WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety

OFFICE USE ONLY
Log No. 34479
Permit No. 52754
Basin 4-62

PRINT OR TYPE ONLY

NOTICE OF INTENT NO. 13167

1. OWNER IVANHOE GOLD COMPANY
MAILING ADDRESS P.O. BOX 2667
WINNEMUCCA, NV 89445

ADDRESS AT WELL LOCATION

2. LOCATION SW ¼ SW ¼ Sec. 9 T. 37 N S R. 48 E. ELKO County

PERMIT NO. 52754 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. TYPE OF WORK
New Well ☒ Recondition ☐
Deepen ☐ Other ☐

4. PROPOSED USE
Domestic ☐ Irrigation ☐ Test ☐
Municipal ☐ Industrial ☒ Stock ☐

5. TYPE WELL
Cable ☐ Rotary ☒
Other ☐

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
SEE ATTACHED				

STATE ENGINEER'S OFFICE
90 OCT -4 AM 10:21

Date started 8/27, 1990
Date completed 9/12, 1990

7. WELL TEST DATA

Pump RPM	G.P.M.	Draw Down	After Hours Pump
—	—	—	—

BAILER TEST
G.P.M. ~ Draw down ~ feet ~ hours
G.P.M. Draw down feet hours
G.P.M. Draw down feet hours

8. WELL CONSTRUCTION
Diameter 20" inches Total depth 716 feet
10" inches
inches
Casing record STEEL
Weight per foot 32 lbs Thickness 279

Diameter	From	To	
20 inches	+ 2 feet	37.5 feet	
10 inches	+ 3 feet	495 feet	BLANK
10 inches	495 feet	655 feet	SCREEN
10 inches	655 feet	706 feet	BLANK
inches	feet	feet	
inches	feet	feet	

Surface seal: Yes ☒ No ☐ Type CEMENT
Depth of seal 0 TO 410 feet
Gravel packed: Yes ☒ No ☐
Gravel packed from 410 feet to 716 feet

Perforations:
Type perforation HI-CRP WIRE WRAP
Size perforation 100 SLOT
From 495 feet to 655 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

9. WATER LEVEL
Static water level 300 feet below land surface
Flow ~ G.P.M. — P.S.I.
Water temperature ~ °F Quality ~

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name LAYNE WESTERN CO., INC. (Contractor)
Address 12030 E. RIGGS RD CHANDLER, AZ 85249 (Contractor)
Nevada contractor's license number issued by the State Contractor's Board 0019101
Nevada contractor's driller's number issued by the Division of Water Resources
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1616
Signed [signature] (By driller performing actual drilling on site or contractor)
Date 9/28/90

(Rev. 11-85) USE ADDITIONAL SHEETS IF NECESSARY (O)-627

34479

LOG OF BOREHOLE

BOREHOLE WW-5A

PAGE 1 OF 5

PROJECT IVANHOE GOLD COMPANY

LOGGED BY J.E. TRUMBLE / T. HANNA

LOC. OR COORDS SW1/4 SW1/4 SEC 9 T37N R48E

GROUND ELEV. 5360

TOTAL DEPTH 716

BOREHOLE DIAM(S) 20" TO 40'
17 1/2" TO 716'

DRILLER LAYNE WESTERN
SMILEY DAVE - DRILLERS
JOHN, JAY, CHUCK - RICH - HELPERS

RIG COOPER LTO 550

BIT(S) 17 1/2" BUTTON

FLUID MUD - POLYMER BASE

	START	FINISH
DATE	8/14/90	9/6/90
TIME	12:00 noon	10:00 am

GEOPHYS. LOG ___ YES ✓

HOW LEFT ___

DEPTH	PENE. RATE	CIRC. RET	CIRC. LOSS	AIRLIFT Q(gpm)	MATERIAL	SYMBOL	DESCRIPTION and COMMENTS
0							Alluvium
							6' Basalt
20							
40	6"/hr.						Basalt - dk grey to grey massive, diss pyrite and pyrite along fracts. Chl⁻ along fracts FeO₂⁺ along fracts. Chalchednay xtals w/ chl⁻
60					BASALT		Basalt as above, clear & milky chalchednay, minor FeO₂ along fracts. Azur. color chl⁻? along fracts.
80	1ft/hr						Basalt as above, diss pyrite & pyrite along fracts, Biotite no noticeable FeO₂ along fracts. chalchednay along fracts
100							Basalt as above, abundant chl⁺⁺ along fracts pyrite as above, chalchednay as above, no Biotite
120							Basalt as above, abundant diss pyrite, FeO₂⁺⁻ along fracts chalchednay along fracts.
140							Basalt as above, increasing vesicals, minor FeO₂⁻⁻ along fracts, diss pyrite & pyrite along fracts, less chalchednay than above

ENG. FORM 197

34479

LOG OF BOREHOLE

BOREHOLE WW-5A

PAGE 2 OF 6

PROJECT IVANHOE GOLD COMPANY

LOGGED BY J.E. TRUMBLE / T. HANNA

LOC. OR COORDS SW1/4 SW1/4 Sec 9 T37N R48E

GROUND ELEV. 5360

TOTAL DEPTH 716'

BOREHOLE DIAM(S) 20" TO 40'
17 1/2" TO 716'

DRILLER LAYNE WESTERN
SMILEY, DAVE - DRILLERS
JOHN, JAY, CHUCK - RICH - HELPERS

RIG COOPER LTD 550

BIT(S) 17 1/2 BUTTON

FLUID MUD - POLYMER BASE

	START	FINISH
DATE	8/14/90	9/6/90
TIME	12:00 noon	10:00 am

GEOPHYS. LOG ___ YES ✓ NO

HOW LEFT

DEPTH	PENE. RATE	CIRC. RET	CIRC. LOSS	AIRLIFT Q(gpm)	MATERIAL	SYMBOL	DESCRIPTION and COMMENTS
140							Basalt dk grey to grey, massive minor FeO2 along fracts, diss pyrite & pyrite along fracts, minor chalcedony along fracts, minor chl along fracts
160							Basalt as above, clayey ~30% blk to dk grey (mud)
180							Basalt as above, massive to grainy, pyrite as above less FeO2 & chalcedony as above
200							Basalt as above, no FeO2 or chl along fracts minor chalcedony along fracts, pyrite as above
220							Basalt dk grey to grey, massive, few fractures no FeO2, minor chl along fracts, diss pyrite minor chalcedony
240							Basalt as above, slow hard drilling
260							Basalt as above slow hard drilling less chalcedony than above <2%
280							clay/basalt, drilled fast, minor basalt, dk grey gummy

ENG. FORM 197

34479

LOG OF BOREHOLE

BOREHOLE WW-5A

PAGE 3 OF 5

PROJECT IVANHOE GOLD COMPANY

LOGGED BY J.E. TRUMBLE / T. HANUSA

LOC. OR COORDS SW1/4 SW1/4 SEC 9 T37N R48E	DRILLER LAYNE WESTERN	START / FINISH
GROUND ELEV. 5360	SMILEY - DAVE - DRILLERS	DATE 8/14/90 / 9/6/90
TOTAL DEPTH 716'	JOHN, JAY, CHUCK, RICH - HELPERS	TIME 12:00 noon / 10:00 a.m.
BOREHOLE DIAM(S) 20" TO 40'	RIG COOPER LTO 550	GEOPHYS. LOG ___ YES ✓
17 1/2" TO 716'	BIT(S) 17 1/2" BUTTON	HOW LEFT
	FLUID MUD - POLYMER BASE	

DEPTH	PENE. RATE	CIRC. RET	CIRC. LOSS	AIRLIFT Q(gpm)	MATERIAL	SYMBOL	DESCRIPTION and COMMENTS
280					Clay + Basalt		
							Basalt/Clay dark gray, minor interbeds of basalt
300							
							Basalt, dk. gray, massive, pyr diss drills slow
320							
340							
							Basalt, hard, dk gray, pyr diss, slow drilling.
360							
380					Basalt		Massive Basalt dark gray, slow drilling
400							
420							

34479

LOG OF BOREHOLE

BOREHOLE WW-5A

PROJECT IVANHOE GOLD COMPANY

LOGGED BY J.E. TRUMBLE / T. HANNA

LOC. OR COORDS SW1/4 SW1/4 SEC 9 T37N R48E	DRILLER LAYNE WESTERN	START / FINISH
GROUND ELEV. 5360	SMILEY; DAVE - DRILLERS	DATE 8/14/90 / 9/6/90
TOTAL DEPTH 716'	JOHN, JIM, CHUCK, RICH - HELPERS	TIME 12:00 NOON / 10:00 am
BOREHOLE DIAM(S) 20" TO 40'	RIG COOPER LTD 550	GEOPHYS. LOG ___ YES ✓
17 1/2" TO 716'	BIT(S) 17 1/2" BUTTON	HOW LEFT
	FLUID MUD - POLYMER BASE	

DEPTH	PENE. RATE	CIRC. RET	CIRC. LOSS	AIRLIFT Q(gpm)	MATERIAL	SYMBOL	DESCRIPTION and COMMENTS
420							Basalt, dark grey, hard, pyr+
440							Clay grey, sticky, minor basalt layers
460							
					Basalt		
480							
					Clay/Tuff		grey / clay + Tuff
500							
							Tuff, grey, silic+-, pyr+-
520							
540			Losing Fluid				loss of fluids
					Tuff		
560							

34479

LOG OF BOREHOLE

BOREHOLE WW-5A

PROJECT IVANHOE GOLD COMPANY

LOGGED BY J.E. TRUMBLE / T. HANNA

LOC. OR COORDS SW1/4 SW1/4 SEC 9 T37N R48E

GROUND ELEV. 5360

TOTAL DEPTH 716'

BOREHOLE DIAM(S) 20" TO 20'
17 1/2" TO

DRILLER LAYNE WESTERN
SMILEY, DAVE, DRILLERS
JOHN, JAY, CHUCK, RICH - HELPERS

RIG COOPER LTD 550

BIT(S) 17 1/2" BOTTON

FLUID MUD - POLYMER BASE

	START	FINISH
DATE	8/14/90	9/6/90
TIME	12:00 noon	10:00 am

GEOPHYS. LOG ___ YES ✓ NO

HOW LEFT

DEPTH	PENE. RATE	CIRC. RET	CIRC. LOSS	AIRLIFT Q(gpm)	MATERIAL	SYMBOL	DESCRIPTION and COMMENTS
560							Tuff grey, fractured, pyrite diss, some clays
			Fluid				
580			Lossing				Tuff grey, minor clays — lossing fluid
600							Tuff grey, hard
620					TUFF		Tuff grey, minor clay, grey
640							~50% tuff-grey - 50% clay grey
					CLAY		
660							100% clay-grey
680							clay grey
700							clay-grey
							T.D. 716' 10:00 am 9/6/90

WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

STATE OF NEVADA
DIVISION OF WATER RESOURCES

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Basin

PRINT OR TYPE ONLY

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MAILING ADDRESS P.O. BOX 2667
WINNEMUCCA, NV 89445
ADDRESS AT WELL LOCATION

2. LOCATION SW ¼ SW ¼ Sec 9 T 37 N S R 48 E ELKO
PERMIT NO. 52754 Issued by Water Resources | Parcel No. | Subdivision Name

3. TYPE OF WORK
New Well ☒ Recondition ☐
Deepen ☐ Other ☐

4. PROPOSED USE
Domestic ☐ Irrigation ☐ Test ☐
Municipal ☐ Industrial ☒ Stock ☐

5. TYPE WELL
Cable ☐ Rotary ☒
Other ☐

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
SEE ATTACHED				

'90 OCT -4 A10:21
STATE ENGINEER'S OFFICE

Date started 8/27, 1990
Date completed 9/12, 1990

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—	—	—	—

BAILER TEST
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G.P.M. Draw down feet hours
G.P.M. Draw down feet hours

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10 inches	655 feet	706 feet	BLANK
inches	feet	feet	
inches	feet	feet	

Surface seal: Yes ☒ No ☐ Type CEMENT
Depth of seal 0 to 410 feet
Gravel packed: Yes ☒ No ☐
Gravel packed from 410 feet to 716 feet

Perforations:
Type perforation HI-CAP WIRE WRAP
Size perforation 100 SLOT
From 495 feet to 655 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

9. WATER LEVEL
Static water level 300 feet below land surface
Flow — G.P.M. — P.S.I.
Water temperature — °F Quality —

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name LAYNE WESTERN CO., INC. (Contractor)
Address 12030 E. RIGGS RD CHANDLER, AZ 85249 (Contractor)
Nevada contractor's license number issued by the State Contractor's Board 0019101
Nevada contractor's driller's number issued by the Division of Water Resources
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1616
Signed Scott Caplell
By driller performing actual drilling on site or contractor
Date 9/28/90

(Rev. 11-85) USE ADDITIONAL SHEETS IF NECESSARY (D)-627