



February 27, 2015

NGL Water Solutions
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NGL C5

Weld County, CO

SW SW Sec. 29 – T2N – R64W

Surface Cementing Procedure-Rev 1

Directions: Take I-76 East towards Keenesburg. Take exit 34 and turn south onto County Road 49. Take immediate NorthEast left onto I-76 frontage road and follow for 1.1 miles, turn south onto County Road 51 and head south for .3 miles. Turn east onto County Road 16. Follow CR 16 for approx. 500' and turn north onto access road/location.

Prepared by:
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Service Location:
Fort Lupton, CO
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NGL
NGL C 5

9 5/8" Surface Casing

Hole Size:	12 1/4 in
Casing Size:	9 5/8 in; 36 lb/ft
Conductor:	80 ft 15.5in ID
Depth:	1030 ft
Excess:	25% (gauge)

Cement Blends

Tail Cement	Control Set 'C' + 1/4 lb/sk Polyflake
	1030 ft to Surface = 1030 ft

Cement Data

BHST: 80°F BHCT: 80°F

Tail

Water Requirement	:gal/sk	9.18
Yield	:ft ³ /sk	1.74
Density	:lbs/gal	13.5
Thickening Time	:hrs:min	2:00
Compressive Strength	:psi/hrs	1000/8 2200/24 2700/48
Temperature	:°F	80

Cement Volumes

Tail Cement	
$0.3132 \text{ ft}^3/\text{ft} \times 950 \text{ ft}$	$= 297.5 \text{ ft}^3$
$297.5 \text{ ft}^3 + 25\% \text{ excess}$	$= 371.9 \text{ ft}^3$
$0.4341 \text{ ft}^3/\text{ft} \times 42 \text{ ft}$	$= 18.2 \text{ ft}^3$
$0.7631 \text{ ft}^3/\text{ft} \times 80 \text{ ft}$	$= 61.0 \text{ ft}^3$
$451.1 \text{ ft}^3 / 1.74 \text{ ft}^3/\text{sk}$	$= \underline{\underline{260 \text{ sacks}}}$