THE STATE OF NEW HAMPSHIRE

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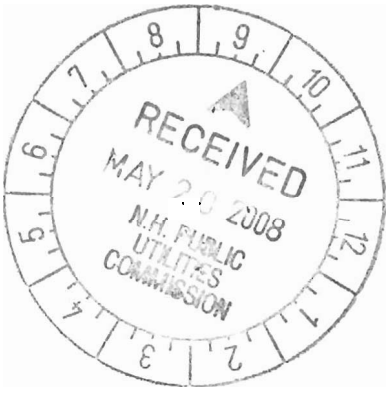
May 20, 2008



Debra A. Howland
Executive Director & Secretary
New Hampshire Public Utilities Commission
21 S. Fruit St., Suite 10
Concord, NH 03301

Re: **DW 07-078,** Lakes Region Water Company, Inc.
Hidden Valley Customer Service Lines

Dear Ms. Howland:

On July 11, 2007, the Commission received a letter from Lakes Region Water Company, Inc. (Lakes Region) requesting that the Commission provide authorization for Lakes Region to require customers of its Hidden Valley community water system to replace their house service lines and pipe fittings which Lakes Region deems inadequate[1]. Pursuant to Lakes Region's tariff and standard water utility practice, individual customers own and are responsible for the service line from the curb stop/shut-off valve (or, in the event there is none, from the property line) to their home. Lakes Region's Hidden Valley system is located in Tuftonboro and Wolfeboro and serves approximately 116 customers. In support of its request, Lakes Region cites to eleven leaking house services it had found in response to outage calls in the two months prior to the date of its letter. The company stated that these leaks had depleted the system's water supply, and had also led Lakes Region to purchase water from outside sources as a result of the loss of the system's water. Lakes Region stated that inadequate original materials were used for service lines and fittings when the system was constructed, and that service line trenches were often backfilled with inappropriate materials such as rocks, stumps, and tree roots. These factors have led, according to Lakes Region, to frequent and unnecessary interruptions in service and to a waste of the company's time and money which have distracted the company from dealing with more crucial objectives.

[1] According to a data response from Lakes Region, attached as Attachment A, approximately half of the customer-owned service lines are believed to have been repaired or upgraded during Lakes Region's period of ownership of the system.

Staff has reviewed the request of Lakes Region for the Commission to order customers at Hidden Valley to replace their customer-owned service lines and pipe fittings. Staff issued data requests to the company, and has also reviewed data responses from Lakes Region in the DW 07-105 docket which were also relevant to the issues in the instant docket. Our review leads us to the conclusion that there is insufficient evidence to support the request of Lakes Region that the Commission take the unprecedented step of ordering the Hidden Valley customers to replace all service lines not installed or replaced subsequent to Lakes Region's acquisition of the two systems. We advised the company of our view of its request in a letter dated April 14, 2008, which is attached to this letter as Attachment B. That letter fully provides the basis for Staff's recommendation. In summary, in reviewing the reported incidents of customer service line repairs, it appeared that some of the repairs cited were not necessarily customer service line breaks, but instead were a mix of frozen lines, bad valves, broken valve stands, etc. When those repairs are removed from the list, it appears there have not been an inordinate number of breaks in customer-owned service lines over the five and a half year period for which data was provided. A review of the eleven cited leaking service lines in the recent two months prior to the company's request shows that about half of them appear to have only involved the curb stop. While it is true that these valves are also the responsibility of the water customer, it is Staff's view that leaking valves alone should not require replacement of an entire service line costing perhaps $1,500 to $2,000. In addition, our review of a number of data responses provided by the company suggests that line breaks, repairs and replacements in company-owned portions of the Hidden Valley systems continue to be a problem of comparable magnitude to that in customer-owned service lines, yet we are not aware that the company has undertaken wholesale replacement of its own facilities in Hidden Valley.

Staff was also interested in reviewing lost water data to determine if that data would provide additional insight into the request of Lakes Region[2]. We do not believe that it does. Staff has not observed any data that would suggest that Hidden Valley is significantly different from other Lakes Region systems. In particular, although the percentage of water loss in Hidden Valley may appear to be high, the actual rate of loss appears neither extraordinary nor inconsistent with the company's other systems. In addition, we question the reliability of the water loss data, in regard to both the source meters and customer meters. Lakes Region's consultant, Lewis Engineering, stated in correspondence to the Department of Environmental Services (DES) dated November 15, 2007, "At the present time, the quantity of water being pumped from the existing wells is not considered reliable."[3] The company's data responses and other correspondence in this docket and in DW 07-105 suggest that reasons include the absence of some source meters, occasional nonfunctioning source meters, and questions about source meter sizing and lack of calibration. Customer consumption data is similarly suspect due, for example, to an apparently significant number of non-functioning remote readers. A number of these concerns will be the subject of new efforts under the schedule approved

[2] See Lakes Region data response to Staff 1-21, enclosed as Attachment C.
[3] Attachment D, page 6 of 8.

by DES on March 24, 2008, in conjunction with the Hidden Valley Administrative Order issued in October 2007, and so may only be resolved over time[4].

It is Staff's belief that, although the quality of the materials used in service lines is an issue in systems such as Hidden Valley, it is the issue of inadequate supply that appears to be the real driver of the company's request in this docket. Staff believes that Lakes Region also acknowledges this as well, as evidenced by its response to Staff data request 1-24, attached as Attachment F. It is our observation that system improvements with regard to supply and storage are the first priority for improving system reliability at Hidden Valley.

For the reasons provided above, Staff recommends that the request of Lakes Region in this filing for authorization to require customers to replace their service lines be denied. As indicated earlier, Staff provided its findings to the company and suggested that the company advise us if it would be providing a response to that letter. The company has not responded to Staff's letter as of this date.

Sincerely,

Mark A. Naylor
Director, Gas & Water Division

cc: Service List
Attachments

[4] See Attachment E.

Staff 1-26
Does the company's service line replacement request apply equally to the upper and lower systems?
Company Response:
Yes, the service line replacement request applies equally to the upper & lower systems.

Staff 1-27
How many of the customer-owned portions of the combined systems' approximately 116 service lines are believed to have been repaired or upgraded during Lakes Region's period of ownership?
Company Response:
We estimate that at least 50% of customer-owned portions of the 116 service lines are believed to have been repaired or upgraded during our period of ownership.

Staff 1-28
Does the company have any reason to believe the material or construction on the company-owned portions of service lines in Hidden Valley differ in any way from that on the customer owned portions?
Company Response:
Yes, the Company owned portions of the service lines in Hidden Valley are installed with a minimum of 160 psi pipe and brass fittings with at least 160 psi. We also follow proper backfill techniques and use adequate materials for such.

Staff 1-29
How many of the company-owned portions of the approximately 116 service lines are believed to have been repaired or upgraded during the company's period of ownership?
Company Response:
Company-owned portions of the 116 service lines that have been repaired or upgraded during our ownership: At least 50% or more of LRWC's service lines have been repaired or upgraded. The most recent renovation is the 500+ feet of water main that was installed on Hidden Valley Drive. The existing main was running through the woods and on customers' property, so it was moved so that the water line and/or customer valves were accessible to LRWC employees.

Staff 1-30
Please indicate the approximate or average age of service lines in the combined Hidden Valley systems and identify the information Lakes Region relied upon in determining this age.
Company Response:
The approximate age of service lines in the Hidden Valley systems are estimated to be about 27-34 years old. The information relied upon is the general age of the buildings in the subdivisions.

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April 14, 2008

Thomas Mason
Lakes Region Water Company, Inc.
P.O. Box 389
420 Governor Wentworth Highway
Moultonborough, NH 03254

Re: DW 07-078, Lakes Region Water Company
Hidden Valley Customer Service Lines

Dear Mr. Mason:

Staff has reviewed the request of Lakes Region Water Company, Inc. (Lakes Region) for the Commission to order customers at the Hidden Valley community water systems (collectively, Hidden Valley) to replace their customer-owned service lines and pipe fittings. As you know, we issued data requests on this matter, and we have reviewed your responses in this docket as well as material provided in DW 07-105 (investigation docket) pertaining to those systems.

Our review leads us to the conclusion that there is insufficient evidence to support your request that the Commission take the unprecedented step of ordering the Hidden Valley customers to replace all service lines not installed or replaced subsequent to Lakes Region's acquisition of the two systems, as your request is clarified in response to data request Staff 1-31. In particular we reviewed in detail your response to Staff 1-25 and listed all of the repairs on a spreadsheet, which is attached. Staff marked up each one as to whether or not it appeared to be a service line issue. It appears that some of the repairs cited were not necessarily customer service line breaks, but instead were a mix of frozen lines, bad valves, broken valve stands, etc. When these are removed from the list, it appears there have not been an inordinate number of breaks in customer-owned service lines over the five and a half year period for which data was provided. In addition, in your July 10, 2007 letter requesting this docket be opened, you noted that there were eleven leaking service lines in the recent two months. Our review of your response to data request Staff 1-36 regarding these incidents shows that about half of them appear to have only involved the curb stop. While Staff acknowledges that these valves are also the customer's responsibility, it is Staff's view that leaking valves alone should not

require replacement of an entire service line costing perhaps $1,500 to $2,000. Similarly, various responses suggest that line breaks, repairs and replacements in company-owned portions of the Hidden Valley systems continue to be a problem of comparable magnitude to that in customer-owned service lines, yet we are not aware that the company has undertaken wholesale replacement of its own facilities in Hidden Valley.

With respect to the issue of lost water, the data you supplied in data response Staff 1-21 does not appear to support your request. There is nothing we observe that sets Hidden Valley apart from your other systems. In particular, although the percentage of water loss in Hidden Valley may appear to be high, the actual rate of loss appears neither extraordinary nor inconsistent with the company's other systems. In addition, we have had questions regarding the reliability of the water loss data, in regard to both the source meters and customer meters. As indicated in correspondence from Bruce Lewis to DES dated November 15, 2007, "At the present time, the quantity of water being pumped from the existing wells is not considered reliable" (p. 6). The company's data responses and other correspondence in this docket and DW 07-105 suggest reasons include the absence of some source meters, periods during which existing source meters were nonfunctioning, and questions about source meter sizing and lack of calibration. Customer consumption data is similarly suspect due, for example, to an apparently significant number of non-functioning remote readers (see, for example, responses to Staff 1-26 and 2-35 (c) in DW 07-105). A number of these concerns will be the subject of new efforts under the schedule approved by DES on March 24, 2008 in conjunction with the Hidden Valley Administrative Order issued in October 2007, and so may only be resolved over time (see, for example, schedule items 7, 10, 11, 12, 13 and 15).

It is our belief that, although the quality of the service lines is an issue in systems such as Hidden Valley, it is the supply issue that appears to be the real driver of the company's request in this docket - as the company itself suggests in its response to Staff 1-24. It is our observation that system improvements with regard to supply and storage are the first priority for improving system reliability at Hidden Valley.

If you have any questions regarding this, please let us know. Staff is prepared to make a recommendation to the Commission as outlined in this letter. Staff suggests that if you wish to respond to Staff's recommendation, let us know and we will indicate that in our recommendation letter.

Sincerely,

Mark A. Naylor
Director, Gas & Water Division

Attachment

DW 07-078 Lakes Region Water Co. - Hidden Valley
DR Staff 1-25, Work Orders for Service Line Leaks

Staff Review	Date	Men	Hrs	Total MH's	Excavator	Total Cost	Sub-contracted	Name	Address	Description
NC	1/2/2002	1	3	3	N	118.53	N	Denham	11 Brown Rd	Install ball valve - leaking
?	3/1/2002	1	1	1	N	14.49	N		53 Hidden Valley Dr	Look for leak
?	4/22/2002	2	2	4	Y	101.29	N	Lange	24 Hidden Valley Dr	Repaired leak
?	5/7/2002	2	3	6	Y	194.86	N	Smith	4 Heritage Rd	Repaired leak - replaced valve
?	7/11/2002	1	6	6	N	109.81	N	Hyman	53 Hidden Valley Dr	Repair leak
?	7/9/2003	1	1	1	N	15.00	N	Gray	72 Hidden Valley Dr	Removed meter & horn. Tried to isolate service at street.
NC	11/19/2003	1	0.5	0.5	N	7.80	N	Magistelli	9 Ethan Allen	Repaired leak on street side of meter.
YES	1/27/2004	1	1	1	N	15.60	N	Magestrelli	9 Ethan Allen	Located leak on 9 Ethan Allen, spread sand on road. (Customer charge - Yes)
NC	2/2/2004	1	1	1	N	15.60	N	A. Leri	11 Aspen	No water, service line frozen before it entered home. (Customer charge - Yes)
NC	4/16/2004	1	1.5	1.5	N	25.20	N	Sharkey	27 Alberg	Repaired leak in water line before meter also. (Customer charge - Yes)
NC	5/17/2004	2	1	2	N	40.55	N	Tyler	10 Hidden Valley Dr	(Leak - Customer) Fix water leak
NC	5/17/2004	1	1	1					10 Hidden Valley Dr	(Leak - Customer) Fix water leak [incomplete work order, for same work as above?]
NO	6/11/2004	1	1	1	N	16.80	N	Quigley	7 Bishops Gate	Repair leak on bottom plate. No water to test when meter was installed before.
YES	7/12/2004	1	2.5	2.5	Y	151.76	N	Lamay	42 Valley	(Leak - Customer) Repair leak in driveway and replace 2 valve stands and fix(?) blow off
		1	3.5	3.5						
NO	4/18/2005	1	2.5	2.5	N	156.19	N	Lamy	42 Valley Rd	Septic truck broke line (Customer charge - No)
		1	3.5	3.5						
NC	2/21/2006	2	1	2	N	32.76	N	Terry	90 Hidden Valley Dr	Shut water off leak in basement + look for other leaks (Leak - Customer)
?	2/22/2006	2	0.5	1	N	?	N	Wilcox	57 Hidden Valley Dr	(Leak - System) (Customer charge - Yes)
NO	4/27/2006	1	2.5	2.5	N	103.91	N	Terry	90 Hidden Valley Dr	Replace meter bottom - 3/4" ball valve
?	5/26/2006	1	2	2	N	69.62	N	Ramunno	24 Alberg	(Leak - Customer)
NC	7/1/2006	1	1	1	N	52.50	N	Terry	90 Hidden Valley Dr	(Leak - Customer)
Yes	9/1/2006	1	3	3	Y	96.39	N	Richardson	3 Bishops Gate Rd	replaced 2 ft of pipe: fixed customer leak
NO	9/2/2006	1	0.5	0.5	N	16.07	N	Morris	6 Bishops Gate Rd	Turned off Morris, because of leak. (Leak - System)
YES	9/10/2006	1	3	3	Y	265.00	N	Ayers	2 Bishops Gate	repaired customer leak
YES	10/17/2006			0	N	116.50	Y	Wilson	14 Heritage Dr	repair customer water leak
NO	1/22/2007	2	3	6	N	378.42	Y	Perrine??	72 Hidden Valley Dr	fix water line leak @ 73 hidden valley dr - L

				0						(Leak - System)
NC	6/7/2007	2	2	4	Y		Y	Townsley	31 Valley Drive	Repair & replace broken valve stand & rod on customer's property
NO	6/19/2007	1	3	3	N	180.56	Y	Rozenzweig	84 HV Drive	repair leaking valve
NO	6/20/2007	1	4	4	N	48.76	Y	Poisson	22 Alberg Dr	replaced leaking valve also replaced neighbor's (not leaking just old - Ramunno)
				0						
YES	6/29/2007	2	3	6	Y	83.12	Y	Heustons		fix water leak - water main break - cust side
NO	7/2/2007	1	1	1	N	44.20	Y			replace 2 dead lot house services with 1 blow-off / had hse service installed for build-out no houses built - hs svs leaking
Yes	7/2/2007	1	4	4	N		Y	Buzzee	890 Beach Pond	Try to get water at Buzzee's - svs line is broken, leaking, installed poorly, over ledge
Yes	7/4/2007	1	3.5	3.5	N	61.74	N	[Buzzee]	[890 Beach Pond]	cust hse service is leaking ran a temporary line so he could have water giving him 30 days to find a contractor ro repair
YES	7/7/2007	1	2	2	N	70.00	Y	Perrine	72 Hidden Valley Dr	Repair leaking house service (Leak - Customer)
YES	7/17/2007	1	2	2	N		N		78 Hidden Valley Drive	Mark out leak area for Dig Safe
Yes	7/18/2007	1	3	3	N		N	Jim Allan	78 Hidden Valley Dr	looking for leak - found leak, Young 78 Main Dr.
Yes	7/18/2007	1	3	3	N	52.92	N	James Allan	78 Hidden Valley Drive	low pressure in system - found customer leak
Yes	7/19/2007	1	2.5	2.5	Y	147.81	N	James Allan	78 Hidden Valley Drive	help Tom fix customer leak per request
?	8/14/2007	1	3.5	3.5	N	61.74	N	Ryan Stuart	11 HV Dr.	looking for leaks found none, rewired lower well. Leak at 11 HV Dr shut off valve - so he can hire a contractor.
Yes	8/21/2007	2	3	6	Y		Y	W. Hayinar	11 Aspen Drive	Repair leak (customer charge)

Staff 1-19

Please indicate how many office personnel were or are employed by Lakes Region Water Company:

a) **At the end of 2005**
b) **At the end of 2006**
c) **Currently**

Company Response:

Office personnel employed by LRWC

a) End of 2005: 3
b) End of 2006: 3
c) Currently: 3

Staff 1-20

Lost water data provided with the company's 2004 and 2005 Annual Reports indicates that the Hidden Valley systems are losing, on average, 2/3 or more of the water produced. In this regard please indicate:

a) **What efforts have been made on leak detection in the systems in the past two years?**
b) **What efforts the company plans to make in 2007 and 2008 in this regard (by year)?**

Company Response:

a) Leak detection efforts past 2 years: Have worked in conjunction with Derek Bennett of NHDES to develop a proper leak detection plan in accordance with AWWA standards. It has been approved and as such, all water mains & services are to be surveyed for leaks. We are presently in the process of completing the leak detection surveys.
b) Plans for leak detection in 2007 & 2008: Continue the leak detection survey until it is completed. Hopefully, leaking house services will be replaced by the homeowners in a timely fashion.

Staff 1-21

Please provide a calculation of lost water for the Hidden Valley systems for 2006 and the first two quarters of 2007, by quarter. Please include the number of customers served in each quarter.

Qtr Ending	Number of Customers	Billed Customer Usage (gallons)	Lost Water Estimate (in gallons per minute)
1/31/06	114	308,924	6.646
4/30/06	115	293,964	2.914
7/31/06	116	587,928	4.205
10/31/06	116	494,428	0.254
1/31/07	116	327,624	5.860
4/30/07	116	367,268	5.558
7/31/07	116	501,160	6.373

Company Response: The lost water estimate is indicative of both large & small system leaks and/or large & small house service leaks over the entire quarterly period. It is also inclusive of any lost customer usage that should have been billed for that quarter but was not billed (refer to chart in Staff 1-10). The worst quarterly calculation of water loss occurred in Quarter 1, 2006. This lost water was estimated to be about 6.6 gallons per minute lost from the system. Please *see attached Hidden Valley Lost Water Calculation.*

Staff 1-21

Qtr 1: Nov 1st - Jan 31st

Date	Usage (gal)
11/2/2005	140620
11/7/2005	79980
11/14/2005	114310
11/25/2005	175080
11/28/2005	54150
12/2/2005	61730
12/7/2005	85170
12/12/2005	88280
12/16/2005	65520
12/19/2005	50340
12/23/2005	65330
12/27/2005	68700
1/3/2006	33540
1/9/2006	34890
1/16/2006	41850
1/20/2006	47650
1/23/2006	59700
1/24/2006	20100
1/27/2006	17850
1/31/2006	25260
Total Outgoing Water:	**1189430**
Total Billed Cust. Usage	**308924**
Total Unaccounted For Water	**880506**
Days in Billing Cycle	92
Total Minutes in 1 day	1440
Lost Water (gal per min.)	**6.646**

Qtr 2: Feb 1st - Apr 30th

Date	Usage (gal)
2/3/2006	18030
2/6/2006	20190
2/10/2006	23160
2/15/2006	21030
2/17/2006	27350
2/20/2006	62030
2/23/2006	50220
2/27/2006	21330
3/6/2006	3610
3/13/2006	69520
3/20/2006	47080
3/27/2006	35070
4/3/2006	52280
4/10/2006	87380
4/16/2006	116740
4/25/2006	8210
Total Outgoing Water:	**663230**
Total Billed Cust. Usage	**293964**
Total Unaccounted For Water	**369266**
Days in Billing Cycle	88
Total Minutes in 1 day	1440
Lost Water (gal per min.)	**2.914**

Qtr 3: May 1st - July 31st

Date	Usage (gal)
5/1/2006	75120
5/8/2006	100090
5/15/2006	94470
5/22/2006	92650
5/30/2006	116250
6/5/2006	72740
6/12/2006	84310
6/19/2006	95690
6/26/2006	95320
7/3/2006	101100
7/10/2006	77470
7/17/2006	40810
7/24/2006	43600
7/31/2006	55450
Total Outgoing Water:	**1145070**
Total Billed Cust. Usage	**587928**
Total Unaccounted For Water	**557142**
Days in Billing Cycle	92
Total Minutes in 1 day	1440
Lost Water (gal per min.)	**4.205**

Qtr 4: Aug 1st - Oct 31st

Date	Usage (gal)
8/7/2006	58630
8/14/2006	55630
8/21/2006	57940
8/28/2006	56140
8/31/2006	46860
9/5/2006	59110
9/11/2006	20550
9/15/2006	20960
9/25/2006	17240
10/2/2006	19140
10/10/2006	26480
10/16/2006	27580
10/23/2006	30470
10/24/2006	3510
10/25/2006	3320
10/26/2006	3900
10/27/2006	2560
10/30/2006	14110
10/31/2006	3890
Total Outgoing Water:	**528020**
Total Billed Cust. Usage	**494428**
Total Unaccounted For Water	**33592**
Days in Billing Cycle	92
Total Minutes in 1 day	1440
Lost Water (gal per min.)	**0.254**

Hidden Valley Lost Water Calculation: DW 07-078

Qtr 1: Nov 1st - Jan 31st

Date	Usage (gal)
11/6/2006	29830
11/7/2006	14540
11/8/2006	16210
11/10/2006	31160
11/13/2006	49930
11/14/2006	16580
11/15/2006	16070
11/16/2006	15330
11/17/2006	16280
11/20/2006	50890
11/21/2006	16010
11/22/2006	15840
11/27/2006	89510
11/28/2006	16730
11/29/2006	16070
11/30/2006	16340
12/1/2006	17510
12/4/2006	51620
12/7/2006	49560
12/11/2006	71230
12/15/2006	67000
12/18/2006	53990
1/2/2007	248870
1/5/2007	10190
1/8/2007	10930
1/15/2007	26650
1/22/2007	59020
1/29/2007	10030
Total Outgoing Water:	**1103920**
Total Billed Cust. Usage	327624
Total Unaccounted For Water	**776296**
Days in Billing Cycle	92
Total Minutes in 1 day	1440
Lost Water (gal per min.)	**5.860**

Qtr 2: Feb 1st - Apr 30th

Date	Usage (gal)
2/5/2007	84400
2/12/2007	120500
2/19/2007	127700
2/26/2007	41900
3/5/2007	37800
3/12/2007	42900
3/19/2007	56200
3/26/2007	55400
4/2/2007	52500
4/9/2007	62600
4/16/2007	151600
4/23/2007	161800
4/30/2007	76300
Total Outgoing Water:	**1071600**
Total Billed Cust. Usage	367268
Total Unaccounted For Water	**704332**
Days in Billing Cycle	88
Total Minutes in 1 day	1440
Lost Water (gal per min.)	**5.558**

Qtr 3: May 1st - July 31st

Date	Usage (gal)
5/7/2007	168800
5/14/2007	50100
5/21/2007	135200
5/29/2007	112900
6/4/2007	130400
6/14/2007	166500
6/18/2007	83500
6/25/2007	91200
7/2/2007	96500
7/9/2007	93500
7/16/2007	100600
7/23/2007	43500
7/30/2007	72700
Total Outgoing Water:	**1345400**
Total Billed Cust. Usage	501160
Total Unaccounted For Water	**844240**
Days in Billing Cycle	92
Total Minutes in 1 day	1440
Lost Water (gal per min.)	**6.373**

Lewis Engineering, PLLC
44 Stark Lane
Litchfield, NH 03052
lewis.h2o@att.net

E-mail Correspondence

November 15, 2007

Mr. Alan Leach
New Hampshire Department of Environmental Services
Monitoring and Enforcement Section
Drinking Water and Groundwater Bureau
29 Hazen Drive, P.O Box 95
Concord, New Hampshire 03302

Re: Hidden Valley Community Water System (CWS), Tuftonboro, NH -
EPA # 2372020 Administrative Order WD 07-029 – Oct. 4, 2007

Dear Alan:

Please allow the balance of this correspondence to act as the response of the Lakes Region Water Company, Inc. (LRWC) relative to the above referenced Administrative Order (AO). The order relates to ongoing water supply issues at the Hidden Valley CWS. Lewis Engineering, PLLC has been retained by LRWC to assist in this matter.

As you know, during the past several months LRWC has been working toward trying to identify and initiate improvements to water supply within this water system. Much of the work has followed the NHDES Letter of Deficiency (LOD) on this CWS. We have previously provided updates to your office following our being retained in April of this year. Our responses to the LOD were dated May, June, July and September.

The report is intended to address the items within the AO that will assist all parties in developing a final plan relative to the availability of water at Hidden Valley. Present and projected needs will be addressed along with a plan to be able to meet these needs. Following a review of this report by NHDES, a meeting will be scheduled with staff to

review this report, to discuss options to correct deficiencies, and outline an implementation plan with attainable milestones to correct the deficiencies. Following this meeting, a final implementation plan will be developed and submitted to NHDES for review and approval. This plan will include the agreed upon plans and specifications for work to be undertaken. This document will be stamped by our office. Once this final plan with specifications, and schedule for same, has been approved by NHDES, it will be considered a part of the AO and will be deemed enforceable.

System Overview

Lakes Region Water Company (LRWC) of Moultonboro, NH owns and operates the Hidden Valley Community Water System (CWS), EPA #2372020. This system is located generally east of Lower Beech Pond in Tuftonboro, NH. It is regulated by NHDES with water rates being set by the New Hampshire Public Utilities Commission (NHPUC).

There are currently 116 customers served by the water system. The system, due to elevation differences, has been primarily operated at two systems, known as Hidden Valley (Upper - 88 customers) and Hidden Valley Shores (Lower - 28 customers). This CWS is a seasonal community, with 11+/- homes per year requesting water be shut off for the winter, and turned back on in the spring. A number of other homes have very limited use during the non-summer months, but may not request that their water service be shut off for the winter months. There is a 2-inch valve in the distribution system that may be operated, when needed, to allow the two systems to work as one system. A review of the general association mapping shows that there are approximately 31+/- vacant lots. It is not known how many of these lots are owned by adjacent homeowners, or whether the vacant lots are actually buildable, i.e. meeting all current conditions necessary to be able to obtain a building permit. We believe that there may be 20+/- vacant lots remaining where a residential home could be built in the future. The fully built-out water system would therefore serve 136 customers.

There are currently a total of 7 wells within the overall system that have some amount of water available. Presently, 4 of the 7 wells are being scheduled for a short duration flow test to better assess actual water supply capacity; Wells No. 3 and No. 4 in the upper system, and Wells No. 1 and No. 2 in the Hidden Valley Shores system. Wells No.1, No. 2 and No. 5 in the Upper system are rated at 5 gpm, 1.5 gpm, and 10 gpm respectively, based on current 24-hour actual run time testing.

The Upper System has a below ground pump house with two atmospheric water storage tanks reported at 12,000 gallons each. There is an emergency fill connection for the tanks. There is one pressure tank reported at 4,800 gallons with an air compressor. There are a number of well meters, two booster pumps and one station discharge water meter. Electrical control components are wall mounted. Photos of the Upper Pump House are included within the Exhibits. The Lower (Shores) System has two well pumps and a 1,000+/- gallon capacity pressure storage tank with air compressor.

Wells No. 1, No. 2 and No. 3 (Blue, Orange, Red) are located at the Upper System's pump house. Wells No. 4 and No. 5 (Purple & 5) are located remote from the Upper pump house. The Lower (Shores) System has two wells, one inside the station and the second outside the station. It is noted that there are existing issues with the Shores System wells and protective radius, although there have been no reported bacteria issues.

A schematic plan is included as an Exhibit that identifies wells that are intended to be used by the system. There are also two wells (Yellow and Black) that are not considered for use as these are reported as being dry, but are available as monitoring wells. Future wells sites are also shown.

It is reported that the water distribution system consists of 3-inch PVC and 2-inch PE piping. The Lower (Shores) System is reported to have 2-inch and 1-inch polyethylene water mains. Individual water services are ¾" polyethylene with nylon fittings. Many of the services beyond the curb box, i.e. customer's pipe, have been found to be leaking due

to the use of substandard materials prior to the system being acquired by LRWC. A schematic of the existing water distribution system is included as an Exhibit. The schematic includes a note on new water main installed this year and a proposed pressure reducing valve (PRV) to be installed.

Water Supply Wells and Proposed Wells

The following table provides information for the existing wells located within the overall water system, including provision for a couple of new bedrock wells:

Well #	Well ID (Color)	GPM	Test Status	Comments
1	Blue	5	24 hr. run	Currently Used Upper PH
2	Orange	1.5	24 hr. run	Limited Water Upper PH
3	Red		To be Tested	May be used
4	Purple		To be Tested	May be used
5	#5	10	Run on psi Demand	Avail. to use with VFD Pressure System
1	Inside Shores PS		To be Tested	
2	Outside Shores PS		To be Tested	
	Yellow	0	-	Monitoring Well for Upper Pump House
	Black	0	-	Monitoring Well for Upper Pump House
	Future			Near Well #5
	Future			Other

Normal system operation currently has Wells No. 1 and No. 2 available for use at the Upper pump house. The wells START and STOP based on level controls inside the atmospheric storage tanks. Pressure switches START and STOP the booster pumps based on pressure in the distribution system. Work to be completed includes; Hydro-fracturing Well No. 3 with testing to determine if any additional water may be relied upon from this well.

Wells No. 4 and No. 5 are located remotely from the Upper pump house. Well No. 4 has to be pump tested to assess the amount of water available from this source. Well No. 5 is rated at 10 gpm. During the past 60 days, LRWC installed a pressure recording chart at the system connection point for this well. Pressure data was accumulated and reviewed. To improve system pressures, a VFD based well pump control system was installed with a master meter for Well No. 5. This well is connected to the system with a 1-1/2-inch P.E. well pipe and is being run to meet the pressure needs within the Upper distribution system. The well runs only fast enough to contribute a predetermined quantity of flow into the water system. If it is determined that Well No. 4 can supply a reasonable amount of water, then it will also be set up with a system similar to Well No. 5.

HydroSource Associates, Inc. (Mr. Fred Bickford) of Ashland, NH, has been retained by LRWC to assist with the location of other potential well sites within this CWS's general geographic area. An acknowledgement from HydroSource Associates is attached. The selection of well sites is challenging given the history of generally poor well performance in the area, coupled with the density of housing units, and the lack of common area available, as it applies to protective radii. Once HydroSource has identified and staked potential well sites, LRWC intends to have Mr. Stephen Roy from NHDES visit and evaluate the prospective well sites.

The Lower (Shores) System has two existing wells at the Shores Pump House. This is reported as a direct pressurization system utilizing the two wells, pressure switches, and existing pressure tank. These wells are being scheduled for short duration pump testing to assess their pumping capacity. One improvement to consider may be deepening Well No. 2, which is located outside the station. The intent would be to drill this well deeper, in hopes of intersecting additional fracture zones. The issue of minimal sanitary protective radii around these wells is an issue. Prior to considering the well deepening, an assessment of capacity, and a review by NHDES relative to the merit of attempting this approach has to be resolved.

Water System Demands

Customer meters are read by LRWC on a quarterly basis. All homes have meters. There are 88 service connections on the Upper System and 28 service connections on the

Lower (Shores) System. At the present time, the quantity of water being pumped from the existing wells is not considered reliable. Historically, well meters have slowed or stopped due to plugging. An evaluation has been conducted to determine the actual water sold to the 88 customers. The water usage evaluation ran from November 6, 2006 (1st day of quarterly billing cycle) through October 31, 2007 (last day of most recent quarterly billing cycle). It was noted that during any one quarter there are some number of customers who report no (zero) water consumption. This may be due to an unoccupied residence, no access to the home for an actual meter reading, or potentially a damaged water meter. LRWC has and ongoing replacement program. Old customer meters are replaced with new meters that have outside reading devices.

Our analysis totaled the amount of water sold during all quarters, and divided it by the number of customers where actual water use was recorded. This provided an average use of water in gallons per day (gpd). Calculated actual water usage varied between 59 and 68 gpd per customer. The average use was then multiplied by the 116 customers presently on the system. Based on the 116 customer total, the highest average day was calculated as 7,936 gpd. If 20 additional customers were added, this would reflect an anticipated water demand of 9,248 gpd at build-out. This number has been multiplied by 2.2 times to reflect a peak day (2.0), plus some provision for unaccounted for water (20%). This reflects a calculated peak day (PPV) of 20,346 gallons. Based on this analysis, the target for water supply at Hidden Valley should be 14+/- gpm from all of the well water supply sources.

Currently, until further testing, we have been able to account for approximately 18 gpm of source water capacity. One draw back is the fact that some of the well water supplies are only available into the system as direct pumping from the well. The amount of water currently available to the atmospheric storage tanks is about 8 gpm, or over a 24 hour period, 11,520 gallons.

The need to develop some additional well water capacity, especially in a manner that would allow the atmospheric tanks to be filled during low demand periods is very

important. The availability of functioning meters, and a water meter readings on a routine basis for all wells is also recommended.

The further development of Wells No. 4, No. 5 and potentially one additional well, and its VFD pressure maintaining system will supply the balance of the Upper System. The Shores System will be supplied by its existing pump house, with potentially Well No.2 (Outside Well) being deepened to seek some additional capacity.

Other Sources of Water Loss

A review of the NHPUC Form E-18, Water Outages, indicates that during the July-September Quarter, there were 4 outages reported. The primary reason reported by LRWC for the outages was that a number of house services have been found to be leaking i.e. customer piping located on private property between the curb stop shut off and the homes themselves. The service piping is small diameter polyethylene with older nylon fittings, which was found to be sub-standard. Although LRWC affected repairs, this is something that is the homeowner's responsibility. During July LRWC sent a letter to the NHPUC requesting that customers be required to replace their sub-standard service lines. As of this date LRWC has not received a response. There have also been a few water main breaks, which have been immediately repaired by LRWC. In addition LRWC reported that they have installed approximately 600 feet of new 2-inch HDPE water main and services in the Lower (Shores) portion of the system along Hidden Valley Road, north of Brown Road.

A leak detection program has been initiated. John Dawson of LRWC has been working with Derek Bennett of the NHDES on a formalized leak detection program. LRWC has prepared a Leak Detection Log, as well as a Leak Detection and Repair Plan for the Hidden Valley System. Copies are found with the Exhibits. Additional ongoing efforts to monitor the actual volume of water entering the water system versus water sold to the customers and to ascertain unaccounted for water will be an important aspect of the long term operation of this system. Locating and repairing leaks as they are found, shutting off customers at the curb if it is found that their service lines are leaking, continuing to replace old customer meters with new meters with outside readers, and

installation of reliable metering associated with all wells that will be used within the system, plus a master system meter near the distribution entry point in the upper pump house are all recommended.

Additional Water Pump House and Water Distribution System Improvements

The Upper pump house, beyond the need for reliable water metering, needs to have some general upgrading. This should include general piping and connection of booster pumps in a fashion that keeps them a minimum of 12-inches off the floor. The electrical controls and electrical wiring for the overall station should also be reviewed and replaced as needed.

At this time, LRWC is also proposing to install a pressure reducing valve vault (PRV) in the 3-inch water main located on Alberg Road. They also plan to keep the emergency connection valve (2") between the Upper and Lower sections in its normally closed position. The distribution system PRV valve and vault will allow the Upper Pump House to supply a portion of the highest elevations within the system.

This concludes our system evaluation report, primarily focusing on water availability, and water needs current and future, along with recommendations. After review, please contact our office with any questions or if additional information is required. Further distribution of this material is left to your discretion. We look forward to the opportunity to meet with NHDES staff to further refine this report and process.

Respectfully,
Lewis Engineering, PLLC

Bruce W. Lewis

Bruce. W. Lewis, P.E.

cc Tom Mason, Sr. and Tom Mason, Jr., LRWC

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

March 24, 2008

Thomas Mason, Sr.
Lakes Region Water Co.
420 Gov. Wentworth Hwy
PO Box 389
Moultonborough, NH 03254

Subject: CWS Tuftonboro: Hidden Valley/ Mason Water System – NH2372020
Implementation Schedule for Administrative Order No. WD 07-029

Dear Mr. Mason:

As you know, the Department of Environmental Services ("DES") issued Administrative Order No. WD 07-029 (the Order), dated October 4, 2007 to Lakes Region Water Company ("LRWC"). The Order was issued in response to several violations of NH Admin. Rule Env-Ws 372, *Design Standards for Small Community Water Systems*, as determined by water capacity shortfalls at the water system. Item E.3 of the Order required LRWC to submit a long-term implementation schedule with milestone dates to correct the violations which, upon DES approval, would be incorporated by reference into the Order and enforceable thereunder.

On March 21, 2008, DES received an e-mail memorandum from Lewis Engineering that set forth the "Final Implementation Schedule" for the Hidden Valley Community Water System project. DES staff has reviewed the schedule and hereby approves it. As noted in the implementation schedule, many tasks associated with proposed water system upgrades require approval by DES prior to construction, as such, DES approvals will establish target dates for upgrade completion on a case-by-case basis.

As a result, the Implementation Schedule outlined in the March 21, 2008 Memorandum, copy enclosed, is incorporated into Administrative Order No. WD 07-029. Compliance with the requirements of the Order shall be determined using the actions and corresponding deadlines contained in the Implementation Schedule. DES appreciates the continuing efforts being made by LRWC to resolve the water supply issues at the system.

If you have any questions concerning this letter, please contact me by phone at (603) 271-1168, or by e-mail at *sarah.pillsbury@des.nh.gov*.

Sincerely,

Sarah Pillsbury, P.G., Administrator
Drinking Water and Groundwater Bureau

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encl.: Lewis Engineering Memorandum, dated March 18, 2008

cc: DES Legal Unit
Public Information Officer, DES PIC
NH AGO, Environmental Protection Bureau
NH PUC
Town of Tuftonboro, Board of Selectmen
Town of Wolfeboro, Board of Selectmen
Hidden Valley Property Owners Association
EPA, Region 1

Attachment E
Page 2 of 3

Hidden Valley CWS - EPA #2372020
NHDES - Admin. Order #WD 07-029 - Mr. Alan Leach
Revised Proposed Final Implementation Schedule
Proponent: Lakes Region Water Company, Inc. - Moultonborough, NH 03254
Engineer: Lewis Engineering, PLLC - Litchfield, NH 03052
Revision Date: March 18, 2008

Item #	Description	Start Date	Est. # Weeks LRWC	LRWC Date to send to DES	Contingency Weeks - DES Review	Finish Date	Completed Date	On Time (Yes/No)	Cntngcy. Decision (Yes/No)	Decision Description
1	Investigation of Lower Shores Wells, plus other sites by LRWC, DES and HydroSource. Included evaluation of "Triangle Property" with well stake (2nd choice) and Hanson Site near Well #5 (3rd Choice).	11-Dec-07	1	18-Dec-07	0	18-Dec-07	18-Dec-07	Yes	No	
2	Deepening of Lower Shores existing well, located adjacent to the pump house, followed by Hydro-Fracturing by zone isolation method.	10-Dec-07	3	31-Dec-07	0	31-Dec-07	21-Dec-07	Yes	Yes	Pursuing additional well siting approval for the Triangle Property Well Location, and Test Well drilling at that location are contingent on the results of Well deepening followed by testing of the well and final well report by HydroSource. This site would be followed by the Hanson Site adjacent to Well #5 if and only if other sources do not provide sufficient water supply capacity.
3	Well Siting Report for Lower Shores deepened well by Hydro-Source, prior to 48 hour well testing, using 175' SPA. Written report by HydroSource includes time for final DES comments and report updating as needed, plus approval.	14-Jan-08	14	21-Apr-08	4	19-May-08			No	Based on timeline estimate from Fred Bickford at HydroSource.
4	Pumping tests - Step test and 48 hour, with full SDWA analysis. Testing to be set up and monitored by LRWC under the direct supervision of HydroSource.	19-May-08	4	9-Jun-08		9-Jun-08			No	Based on timeline estimate from Fred Bickford at HydroSource, and scheduling of equipment installation from LRWC.
5	Final Well Report for 48 hour pump test by HydroSource, including SDWA water quality results. Including time for DES review and approval.	9-Jun-08	10	18-Aug-08	4	1-Sep-08			Yes	Based on timeline estimate from Fred Bickford at HydroSource. Lab turn around time will also be a potential factor for full SDWA results.
6	Evaluating Alarm communications for Upper Pump House with recommendation & installation of equipment. Verify customer water use from 2006 and 2005 based on meter billing records from LRWC. Provide written Memo report and design recommendations.	14-Jan-08	2	4-Feb-08	1	4-Feb-08	4-Feb-08		Yes	If telephone dial tone service entrance is required, add 8+/- weeks for installation of same.
7	Design improvements for upgrading of Upper Pump House for Metering, Controls, Pumping, and Piping. Provide Design package with detailed recommendations.	7-Apr-08	4	5-May-08	4	2-Jun-08			Yes	Installation of component schedule to be determined following design based on delivery of equipment and subsequent installation and start up scheduling.
8	Design improvements for PRV vault to be installed in distribution system. Submit Design Package.	7-Apr-08	4	5-May-08	4	2-Jun-08			Yes	Installation of component schedule to be determined following design based on delivery of equipment and subsequent installation and start up scheduling.
9	Design improvements for Well integration at the Lower Shores location into the general system and provide Design package with recommendations. Verify elevation differences across site, so that pressures may be accurately predicted for each pressure zone to be used, and recommend where and whether additional atmospheric should be employed. Report to DES for review & approval.	16-Jun-08	4	14-Jul-08	3	4-Aug-08			Yes	Based on preliminary results of the 48 hour pumping test for quantity, and basic water quality plus Radon, if treatment is required in design.

Attachment E
Page 3 of 3

Item #	Description	Start Date	Est. # Weeks LRWC	LRWC Date to send to DES	Contingency Weeks - DES Review	Finish Date	Completed Date	On Time (Yes/No)	Cntngcy. Decision (Yes/No)	Decision Description
10	Upper Pump House check and replace well meter on Blue Well (#1), as needed. Review installation and submit verification of meter sizing at this well for the source meter showing meter size is appropriate for the application. Monitor GPM and pumping level using transducer / recorder to verify fixed rate flow capacity - with a 24 hour pump test. Provide memo report with results. Check calibration of 3" master meter and 1" bypass meter. Use 1" bypass meter for random evening water use to morning, 5 sample evenings over 30 days, and provide written report of results to Derek Bennett. (Also see Task 13)	7-Apr-08	6	19-May-08	3	9-Jun-08			Yes	Subject to replacement parts and installation of same, if needed.
11	Lower Shores Pump House install well meters (inside and outside wells) as necessary to verify water use and pumping capacity. Review installation and submit verification of meter sizing on these wells for the source meters showing meter size is appropriate for the application. Monitor water level with transducer / recorder to track pumping level - 1 week minimum. Improve general condition of station to include adding a gravity floor drain to station to alleviate flooding potential.	12-May-08	3	2-Jun-08	3	23-Jun-08			Yes	Subject to replacement parts and installation of same, if needed.
12	Well #5 continue to monitor water use from this direct pumping water meter / VFD system. Verify the number of customer units on this system, and verify actual number using water. Provide memo report with minimum 1 month data via 4 weekly readings. Also submit verification of meter sizing on this well for the source meter showing meter size is appropriate for the application.	21-Apr-08	6	2-Jun-08	3	23-Jun-08			No	
13	A program of monitoring water use from 12 am - 3 am on a regular basis will be implemented at the upper pump house, as well as the ongoing leak detection monitoring. A quarterly report will be sent to Derek Bennett.	7-Apr-08				5-Jan-09			No	
14	If water pumpage exceeds 20,000 gpd for any 7 day cumulative period, or 600,000 gallons over a 30 day period, LRWC will fill out Water Use Registration and Reporting form, and report water withdrawal to Derek Bennett.	7-Apr-08				27-Oct-08			Yes	Ongoing monitoring to determine if reporting will be required.
15	Read all source meters at least weekly, prepare monthly water use spreadsheets, and these will be sent to Derek Bennett.	19-May-08				5-Jan-09			Yes	Source meters to be checked, replaced and/or installed to insure accuracy, prior to beginning readings.
16	LRWC reports that all residences have remote read meters.									
17	As water system improvements are completed and pressure is balanced around the sytem, individual residential booster pumps will be removed.	25-Aug-08	4		1	29-Sep-08				

Staff 1-22
Please indicate the dates and amounts of any water purchased for the Hidden Valley systems in 2006 and 2007.

Company Response:
Purchased water in 2006 & 2007:

Date of Purchase	Amount Purchased
9/2/06	2 loads @ 6,000 gal per load = 12,000
5/19/07	2 loads @ 6,000 gal per load = 12,000
6/16/07	1 load @ 6,000 gal per load = 6,000
6/17/07	2 loads @ 6,000 gal per load = 12,000
6/18/07	2 loads @ 6,000 gal per load = 12,000
6/27/07	2 loads @ 6,000 gal per load = 12,000
	11 loads total = 66,000

Please see attached bulk water delivery invoices from R&TJs Trucking.

Staff 1-23
Over what time period would the company propose customers be required to replace their service lines?
Company Response:
We propose that customers should be required to replace their services lines within 6 months – 1 year of obtaining Commission approval of this request.

Staff 1-24
Do any of the company's other water systems have service line material or construction deficiencies similar to those cited in Hidden Valley? Please explain.
Company Response: Yes, other LRWC-owned water systems experience similar problems with house service construction deficiencies. The majority of these services were installed in the 70s. Water leakage in most of these systems, however, is not as critical as that experienced in Hidden Valley.

Staff 1-25
Please provide any available records of service line leaks in Hidden Valley for the past five years.
Company Response:
Records of service leaks in Hidden Valley for past 5 years: Please see attached.

THOMAS A MASON SR
LAKES REGION WATER COMPANY IN
PO BOX 389
420 GOV WENTWORTH HWY
MOULTONBORO NH 03254

Docket #: 07-078 Printed: May 20, 2008

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RATHER THAN WITH THE EXECUTIVE DIRECTOR

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CONCORD NH 03301-2429

BULK MATERIALS:

Upon request, Staff may waive receipt of some of its multiple copies of bulk materials filed as data responses. Staff cannot waive other parties' right to receive bulk materials.

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