

May 9, 2025

Innovative Solutions for Modernizing the City Creek Water Treatment Plant

Overcoming Project Restraints and Challenges



American Water Works Association
Pacific Northwest Section

ANNUAL CONFERENCE
2025



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Innovative Solutions for Modernizing the City Creek Water Treatment Plant

Project Restraints and Challenges



Innovative Solutions for Modernizing the CCWTP



The City Creek Water Treatment Plant Upgrade Project in Salt Lake City, Utah, represents a significant engineering endeavor aimed at modernizing the state's oldest water treatment facility. Built in 1953, the infrastructure's condition no longer made structural improvements to withstand predicted seismic activity a viable option, leading to a decision to rebuild the facility within the existing plant footprint, all while providing a constant supply of water throughout construction. This presentation discusses innovative design solutions implemented to overcome the unique challenge of constructing the 16 mgd capacity plant within a highly restricted footprint situated three miles up a steep and narrow canyon in immediate proximity to the heart of downtown Salt Lake City. Solutions include utilizing high-rate sedimentation, minimizing excavation using existing infrastructure, optimizing layout to maximize access, and obtaining chlorine contact time with whole plant chlorination.

Agenda

City Creek Water Treatment Plant

Challenge 1 Canyon Access

Challenge 2 Public Safety

Challenge 3 Project Schedule

Challenge 4 Site Constraints



City Creek Water Treatment Plant

Plant History



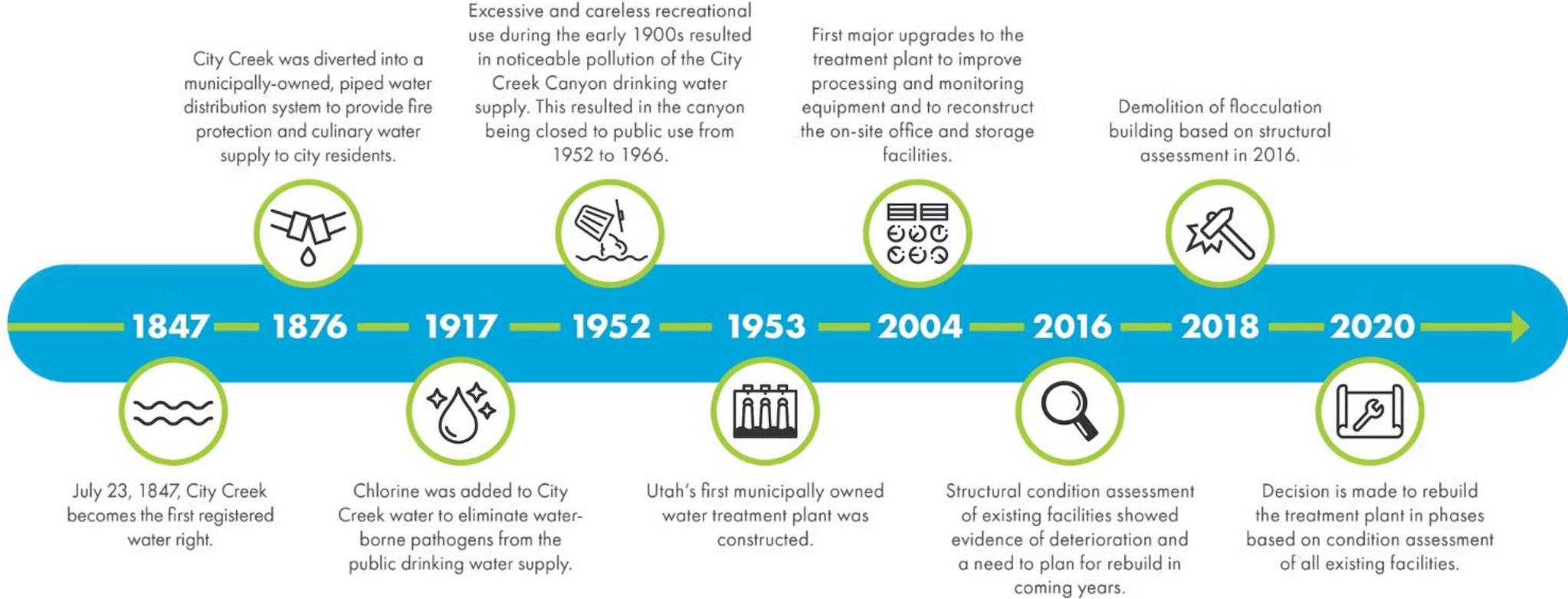
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Plant History

History of City Creek





Project Challenge 1

Canyon Access

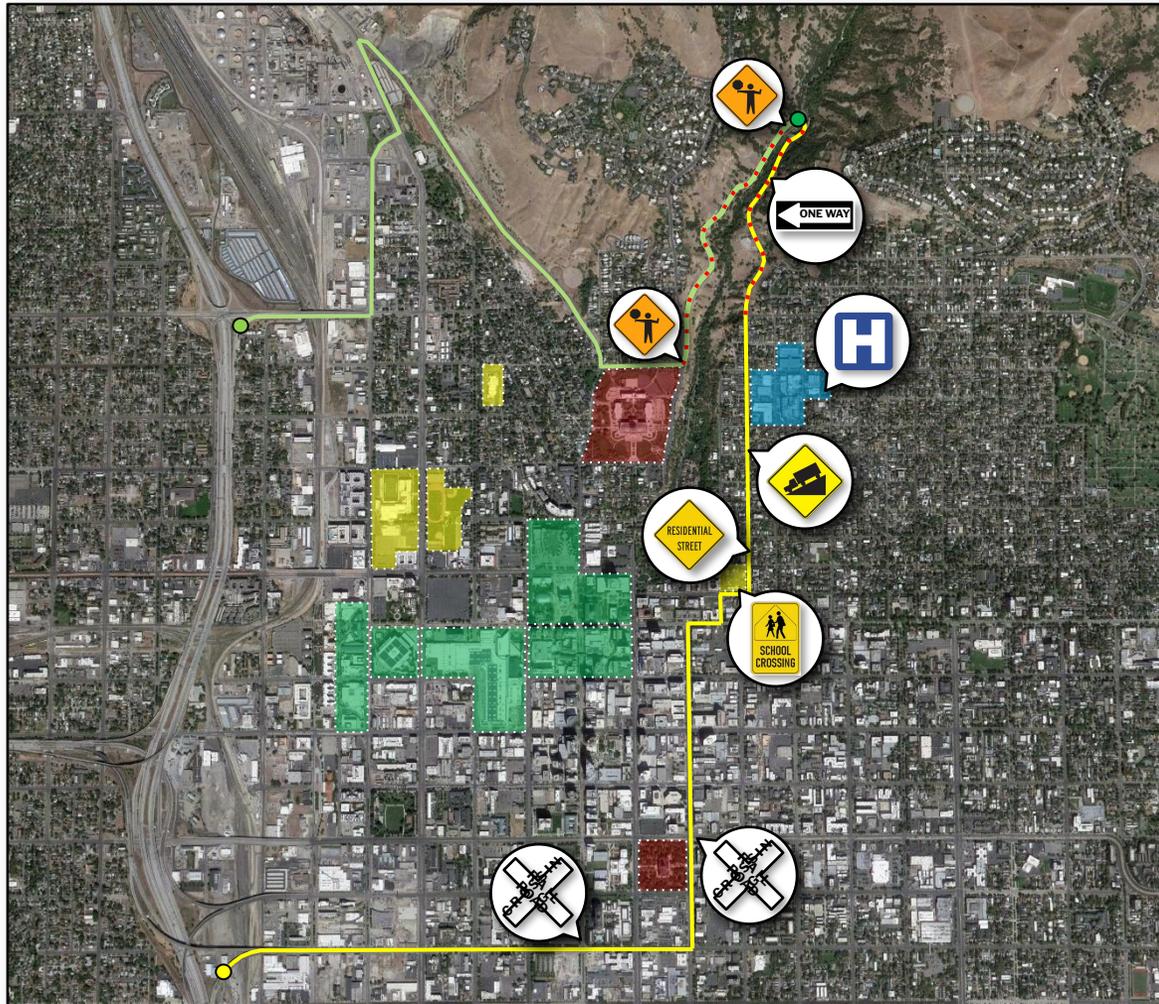


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Canyon Access



Access Concerns

- Hospitals
- Schools
- Tourism and Traffic
- Light Rail
- Residential Area
- Multiple Unprotected Intersections
- Steep Incline
- Recreation



Project Challenge 2

Public Safety

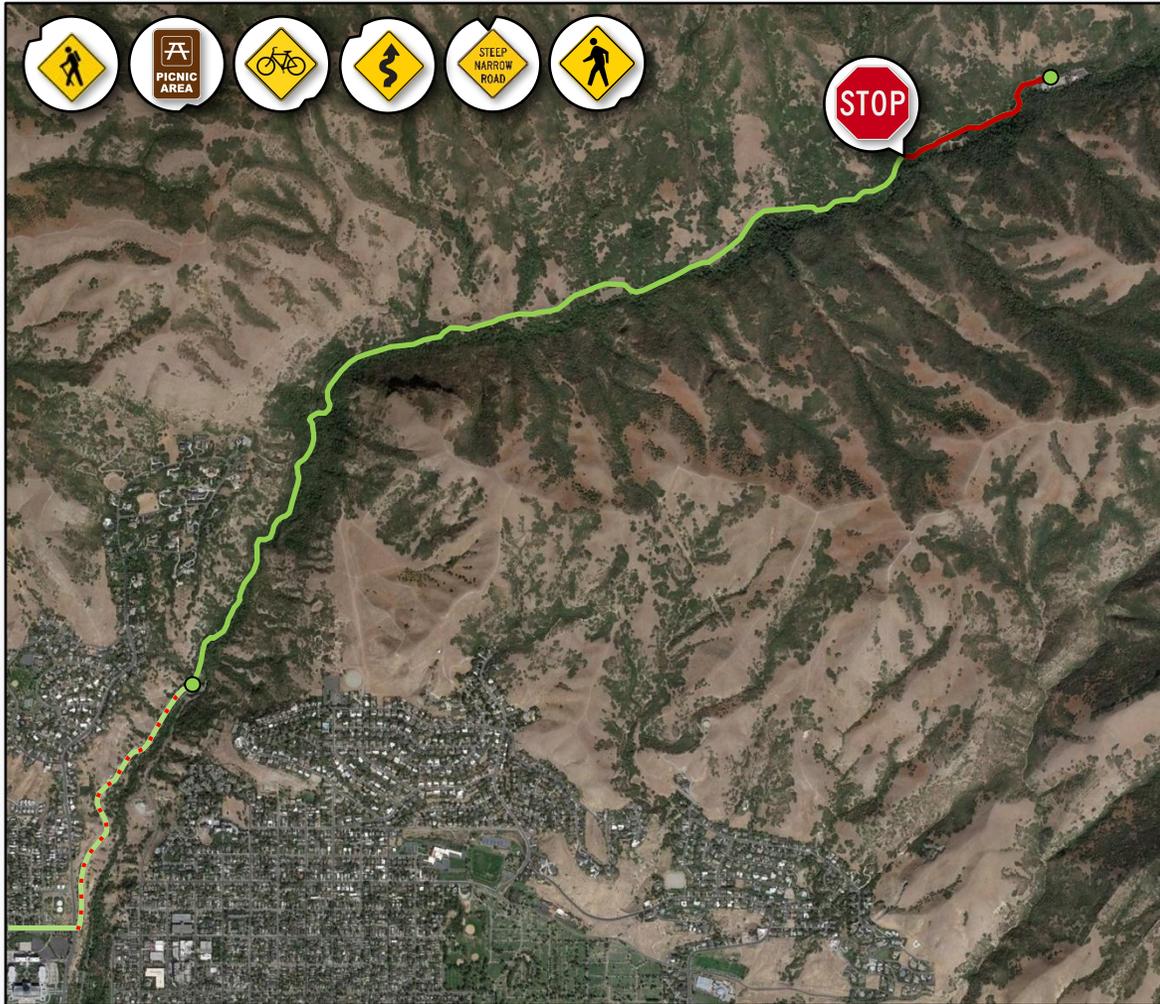


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Public Safety



Recreational Activities

- Biking
- Hiking
- Running
- Picnic Sites

Concerns

- Narrow Pathways
- Blind Corners
- Low Visibility
- Heavy Equipment
- High Speeds (Bikes)
- Debris

Resolution

- No Public Access on Weekdays
- Saturday and Sunday Public Access
- No Public Vehicles
- No Access Above Site 16



Project Challenge 3

Project Schedule



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BRIC Funding

**REDUCING
RISK
FROM:**



Earthquakes



Floods



Landslides



Wildfires

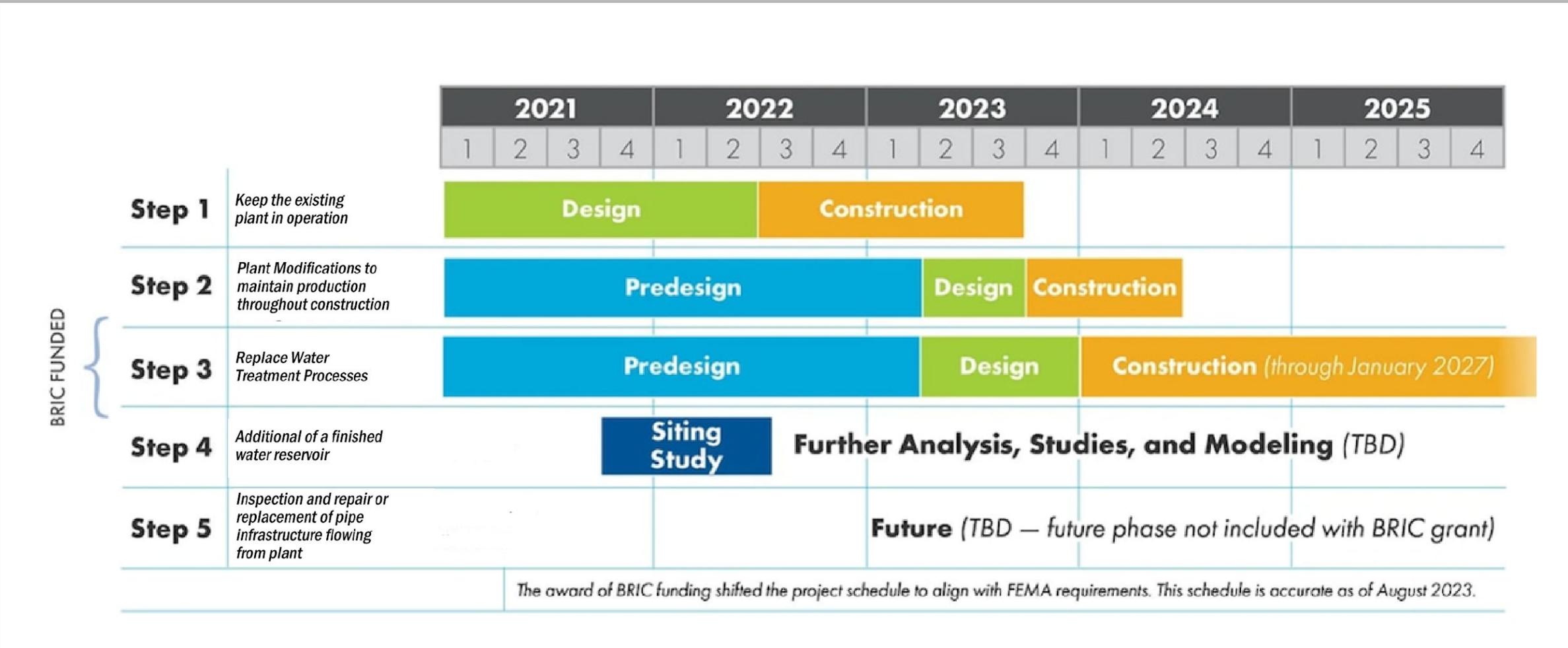


Drought



Severe Weather

Project Schedule





Project Challenge 4

Site Constraints



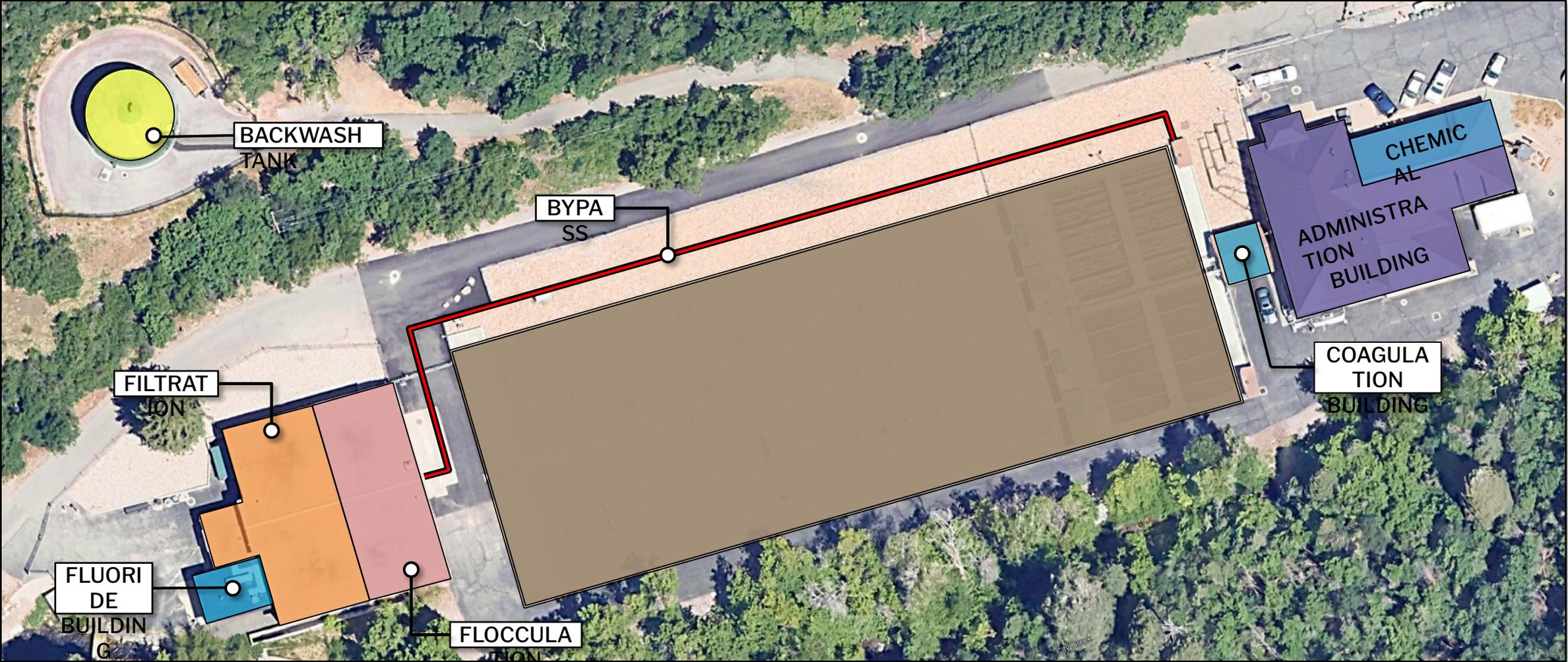
JUNE
2023



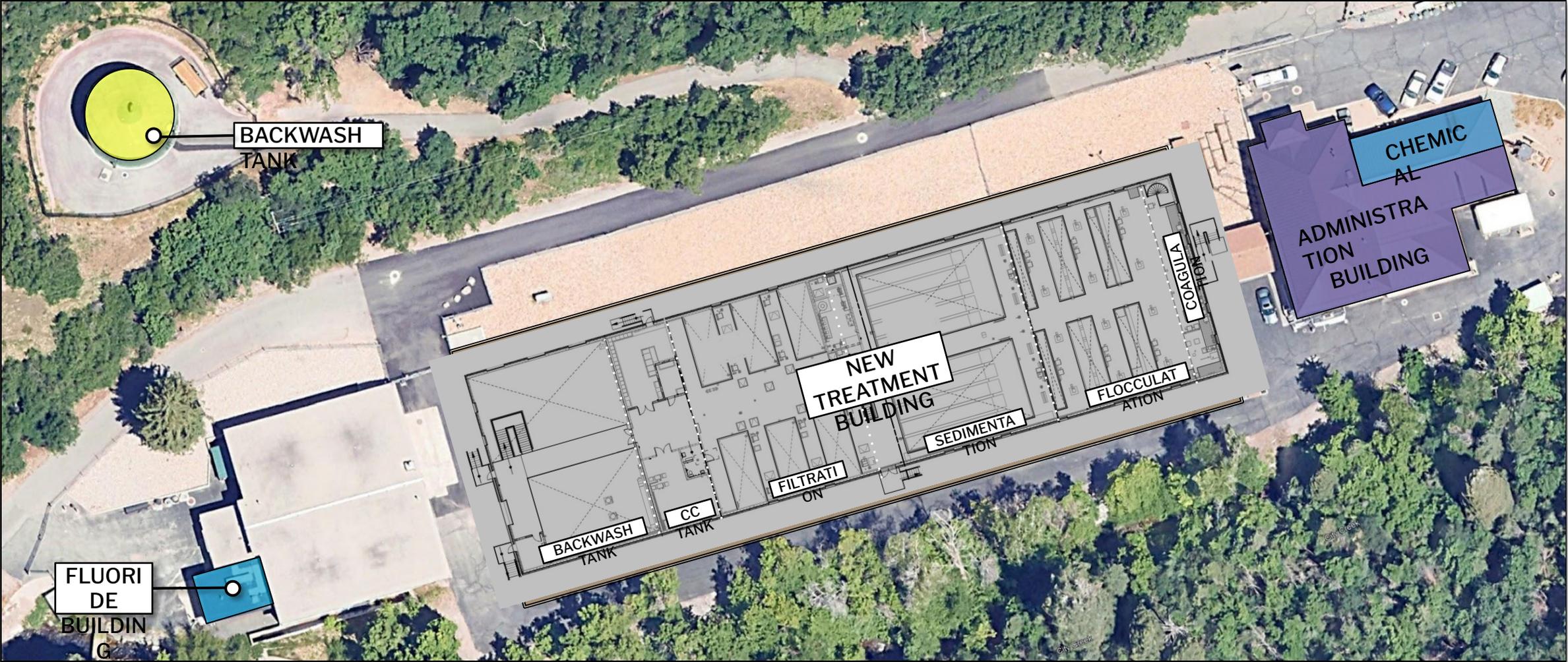
City Creek Water Treatment Plant [2023]



City Creek Water Treatment Plant [2025]



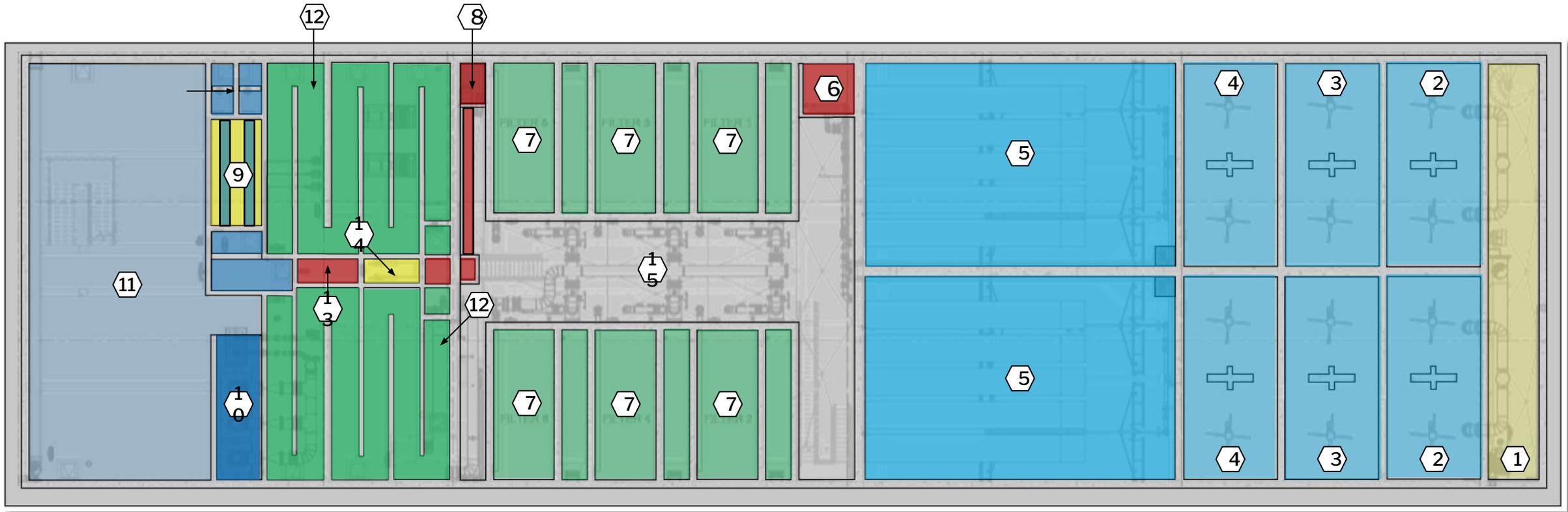
City Creek Water Treatment Plant [2027]



APRIL
2025



Lower Level

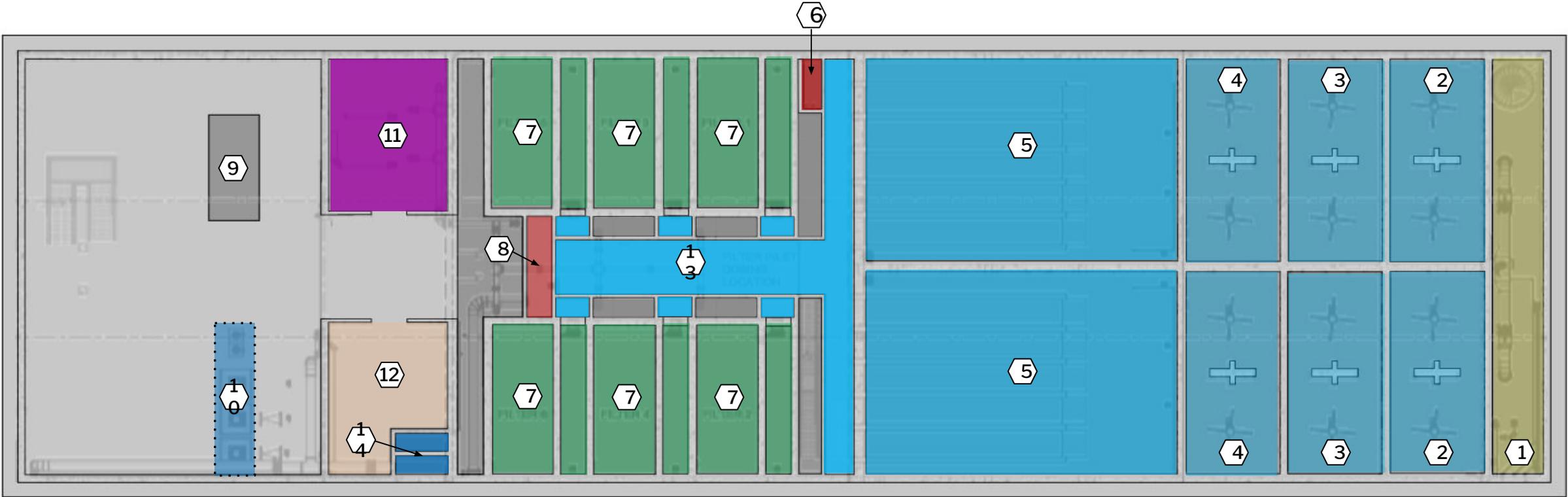


- ① COAGULATION AREA [PUMP DIFFUSION]
- ② FLOCCULATION [STAGE 1][13.5 MIN]
- ③ FLOCCULATION [STAGE 2][13.5 MIN]
- ④ FLOCCULATION [STAGE 3] [13.5 MIN]
- ⑤ HIGH-RATE SEDIMENTATION [INCLINED PLATES]

- ⑥ SOLIDS COLLECTION BOX
- ⑦ HIGH RATE FILTRATION [7.4 MIN]
- ⑧ SPILL OVERFLOW SYSTEM
- ⑨ PLANT FLOW METER VAULT
- ⑩ BACKWASH | PW PUMP INTAKE

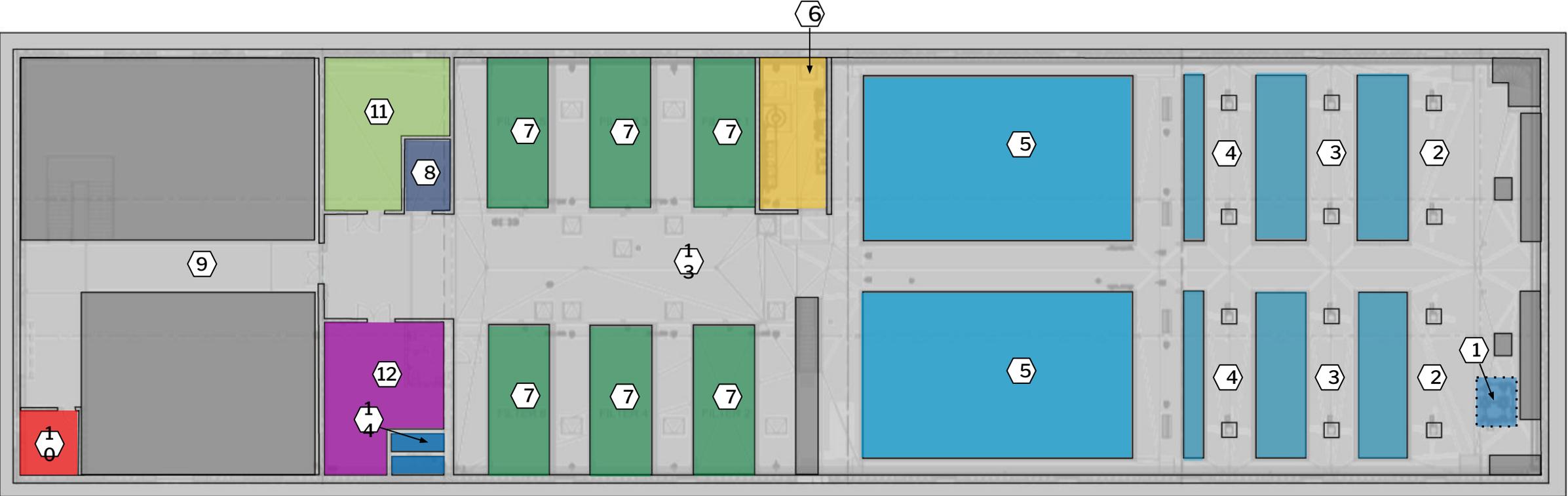
- ⑪ BACKWASH WATER TANK
- ⑫ CHLORINE CONTACT TANK [12 MIN]
- ⑬ COBASIN + BACKWASH TANK
- ⑭ DRAIN PUMP VAULT
- ⑮ FILTER GALLERY

Intermediate Level



- | | | |
|--|-------------------------------------|---------------------------|
| ① COAGULATION AREA [PUMP
DIFFUSION] | ⑥ SOLIDS COLLECTION BOX | ⑪ AIR SCOUR BLOWER ROOM |
| ② DIFFUSION [STAGE 1][13.5
MIN] | ⑦ HIGH RATE FILTRATION [7.4
MIN] | ⑫ UTILITY ROOM |
| ③ DIFFUSION [STAGE 2][13.5
MIN] | ⑧ PERMITS OVERFLOW SYSTEM | ⑬ FILTER INFLUENT CHANNEL |
| ④ DIFFUSION [STAGE 3] [13.5 MIN] | ⑨ PLANT FLOW METER VAULT | ⑭ CONSTANT HEAD BOX |
| ⑤ HIGH-RATE SEDIMENTATION
[INCLINED PLATES] | ⑩ BACKWASH PW PUMPS | |

Operating Level



- ① PUMP DIFFUSION SYSTEM
- ② FLOCCULATORS [STAGE 1]
- ③ FLOCCULATORS [STAGE 2]
- ④ FLUCCULATORS [STAGE 3]
- ⑤ HIGH-RATE SEDIMENTATION [INCLINED PLATES]
- ⑥ POLYMER ROOM
- ⑦ HIGH RATE FILTRATION [7.4
- ⑧ CONTROL ROOM
- ⑨ ELEVATED WALKWAY
- ⑩ SHELTER IN PLACE
- ⑪ ELECTRICAL ROOM
- ⑫ BUILDING MECHANICAL ROOM
- ⑬ OPERATING FLOOR
- ⑭ CONSTANT HEAD BOX



Questions?



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