EMERGENCY DROUGHT APPLICATION: GROUNDWATER REVIEW

TO: Water Rights Section Date **6 June 2015** Supersedes **22 May 2015**

FROM: Groundwater Section **Gerald H. Grondin**
Reviewer's Name

SUBJECT: Application **G- 18085**

This review is based on authorities laid out in OAR 690-019 Drought Mitigation rules. This is an expedited review to evaluate an emergency request for groundwater use for one season under a Governor's drought declaration. Notwithstanding groundwater availability, stability of the groundwater resource, and surface water and Scenic Waterway considerations, the Department may issue a drought permit for short-term emergency use provided that there is no injury and that the use is within the public interest as per OAR 690-019-0040(3).

A. GENERAL INFORMATION: Applicant's Name: **Henry C. G. Cheyne** County: **Klamath**

A1. Applicant(s) seek(s) **(1100 gpm) 2.45** cfs from **1** well(s) in the **Klamath** Basin, **Lost River** subbasin Quad Map: **Lorella**

A2. Proposed use **Irrigation 147 acres** Seasonality: **20 June to 1 September**

A3. Well and aquifer data **(attach and number logs for existing wells; mark proposed wells as such under logid)**:

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	**KLAM 10364**	**Smith**	**Basalt**	**2.45**	**40S/13E-sec 02 aaa**	**40' S, 275' W fr NE cor S 02**
2						

- Alluvium, CRB, Bedrock, Volcanics

Fill out the following from the application for each well not yet drilled or no log available; otherwise, attached well reports

Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)
1	**524**	**0 to 129**	**+1 to 129**	**None**	**None**	**1,900**
2						

Comment:

The proposed maximum pumping rate (1,100 gpm, 2.45 cfs) is greater than typically allowed for 147 acres (1.84 cfs, 825 gpm).

The application has two different proposed total maximum annual volumes: 220 ac-ft and 367 ac-ft. Both are within the total maximum annual volume typically allowed for 147 acres (441 ac-ft).

Is there information that this drought groundwater use will injure senior spring or surface water rights during the duration of the drought declaration? (☐**Yes**) (☒**No**) If yes, explain:

The proposed POA well is connected to surface water in the long-term. However, its connection to surface water, including springs, is indirect (not direct). Shutting off the well will not bring timely and effective relief to the surface water resource.

The proposed POA well is in the Lorella sub-area. It is completed in a compartmentalize, canal influenced, shallower basalt water bearing zone above a deeper, more regional basalt water bearing zone. Data in an adjoining compartment indicates the deeper, more regional basalt water bearing zone is hydraulically connected to Bonanza Big Springs. Data in the adjoining compartment indicates pumping the upper basalt zone has a fractional (small) influence on the groundwater level in the deeper basalt (see Gannett and others 2007, figure 29, page 54). Bonanza Big Springs is about 8.6 miles northwest of the well. ADR wells in the Bonanza sub-area have been regulated to protect spring discharge. The potential seasonal impact to Bonanza Big Springs by pumping the proposed POA well will be significantly less than pumping a well within the Bonanza sub-area given the proposed POA well is inefficiently hydraulically connected to Bonanza Big Springs: there are two hydraulic dampeners between the proposed POA well and Bonanza Big Springs. The first dampener is between the shallower compartmentalize, canal influenced, basalt water bearing zone and the deeper, more regional basalt water bearing zone. The second dampener is between the Lorella sub-area and the Bonanza sub-area. The relationship between the sub-areas is explained in Grondin (2004).

Other springs closer to the proposed POA well appear to be perched above the valley floor and stratigraphically controlled rather than fault controlled. Pumping the proposed POA well should have minimal impact on those springs which are likely intermittent.

The well is about 1.6 miles from the Lost River. Groundwater discharge to the nearest Lost River reach is via seepage through the stream-bed. Groundwater discharge to the river via seepage is inefficient, significantly less than the much more efficient discharge to the river via fault controlled springs present in other sub-areas. Consequently, pumping the proposed POA well should have minimal seasonal impact on the river when compared to pumping wells efficiently hydraulically connected to fault controlled springs that discharge to the river.

Is there information that this drought groundwater use will injure senior groundwater rights during the duration of the drought declaration? (☐**Yes**) (☒**No**) If yes, explain.

Decreased seasonal canal leakage and increased groundwater use will likely lower the groundwater level in the Lorella sub-area compartmentalized upper basalt water bearing zone. Senior water right irrigation wells in the area should be able to accommodate the seasonal decline and pump groundwater.

Groundwater (☐**is**) (☒**is not**) available within the capacity of the resource.

The decadal trend indicates the groundwater level in Lorella sub-area is in gradual decline since the mid-1980s. Part of the decline may be climate driven.

Is any proposed POA adjacent or within a delineated area in the Klamath Basin where the 2001 to 2011 long-term groundwater decline was 20 feet or more? (☐**Yes**) (☒**No**) See attached map.

Groundwater level declines in the Upper Lost River sub-basin from 1998 to present ranges from 5 to nearly 10 feet depending upon the sub-area. The decline within the Lorella sub-area varies by compartment.

There (☒**is**) (☐**is not**) a preponderance of evidence that the proposed short-term emergency groundwater use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway.

Groundwater interference with the Klamath scenic water way under existing permits has exceeded the 1 cfs limit. Short term emergency groundwater uses will be an addition. The timing and degree (amount) of additional impact from the proposed short-term emergency groundwater use is beyond the scope of this review.

Proposed Permit Conditions:

If a permit is issued, include:

Condition 7B (interference condition). Note that drought permits are very junior rights and highly vulnerable to regulation.

Condition 7P (well tag)

"Large" water use condition (totalizing flowmeter required). Note that "The readings must be reported to the Department by 15 November."

Special condition: "Prior to use, the well shall be configured to allow a strictly clean water (no oil) static water level measurements with an electric-tape. That can include measurement access via an unobstructed vertical discharge pipe that allows the groundwater level to fluctuate freely within the discharge pipe (no valves, etc.). Otherwise, a dedicated measuring tube must be installed prior to use. The tube must be unobstructed, have a diameter of ¾ inch (0.75 inch) or greater, and pursuant to figure 200-5 in OAR 690-200."

Special condition for drought static groundwater level measurement and reporting: "The static groundwater level at the well(s) must be measured to the nearest 0.10 foot and recorded and reported to the Department within 7 days prior to drought groundwater pumping at the well(s) begins, and subsequently measured to the nearest 0.10 foot (inch), recorded, and reported to the Department at the end of drought groundwater pumping at the well(s). The last measurement must be reported to the Department by 15 November of the same year."

Special condition: "Groundwater pumping under this permit shall discontinue or be reduced if Lorella sub-area wells with permanent primary and/or supplemental groundwater rights are being regulated off due to groundwater level decline or interference with senior water rights unless the Department determines no action is necessary (pumping under this permit can continue) because the groundwater resource can sustain continued groundwater pumping under this permit without adversely impacting the resource or without causing substantial interference with senior water rights."

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STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

Klam 10364

RECEIVED

DEC 23 1991

WATER RESOURCES DEPT.

40S/13E/2aa

(START CARD) # W-26536

(1) OWNER:

Well Number: 3

Name Richard A. Smith

Address 10166 E. Langell Vly. Rd.

City Bonanza State OR. Zip 97623

(2) TYPE OF WORK:

☒ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD

☒ Rotary Air ☐ Rotary Mud ☐ Cable

☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☒ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes ☐ No ☒ Depth of Completed Well 524 ft.

Explosives used Yes ☐ No ☒ Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
20"	0	129	Cement	0	129	95 Sacks
16"	129	270				
12"	160	315				
10"	315	440				
8"	440	524				

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E

☐ Other

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	16"	+1	-129	.250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☐ Perforations Method

☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
1900	184'		1 hr.
Test pumped by Valley Pump.			

Temperature of water 68 Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Klamath Latitude " Longitude "

Township 40S N or S, Range 13E E or W, WM.

Section 2 NE ¼ NE ¼

Tax Lot Lot Block Subdivision

Street Address of Well (or nearest address) 10166 E. Langell Vly. Rd.

(10) STATIC WATER LEVEL:

16 ft. below land surface. Date 9/4/91

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 22'

From	To	Estimated Flow Rate	SWL
245'	524'	1900 GPM	16'

(12) WELL LOG:

Ground elevation

Material	From	To	SWL
Sandy Soil	0	3	
Brown Sandstone	3	16	
Yellow Clay	16	22	
Brown Sandstone & Clay	22	55	
Coarse Brown Sandstone	55	80	
Yellow Claystone	80	124	
Grey Basalt	124	150	
Brick Red Rock	150	172	
Grey Basalt	172	245	
Grey Basalt w/Sandy Clay	245	265	16'
Blue Rock & Clay	265	280	16'
Blue Clay	280	295	16'
Brown Clay & Pumice	295	305	16'
Blue Clay	305	375	16'
Hard Black & Brown rock	375	524	16'

Date started 7/30/91 Completed 11/14/91

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

Signed Michael Smith WWC Number 1452 Date 12/8/91

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. all work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

Signed Roger Rancelly WWC Number 693 Date 12/8/91

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 3/88

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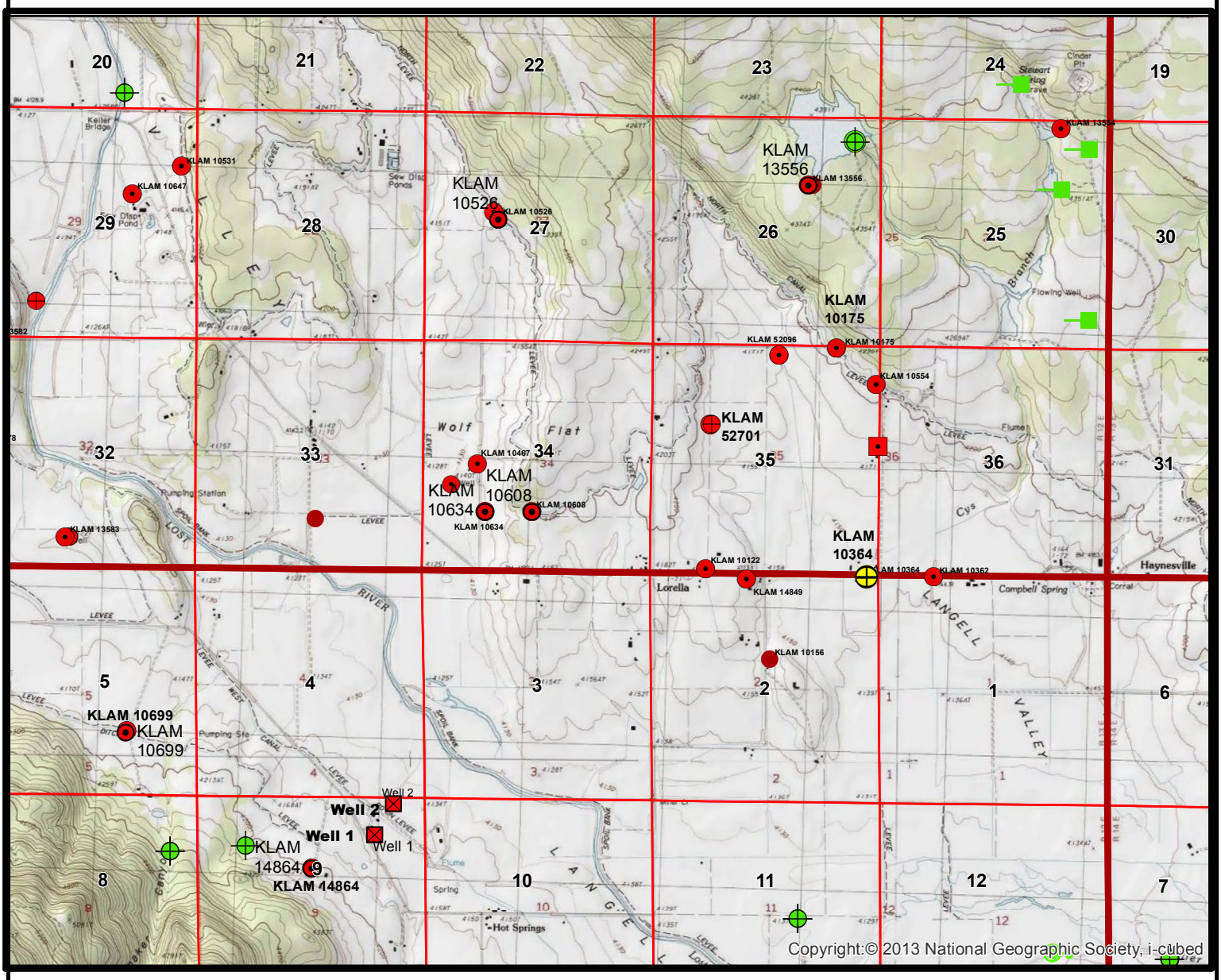

0 0.25 0.5 1 1.5 2
Miles

Yellow = Related POA Wells
Red & Blue = Other Wells

Green = Surface Water Rights

Legend
Townships
Sections

Drought Groundwater Permit Application G-18085
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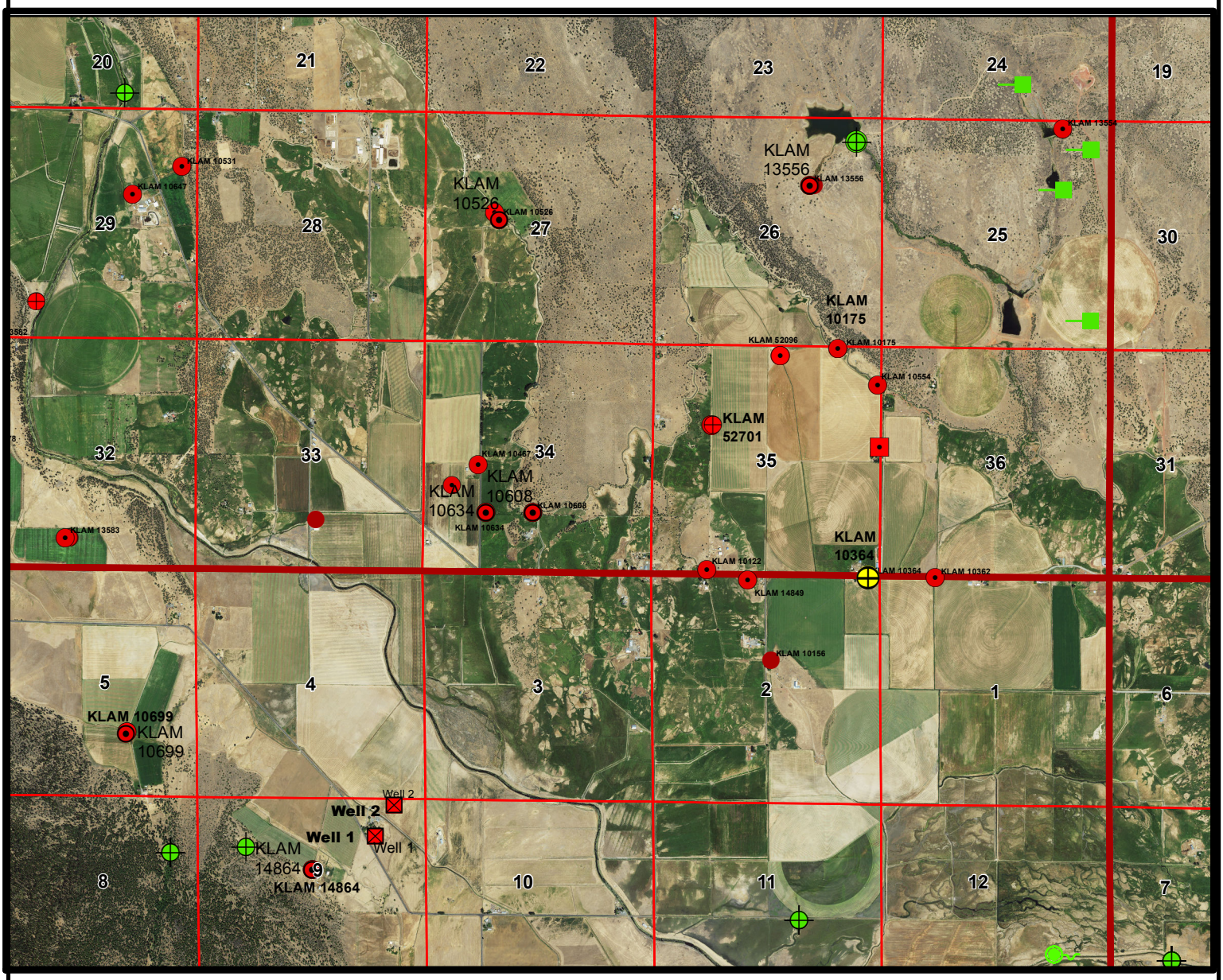

0 0.25 0.5 1 1.5 2
Miles

N

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Legend

- Townships
- Sections

NAIP 2014 imagery

RGB

- Red: Band_1
- Green: Band_2
- Blue: Band_3

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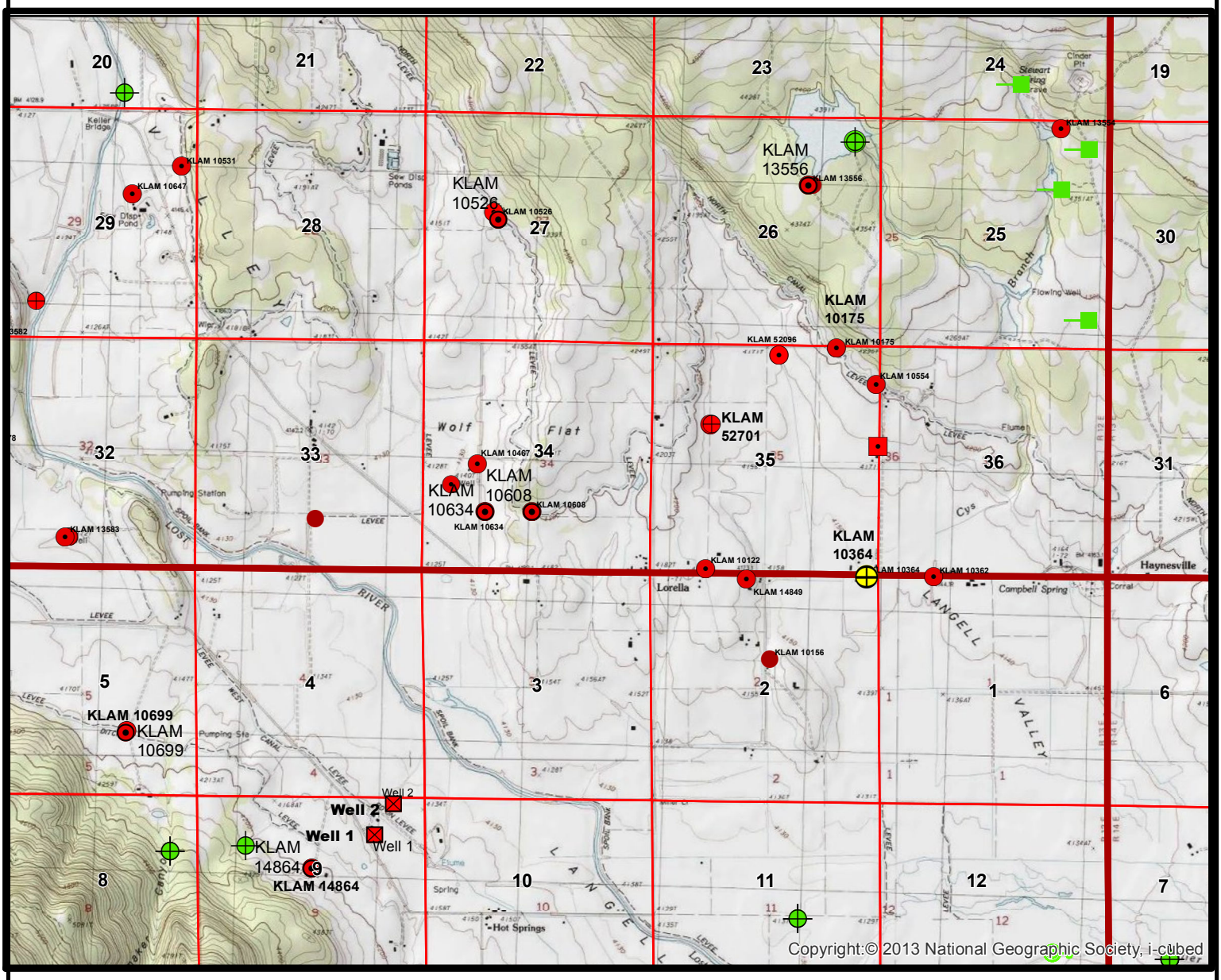

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2001 to 2010 Long-Term GW Declines Contour

- 10 - 20 feet
- 20 - 30 feet
- >30 feet