Work Plan to Plug and Abandon Wells 03-B-09 and 03-B-10

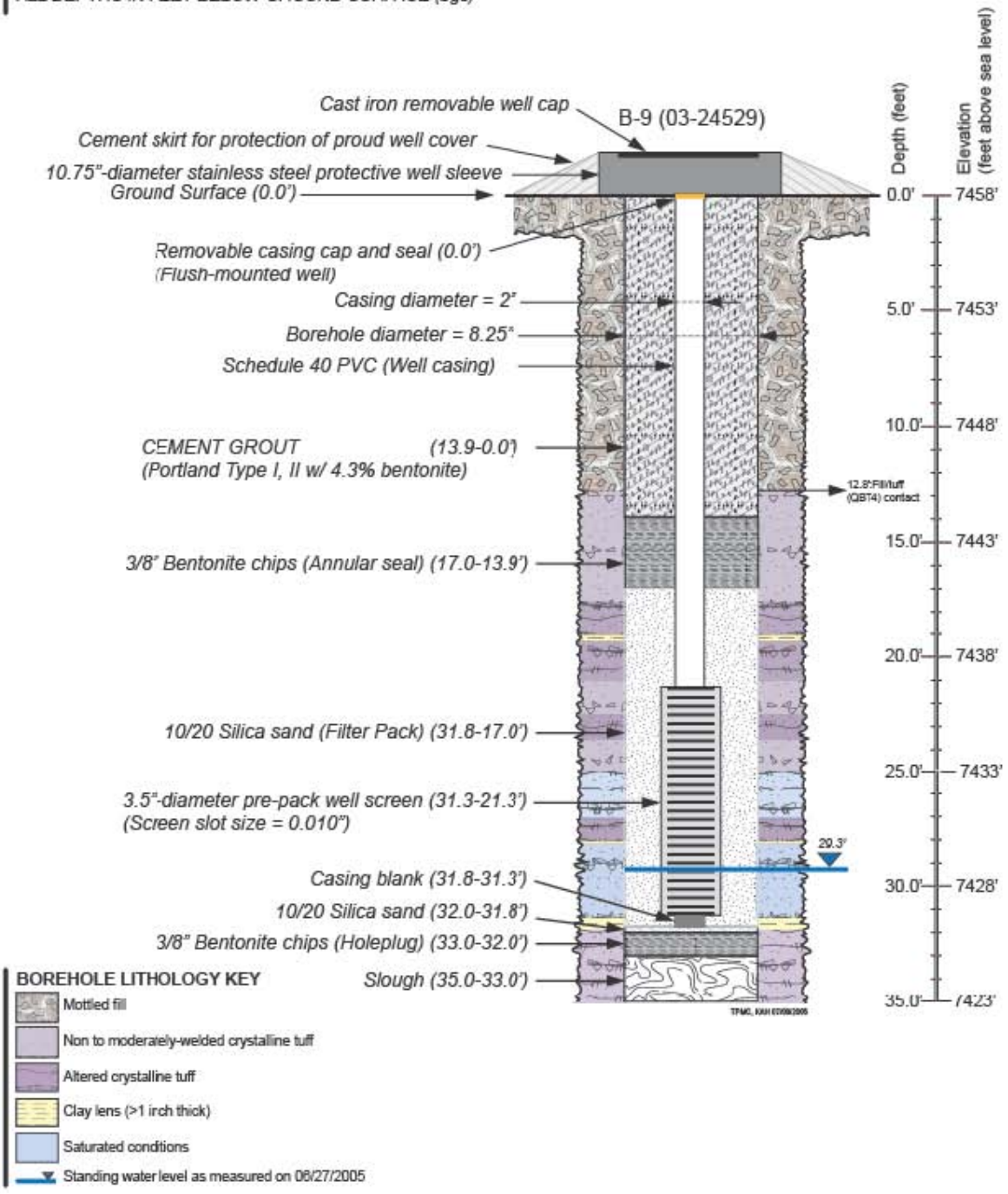
Primary Purpose	This work plan summarizes the methods Los Alamos National Laboratory (the Laboratory) proposes to use to plug and abandon groundwater-monitoring wells 03-B-09 and 03-B-10. Both wells are flush-mounted and located within or along an emergency access road used for fire protection. Because of their location, these wells have been subject to damage by snow plows and have been compromised to the point of being potential conduits for contamination into the subsurface. The purge water from the wells must be managed as mixed low-level waste (MLLW) because of the presence of solvents and tritium in the perched zone they monitor. The Laboratory's standard operating procedure (SOP) for monitoring well and borehole abandonment (EP-ERSS-SOP-5034) states, "if the casing, sampling media, filter pack and annular seal materials cannot, or should not, be removed, leave these materials in place." To minimize generation of MLLW, the Laboratory is proposing pressure-grouting the well materials in place. Well abandonment will be consistent with the requirements and guidelines of the "New Mexico Environment Department Monitoring Construction and Abandonment Guidelines" and the well abandonment goals in Sections IV.B.1.b.v and X.D (Well Abandonment) of the Compliance Order on Consent.
Construction of Wells 03-B-09 and 03-B-10	Groundwater-monitoring wells 03-B-09 and 03-B-10 were installed in June 2005 using hollow-stem auger methods. No drilling fluids were used during installation. Well 03-B-09 is a single-screen well constructed as follows (see attached well completion log): • 0–14 ft below ground surface (bgs): 2-in.-diameter polyvinyl chloride (PVC) casing, grouted in place • 14–17 ft bgs: 2-in.-diameter PVC casing, with a bentonite chip seal • 17–32 ft bgs: 3.5-in.-diameter prepack filter pack with 10-ft schedule 40 PVC screen (2-in.-diameter, 0.010-in. slot size, and 10/20 silica sand). A 0.5-ft PVC blank was used at the bottom of the well. Well 03-B-10 is a single-screen well constructed as follows (see attached well completion log): • 0–13 ft bgs: 2-in.-diameter PVC casing, grouted in place • 13–16 ft bgs: 2-in.-diameter PVC casing, with a bentonite chip seal • 16–31 ft bgs: 3.5-in.-diameter prepack filter pack with 10-ft schedule 40 PVC screen (2-in.-diameter, 0.010-in. slot size, and 10/20 silica sand). A 0.5-ft PVC blank was used at the bottom of the well.
Abandonment Methods	Before the wells are abandoned, transducers will be removed from the wells. To plug and abandon wells 03-B-09 and 03-B-10, both the screened and cased intervals will be pressure-grouted. Because of the small diameter and shallow depths of the wells, the grouting pump will be coupled directly to the casing to force grout into the screened interval. Both the calculated and the actual volume of grout will be recorded to ensure no bridging occurs during the operation.
Surface Completion	Once the wells have been pressure-grouted to within 2.5 ft of ground surface, the near-surface (less than 1 ft bgs) portions of the well (i.e., manhole, plug, and top 0.5 ft of casing) will be removed to allow for repair of the asphalt fire lane where the well is located. The well will then be cemented to within 0.5 ft of the ground surface. Cold-patch asphalt will be used to fill the last 0.5 ft to the surface to match the existing grade of the fire lane.

Waste Disposal	No sampling will take place during plugging and abandonment of these wells. The intent is to leave all materials in the subsurface under the emergency fire lane, with the exception of the near-surface portions, which must be removed to repair the fire lane. If it can be shown these materials have not come in contact with site contamination, they will be disposed of as industrial waste based on acceptable knowledge (AK). If the surface completion materials cannot be adequately characterized using AK, they will be disposed of in accordance with the waste characterization strategy form that applies to this activity.	
Summary Report	A brief report will be prepared detailing the methods used to plug and abandon wells 03-B-09 and 03-B-10 and providing the final abandonment configuration.	
Schedule of Activities	**Activity**	**Schedule**
	Complete plugging and abandoning of two wells by pressure-grouting in place	Within 60 days of NMED approval of plan
	Submit report to NMED	Within 30 days of well abandonment

BOREHOLE/WELL CONSTRUCTION AND COMPLETION LOG
SWMU 03-010(a) and SWMU 03-001(e) RFI Investigation

BOREHOLE ID:	03-24529 (B-9)	Technical Area (TA): 03-010(a)	Field Team Leader: G. Stoopes
DRILLING COMPANY: Spectrum Exploration	START DATE/TIME: 06/02/2005:1500	FINISH DATE/TIME: 06/03/2005:0950	

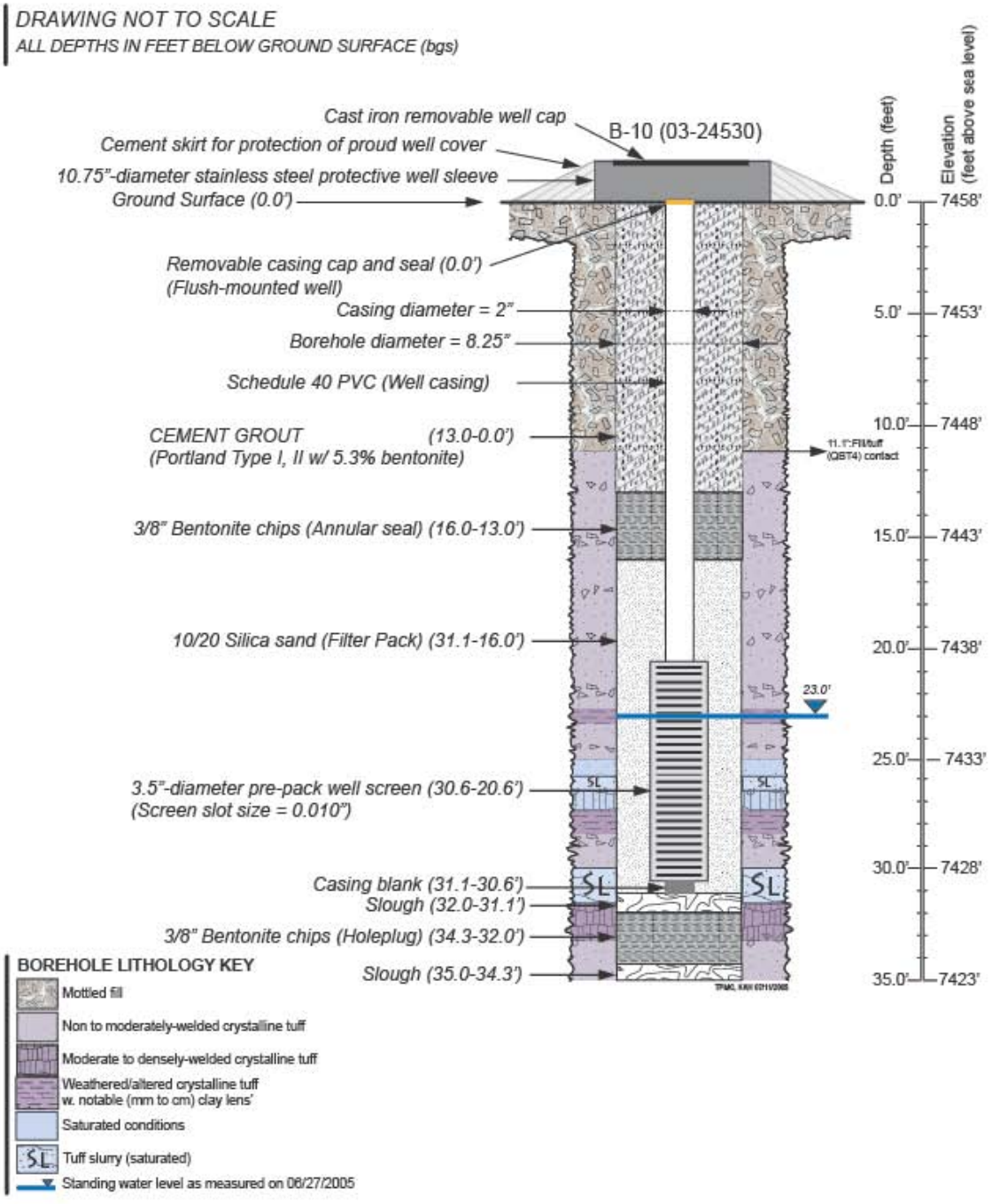
DRAWING NOT TO SCALE
ALL DEPTHS IN FEET BELOW GROUND SURFACE (bgs)



BOREHOLE/WELL CONSTRUCTION AND COMPLETION LOG
SWMU 03-010(a) and SWMU 03-001(e) RFI Investigation

BOREHOLE ID:	03-24530 (B-10)	Technical Area (TA):	03-010(a)	Field Team Leader: G. Stoopes
DRILLING COMPANY: Spectrum Exploration	START DATE/TIME: 06/03/2005:1502		FINISH DATE/TIME: 06/04/2005:1200	

DRAWING NOT TO SCALE
ALL DEPTHS IN FEET BELOW GROUND SURFACE (bgs)



BOREHOLE LITHOLOGY KEY

- Mottled fill
- Non to moderately-welded crystalline tuff
- Moderate to densely-welded crystalline tuff
- Weathered/altered crystalline tuff w. notable (mm to cm) clay lens'
- Saturated conditions
- SL Tuff slurry (saturated)
- Standing water level as measured on 06/27/2005