

APPENDIX C-1:

INJECTION AND MONITORING WELL SCHEMATICS

“CTV III” STORAGE PROJECT

The following schematics provide depictions of the proposed injection and monitoring wells associated with CTV III project. This includes the well construction details and the type and location of monitoring equipment within the wellbore and relative to the geologic storage complex. Perforations and gross monitoring intervals have been indicated, but actual completion and monitoring intervals will be confirmed during the pre-operations phase of the project once the wells have been drilled.

Additionally, schematics of the proposed abandonment configurations of all injection and monitoring show proposed cement plug depths to ensure confinement and non-endangerment of USDW. Cement plug descriptions have been provided in tabular format.

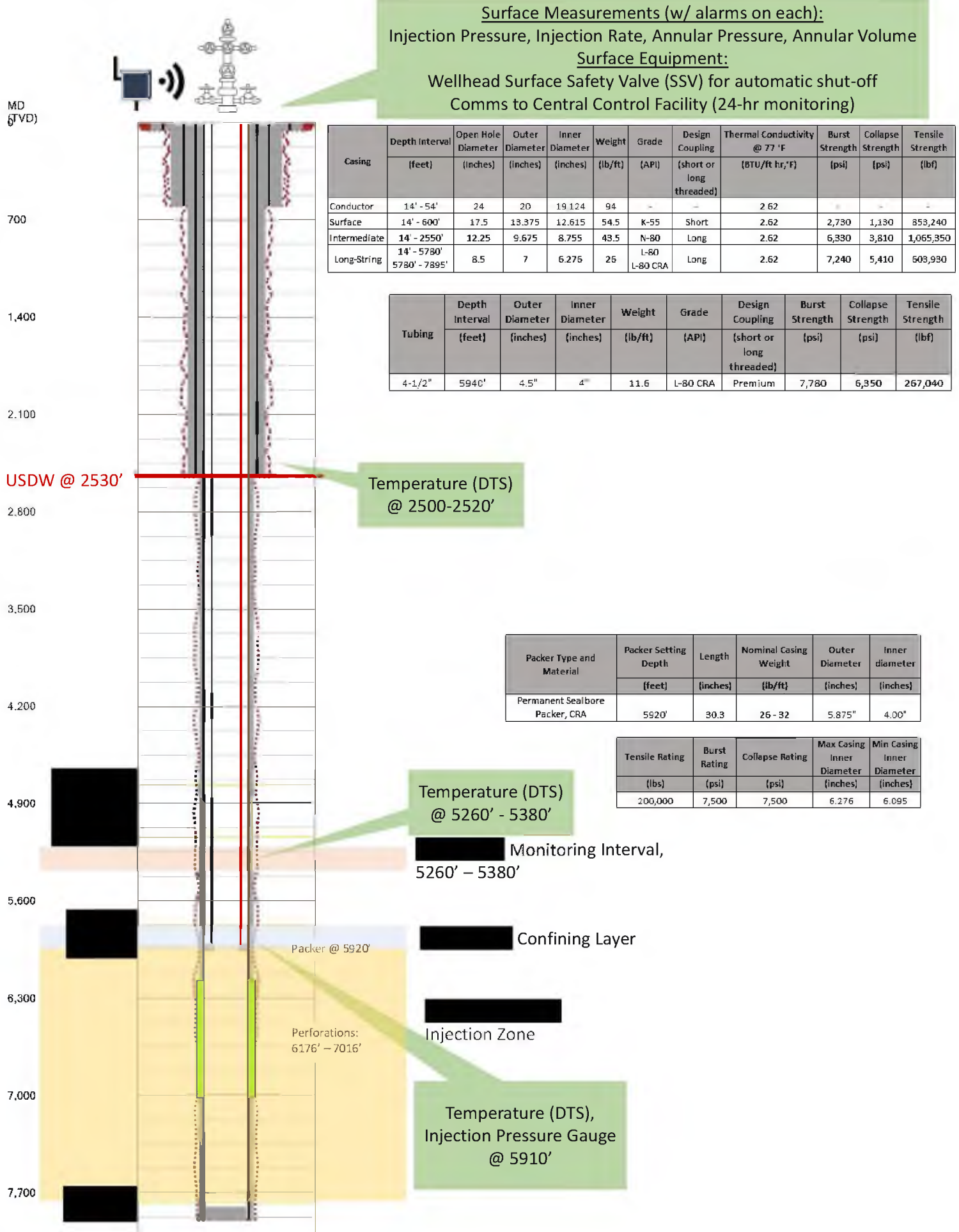


Figure 1. Injection Well C-1, CO₂ Injection Schematic

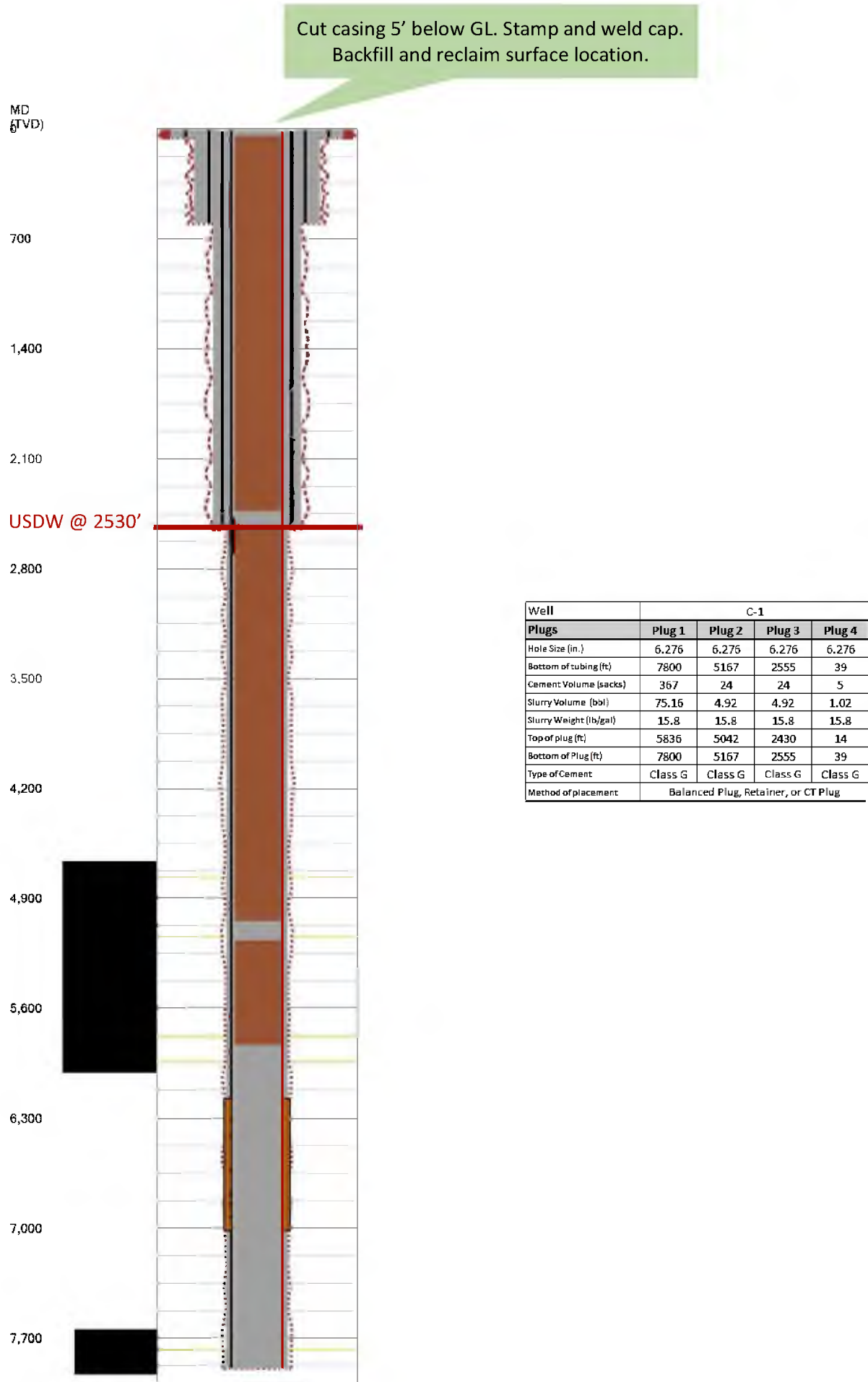


Figure 2. Injection Well C-1, Abandonment Schematic

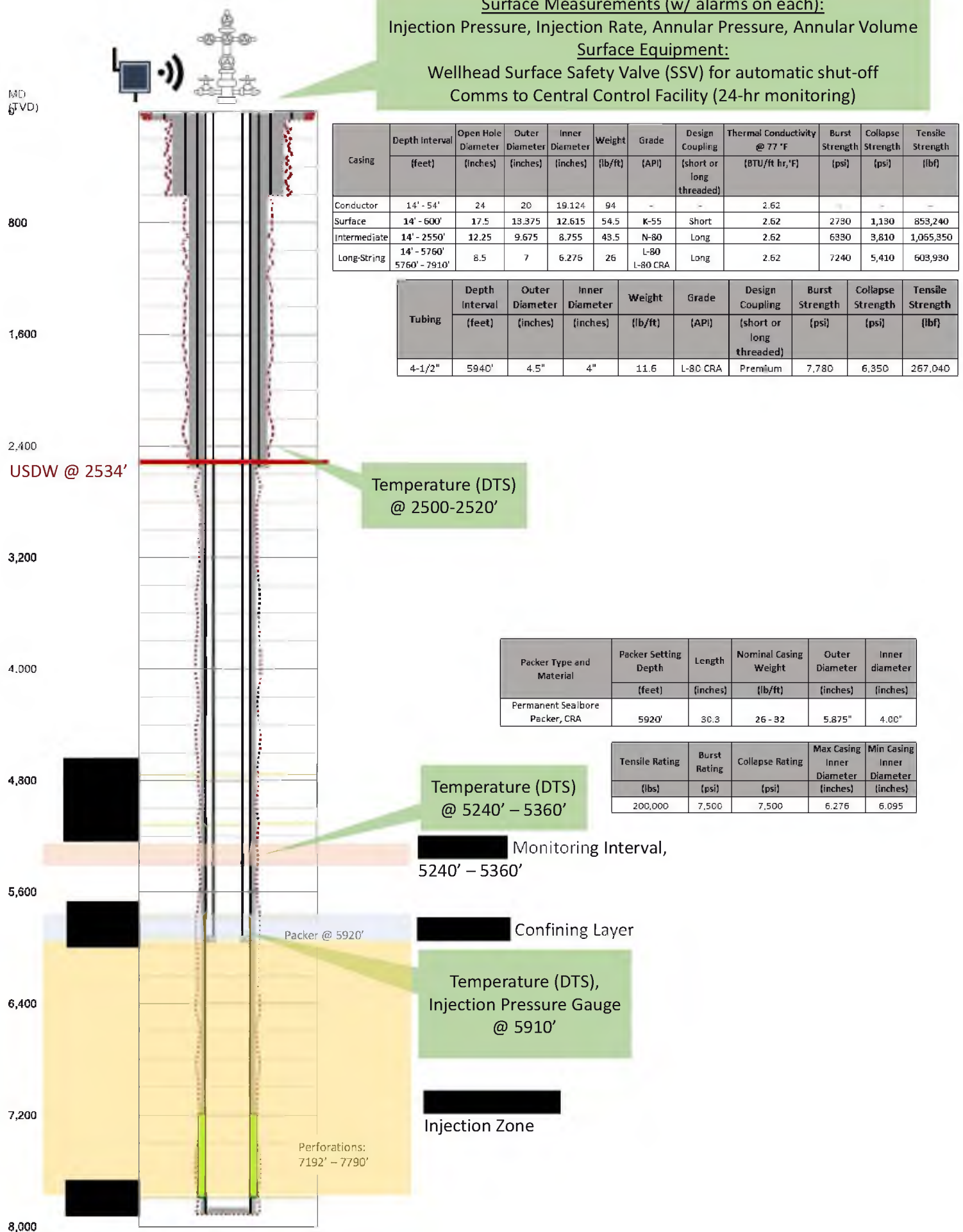


Figure 3. Injection Well C-2, CO₂ Injection Schematic

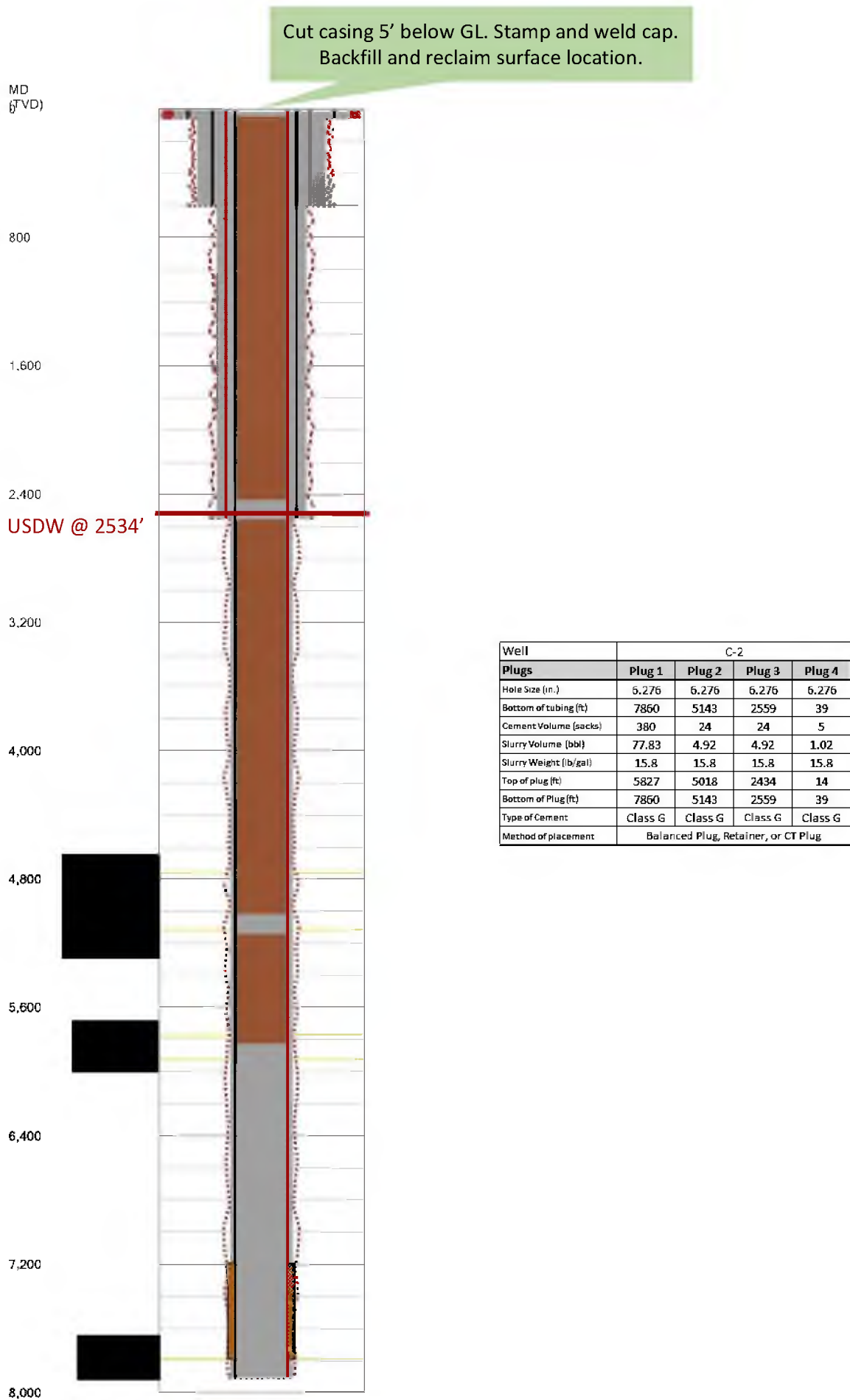


Figure 4. Injection Well C-2, Abandonment Schematic

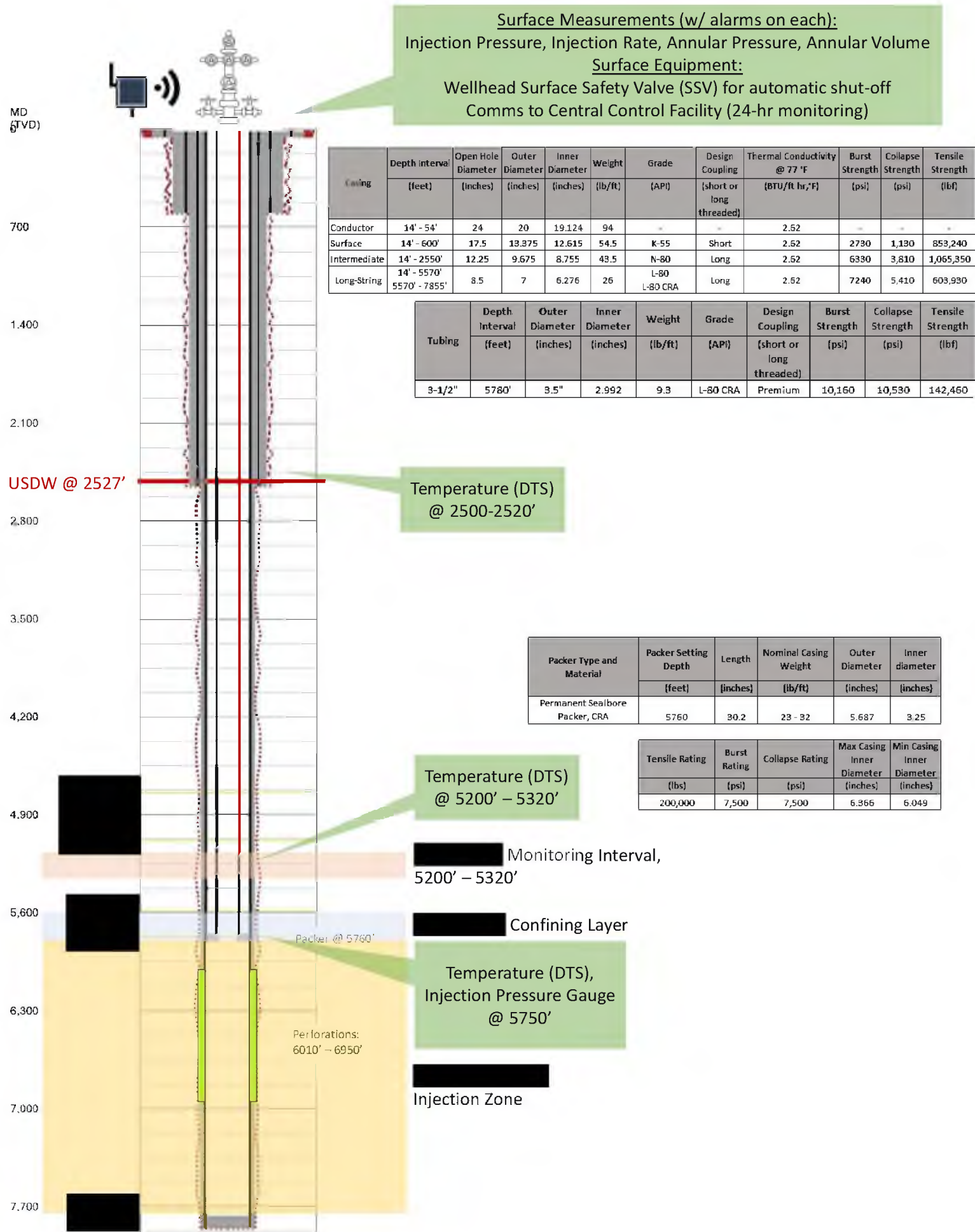


Figure 5. Injection Well E-1, CO₂ Injection Schematic

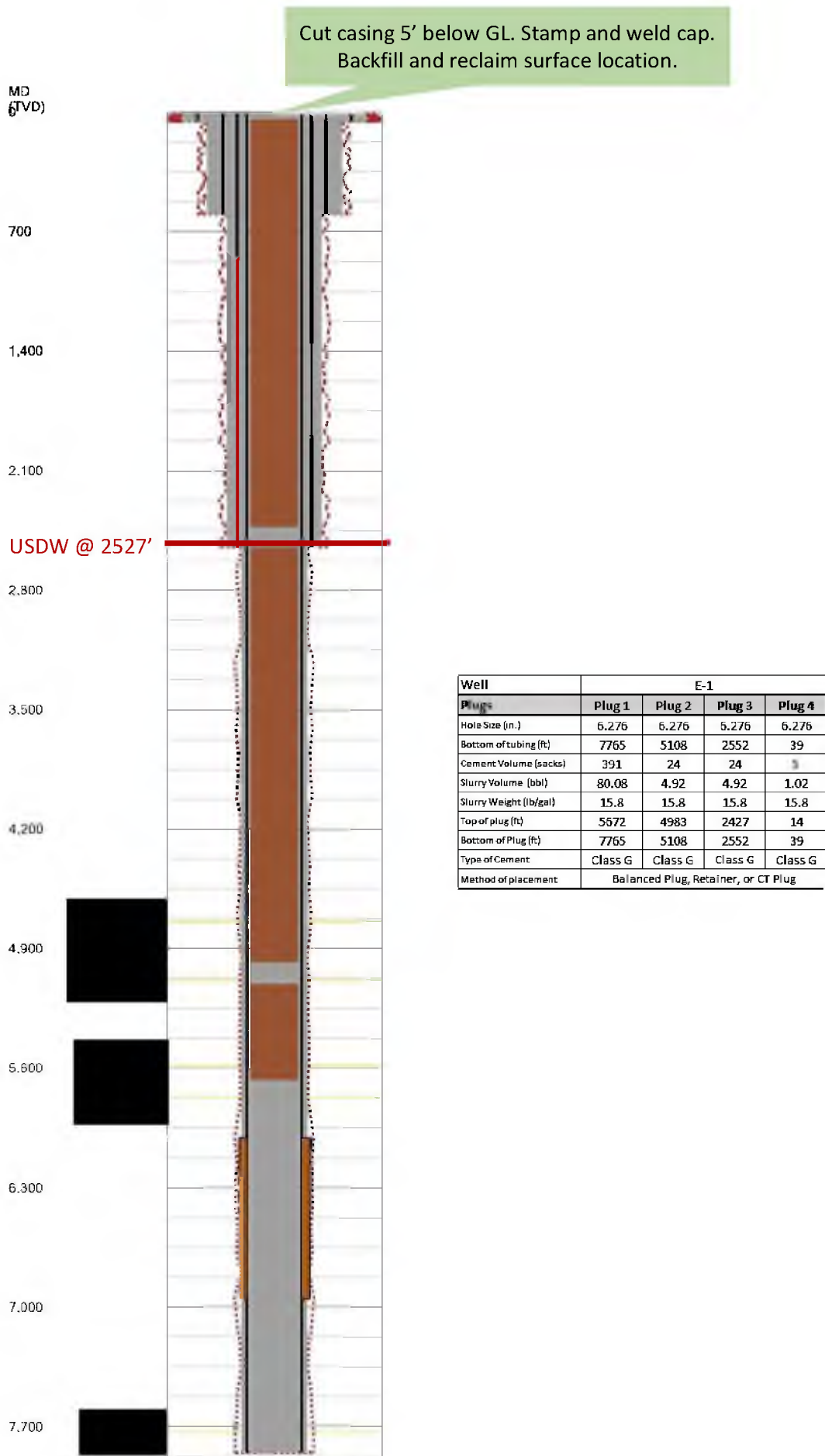


Figure 6. Injection Well E-1, Abandonment Schematic

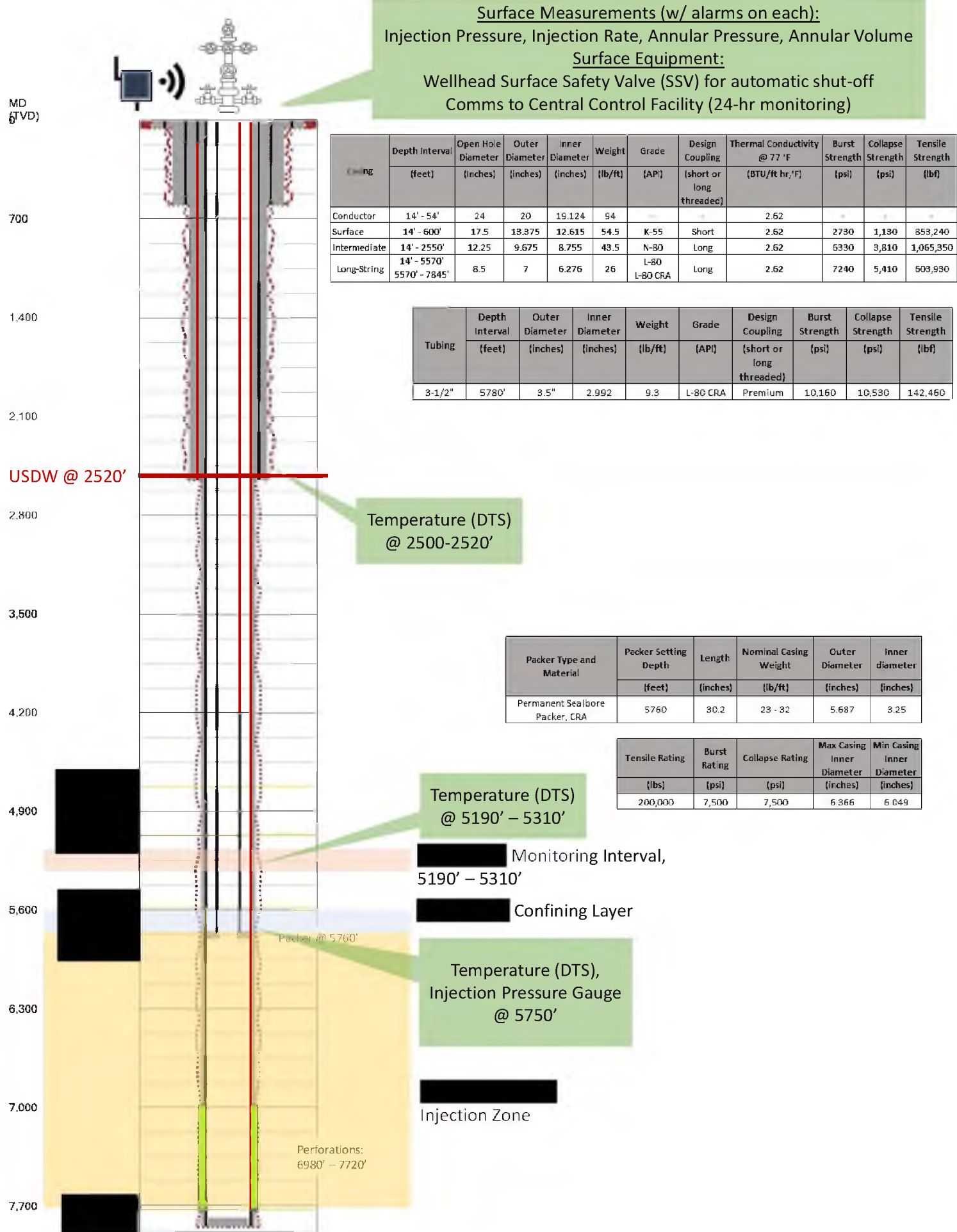


Figure 7. Injection Well E-2, CO₂ Injection Schematic

MD
(TVD)

800

1,600

2,400

USDW @ 2520'

3,200

4,000

4,800

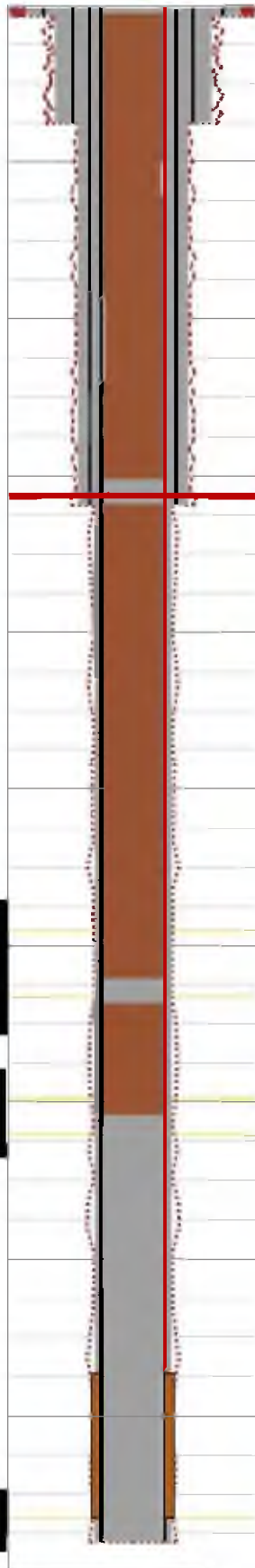
5,600

6,400

7,200

8,000

Cut casing 5' below GL. Stamp and weld cap.
Backfill and reclaim surface location.



Well	E-2			
Plugs	Plug 1	Plug 2	Plug 3	Plug 4
Hole Size (in.)	6.276	6.276	6.276	6.276
Bottom of tubing (ft)	7790	5094	2545	39
Cement Volume (sacks)	397	24	24	5
Slurry Volume (bbl)	81.31	4.92	4.92	1.02
Slurry Weight (lb/gal)	15.8	15.8	15.8	15.8
Top of plug (ft)	5668	4969	2420	14
Bottom of Plug (ft)	7790	5094	2545	39
Type of Cement	Class G	Class G	Class G	Class G
Method of placement	Balanced Plug, Retainer, or CT Plug			

Figure 8. Injection Well E-2, Abandonment Schematic

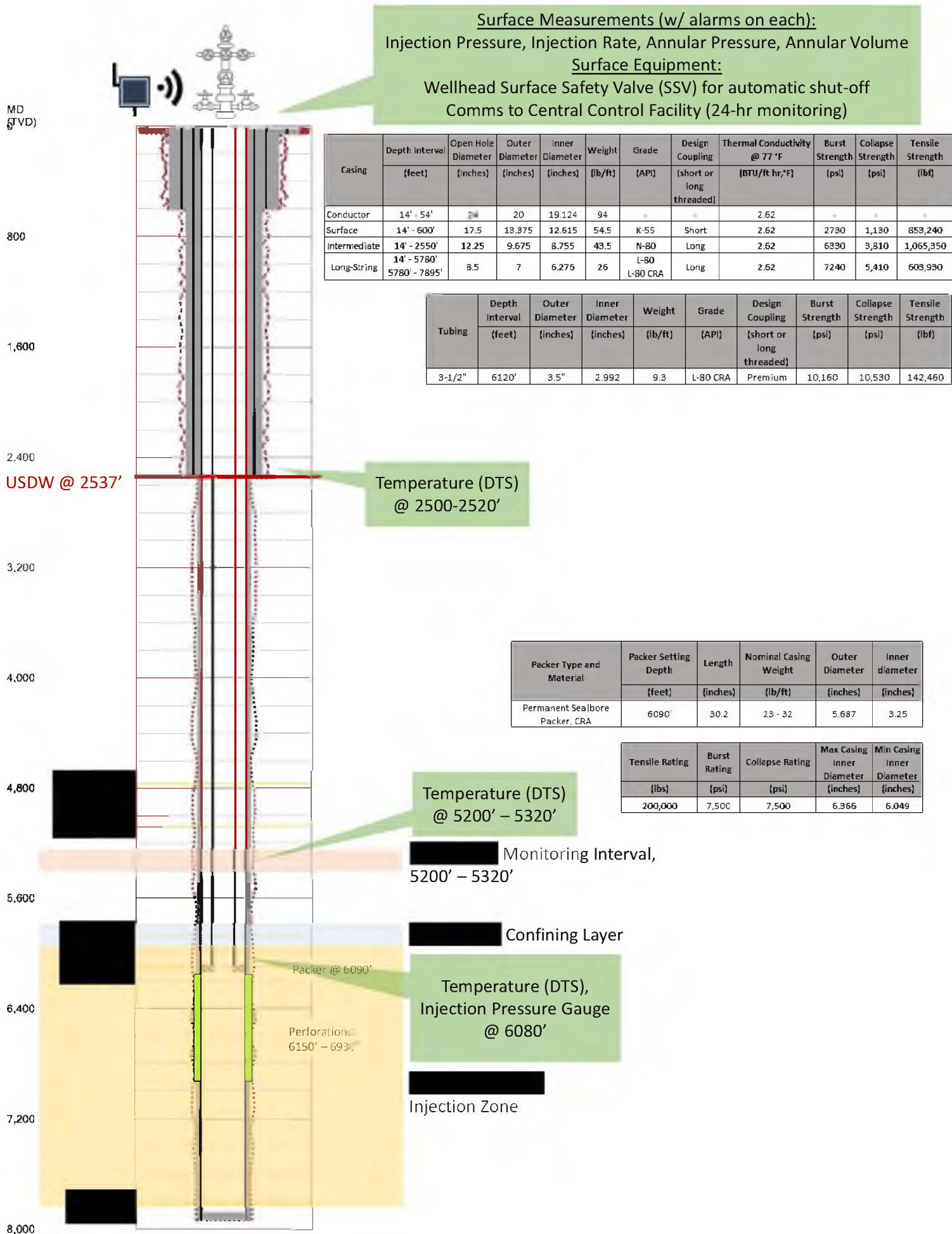


Figure 9. Injection Well W-1, CO₂ Injection Schematic

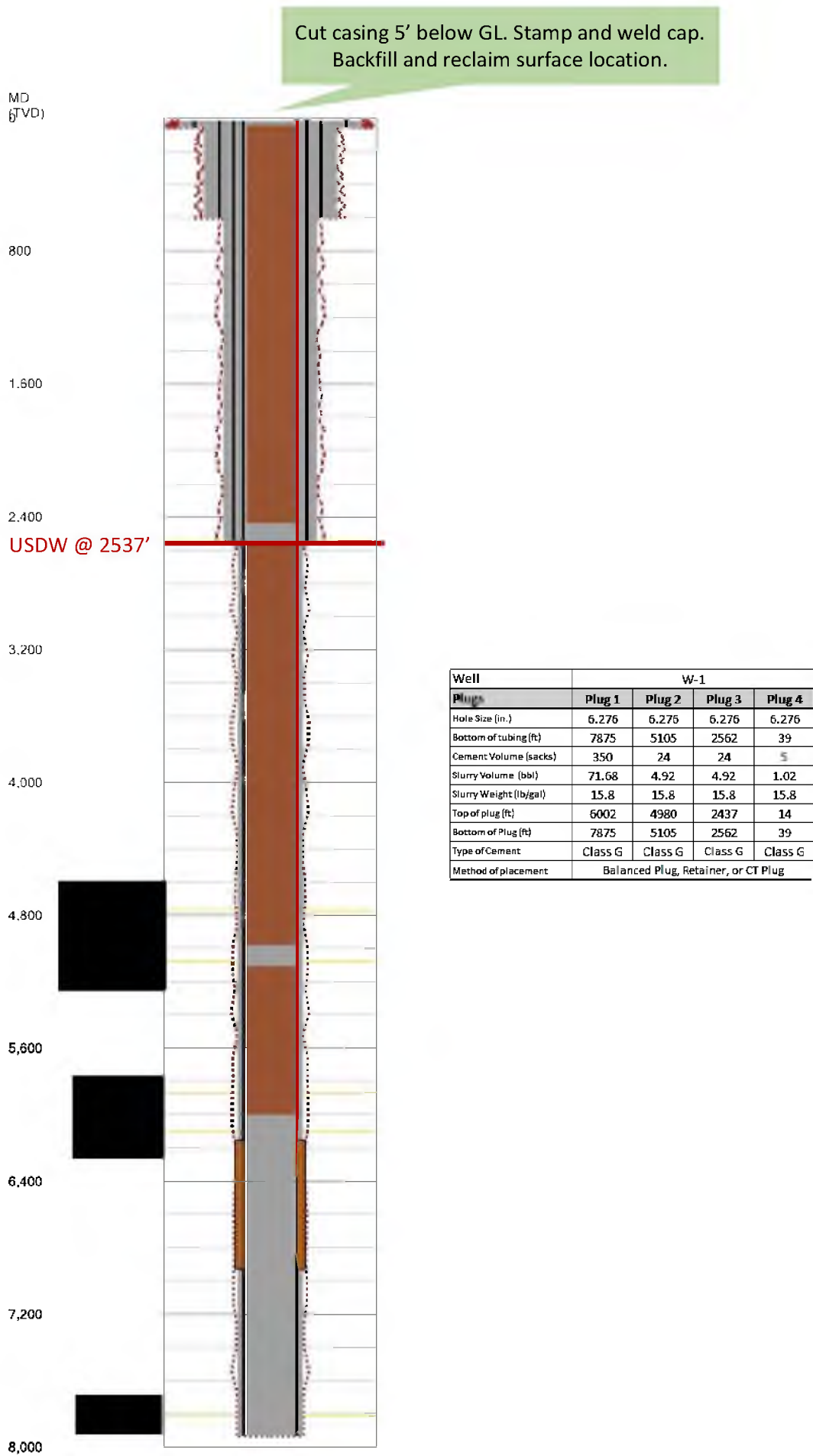


Figure 10. Injection Well W-1, Abandonment Schematic

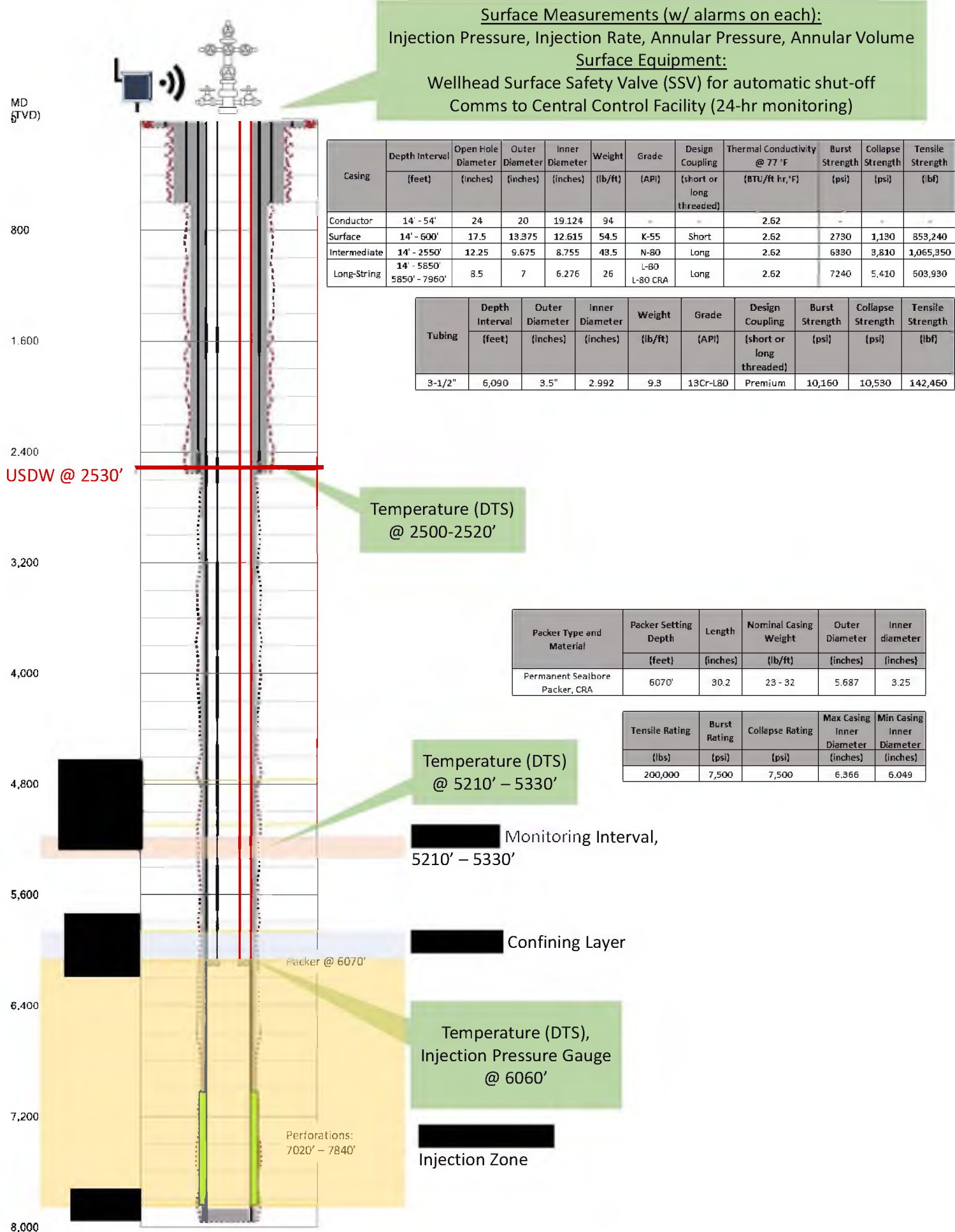


Figure 11. Injection Well W-2, CO₂ Injection Schematic

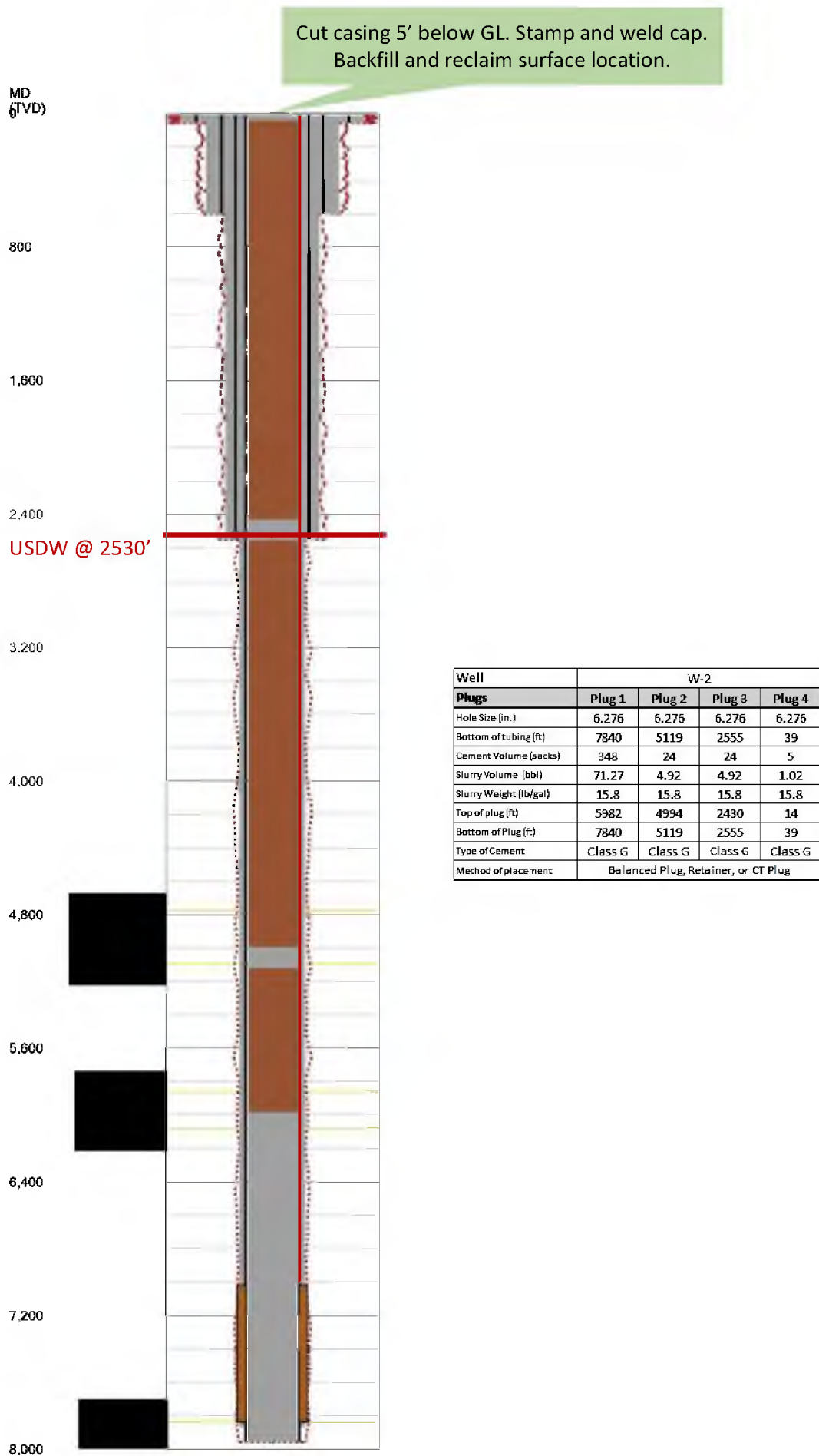


Figure 12. Injection Well W-2, Abandonment Schematic

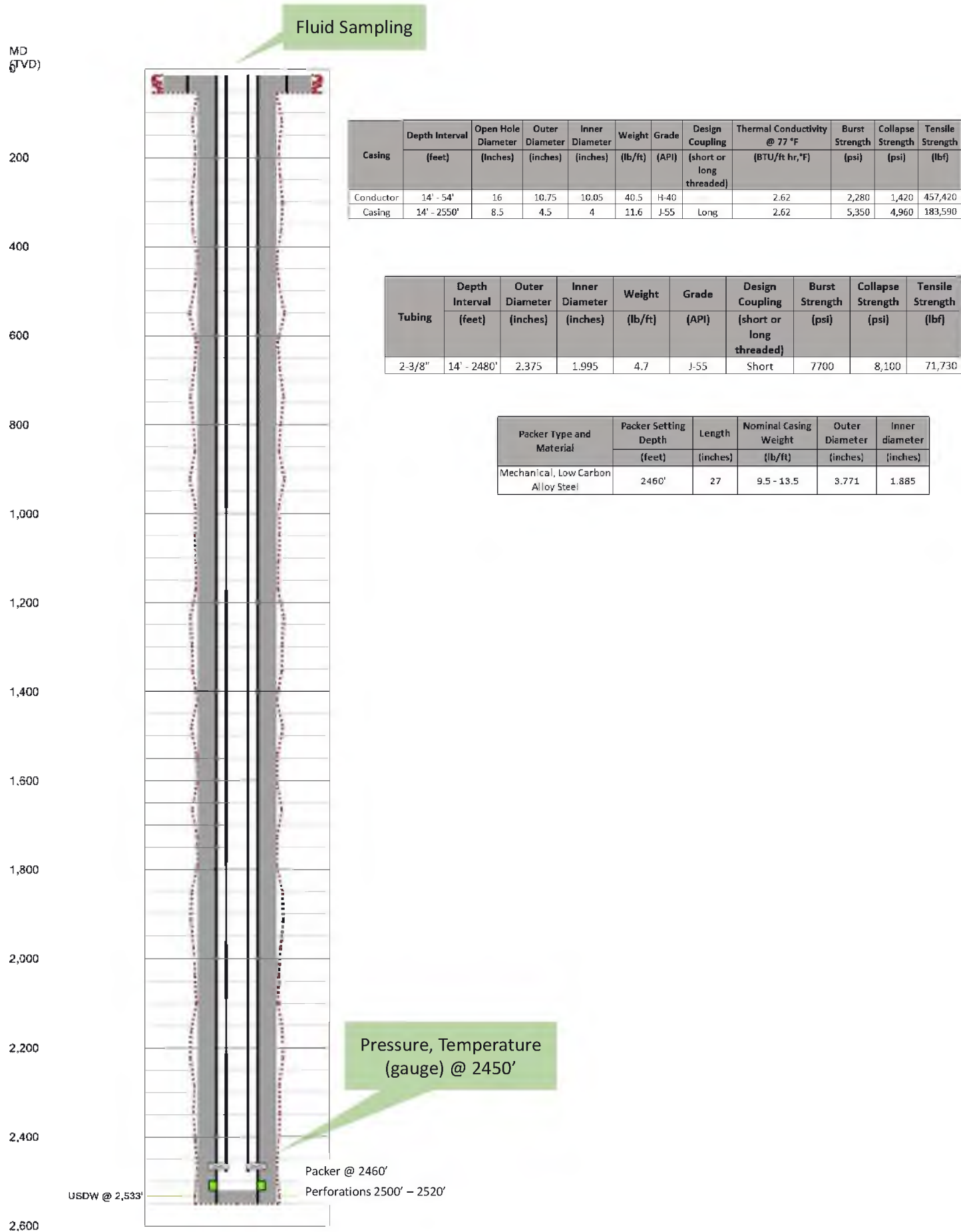


Figure 13. USDW Monitoring Well – US-1, Proposed Monitoring Schematic

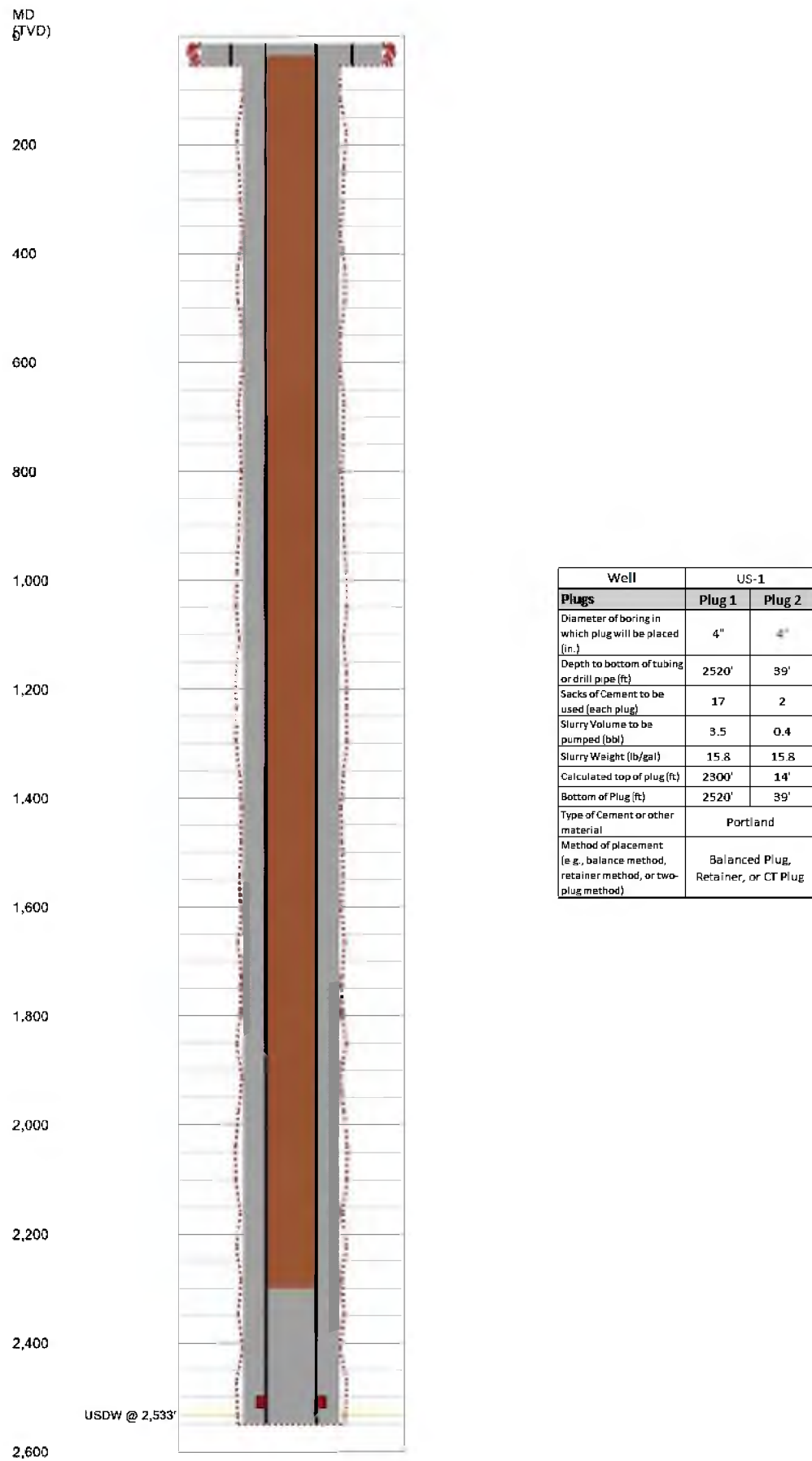


Figure 14. USDW Monitoring Well – US-1, Proposed Abandonment Schematic

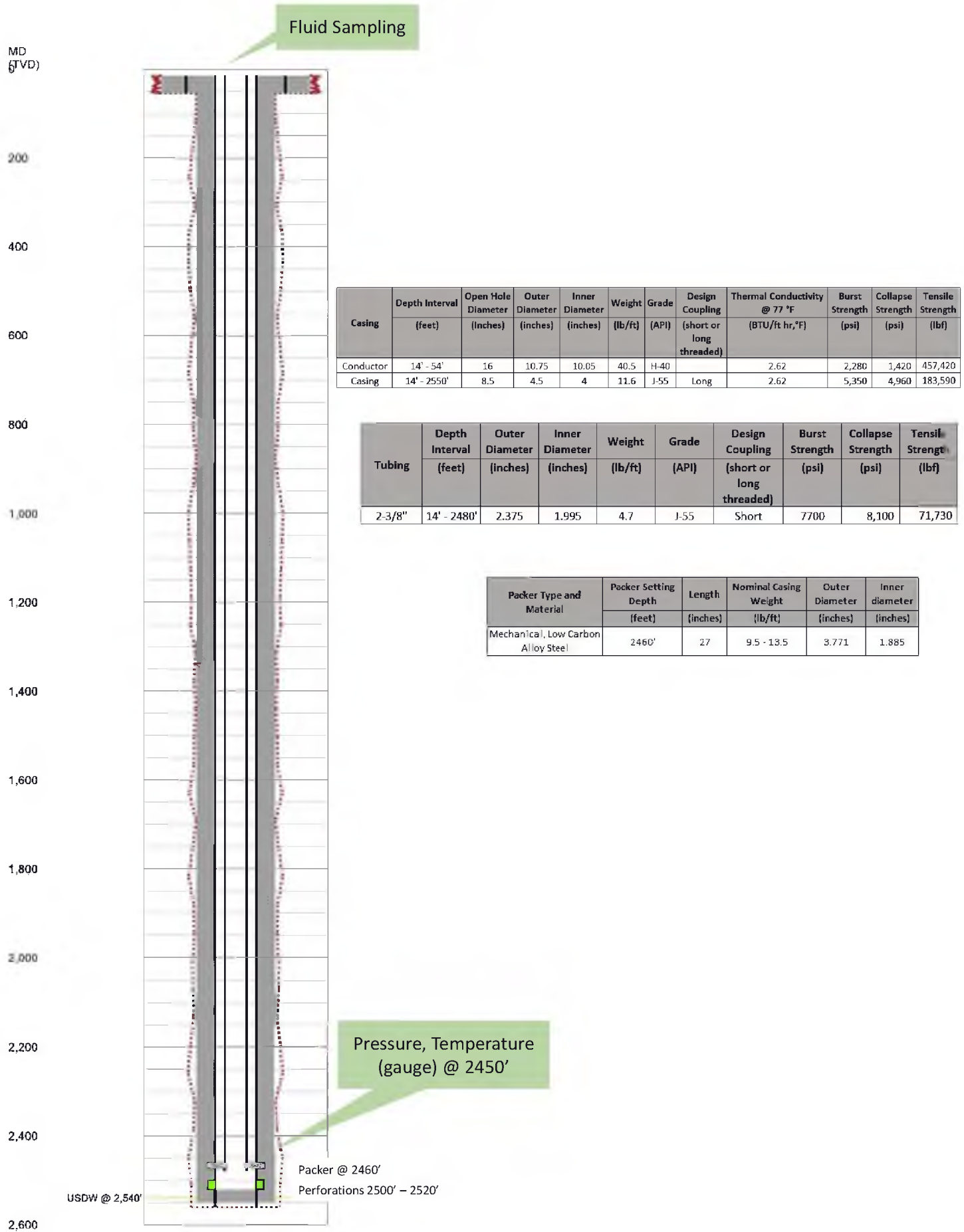
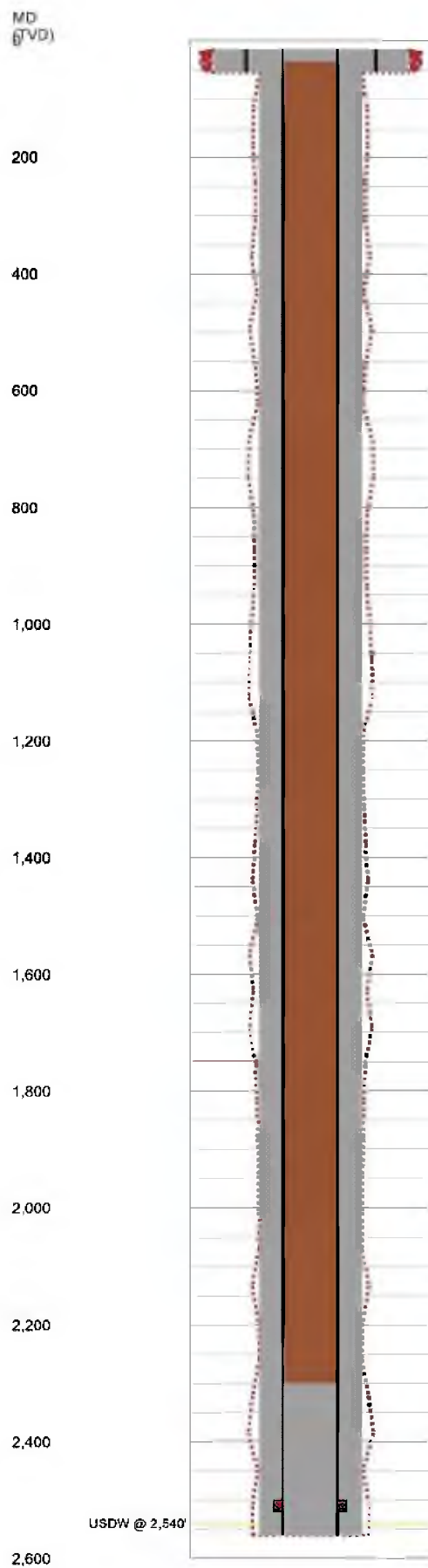


Figure 15. USDW Monitoring Well – US-2, Proposed Monitoring Schematic



Well	US-2	
Plugs	Plug 1	Plug 2
Diameter of boring in which plug will be placed (in.)	4"	4"
Depth to bottom of tubing or drill pipe (ft)	2520'	39'
Sacks of Cement to be used (each plug)	17	2
Slurry Volume to be pumped (bbl)	3.5	0.4
Slurry Weight (lb/gal)	15.8	15.8
Calculated top of plug (ft)	2300'	14'
Bottom of Plug (ft)	2520'	39'
Type of Cement or other material	Portland	
Method of placement (a.g., balance method, retainer method, or two-plug method)	Balanced Plug, Retainer, or CT Plug	

Figure 16. USDW Monitoring Well – US-2, Proposed Abandonment Schematic

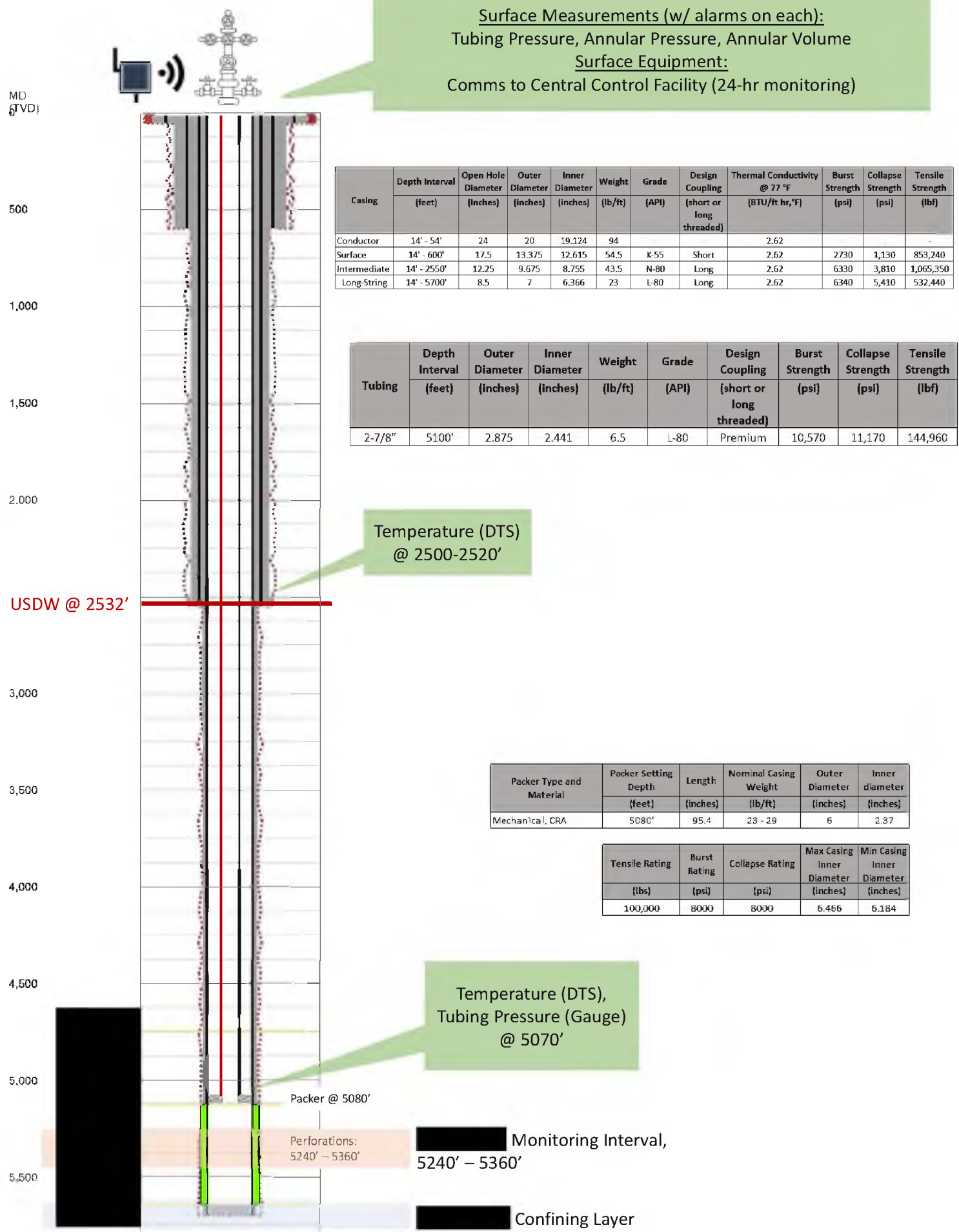


Figure 17. Monitoring Well D-1, Monitoring Schematic

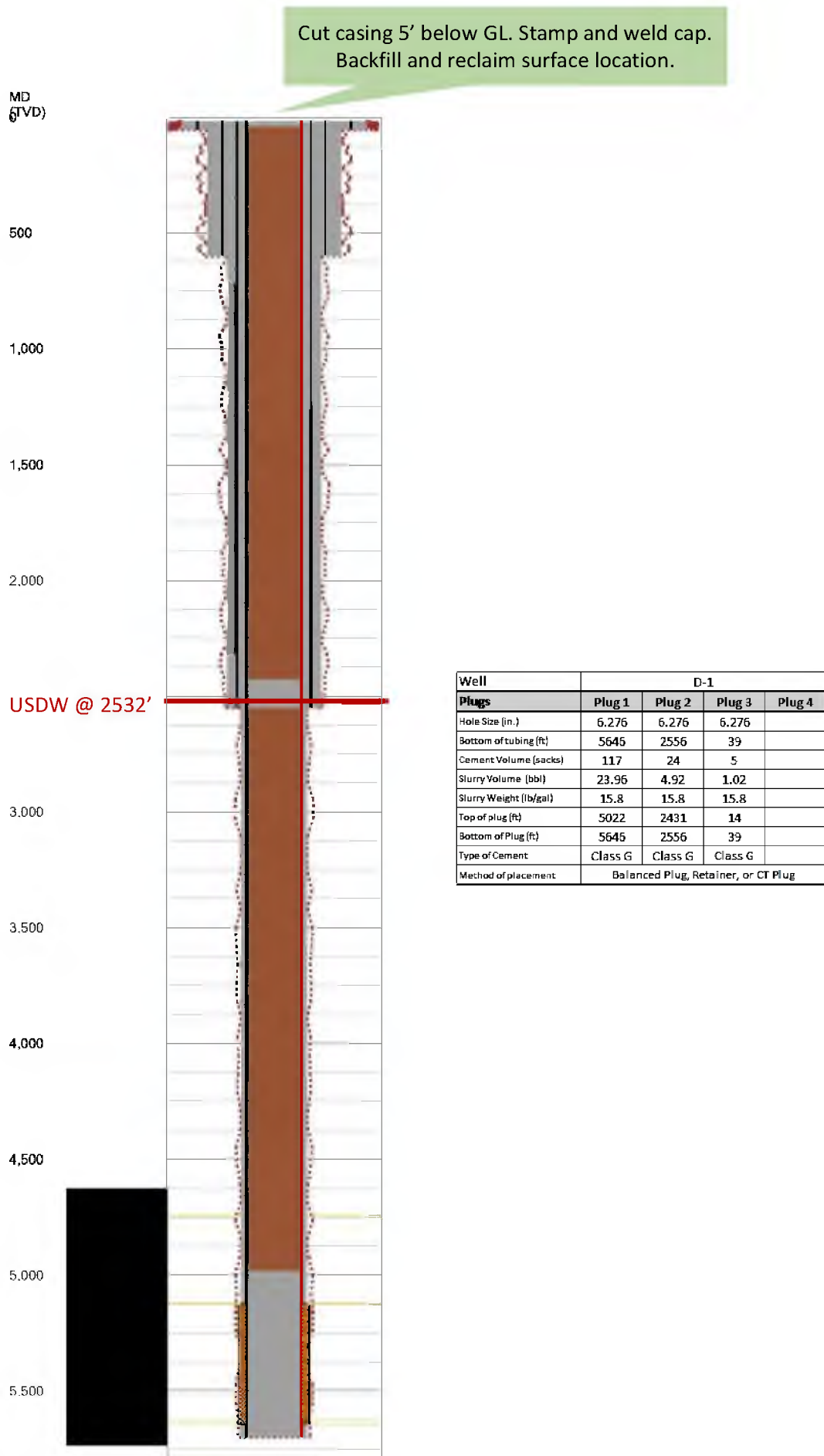


Figure 18. XXXXXXXXXX Monitoring Well D-1, Abandonment Schematic

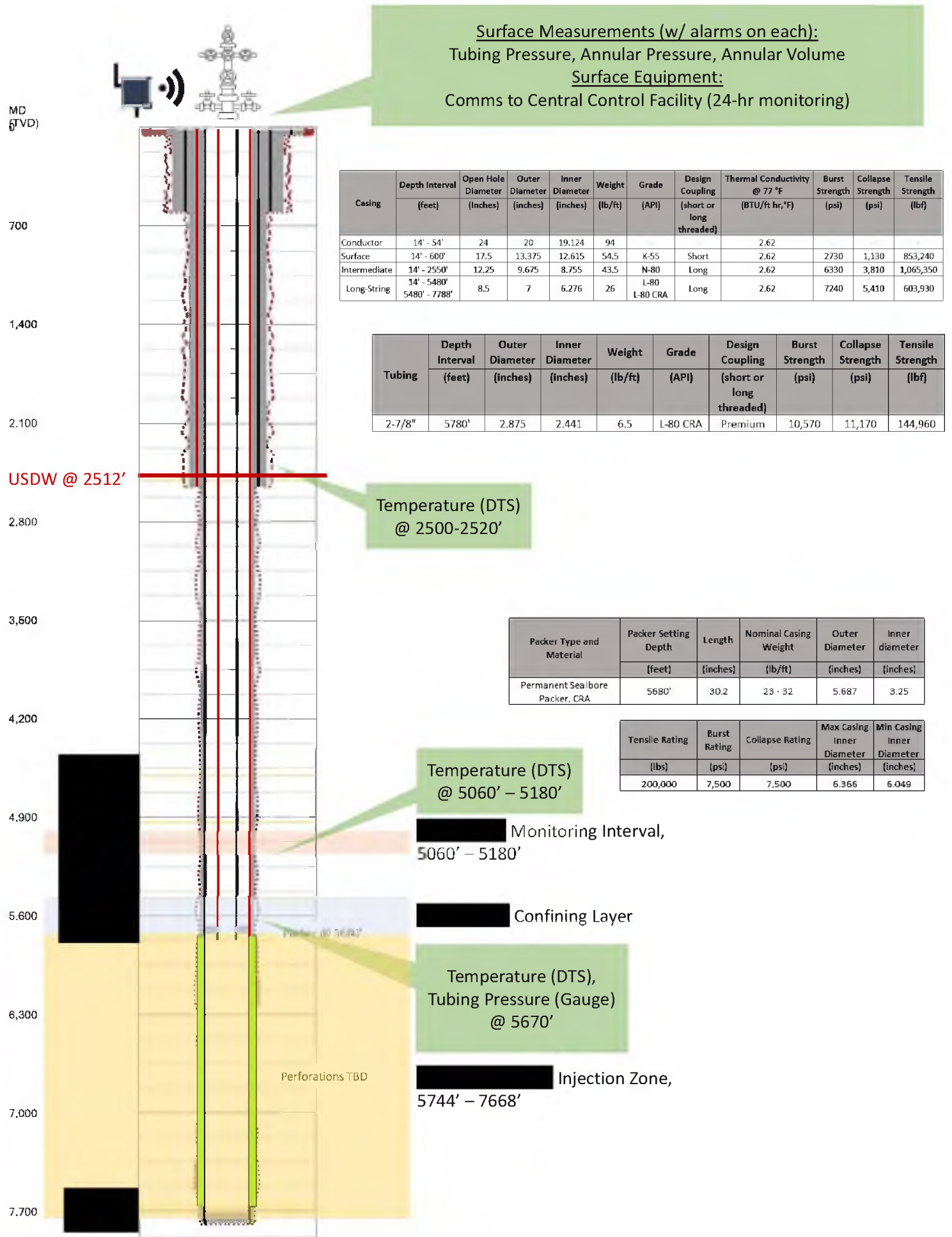


Figure 19. Monitoring Well M-1, Monitoring Schematic

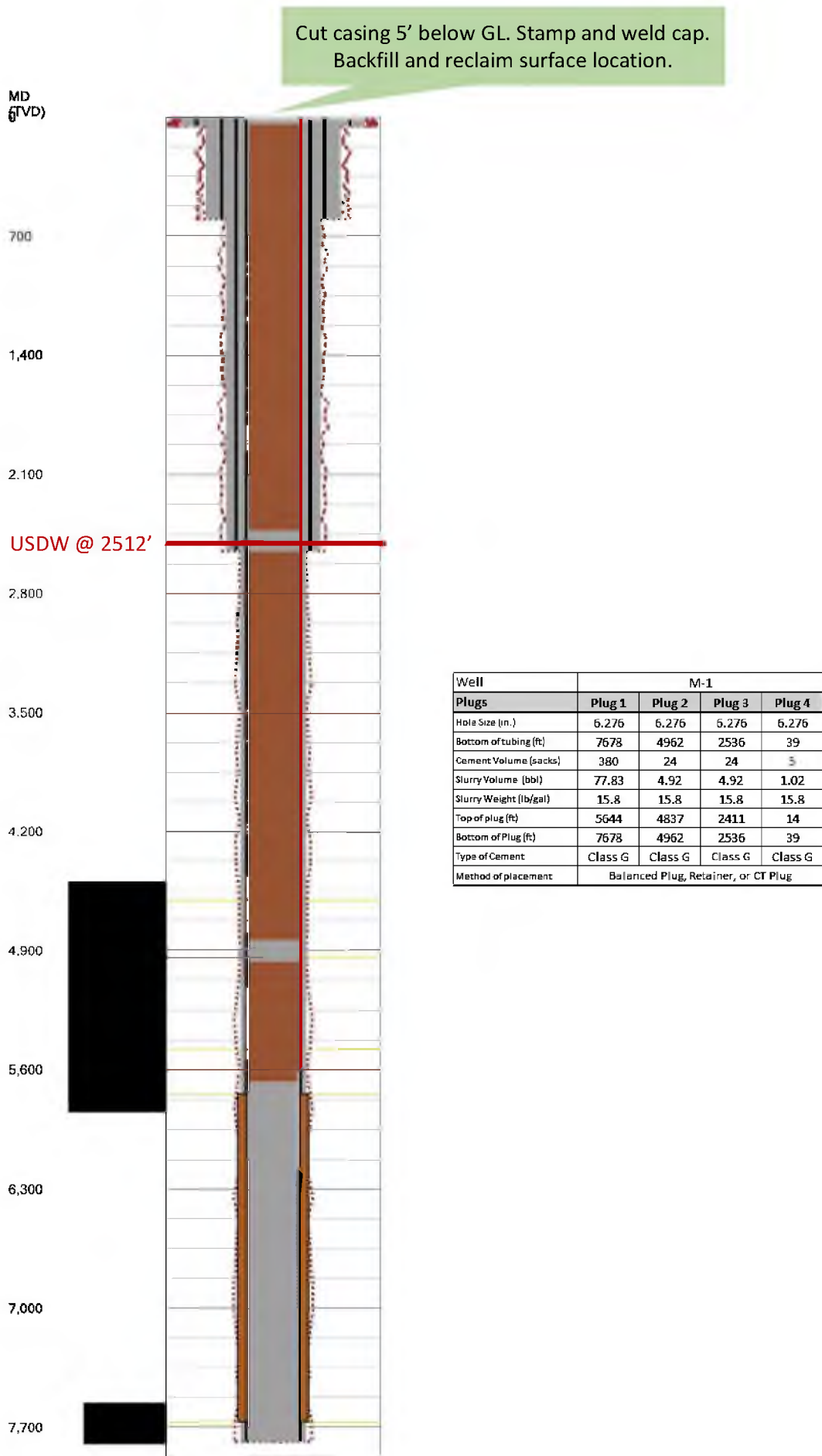


Figure 20. [REDACTED] Monitoring Well M-1, Abandonment Schematic

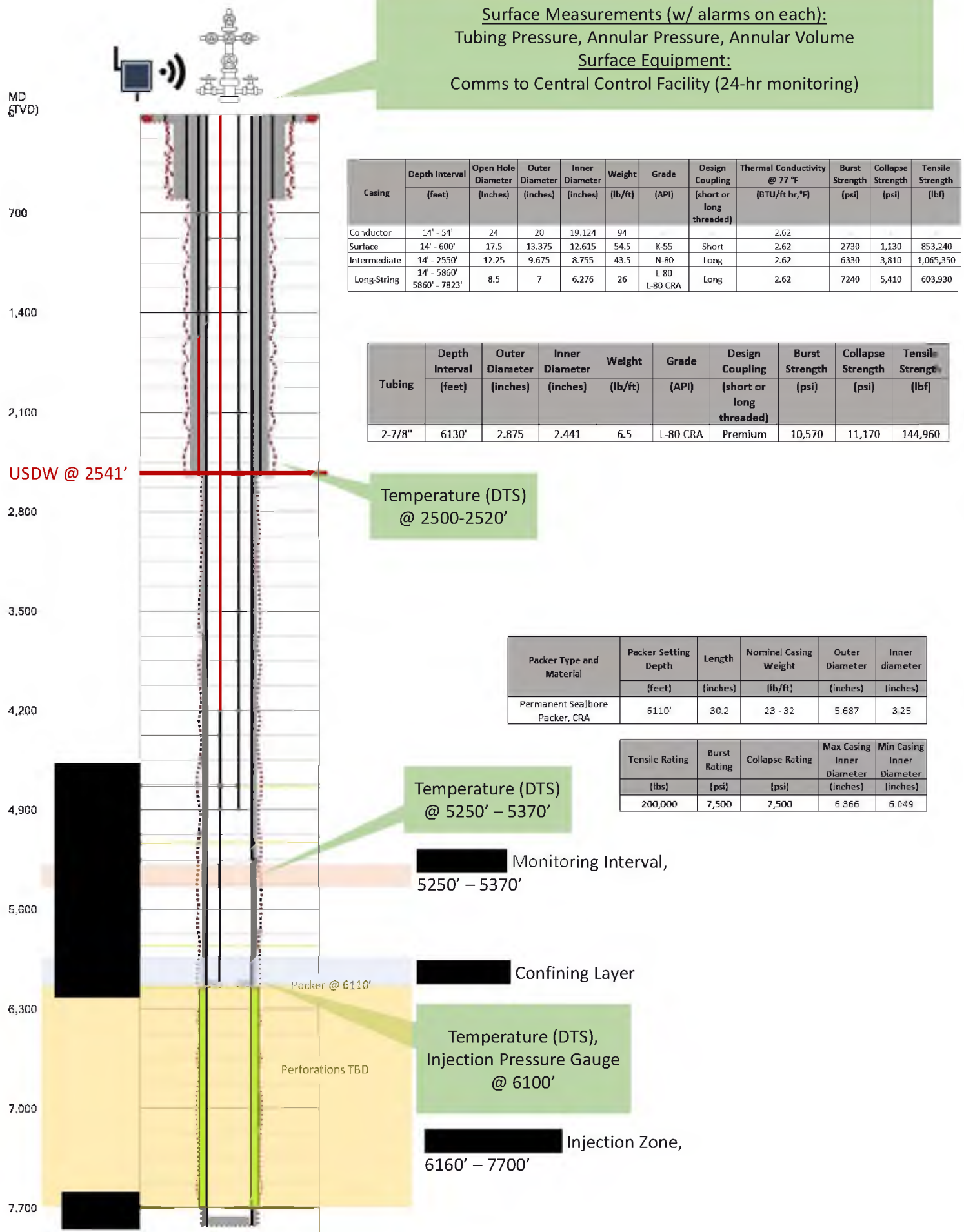


Figure 21. Monitoring Well M-2, Monitoring Schematic

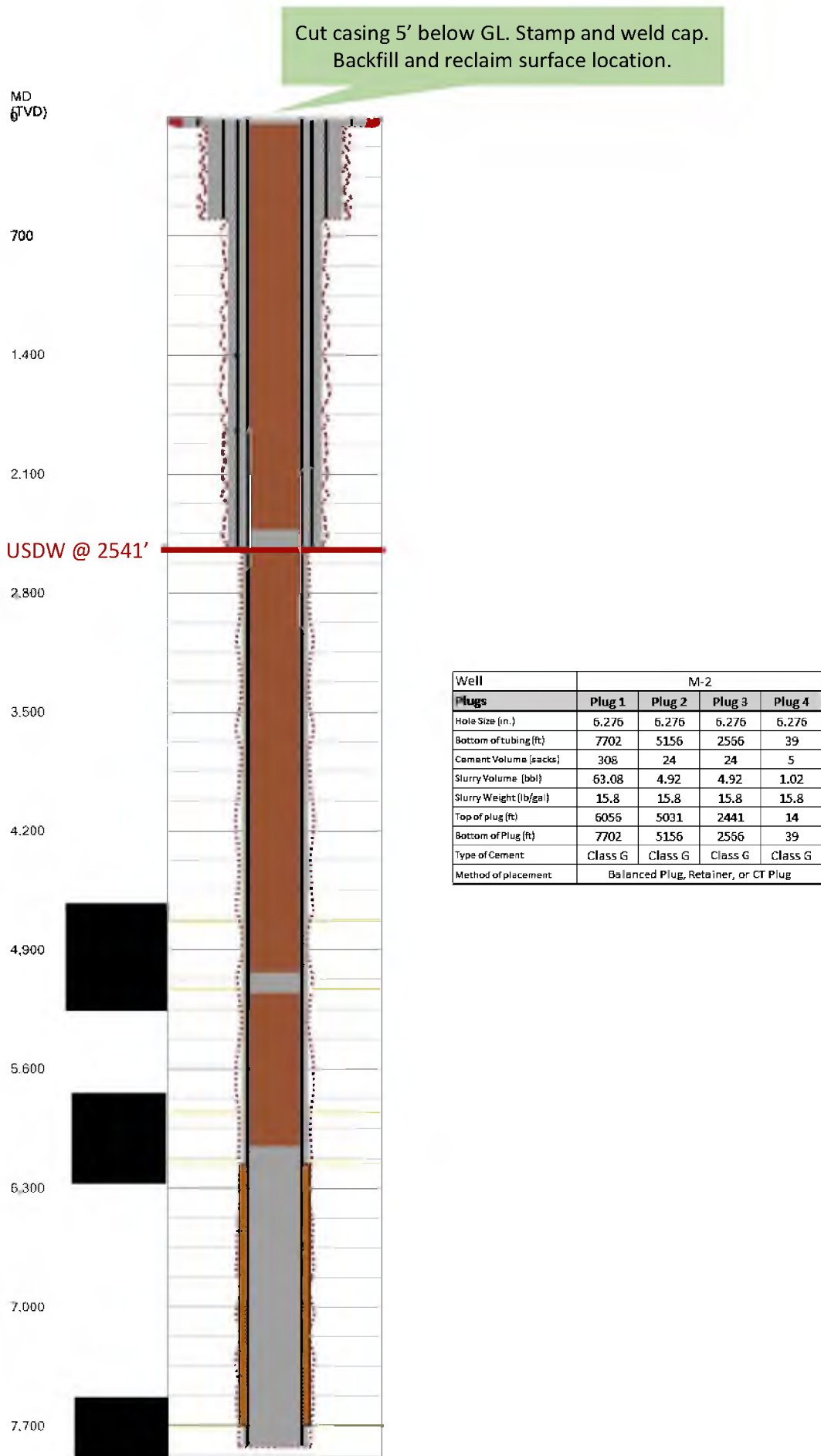


Figure 22. XXXXXXXXXX Monitoring Well M-2, Abandonment Schematic

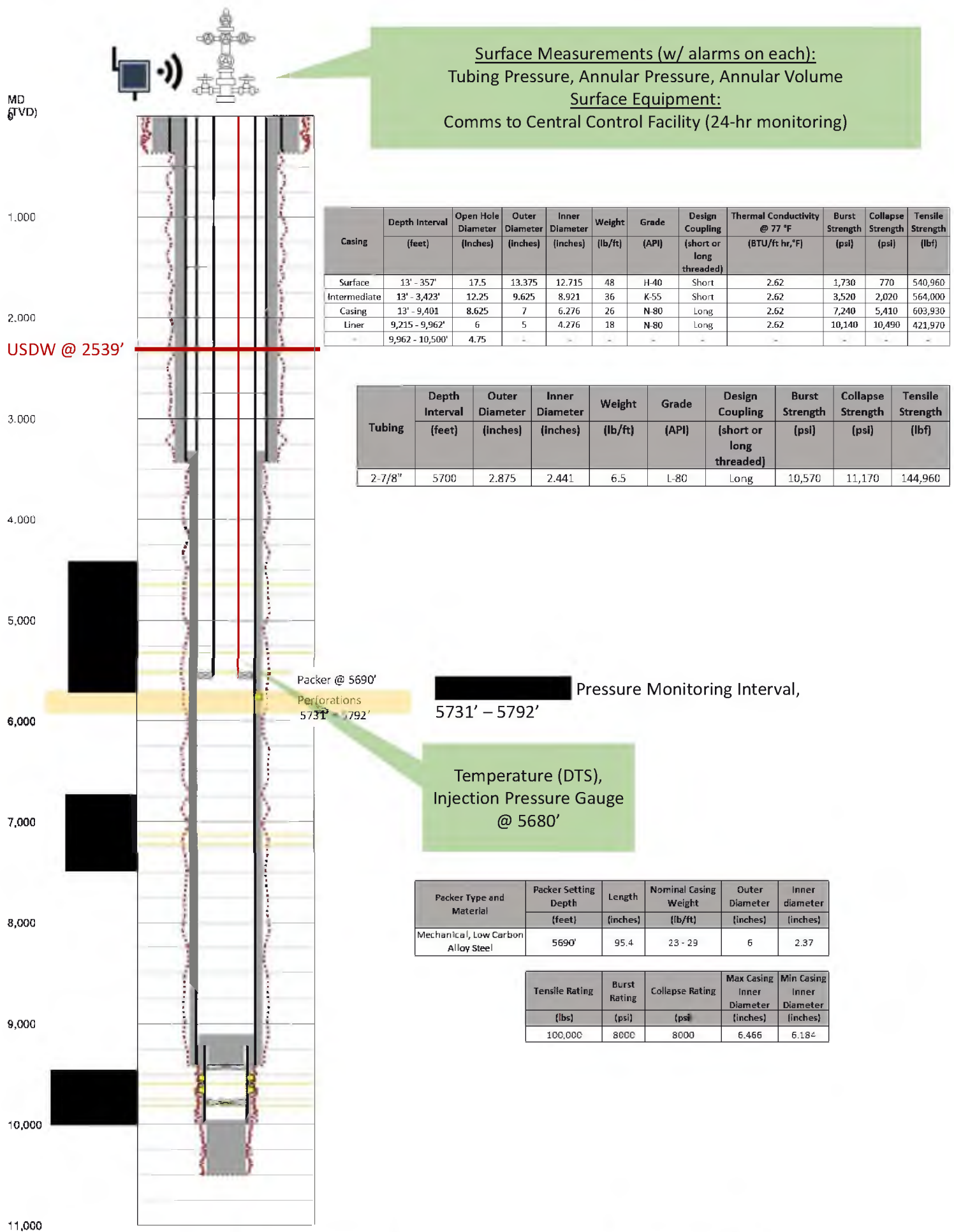


Figure 23. [REDACTED] Pressure Monitoring Well, [REDACTED]
 [REDACTED], Proposed Monitoring Schematic

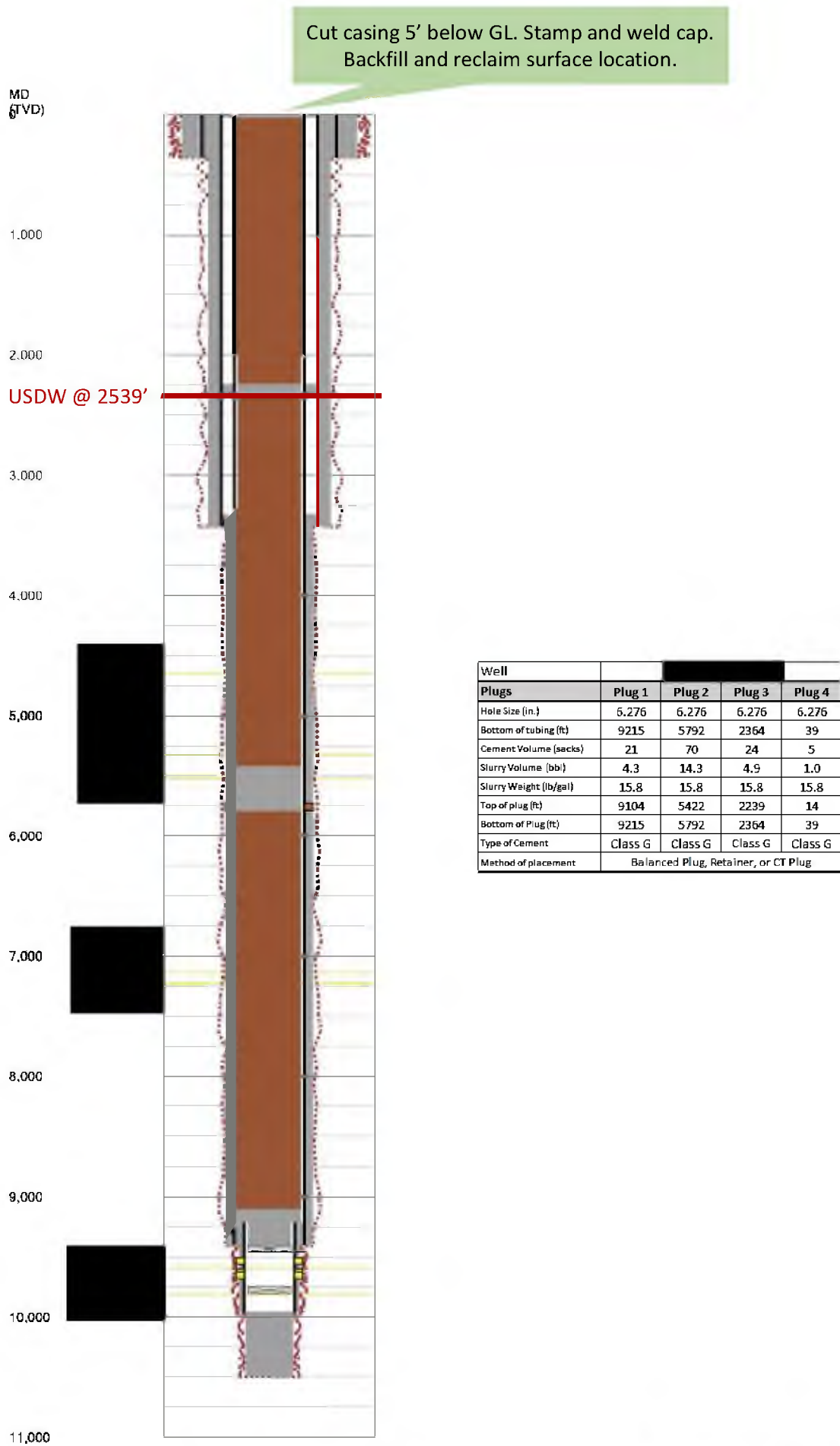


Figure 24. [REDACTED] Pressure Monitoring Well, [REDACTED]
[REDACTED], Proposed Abandonment Schematic