

CITY OF QUINCY – Q1W PLAN SERVER FARMS AND INDUSTRIAL WATER AND WASTEWATER USERS

- Introduction
- Water Balance 101
- Complex Closed Loop System
- Aquifer Storage and Recovery
- Permitting Pathway Including Loss of Outfall



CITY OF QUINCY – Q1W PLAN INDUSTRY ENGAGEMENT

- Small town, big industry
- 7,200 population, 13 industrial users
- Losing outfalls, water supply stressed



Microsoft

Lamb Weston

Quincy Foods

Vantage

Amway

Sabey

Star Ranch

Oath

Double Diamond

Intuit

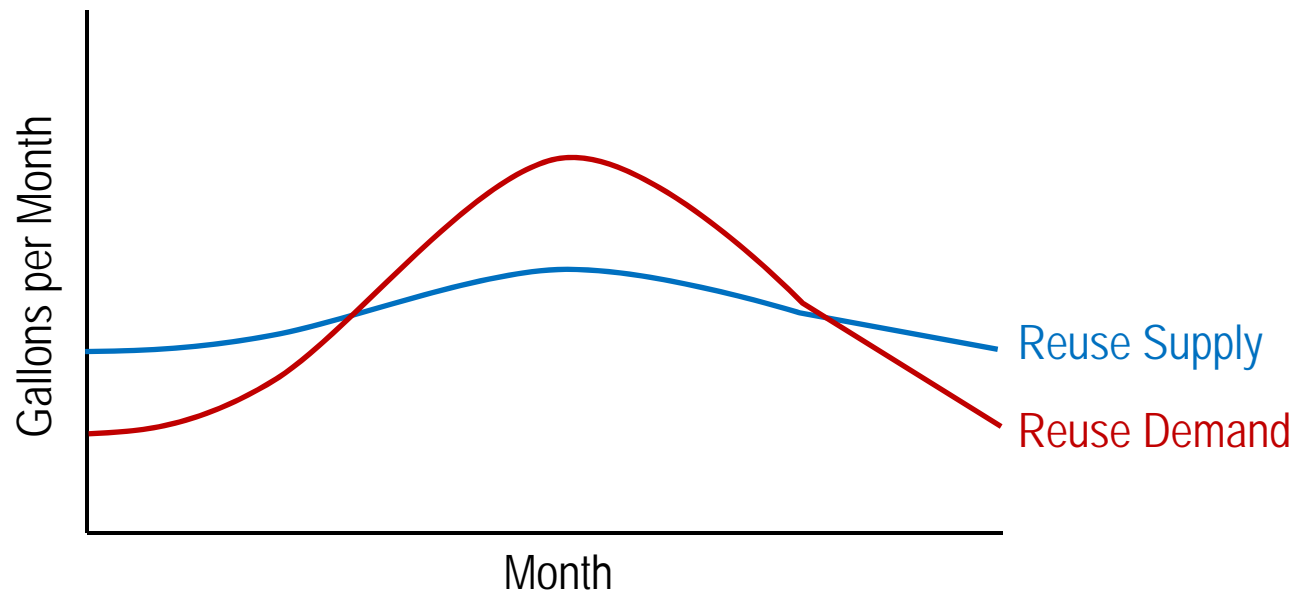
Quincy Fresh

Vitalix

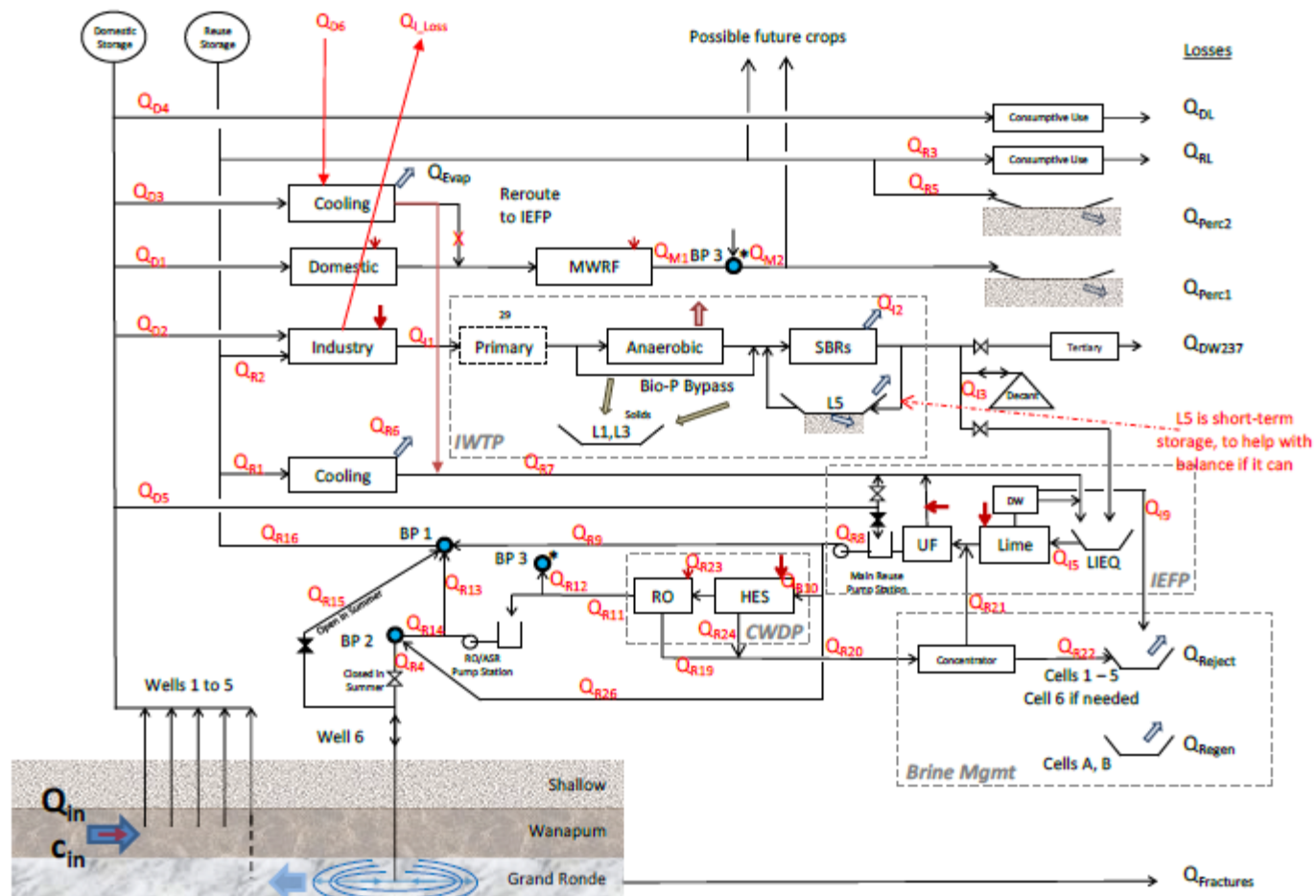
Imerys



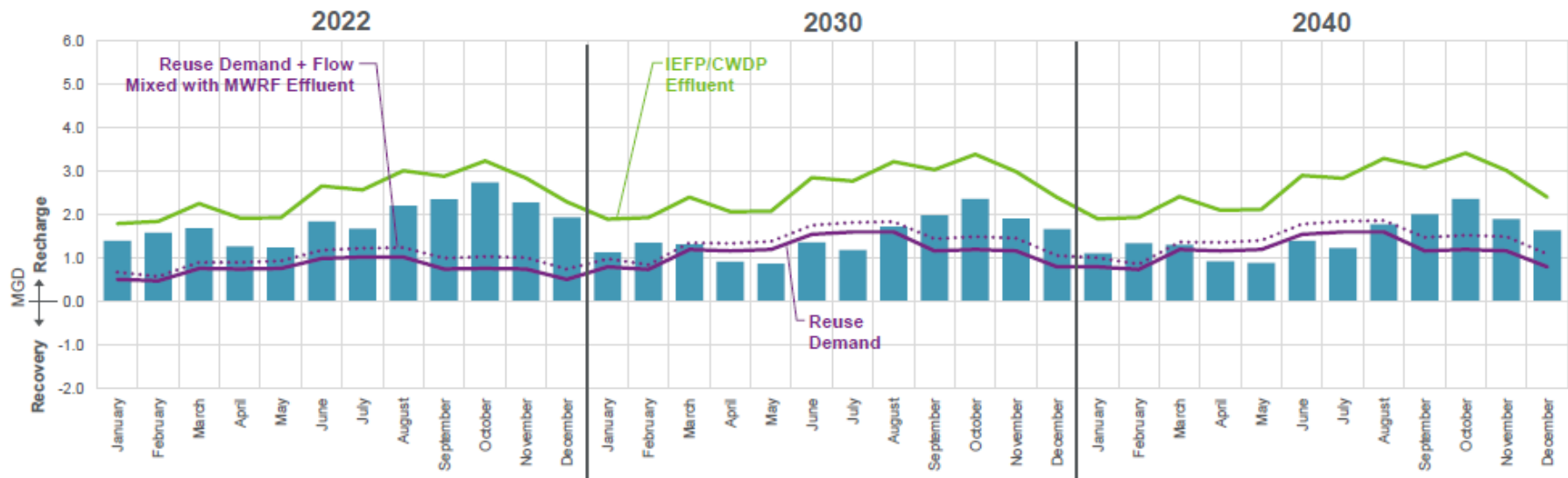
WATER BALANCE 101



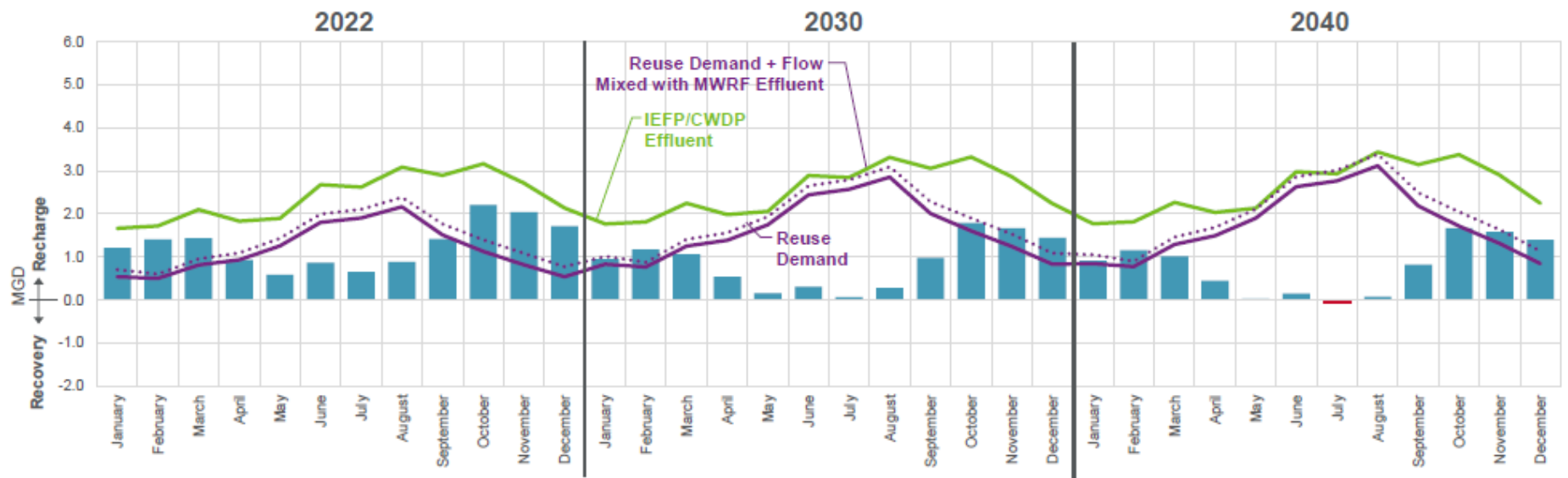
Q1W WATER BALANCE MODEL – THE TDS EFFECT



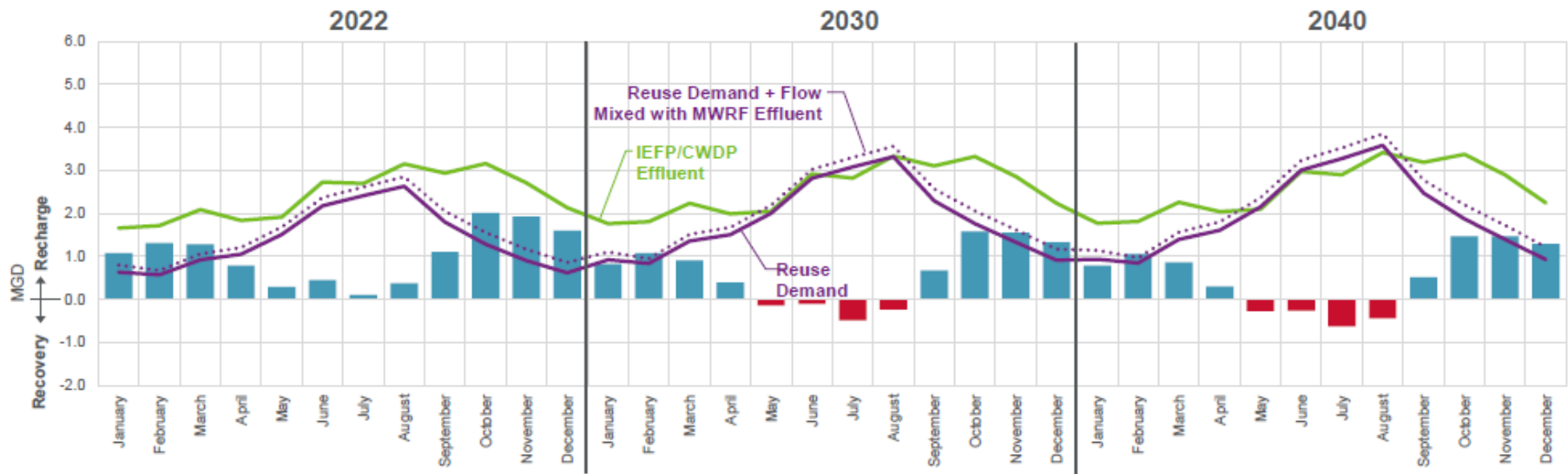
SCENARIO 1



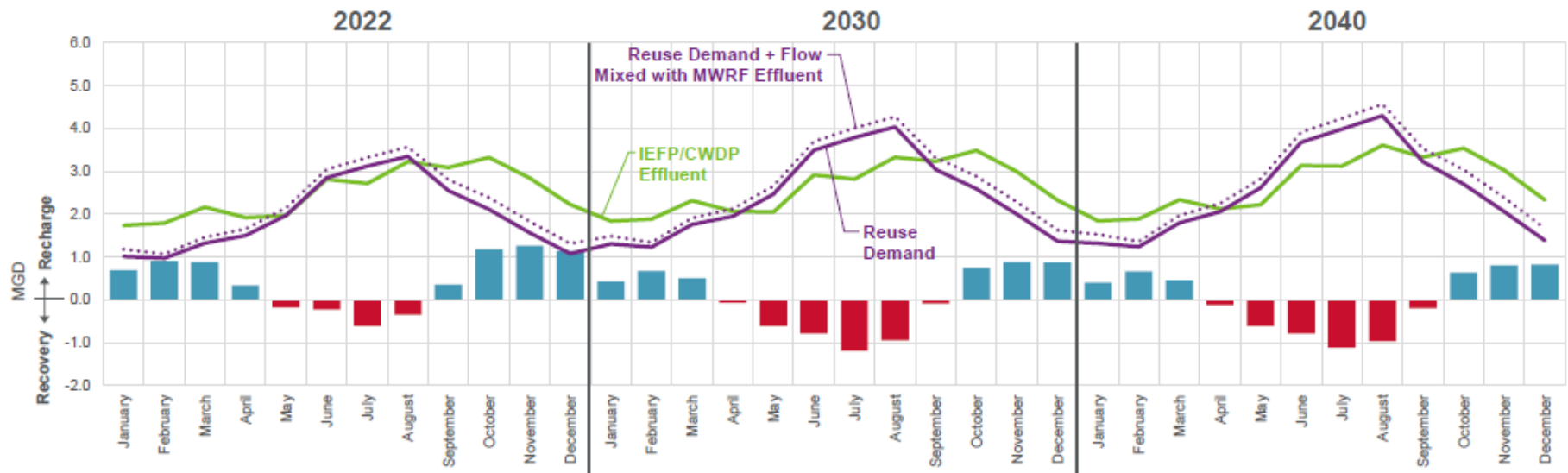
SCENARIO 2



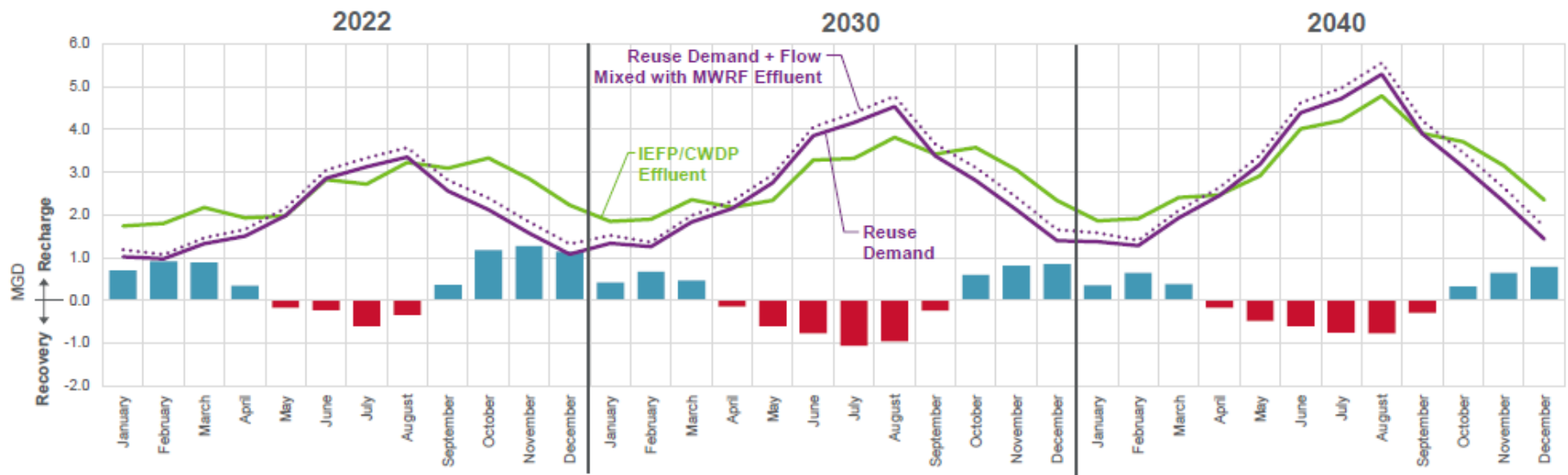
SCENARIO 3



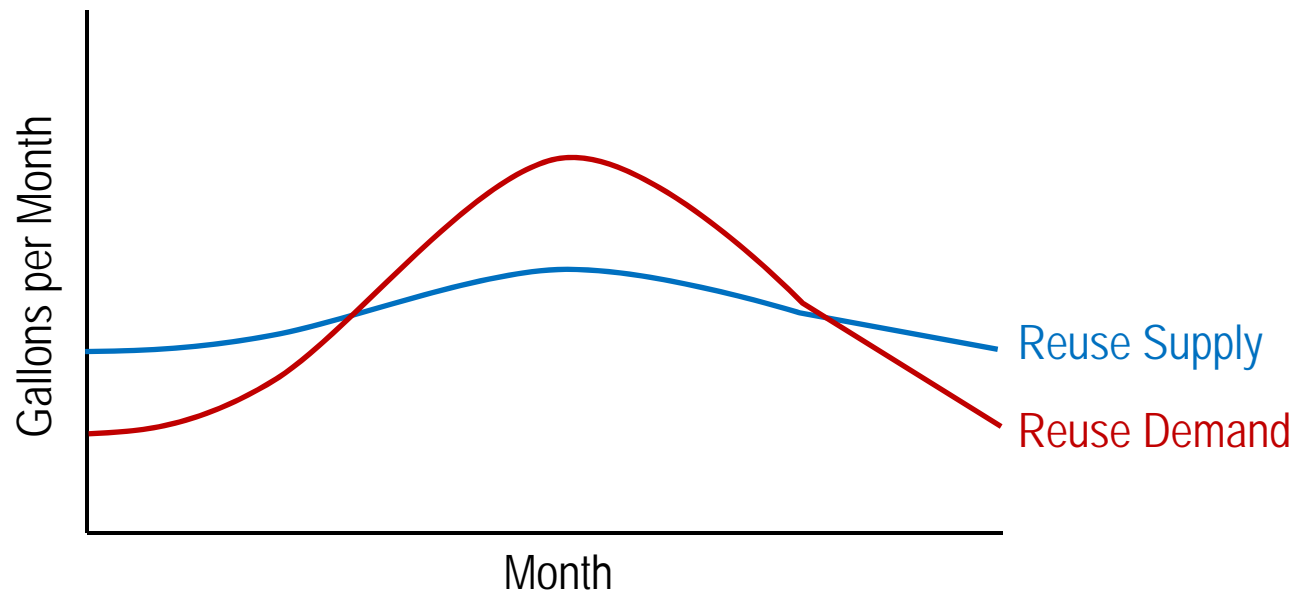
SCENARIO 4



SCENARIO 5



WATER BALANCE 101



AQUIFER STORAGE AND RECOVERY

STORAGE OPTIONS (TANKS)

- 10,000,000 Gallon Storage Tank
- Need 12 for 120,000,000 gallons
- \$10,000,000 to \$15,000,000 each
- \$120,000,000 to \$180,000,000
- \$1.0 to \$1.5/gallon, 20+ times ASR
- Tanks easily managed
- More storage = more tanks = larger footprint (a tank farm)

STORAGE OPTIONS (POND/BASIN)

- 120,000,000 gallons = 368 acre-feet
- 10 foot deep pond/basin, 36.8 acres, qtr/qtr section
- Sealed (prevent leakage) and Covered (keep debris out)
- Seasonal issues
- Cost?
- More storage = bigger pond

STORAGE OPTIONS (ASR)

- Uses well(s) and the CRBG aquifer
- Capital cost: \$5,000,000 to \$6,000,000 (includes Phase 1) to build, test, and permit by 2022
- \$0.05 to \$0.06/gallon
- Small foot print (well house/discharge basin)
- Storage volume only limited by aquifer
- Unrecovered stored water benefits aquifer (an OCR goal)

ASR INTRODUCTION

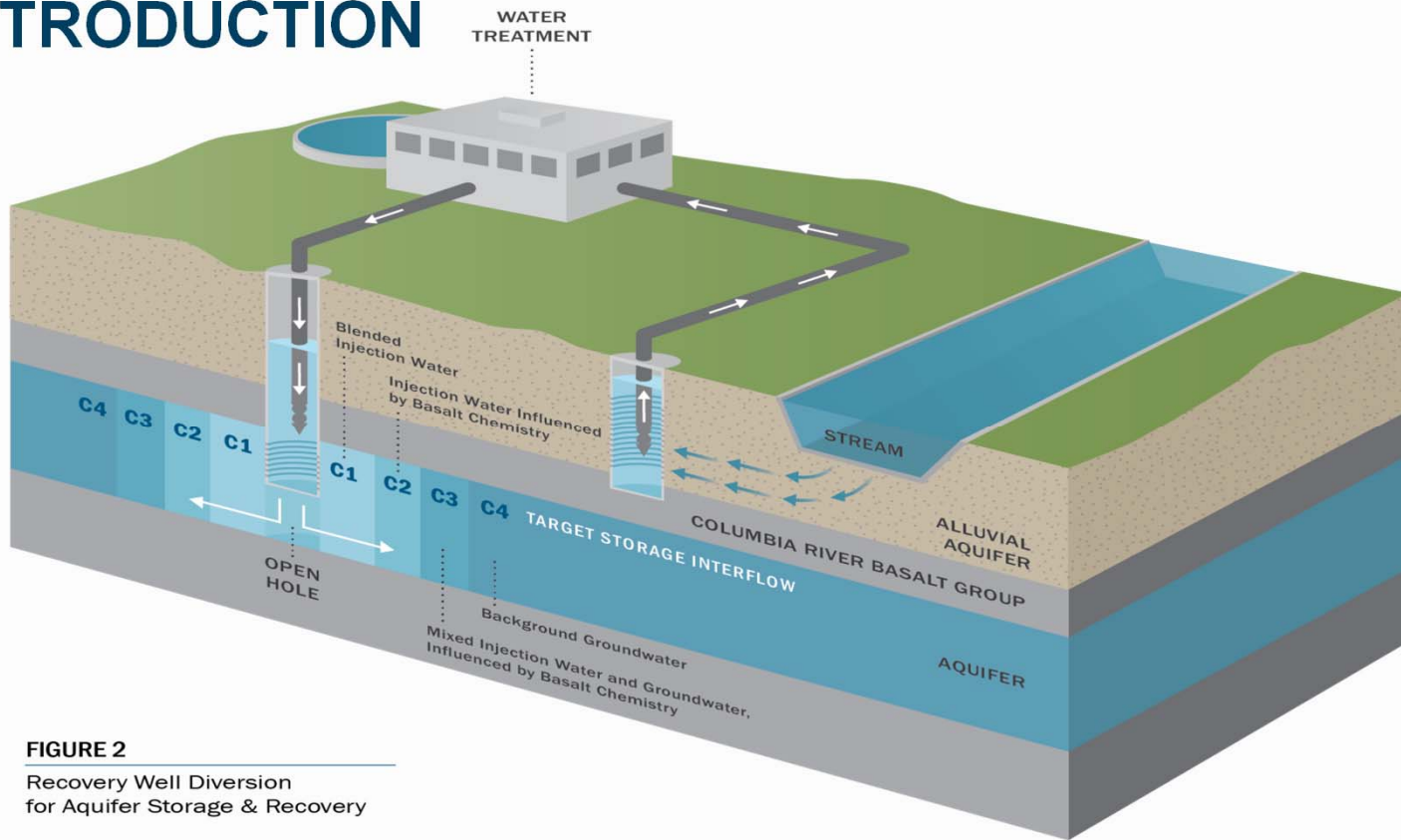
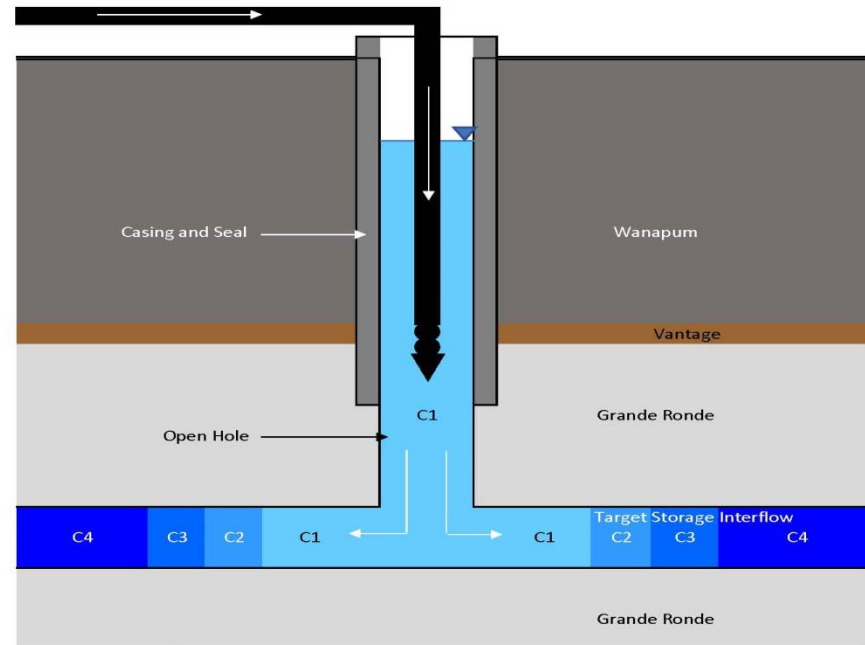


FIGURE 2
Recovery Well Diversion
for Aquifer Storage & Recovery

ANTIDEGRADATION

THE ASR BUBBLE

- Manage Injected Q1W Water in Storage Zone
- Push Native and Mixed Q1W-Native Groundwater Away
- Recover Q1W Water



Drawing Not to Scale. During recovery, reverse arrow direction.

C1 = Blended Injection Water
C2 = Injection Water Influenced by basalt chemistry
C3 = Mixed Injection Water and Groundwater, Influenced by Basalt Chemistry
C4 = Background Groundwater

PERMITTING PATHWAY

- One Model



INDUSTRY ENGINEERING REPORT COORDINATION AND REVIEW

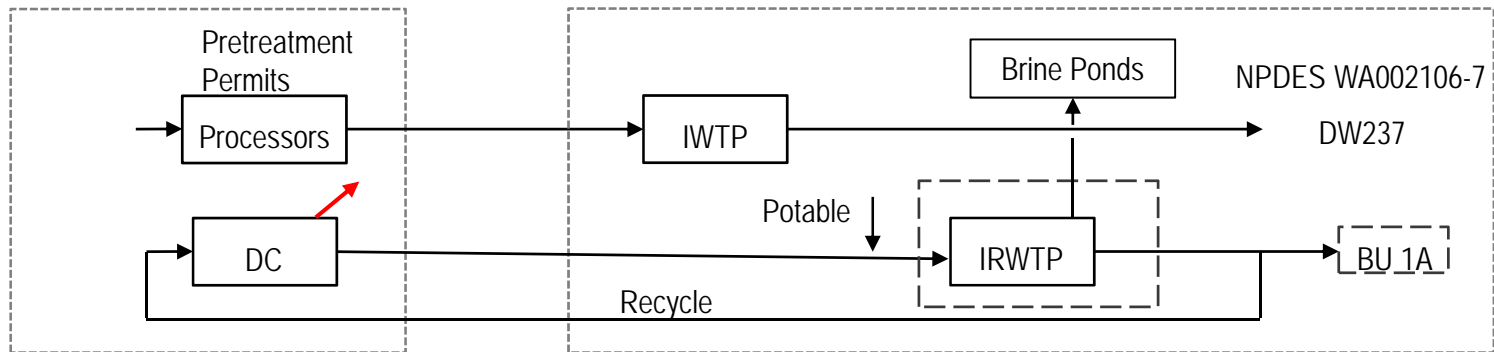
- Contact industries with requests to update individual engineering reports.
- Evaluate individual industry engineering reports with respect to meeting the requirements of WAC 173-240-130.
- Evaluate the collective industrial discharges to the IWTP/IRWTP and make recommendations regarding the need for IWTP/IRWTP improvements, and the need for pollutant discharge limits for individual industries



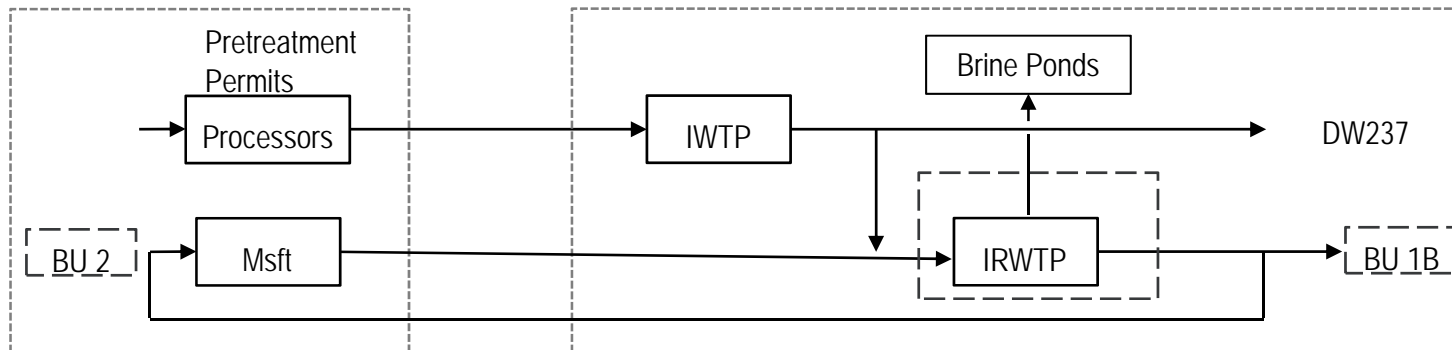
DECISION REGARDING INDUSTRIAL REUSE SWDP PERMIT

- Various potential decisions/outcomes based on the water balance and other permitting considerations:
 - Industrial reuse becomes a part of the existing NPDES permit and the industrial reuse SWTP is cancelled. NPDES would have both a surface water component and a reuse piece that would allow discharge of RO water to the perc beds or other beneficial uses, OR
 - New industrial reuse SWDP (for muni perc beds and other beneficial uses) is issued separately from the existing NPDES permit, and the original industrial reuse SWTP is cancelled OR
 - Other permit arrangements, such as single permit with various discharges and beneficial uses
- When/if discharge to all surface waters ceases, existing NPDES permit is cancelled

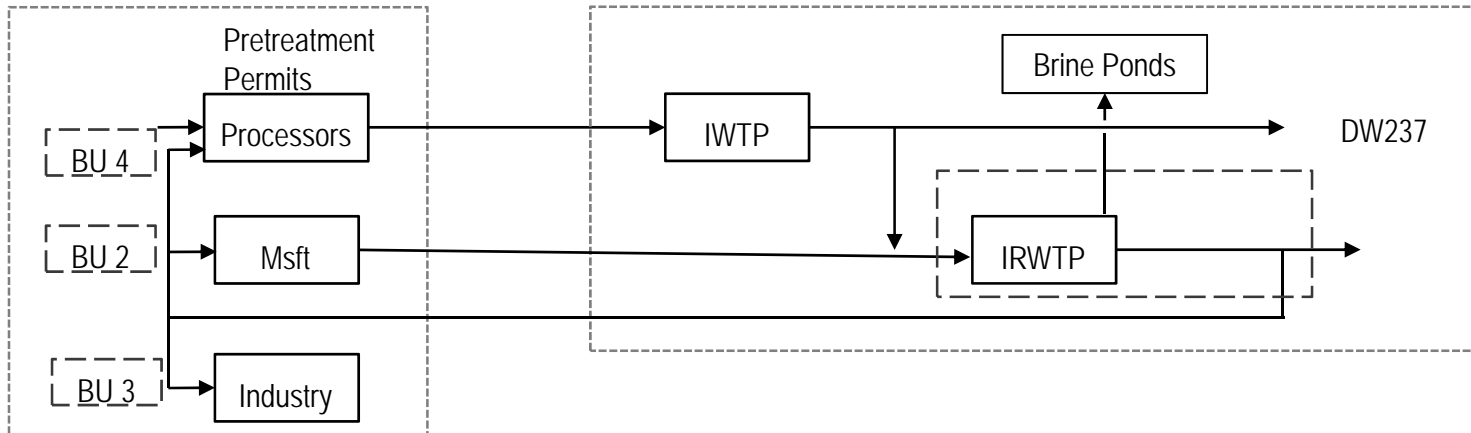
CREATE INDUSTRIAL REUSE WATER TREATMENT PLANT



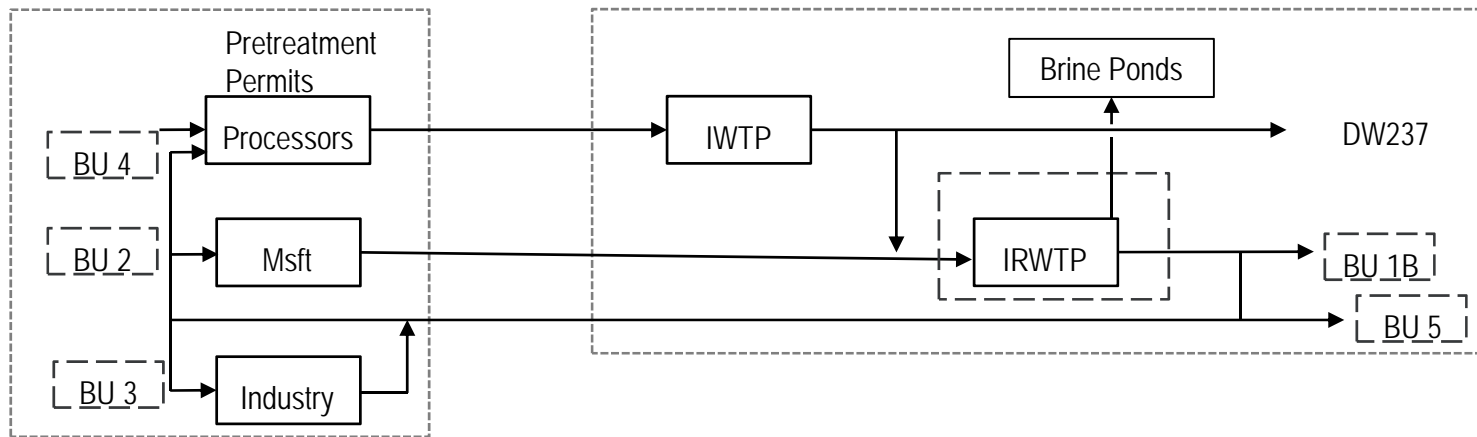
SHIFT TO IWTP EFFLUENT FEED



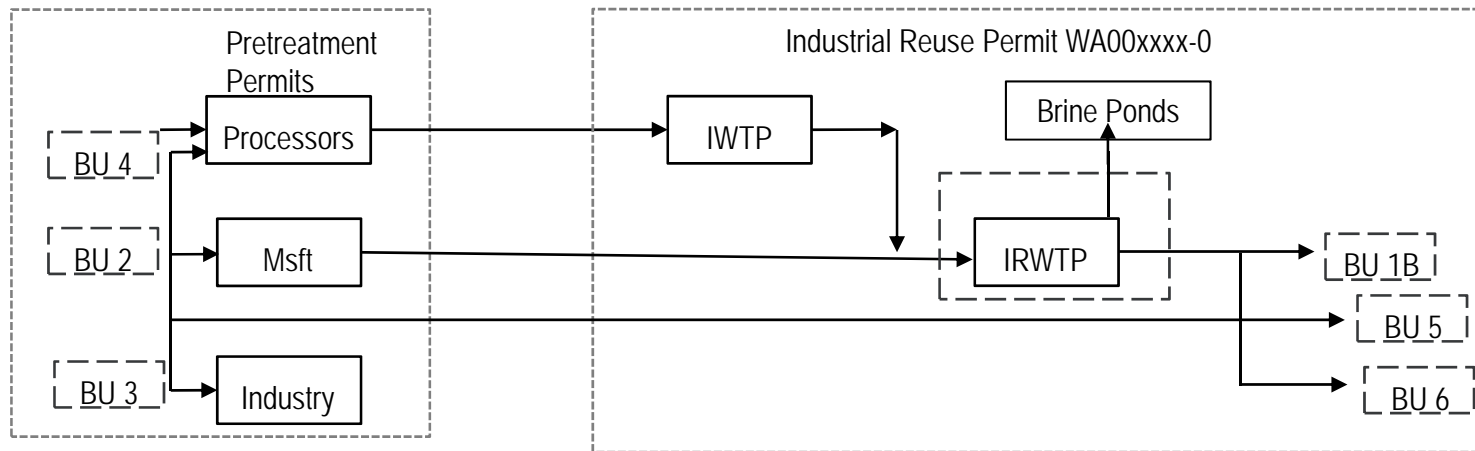
REUSE/RECYCLE WATER



EXPAND PERCOLATION OR ASR



ELIMINATE NPDES PERMIT



THANK YOU!

