

Status Update

Remediation of Unstable Brine Cavern in Carlsbad, New Mexico

by Energy Minerals & Natural Resources Department (EMNRD)
to Water & Natural Resources Committee

September 5, 2019

What This Project Is Attempting To Avoid

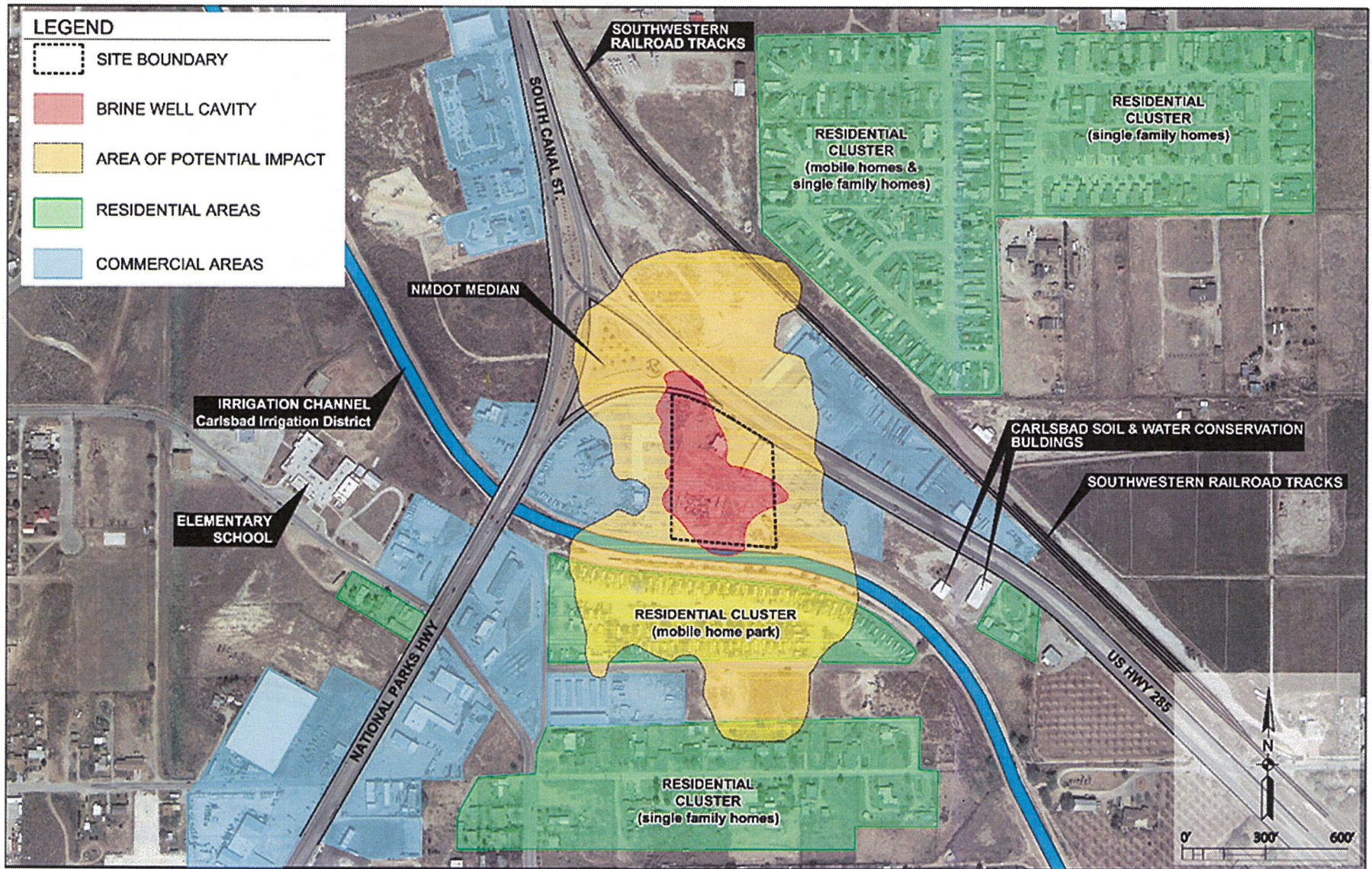


Jim's Water Service – July 2008

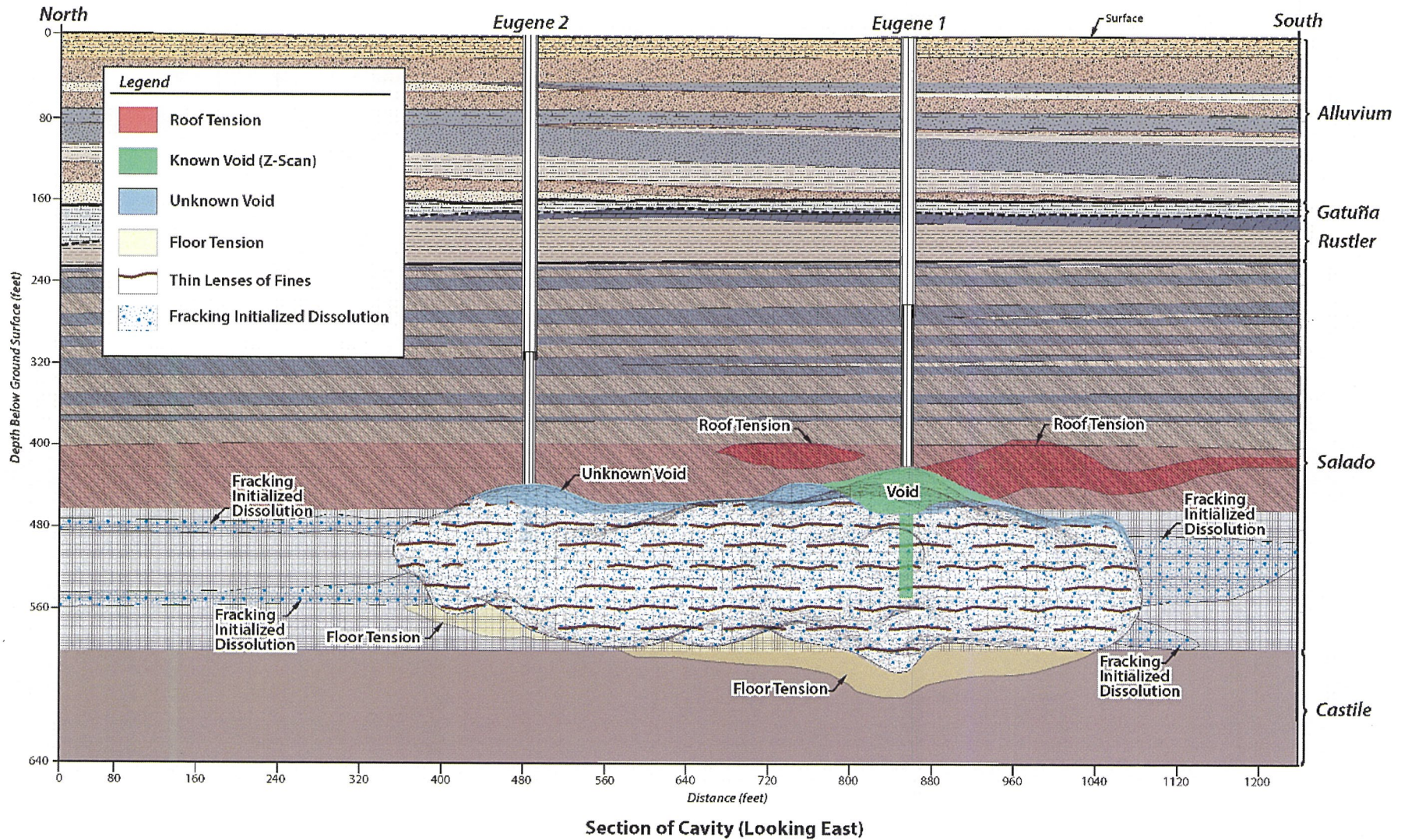
Loco Hills Disposal – November 2008



I&W Brine Cavern in Carlsbad



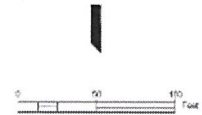
I&W Brine Cavern in Carlsbad



Remedy

- Install a series of wells to sequentially pressure inject grout in two phases while simultaneously extracting brine
 - Maintain cavity pressure
 - Balance volume of brine removed with volume of grout injected
 - Injection Phase 1 - Establish a subsurface cap using high mobility grout materials to support the existing weakened cavity roof
 - Injection Phase 2 – Create columns within the existing partially dissolved cavern rubble using low mobility grout to structurally support the new grout cap

Grouting Well Sequence



LEGEND

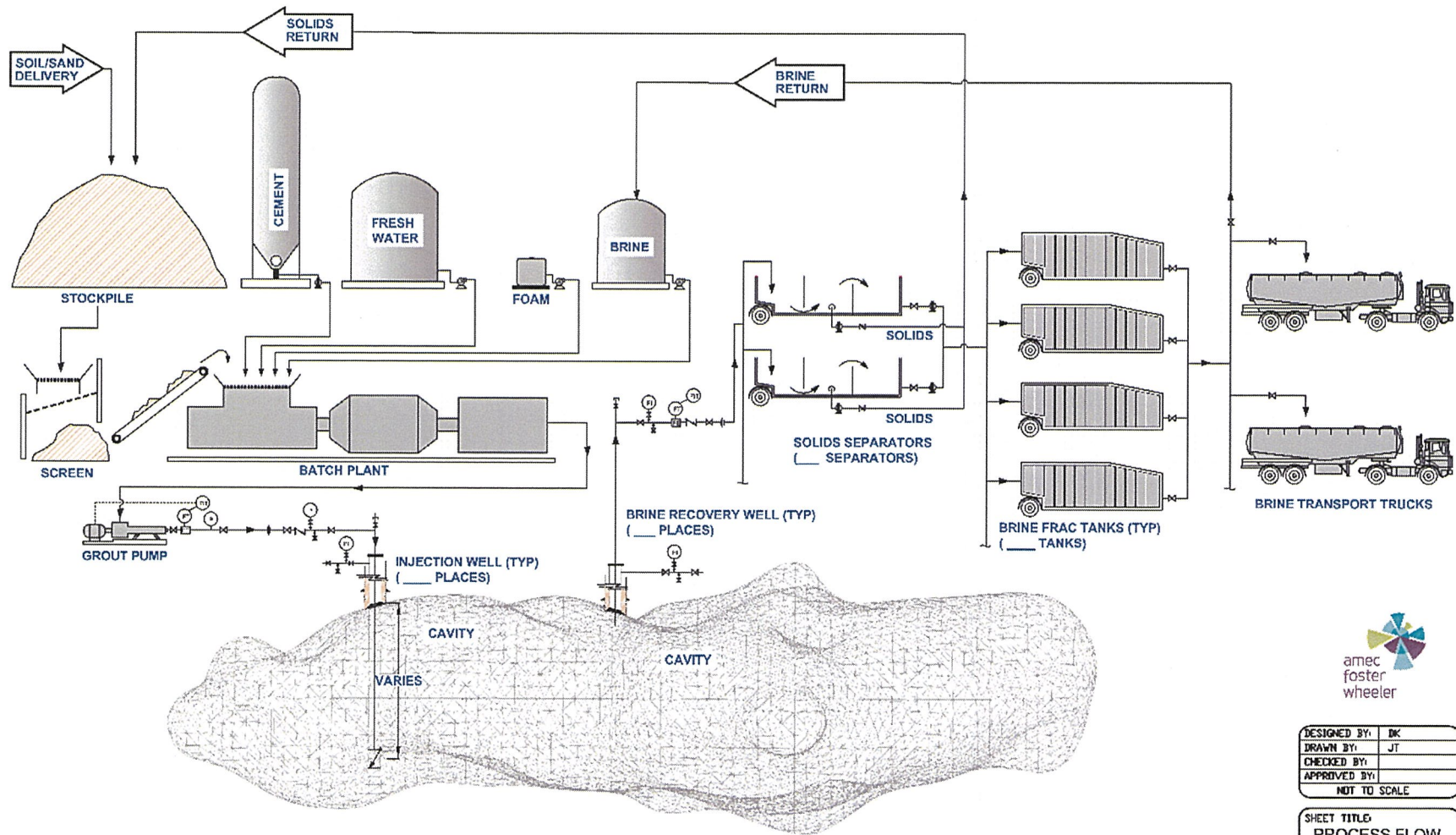
- ◆ PHASE 1 WELLS
- ◆ PHASE 2 WELLS

GROUT SEQUENCING	
PHASE	GROUT/BRINE RECOVERY WELL
1	1 (GW 9)
	2 (GW 6)
	3 (GW 10)
	4 (GW 12)
	5 (GW 11)
	6 (GW 3)
	7 (GW 2)
2	8 (GW 1)
	9 (GW 14)
	10 (GW 15)
	11 (GW 16)
	12 (GW 13)
	13 (GW 8)
	14 (GW 7)
	15 (GW 5)
	16 (GW 4)

GROUT WELL DRILLING PLAN & GROUTING SEQUENCE

16 WELLS, 2 PHASES
125-FT SPACING

Cavity Filling Process



DESIGNED BY:	DK
DRAWN BY:	JT
CHECKED BY:	
APPROVED BY:	
NOT TO SCALE	

SHEET TITLE:
PROCESS FLOW
DIAGRAM
I&W Brine Cavity

Risk Management

- Keep public safe
- Close monitoring during remedy implementation
 - Borehole Tilt Meters
 - Grout pressure monitoring
 - Ground level movement
 - Monitor grout volume injected
 - Constant feedback of advanced warning for emergency management
- Post remedy monitoring
 - Remedy confirmation
 - 2-yr monitoring period

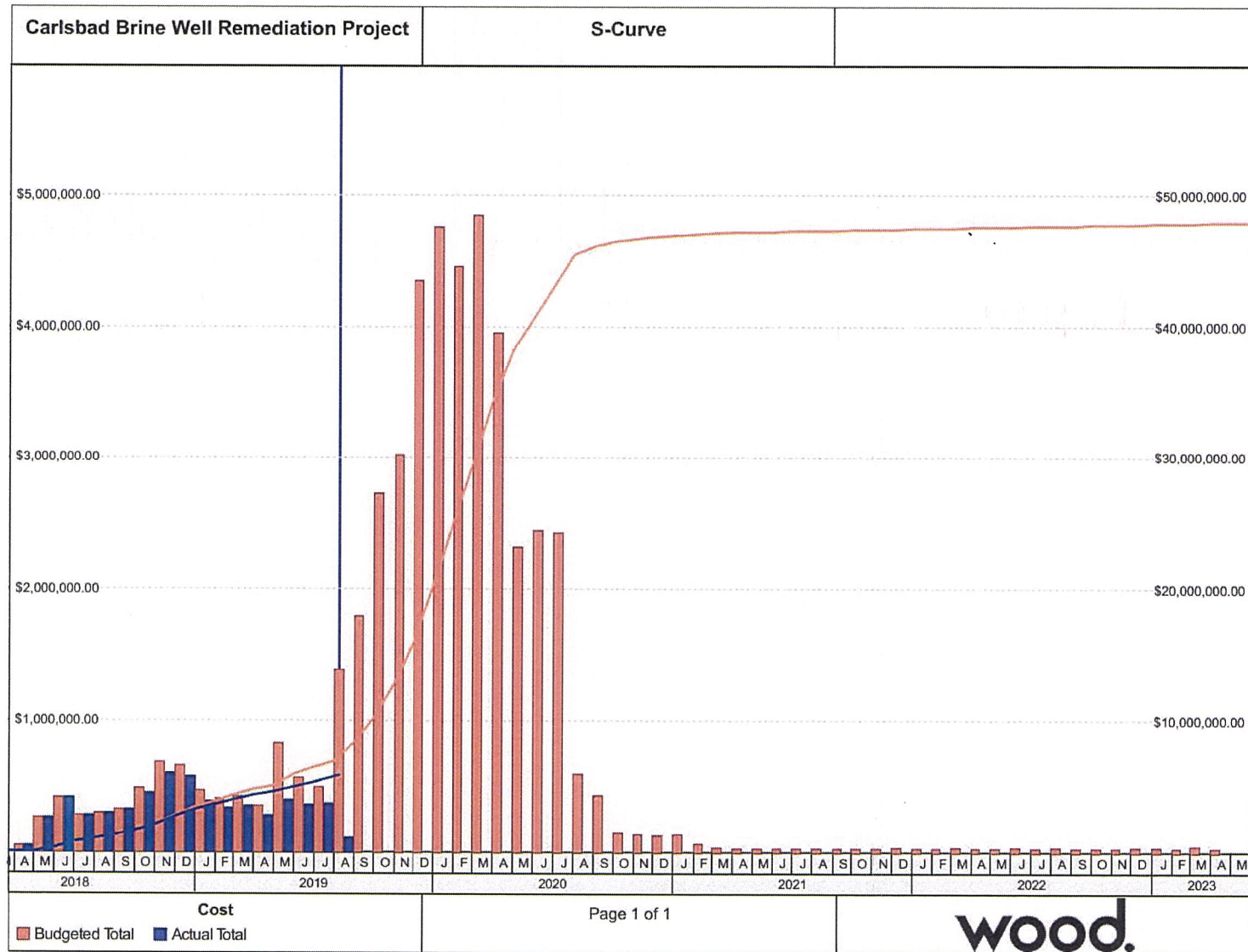
Project Funding & Expenditures

- Total Funding Secured to Date - \$45,498,800
 - \$4,020,000 - City of Carlsbad
 - (phased over 3 years: FYs 19, 20, & 21)
 - \$4,020,000 - Eddy County
 - (phased over 3 years: FYs 19, 20, & 21)
 - \$30,000,000 - NMDoT
 - (phased over 3 years: FYs 19, 20, & 21)
 - \$2,000,000 - NM Environment Dept
 - (phased over 2 years: FYs 18 & 19)
 - \$3,500,000 - General Fund (FY 19)
 - \$1,958,800 - Bonds
- Expenditures to Date - \$6,291,402.25

Project Status

- ✓ Remediation Design Finalized
- ✓ 4 of 6 Access Agreements Finalized
- ✓ Traffic Modifications Constructed
- ✓ On-Site Buildings & Other Infrastructure Removed
- ✓ Drill Site Grading - Completed
- ❑ Utility Upgrade - 75% Complete
- ❑ Monitoring System Upgrade - 86% Complete
- ❑ Perimeter Security Fencing - 20% Installed
- ❑ Sept. 16 - Driller Mobilization (2 rigs)
- ❑ Sept. 30 - Begin Drilling (operate 24/7)
- ❑ Nov. 2019 to Aug. 2020 - Grout Injection

Project Expenditure Timeline



Current Budget Projection

FEL3 Cost (includes 10% contingency)	\$47,928,706.00
NMGRT (7.875%)	3,774,385.60
Access Agreements to Date	1,944,000.00
Pending Access Agreements	To Be Determined
<u>EMNRD Partial Overhead (3 years)</u>	<u>375,000.00</u>
Total	\$54,022,091.60+
<u>Funding to Date</u>	<u>45,498,800.00</u>
Currently Anticipated Budget Shortfall	(\$8,523,291.60+)

Discussions ongoing with DFA, LFC, Eddy County, and City of Carlsbad to resolve shortfall.

Questions

Thank You

