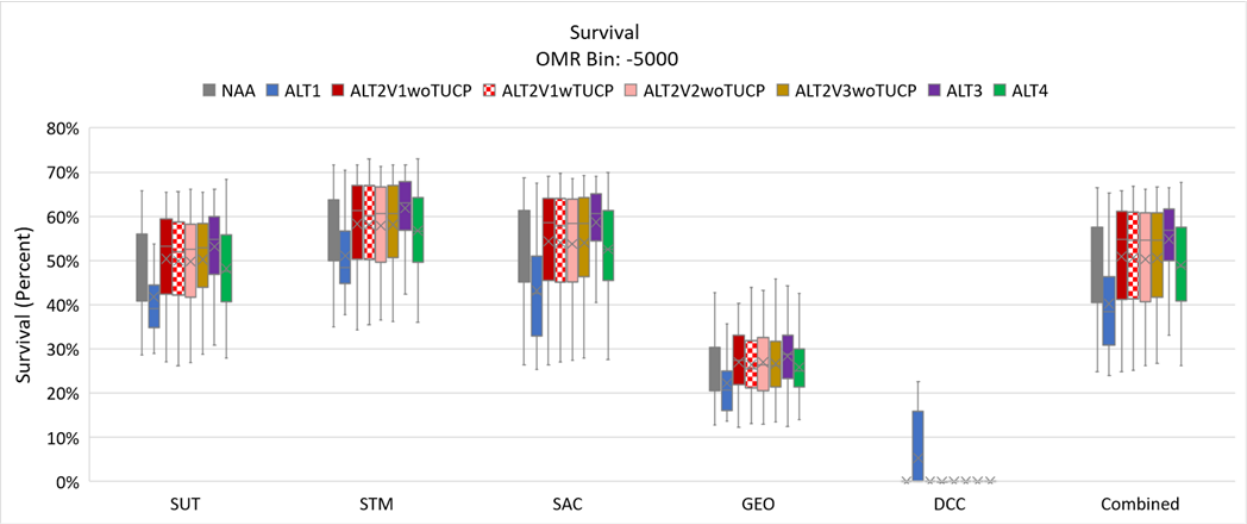

Figure I.7-14. Box and whisker of mean December through March route-specific percent survival by OMR bin -5,000 for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

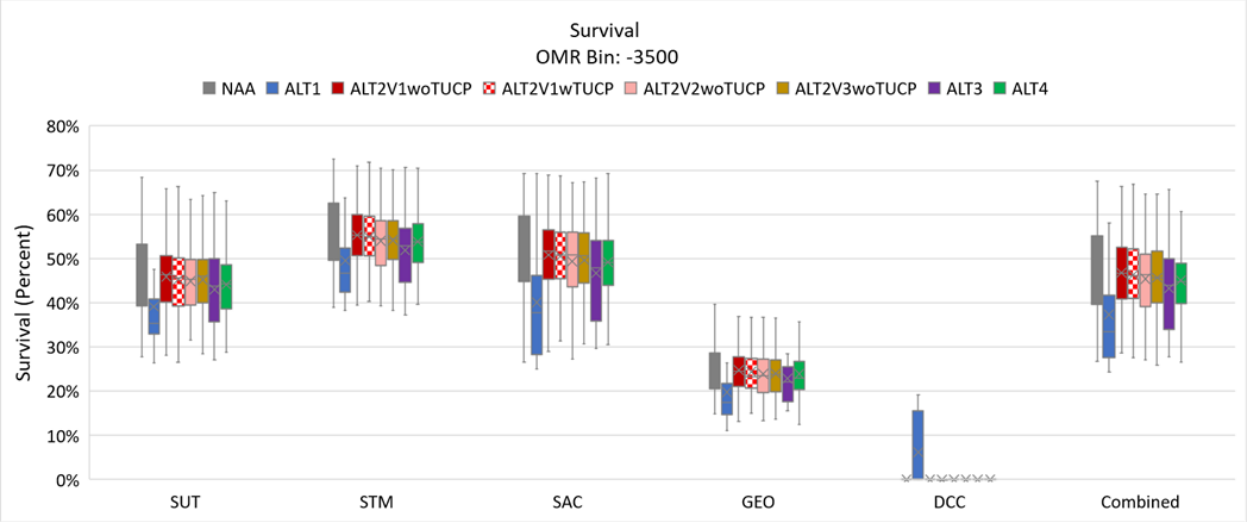

Figure I.7-15. Box and whisker of mean December through March route-specific percent survival by OMR bin -3,500 for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

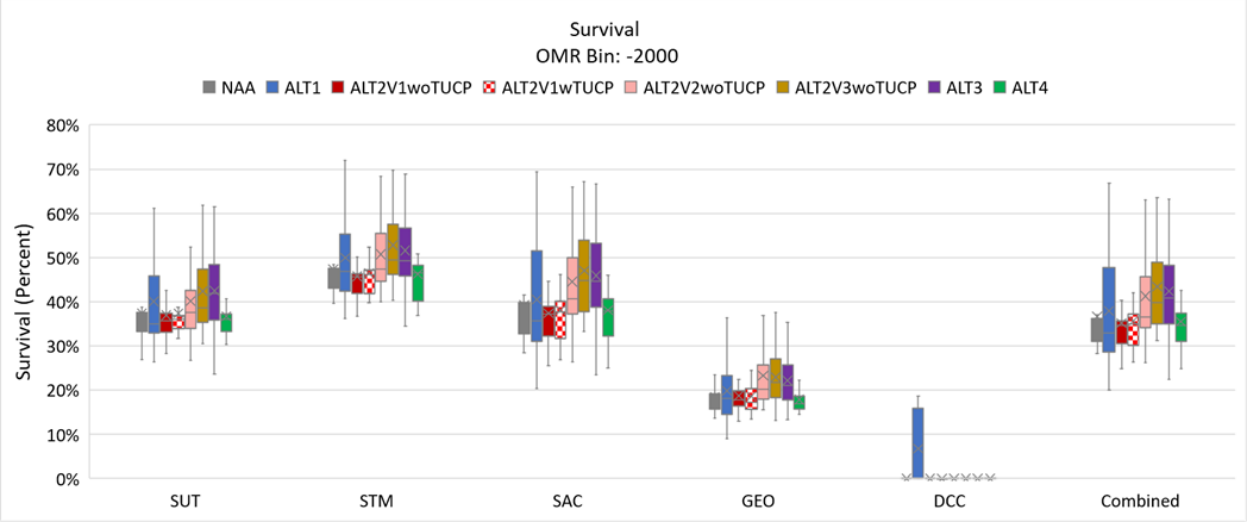

Figure I.7-16. Box and whisker of mean December through March route-specific percent survival by OMR bin -2,000 for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

I.7.3.4.3 ROUTING, INFLOW BINS

BA

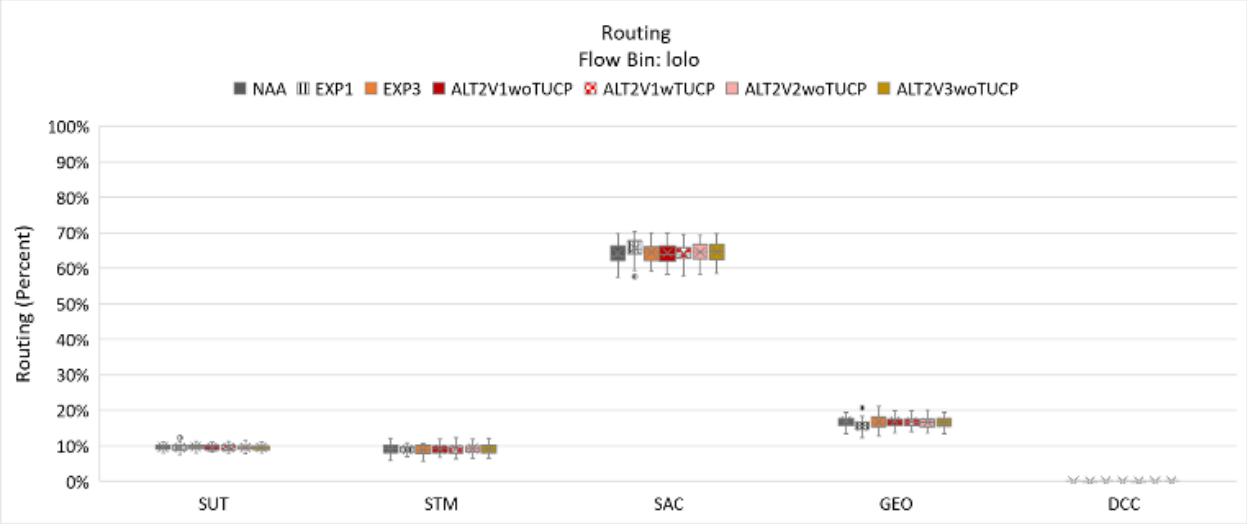

Figure I.7-17. Box and whisker of mean December through March route-specific percent routing by Inflow bin "lolo" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

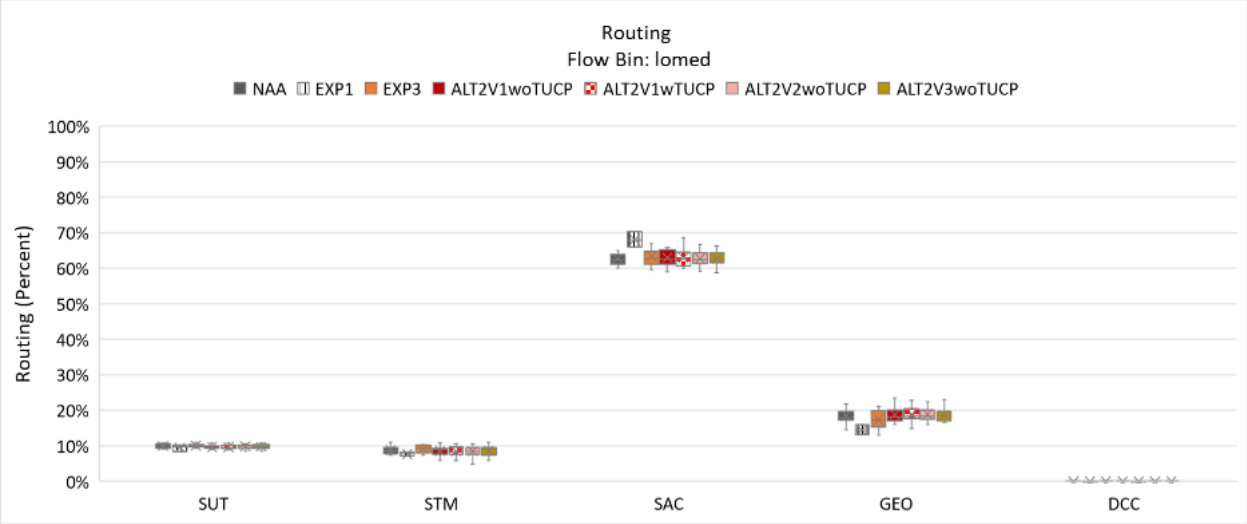

Figure I.7-18. Box and whisker of mean December through March route-specific percent routing by Inflow bin "lomed" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

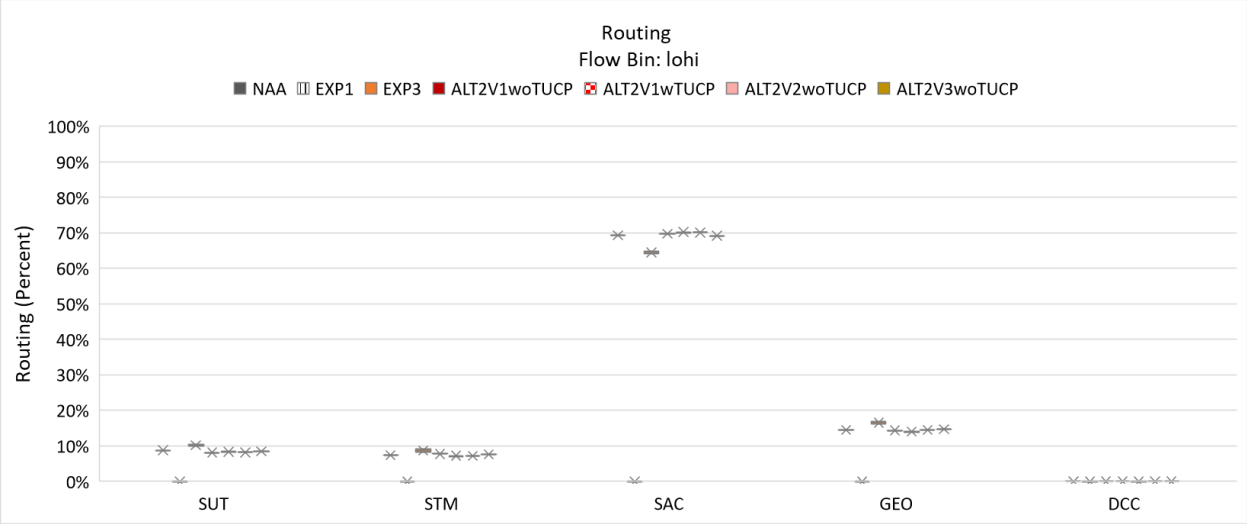

Figure I.7-19. Box and whisker of mean December through March route-specific percent routing by Inflow bin "lohi" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

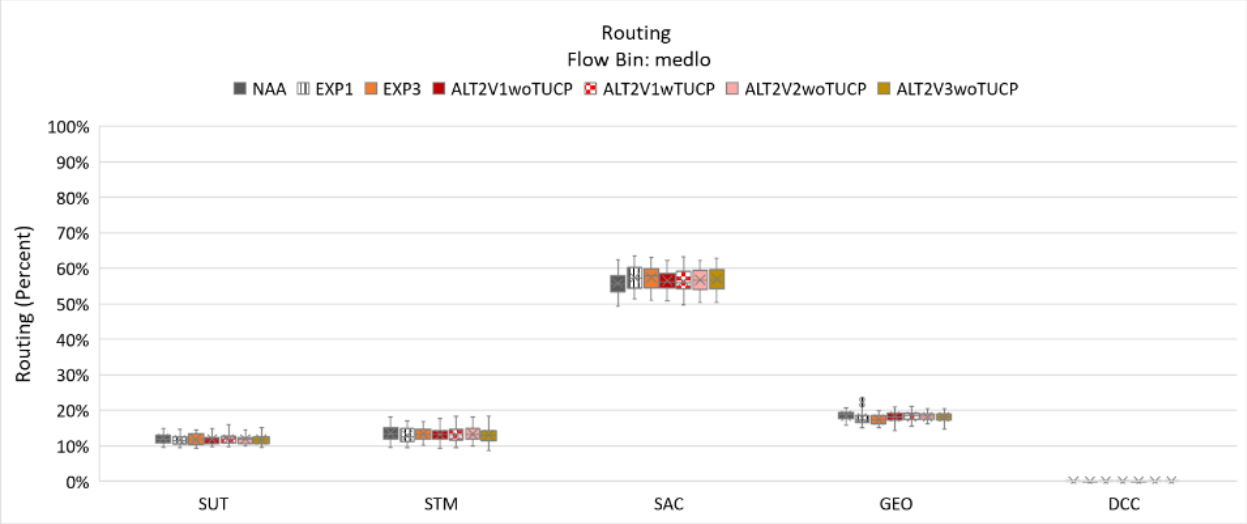

Figure I.7-20. Box and whisker of mean December through March route-specific percent routing by Inflow bin "medlo" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

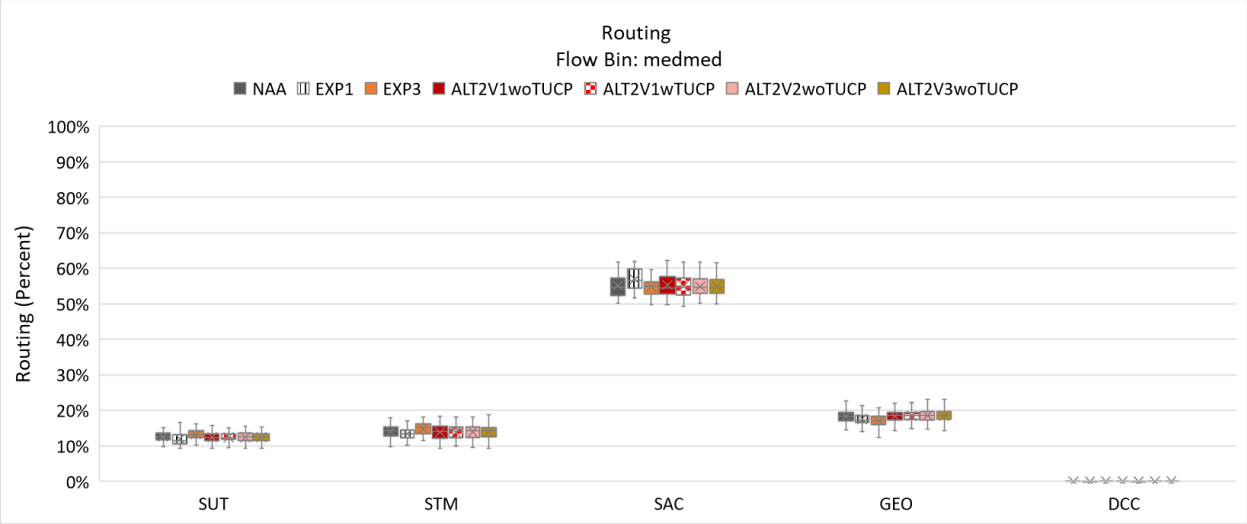

Figure I.7-21. Box and whisker of mean December through March route-specific percent routing by Inflow bin "medmed" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

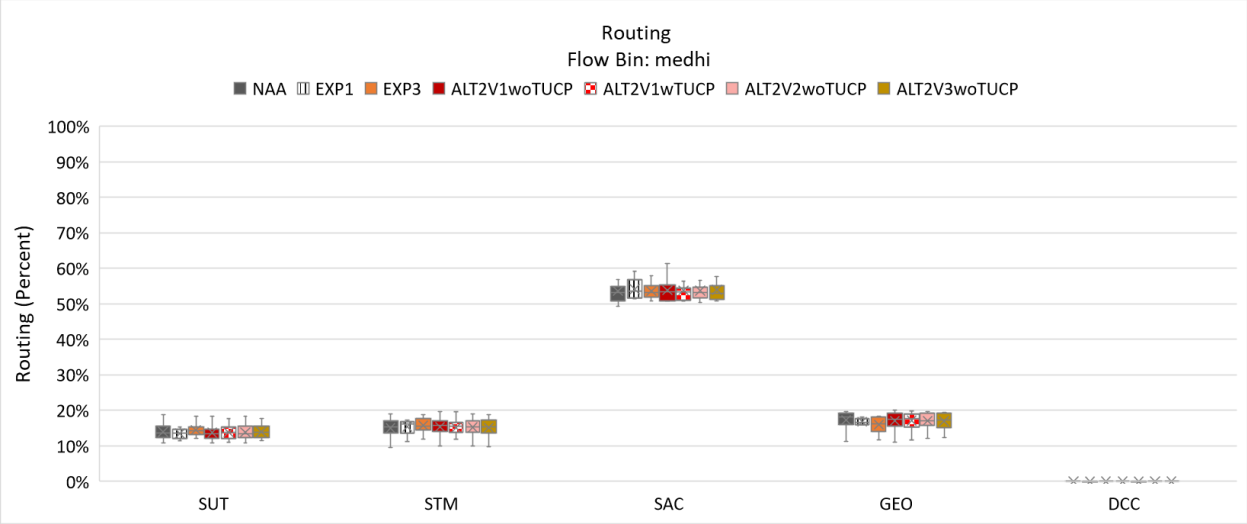

Figure I.7-22. Box and whisker of mean December through March route-specific percent routing by Inflow bin "medhi" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

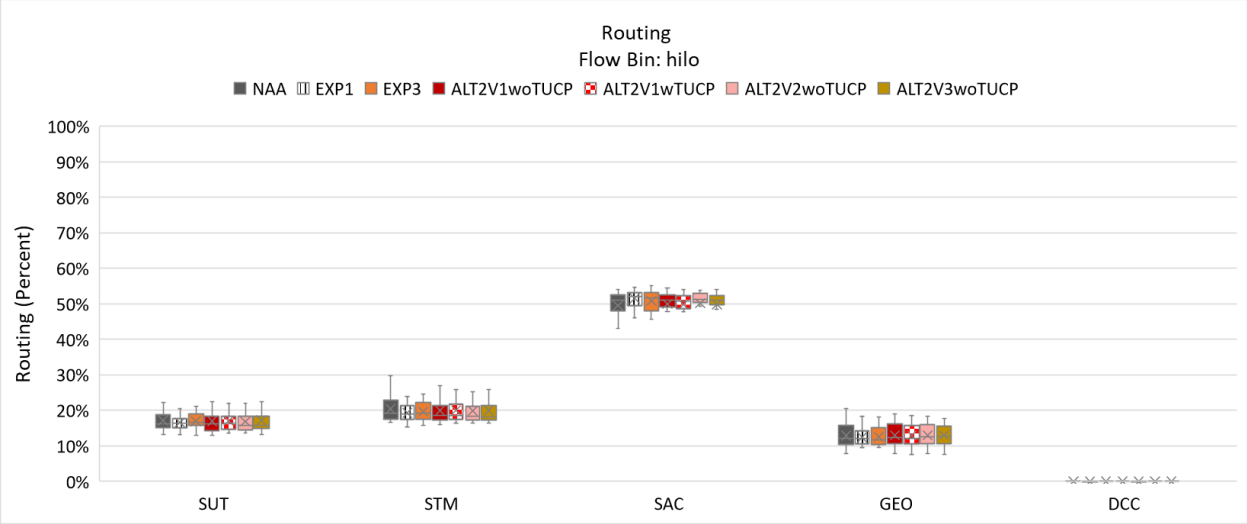

Figure I.7-23. Box and whisker of mean December through March route-specific percent routing by Inflow bin "hilo" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

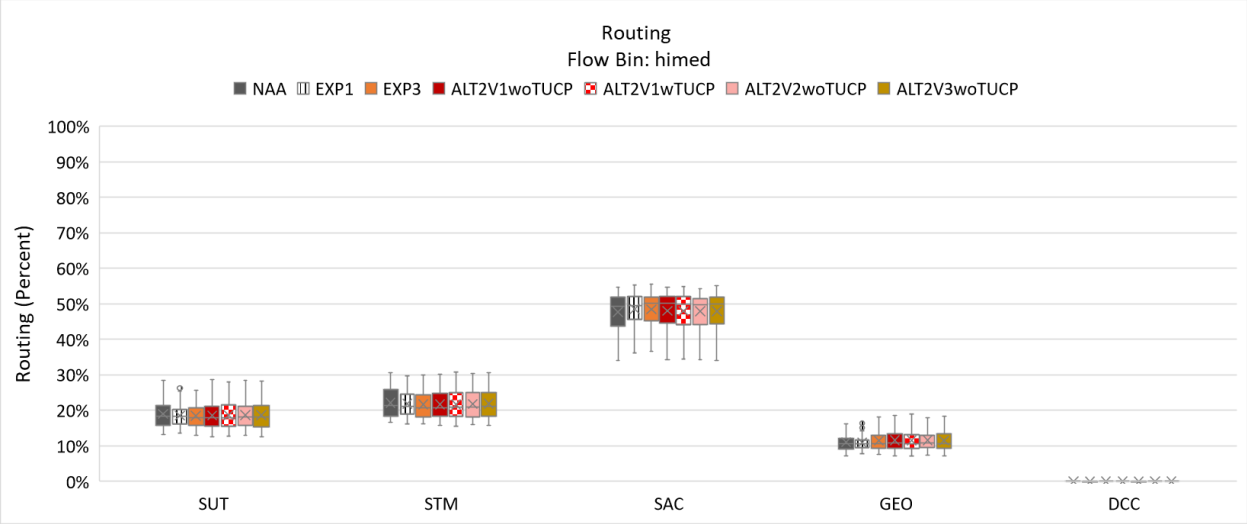

Figure I.7-24. Box and whisker of mean December through March route-specific percent routing by Inflow bin "himed" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

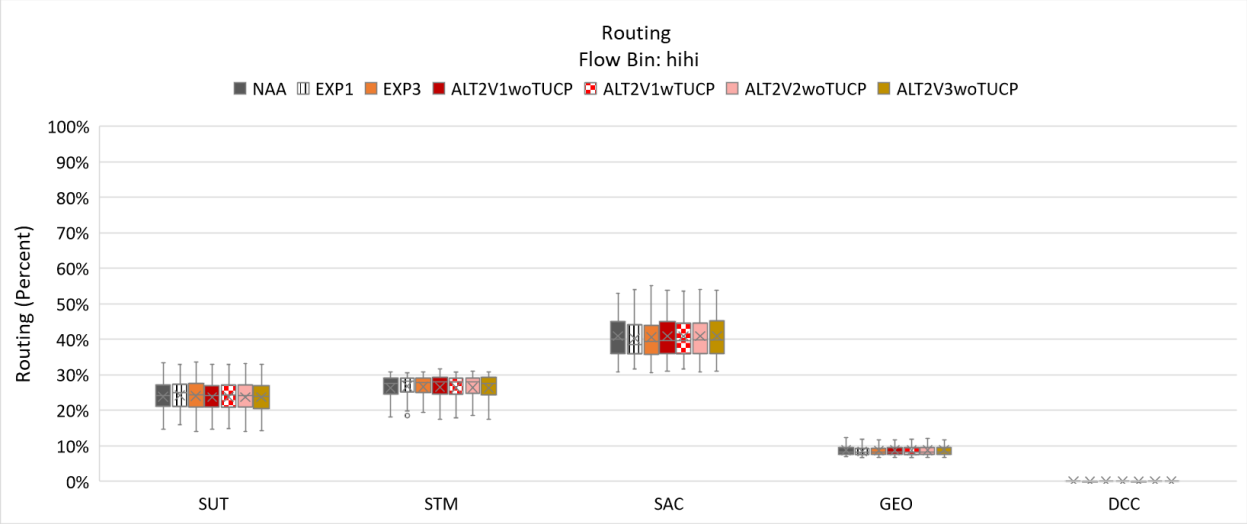

Figure I.7-25. Box and whisker of mean December through March route-specific percent routing by Inflow bin "hihi" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

EIS

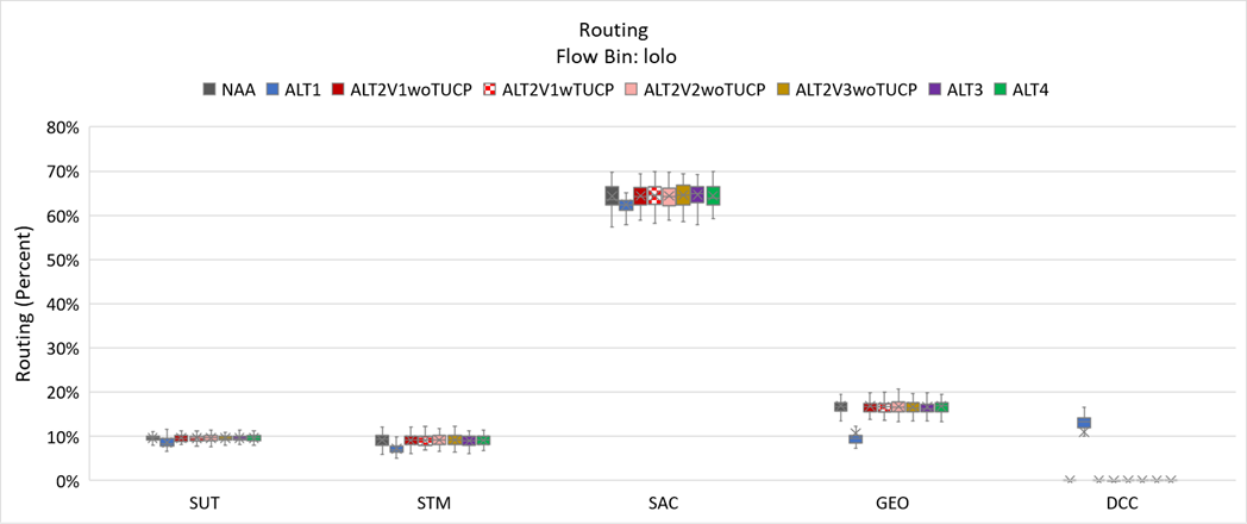

Figure I.7-26. Box and whisker of mean December through March route-specific percent routing by Inflow bin "lolo" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

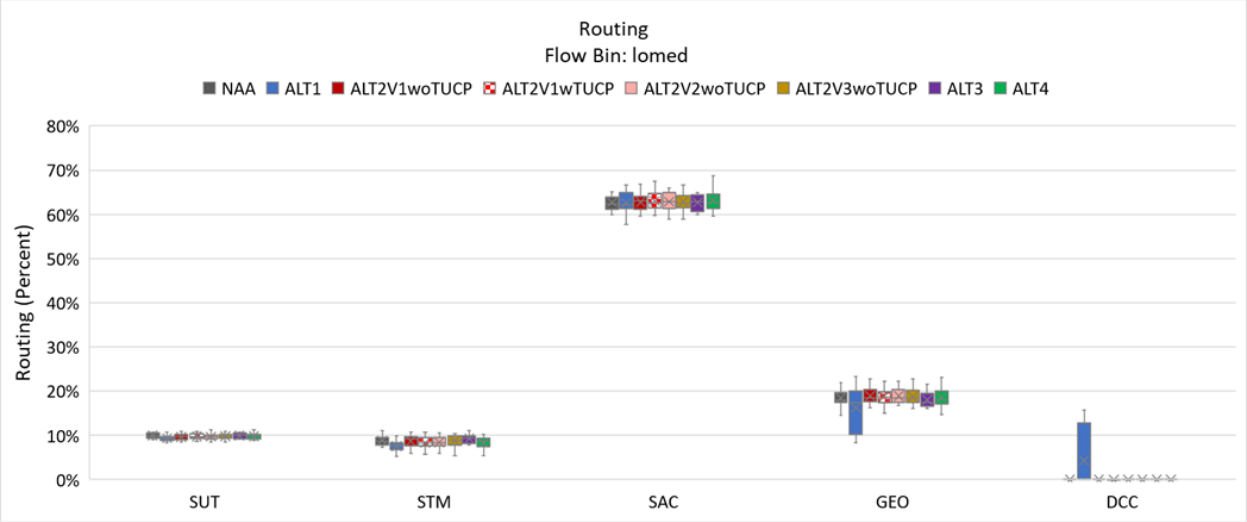

Figure I.7-27. Box and whisker of mean December through March route-specific percent routing by Inflow bin "lomed" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

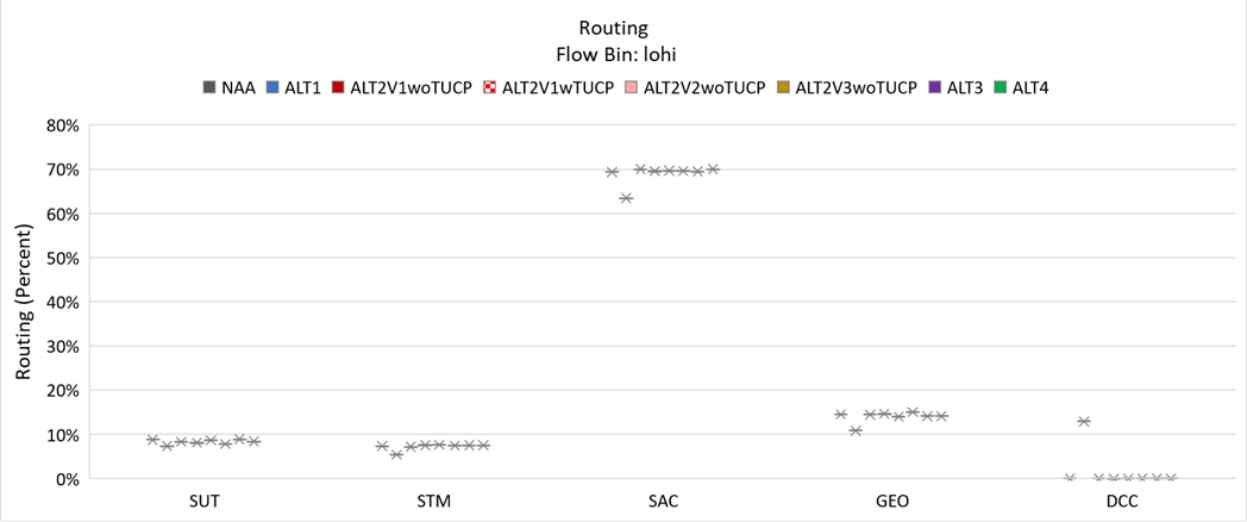

Figure I.7-28. Box and whisker of mean December through March route-specific percent routing by Inflow bin "lohi" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

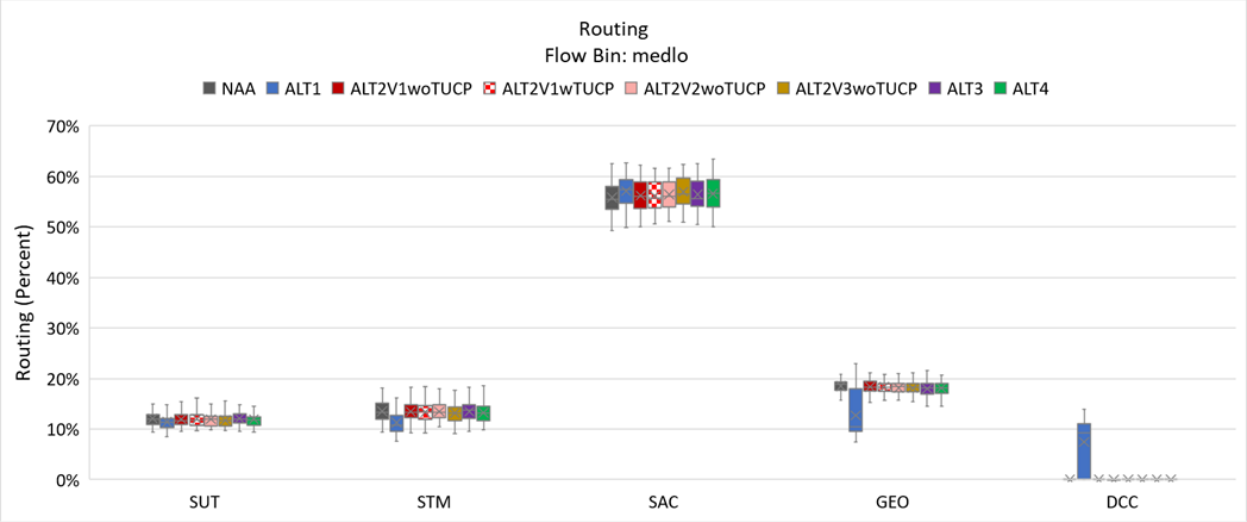

Figure I.7-29. Box and whisker of mean December through March route-specific percent routing by Inflow bin "medlo" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

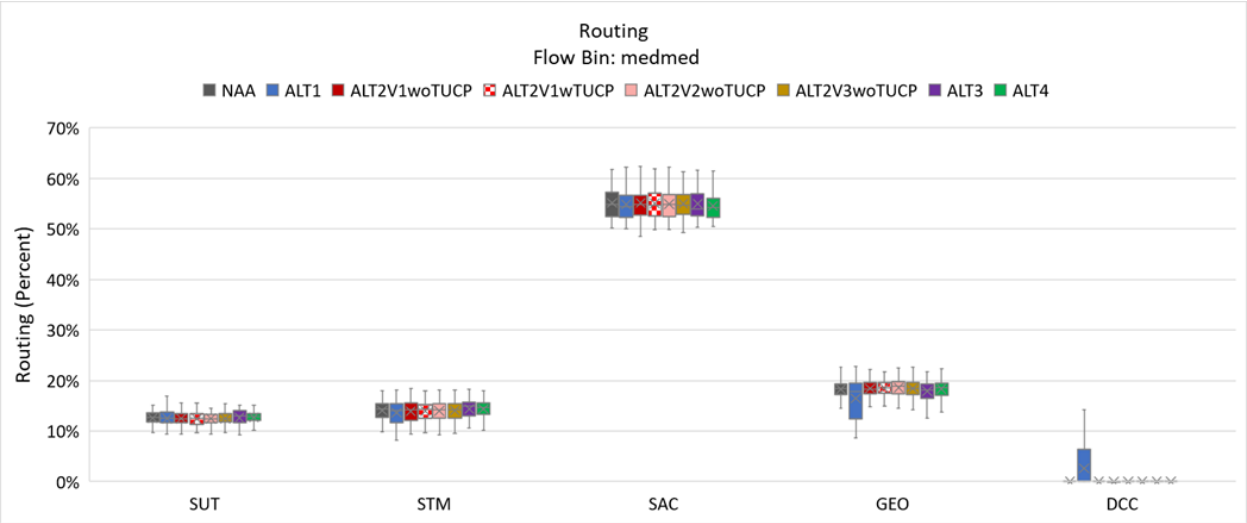

Figure I.7-30. Box and whisker of mean December through March route-specific percent routing by Inflow bin "medmed" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

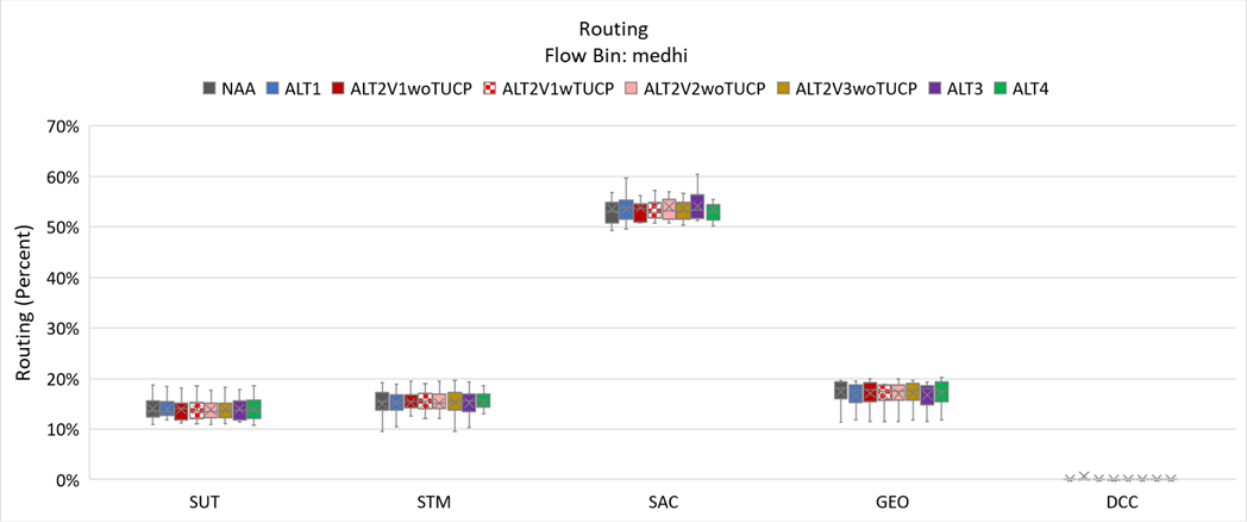

Figure I.7-31. Box and whisker of mean December through March route-specific percent routing by Inflow bin "medhi" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

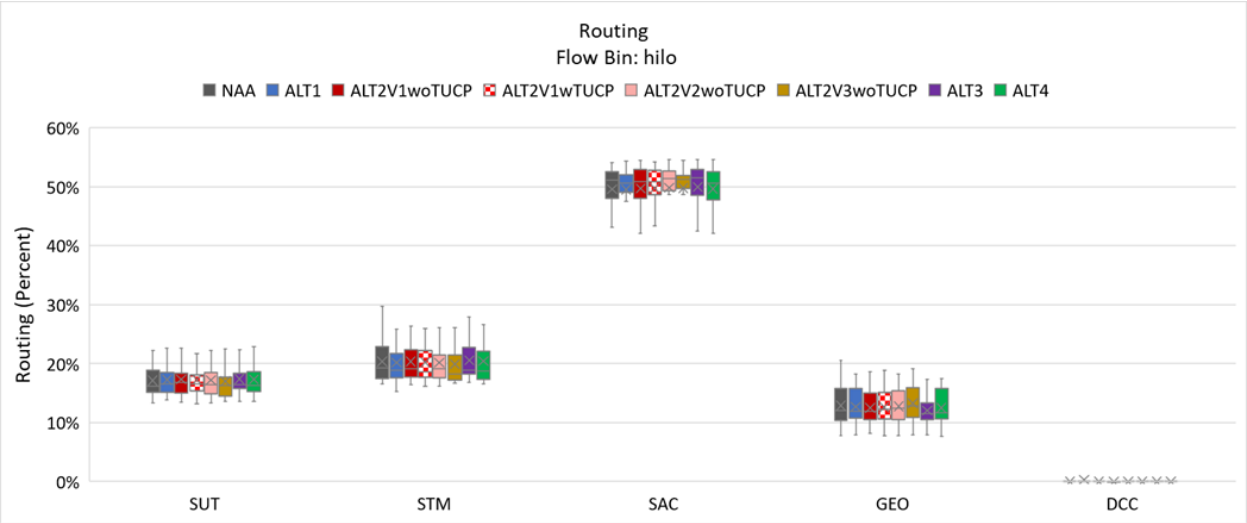

Figure I.7-32. Box and whisker of mean December through March route-specific percent routing by Inflow bin "hilo" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

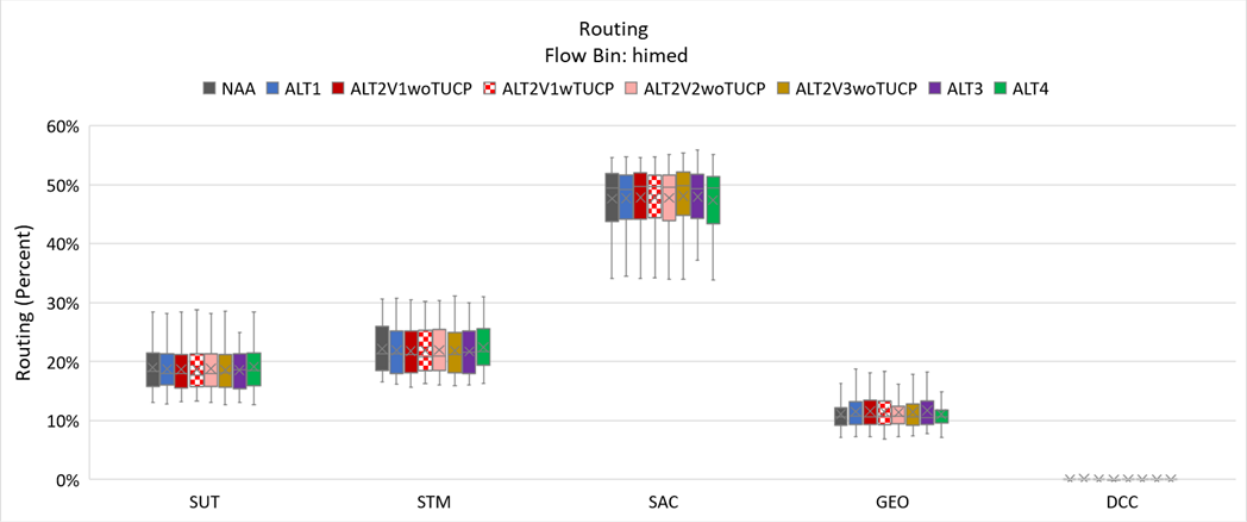

Figure I.7-33. Box and whisker of mean December through March route-specific percent routing by Inflow bin "himed" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

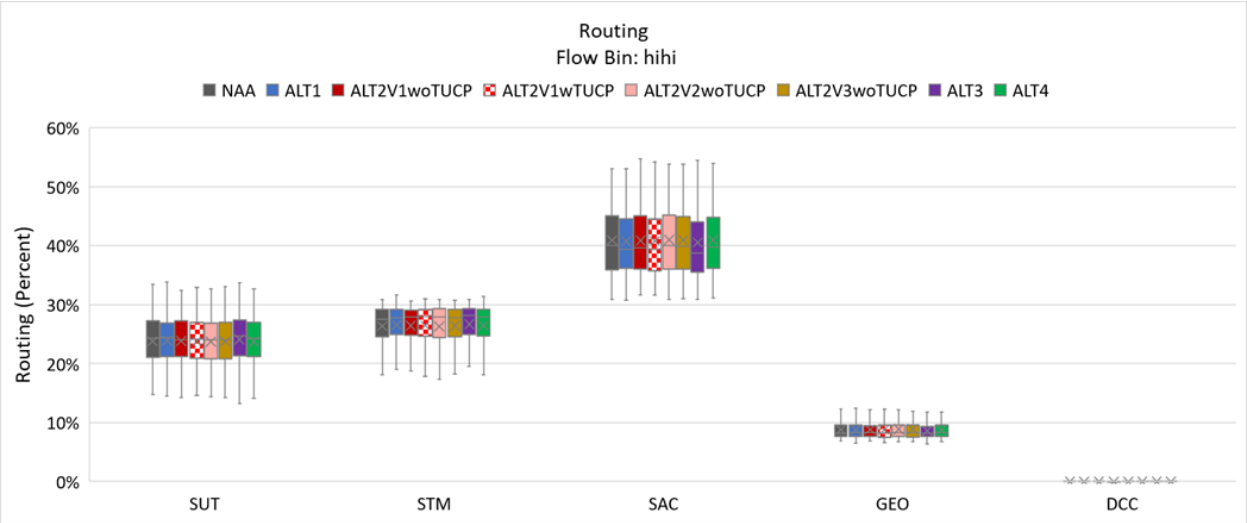

Figure I.7-34. Box and whisker of mean December through March route-specific percent routing by Inflow bin "hihi" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

I.7.3.4.4 SURVIVAL, INFLOW BINS

BA

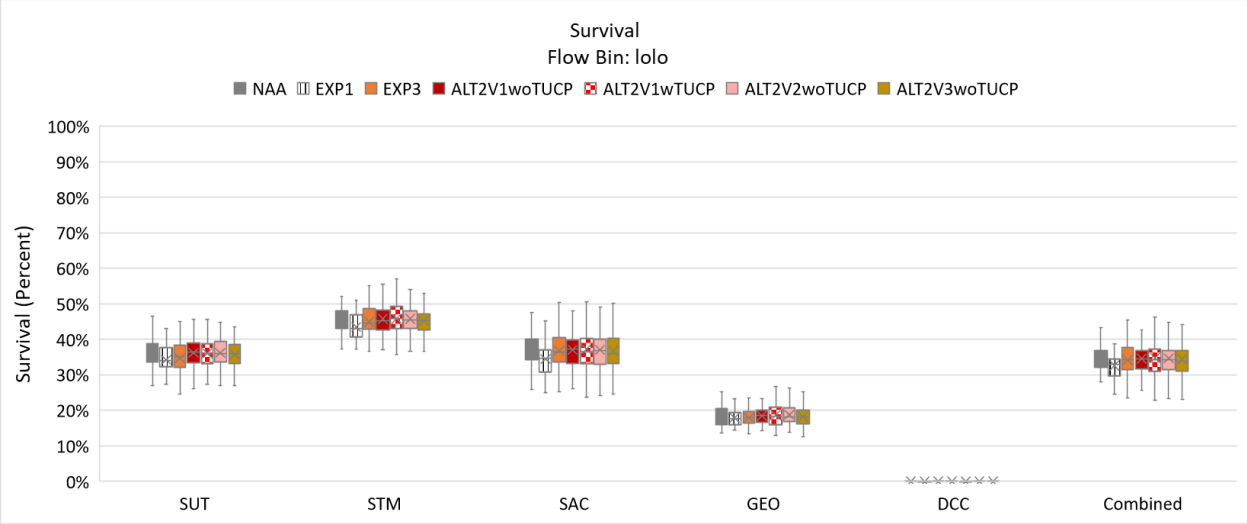

Figure I.7-35. Box and whisker of mean December through March route-specific percent survival by Inflow bin "lolo" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

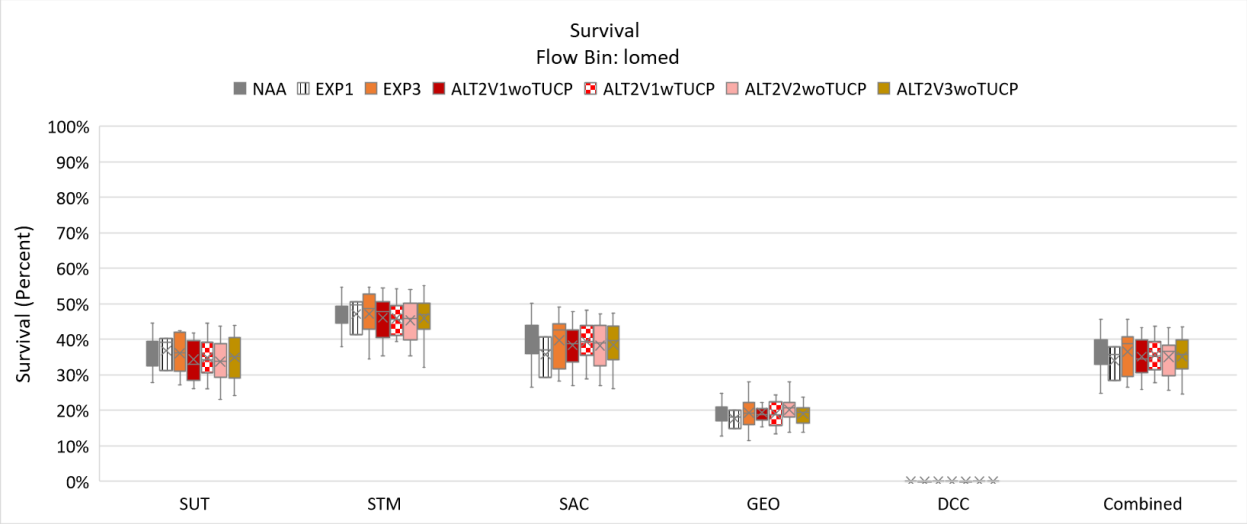

Figure I.7-36. Box and whisker of mean December through March route-specific percent survival by Inflow bin "lomed" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

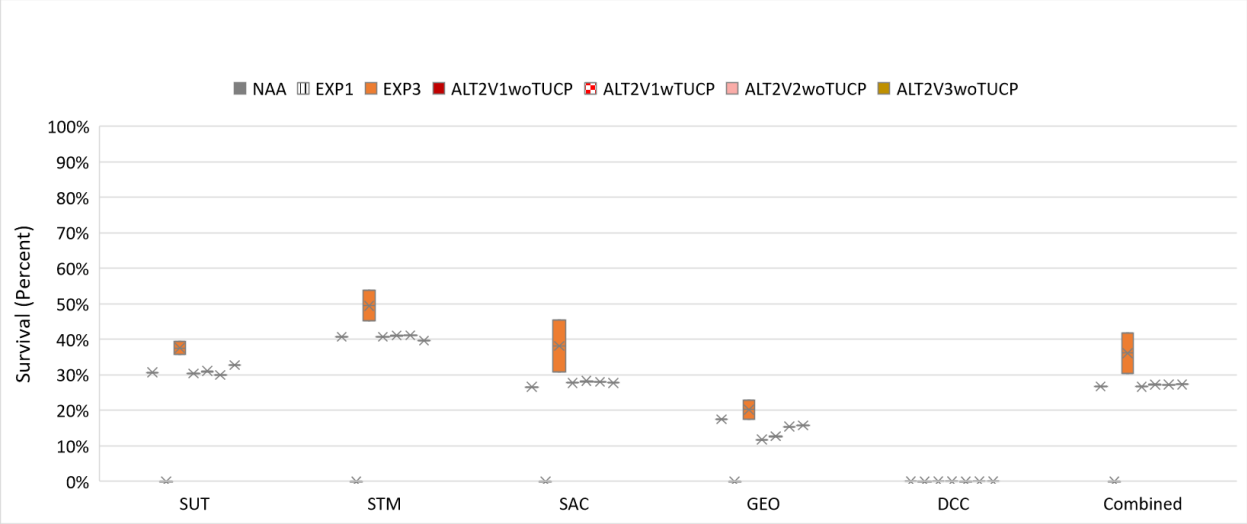

Figure I.7-37. Box and whisker of mean December through March route-specific percent survival by Inflow bin "lohi" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

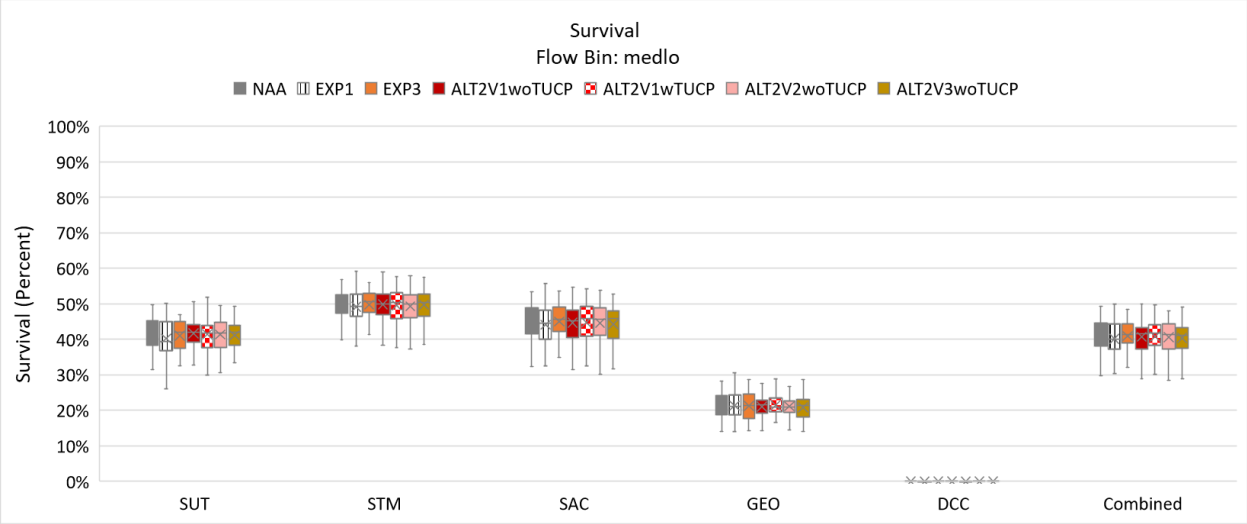

Figure I.7-38. Box and whisker of mean December through March route-specific percent survival by Inflow bin "medlo" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

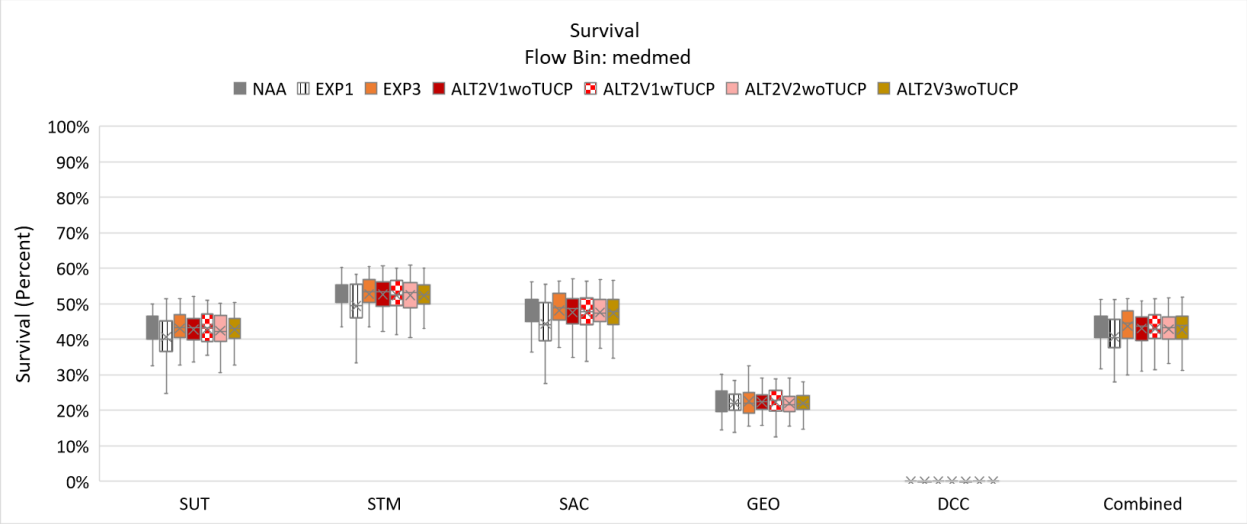

Figure I.7-39. Box and whisker of mean December through March route-specific percent survival by Inflow bin "medmed" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

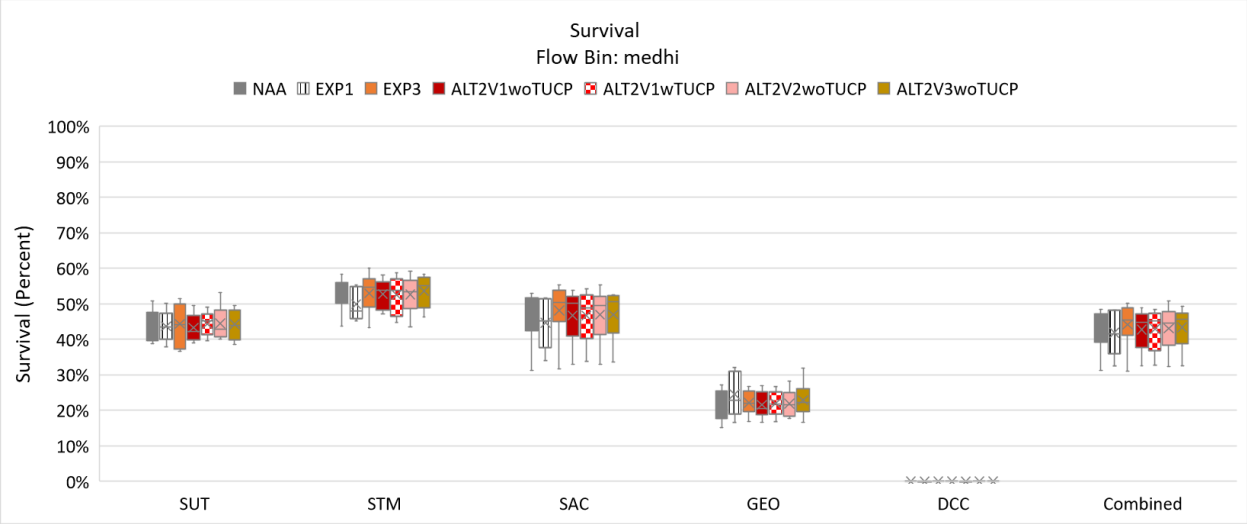

Figure I.7-40. Box and whisker of mean December through March route-specific percent survival by Inflow bin "medhi" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

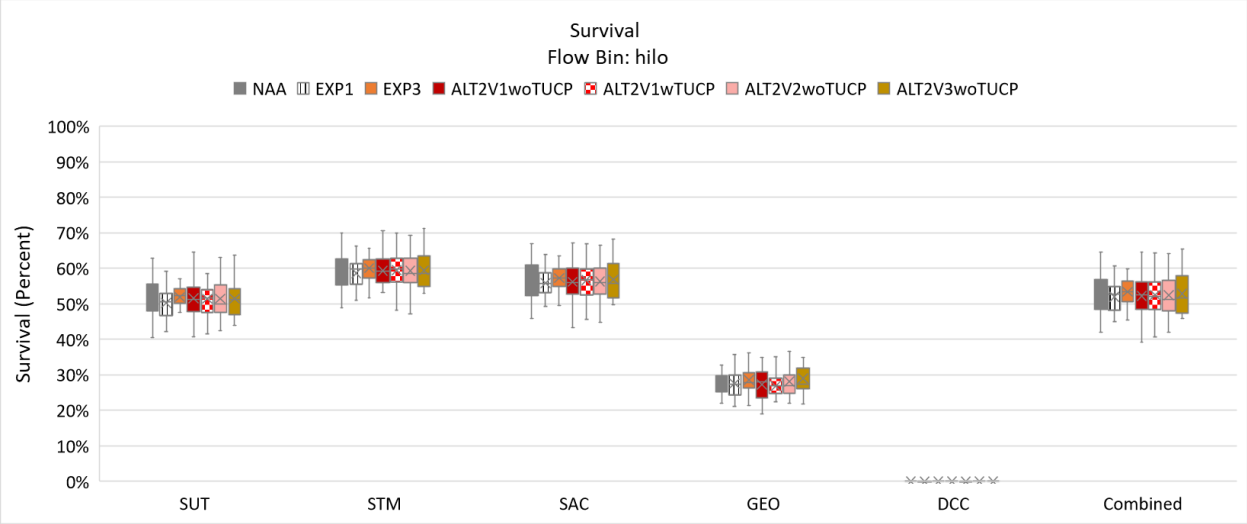

Figure I.7-41. Box and whisker of mean December through March route-specific percent survival by Inflow bin "hilo" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

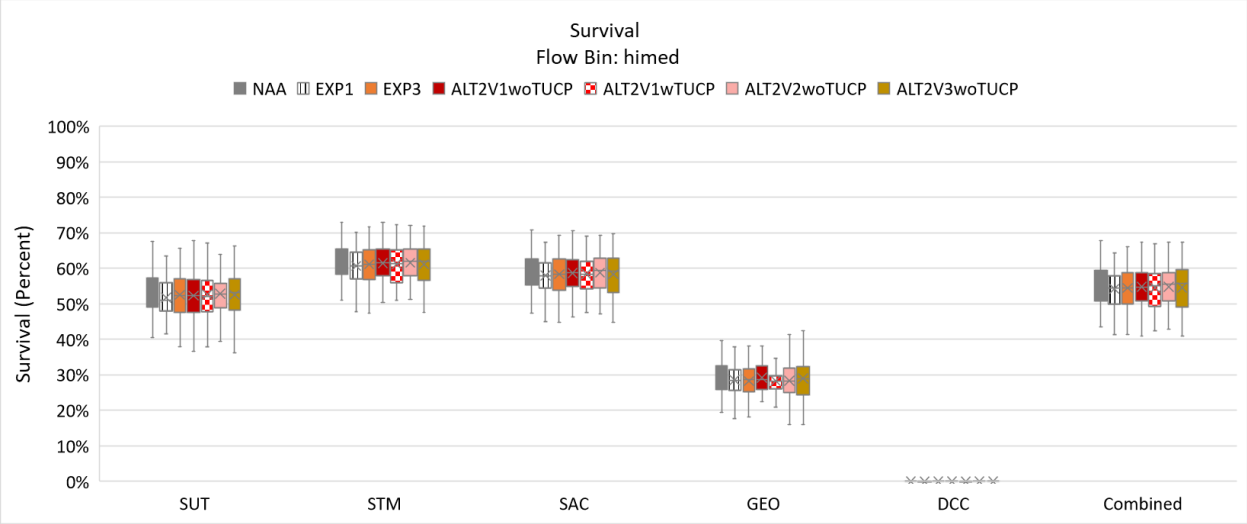

Figure I.7-42. Box and whisker of mean December through March route-specific percent survival by Inflow bin "himed" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

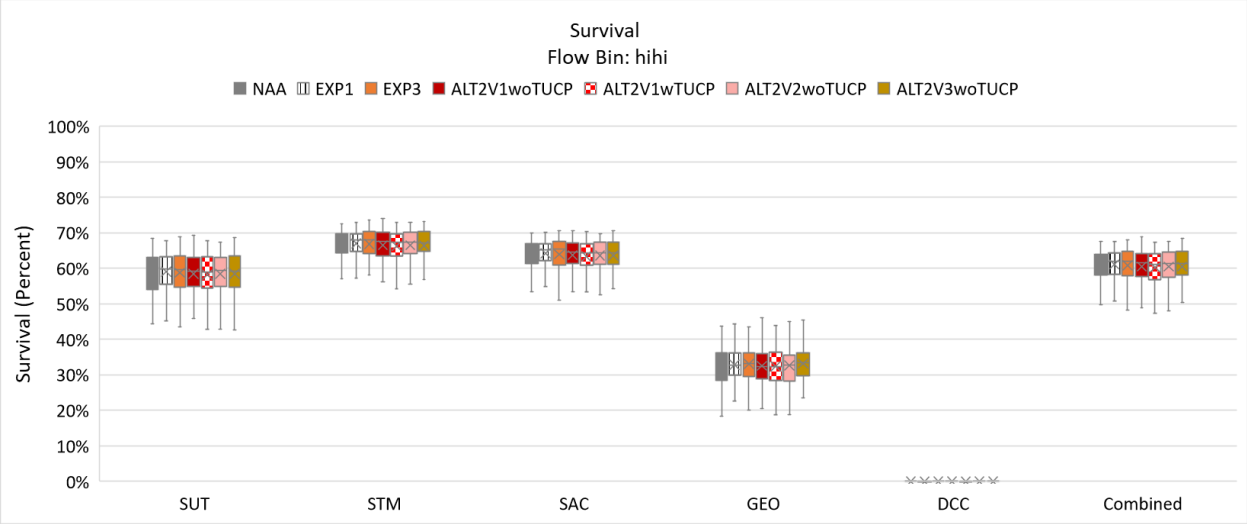

Figure I.7-43. Box and whisker of mean December through March route-specific percent survival by Inflow bin "hihi" for NAA, EXP1, EXP3, and four phases of Alternative 2 (BA scenarios).

EIS

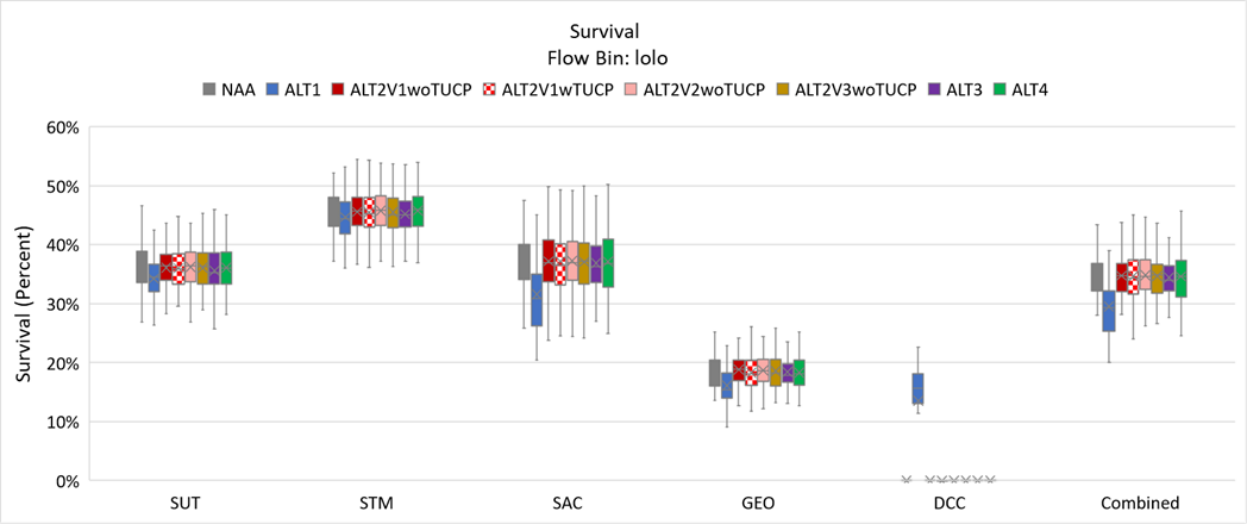

Figure I.7-44. Box and whisker of mean December through March route-specific percent survival by Inflow bin "lolo" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

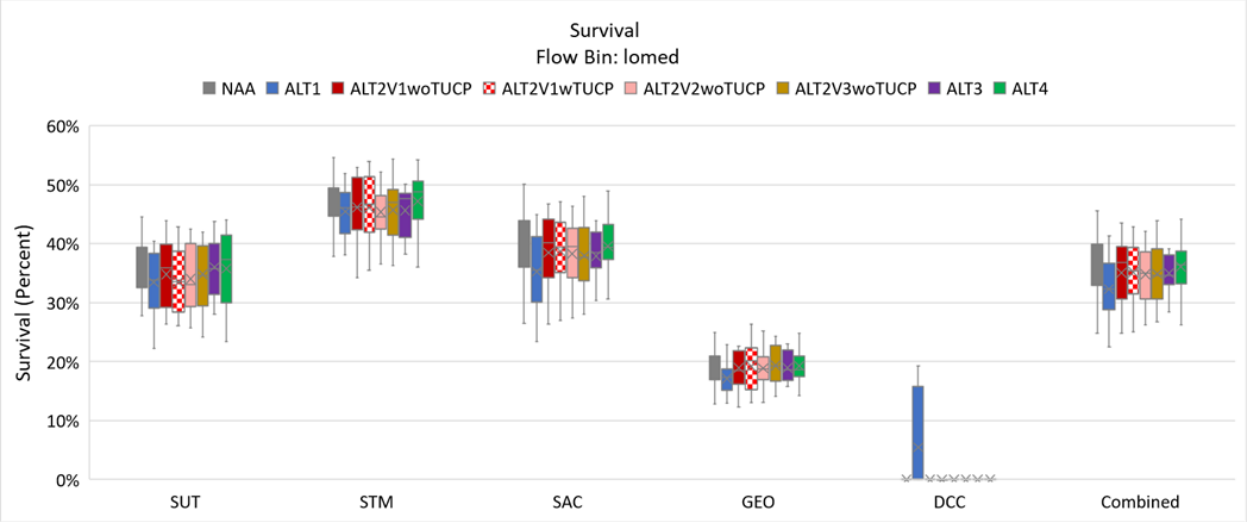

Figure I.7-45. Box and whisker of mean December through March route-specific percent survival by Inflow bin "lomed" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

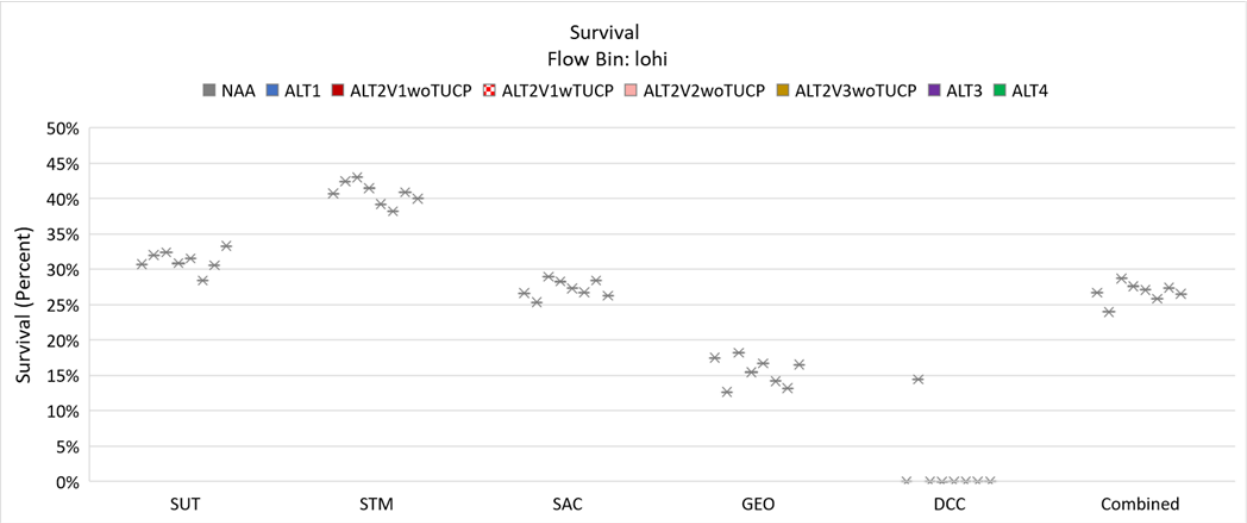

Figure I.7-46. Box and whisker of mean December through March route-specific percent survival by Inflow bin "lohi" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

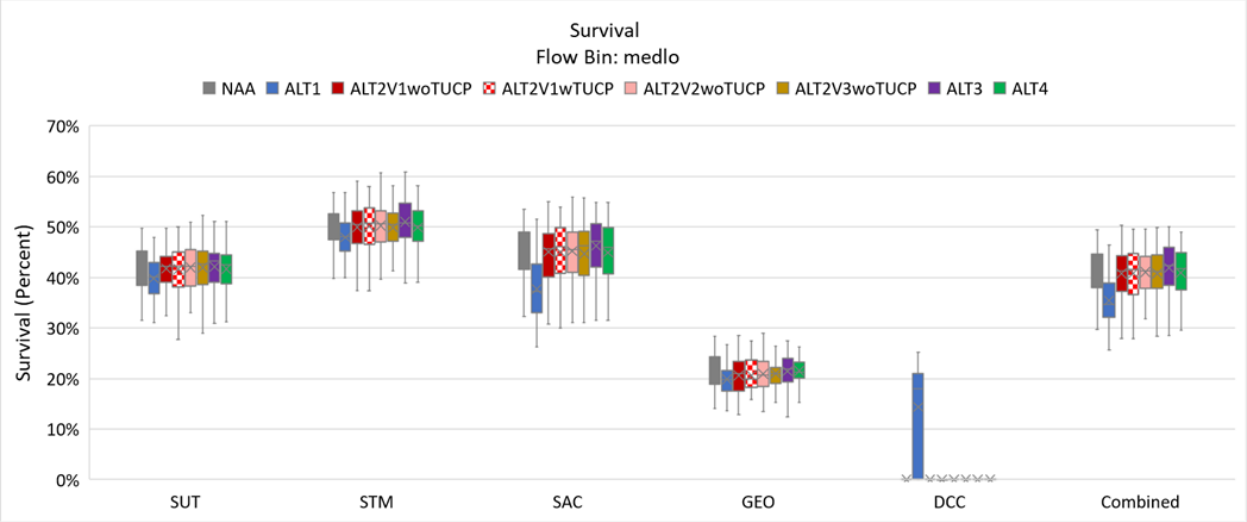

Figure I.7-47. Box and whisker of mean December through March route-specific percent survival by Inflow bin "medlo" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

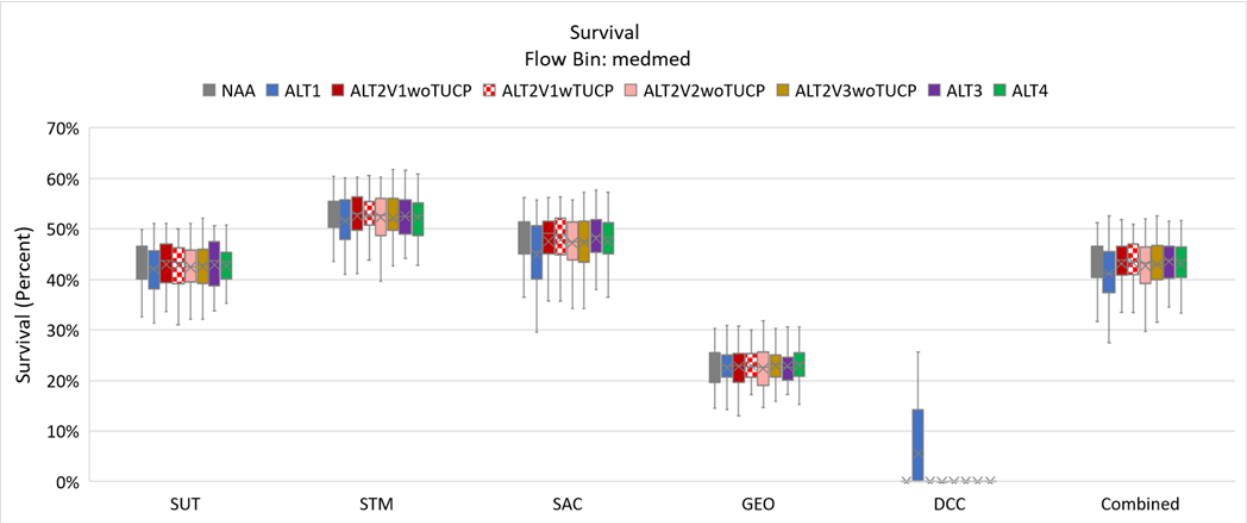

Figure I.7-48. Box and whisker of mean December through March route-specific percent survival by Inflow bin "medmed" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

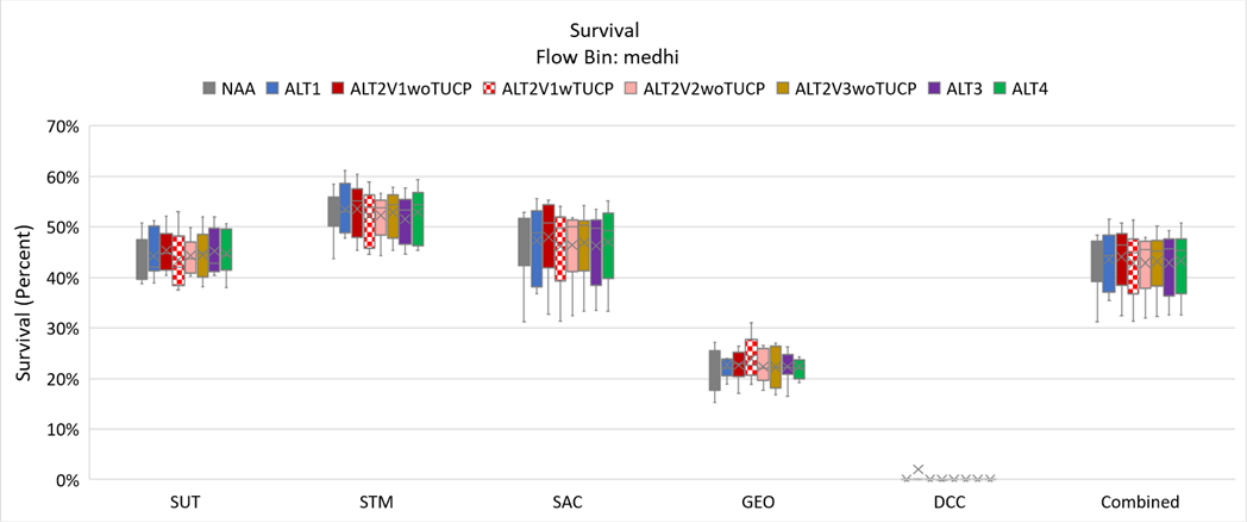

Figure I.7-49. Box and whisker of mean December through March route-specific percent survival by Inflow bin "medhi" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

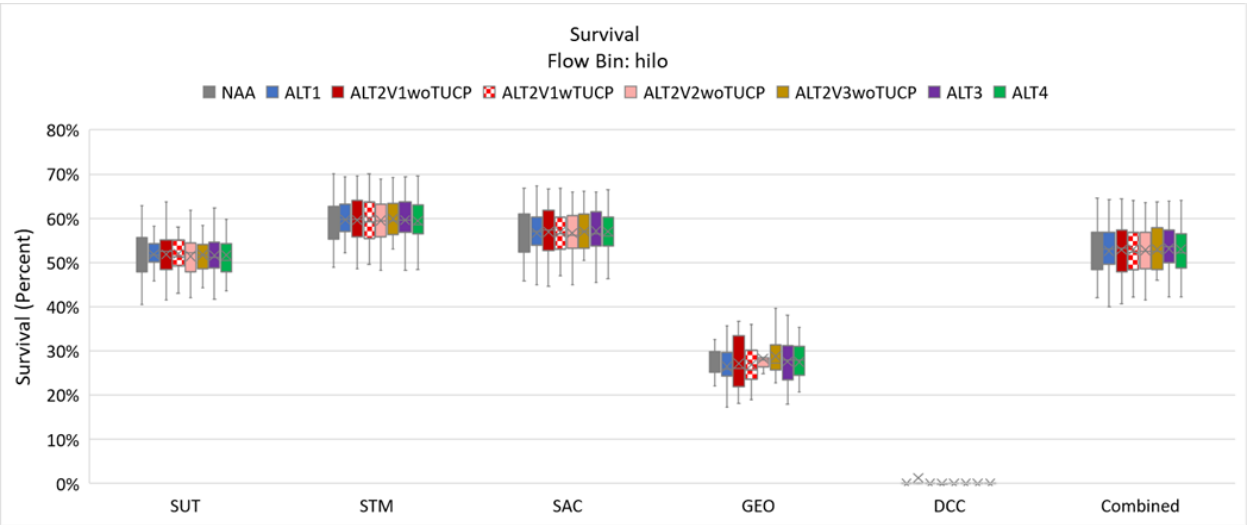

Figure I.7-50. Box and whisker of mean December through March route-specific percent survival by Inflow bin "hilo" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

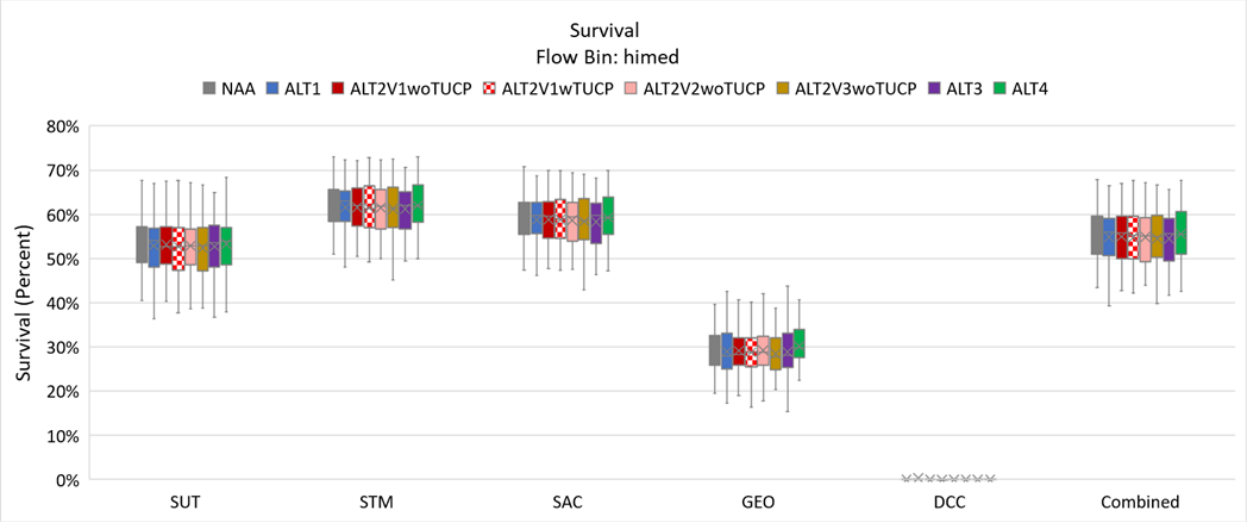

Figure I.7-51. Box and whisker of mean December through March route-specific percent survival by Inflow bin "himed" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

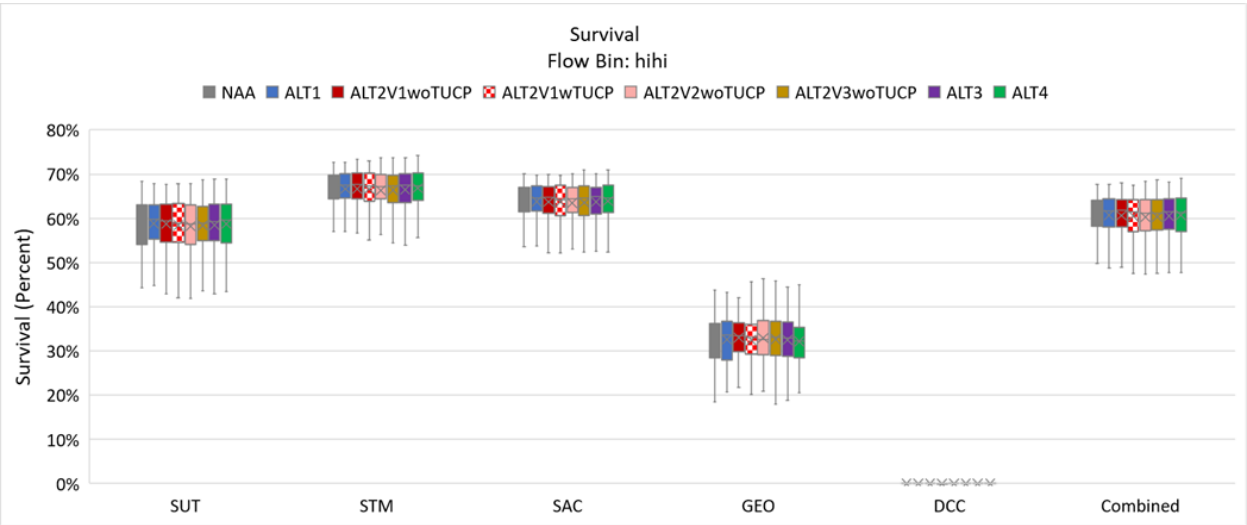

Figure I.7-52. Box and whisker of mean December through March route-specific percent survival by Inflow bin "hihi" for NAA, Alternative 1, four phases of Alternative 2, Alternative 3, and Alternative 4 (EIS scenarios).

I.7.4 References

Wang, Xiaochun, (2019) Chapter 1, ECO_PTM Model Development, Methodology for Flow and Salinity Estimates in the Sacramento-San Joaquin Delta and Suisun Marsh, 40th Annual Progress Report, California Department of Water Resources.