



Cushman #1 Low Level Outlet Valve Replacement

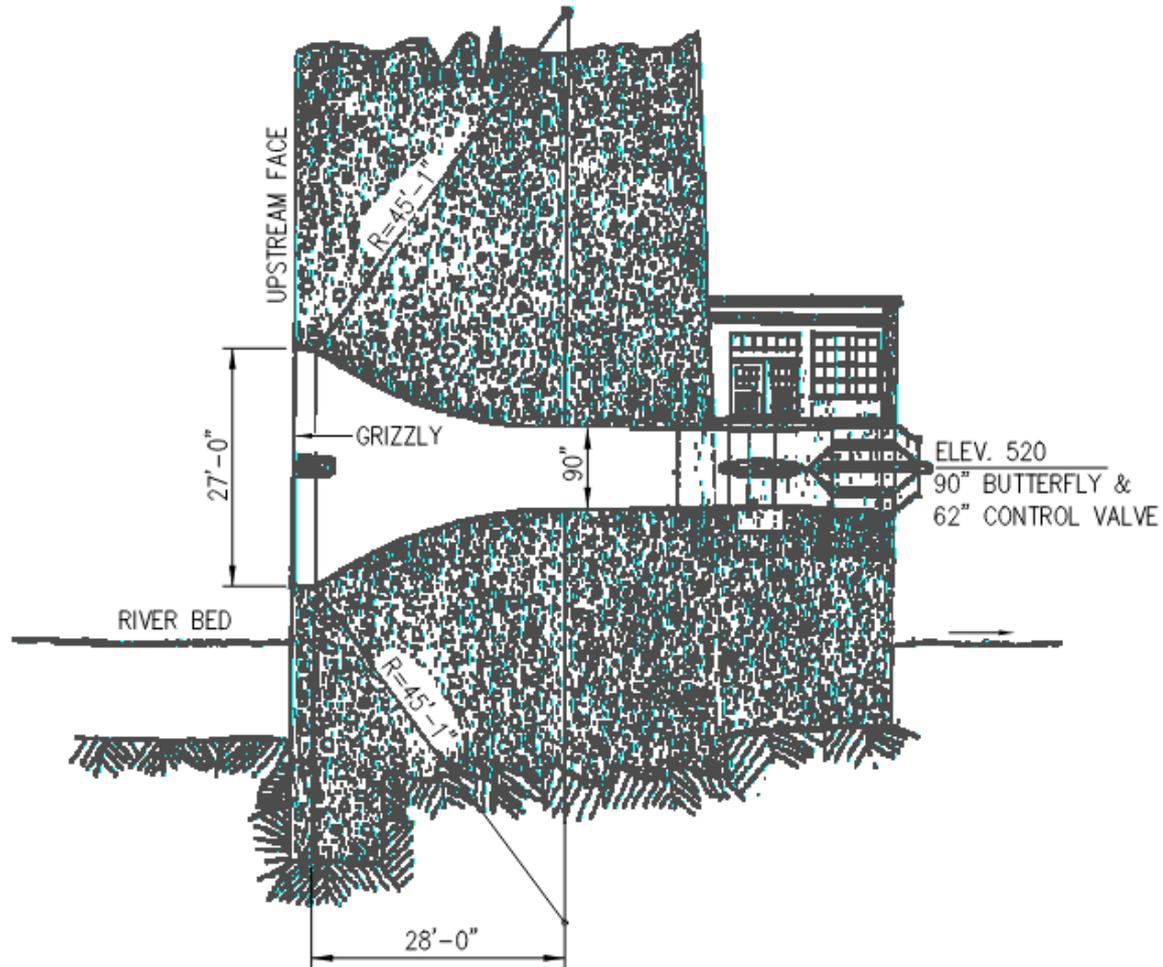
March 9, 2022

Cushman # 1 LLOV Basics



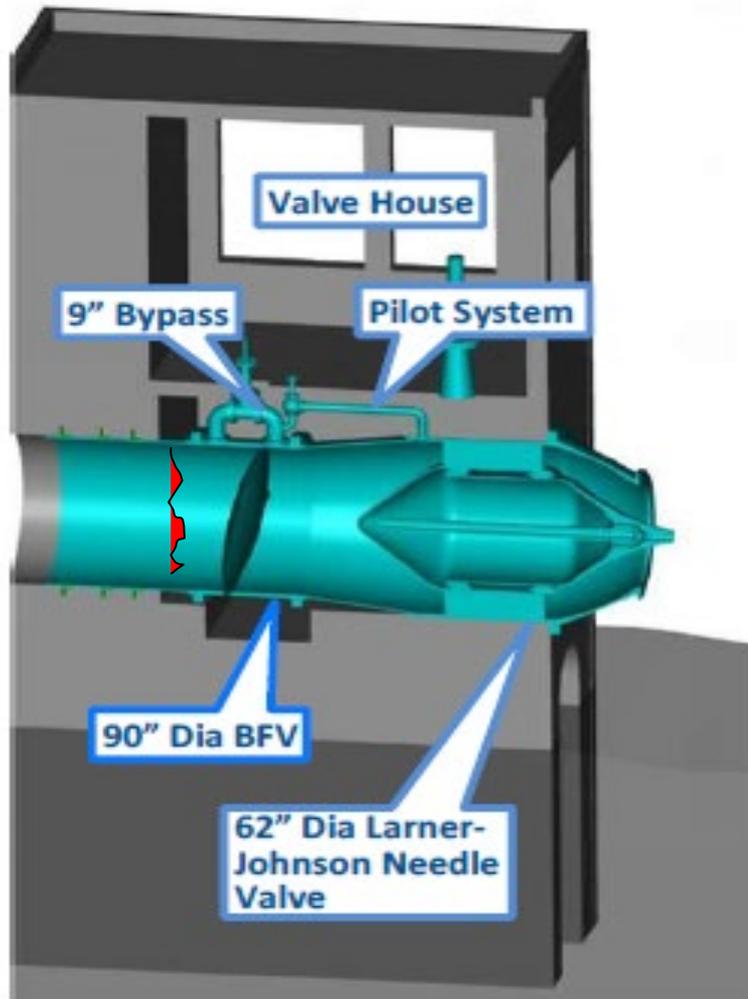
Cushman #1 LLOV Basics





90" OUTLET THRU DAM

SCALE 1" = 20'-0"

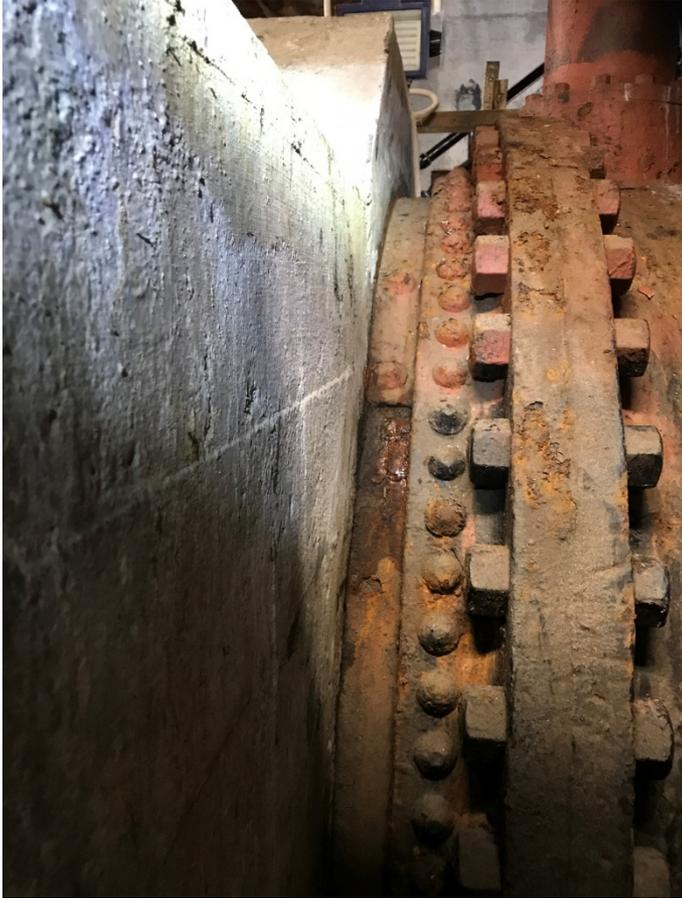


Low Level Outlet Valves

- 90-inch Butterfly Valve
- 62-inch Johnson Valve
- 9-inch Bypass / Fill Valve
- Red is the Major Area of Concern

Business Need for the Project

Problem:



Business Need for the Project

Problem:

- The Low Level Outlet Valves (LLOV) are original (1924) to the dam
- Valve Unsafe to Operate – Industry Wide Concern
- Piping upstream of the Butterfly Guard Valve is severely corroded and is leaking (Red Area on Previous Slide)
- A failure within the LLOV System could result in life and dam safety consequences

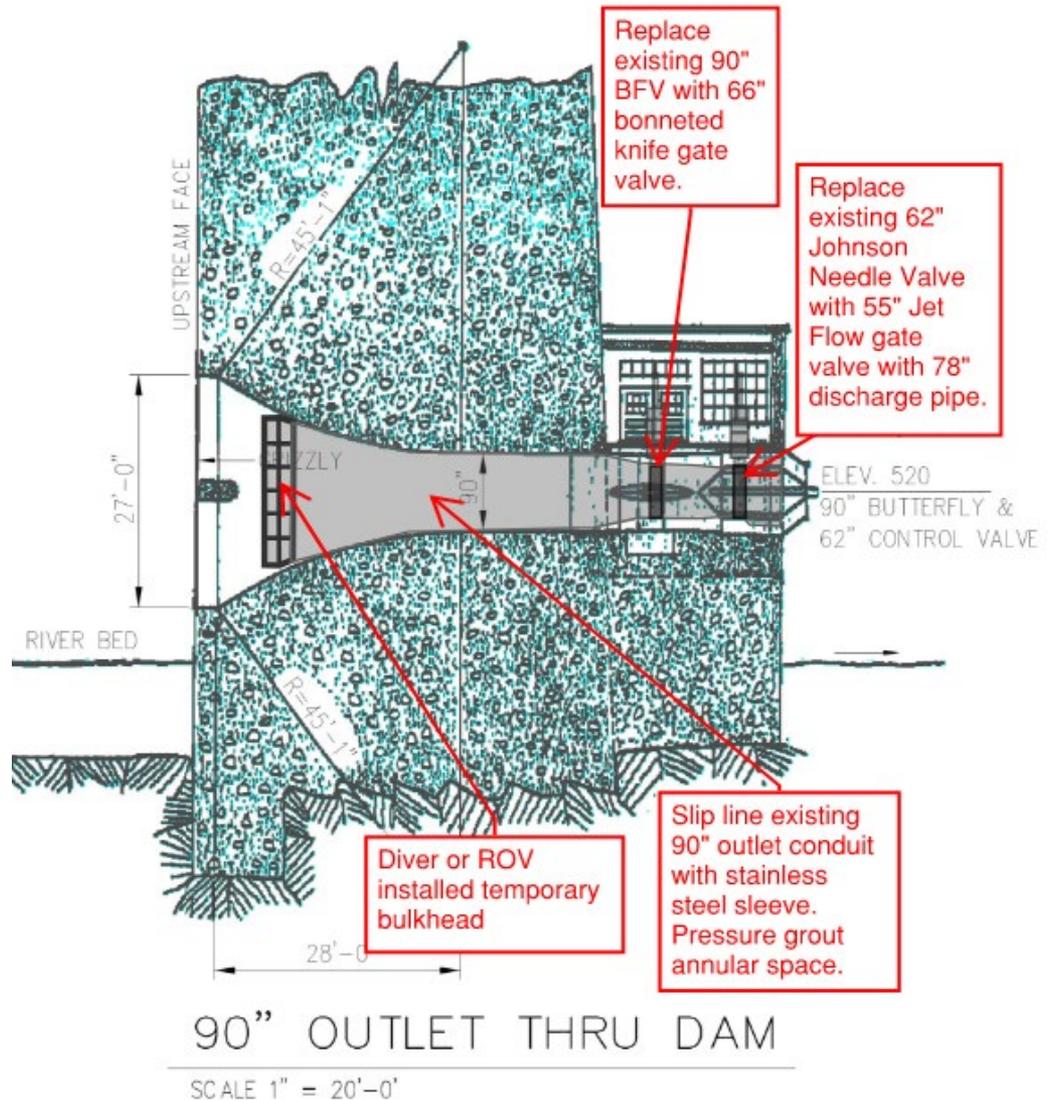
Project Description:

- Replace the System in a way that Safely and Economically meets Dam Safety, Fish Passage and Power Management requirements

Project Scope

Plan:

- Replace the entire Low Level Outlet Works (LLOW)
- New Valves, Intake Piping and controls



Project Schedule and Status

- ✓ **Design Consultants Hired** **Fall 2019**
 - ✓ Black and Veatch
 - ✓ Paul Carson
- ✓ **Underwater Video Inspection** **April 2021**
- ✓ **30-percent Design Phase** **October 2021**
- ✓ **60-percent Design Phase** **February 2022**
- ❑ **100-percent Design** **June 2022**
- ❑ **Submittal to the FERC for Approval** **June 2022**
- ❑ **Specifications, Bidding and Procurement** **Fall 2022**
- ❑ **Construction**
 - ❑ **Installation of the Temporary Plug** **Summer / Fall of 2023**
 - ❑ **Installation of the new Valve Systems** **2024 /2025**

Project Costs

As of March 2021 (*Subject to Inflation and Supply Chain Challenges)

Description	Lower Estimate	Upper Estimate
Mobilization	\$1,243,000	\$1,616,000
Sediment Removal	\$735,000	\$955,000
Plug Install	\$2,910,000	\$3,783,000
Valve Construction	\$4,932,000	\$6,412,000
Plug Removal	\$2,428,000	\$3,157,000
Project Demob	\$102,000	\$133,000
Consultants	\$3,705,000	\$4,817,000
Internal Labor	\$2,189,000	\$2,845,000
A&G	\$1,248,000	\$1,622,000
Force Account (15%)	\$2,408,000	\$3,131,000
Total	21,900,000	\$28,471,000

Conclusion and Questions

- Any Questions?



Thank You