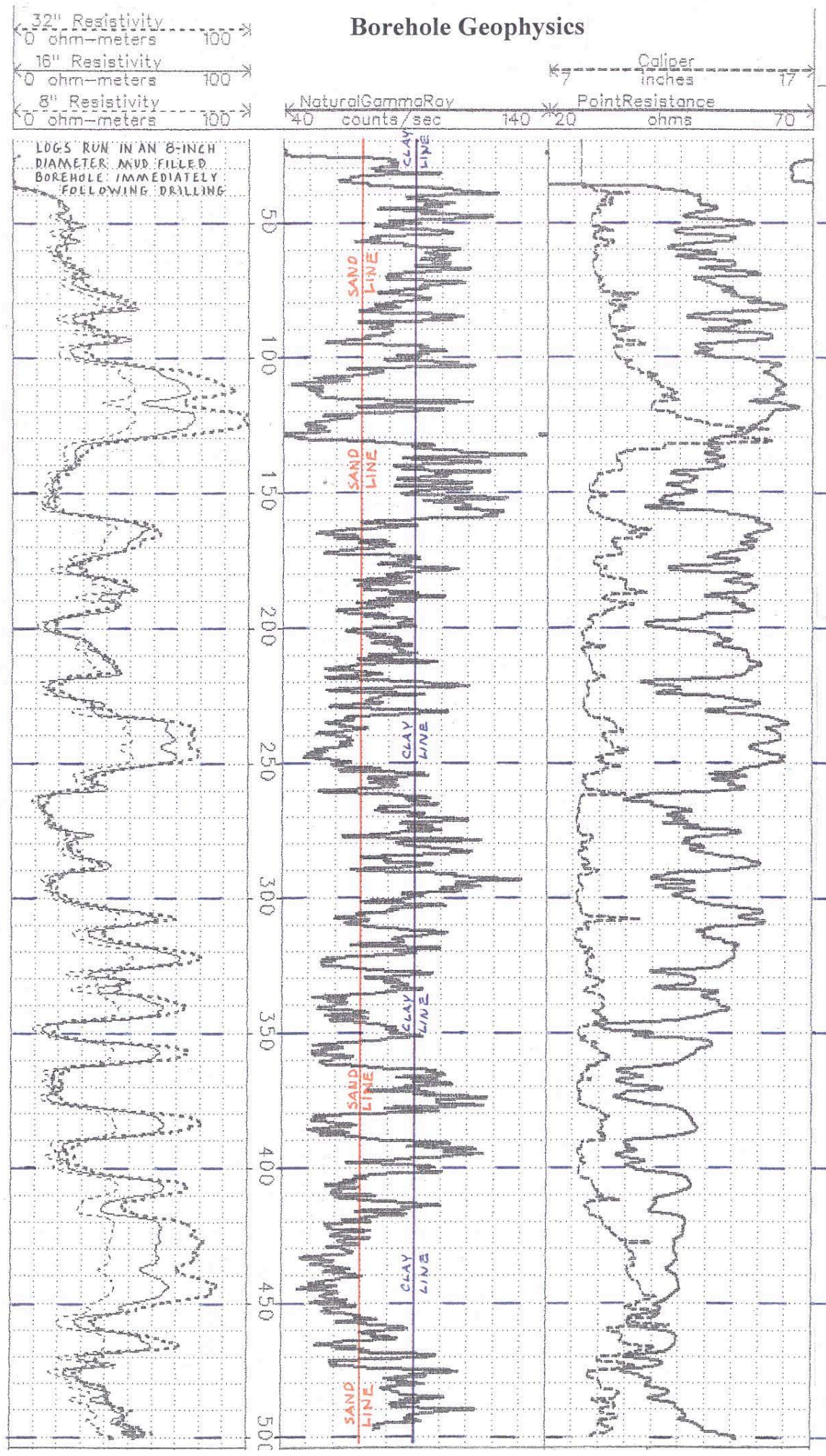
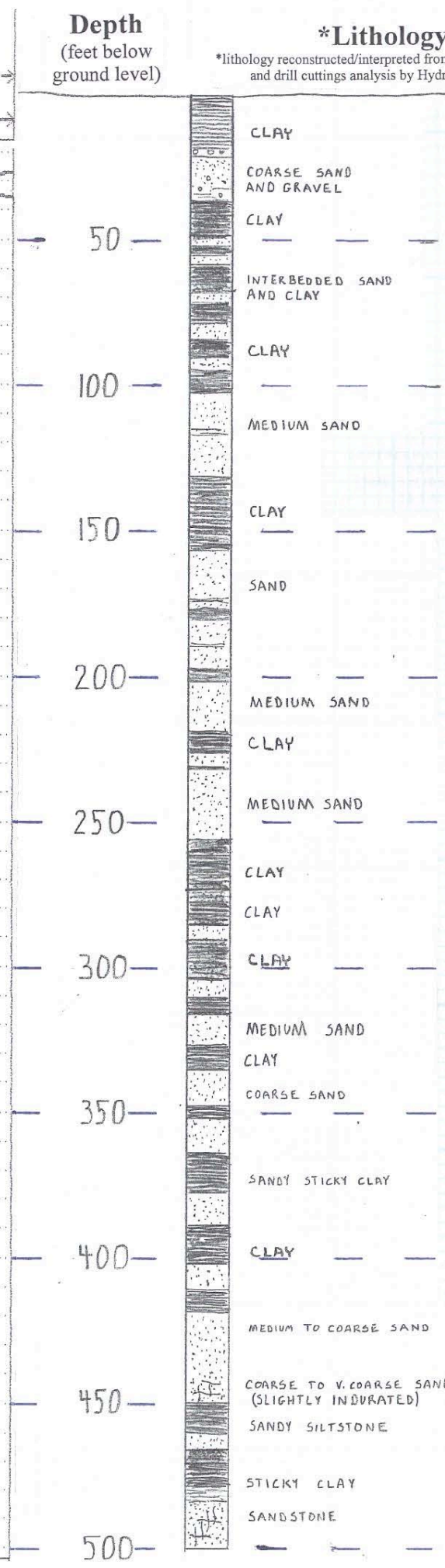
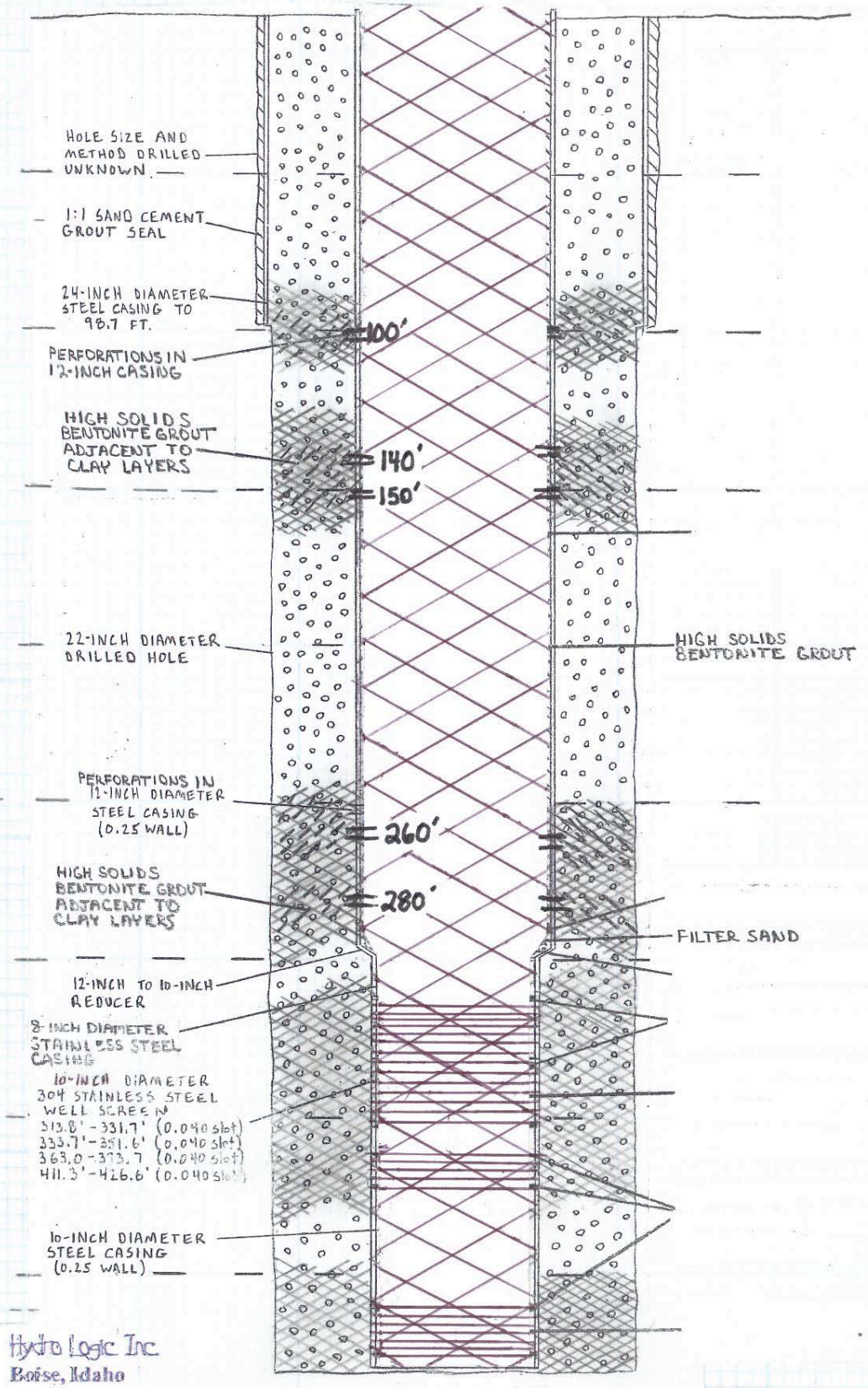
City of Caldwell #7
Proposed Well Abandonment Plan







Hydro Logic Inc.
Boise, Idaho

Test Well

T , R , Sec , SE ¼, NE ¼, NE ¼

February,

Well design by Hydro Logic Inc., Boise, Idaho

Drilling and construction by

Geophysics

16" Resistivity: 0 ohm-meters – 250

64" Resistivity: 0 ohm-meters – 250

NaturalGammaRay: 40 counts/sec – 140

PointResistance: 10 ohms – 110

Temperature: 45 degrees F – 75

Caliper: 11 inches – 21

logs run in a 12" diameter mud-filled borehole on /7/(by Hydro Logic Inc.

REGISTERED PROFESSIONAL GEOLOGIST EDWARD SQUIRES 968 STATE OF IDAHO

BHT = 69.2°F

*Lithologic log is reconstructed/interpreted from geophysical logs and from drill-cuttings analysis.

Lithology

elevation: 65 ft.

river cobbles

sticky brown clay

very coarse sands up to 2-3 mm

sticky brown clay

medium to coarse sand

fine to very coarse sands

tacky tan clay

fine to very coarse sand

tacky tan and sticky olive green clays

very coarse sand and gravel up to 1cm broken rounds

sticky clay

fine to very coarse sand

sticky clay

-color change-

sticky clay

very coarse sand and gravel up to 1 cm broken rounds

very coarse sand and gravel up to 4 cm broken rounds

very coarse sand and gravel up to 3 cm broken rounds

tacky clay

very coarse sand

tacky clay

very coarse sand

tacky clay

elevation: 0 ft.

light olive gray to dark gray (5Y 6/2-5Y 4/1) → light yellowish brown to pale olive (2.5Y 6/4-5Y 6/3)

Depth

(feet below ground level)

-0- -100- -200- -300- -400- -500- -600- -700- -800- -900-

Well Construction

static water levels

Zone 1 = 20-25 ft. agl

Zone 2 = 16.10 ft. agl

Zone 3 = 13.52 ft. agl

Zone 4 = 3.35 ft. agl

16-inch diameter air rotary drilled borehole 0 ft.-to-38 ft.

16-inch diameter steel casing to 38 ft. (0.25 wall)

12-inch diameter reverse-rotary drilled borehole to 925 ft.

2-inch diameter Schedule 80 PVC pipe

graded silica filter sand (Bird Seed #8-#16) (0.7 yards) 299' to~350'

5/16" washed chip gravel poured from surface (~1 yard) ~350' to 409'

graded silica filter sand (Bird Seed #8-#16) (2.75 yards) 430' to ~512'

5/16" washed chip gravel (0.75 yards) 512' to ~545'

graded silica filter sand (Bird Seed #8-#16) (2.4 yards) 582' to 667'

5/16" washed chip gravel (0.10 yards) 667' to ~670'

5/16" washed chip gravel (1.1 yards) 685' to ~764'

graded silica filter sand (Bird Seed #8-#16) (1.3 yards) 814' to 851'

3/8" washed chip gravel (0.5 yards) 851' to ~872'

3/8" washed chip gravel (1.1 yards) 897' to ~927'

Zone 1 Zone 2 Zone 3 Zone 4

315 355 445 475 495 525 590 620 640 670 820 850

T.D. = 935 ft.

Teague Mineral Products high solids bentonite grout (30.5 % avg.solids by weight) 290 ft. to surface (1275 gallons)

Teague Mineral Products 3/4" chip bentonite (0.75 yards) 290' to ~299'

Teague Mineral Products 3/4" chip bentonite (0.5 yards) 409' to 430'

2-inch diameter Schedule 80 PVC screen 0.030 slot

Teague Mineral Products 3/4" chip bentonite (0.75 yards) ~545' to 582'

Teague Mineral Products 3/4" chip bentonite (0.17 yards) ~670' to 685'

Teague Mineral Products 3/4" chip bentonite (1.1 yards) ~764' to 814'

Teague Mineral Products 3/4" chip bentonite (0.33 yards) 872' to 897'

horizontal scale 0.2"=1"

vertical scale 1"=100'

Water Chemistry

(Analyses by Alchem Laboratories)

Analysis	Analysis Results (mg/l) (			
	Zone 1	Zone 2	Zone 3	Zone 4
Alkalinity	56.7	56.7	62.0	135.0
Ammonia as N	0.08	0.09	<0.01	<0.01
Arsenic	<0.005	<0.005	<0.005	<0.005
Calcium as CaCO3	31.8	30.6	58.1	198.0
Chloride	0.92	1.02	8.02	33.3
Conductivity	127.0	134.0	205.0	605.0
Corrosivity	-0.59	-0.71	-0.78	-0.38
Fluoride	0.34	0.33	0.26	0.18
Hardness	40.9	39.8	74.6	253.0
Iron (diss.)	0.01	0.01	<0.01	<0.01
Magnesium	2.14	2.20	4.07	13.7
Manganese (diss.)	0.10	0.07	0.02	<0.01
Nitrate as N	<0.10	<0.10	0.44	2.04
Nitrite as N	<0.01	<0.01	<0.01	<0.01
pH (SU)	7.98	7.95	7.64	7.28
Potassium	1.09	1.20	1.33	2.28
Silica	22.5	23.8	24.6	17.1
Sodium	11.7	13.2	13.7	27.2
Sulfate	6.66	8.99	25.9	119.0
Temperature (°F)	72.0	67.0	63.0	59.8
Total Diss. Solids	83.0	93.0	135.0	413.0
Total Kjeldahl nitrogen	0.11	0.12	<0.10	<0.10
Total Organic carbon	<1.0	<1.0	<1.0	<1.0
Total Phosphorous as P	0.051	0.040	0.029	0.017

Hydro Logic, Inc.

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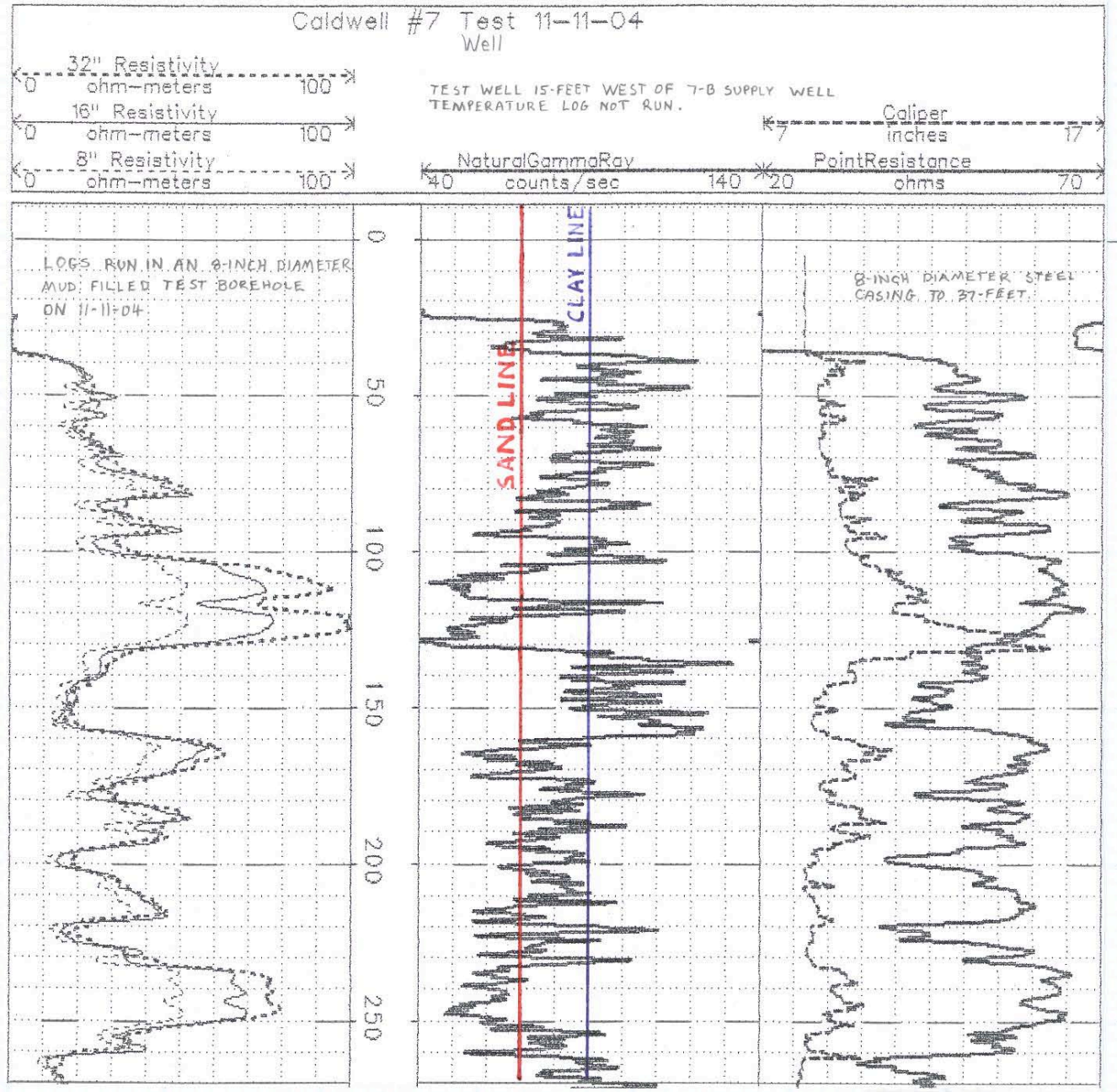
City of Caldwell #7-B Supply Well

T. 4 N., R. 3 W, Sec. 35, NW¼, NW¼, NE¼
Completed June, 2005

Hydro Logic Inc.
Boise, Idaho

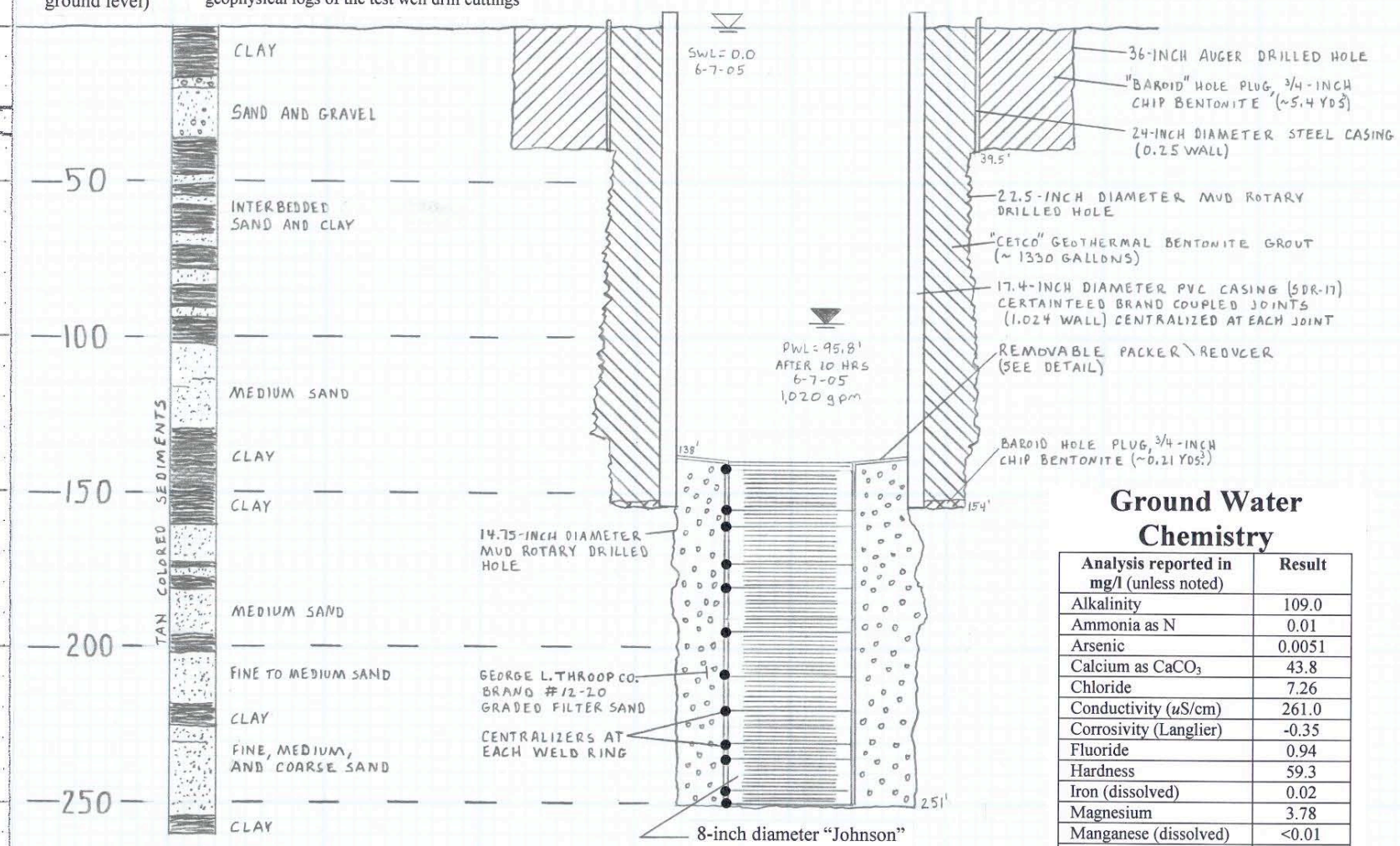
Borehole Geophysics



Depth
(feet below ground level)

Lithology
Lithologic log is reconstructed/interpreted from geophysical logs of the test well drill cuttings

As-Built Well Construction
Horizontal scale 0.1"=1"
Vertical scale 1"=50'



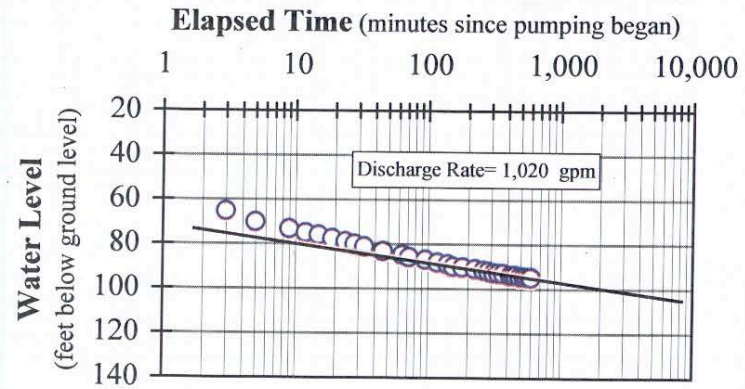
8-inch diameter "Johnson" stainless steel well screen pipe size, HI-FLOW (HI-Q)
143.1'-155.1' (0.010 slot)
155.1'-161.1' (0.015 slot)
161.1'-173.1' (0.025 slot)
173.1'-180.1' (0.010 slot)
180.1'-194.2' (0.015 slot)
194.2'-208.2' (0.010 slot)
208.2'-219.2' (0.020 slot)
219.2'-230.2' (0.010 slot)
230.2'-235.2' (0.030 slot)
235.2'-245.2' (0.030 slot)
245.2'-250.2' (0.015 slot)

Ground Water Chemistry

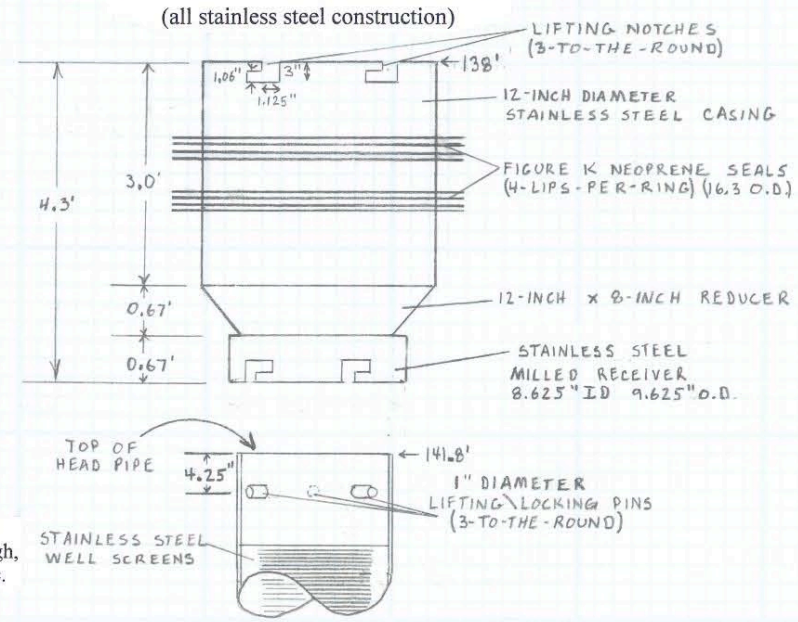
Analysis reported in mg/l (unless noted)	Result
Alkalinity	109.0
Ammonia as N	0.01
Arsenic	0.0051
Calcium as $CaCO_3$	43.8
Chloride	7.26
Conductivity (*u*S/cm)	261.0
Corrosivity (Langlier)	-0.35
Fluoride	0.94
Hardness	59.3
Iron (dissolved)	0.02
Magnesium	3.78
Manganese (dissolved)	<0.01
Nitrate as N	0.45
Nitrite as N	<0.01
Orthophosphate	0.029
Potassium	2.41
Silica	38.9
Sodium	46.0
Sulfate	9.84
Sulfide	<0.05
Total Dissolved Solids	153.0
Total Kjeldahl Nitrogen	<0.10
Total Organic Carbon	<1.0
Field Temperature (°F)	65.6
Field Conductivity (*u*S)	286
Field pH (S.U.)	8.08
Field ORP (mV)	+39
Field Dissolved Oxygen	+0.1

Analyses by Alchem Laboratories, Boise, ID
(samples collected on 6/8/05)

Hydraulic Testing - June 7, 2005



Packer/Reducer Detail
(all stainless steel construction)



On site supervision, borehole geophysics, well design, pump test design, camera survey, and water quality sampling by Hydro Logic, Inc., Boise, Idaho
Mud-rotary drilling/well construction by Treasure Valley Drilling, Weiser, Idaho
Auger drilling by Anderson and Wood Construction, Meridian, Idaho
Pump testing by Layne of Idaho, Nampa, Idaho
Project administration by Caldwell Public Works Department, Gordon N. Law, P.E., Director

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drafted 7/8/05
by Brian Cavanagh,
Hydro Logic Inc.