west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

March 25, 2015

HARPER, HAYDEN ENERGY KA, LLC
1001 MOOREHEAD SQUARE DRIVE - SUITE 350
CHARLOTTE, NC 28203

Re: Permit Modification Approval for API Number 10901466, Well #: PLC 35
REVISED WORK ORDER

Oil and Gas Operator:
The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith gmm

Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

NEED 4/11/15 10901466P
MODIFICATION

REVISED WORK ORDER
PLC #35
47-109-01466

PROPOSED PLUGGING PROCEDURE

1. Prepare plugging permit application.

2. Certify to surface and coal owners.

3. Certify to designated State inspector for signature.

4. Once all signatures are obtained, copy for our records and certify to Jeff at the State Office for approval.

5. Receive plugging permit good for 2 years.

6. Notify the designated State inspector 24 hours prior to commencing operations.

7. Take equipment to location and begin prepping for plug.

8. Rig up

9. Verify total depth of 2336' CASING @ 2336' TD WAS 2397

10. Attempt to clean out well bore to original depth, if needed.

11. Run E-log (caliper, deviation, density, and gamma) to determine the location of the lowest mineable coal bed.

12. Run tubing to TD. Set first plug with 71 sacks of Class A cement with no more than 3% CaCl2 and no other additives from TD up to 1344'. (This covers bottom, pay zones, and elevation)

13. Pull tubing back, wait 8 hours

14. Run in and tag plug, add cement if needed.

15. Run 3 sacks of 6% Bentonite gel from 1344' up to 950'.

16. Begin looking for free point, according to state record WR-35 cement fill up should be about 900', severe 4 1/2.

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17. If the well bore still produces gas, a mechanical bridge plug shall be placed in the well bore in a competent stratum at least 200' below the lowest mineable seam of coal but above the uppermost hydrocarbon producing zone.

18. Run tubing to 950' and run 52 sacks of f expandable cement slurry down the tubing to displace the gel from 950' up to 640' (casing severe, 200' below POCA 3 coal seam, 100' above and 7" casing shoe) *** SEE #21

19. Pull tubing back, wait 8 hours

20. Run in and tag plug, add cement if needed.

21. No need to mill because there is no casing through zone, there is nothing to perforate, all pipe is either removed or above POCA 3 coal seam area.

22. Run 5 sack of 6% Bentonite gel from 640' up to 100'.

23. Run tubing to 100' and run ~~19~~ 40+ sacks of Class A cement with no more than 3% CaCl2 and no other additives from ~~100'~~ 268' → MATCH TO SCHEMATIC PLUG #3 up to surface. (surface)

24. Solidify pit if necessary with more cement and lime, then bury.

25. Set 6" x 12.5" steel pipe with concrete with 1/2" API identification.

26. Rig down, and move equipment out.

27. Reclaim location

28. Prepare WR-34 & WR-38 for permit release.

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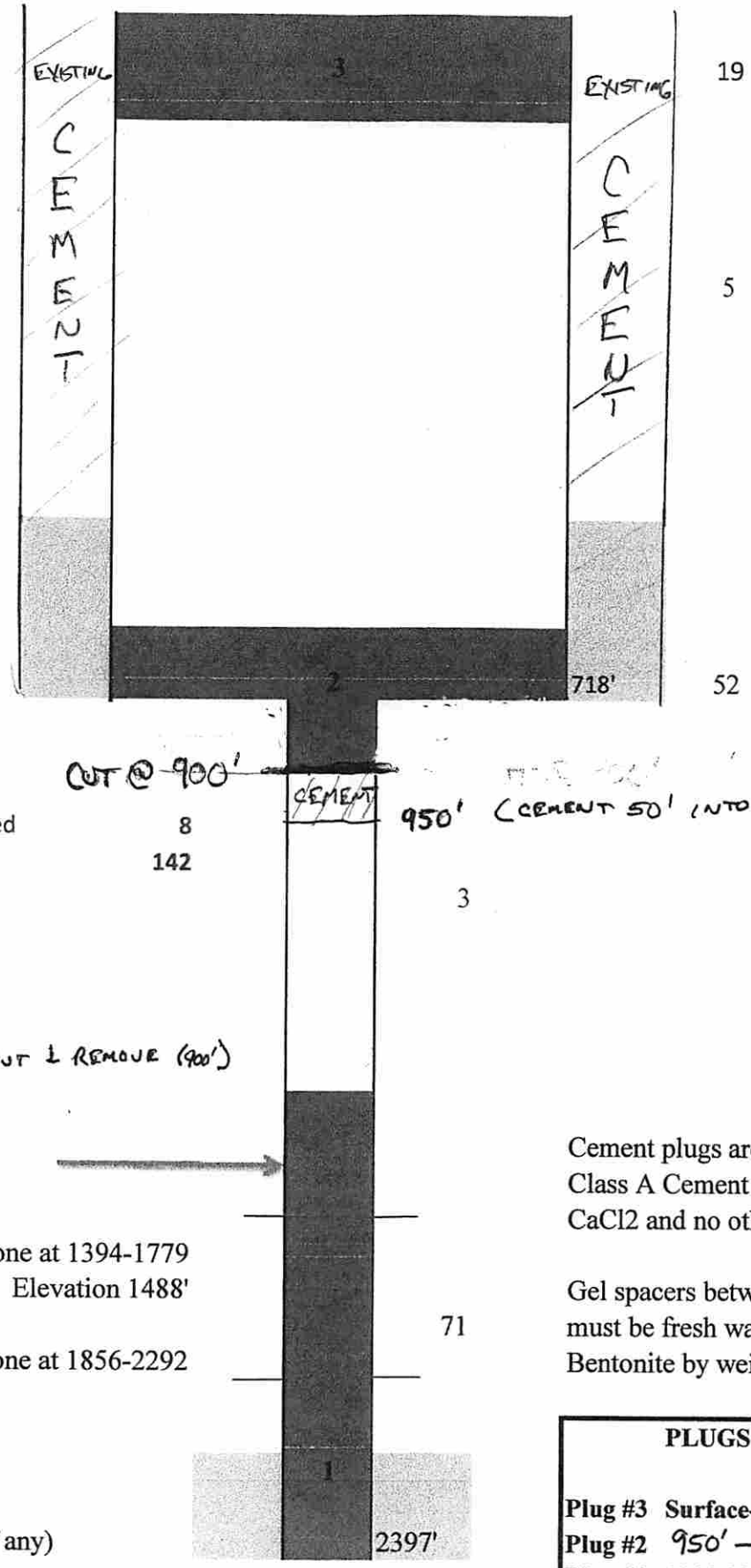
47-109-01466



50lb sacks of 6% gel used	8
100lb sacks of cement	142

Cement plugs are at a minimum of 100' Class A Cement with no more than 3% CaCl2 and no other additives.

Gel spacers between all cement plugs must be fresh water with at least 6% Bentonite by weight

: Cement
: Gel
_____ :Bridge Plug (if any)

PLUGS

Plug #3 Surface-268 Coal & Surface
Plug #2 950' — 640'
Plug #1 1344-2397 bottom, pay, elev. Rip