



Capital Program Update

Anne Malenfant
P.E., PMP

Welcome to 2023 – What Can We Expect?

January 19, 2023



**CDM
Smith**

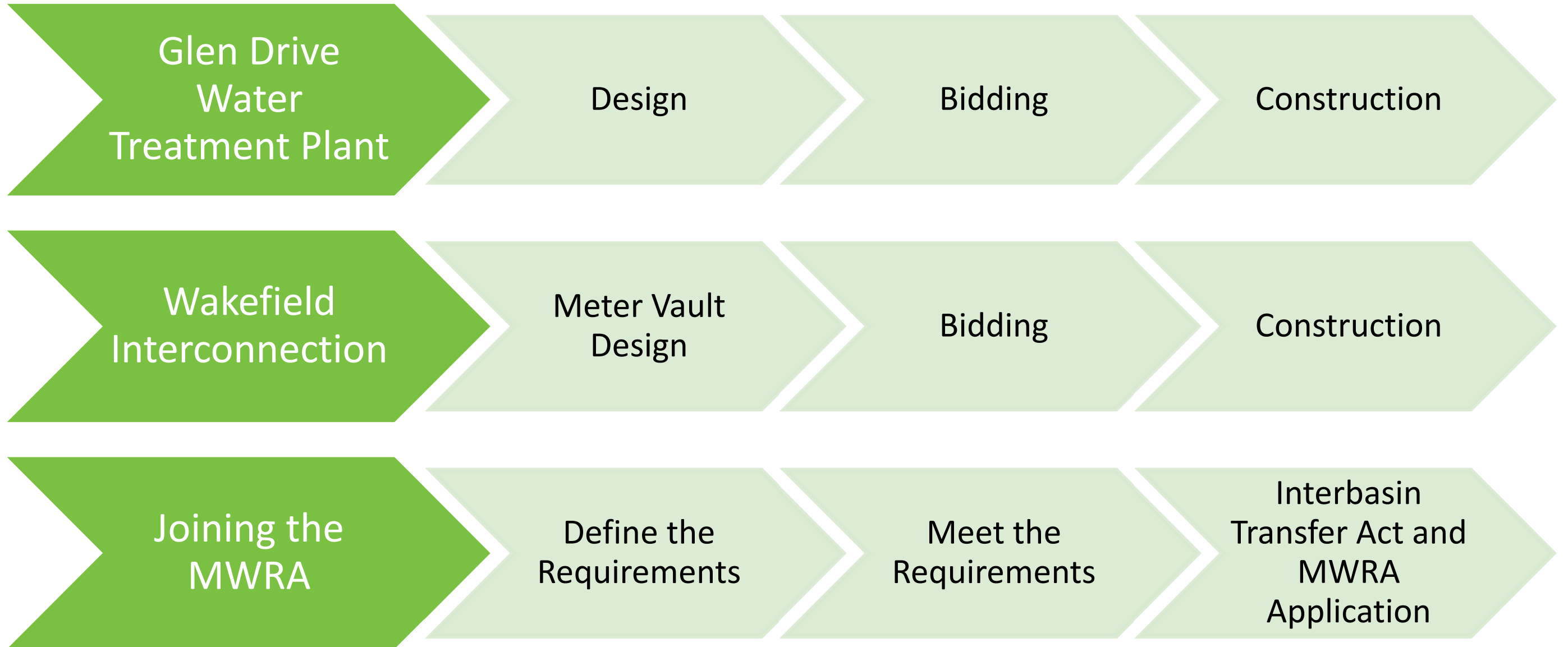
Agenda

- Wakefield/MWRA Interconnection
 - Meter vault design and construction
 - Wakefield distribution system upgrades
 - MWRA admission
- Glen Drive Water Treatment Plant
 - Adjusting for PFAS and alternatives analysis
 - Funding successes
 - Next steps and schedule

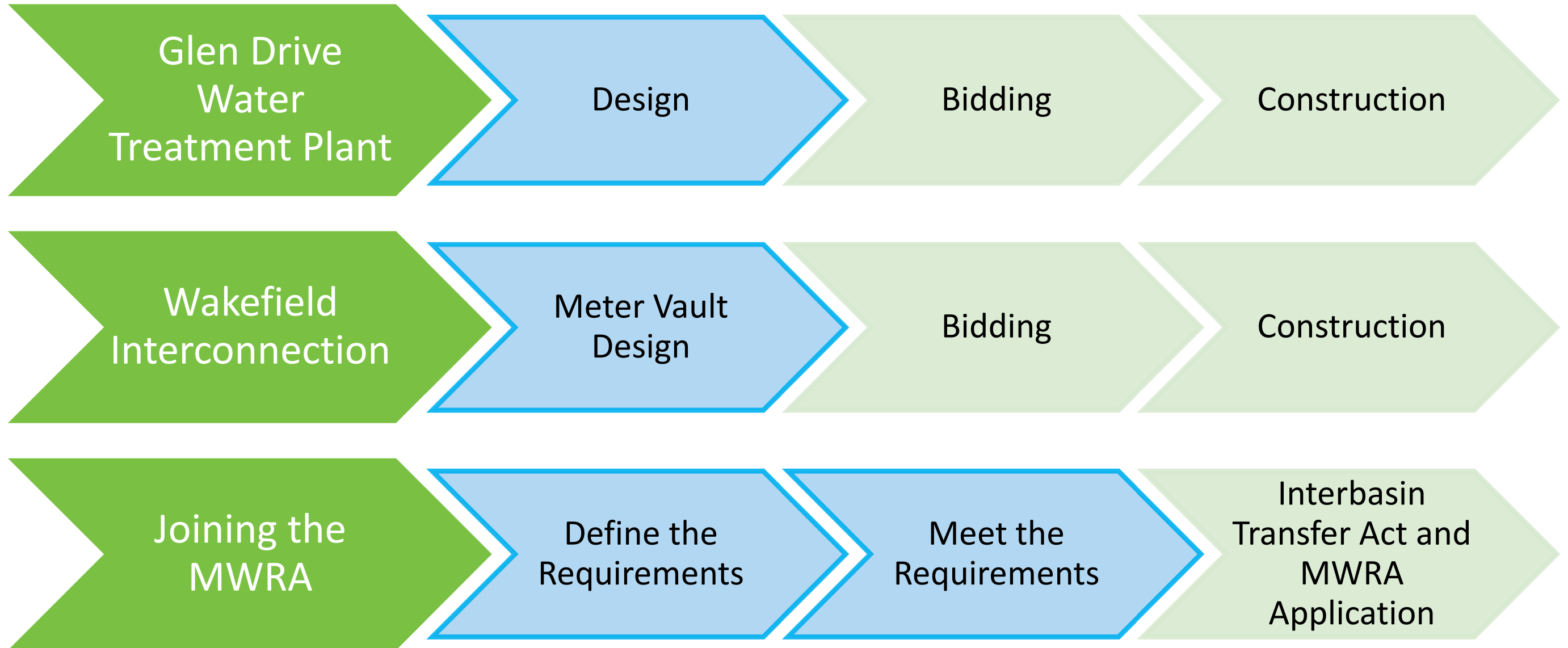


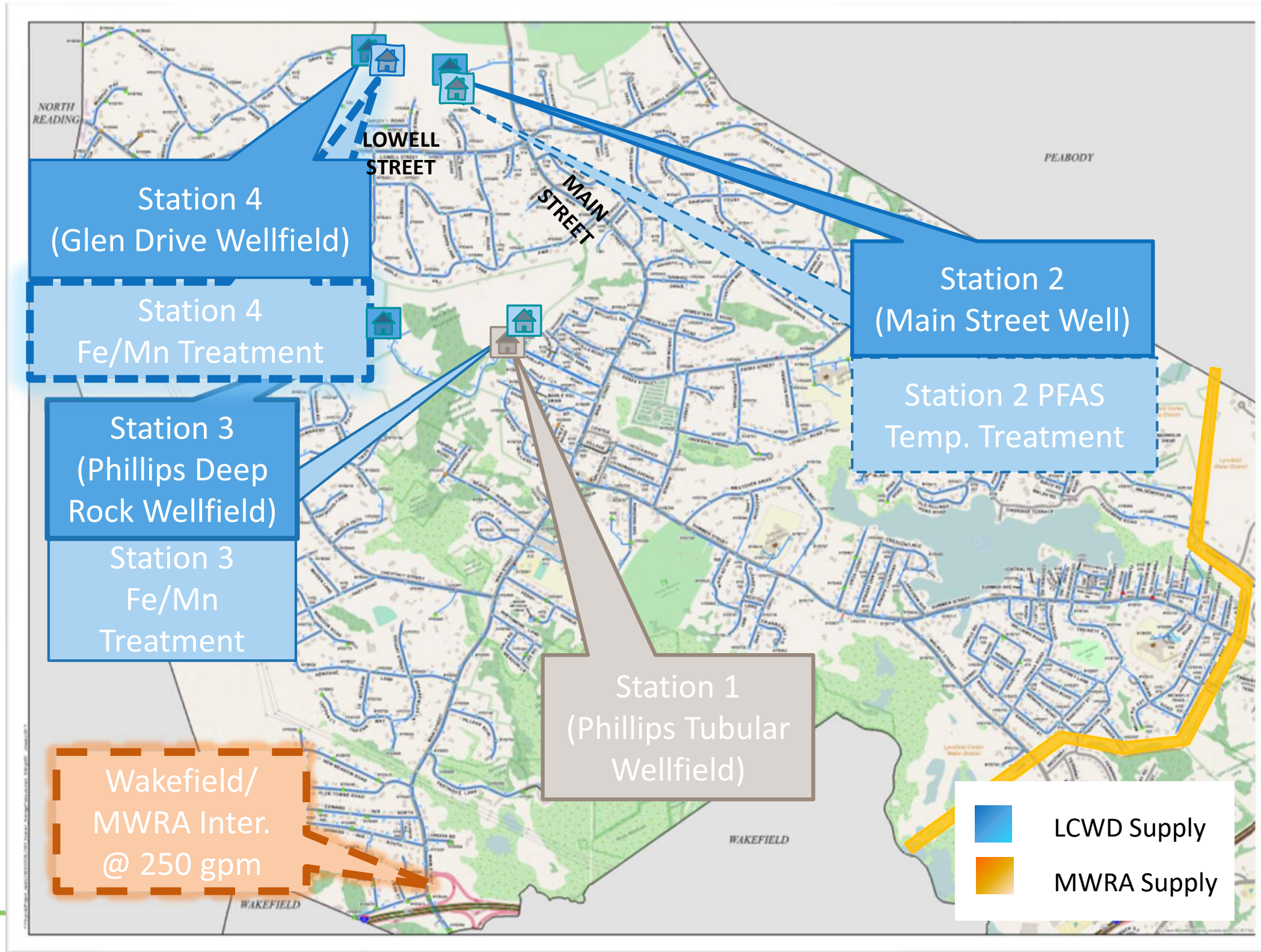
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Capital Program Projects

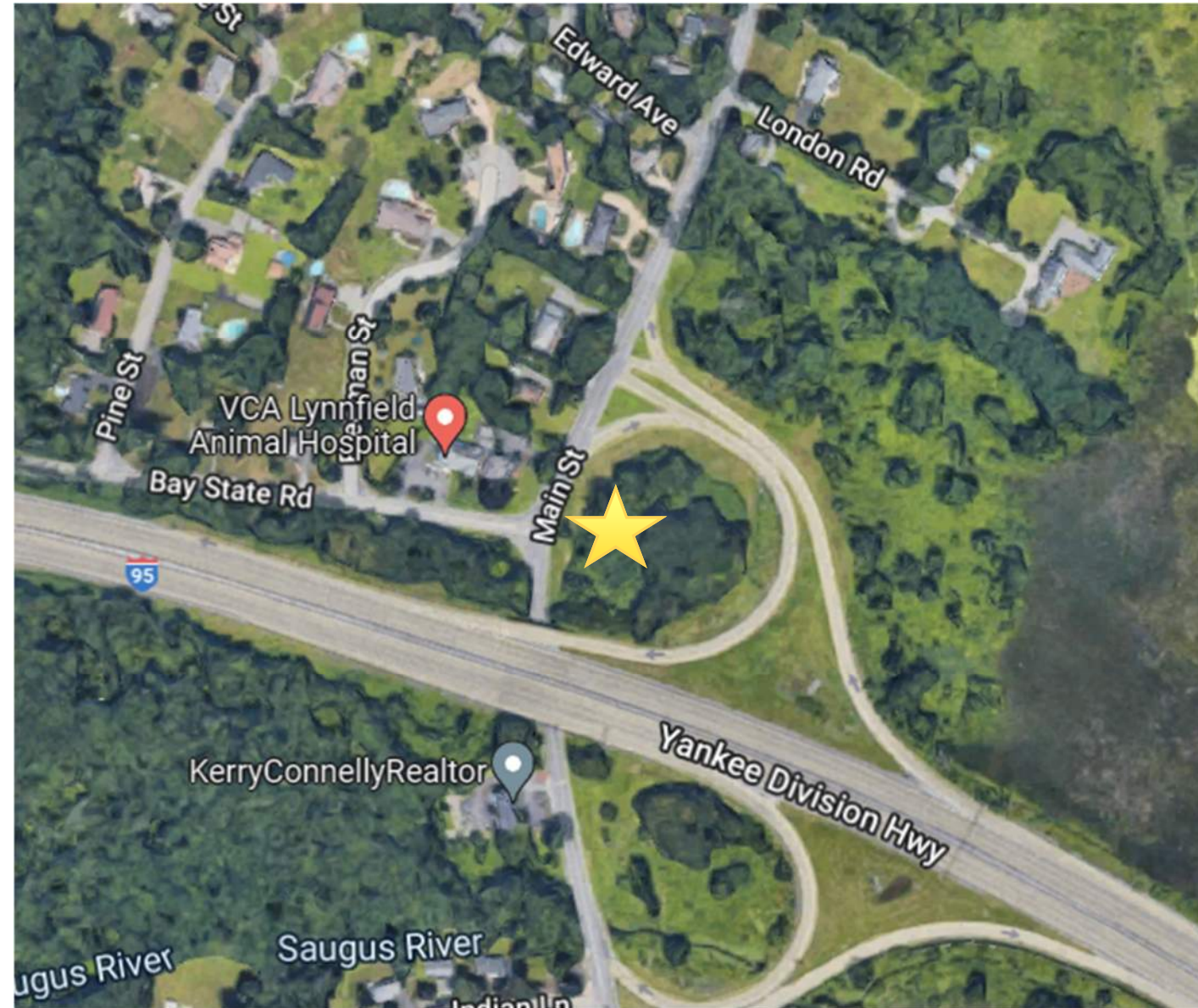


Capital Program Projects

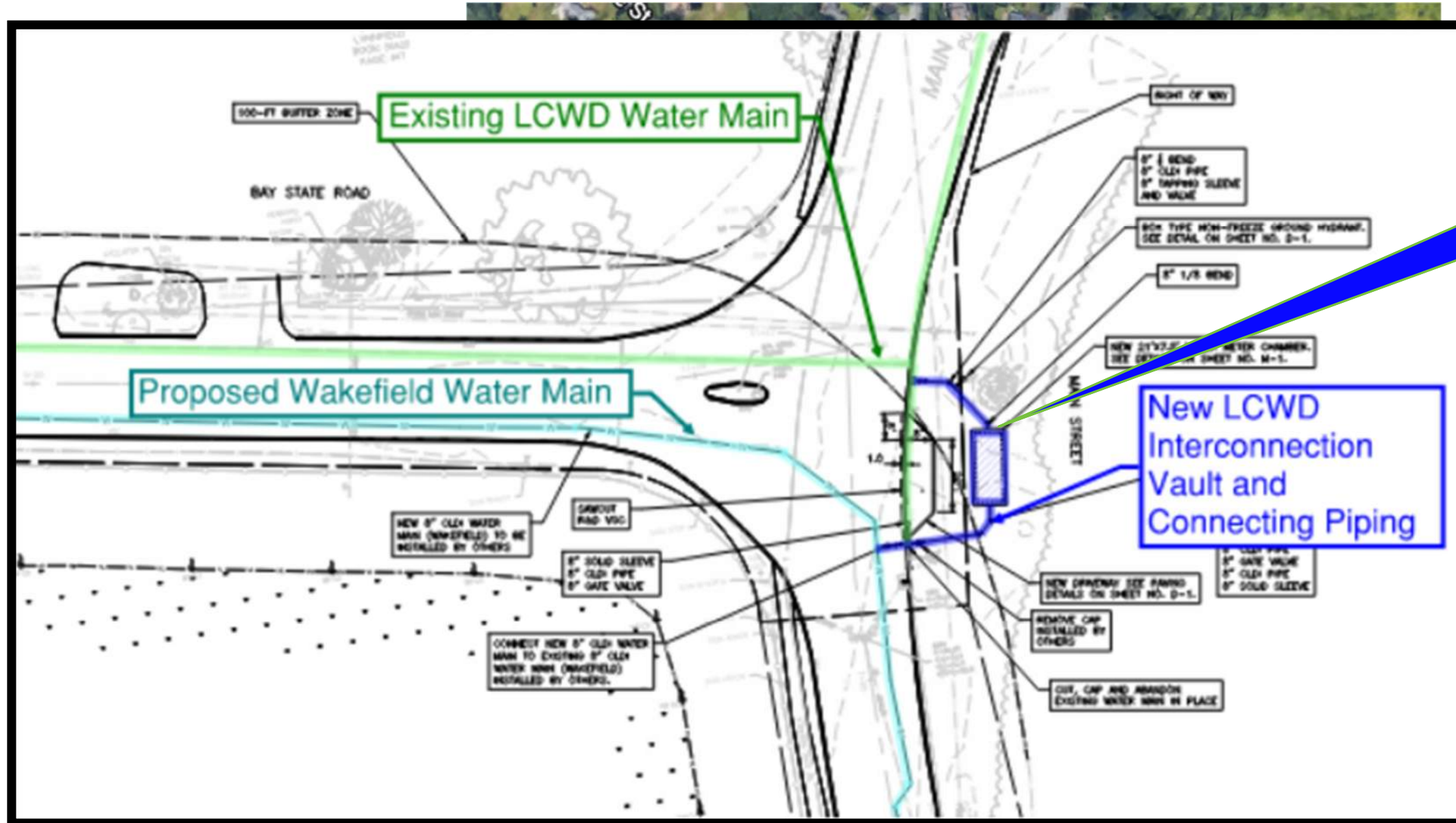




MWRA/Wakefield Meter Vault Design



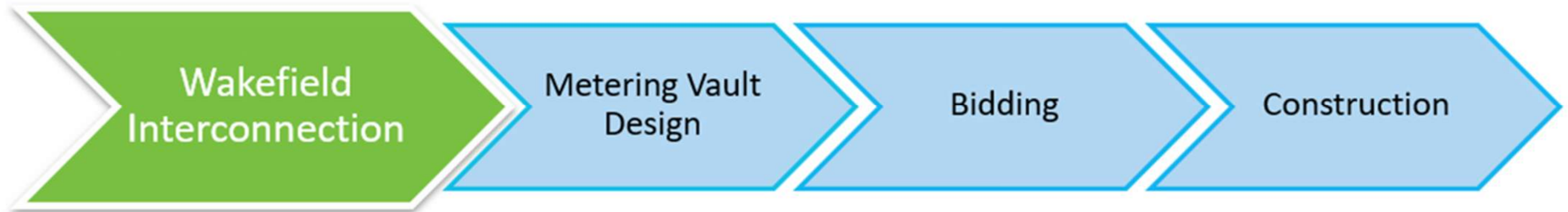
MWRA/Wakefield Meter Vault Design



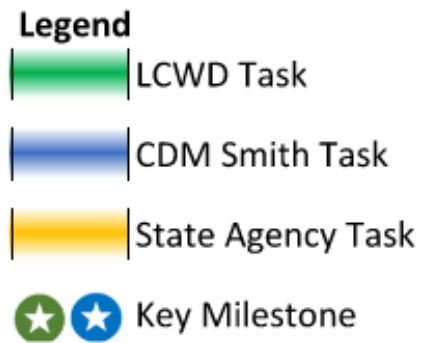
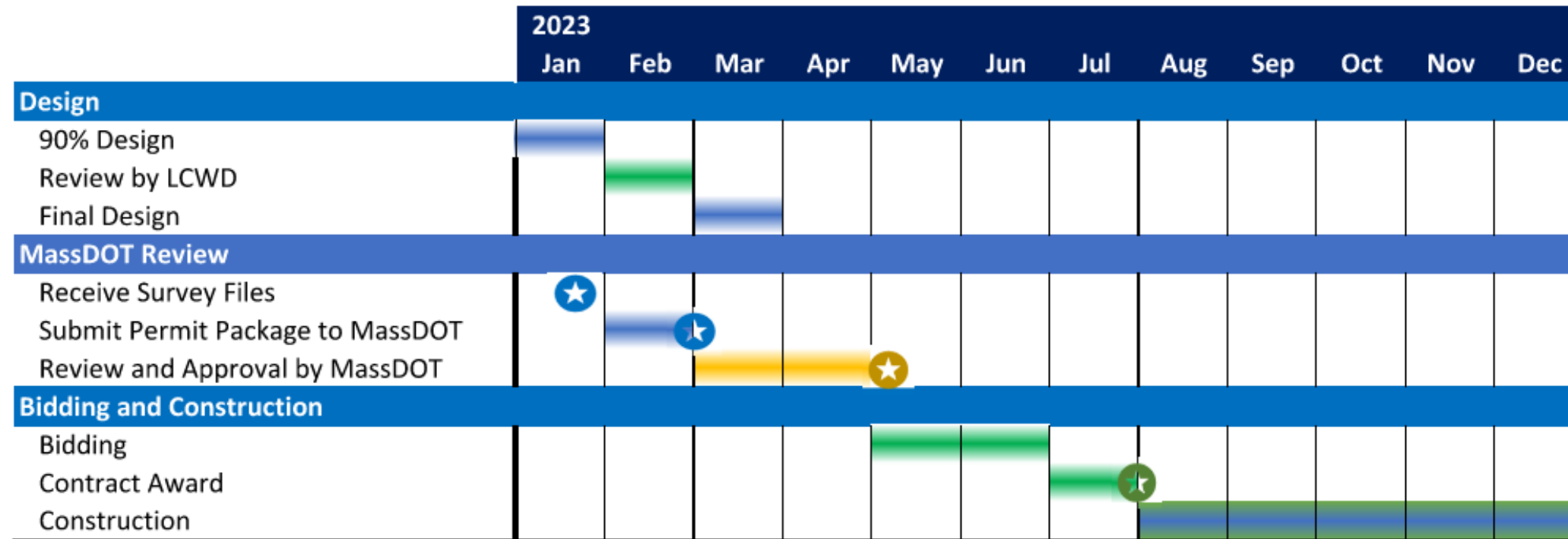
21-ft x 7.5-ft vault

Meter Vault Project Status

- Project in design – 90% submittal January 2023
- Develop bid documents for early Spring 2023 bid
- Coordination with MassDOT for easement
 - Required survey complete
 - Need approval before bidding
- Construction Spring/Summer 2023



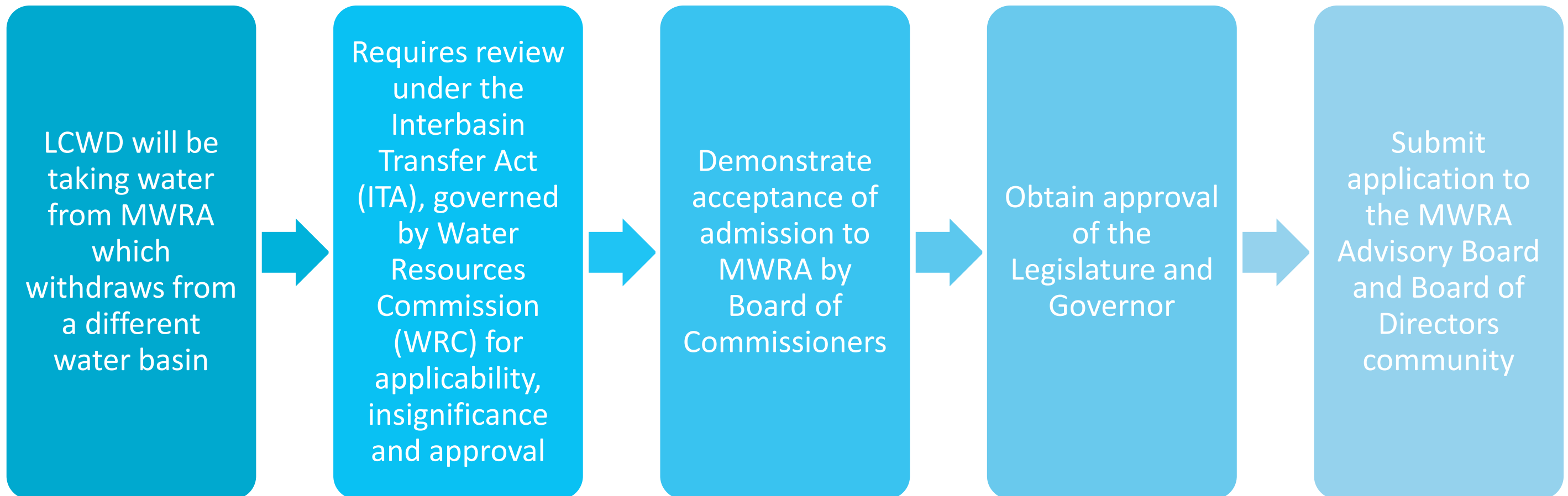
Meter Vault Project Schedule



Joining the MWRA



What is the process?



WRC Process for ITA

✓ Determination of Applicability

➤ **MEPA**

➤ **Expanded Environmental Notification Form (EENF)**

○ **Single Environmental Impact Report (SEIR)**

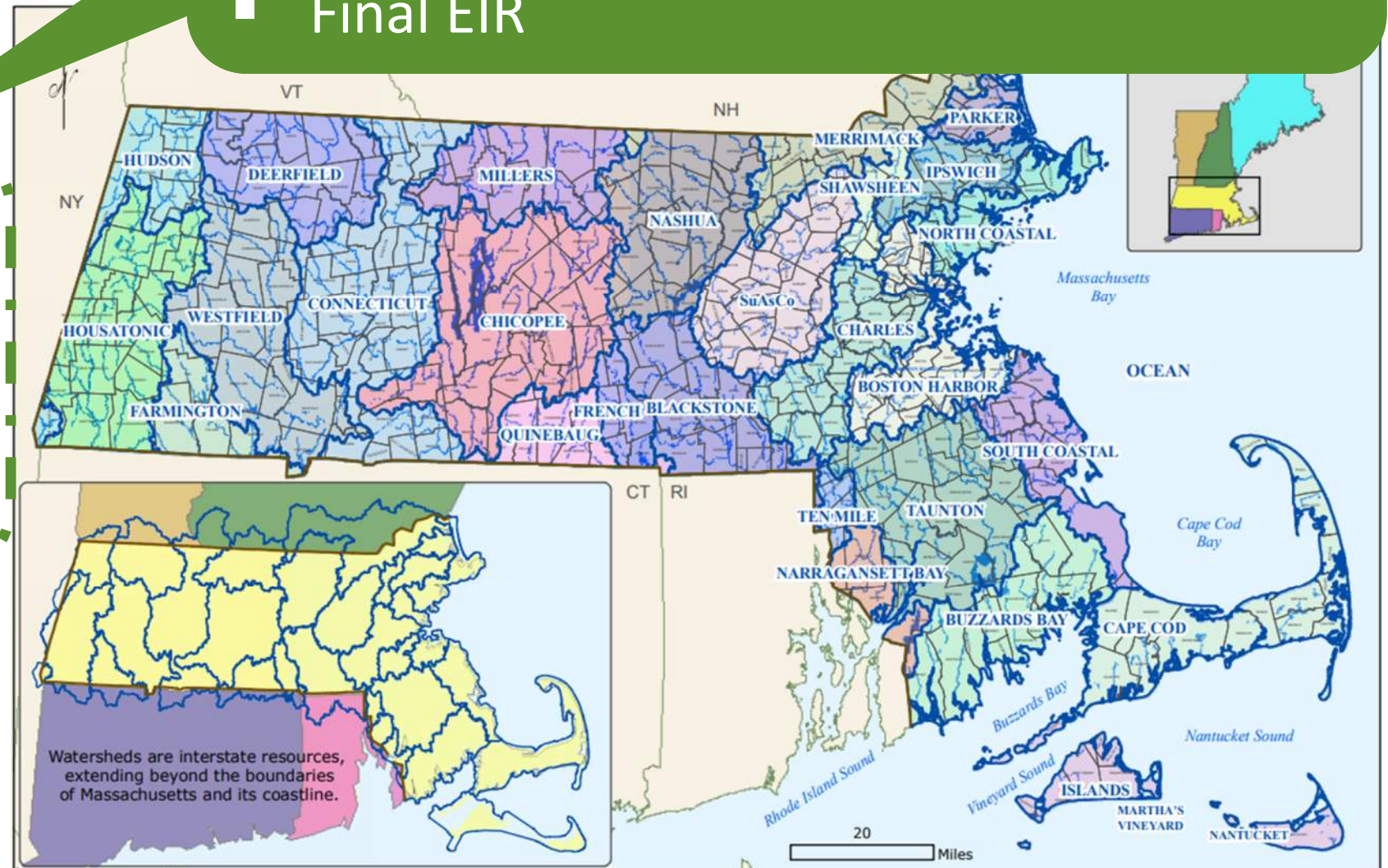
■ EIR as Application to WRC for ITA

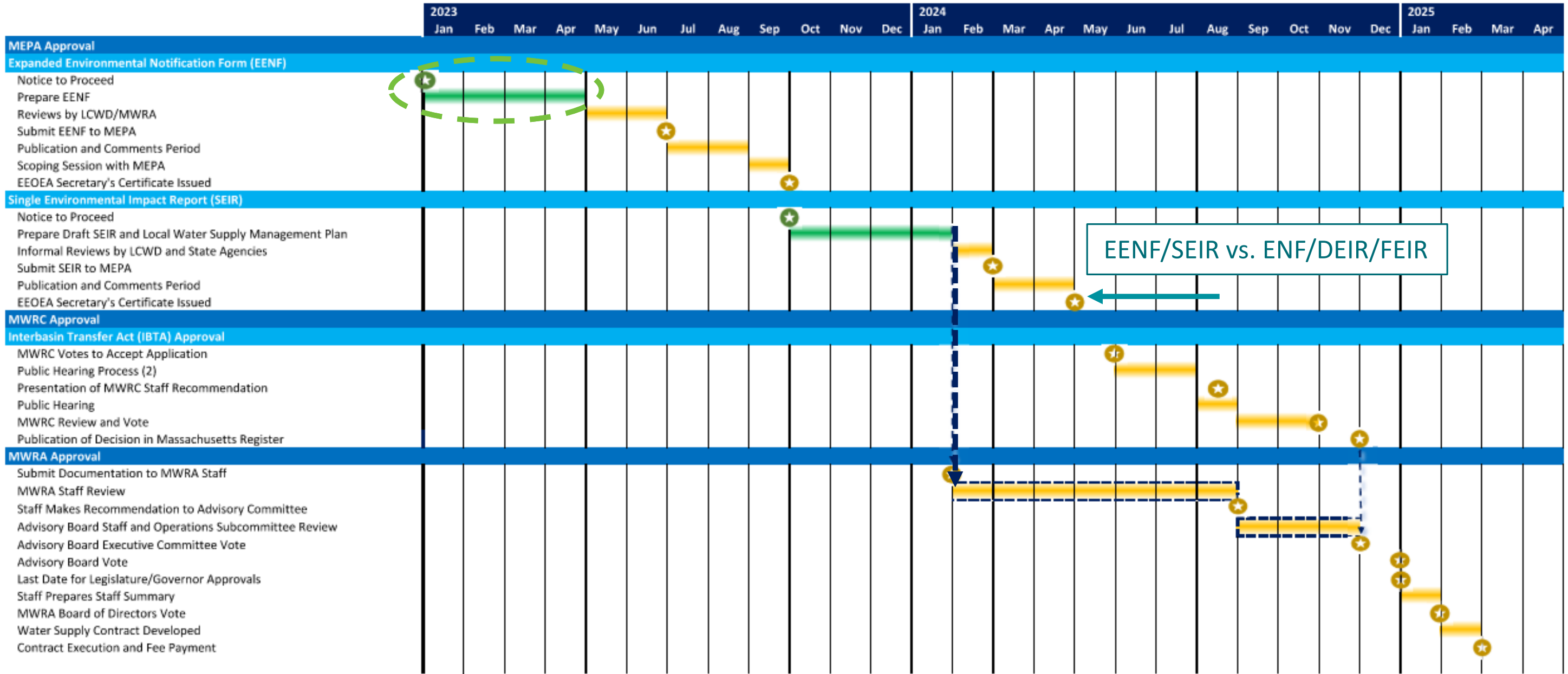
■ WRC Hearings

■ WRC Approval for ITA

Typically:

- Environmental Notification Form (ENF),
- Draft EIR, then
- Final EIR





EENF/SEIR vs. ENF/DEIR/FEIR

Assumptions

1. LCWD and MWRA reviews of draft documents will be simultaneous.
2. EEOEA and MWRC will not require additional studies during their reviews.
3. LCWD meets all water system performance standards in 2022.
4. No wastewater system evaluations are needed.

Notes

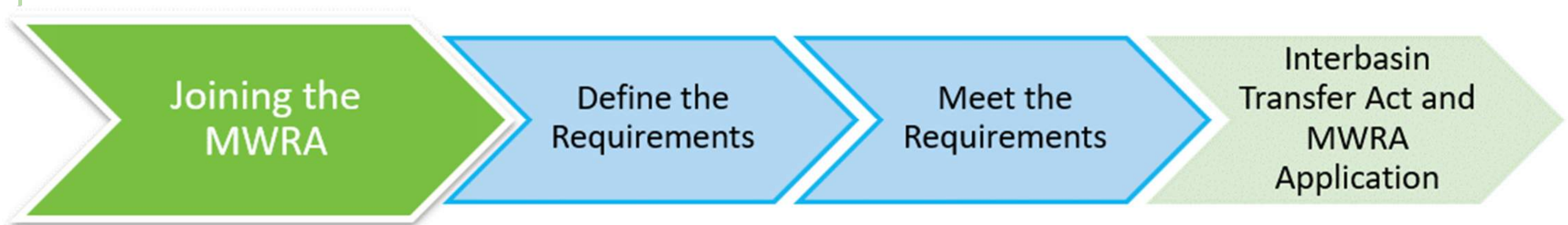
1. With the submittal of an Expanded Environmental Notification Form (EENF) the EIR will be a Single EIR (SEIR).
2. The SEIR constitutes the application for MWRC and MWRA approvals.
3. The SEIR preparation may be shorter or longer depending on the results of the MEPA scoping session.

Legend

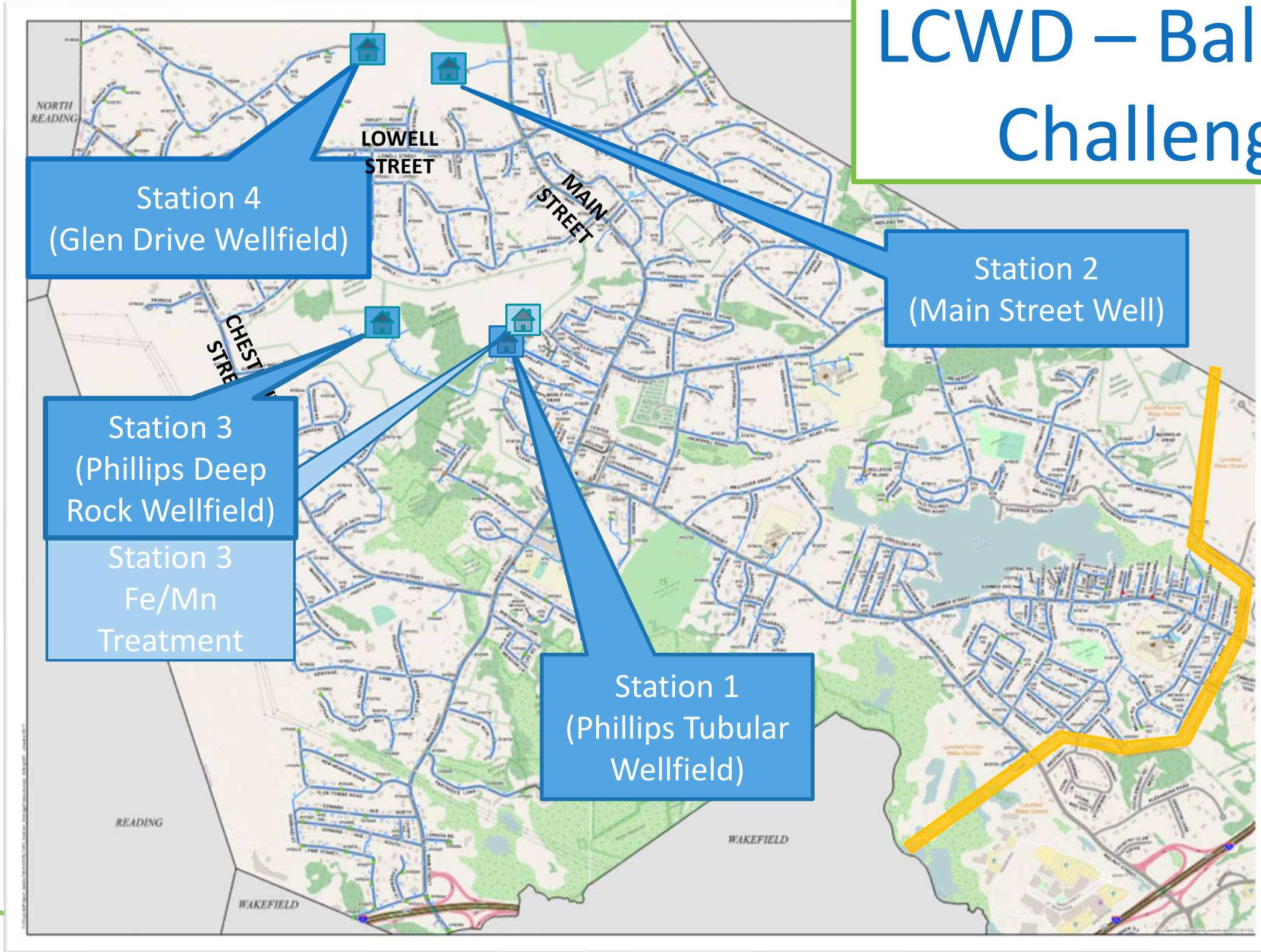
- Green bar: LCWD-led Task
- Yellow bar: Task with State Agency
- Green star: Key Milestone
- Yellow star: Key Milestone
- Dashed blue bar: Task with Non-Critical Timeline

MWRA Admission – Phase 1 → Phase 2

- Completed to Date:
 - Through the Phase 1 process:
 - Familiarized the stakeholders with the project,
 - Determine a streamlined process through MEPA, and
 - Clearly defined the scope for the EENF process
 - Initial meetings with MWRA under Phase 2, starting to “meeting the requirements”



LCWD – Balancing Challenges



LCWD - Balancing Challenges (May 2021)

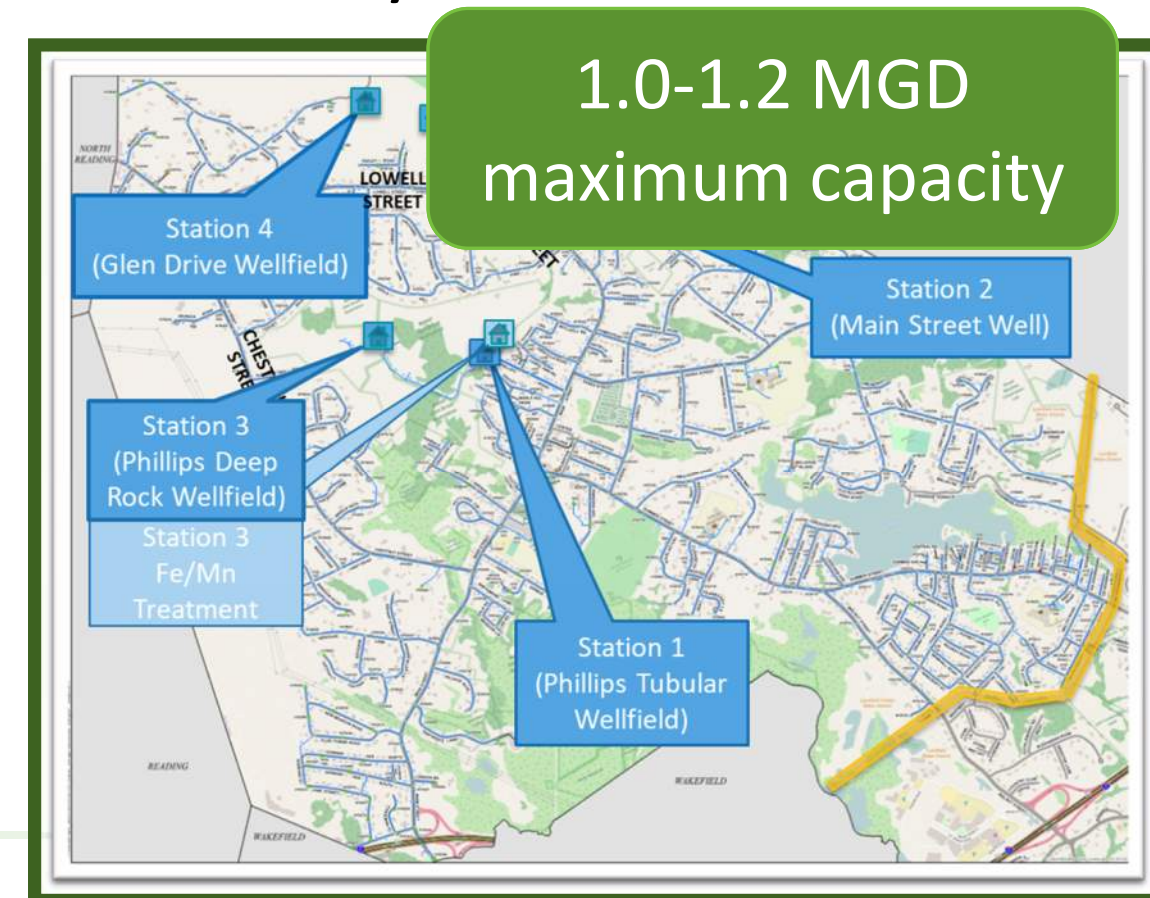
■ Quality

- Iron and manganese
 - Station 4 (Glen Drive)

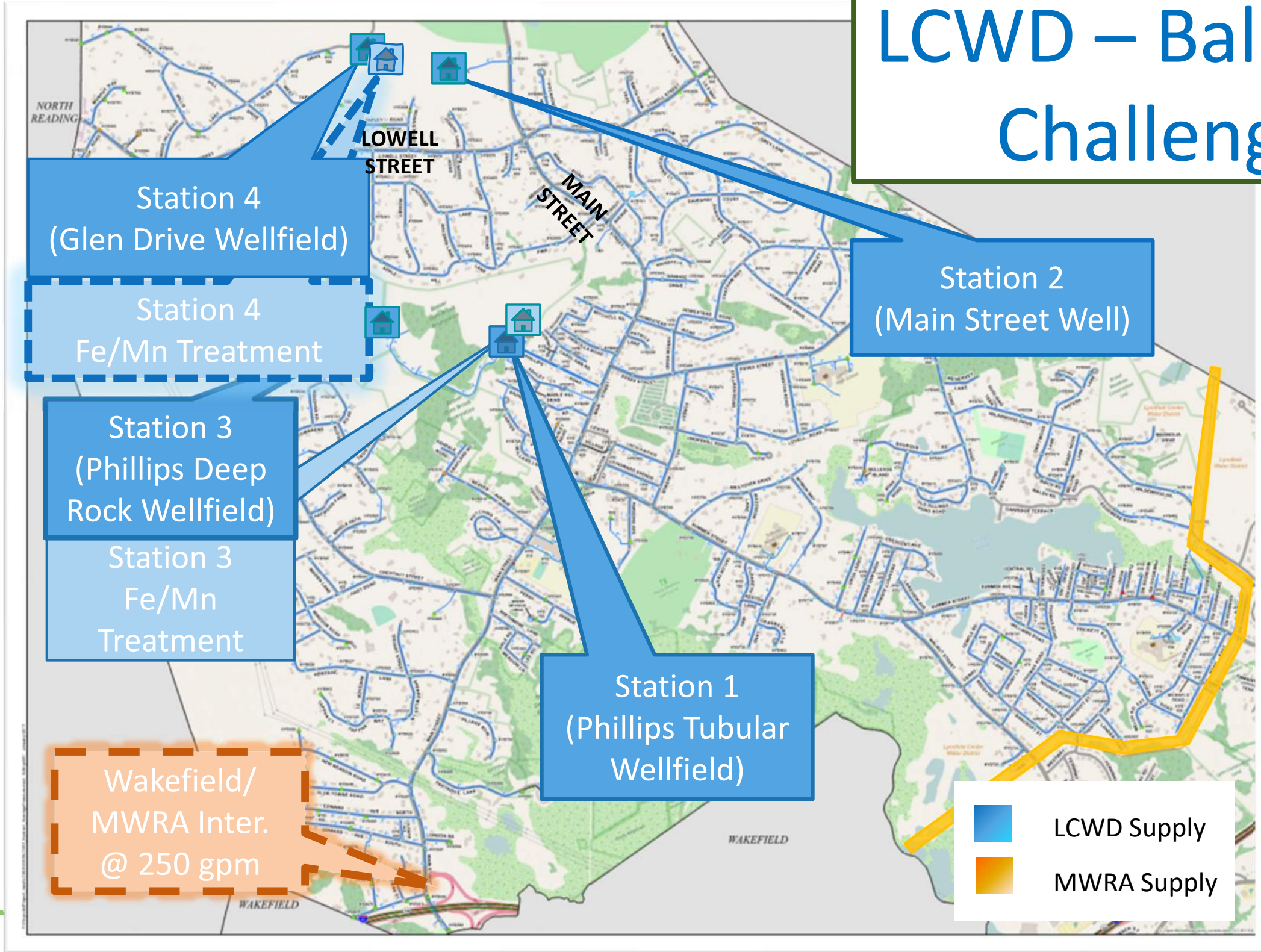


■ Quantity

- Challenged to meet summer demands (1.0-1.4 MGD) – no redundancy



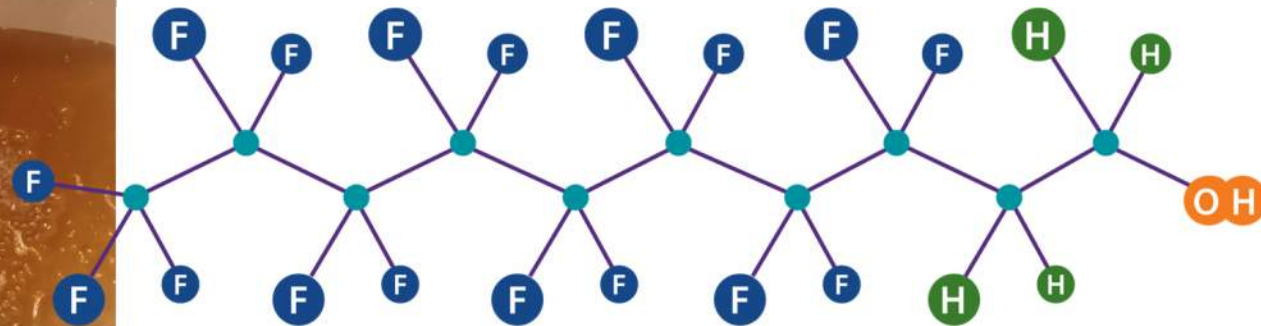
LCWD – Balancing Challenges



LCWD - Balancing Challenges (September 2021)

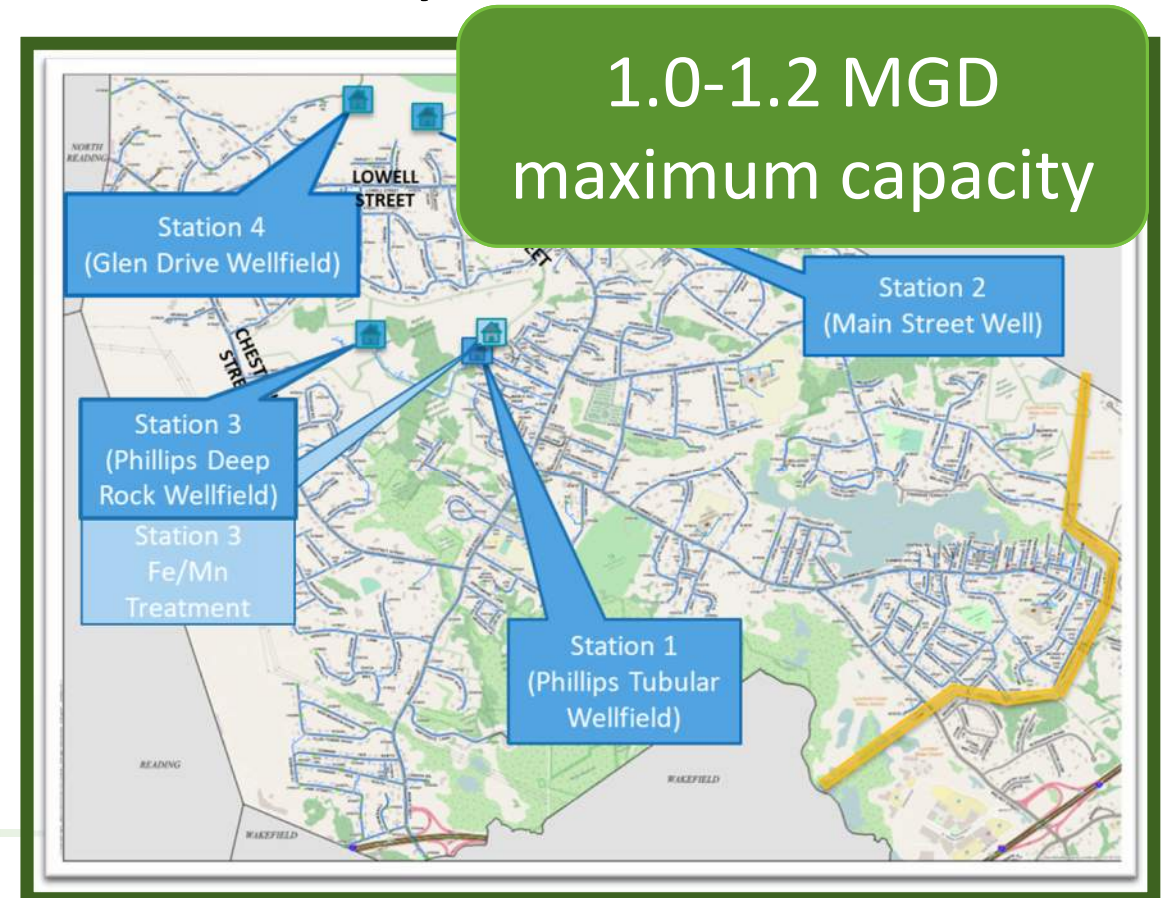
■ Quality

- Iron and manganese
 - Station 4 (Glen Drive)
- PFAS
 - Station 1 (Phillip Rd Tubular)
 - Station 2 (Main Street)

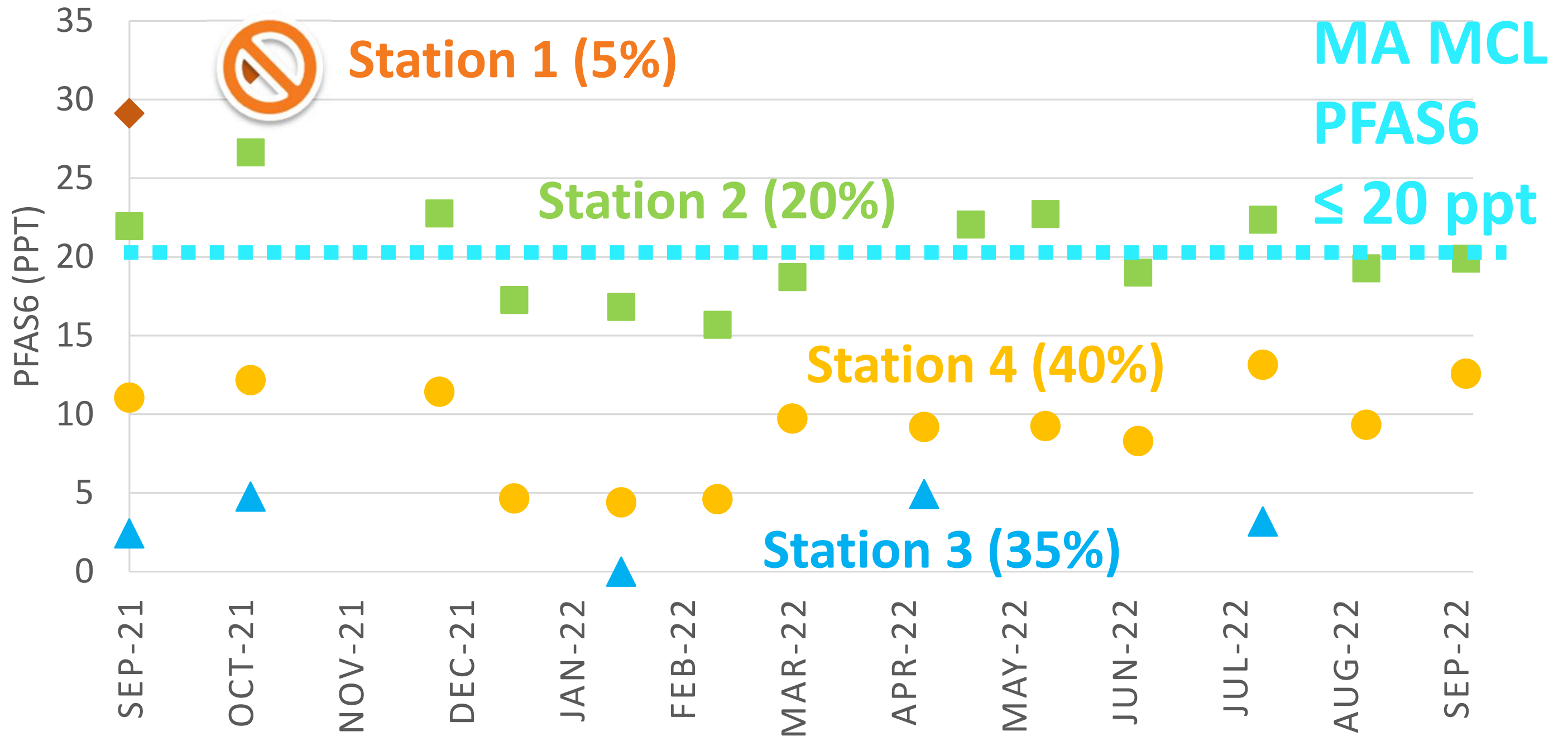


■ Quantity

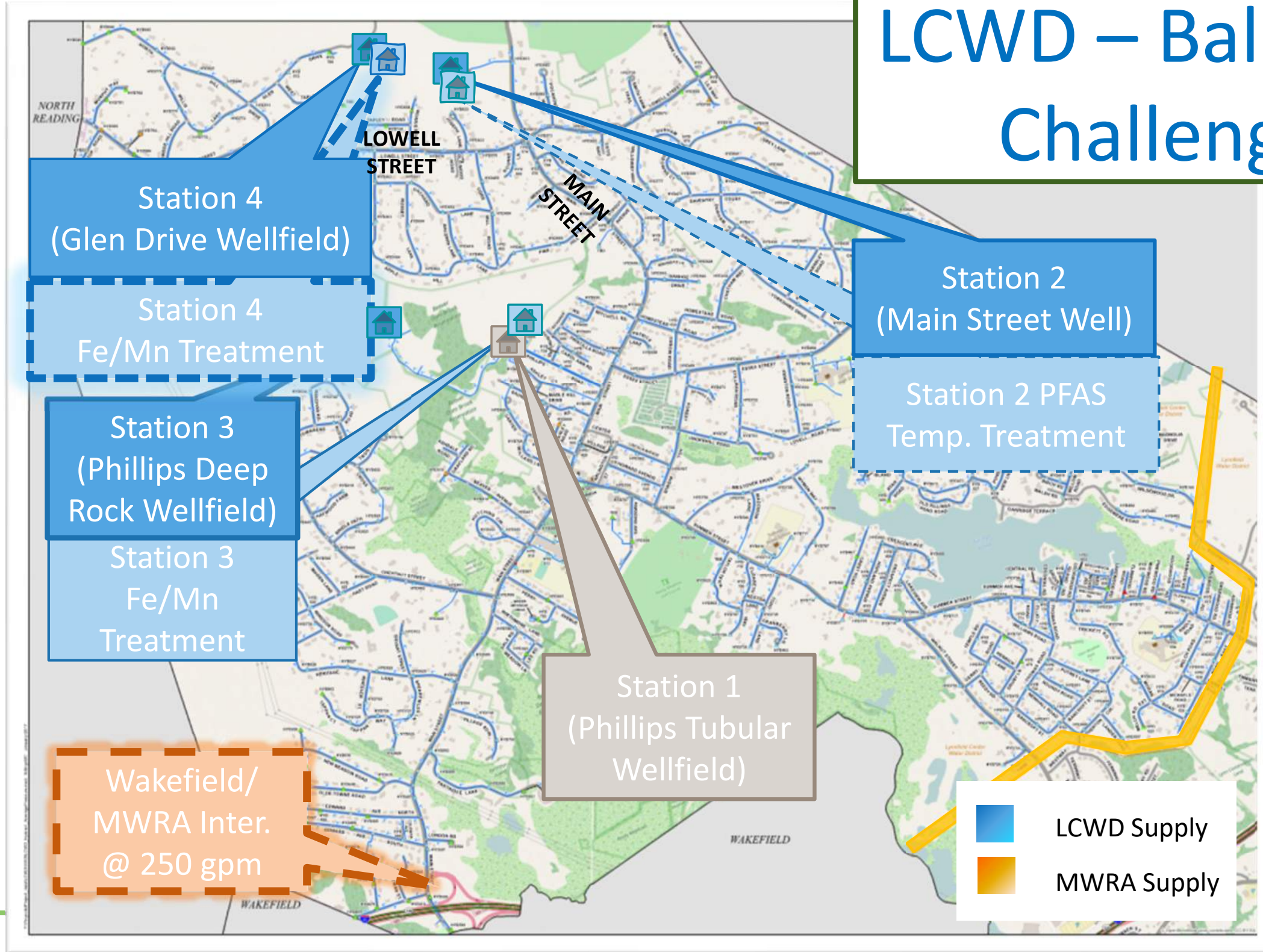
- Challenged to meet summer demands (1.0-1.4 MGD) – no redundancy



Balancing Challenges - PFAS



LCWD – Balancing Challenges



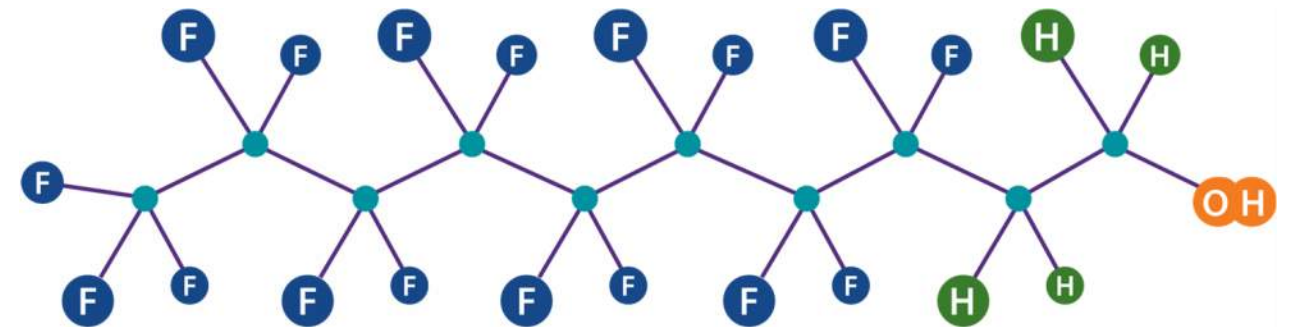
PFAS Maximum Contaminant Level (MCL)

- Massachusetts Department of Environmental Protection (MassDEP) drinking water standard
- No Federal PFAS drinking water standard – proposed EPA MCL expected ~~December~~ **January March 2023**
 - Possible - detection limit for PFOA and PFOS (2 to 4 ppt)

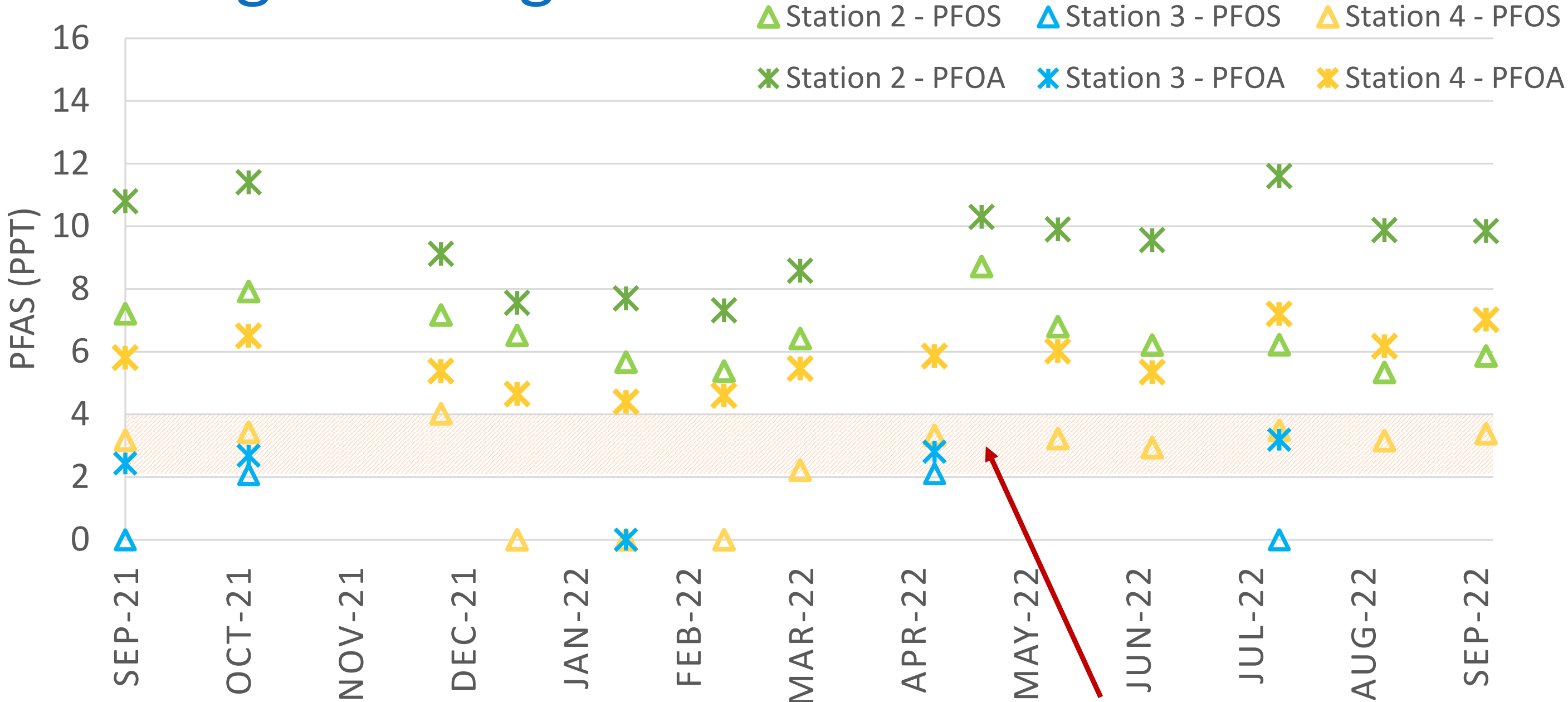
PFOS+PFOA+PFHxS+PFNA+PFHpA+PFDA =

PFAS6

Its maximum contaminant level (MCL) is **MCL=20 ppt**



Balancing Challenges - PFAS

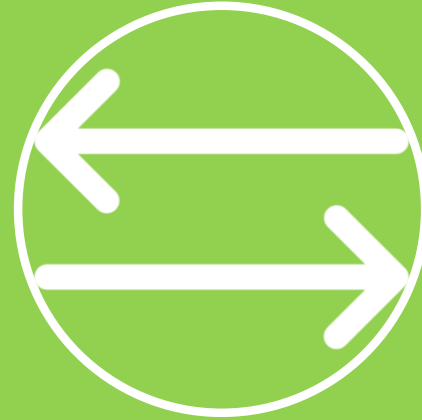


Possible EPA proposed MCL for PFOA or PFOS
2 to 4 ppt (detection limit)

2022 – New Quality Challenge - PFAS



**All Water from
LCWD**



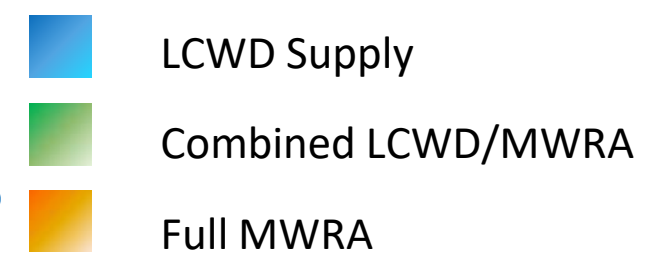
**Improvements to
LCWD and
Supplemental
Water from MWRA**



**All Water from
MWRA**



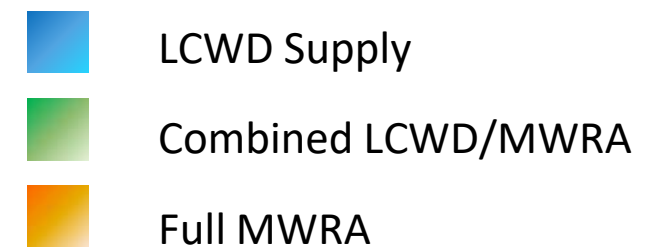
Long Term PFAS Capital Project Options



Alternative	Brief Description
1	<ul style="list-style-type: none"> No Glen Drive WTP Wakefield MWRA Interconnection at 250 gpm Temp. PFAS treatment at Station 2
2	<ul style="list-style-type: none"> Glen Drive WTP with iron, manganese and PFAS treatment for Station 2 and Station 4 Wakefield MWRA Interconnection at 250 gpm
3	<ul style="list-style-type: none"> Glen Drive WTP with iron and manganese treatment for Station 4 only Increase Wakefield MWRA Interconnection to 575 gpm Discontinue use of Station 2
4	<ul style="list-style-type: none"> Increase Wakefield MWRA Interconnection to 575 gpm LWD MWRA Interconnection for 250 gpm Discontinue use of Station 2 and Station 4
5	<ul style="list-style-type: none"> Increase Wakefield MWRA Interconnection to 575 gpm LWD MWRA Interconnections for 650 gpm Discontinue use of all LCWD sources (Stations 1, 2, 3 and 4)
6	<ul style="list-style-type: none"> Direct interconnection to MWRA Discontinue use of all LCWD sources (Stations 1, 2, 3 and 4)

Long Term PFAS Capital Project Options

Flow Matrix (gallons per minute)



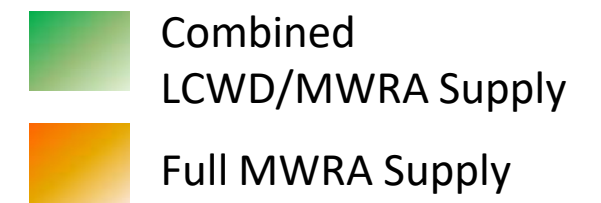
Alternative	LCWD Sources				MWRA Sources			Total
	Station 1	Station 2	Station 3	Station 4	Wakefield	LWD	Direct	
1	0	240	400	335	250	0	0	1225
2	0	240	400	335	250	0	0	1225
3	0	0	400	335	575	0	0	1310
4	0	0	400	0	575	250	0	1225
5	0	0	0	0	575	650	0	1225
6	0	0	0	0	0	0	1225	1225

Long Term PFAS Capital Project Options

- 30 Year Total Cost
 - Capital investments – borrowing rate?
 - 5% for LCWD
 - 0% SRF loan available for PFAS projects
 - Operating costs
 - Labor
 - Utilities
 - Maintenance
 - Equipment
- Periodic replacement costs
- Purchased water
 - Wheeling Wakefield or LWD – MWRA + % mark up
 - Direct MWRA

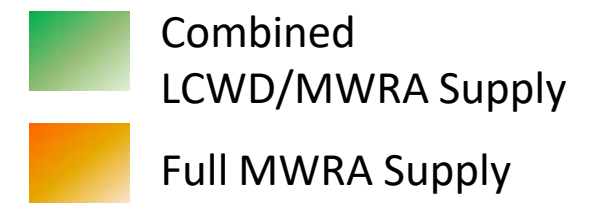


Long Term PFAS Capital Project Options



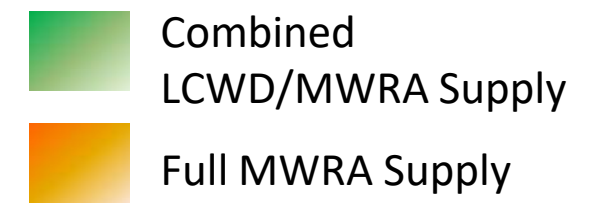
Option	1	2	3	4	5	6
	<ul style="list-style-type: none"> No Glen Drive WTP Wakefield MWRA Inter. @ 250 gpm 	<ul style="list-style-type: none"> Glen Drive WTP Fe, Mn, PFAS St. 2 & St. 4 Wakefield MWRA Inter. @ 250 gpm 	<ul style="list-style-type: none"> Glen Drive WTP Fe, Mn St. 4 only Wakefield MWRA Inter. @ 575 gpm Retire St. 2 	<ul style="list-style-type: none"> Wakefield MWRA Inter. @ 575 gpm LWD MWRA Inter. @ 250 gpm Retire St. 2 & 4 	<ul style="list-style-type: none"> Wakefield MWRA Inter. @ 575 gpm LWD MWRA Inter. @ 650 gpm Retire all LCWD sources 	<ul style="list-style-type: none"> Retire all LCWD sources Direct connection to MWRA
Quality	<i>Not Achieved</i>		<i>Partially Achieved</i>			<i>Fully Achieved</i>
Timeframe	1-2 years	2 years	2 - 3 years	3 - 5 years	3 - 5 years	3 - 5 years
Capital Investment	\$2 M	\$18 – 20 M	\$18 – 20 M	\$12 – 14 M	\$18 - 20 M	\$25 - \$30 M
Borrowing	Capital Borrowing (5%)	Capital Borrowing (0% SRF Loan)	Capital Borrowing (5%)	Capital Borrowing (5%)	Capital Borrowing (5%)	Capital Borrowing (5%)
Total 30-year Cost	\$140 M	\$210 M	\$290 M	\$300 M	\$380 M	\$330 M
Water Rates (% of capacity)	MWRA+20% 20% Local Rates 80%	MWRA+20% 20% Local Rates 80%	MWRA+20% 50% Local Rates 50%	MWRA+20% 67% Local Rates 33%	MWRA+20% 100% Local Rates 0%	MWRA 100% Local Rates 0%

Long Term PFAS Capital Project Options



Option		2		4	5	6
		<ul style="list-style-type: none"> Glen Drive WTP Fe, Mn, PFAS St. 2 & St. 4 Wakefield MWRA Inter. @ 250 gpm 		<ul style="list-style-type: none"> Wakefield MWRA Inter. @ 575 gpm LWD MWRA Inter. @ 250 gpm Retire St. 2 & 4 	<ul style="list-style-type: none"> Wakefield MWRA Inter. @ 575 gpm LWD MWRA Inter. @ 650 gpm Retire all LCWD sources 	<ul style="list-style-type: none"> Retire all LCWD sources Direct connection to MWRA
Quality						
Timeframe		2 years		3 - 5 years	3 - 5 years	3 - 5 years
Capital Investment		\$18 – 20 M		\$12 – 14 M	\$18 - 20 M	\$25 - \$30 M
Borrowing		Capital Borrowing (0% SRF Loan)		Capital Borrowing (5%)	Capital Borrowing (5%)	Capital Borrowing (5%)
Total 30-year Cost		\$210 M		\$300 M	\$380 M	\$330 M
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Long Term PFAS Capital Project Options

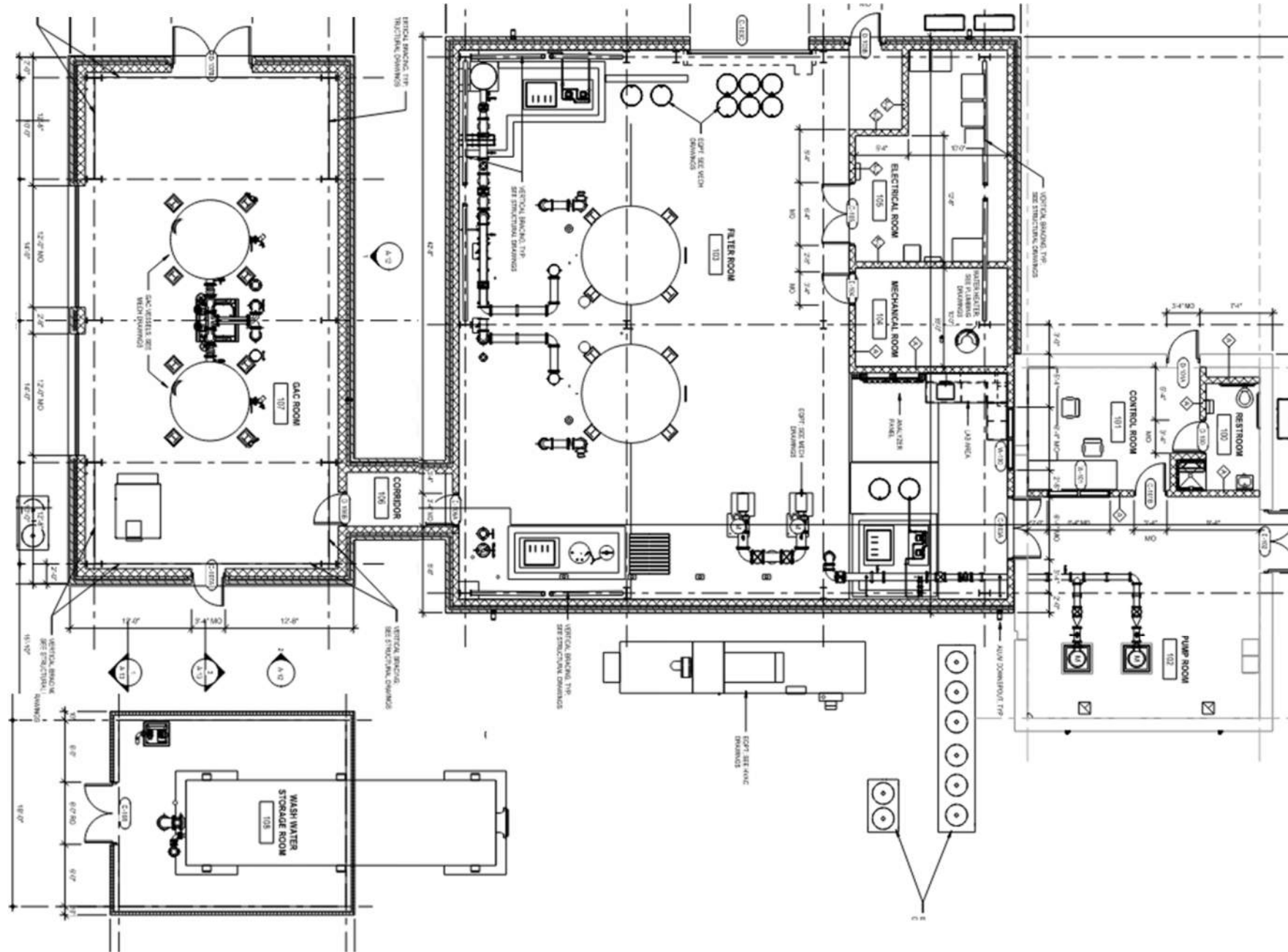


Option		2	2A	4	5	6
		<ul style="list-style-type: none"> Glen Drive WTP Fe, Mn, PFAS St. 2 & St. 4 Wakefield MWRA Inter. @ 250 gpm 	<ul style="list-style-type: none"> Glen Drive WTP Fe, Mn, PFAS St. 2 & St. 4 Station 3 PFAS WTP Wakefield MWRA Inter. @ 250 gpm 	<ul style="list-style-type: none"> Wakefield MWRA Inter. @ 575 gpm LWD MWRA Inter. @ 250 gpm Retire St. 2 & 4 	<ul style="list-style-type: none"> Wakefield MWRA Inter. @ 575 gpm LWD MWRA Inter. @ 650 gpm Retire all LCWD sources 	<ul style="list-style-type: none"> Retire all LCWD sources Direct connection to MWRA
Quality						
Timeframe		2 years	2-3 years	3 - 5 years	3 - 5 years	3 - 5 years
Capital Investment		\$18 – 20 M	\$24 – 26 M	\$12 – 14 M	\$18 - 20 M	\$25 - \$30 M
Borrowing		Capital Borrowing (0% SRF Loan)	Capital Borrowing (0% SRF Loan)	Capital Borrowing (5%)	Capital Borrowing (5%)	Capital Borrowing (5%)
Total 30-year Cost		\$210 M	\$220 M	\$300 M	\$380 M	\$330 M
Water Rates (% of capacity)		MWRA+20% 20% Local Rates 80%	MWRA+20% 20% Local Rates 80%	MWRA+20% 67% Local Rates 33%	MWRA+20% 100% Local Rates 0%	MWRA 100% Local Rates 0%

Long Term PFAS Capital Project Options

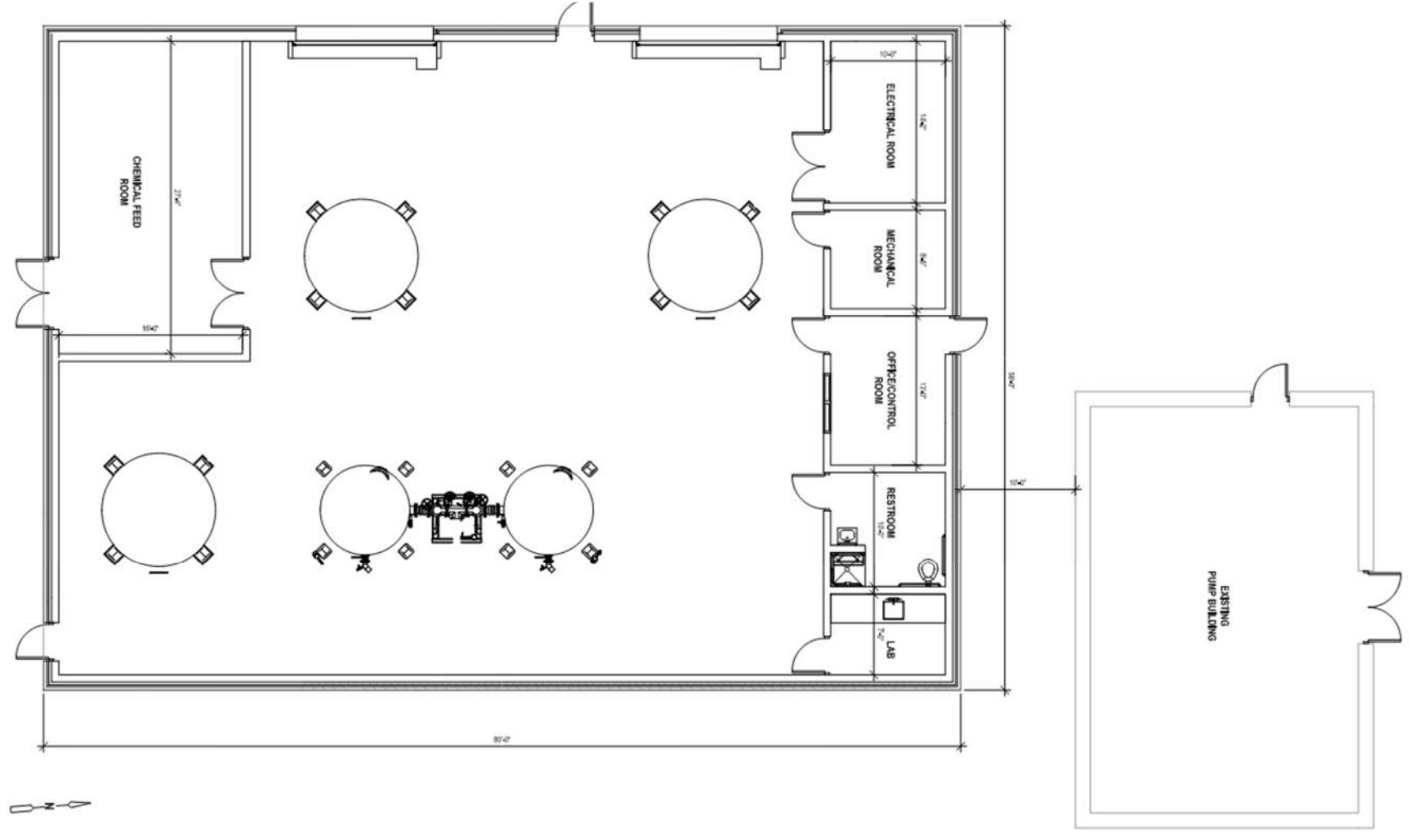
- **Path Forward:** Maintaining LCWD assets with treatment and MWRA supplemental supply
- Glen Drive WTP and Station 2 Pipeline **awarded 0% SRF loan**
- **Received earmark** from Commonwealth for PFAS design
- **Submitted for WMA Grant** to cover cost of MWRA Admission Phase 2 (EENF) and the meter vault design
- Ready to move forward – single Glen Drive WTP building for iron, manganese, and PFAS

Glen Drive WTP



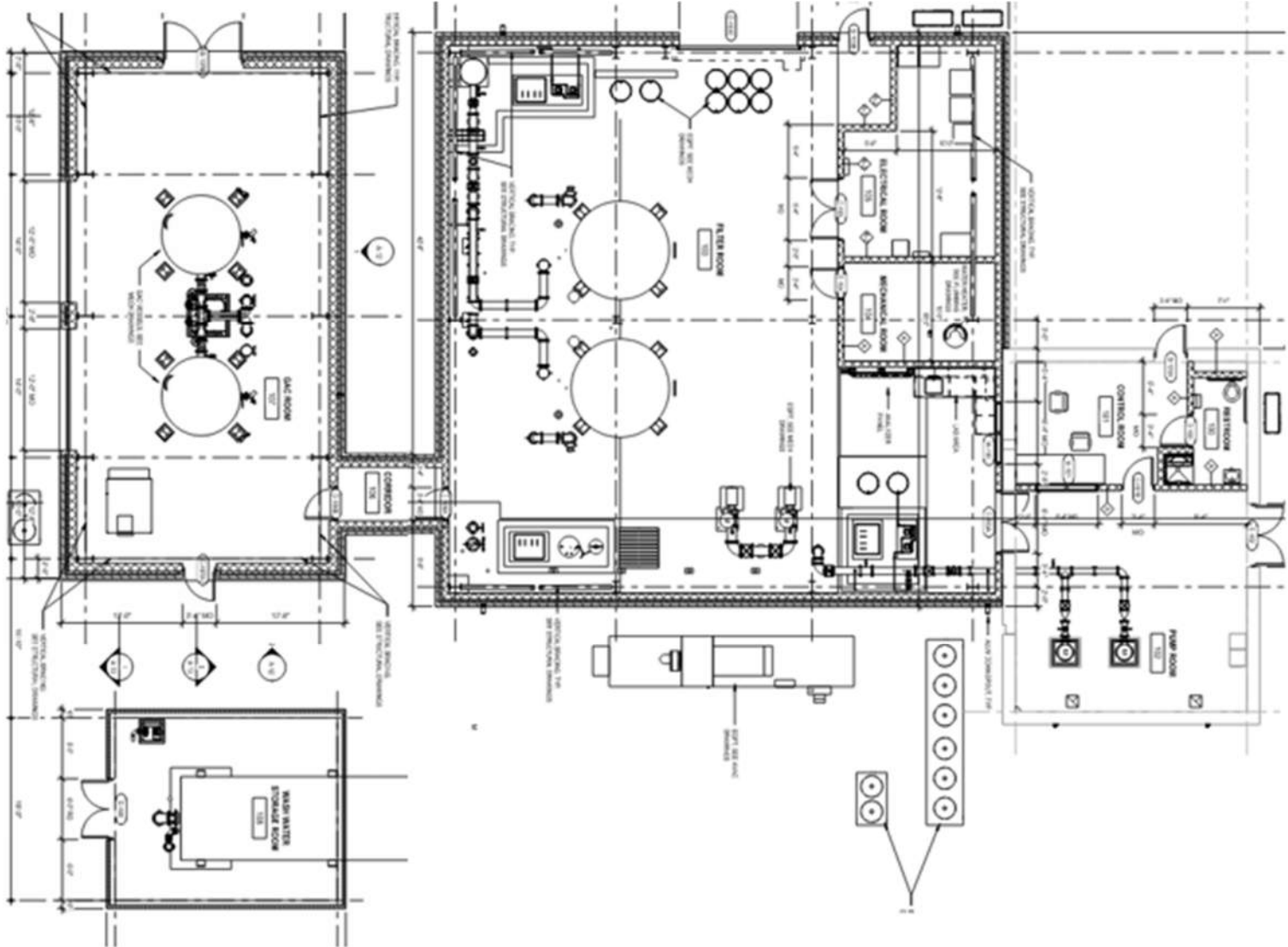
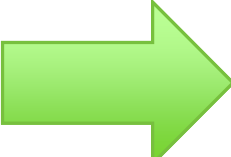
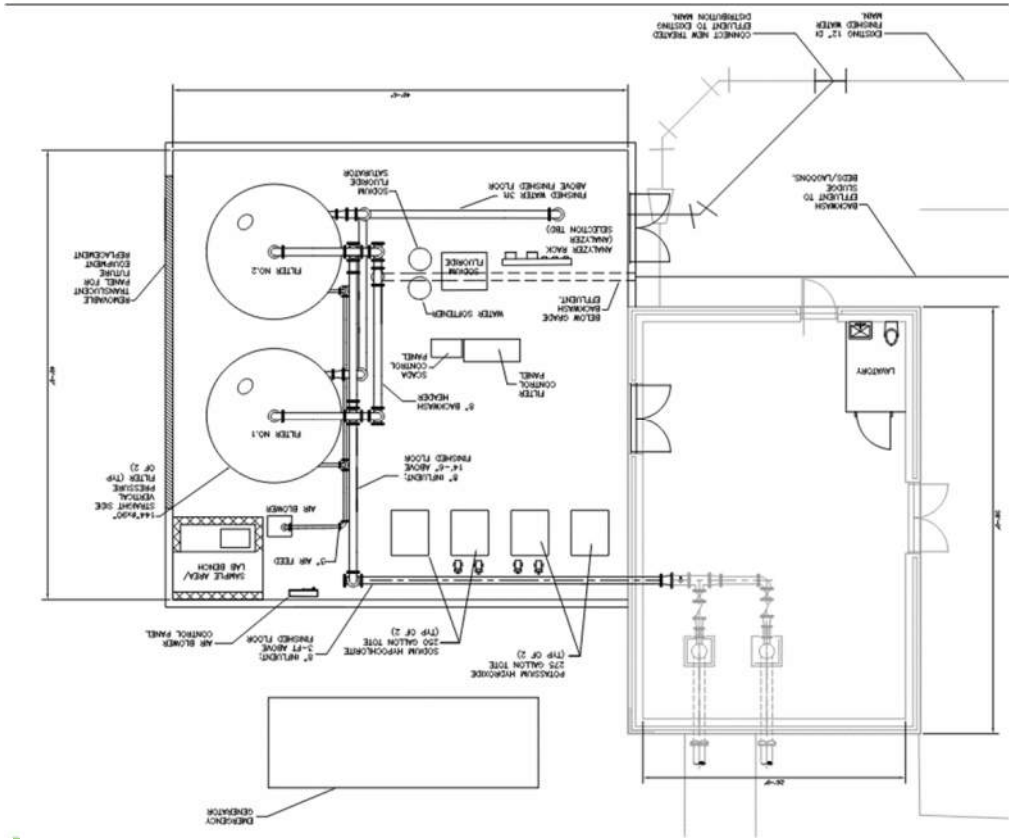
60% Design with
Separate Buildings

Glen Drive WTP

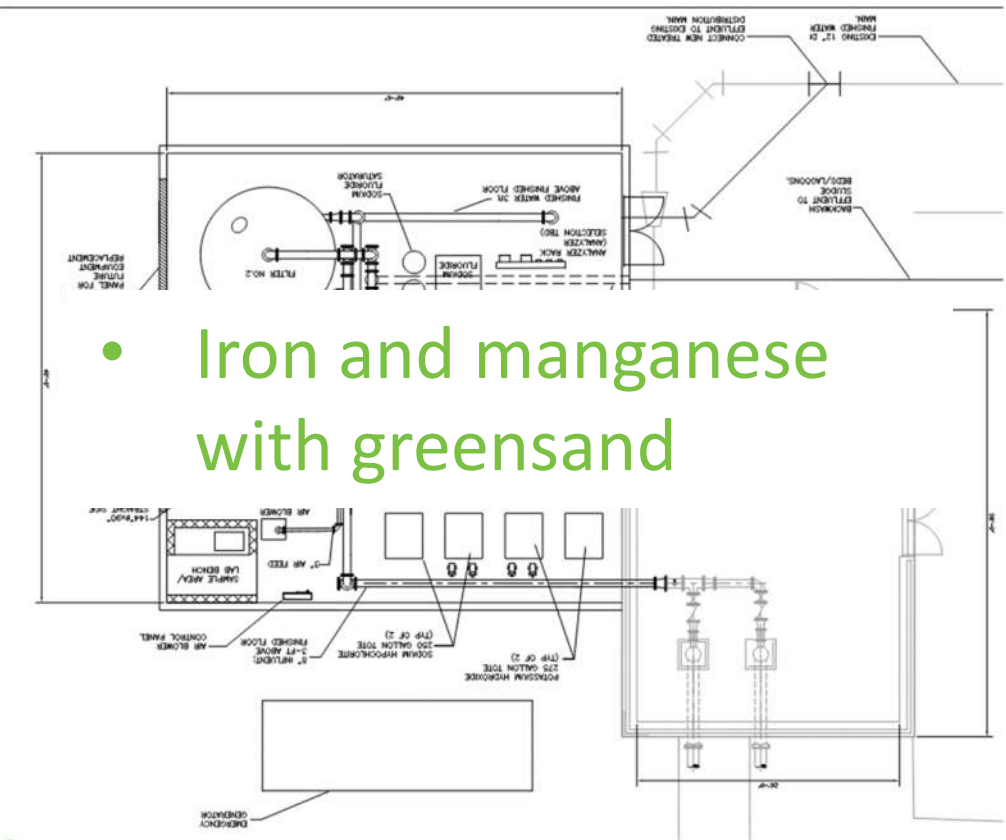


Conceptual Design
with Single Building

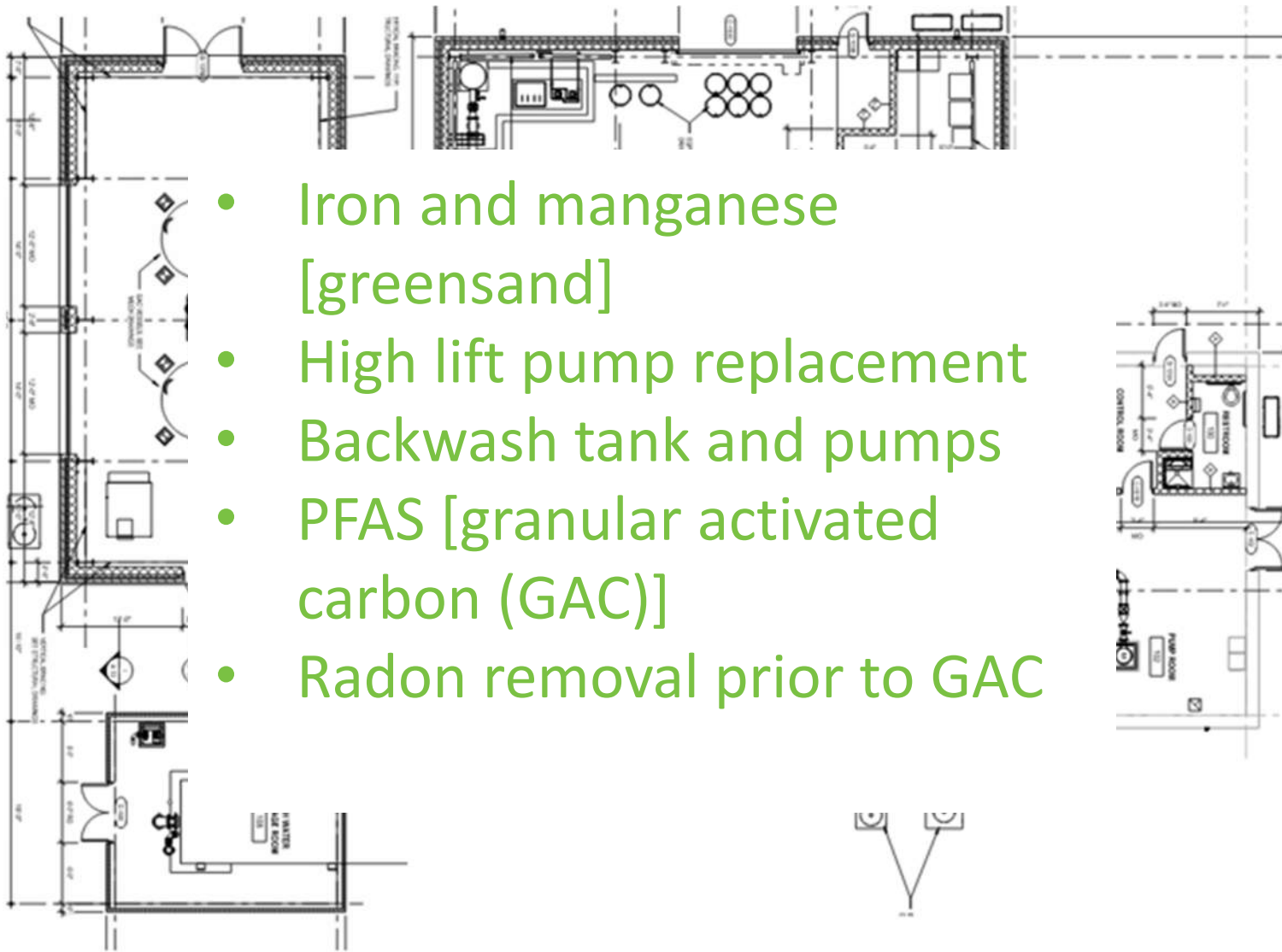
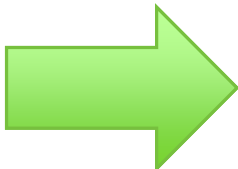
Glen Drive WTP Then and Now



Glen Drive WTP Then and Now



- Iron and manganese with greensand



- Iron and manganese [greensand]
- High lift pump replacement
- Backwash tank and pumps
- PFAS [granular activated carbon (GAC)]
- Radon removal prior to GAC

Glen Drive WTP Schedule

- SRF funding – Design documents must be submitted by October 13, 2023 (could be complete as early as August 2023)
- Go to bid October/November 2023
- Award December 2023/January 2024
- Construction through mid to late 2025



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April Board Meeting – Where will we be?

- **Interconnection Meter Vault** – designed, MassDOT approval, and ready to bid (or bid!)
- **MWRA Admission** – draft EENF complete for LCWD/MWRA review
- **Glen Drive WTP** – design resumed with combined building, nearing first delivery milestone
- EPA proposed PFAS MCL

