



Board Update: Water Transmission Main Valve Evaluation Program

April 26, 2023 | Todd King, Field Services Director

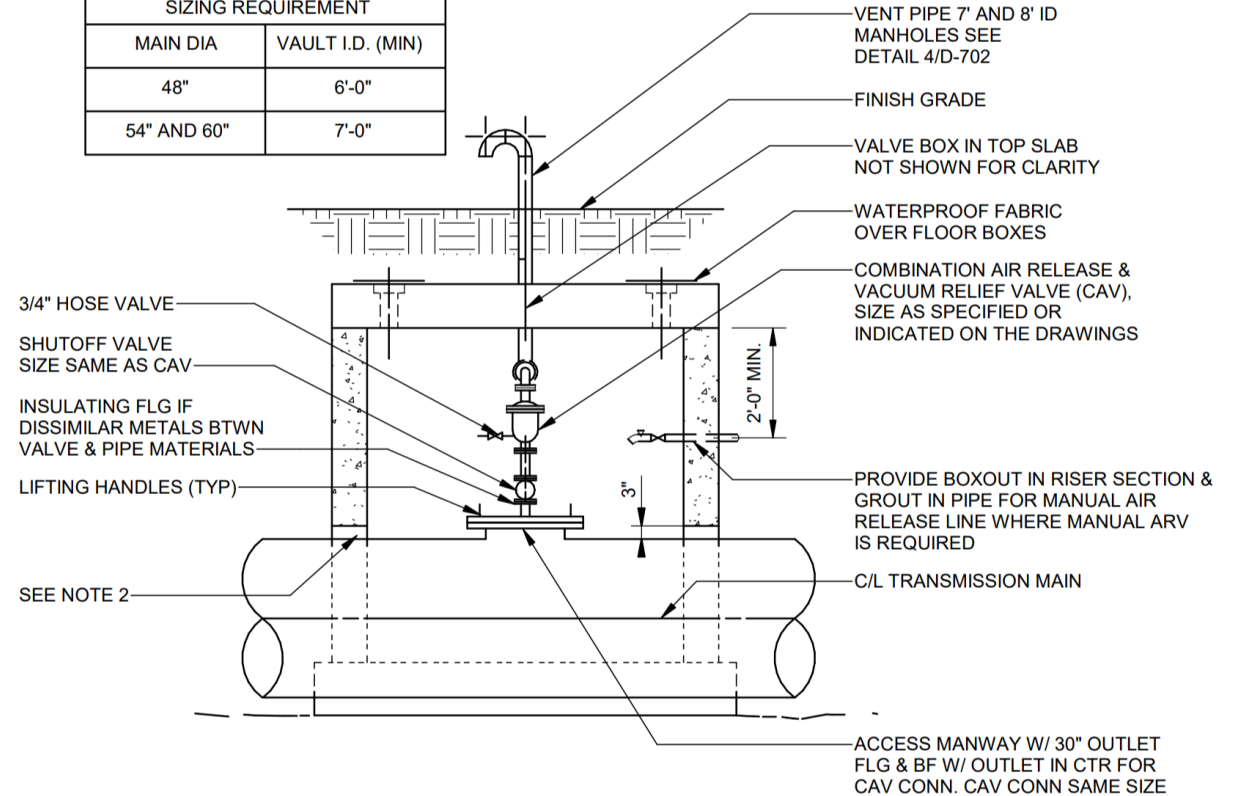
Valve Exercising Program

- 💧 450 Valve Pilot Conducted 2016-2018
- 💧 Streamlined Program and re-bid Contract
- 💧 11,073 Valves in GLWA System
 - 💧 5,302 – System (Isolation)
 - 💧 3,501 – Air
 - 💧 2,270 – Blowoffs
- 💧 Valves Inspected as of 3/9/23
 - 💧 60% Isolation
 - 💧 75% Air
 - 💧 72% Blowoffs

Air Valves

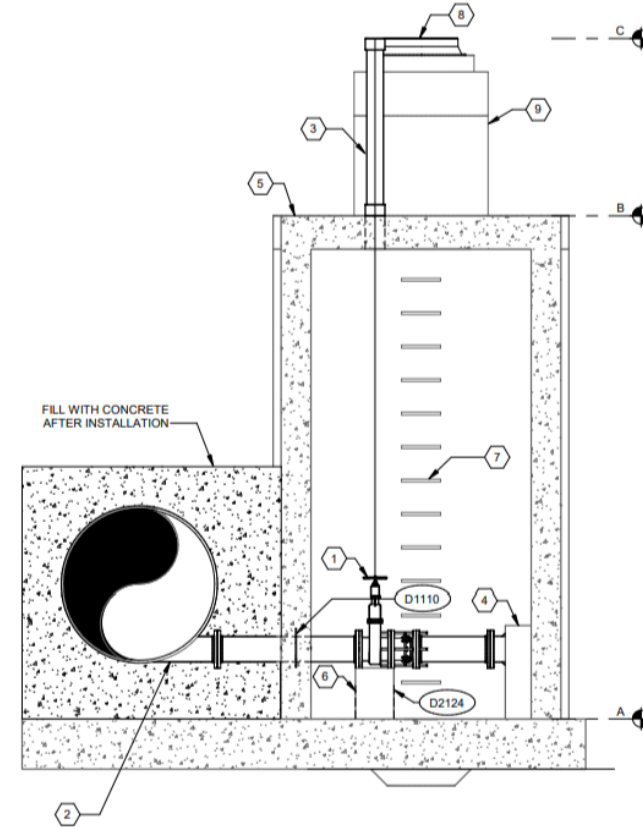
- At high points of mains
- Manual or automatic
- Air trapped in main reduces capacity and increases chance of “water hammer”

TRANSMISSION MAIN CAV SIZING REQUIREMENT	
MAIN DIA	VAULT I.D. (MIN)
48"	6'-0"
54" AND 60"	7'-0"



Blow Off Valves

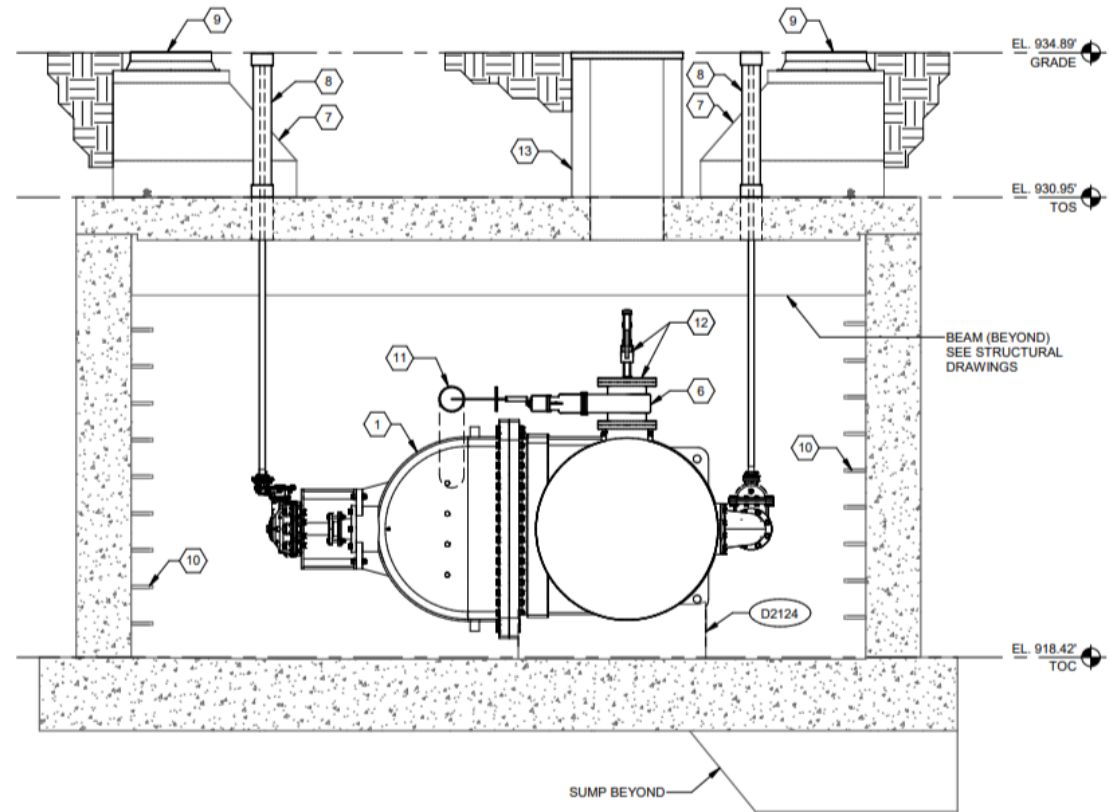
- At low points of mains
- Drain to surface, storm, or sewer
- Used to drain main, relieve pressure when repairing breaks



1 SECTION
D-111 SCALE: 3/8" = 1'-0"

Isolation (System) Valves

- Isolate portions of transmission system
- Focus of exercise program
- Can be double disc gate, butterfly, or cone



2 SECTION
D-108 SCALE: 3/8" = 1'-0"

Valve Program

💧 Vision:

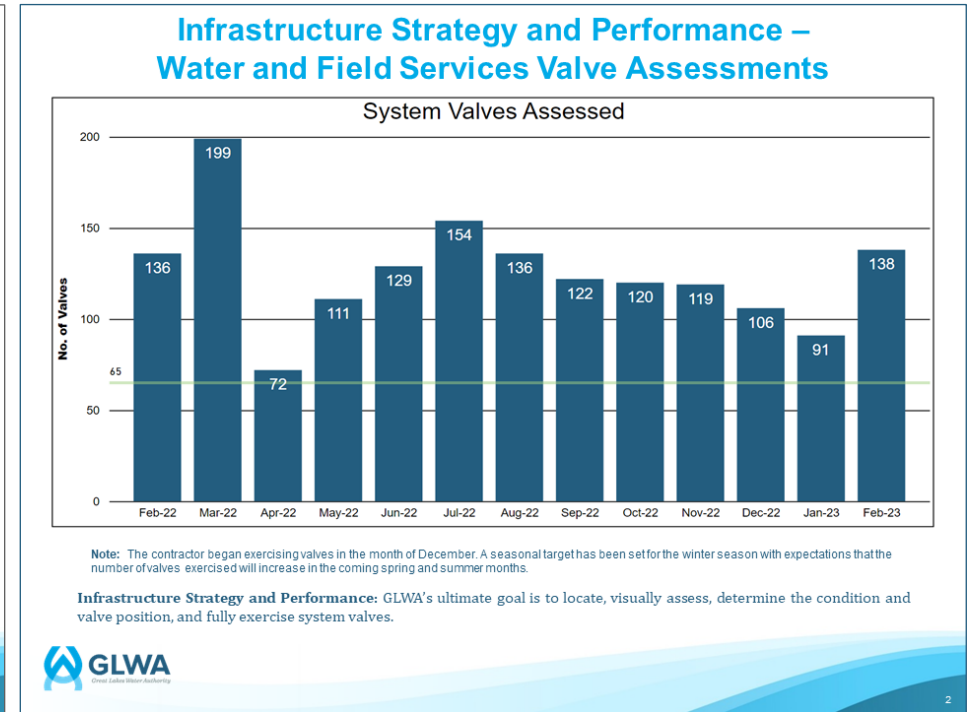
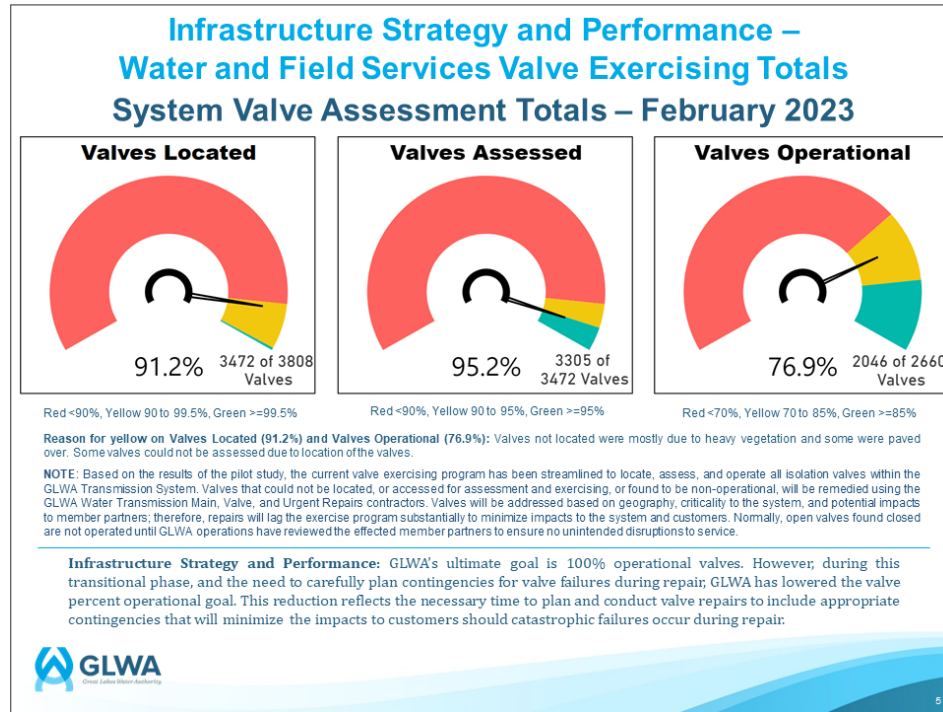
Proactively assess valve condition to improve reliability and allow for efficient operation and maintenance of the transmission system

💧 Goals:

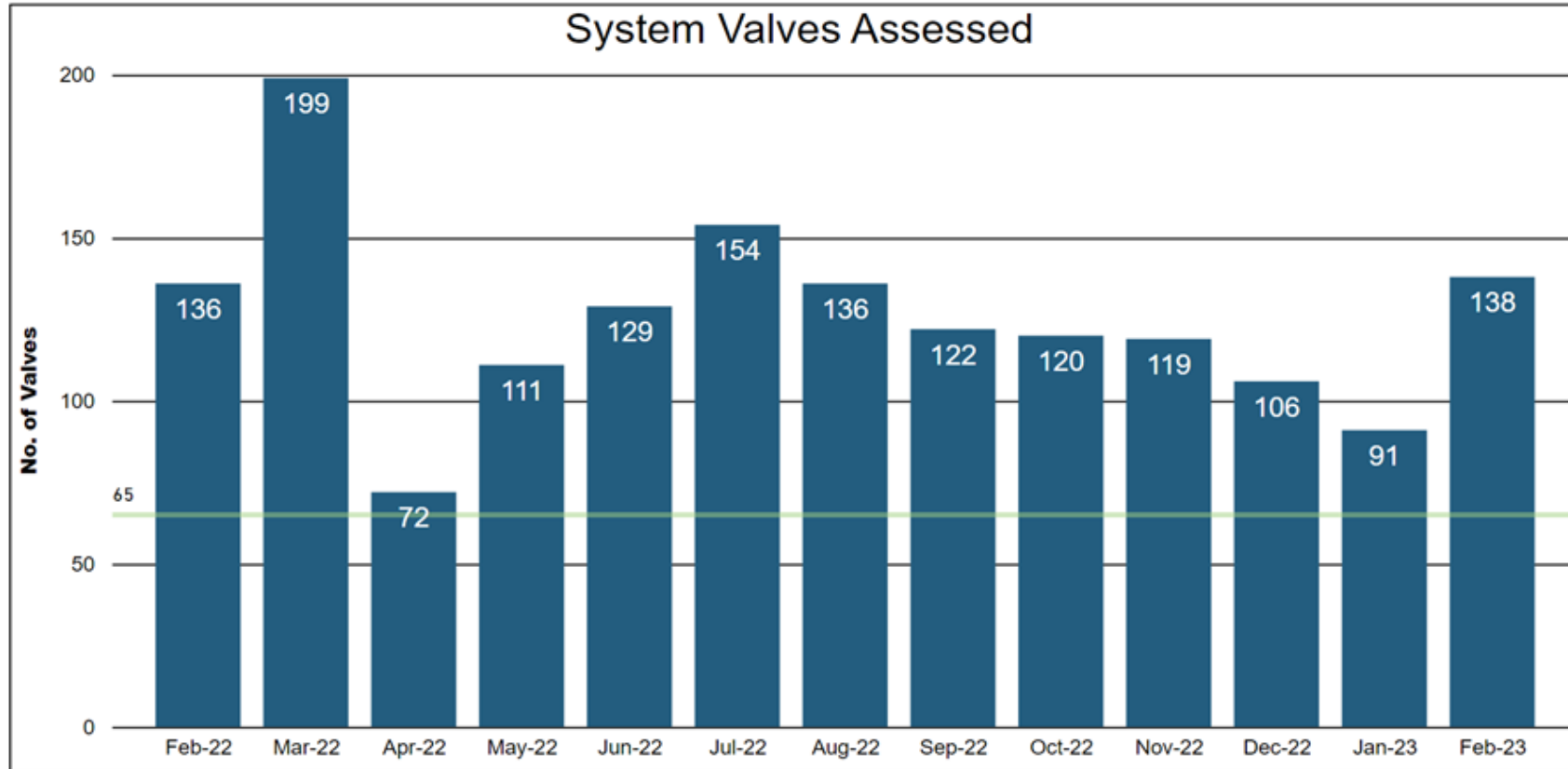
- 💧 Identify location and accessibility of all valves
- 💧 Determine condition and operability of isolation valves
- 💧 Provide a foundation for management of these assets

Communicating Progress to Board through KPIs

- Count of valves assessed
- Status of valves assessed



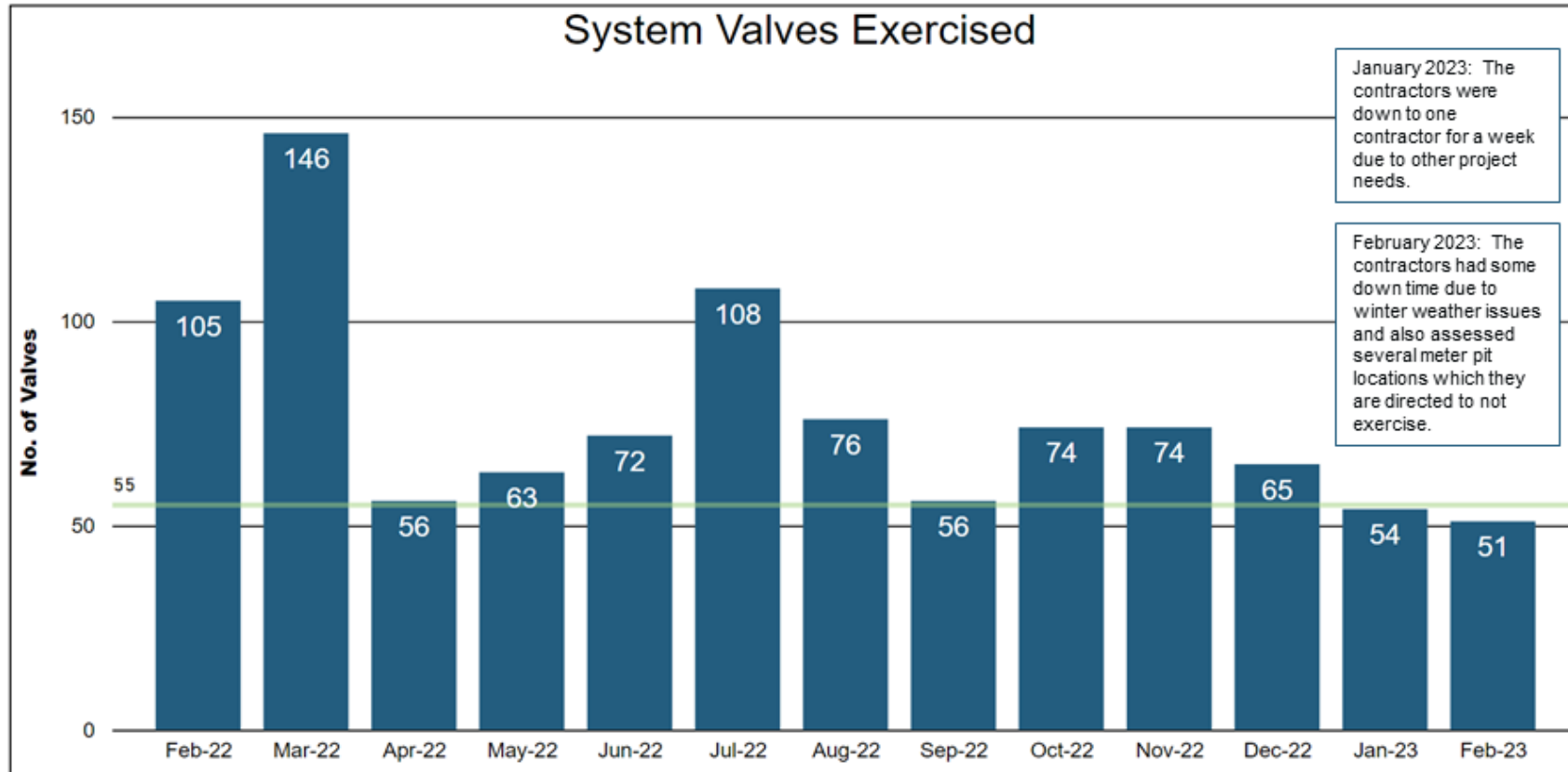
Infrastructure Strategy and Performance – Water and Field Services Valve Assessments



Note: The contractor began exercising valves in the month of December. A seasonal target has been set for the winter season with expectations that the number of valves exercised will increase in the coming spring and summer months.

Infrastructure Strategy and Performance: GLWA's ultimate goal is to locate, visually assess, determine the condition and valve position, and fully exercise system valves.

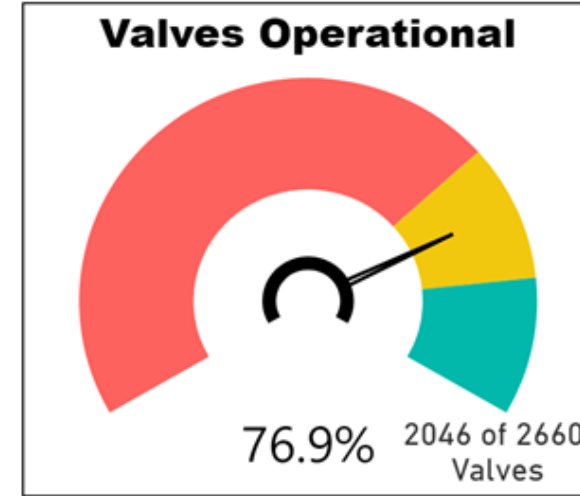
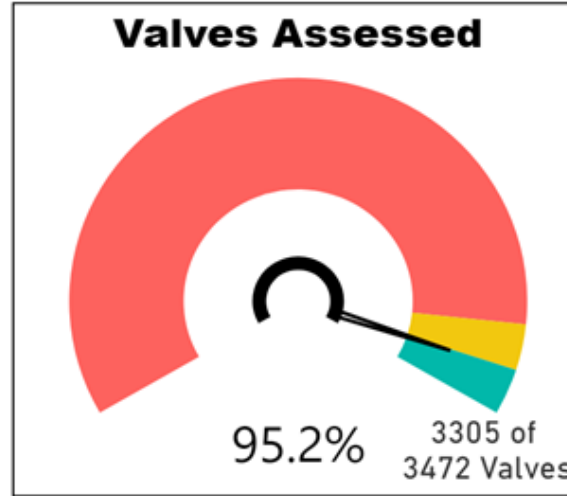
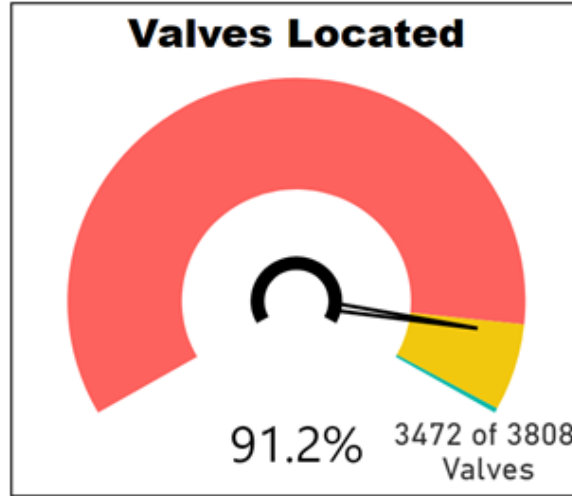
Infrastructure Strategy and Performance – Water and Field Services Valve Exercising



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Infrastructure Strategy and Performance: GLWA's ultimate goal is to locate, visually assess, determine the condition and valve position, and fully exercise system valves.

Infrastructure Strategy and Performance – Water and Field Services Valve Exercising Totals System Valve Assessment Totals – February 2023



Red <90%, Yellow 90 to 99.5%, Green >=99.5%

Red <90%, Yellow 90 to 95%, Green >=95%

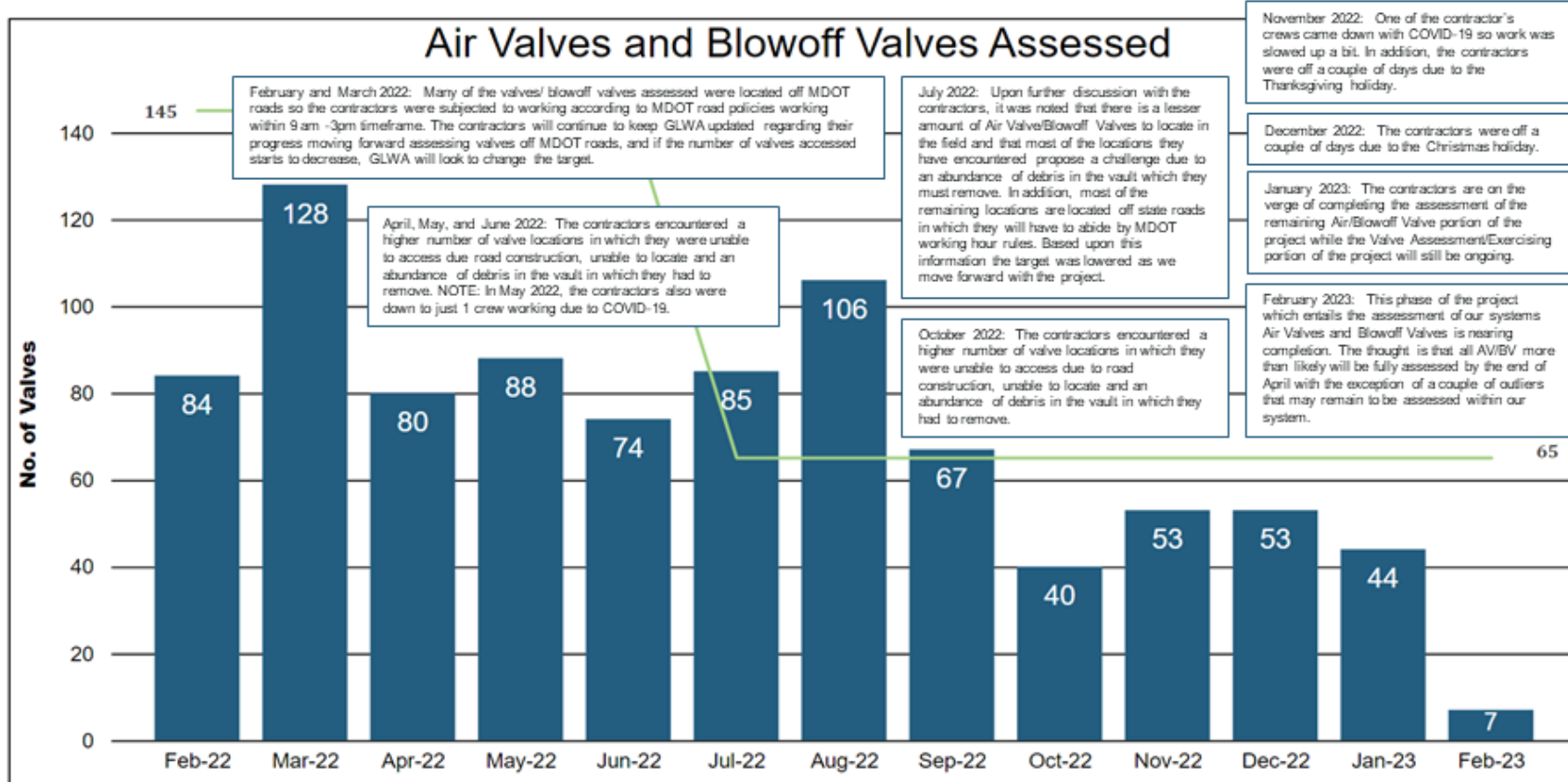
Red <70%, Yellow 70 to 85%, Green >=85%

Reason for yellow on Valves Located (91.2%) and Valves Operational (76.9%): Valves not located were mostly due to heavy vegetation and some were paved over. Some valves could not be assessed due to location of the valves.

NOTE: Based on the results of the pilot study, the current valve exercising program has been streamlined to locate, assess, and operate all isolation valves within the GLWA Transmission System. Valves that could not be located, or accessed for assessment and exercising, or found to be non-operational, will be remedied using the GLWA Water Transmission Main, Valve, and Urgent Repairs contractors. Valves will be addressed based on geography, criticality to the system, and potential impacts to member partners; therefore, repairs will lag the exercise program substantially to minimize impacts to the system and customers. Normally, open valves found closed are not operated until GLWA operations have reviewed the effected member partners to ensure no unintended disruptions to service.

Infrastructure Strategy and Performance: GLWA's ultimate goal is 100% operational valves. However, during this transitional phase, and the need to carefully plan contingencies for valve failures during repair, GLWA has lowered the valve percent operational goal. This reduction reflects the necessary time to plan and conduct valve repairs to include appropriate contingencies that will minimize the impacts to customers should catastrophic failures occur during repair.

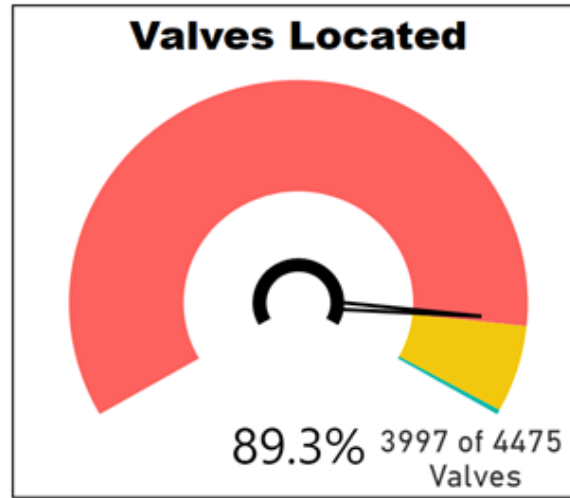
Infrastructure Strategy and Performance – Water and Field Services Valve Assessments



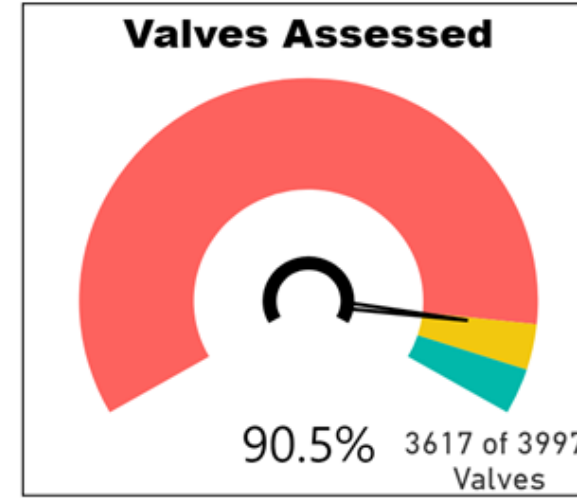
Note: Phase 2 of the project began in August 2020. The project will focus on locating and assessing designated valves within the water transmission main.

Infrastructure Strategy and Performance: GLWA's ultimate goal is to locate, visually assess, determine the condition and valve position, and fully exercise system valves.

Infrastructure Strategy and Performance – Water and Field Services Valve Assessment Totals Air and Blowoff Valve Assessment Totals – February 2023



Red <90%, Yellow 90 to 99.5%, Green >=99.5%



Red <90%, Yellow 90 to 95%, Green >=95%

Reason for red on Valves Located (89.3%) and yellow on Valves Operational (90.5%): Valves not located were mostly due to heavy vegetation and some were paved over. Some valves located could not be assessed due to particulars associated with their individual locations.

NOTE: During the initial preliminary stages of the project, the contractor is conducting inventory, locating and assessing designated valves, as well as determining which valves are operational within the GLWA water transmission system.

Infrastructure Strategy and Performance: GLWA's ultimate goal is 100% operational valves. We are in a transitional phase moving towards that goal and will reassess the red, yellow, green targets annually thereafter for the next 3 years.



Examples of various valve conditions



1. Extension Rounded



2. Rounded off Nut



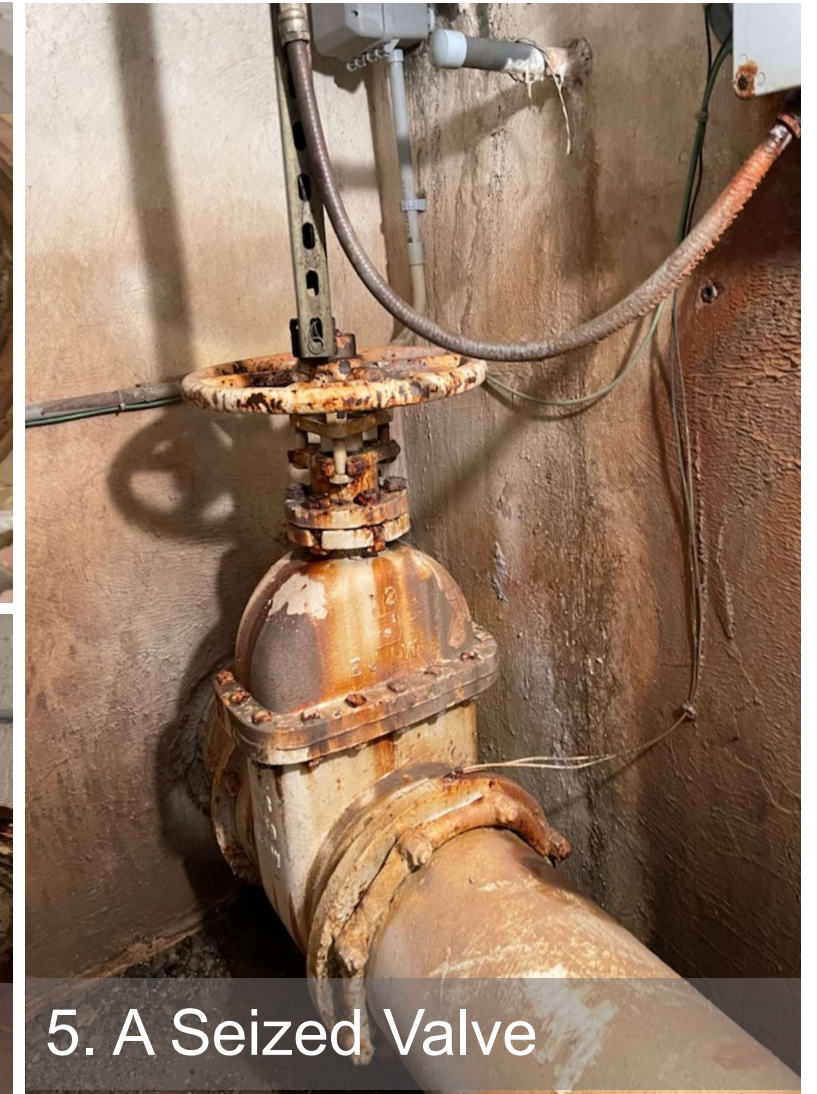
3. Asphalt



4. Nut Missing

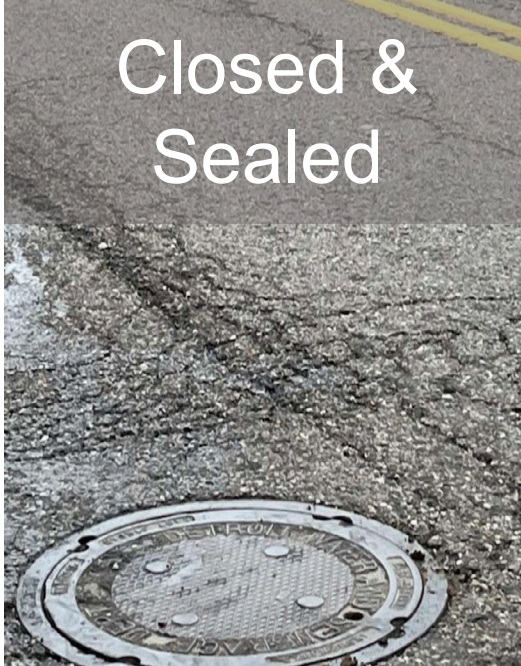


5. A Seized Valve

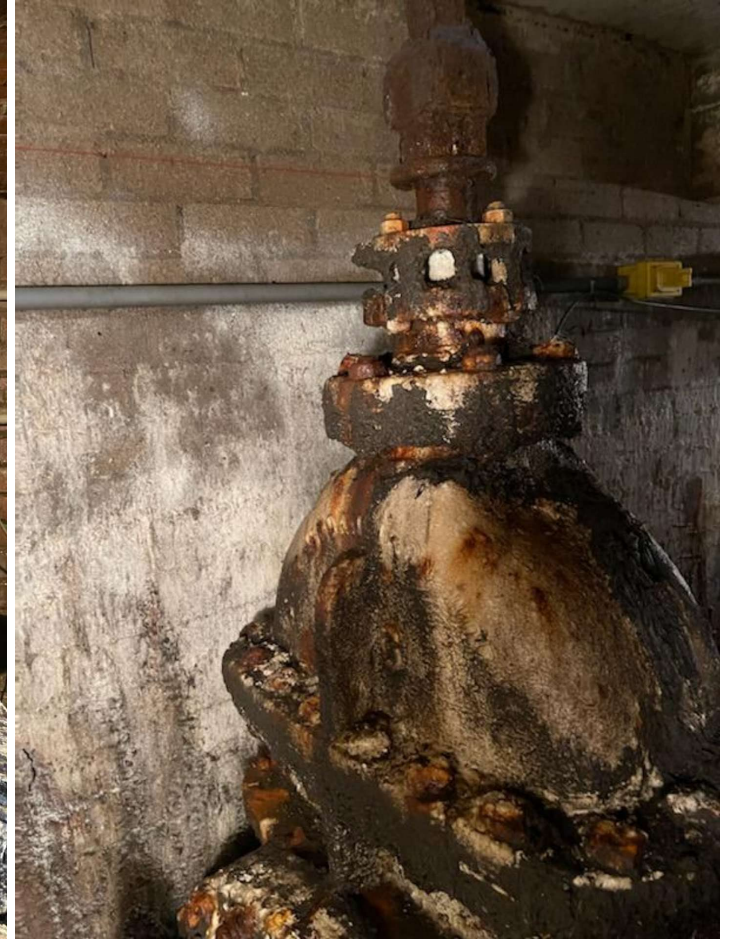
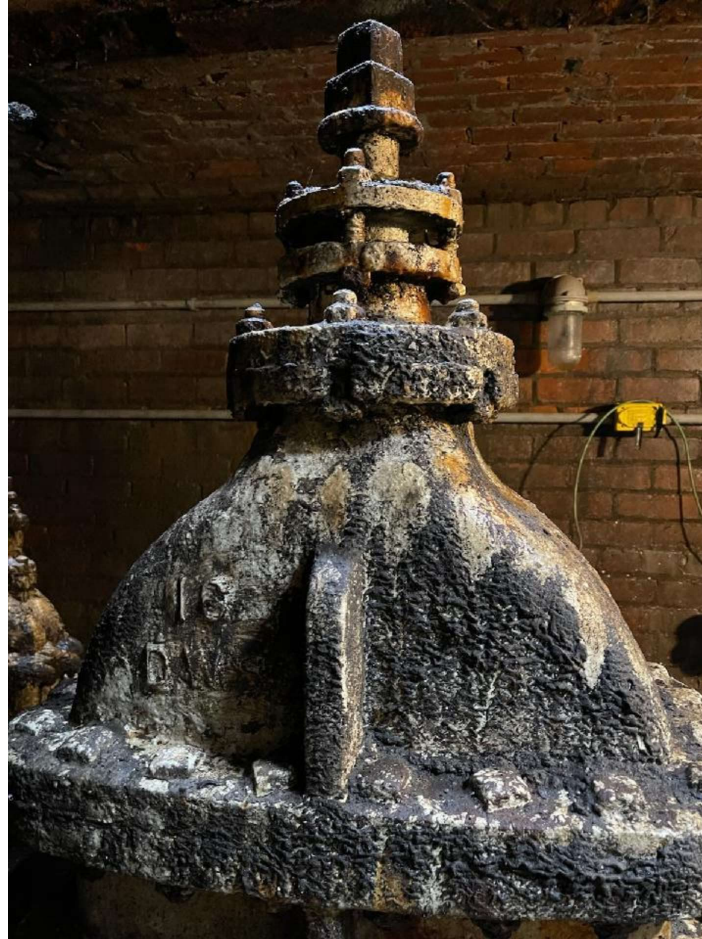
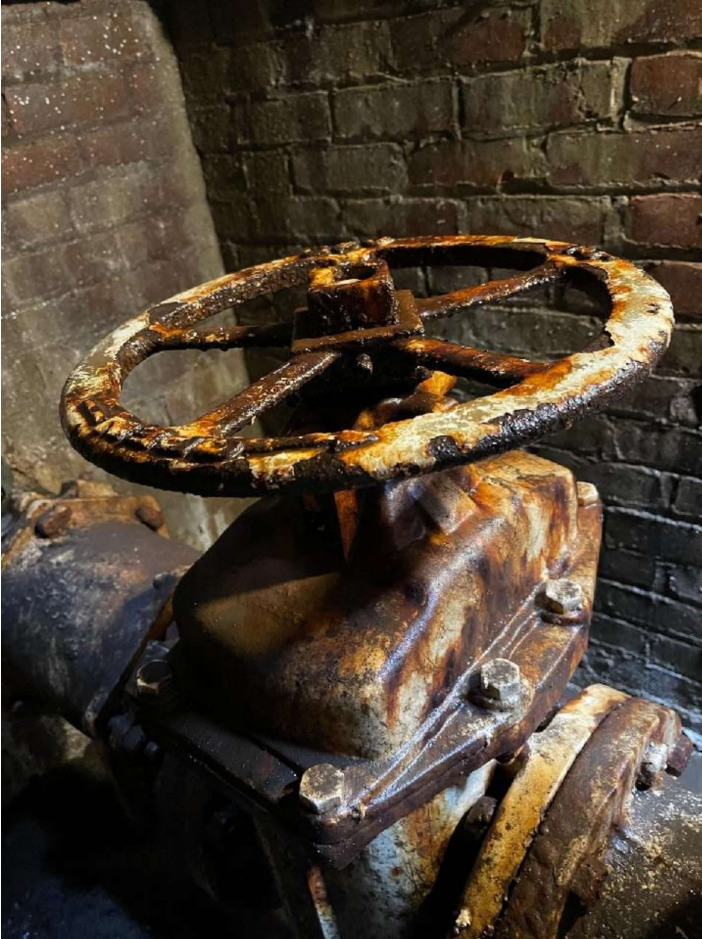




Closed &
Sealed



Seized



Inoperable: designated due to condition or system boundary

Examples



Inoperable per
GLWA



Frozen



Inaccessible
(Vault door locked)

Examples



Frozen



Unable to unlock
meter pit door



**Do not
operate**



**Not accessible:
Paved over**



**Do not
operate**

Frozen Valve Examples





Operational Nut Rounded/Missing



Not Accessible,
Excessive Debris on Valve

Where are we now?

- 💧 Total Valves in GIS = 12,543
- 💧 Eligible Valves = 11,073
 - 💧 Excludes specialty valves like pressure reducing valves or valves within meter pits that are maintained by others, emergency connections between member partners, etc.
- 💧 Categories of Eligible Valves
 - 💧 Isolation (System) Valves = 5,302
 - 💧 Air Valves = 3,501
 - 💧 Blowoff Valves = 2,270

Isolation (System) Valves

- 💧 Total = 5,302
- 💧 Enrolled in program to date* = 3,590 or 68%
- 💧 Located = 3,356 or 93%
- 💧 Accessible = 3,244 or 97%
- 💧 Assessed = 3,244 or 100%
- 💧 Operable = 2,309 or 71%

Approximately 140 valves enrolled per month, need about 1 more year to complete Isolation Valves

*as of April 10, 2023

Air Valves

- 💧 Total = 3,501
- 💧 Enrolled in program to date* = 3161 or 90%
- 💧 Located = 2,900 or 92%
- 💧 Accessible = 2,634 or 91%
- 💧 Assessed = 2,634 or 100%
- 💧 Operable = 1,755 or 67%

Approximately 140 valves enrolled per month, need about 1 more year to complete Isolation Valves

*as of April 10, 2023

Blowoff Valves

- 💧 Total = 2,270
- 💧 Enrolled in program to date* = 1,296 or 57%
- 💧 Located = 1,093 or 84%
- 💧 Accessible = 985 or 90%
- 💧 Assessed = 985 or 100%
- 💧 Operable = 678 or 69%

Approximately 140 valves enrolled per month, need about 1 more year to complete Isolation Valves

*as of April 10, 2023

Minor Issues with Valves

- 💧 Not located – typically paved over or buried
- 💧 Rounded/missing operating nuts – replacements
- 💧 Leaking – re-packed
- 💧 Missing/corroded/broken operating stem – replace
- 💧 Corroded bolts – replace – one at a time

Next Steps

- 💧 Will be requesting 18-month contract extension from Board for existing vendor to complete all valves
- 💧 Integrate findings with Asset Management to coordinate re-inspections and major valve repairs
- 💧 Develop "minor repair" list and begin repair with GLWA and vendor resources

A dynamic splash of clear blue water against a light blue background, with a semi-transparent blue band across the middle containing text.

Thank you!

Questions?