# IN THE OFFICE OF THE STATE ENGINEER OF THE STATE OF NEVADA

IN THE MATTER OF APPLICATION NUMBER 78796
FILED BY Granite Peak Properties, LC
ON August 10, 2009, TO APPROPRIATE THE
WATERS OF Underground

FILED
PROTEST
DEC 04 2009
STATE ENGINEER'S OFFICE

2009 DEC -4 AM 8:36

Comes now United States Dept. of Interior, Bureau of Land Management
Printed or typed name of protestant

whose post office address is 150 East 900 North, Richfield, UT 84701
Street No. or PO Box, City, State and ZIP Code

whose occupation is federal land management agency and protests the granting

of Application Number 78796, filed on August 10, 2009

by Granite Peak Properties, LC to appropriate the

waters of Underground situated in White Pine
Underground or name of stream, lake, spring or other source

County, State of Nevada, for the following reasons and on the following grounds, to wit:

Please see attached statement of reasons.

THEREFORE the Protestant requests that the application be denied
Denied, issued subject to prior rights, etc., as the case may be

and that an order be entered for such relief as the State Engineer deems just and proper.

Signed Rodney P. Lee, Acting Field Manager
Agent or protestant

Rodney P. Lee
Printed or typed name, if agent

Address 150 East, 900 North
Street No. or PO Box

Richfield, UT 84701
City, State and ZIP Code

435-896-1550 Fax 435-896-1500
Phone Number

Subscribed and sworn to before me this 2nd day of December, 2009

Jennifer Anderson
Notary Public

JENNIFER ANDERSON
Notary Public / State of Utah
Com. No. 563314
My Comm. Exp. 01/07/2010
245 No. 500 W. Richfield, UT 84701

State of Utah
County of Sevier

+ **$25 FILING FEE MUST ACCOMPANY PROTEST. PROTEST MUST BE FILED IN DUPLICATE.**

**ALL COPIES MUST CONTAIN ORIGINAL SIGNATURE.**

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**ATTACHMENT TO BLM PROTEST TO APPLICATION NO. 78796**

The grounds for the BLM protest to Application No. 78796 are as follows:

1. The BLM holds Utah water right 18-571 on Needlepoint Spring, which is located only 5750 feet east of the proposed point of diversion. Water Right 18-571 is located South 3320 feet West 1247 feet from the Northeast Corner, Section 1, T24S R20W, S.L.B.M. Water Right 18-571 allocates a flow rate of 0.013 cfs with a 1903 priority to BLM for the watering of up to 1000 livestock units, 10 antelope, 15 deer, and mammals and birds. The water right is for year round use.

2. Needlepoint Spring is also a public water reserve (PWR) established pursuant to the Stock-Raising Homestead Act of 1916. This federal reserve water right has not been adjudicated. Groundwater resources located in both Nevada and Utah are essential to the functioning of the spring and to fulfilling the purpose of the PWR, as well as the permitted uses under Utah water right 18-571.

3. The proposed change would move the point of diversion approximately 2.5 miles closer to Needlepoint Spring. The proposed change would likely place Needlepoint Spring directly within the cone of depression associated with the well. The proposed change is likely to intercept water that supplies Water Right 18-571 and unreasonably interfere with and impair such water right.

   The proposed well is approximately 1250 feet west of the existing well on the Utah side of the border (Utah water right 18-667) that has caused unacceptable impacts to Needlepoint Spring. Pumping of the proposed well will add to the existing drawdown at Needlepoint Spring caused by pumping from Utah water right 18-667. BLM's estimate is that the existing drawdown at Needlepoint Spring could double as a result of implementing pumping at the proposed location.

4. BLM installed groundwater monitoring equipment at Needlepoint Spring in 2001. Data from this monitoring effort have demonstrated that the groundwater level and flow rate at Needlepoint Spring is directly and unequivocally related to and impacted by groundwater pumping operations implemented by the Applicant under water rights held by the Applicant in Utah and Nevada.

5. Needlepoint Spring has a record of continuous flow since flows were first recorded by the Civilian Conservation Corps (CCC) in 1939. However, flow at the Needlepoint Spring orifice ceased in 2001. The attached graphic that displays the BLM monitoring data shows that the groundwater levels around the spring are steadily decreasing over time and that groundwater levels are not recovering after irrigation ceases each year. The current water level is approximately four feet below the spring orifice.

6. The groundwater trends illustrated by the BLM monitoring data is further supported by groundwater level data collected by the Utah Geological Survey. The UGS wells at Needlepoint Spring and at Site UGSAG15, located approximately two miles southwest from Needlepoint Spring, indicate that groundwater levels are directly related to irrigation pumping regimes.

7. BLM protested the applicant's Application to Appropriate A73299 (Utah Water Right 18-667) in 2001, based upon existing and potential injury to the BLM water right. The Utah State Engineer ruled that he possessed insufficient data at that time to make a determination that the proposed use would injure the BLM water right. Since that time, BLM has collected monitoring data that directly relates spring flows and groundwater levels to groundwater pumping by the applicant.

8. The water rights injury at Needlepoint Spring has resulted in significant resource damages and monetary costs to the BLM by dislocating the animals that traditionally relied on this water supply and necessitating BLM to incur substantial costs to provide water otherwise not naturally available.

For the reasons stated above, BLM requests that this application be denied.

# Hydrogeologic Analysis of Needle Point Spring, Snake Valley, Utah



by
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National Operations Center
Denver, Colorado
Updated July 18, 2008

Introduction:
Needle Point Spring is a low flowing spring that occurs at the northern tip of the Needle Point Mountain, a north-south trending outcrop of dolomite hills about one mile east of the Nevada state line, in Millard County, Utah. It is located in the upper part of the Snake Valley drainage, with Hamlin Valley adjacent to the west, extending into Nevada.

The spring has a long history of existence. It was documented as early as 1939 by the Civilian Conservation Corps (CCC) work crew, who did improvements at the spring. Flow was measured at 6 gallons per minute (gpm) by Robert Wilkins and Robert Elliot, CCC camp engineers, on Sept. 22, 1939. The spring was developed by digging into the alluvium about 10 ft. and installing a 6 ft. diameter circular steel tank which is perforated to allow water to flow into the tank. An outlet pipe feeds water to a nearby trough and a surface pond for easy access by stock and wild horses. Water at the spring has been used for watering stock and wild horses for several decades. BLM filed a diligence water right on the spring on May 30, 1986 for .0133 cfs of water. The spring is noted on the master title plat as a Public Water Reserve 107. The diligence claim asserts that the water was being used for public land management purposes prior to 1903.

The Army Map Service plotted the spring on their topographic map of 1956. The spring was mentioned in a U.S. Geological Survey report on the area (Snyder, 1963), and the spring was visited during a study by the Las Vegas Valley Water District (1993).

Flows measured at the spring have remained steady since the first known measurement in 1939. The following flow measurements have been recorded since 1939 :

Sept. 24, 1992 flow 6 gpm measured by Fillmore BLM staff.

Feb. 16, 1994 flow 7 gpm measured by Fillmore BLM staff.

July 11, 1997 flow 7 gpm measured by Fillmore BLM staff.

June 6, 2001 flow 2.4 gpm measured by Fillmore BLM staff, and state office BLM.

Late June, 2001: Water level drops below outlet pipe of spring box and flow to the watering trough and surface pond ceases.

A local rancher has told BLM that in the 40 yrs. he has been ranching out there, Needle Point Spring has never gone dry.

The spring didn't actually go dry in the sense that the water supply is now gone. The water level in the alluvium dropped to a level below the outflow pipe in the steel tank, and water ceased to flow out of the buried inflow tank. The alluvium likely remains saturated in the vicinity of the spring.

<u>Ground Water Conditions</u>
Needle Point Spring is located in the alluvium that overlies fractured dolomite that forms Needle Point Mountain south of the spring (Whitebread, 1969). The spring likely was originally evident as a seep where water flowed from the fractured dolomites into the alluvium, creating a wet area on the alluvial slope. The seep was likely noted to be perennial, and prompted the development of an inflow structure to increase flow of the water supply.

Alluvial basin fill is extensive in the area, and extends from the mountain front along the Snake Range in Nevada, eastward into Utah to the Burbank Hills and the Mountain Home Range, a distance of about 6 miles east of the spring. The alluvial basin fill is recharged by precipitation in the Snake Range, and provides a large amount of recharge water to the alluvium in Hamlin Valley just west of the spring. The alluvium is also recharged by the flow of Big Spring, a large volume flowing spring (3,700 gpm) issuing from near the base of the Snake Range. Water flows from the spring northward into Hamlin Valley, forming Big Spring Creek, a major drainage that flows along the center of Hamlin Valley, an alluvial basin about 1.5 miles south west of Needle Point Spring.

Ground water flows from the recharge area in mountain front alluvial fans along the Snake Range eastward into Utah, then northward towards Great Salt Lake (Brothers, et al., 1993, and Hood and Rush, 1965). The water level at the spring is at about 5445 ft. elevation, which is about the same elevation of water in the deep irrigation well 4500 feet west of the spring, and is about the same elevation as water in a well 3.5 miles to the east (sec. 3, T. 24 S., R. 19 E.) which was drilled into the alluvial basin fill.

Ground water saturates the alluvial basin fill in Hamlin Valley (1.25 miles east of the spring), and a few flowing springs occur in the floor of Hamlin Valley, where upwelling water can be observed, suggesting that there is considerable upward movement of ground water. Hamlin Valley merges into Snake Valley near Needle Point Spring. The alluvium is a widespread aquifer, extending over the entire alluvial basin, from Hamlin Valley eastward to Snake Valley and the Burbank hills in Utah. From inspection of well logs in southern Snake Valley, the basin fill aquifer is comprised of a shallow unconfined aquifer and a deep confined aquifer that has a potentiometric head higher than the shallow aquifer. The deep confined aquifer is the source of water for the irrigation wells west of Needle Point Spring, based on well depths, and most likely the source of water for Needle Point Spring, as suggested by cyclical water level declines due to irrigation pumping.

Some ground water likely issues from the dolomite rocks of Needle Point Mountain into the alluvium near Needle Point Spring, as the water quality analysis at the spring shows that sulfate is slightly elevated, likely from thin gypsum beds present in the dolomite of Needle Point Mountain (Hintze, 1986). This is not considered a major source of water to the system. The temperature of the water at the spring, $15^0$ C in 1992 (BLM measurement), and 12.5 $^0$C in 1991 (Brothers, et al, 1993) indicates that the water source for the spring is not a deep regional aquifer, as the water is too cool. The water is more from a local system, and is likely recharge from the Snake Range to the west in Nevada. Because of the extensive fracturing of dolomites in Needle Point Mountain, water is likely flowing through the fractured rocks into the alluvium, near the spring.

Information from driller's logs of the nearby irrigation wells indicates that the wells in Nevada and Utah are 16-inch diameter wells. Although pump test information is not available on all of the wells, one well test on the Nevada side was at 750 gpm. It is estimated that all the wells would be capable of yielding at least 500 gpm. Water right applications for two wells on the Utah side (in T. 24 S., R. 20 W., sec. 2) are for high capacity pumping. One application stated 3 cfs (about 1300 gpm) and another well has applied for 2 cfs (about 900 gpm).

Water Level Declines

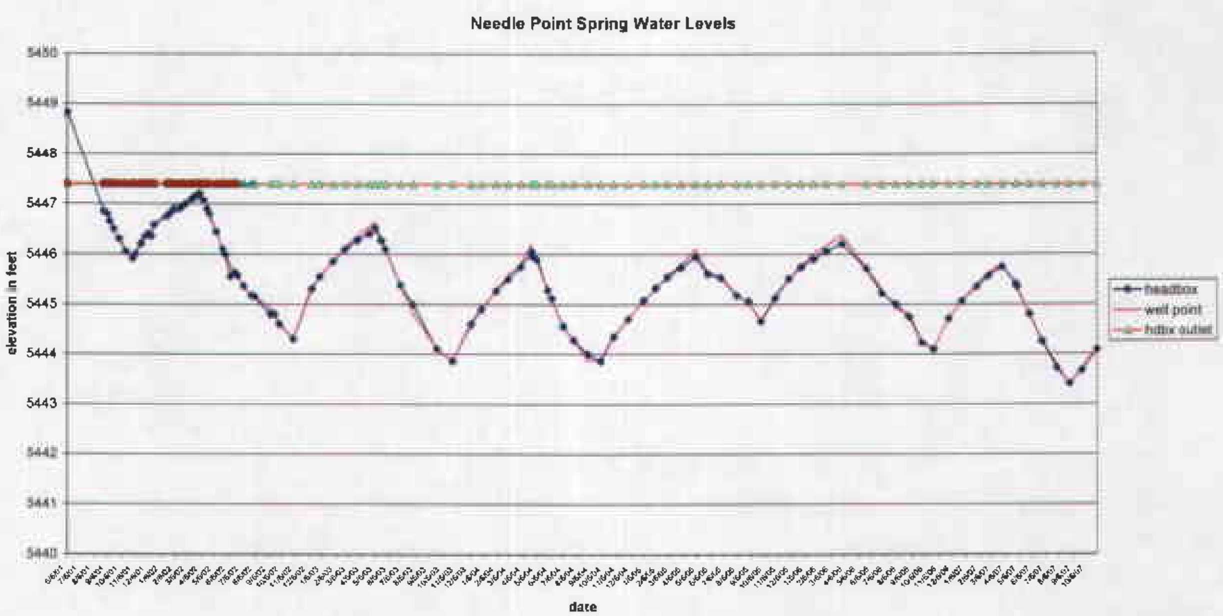
The water level decline in 2001 at Needle Point Spring is about 2.5 ft., (measured from the top of the steel tank intake) which is enough to drop the water level below the out flow pipe, resulting in cessation of flow to the watering trough and pond. The water level in the spring intake box dropped from 11.6 inches on June 6 (measured by BLM hydrologists) to 29.5 inches on July 18, 2001. However, from the discovery date of the wild horse mortalities, the spring likely stopped flowing into the trough about the last week of June 2001, so the water level decline was rather rapid, dropping an estimated 1.5 feet in about 2-3 weeks, but the water level may have dropped more than 1.5 ft, as there may have been some decline prior to the June 6th field visit by BLM.

The 2001 decline in ground water level at Needle Point Spring is likely due to increased irrigation pumping with center pivot sprinkler systems about a mile to the west. Consideration of precipitation as a factor could be that precipitation has been less than normal. The lower precipitation is not documented in this area by rain gages, but anecdotal reports from local ranchers suggest that precipitation is generally less than in the past. This factor is not regarded as being the cause of the decline of the spring however, because the decline was abrupt, and coincides with the onset of the 2001 irrigation season. The most likely explanation for the spring going dry is the irrigation pumping. There are about 13 center pivots in Hamlin Valley to the west (2 miles away); at least one of the center pivots is just east of the Nevada border in Utah and others are across the line in Nevada, extending south for about 4 miles. Water is used for crops from April to October. The exact pumping cycle applied to the crops is not known.

Because the basin fill alluvium extends from the area of the irrigation wells to Needle Point Spring, a geologic and hydraulic connection exists between the area being pumped for irrigation and the spring. A predictive analysis of drawdown due to pumping of planned wells in Snake Valley by the Las Vegas Valley Water District in 1993 indicated that drawdown of water levels from pumping of wells on the east side of Snake Valley in Nevada would extend throughout Snake Valley including the area of Needle Point Spring, after pumping until steady state is reached, a period of several years.

A predictive analysis of the potential drawdown at Needle Point Spring as a result of the irrigation pumping is difficult because of the lack of actual pumping data, including the rate of pumping and the duration. An estimate of the possible magnitude of drawdown was made, using pumping rates as applied for in the water right applications, and assuming a period of use of April to October which is unconfirmed. Using an analytical model, the Theis analysis for confined aquifers, it is estimated that drawdown at Needle Point spring of 7.2 ft. could occur for a well pumping at 1300 gpm 4500 ft. away from the spring, assuming a pumping duration of 90 days continuous pumping. The actual pumping may be less than this so drawdown would be less. Also, actual aquifer conditions might be different than those assumed in the model.

Since August 2001, when the water level dropped below the spring box outlet, the water levels have declined every irrigation season, coinciding with the time period when the irrigation pumps are turned on, and recovering when the pumps are turned off. Monitoring of water levels since then shows that water levels have experienced deeper declines from one summer to the next, and that recovery is lower in each successive irrigation season. This pattern changed somewhat in 2005, when it is suspected that the pumping rate was reduced, due to a reduced irrigated acreage. The 2006 irrigation season brought on the about the same water level decline as seen in September 2004. Ground water levels declined sharply in the 2007 irrigation season, with a greater total water level decline than in any year since 2001 (slightly greater than a 5 ft. decline from the June 2001 level). The attached graph of water levels shows the cyclic trend of water level declines, coinciding with the irrigation season pumping. The trend of maximum end-of-irrigation-season water levels continues to be downward, and is expected to continue in this manner as long as pumping is continued. Because of the lag time in aquifer response, the minimum water level occurs usually around early to mid-November, a month or so after irrigation season has ended, as shown in the chart below. The maximum recovery in water level usually occurs a few weeks after the next irrigation season begins, and is seen in the graphs as a Mid-April or mid-May event. The water level might have continued to rise somewhat if pumping was not resumed, but full recovery to pre-pumping water levels is not expected. Additional pumping by new wells in this area will accelerate this trend of deepening minimum water levels, and will result in much greater drawdowns that could extend over a large area in Snake Valley.



Literature Cited

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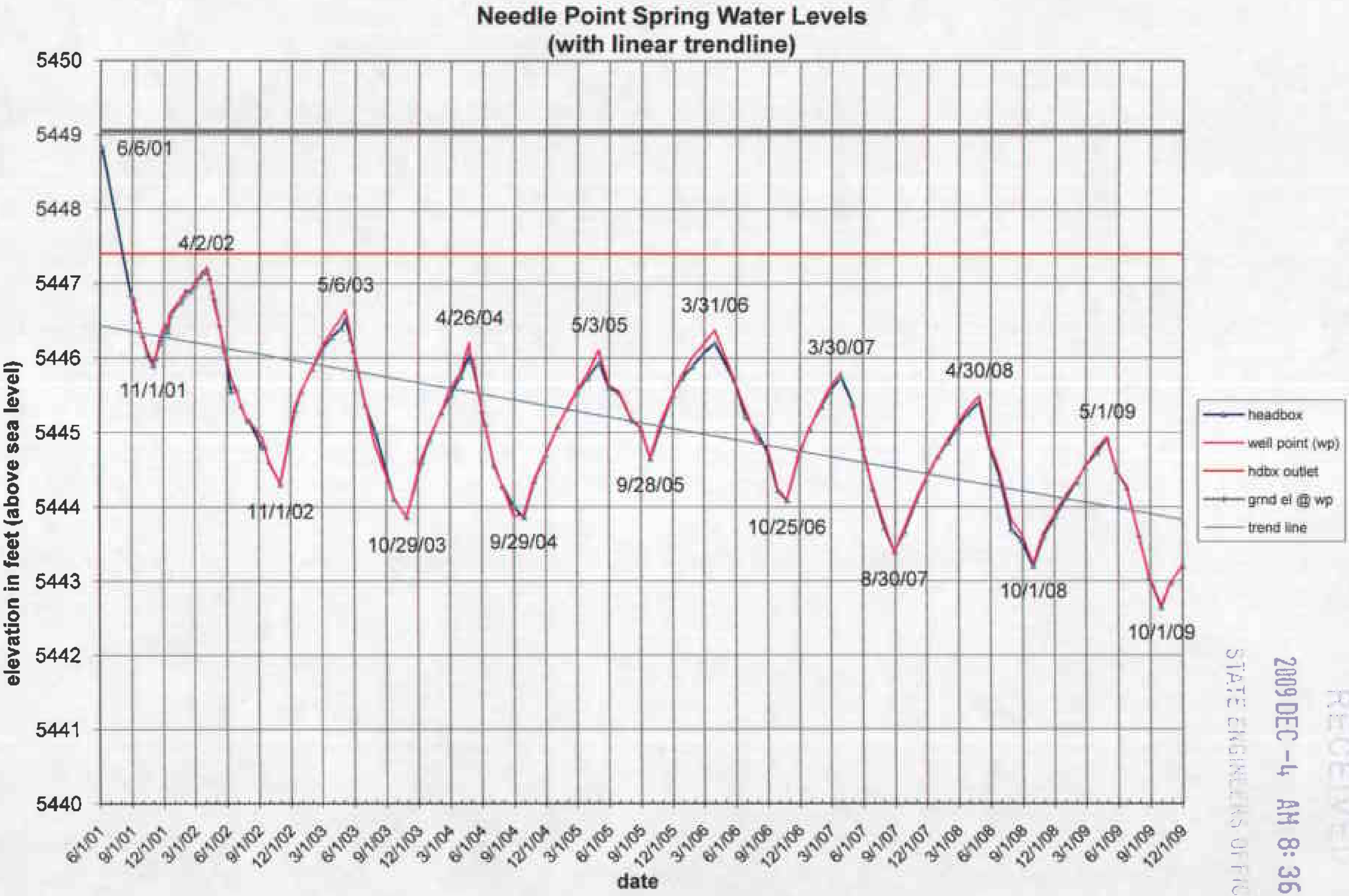

Needle Point Spring Water Levels
(with linear trendline)
elevation in feet (above sea level)
date
6/6/01
4/2/02
11/1/01
5/6/03
11/1/02
4/26/04
10/29/03
5/3/05
9/29/04
3/31/06
9/28/05
3/30/07
10/25/06
4/30/08
8/30/07
5/1/09
10/1/08
10/1/09
headbox
well point (wp)
hdbx outlet
grnd el @ wp
trend line