

Gaming Issues

Game 1 Issues

1. Should conduct a gaming exercise with a base run w/o in-delta AFRP.
2. Need to consider water quality impacts as we progress through game.
3. Determine cost of moving and purchasing water as we go.
4. Should considering closing DCC only when salvage is increasing or high.
5. Input monthly distribution of ET in the Delta
6. Need to consider water cost of closing DCC
7. San Joaquin attraction flows
8. Tax on EWA releases from Shasta? Carriage loss? 20% combination of carriage and conveyance loss? As long as we are not exporting it, it is not an issue. Effect on Shasta cold-water pool.
9. Exact accounting of EC from G model.
10. Concern about chopping off first flow peaks of year.
11. Concern about pulling X2 upstream with delta smelt if we take first February small flush in 1991 and put into EWA SL and allow X2 to move upstream.
12. Is the harm that might befall ds, sig relative to future benefits of EWA water in such a dry year as 1991.
13. Consider proportion of hatchery salmon in the salvage?
14. CCF screen not in place for this game.
15. Using DW Bacon as a forebay for project diversions. Concern about using this island as a wheeling facility. Power costs? Other costs? Assume that DW is owned and operated by projects.
16. If EWA cuts diversions and lower E/I, can projects DW island divert to storage because they have screens to protect salmon? If we let it go onto Webb, then that would EWA water. But that would be an additional impact. Also non-screen issues from exporting to Webb.
17. The value of individual fish increases as the population is lower.
18. Difference in screen efficiency and location of the intakes are important factors when making decisions on using Webb, Bacon, or CCF.
19. Indirect effects (benefits) of export curtailment.
20. Benefit of increasing SJ flows in preVAMP conditions/period.
21. Should we consider putting in HOR before VAMP if we reduce exports?
22. TOC if DW islands water remained unused for long period. Could recycle water through island to keep it fresher, but would have pumping effects. Just keep track of this facility's use pattern; may not be a problem. Under surplus conditions no problem with recirculating; there would be a problem when not in surplus.
23. Kern priority in dry years. Not sure how they can operate the project. 400+ TAF capacity.
24. Separating Delta from upstream conditions?
25. Increasing pumping may cause increased salvage that triggers restrictions earlier.
26. Releases from project island when stored water TOC is higher than ambient.
27. Increase in concentration of TOC during storage – absorption, resuspension
28. In Delta storage quality issues: a) foregone ag use on islands (salt and TOC); b) irrigation season benefits vs single discharge of stored water; and c) evaporation effects.
29. Fate of released water. % increase in TOC at CCWD and CCF at Tracy Intakes.
30. Do not use these rules for Stage 1 operation until we have taken in a broader perspective. Do not worry about the details at this time.
31. % of fish protected with DCC.
32. Appears to be a frequent need for San Joaquin flows that puts demands on SJ storage.
33. Might consider quantity and price of water that varies by year type – last year type.
34. If EWA triggers a change in ROE X2 requirement, how would we resolve this?
35. Using log scale of fish densities is deceptive.
36. Careful with Sac flow fluctuations in August/September.
37. Daily model indicates opportunities to take water when the monthly model indicates otherwise.
38. Using DW in two ways – forerunner of new screening facility – storing or passing through. Mixing two types at same time. Use intake at Bacon most of time, except for cost factor.
39. If projects go above their baseline because of previous month cutbacks by env action, but stay below constraints, does the water go to EWA or projects? And conversely. Who pays for pumping costs? Real world has no baseline. Evaluate against real world accounting. Cost of projects would be known by end of period.
40. Interruptible supplies as a black hole?
41. To the extent that we affect move X2 downstream with env actions, how do we account for the extra water projects can pump? Similar to Roe Island issue (inverse).
42. Question benefit of reverse carriage water when backing up water into NOD storage.

43. July exports are function of June exports, if EWA reduce June exports than we would not penalize July exports. Make sure we allow this relaxation.

Game 2 Issues

44. Both south Delta pumping plants would be screened at year 7.
45. May have overestimated groundwater resources available in dry years. May mess up the baseline. Kern has unknown potential; depends on how much local users demand; possible 0-30TAF. Model uses 30TAF for WS portion. EWA has 10TAF per month available. This is conservative. 20TAF is safe for Stage 1 for Kern.
46. Baseline for Study 834 (game 1) is not realistic from water users perspective. Need a run of Accord + Upstream AFRP as the base, or basis of comparison for water users. EWA could also be used for portions of the 834 base.
47. Using 91-95 always may bias our view of the EWA.
48. How to adjust salvage numbers using new screens at south Delta pumping plants; especially given reduction in predation in CCF.
49. EWA water on Bacon could be useful for WQ when Delta channel quality is poor in the fall.
50. WQ benefited from Accord.
51. Could borrow from each other – EWA could borrow Webb storage or exchange Webb and back into Shasta. EWA can relax E/I when WS can not. Or stick to defined roles for each island.
52. Why constrain exports if new screens are in place? R: Because of indirect effects.
53. Monthly export salvage losses limit our ability to adjust daily operations when using daily model.
54. Is salvage a good surrogate for real-time monitoring?
55. Depending on where options are available would determine which species we would protect.
56. Difficult to speculate location of smelt in summer after doing many things over spring.
57. Where to store water called upon? If you buy Yuba water they will want to release it in the summer. Could Yuba keep it in summer? Water purchases real?
58. Is pumping onto Webb constrained by E/I?
59. Do storage islands need a pipe to pumps? WQ problem.
60. Need to think about in-lieu features for environment as well as for water supply.

61. Option to sell EWA water to water supply needs pricing guidelines. Need to work out pricing guidelines. Drought bank situations. E/I generated water should not cost \$300/AF, but may be worth market value.
62. What negotiating points need development; tying these down will be one of the fruits of our gaming effort. What we do for all pieces of the picture such as demand reductions needs to be presented. Look for ties to rest of CALFED program to provide an integrated program.
63. Advantages of keeping EWA water in San Luis by raising low-point.
64. Sharing facilities and relaxation standards for both WS and EWA would make the system more efficient.
65. Need to look at historical and baseline conditions when we are looking at results.
66. If EWA actions generate (reduce) power benefits who gets that revenue (cost)?
67. CVP Tracy could be used to pump water to SWP San Luis.
68. Impacts would still occur if we go back to prescriptive standards, thus we still need to consider them.
69. Advantage of pumping at Webb or Bacon over CCF or Tracy given all have same screen protection? (Better to pump from main channels?)
70. Water quality changes on the DW islands during spring and summer. Webb could be looked at with different intents for the water – outflow versus export.
71. Moving water from upstream options to Delta in summer may affect upstream habitat conditions.
72. Options were not intended to be exercised every year.
73. Fish versus WQ conflict in July. Fish want to hold new exports to August, but more benefit to WQ if released earlier in the summer. Algae and nutrients are water quality problems, thus release it earlier the better.
74. Recirculate Webb to help WQ.
75. Can't short projects without collateral; question whether money is adequate collateral and whether we could buy on spot market.

Game 3 Issues

76. E/I ratio is average standard, thus what does it mean to relax E/I over short period.
77. If Credits or options are used to enhance outflow, then can WS take extra water onto DW islands?
78. Demands from projects affect on deliveries and San Luis storage and DW island storage. Demand levels are different between daily and monthly models. Russ used more than

historic; Russ's are less than George's demands. The patterns of demands are just as important as storage considerations.

79. Effect of San Joaquin spills from Friant on export demands. Are deliveries from the Delta Mendota Pool accounted for in the deliveries in DWRSIM? GW and Interruptible may explain the higher deliveries in DWRSIM.
80. Clear ID of demands by year type is needed as what we use has a large impact on operations that we are unable to factor into the gaming, which affects our decisions on exports and deliveries.
81. Winter exports have screens to protect yearling salmon, splittail, and adult smelt? Or are indirect effects sufficiently important to limit exports to protect these fish?
82. Backing up EWA water into reservoirs could be expanded if AFRP flows could be relaxed.
83. Could use reverse demand shifting between EWA and projects.
84. Increasing future demands and infrastructure will erode away the capabilities of the EWA.
85. Account has no access to first 15,000 cfs.
86. How much San Luis debt can be carried through summer. Rule is no harm – as long as no impact on deliveries we can carry debt in San Luis.

Game 4 Issues

87. EWA takes a lot of GW and SJ water available for transfers.
88. Sharing of expanded Banks pumping.
89. Conveyance water losses on San Joaquin.
90. Beginning VAMP a week early has an impact that EWA does not have to pay back.
91. Demand effects EWA, but also upstream AFRP requirements also put in extra inflow over historical – about 5,000 cfs extra released.

Game 5 Issues

92. Scale of baseline differences is large and confuses differences with game 4.
93. High demand in spring of 93 in Daily model compared to DWRSIM and historic – affects pumping rates. 500 TAF of export controls by extending VAMP to 6 weeks is a very large burden on EWA. Water could be made up during the summer unless demands are high.
94. Highly questionable taking on debt of 875TAF by June in San Luis by EWA.
95. Should consider shifting debt to Sacto reservoirs and shift SJ water in July.
96. Cost of debt moving could affect peaking power generation.

97. If Shasta or Oroville spill in winter then the debts taken on are erased. EWA borrowed water in San Luis was shifted to upstream reservoirs in previous summers are therefore erased with new filling.
98. By shifting X2 up or down we are either giving or taking project water.