

A scenic landscape photograph of Lake Irwin. The lake is calm, reflecting the surrounding environment. In the background, a range of rugged mountains with brown and tan hues rises against a clear blue sky with a few wispy clouds. The middle ground is filled with a dense forest of evergreen trees. In the foreground, there are green plants with yellowish flowers and a large, dark evergreen tree on the right side. The overall scene is peaceful and natural.

Lake Irwin Valve and Pipe Project - Raw Water Infrastructure

Prior to Construction

April 7, 2022

Headwaters Coal Creek



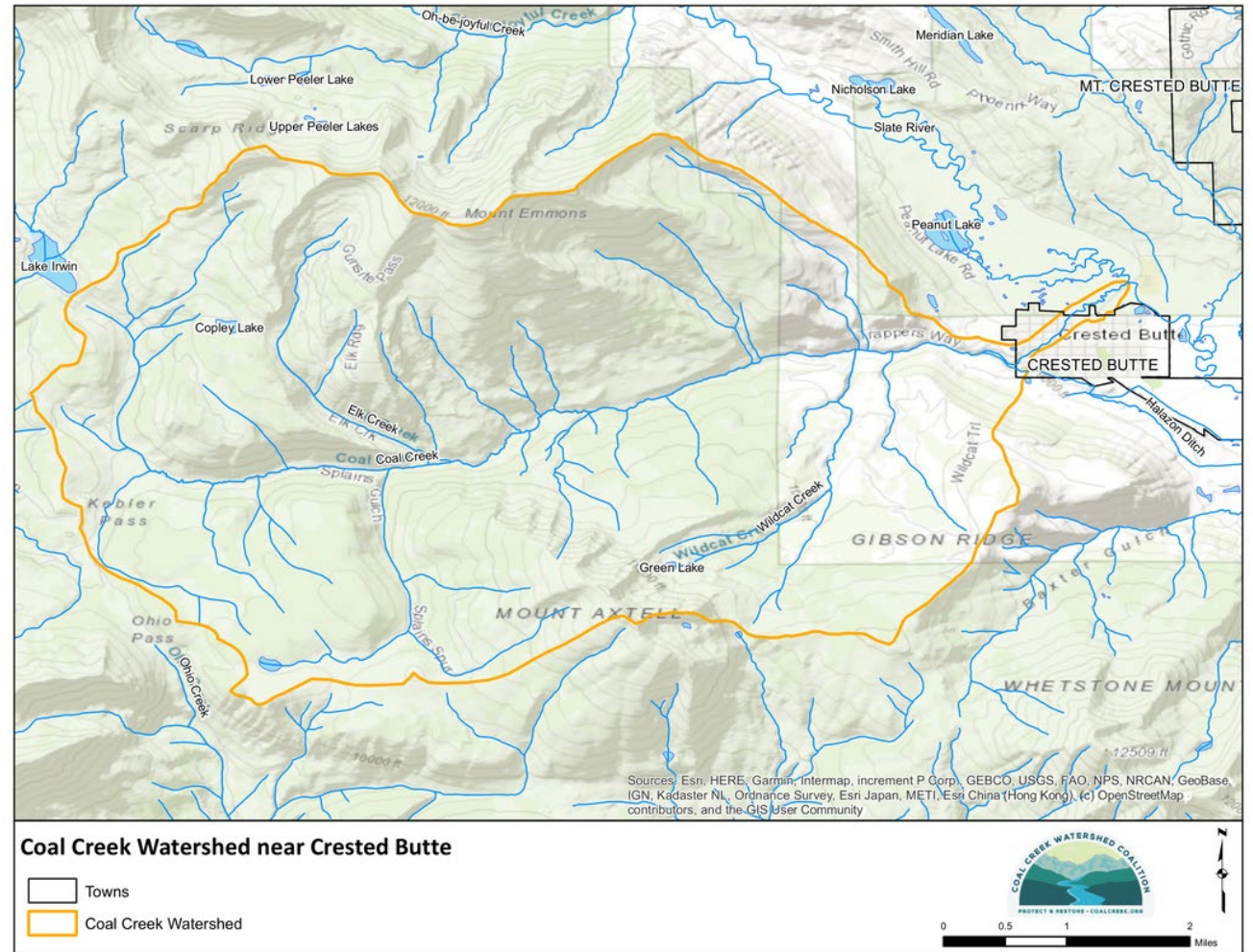
Coal Creek

15,600 acres Watershed

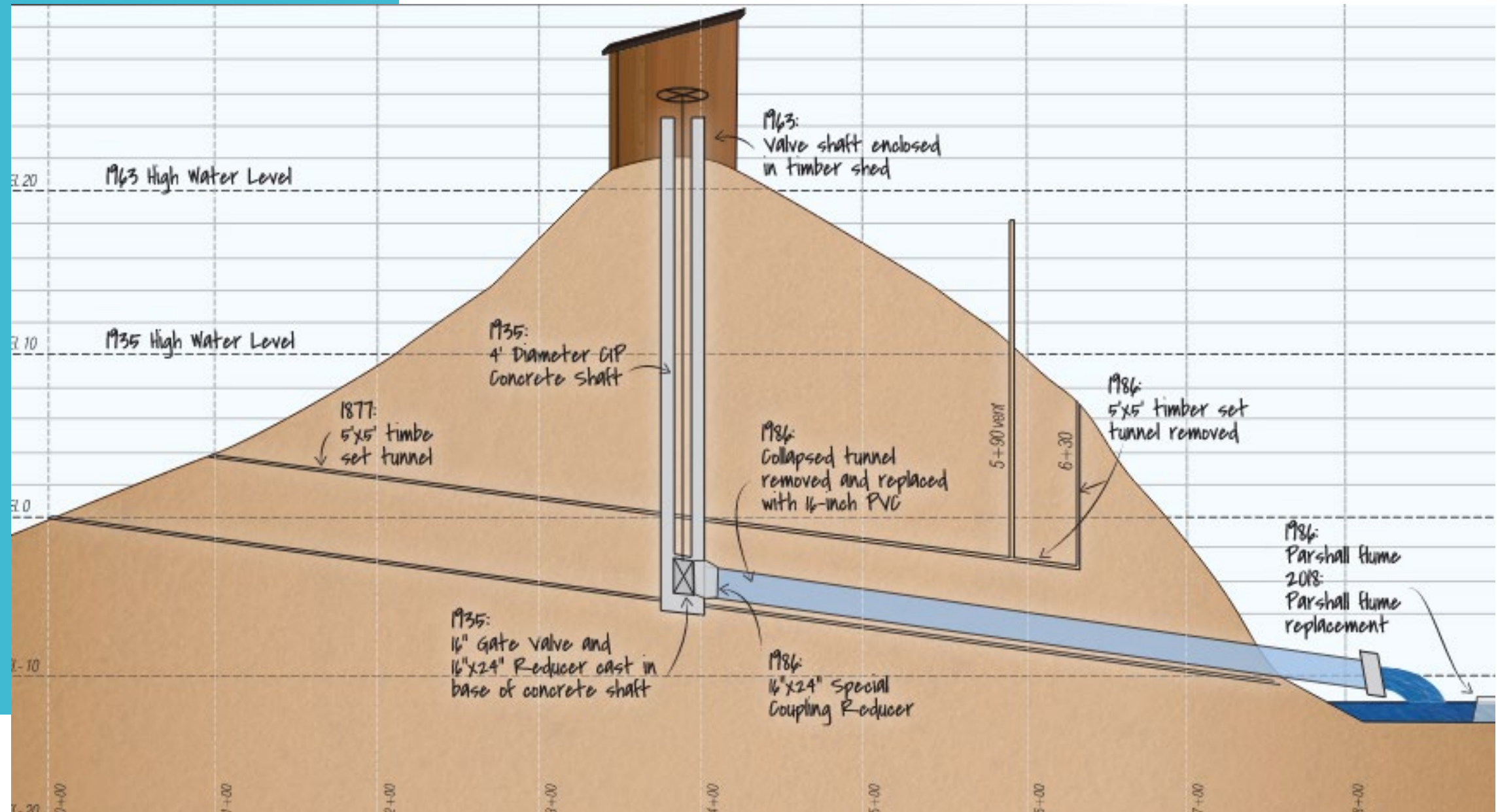
Tributary to the Slate, East and Gunnison Rivers

Mine influences: Standard Mine, Keystone Mine outfall and Mt. Emmons Iron Fen

Water Quality and Health of this River is Vital

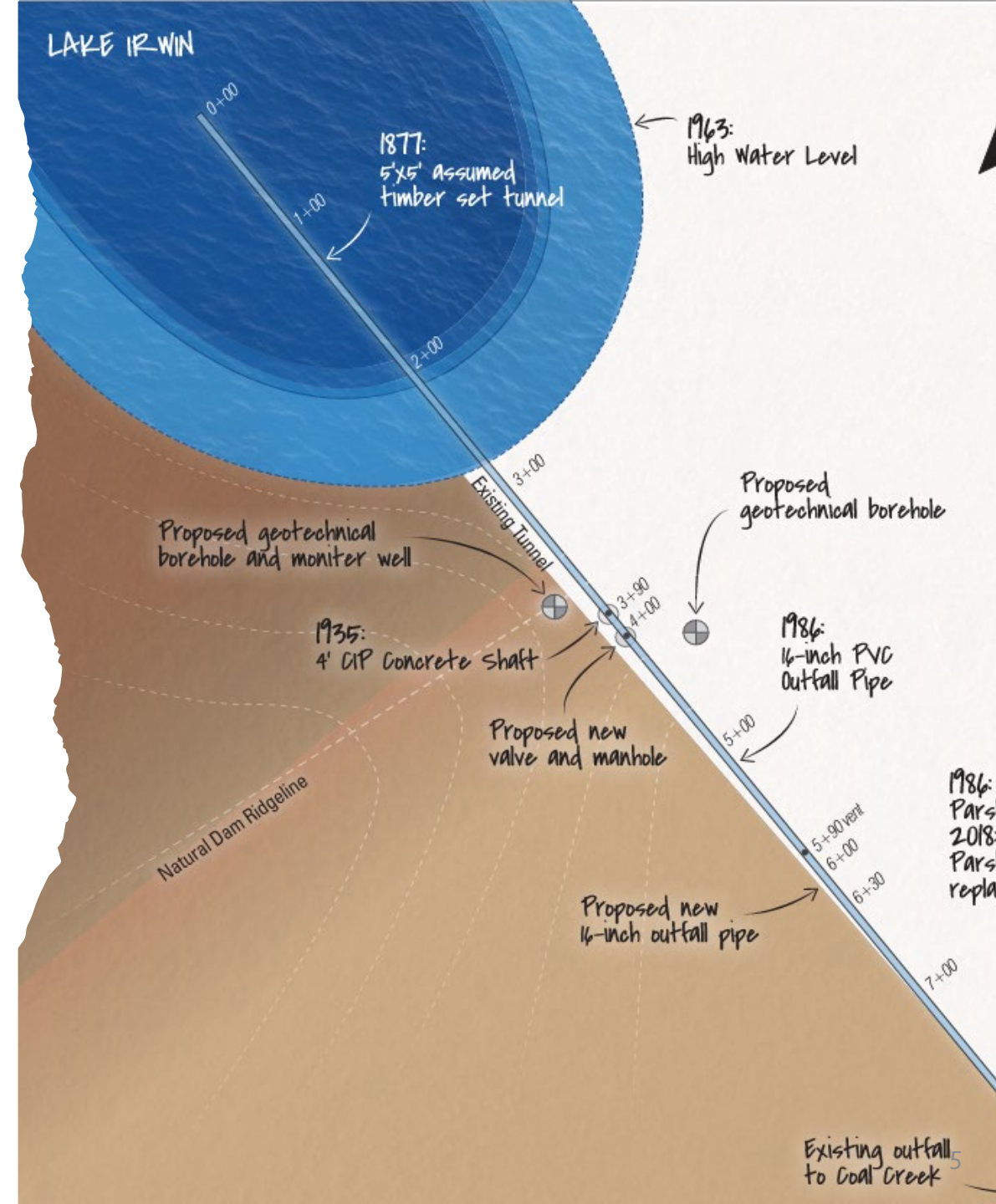


// Lake Irwin System Improvements



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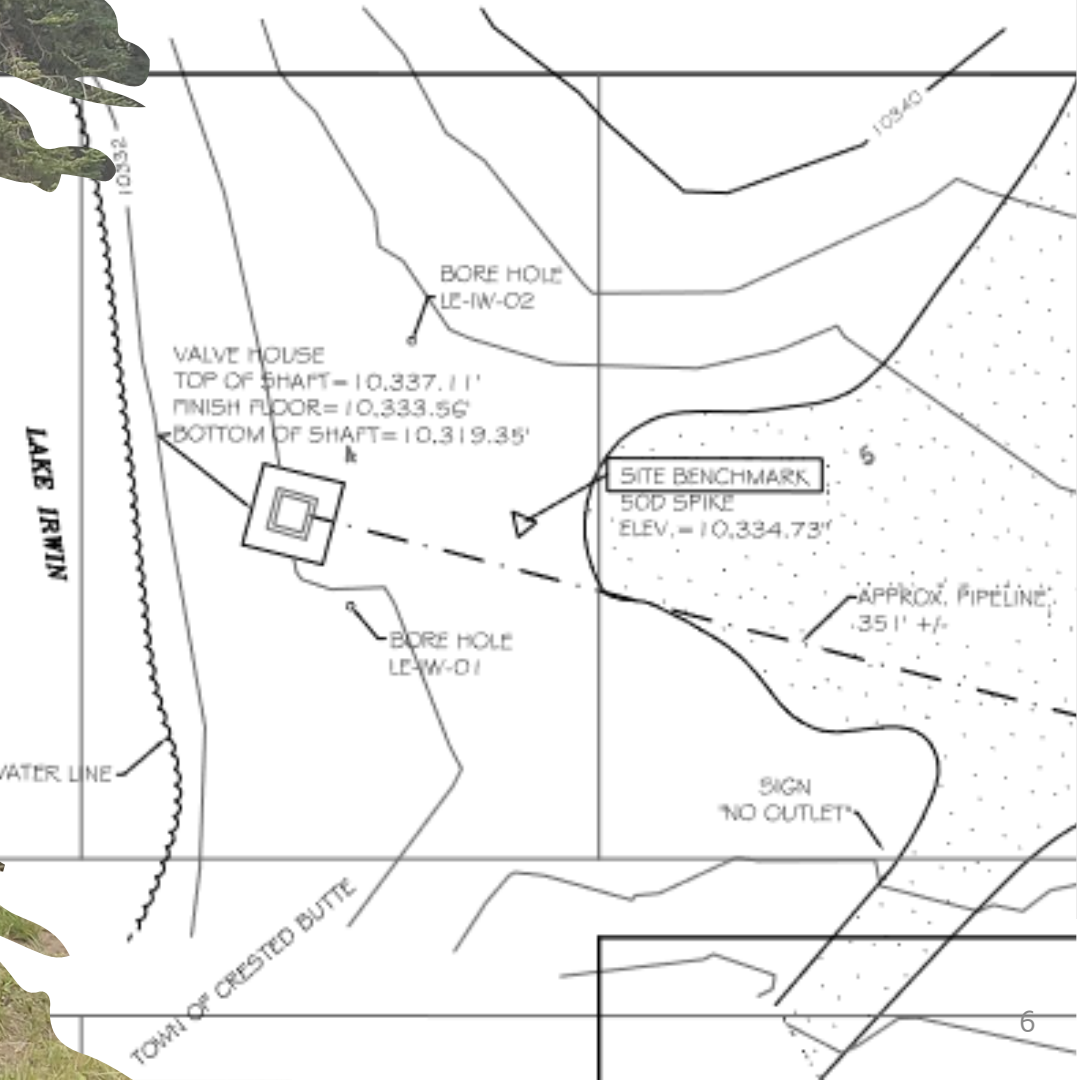
- Lake Irwin significant water source during winter months
- Historical documents identified during proposal phase
- Existing intake tunnel appears to have been installed in 1877





Survey and Geotechnical Investigation Complete

- High water line 10,331.11



What the
Underwater
Rover Camera
sees!

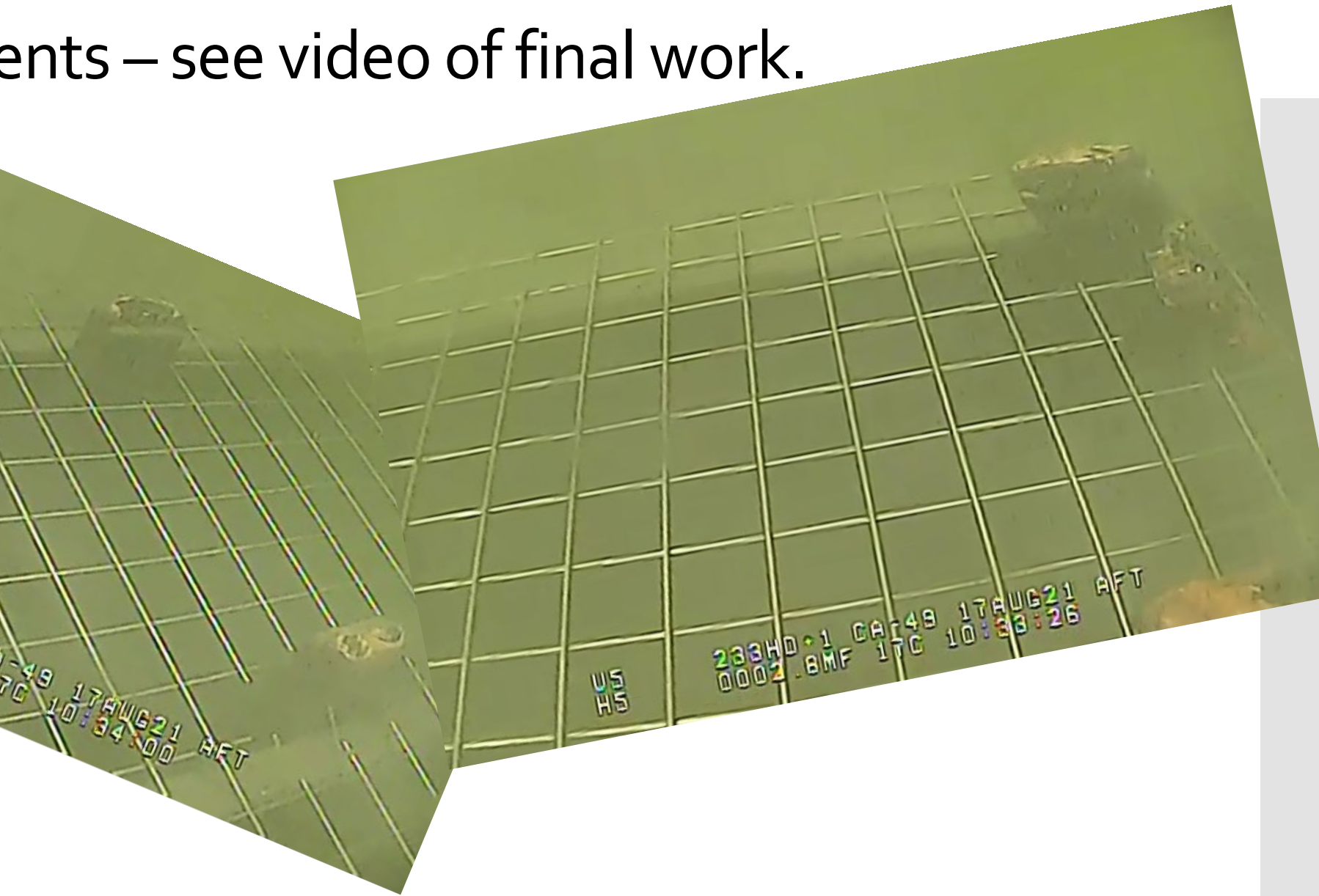
Sonar not
shown.



What happens
when you add
These TWO
THINGS
together?



Tunnel Improvements – see video of final work.



Lake Irwin Valve and Piping to 2018 Parshall Flume

Coal Creek water supply concern

- Operational difficulties of valve
- Valve and pipe failure

Unknowns

- No drawings and unknown geotechnical conditions
- = additional investigations

Scope of Design

- Remove debris in vault, replace valve & vault
- Replace approximately 6" with 12" DIP pipe



Lake Irwin Gate Valve

Lake Irwin to Coal Creek Piping

Engineering

- Preliminary & Detailed Design 2021
- \$235,000

Construction

- Infrastructure Construction 2022-24
- \$2.2 Million (at 30%) +11% = \$2.47 M

Pillars of Success

- Critical Infrastructure Restored
- Environment, Water Supply & Recreation

GENERAL NOTES:

- 1.

KEY NOTES:

- 1.

Lake Irwin Water Level Measurements

Date	Top of Well Pipe	Top of Valve Box	Lake Level
7/30/2021	13'2"	ND	ND
8/16/2021	12'8"	16'7"	ND
8/20/2021	ND	ND	3.84'
8/23/2021	12'7"	15'11"	3.66'
9/3/2021	12'10"	18" - bottom	2.9'
9/9/2021	13'2"	18" - bottom and dry	2.2'

Note by Andrew Crowley: Lake level groundwater has dropped enough that we can now see into bottom of the shaft. It is completely dry with no water infiltration from the sides. Dates 9/3/2021 and 9/9/2021.

PLAN
FILE: Pkg_Num_00C01

PROFILE
FILE: Pkg_Num_00C01

30% F NOT F

RECORD DRAWING TUNNEL INTAKE PLAN AND PROFILE

TOWN OF CRESTED BUTTE
LAKE IRWIN VALVE AND PIPING PROJECT
CIVIL
00C02

VERIFY SCALES
BSP IS ONE INCH TO ORIGINAL DRAWING
0 20' 40' 80' 160'
SCALE: 1" = 40' (HORIZ)
0 2.5' 5' 10'
SCALE: 1" = 5' (VERT)

KEY MAP

811
Know what's below. Call before you dig. www.811.org

DATE
SEPTEMBER 2021

PROJECT NO. 200296-100000
FILE NAME: 20029600C02.dwg

LAST REVISED BY: JAA

// Project overview –

Lake Intake - Submerged timber set tunnel

Lake Outfall – 16-inch PVC pipe

Lake Flow Control – 16-inch gate valve in valve shaft

Existing infrastructure varies in age, but all is in a state of deterioration and requires repair/ replacement



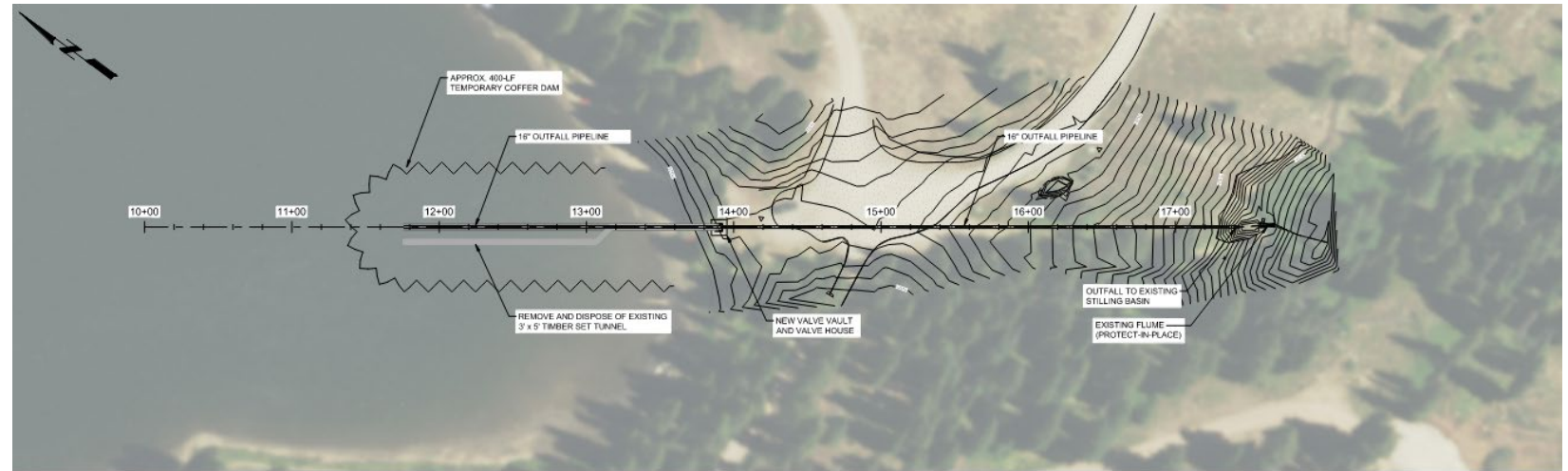
// Project overview – Option 1 replacement of all infrastructure

Lower lake level about 10-feet
and install temporary coffer
dam around existing tunnel

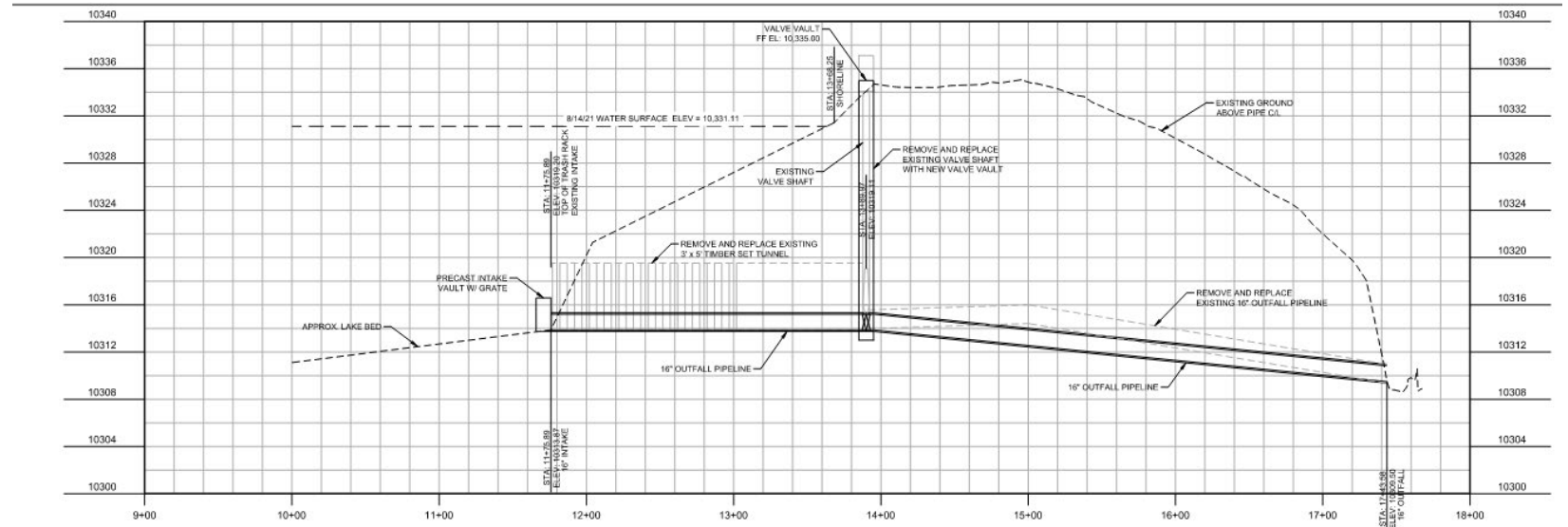
Replace timber set tunnel and
outfall pipeline with 16-inch
pipe

Replace existing valve shaft
with new valve vault

Protect existing flume in-place



PLAN
FILE: Proj_Nam_EOC101



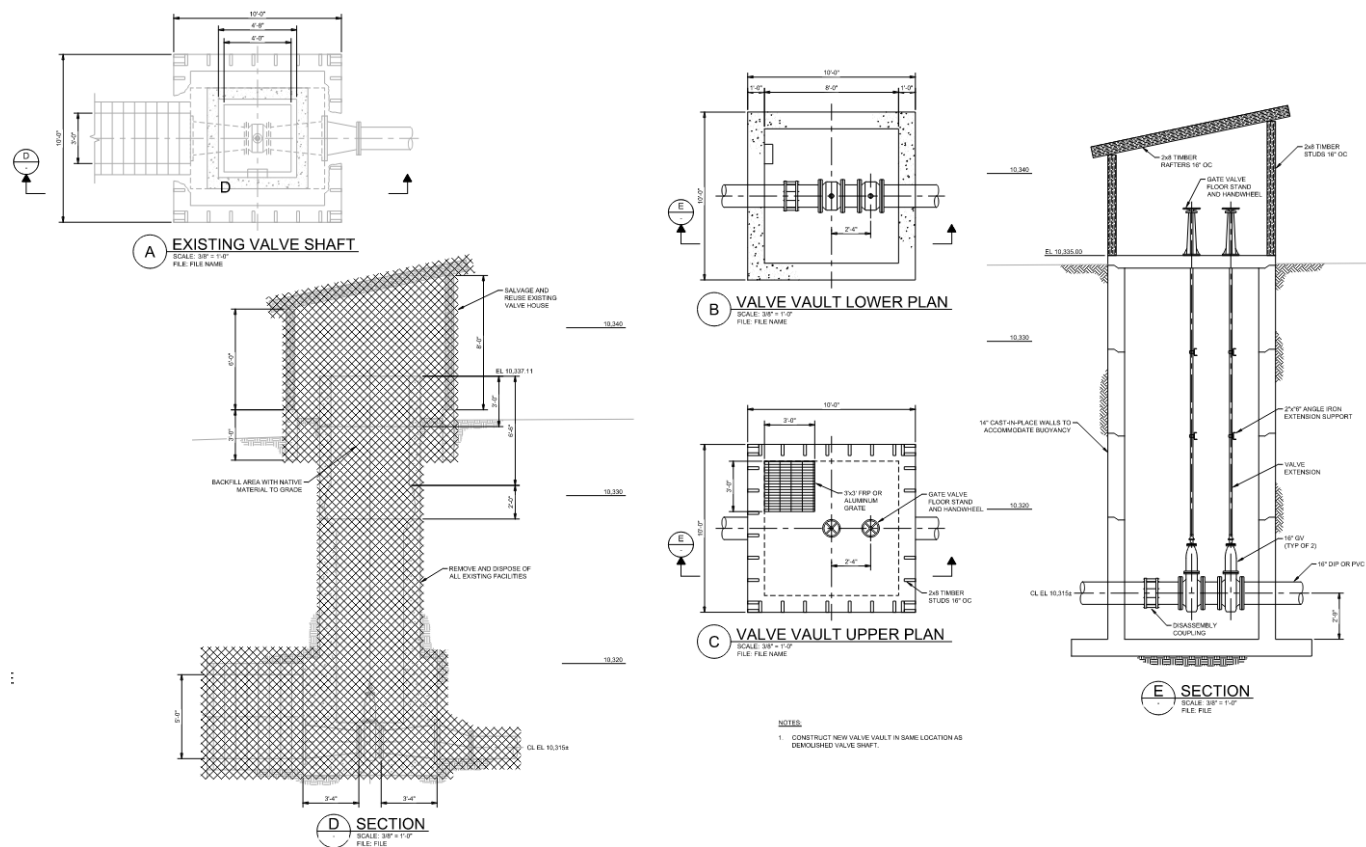
// Project overview – Option 1 remove and replace existing valve shaft with new valve vault

Demolish and remove existing valve shaft

Construct new cast-in-place valve vault in same location as original

Install dual 16-inch gate valves for redundancy

Salvage and reinstall existing valve house



Pillars of Success

Healthy River &
Quality

Restore &
Maintain Critical
Infrastructure

Sustainable
Drinking Water

Recreational

