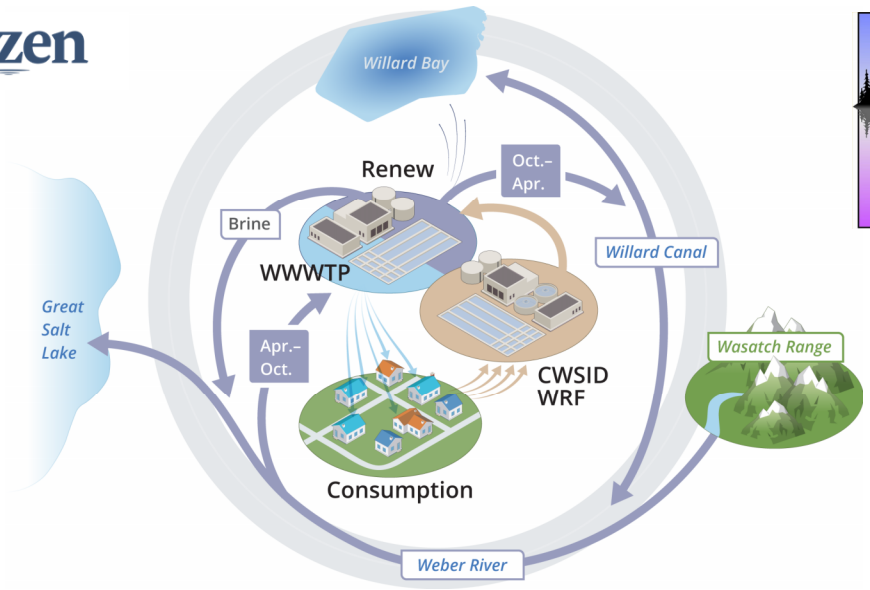
Hazen



WEBER BASIN WATER CONSERVANCY DISTRICT

Establishing the Weber West Water Campus – One Site, Two Treatment Plants

1

Background

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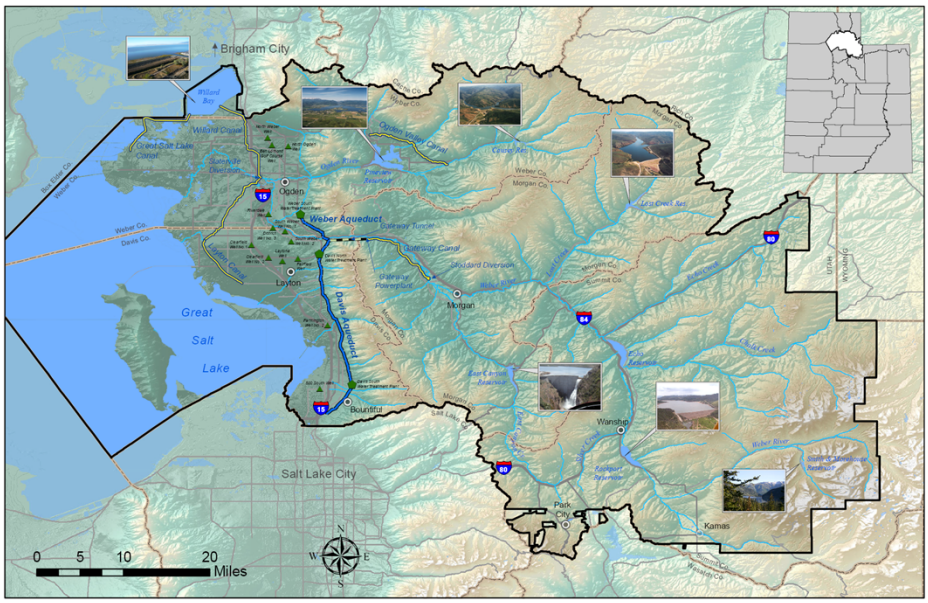
Weber Basin Water Conservancy District

- Regional water supplier
- Wholesales 230,000 ac-ft annually to:
  - **Municipalities (treated water)**
  - **Agriculture**
  - **Secondary irrigation**
  - **Industrial (treated and untreated)**
- Over 700,000 residents receive water from District sources

3

Coverage Area

- 5 Counties
- Facilities
  - **7 storage reservoirs**
  - **3 hydro-facilities**
  - **21 wells**
  - **4 WTPs**
  - **Hundreds of miles of canals, tunnels, aqueducts, and pipelines**



4

Meeting Future Demand

- Large population increase is expected over the next 20 years
- Future demands will be met through:
  - Conservation
  - Conversion of ag lands to developments
  - Reuse
  - Development of sources where existing water rights are held
- There are five WRFs in the District's area
  - 27,200 ac-ft/yr return flows to which the District has full rights
  - 8,800 ac-ft/yr from CWSID



Hazen

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Water Planning

6

6

Potable Water Planning

- WBWCD operates 4 WTPs
- Long-term master plan identified need for a new WTP in western Weber County
  - **Will treat water from Weber River and Willard Bay Reservoir**
- Piloting for a new facility was completed in 2025



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Reuse Facility Planning

- Title XVI Feasibility Study
  - **Initial Submission April 2019**
  - **Updated May 2025 & October 2025**
- Pilot Report/Alignment Study (2021)
- Supply and Demand Study (2024)

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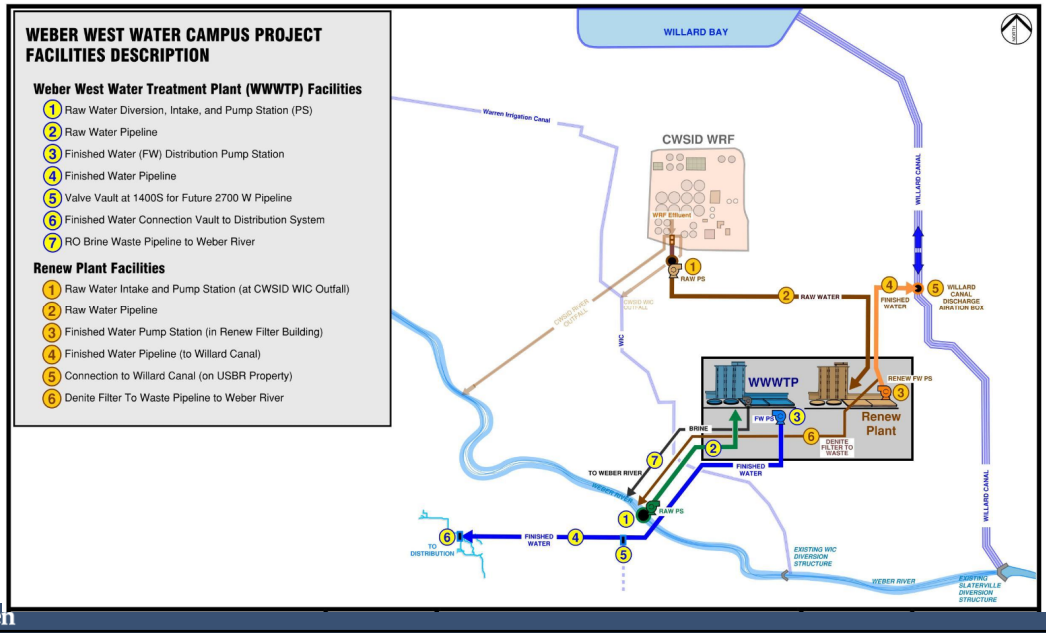
Project Definition

Siting Two Plants

- WTP needed in west Weber County
- Reuse facility needed near CWSID's WRF
- Does it make sense to combine the facilities into one site?
  - One construction project
  - One utility feed (power, sewer, fiber, gas, water, etc.)
  - One admin/operations area
  - One maintenance area
  - One Chemical Building?
  - Share treatment processes?
  - Share residuals handling?

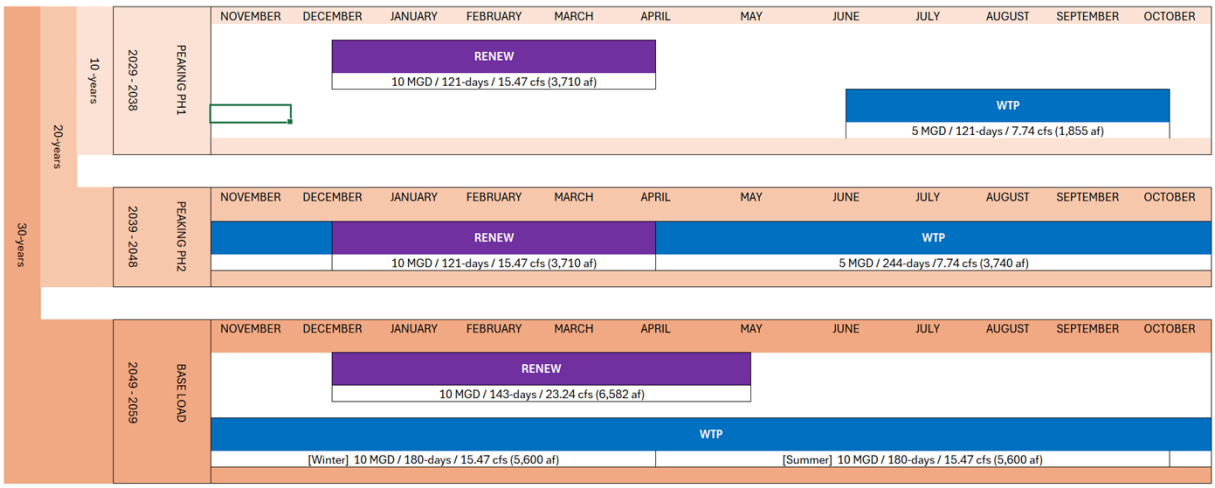


Operational Concept



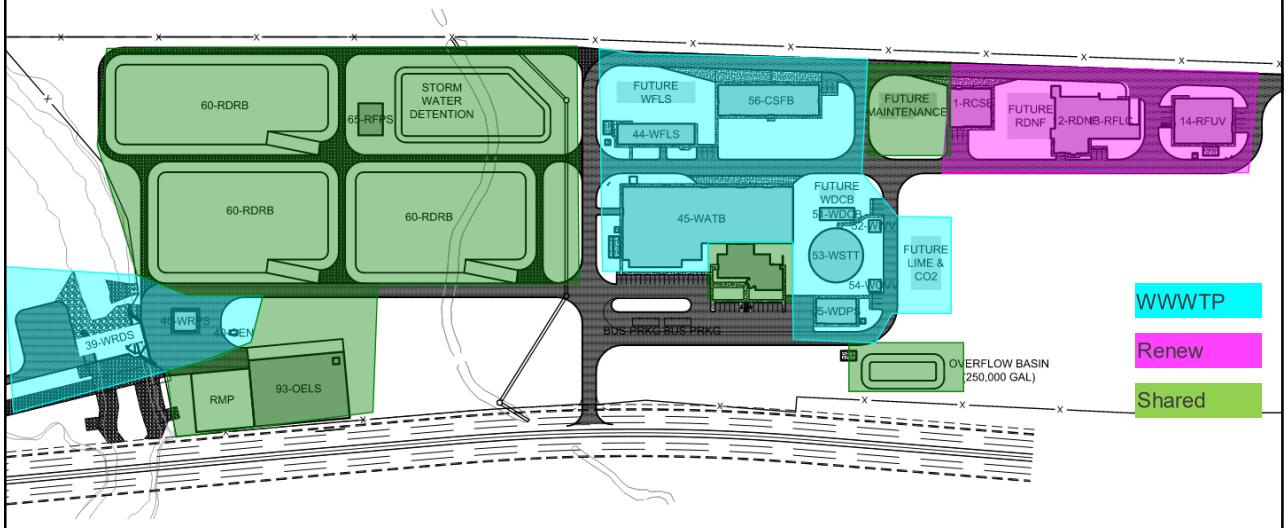
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Operational Flows



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Weber West Water Campus Site Layout



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Site Description

Weber West Water Treatment Plant (WWWTP)

- Advanced water treatment to remove
  - Dissolved solids
  - Taste and odor-causing compounds
  - Manganese

Weber West Renew (Renew)

- Denitrification
- Phosphorus Removal
- Disinfection

Shared Facilities

- Electrical Substation
- Electrical/Generator Building
- Administration Building
- Maintenance Building
- Residuals Handling Facilities

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Project Status

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Project Status

- Project Definition Report (2024)
- Preliminary Engineering Report (2025, 2026)
- CMAR Selection (2025)
- 60% Design (9/2026)

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Weber West Water Treatment Plant

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Weber West Water Treatment Plant (WWTP)

- Capacity 5 mgd expandable to 10 mgd
- Designed with multiple barriers to provide a robust system with redundancy
- Focused on finished water quality to match existing water quality and compatibility to minimize any issues in the distribution system
  - Chlorides
  - TDS

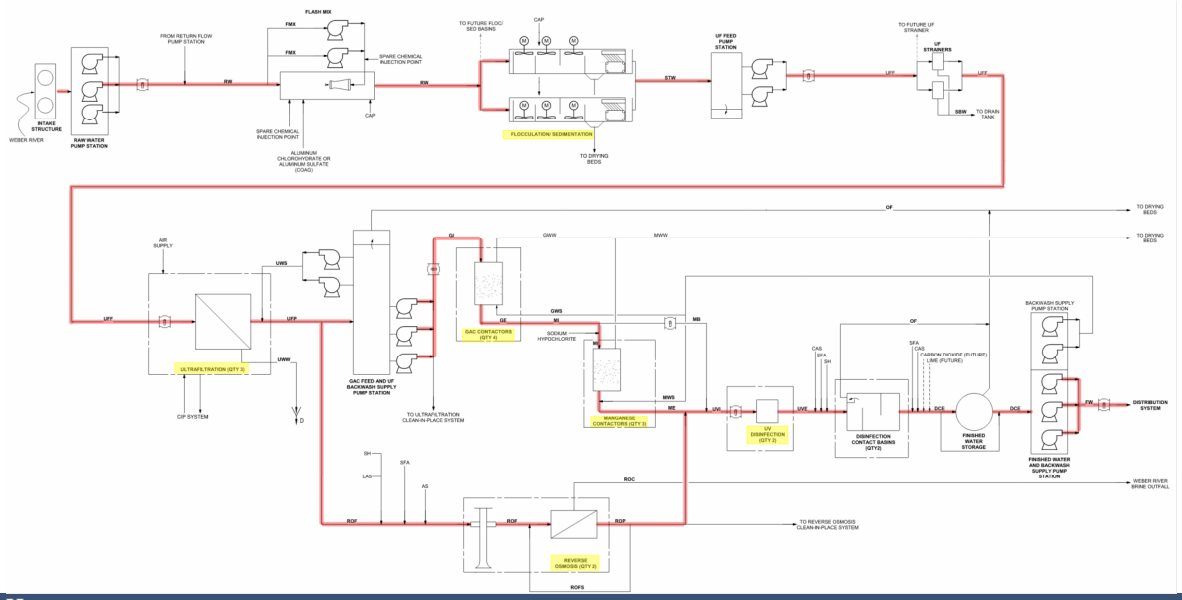
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Anticipated Raw Water Quality

Parameter	Units	Willard Bay Water Quality				Weber River Water Quality			
		Min	Max	Avg	95th	Min	Max	Avg	95th
Alkalinity	mg/L as CaCO3	70	189	144	167	88	242	174	231
Chloride	mg/L	46	361	186	326	19	208	68	143
Manganese	mg/L	2.5	32	13	26	3.7	44	28	43
Sodium	mg/L	28	221	108	194	12	124	39	85
TDS	mg/L	264	856	503	788	174	616	337	505
TOC	mg/L	3.3	5.2	3.8	4.6	1.8	6.7	3.1	4.2
TSS	mg/L	0.8	144	14	44	0.4	275	17	52
Turbidity	NTU	1.9	86	14	38	1.2	172	11	27

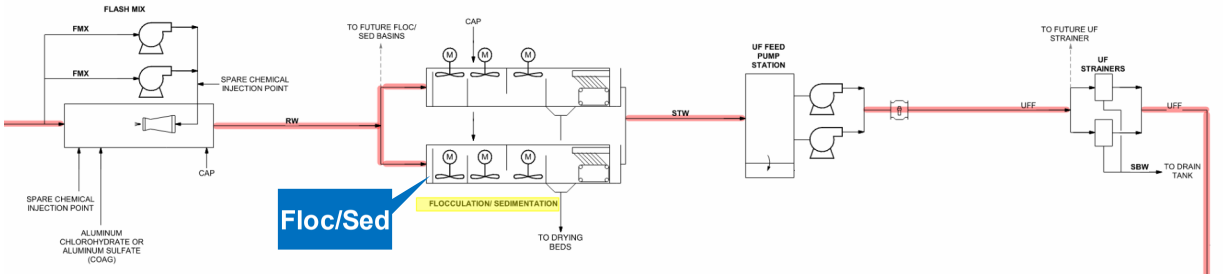
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Process Flow Diagram



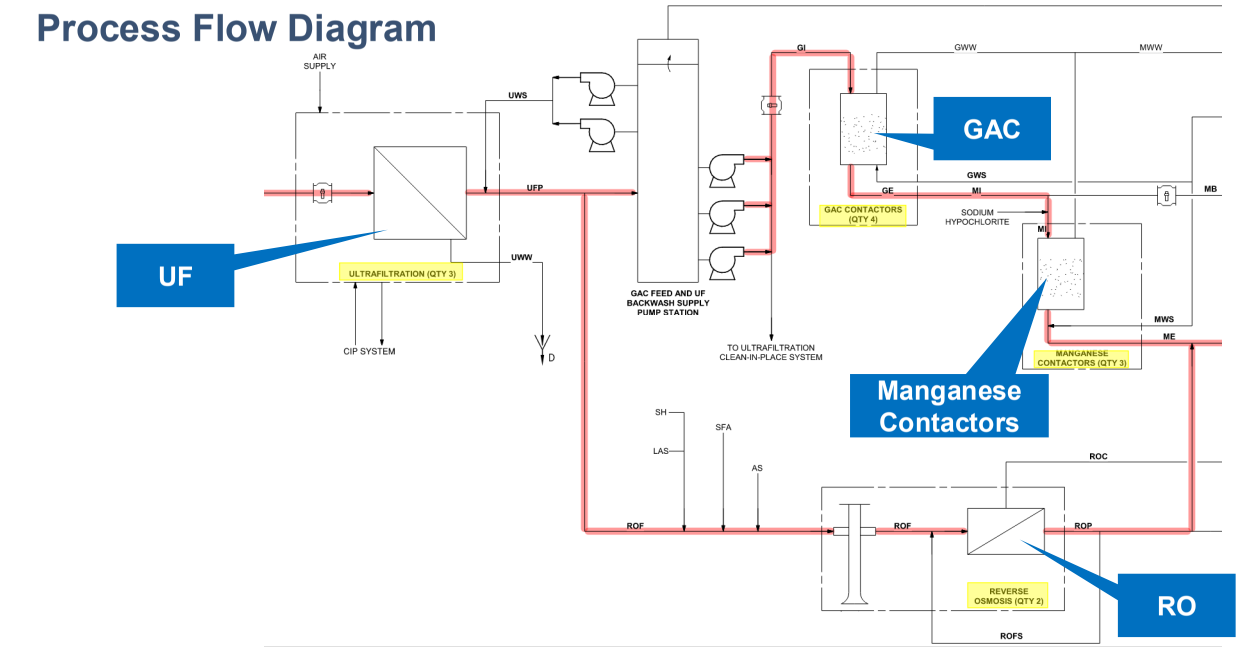
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Process Flow Diagram



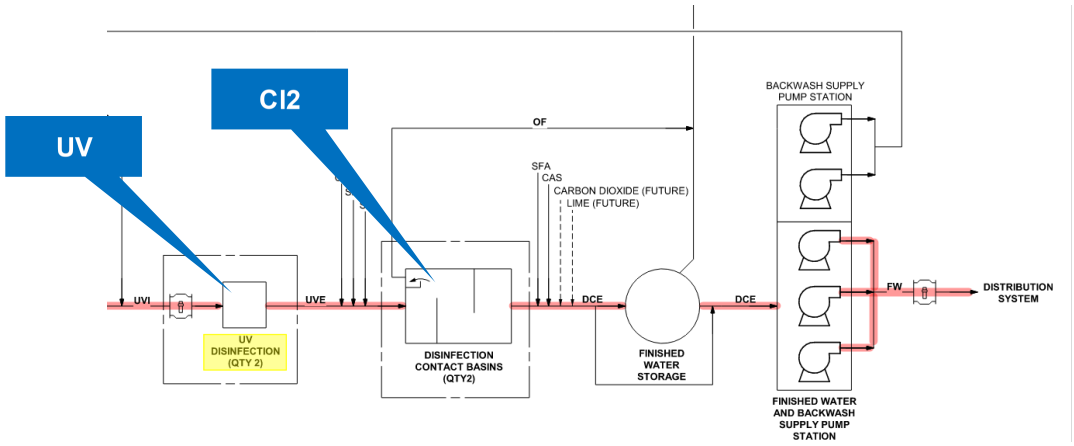
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Process Flow Diagram



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Process Flow Diagram



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Finished Water Quality Goals

Parameter	Goal	Units	Notes
Turbidity			
Settled Water	< 1.0 Target < 2.0 Max	NTU	Partnership for Safe Water goals: <1 when raw water is <10 <2 otherwise
Settled Water Zeta	Train 1: -3 to 0 Train 2: TBD	millivolt	
Filtered Water	< 0.1	NTU	Utah DDW R309-200-5(5)(a)(ii)
Aesthetics			
Total Odor Number	≤ 2.0		
Flavor Profile Analysis (FPA)	"Good" or "Excellent"	mg / L	
TDS	< 350 Summer < 500 Winter	mg / L	Match Weber South WTP
Chloride	< 70 Summer < 120 Winter	mg / L	Match Weber South WTP
Total Iron	≤ 0.05	mg / L	Secondary standard is 0.3 mg/L
Total Manganese	≤ 0.02	mg / L	Typical treatment goal is 0.02 mg/L Secondary standard is 0.05 mg/L
Geosmin/MIB	< 10 - 15	ppb	Typical human detection range is 5 and 15 ppb
Hardness	< 250 Summer < 320 Winter	mg / L	

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Water Quality Goals

Parameter	Goal	Units	Notes
Other Constituents			
TOC Removal	Regulatory Matrix		15% for 2 - 4 mg/L TOC and >120 mg/L alkalinity 25% for 4 - 8 mg/L TOC and >120 mg/L alkalinity 35% for 4 - 8 mg/L TOC and <120 mg/L alkalinity
Finished Water pH	7.5 - 9		
Finished Water Langelier Saturation Index (LSI)	Positive		
Finished Water Calcium Carbonate Precipitation Potential (CCPP)	4 - 10	mg / L	
PFOS/PFOA	3	ppt	75% of MCL
Hazard Index	0.75		75% of MCL
Disinfection Byproduct Formation Goals			
Bromate	0.008	mg / L	80% of MCL (0.01 mg/L)
Chlorite	0.8	mg / L	80% of MCL (1.0 mg/L)
Total Trihalomethanes	0.064	mg / L	80% of MCL (0.08 mg/L)
Haloacetic Acids	0.048	mg / L	80% of MCL (0.6 mg/L)
Chlorine Residual	0.2 - 0.5	mg / L	At 7-day SDS

Hazen

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Weber West Renew

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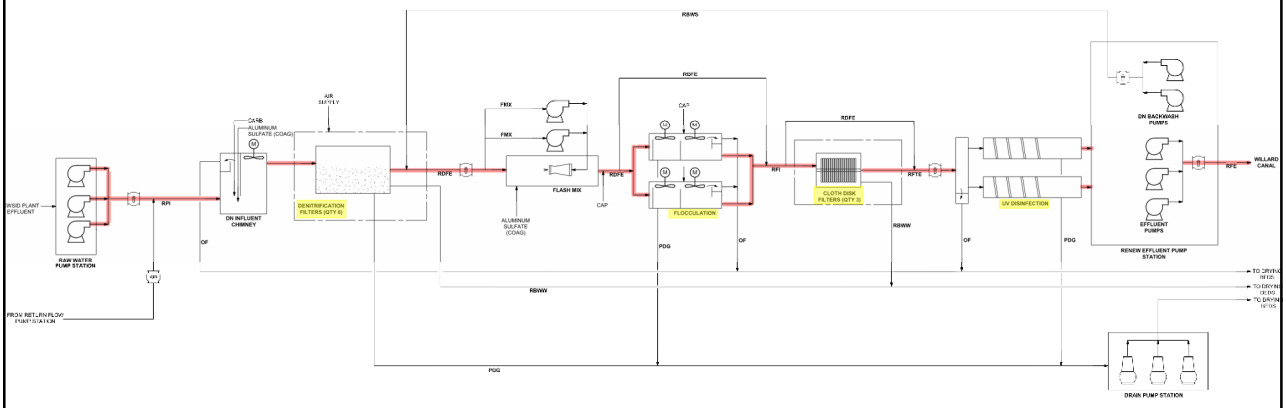
Weber West Renew (Renew)

- Initial design capacity = 10 mgd net
- Future expansion planned to double capacity to 20 mgd
- Targeting Nutrient Removal
  - **Nitrogen**
    - *Biological process utilizing deep bed sand filters and supplemental carbon*
  - **Phosphorus**
    - *Chemical Process to coprecipitate phosphorus using a metal salt (Aluminum Sulfate or Alum)*
- Limit negative effects on Willard Bay (regulatory limits)

Anticipated Raw Water Quality

	Anticipated Influent					Effluent
Parameter	Units	Median	Avg	Max	90th Percentile	Treatment Goal
BOD	mg / L	5.20	5.59	66.7	7.40	≤25
TSS	mg / L	5.50	6.14	180	7.50	≤25
pH		7.31	7.31	7.69	7.39	6-9
DO	mg / L	6.79	6.77	8.83	7.28	≥5
NH3 Oct – Dec Jan – Mar Apr - Jun	mg / L	 0.10 0.10 0.10	 0.20 0.76 0.34	 3.63 15.90 5.68	 0.52 4.42 1.11	
TKN	mg / L	5.00	5.33	12.5	6.00	
NO3	mg / L	8.45	8.39	14.7	10.8	
NO2	mg / L	0.02	0.05	0.77	0.07	
TIN	mg / L	8.81	8.84	14.87	11.12	≤2
Total P	mg / L	0.23	0.36	2.78	0.71	≤0.1
Ortho P	mg / L	0.07	0.17	2.54	0.50	

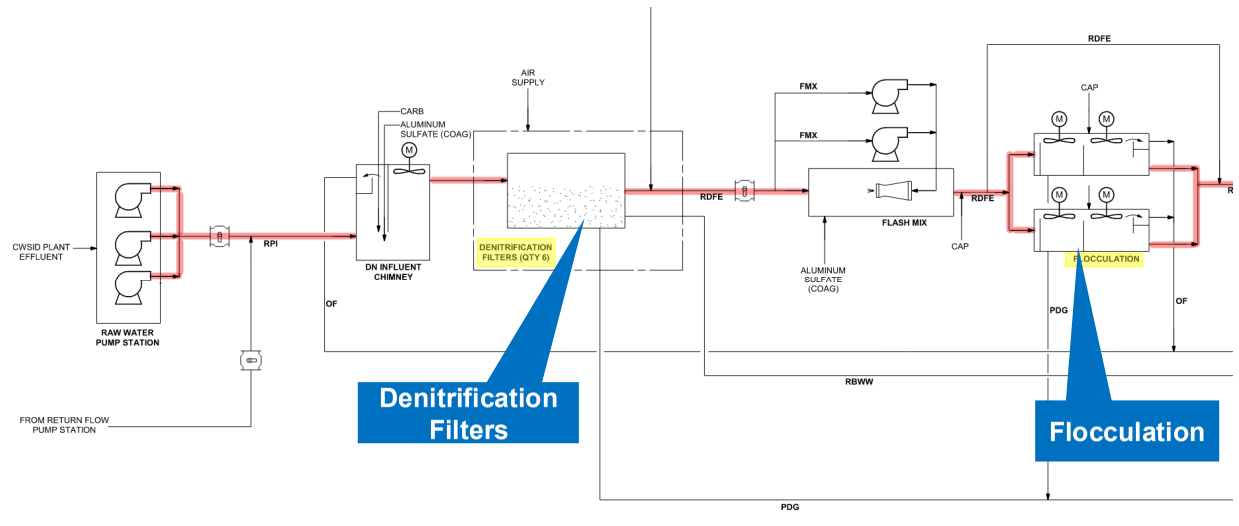
Process Flow Diagram



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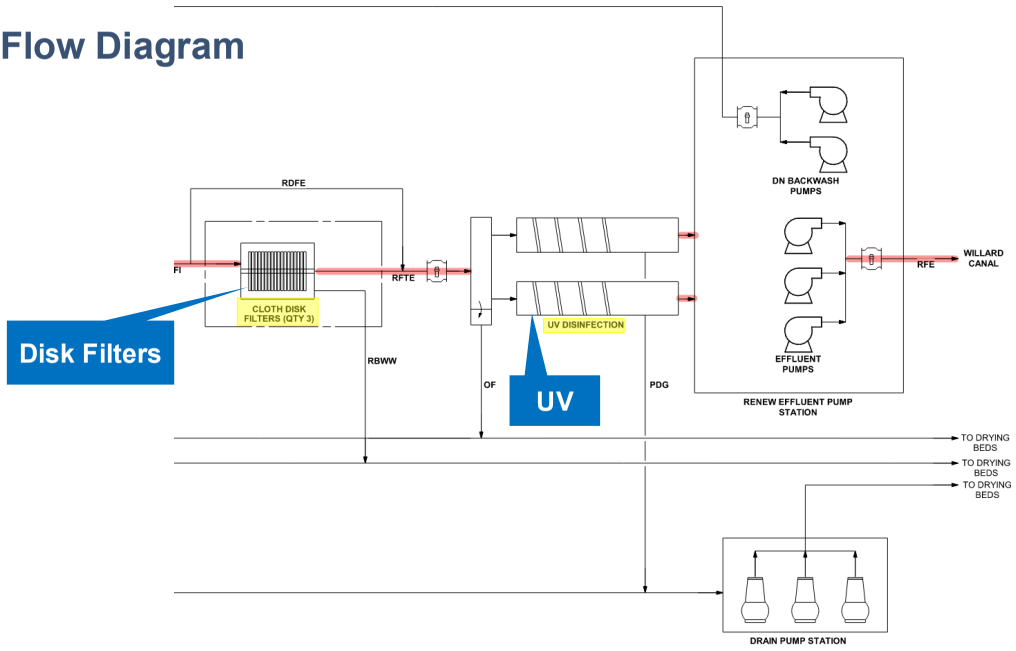
Process Flow Diagram



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Process Flow Diagram



Hazen

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Delivery Approach

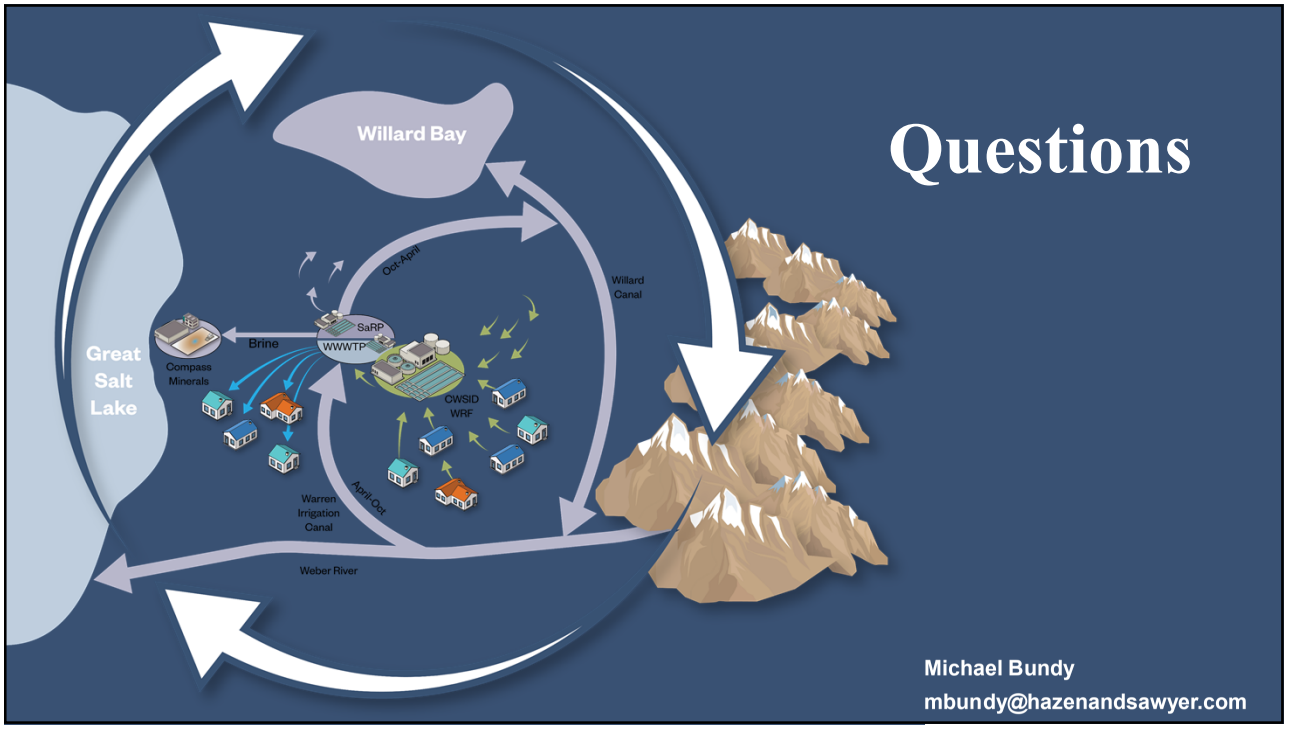
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Why Alternative Delivery Made Sense

- Several large construction projects projected to be under construction at the same time
- Construction cost certainty sooner
- Contractor assistance
  - Design input
  - Schedule
  - Value engineering
  - Constructability reviews
- Maintain project off-ramp

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Questions

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