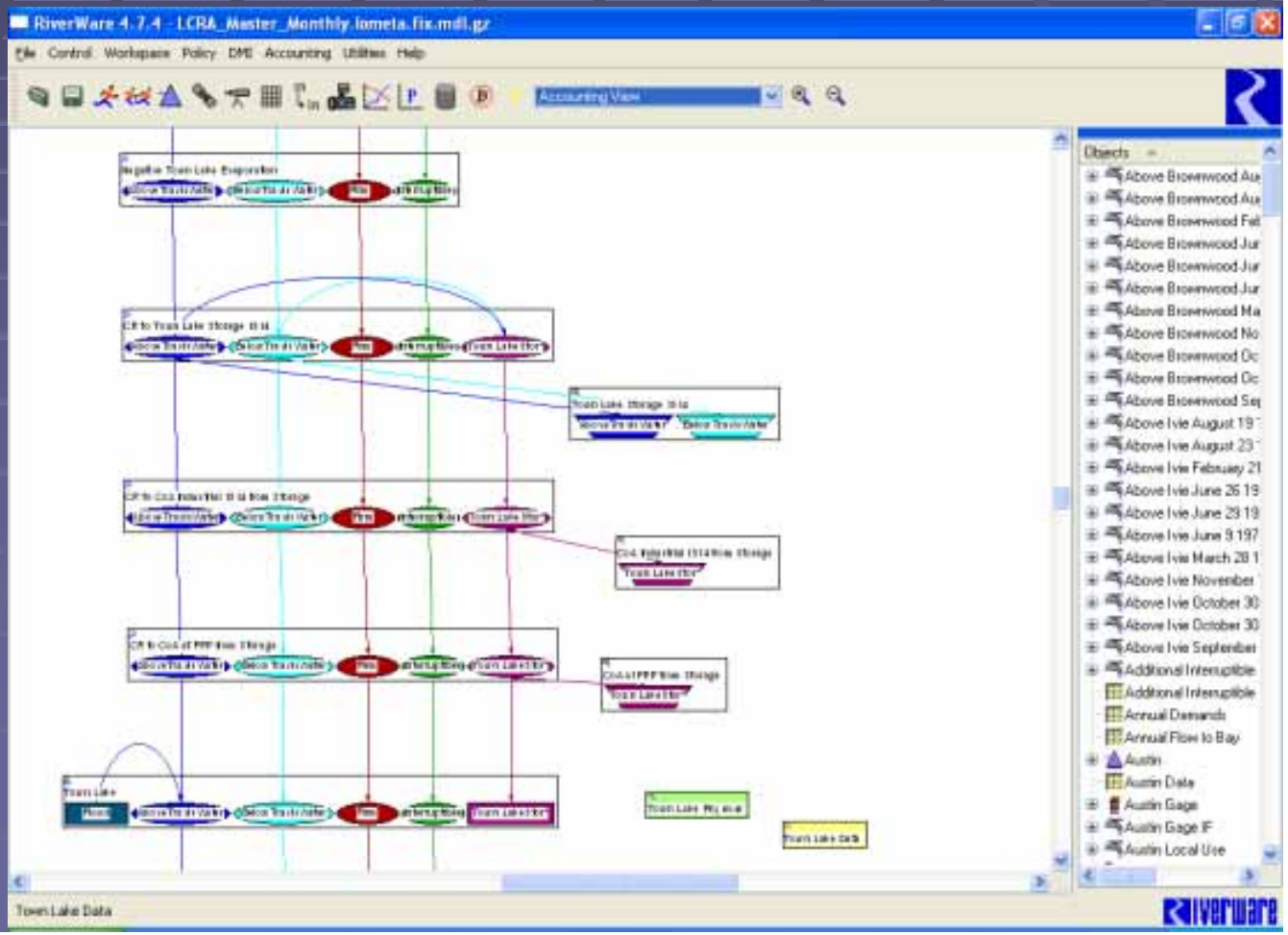
Water Rights Solver - Restructuring the World of Accounting

LCRA Model

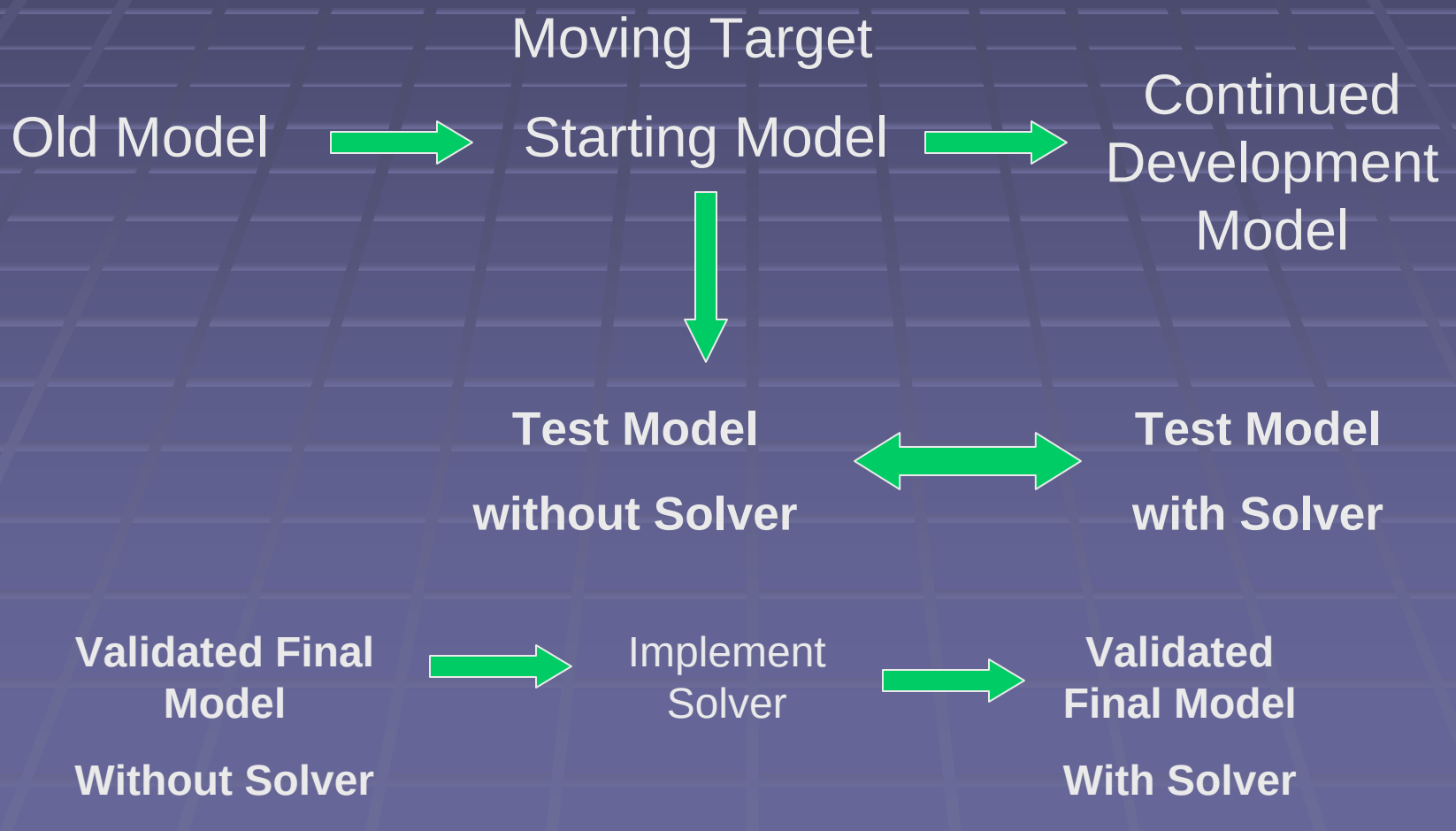
Hydrosphere Resource Consultants

LCRA Model

- Water rights model
  - Daily
  - Monthly
- Replace RESPONSE and WAM
- 1800+ rules
- Run time = 30+ hours



Order of Events



Starting Model

-108 water users

-14 reservoirs

- 4 supply chains

- 1800+ rules

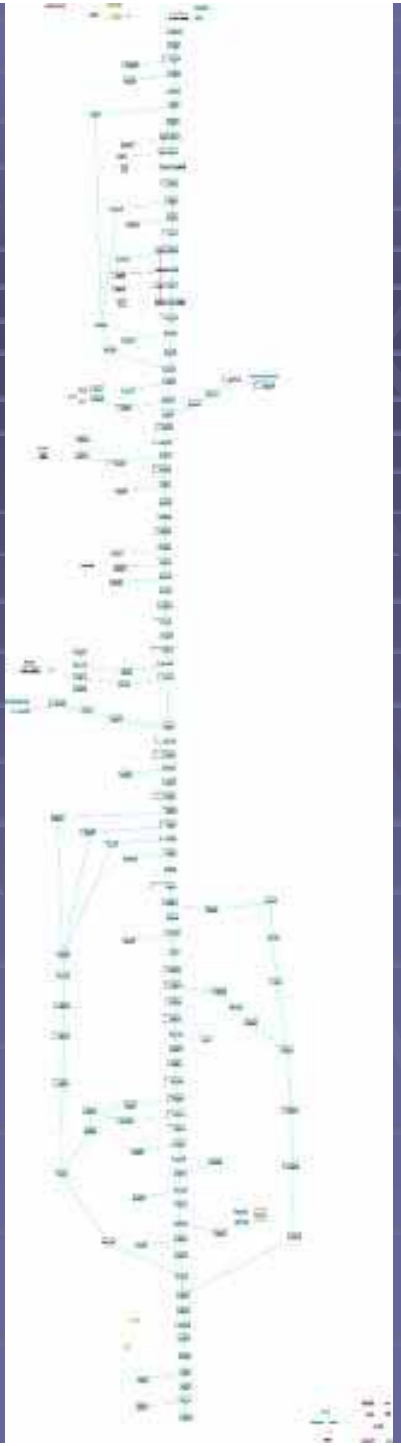
Test Model

- 48 water users

- 6 reservoirs

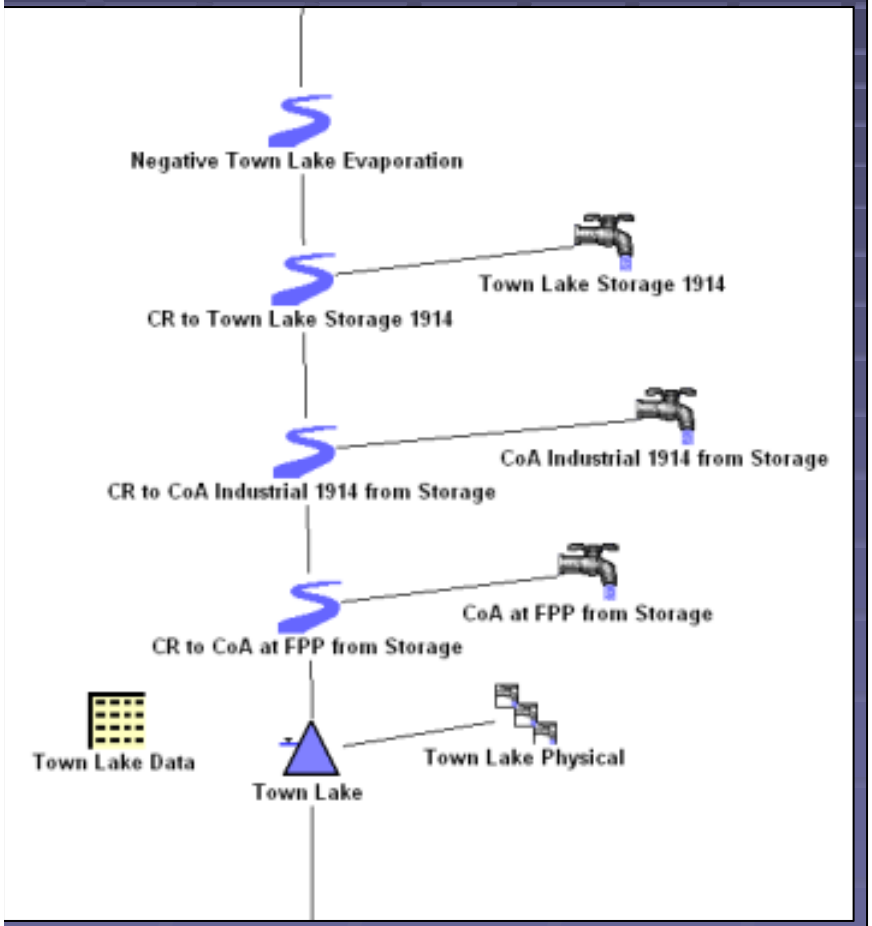
-1 supply chain

- 145 rules

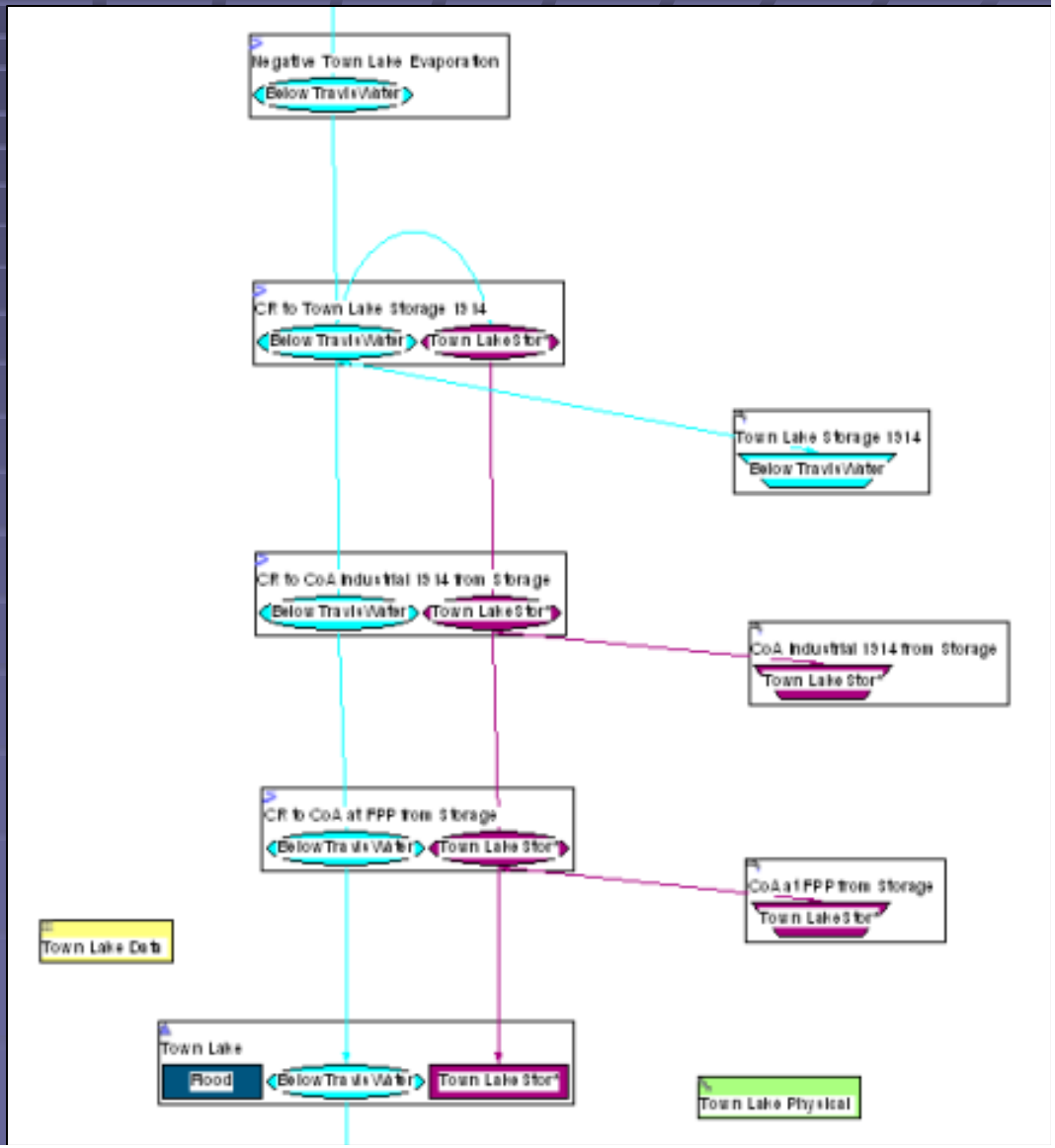


On Channel Reservoirs – How it was

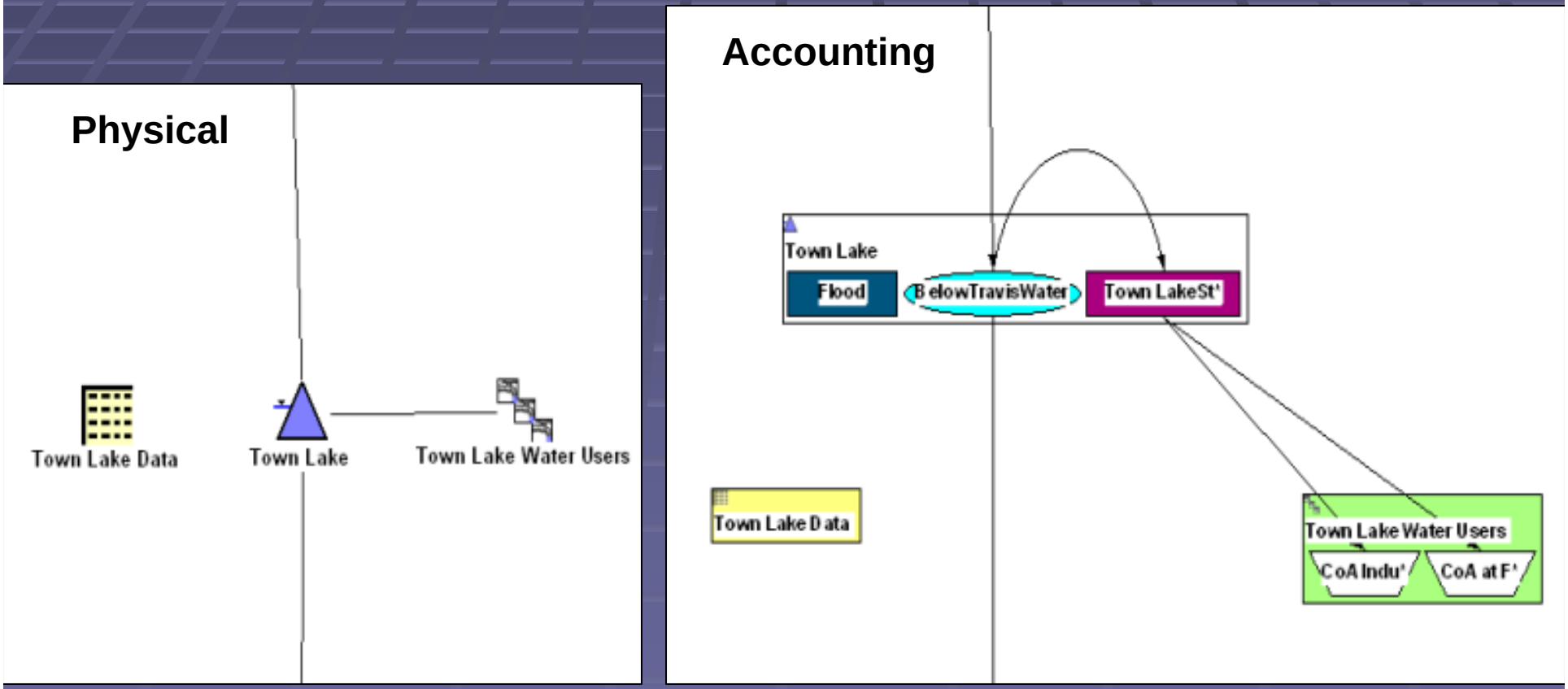
Physical



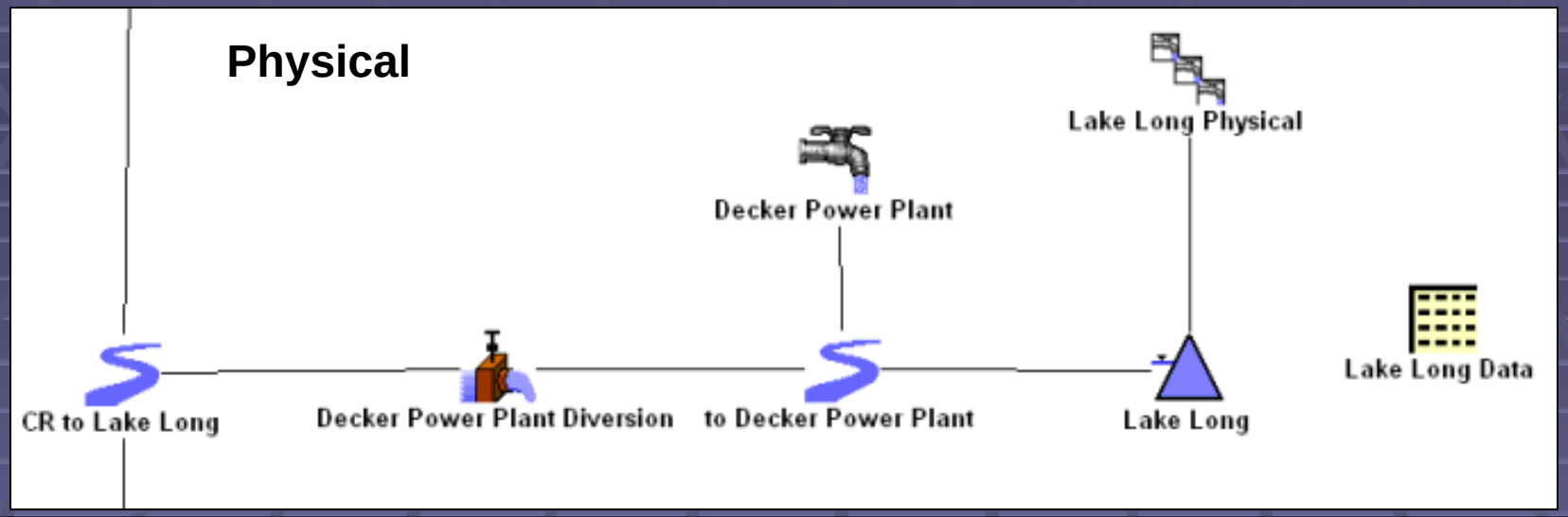
Accounting

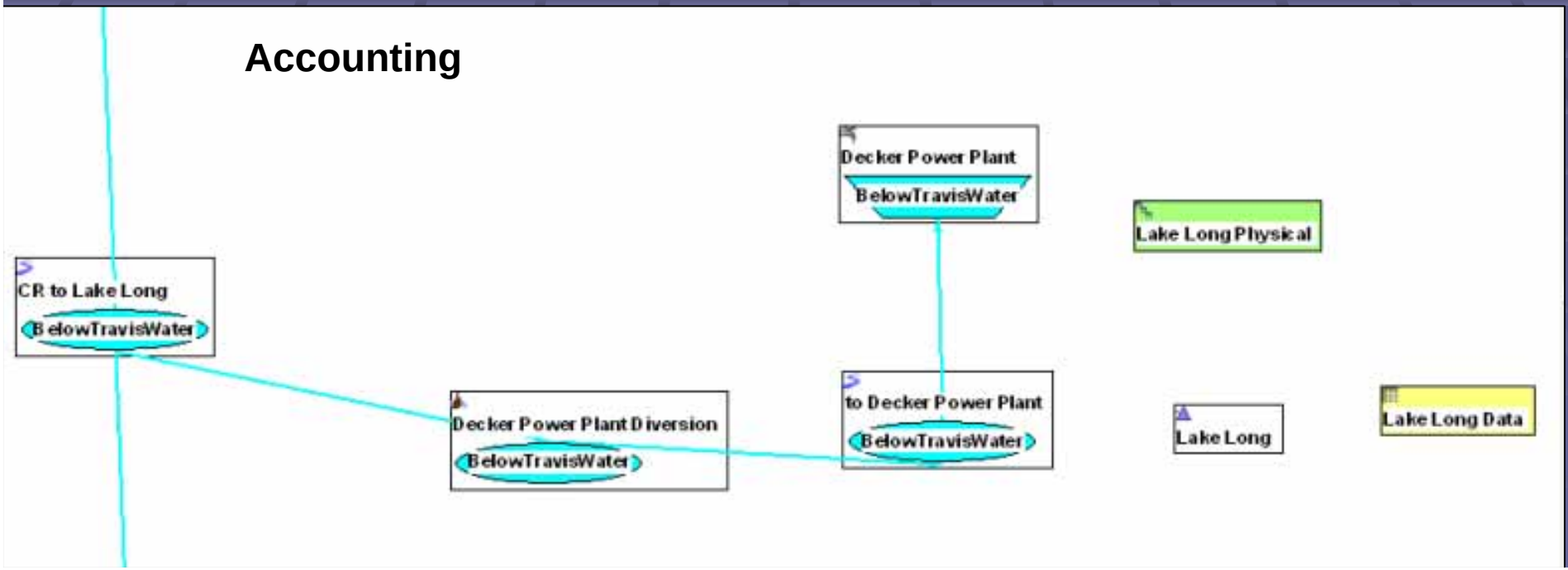


On Channel Reservoirs – How it will be

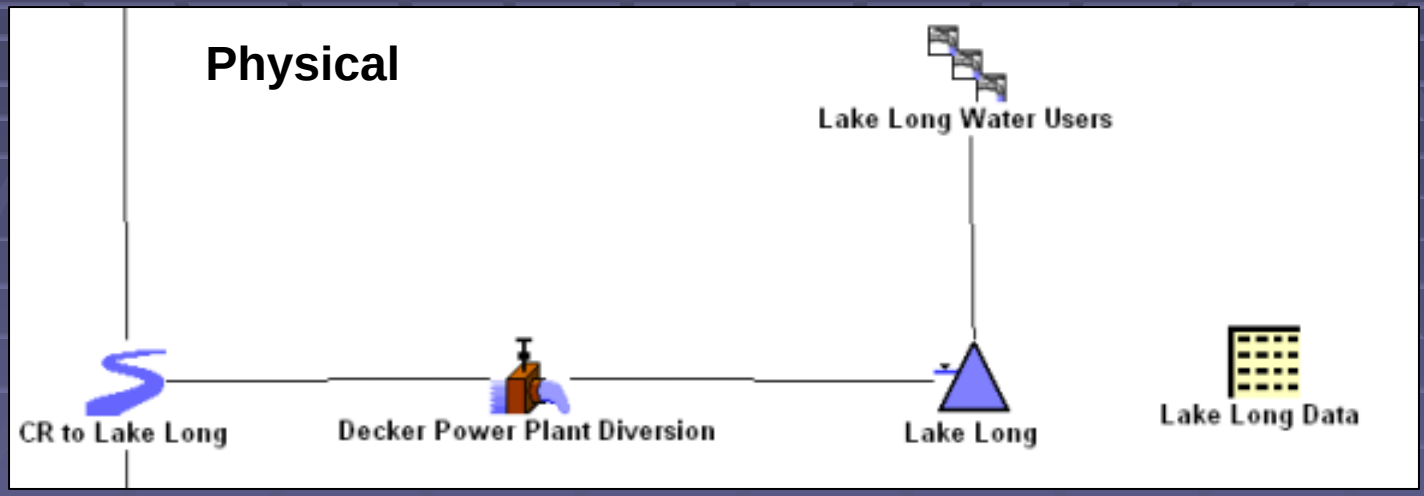


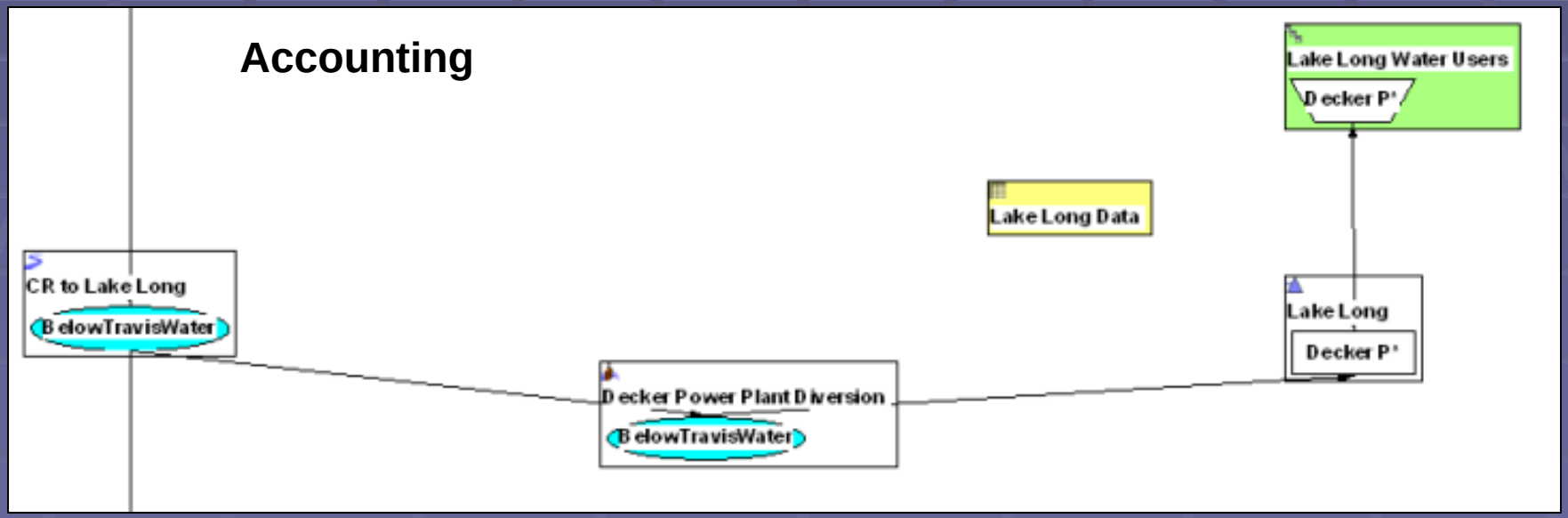
Off Channel Reservoirs (Part I) – How it was



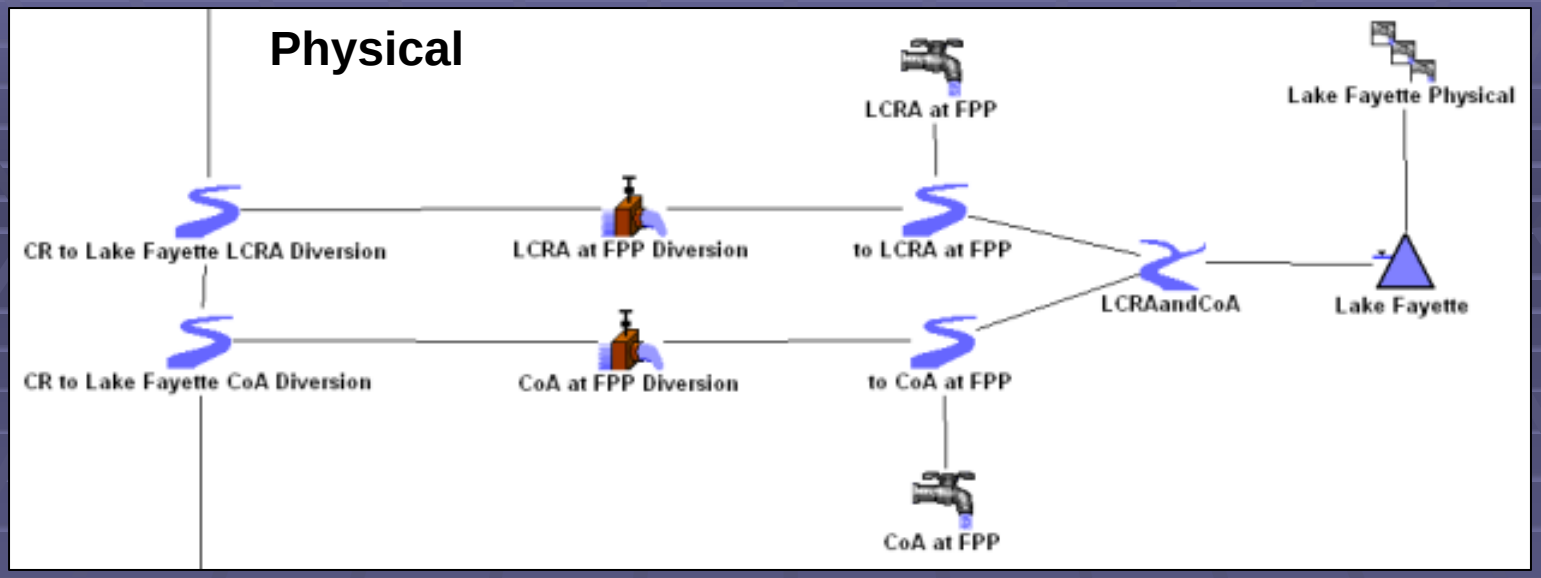


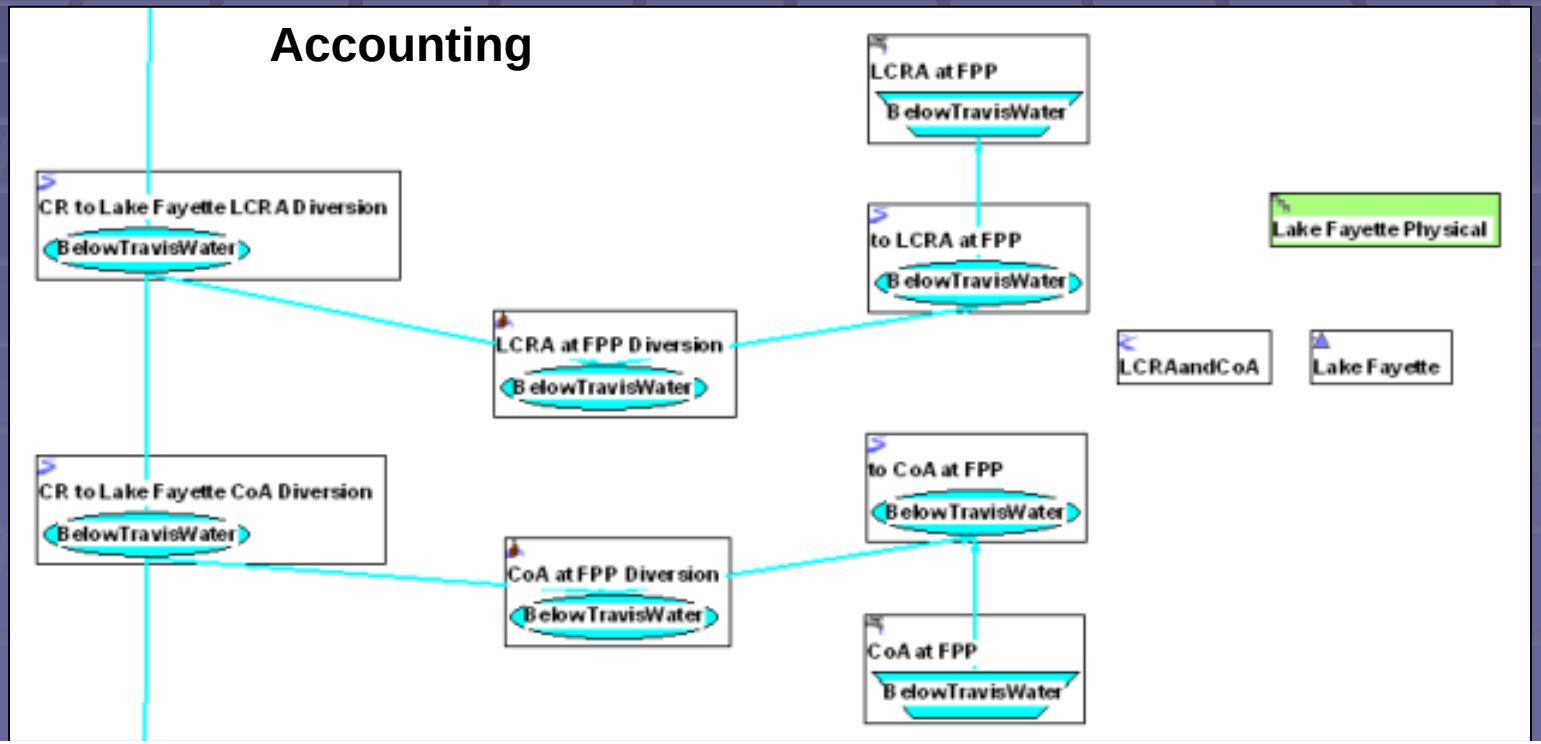
Off Channel Reservoirs (Part I) – How it will be



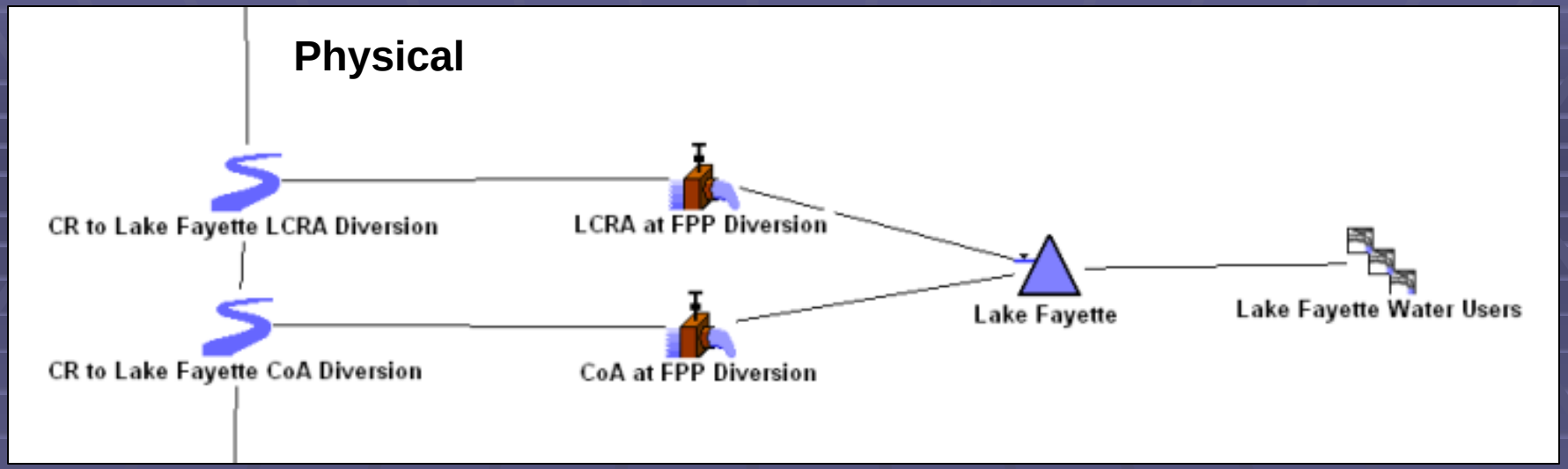


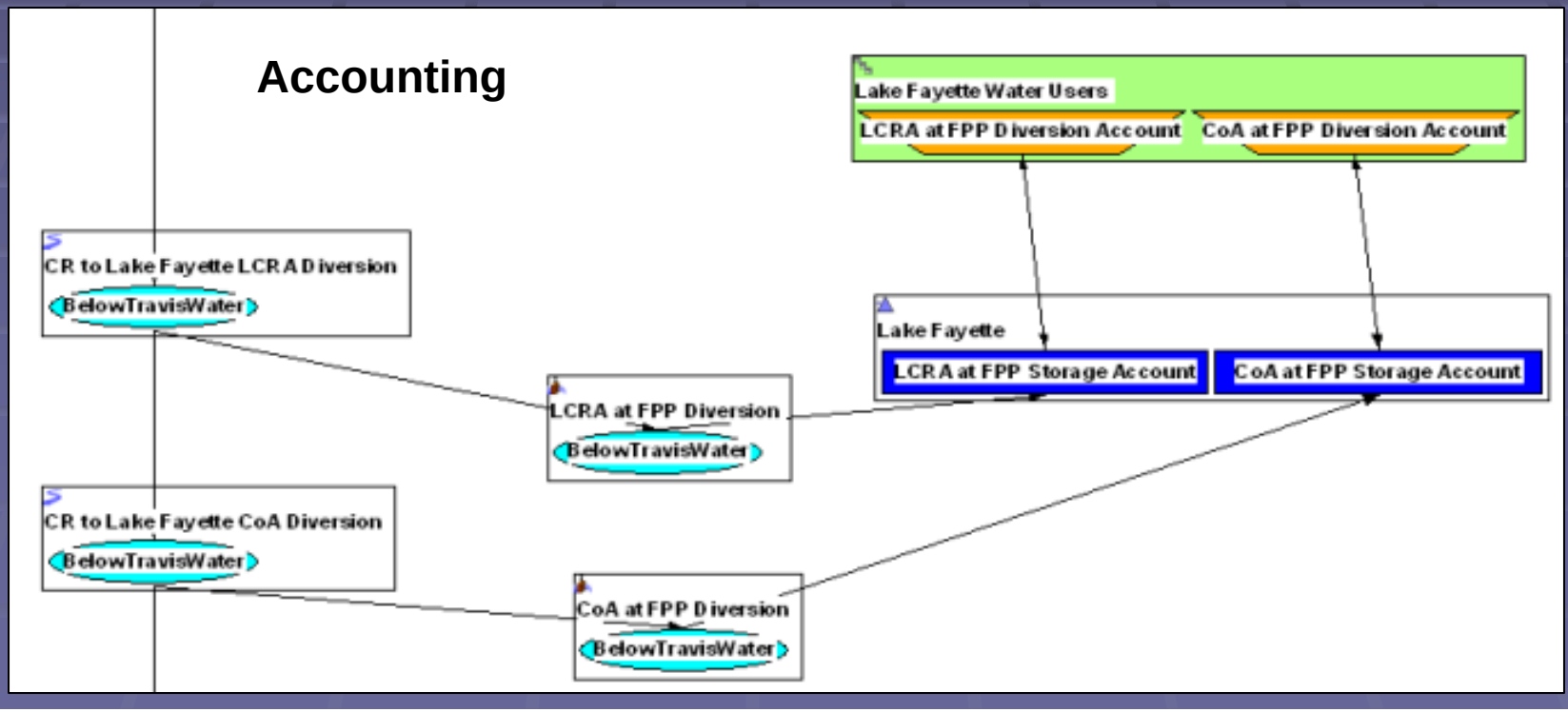
Off Channel Reservoirs (Part II) – How it was

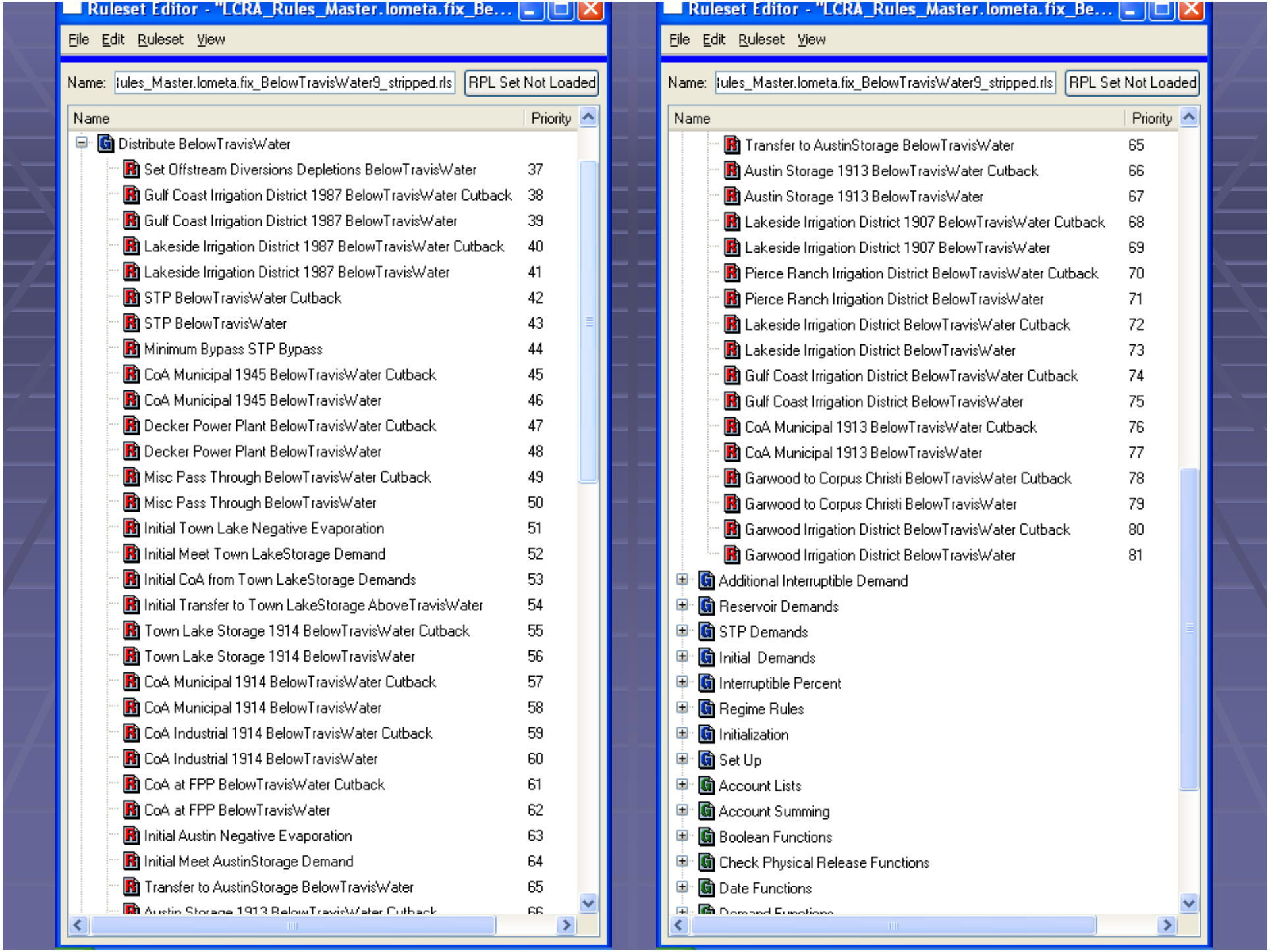




Off Channel Reservoirs (Part II) – How it will be



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Gulf Coast Irrigation District 1987 BelowTravisWater Cutback 38
Gulf Coast Irrigation District 1987 BelowTravisWater 39
Lakeside Irrigation District 1987 BelowTravisWater Cutback 40
Lakeside Irrigation District 1987 BelowTravisWater 41
STP BelowTravisWater Cutback 42
STP BelowTravisWater 43
Minimum Bypass STP Bypass 44
CoA Municipal 1945 BelowTravisWater Cutback 45
CoA Municipal 1945 BelowTravisWater 46
Decker Power Plant BelowTravisWater Cutback 47
Decker Power Plant BelowTravisWater 48
Misc Pass Through BelowTravisWater Cutback 49
Misc Pass Through BelowTravisWater 50
Initial Town Lake Negative Evaporation 51
Initial Meet Town LakeStorage Demand 52
Initial CoA from Town LakeStorage Demands 53
Initial Transfer to Town LakeStorage AboveTravisWater 54
Town Lake Storage 1914 BelowTravisWater Cutback 55
Town Lake Storage 1914 BelowTravisWater 56
CoA Municipal 1914 BelowTravisWater Cutback 57
CoA Municipal 1914 BelowTravisWater 58
CoA Industrial 1914 BelowTravisWater Cutback 59
CoA Industrial 1914 BelowTravisWater 60
CoA at FPP BelowTravisWater Cutback 61
CoA at FPP BelowTravisWater 62
Initial Austin Negative Evaporation 63
Initial Meet AustinStorage Demand 64
Transfer to AustinStorage BelowTravisWater 65
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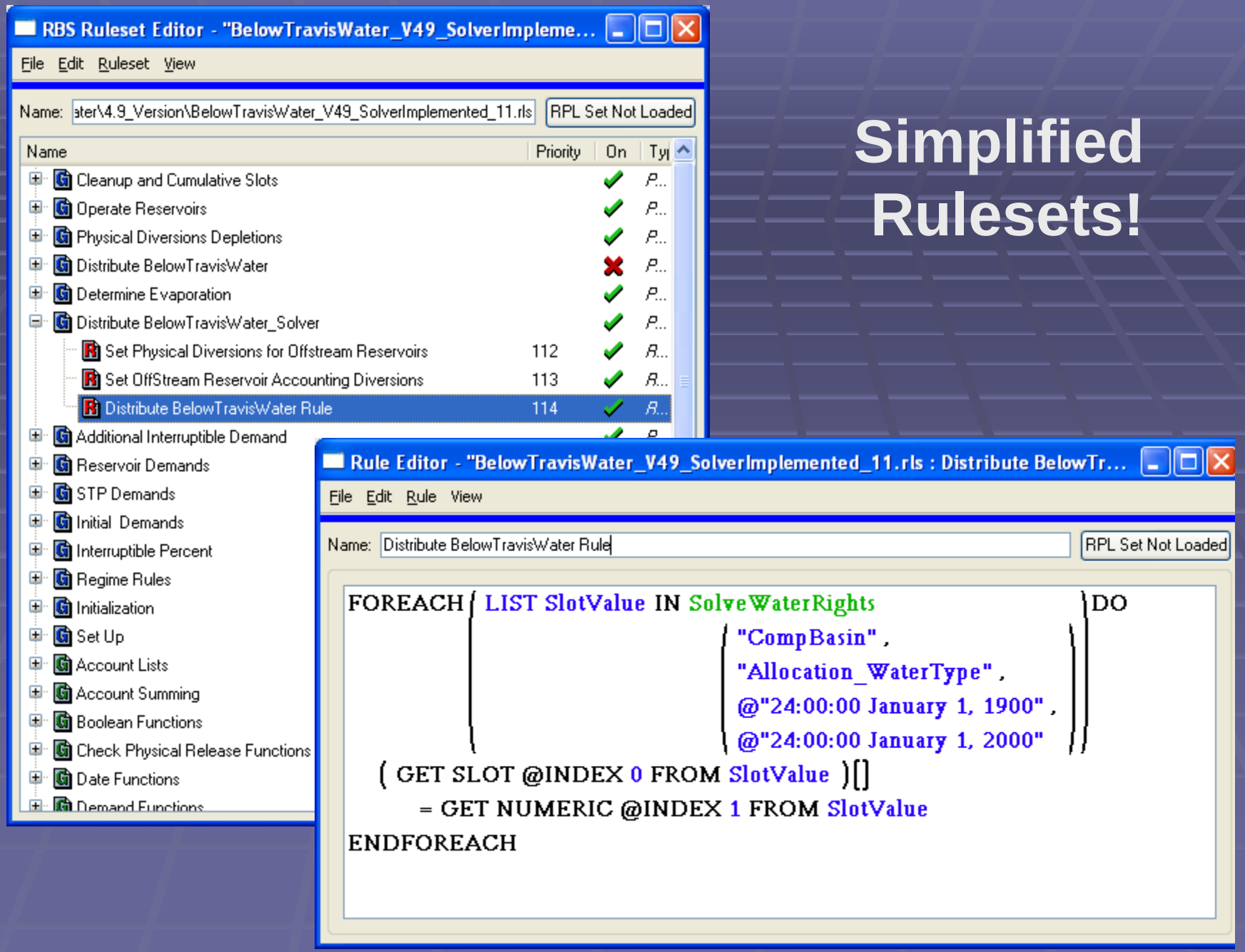
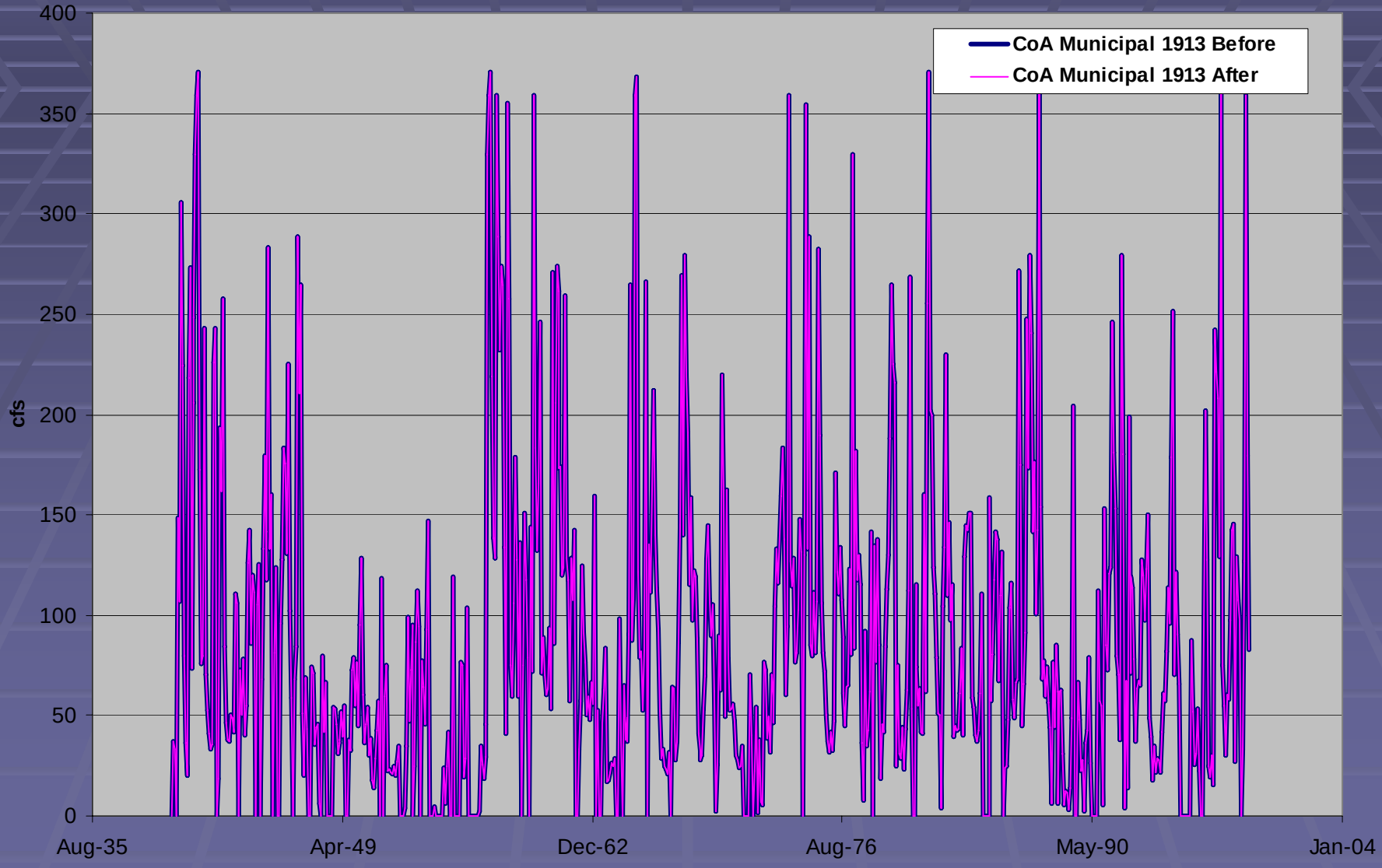
Austin Storage 1913 BelowTravisWater 67
Lakeside Irrigation District 1907 BelowTravisWater Cutback 68
Lakeside Irrigation District 1907 BelowTravisWater 69
Pierce Ranch Irrigation District BelowTravisWater Cutback 70
Pierce Ranch Irrigation District BelowTravisWater 71
Lakeside Irrigation District BelowTravisWater Cutback 72
Lakeside Irrigation District BelowTravisWater 73
Gulf Coast Irrigation District BelowTravisWater Cutback 74
Gulf Coast Irrigation District BelowTravisWater 75
CoA Municipal 1913 BelowTravisWater Cutback 76
CoA Municipal 1913 BelowTravisWater 77
Garwood to Corpus Christi BelowTravisWater Cutback 78
Garwood to Corpus Christi BelowTravisWater 79
Garwood Irrigation District BelowTravisWater Cutback 80
Garwood Irrigation District BelowTravisWater 81
Additional Interruptible Demand
Reservoir Demands
STP Demands
Initial Demands
Interruptible Percent
Regime Rules
Initialization
Set Up
Account Lists
Account Summing
Boolean Functions
Check Physical Release Functions
Date Functions

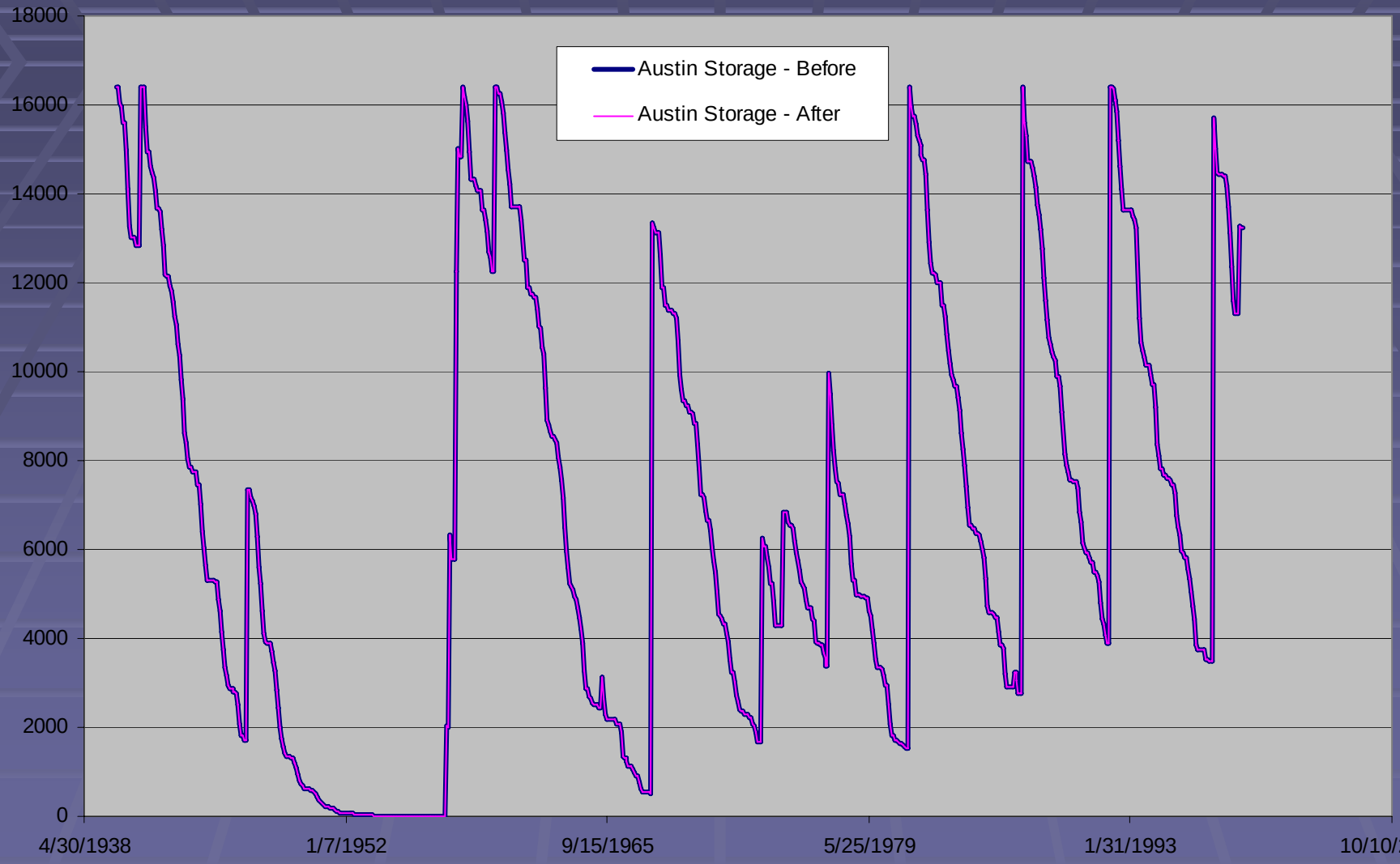
Simplified Rulesets!



Making it Match - Depletions



Making it Match – Reservoir Storages



Next Steps

- Implement instream flow rights into test model
- Goal = One-to-one match
- Evaluate final model starting point
  - Current Validated model vs. LSWP model
- Implement solver into validated model