



The

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

hereby issues

LARGE GROUNDWATER WITHDRAWAL PERMIT

NO. LGWP-2010-0004

to the permittee

PERRY STREAM LAND & TIMBER CO., INC.
10 FARR ROAD
PITTSBURG, NH 03592
(603-538-7111)

for the withdrawal of the following volume of groundwater from the following source for use in the production of bottled water:

PB-1 360,000 gallons over any 24-hour period

Date of Issuance: May 17, 2010

Date of Expiration: May 17, 2020

Pursuant to authority in N.H. RSA 485-C:21, the New Hampshire Department of Environmental Services (NHDES), hereby grants this permit to withdraw groundwater from PB-1 subject to the following conditions and limitations:

1. The permittee shall comply with the requirements of Env-Wq 403 (formerly Env-Ws 388) and RSA 485-C at all times.
2. Water Conservation: The permittee shall implement the approved Water Conservation Plan, dated April 22, 2008, in accordance with Env-Wq 2101 (formerly Env-Ws 390) and NHDES' conditional approval dated May 23, 2008.
3. Metering Requirements: The withdrawal from PB-1 must be metered at all times. All meters must be selected, installed, tested, and maintained in accordance with the AWWA M6 manual as referenced in Env-Wq 2101. The permittee shall provide NHDES with a certificate of calibration and performance specifications for each meter. The permittee shall document and maintain records of all meter maintenance and calibration activities and submit this information to NHDES in an annual report by January 31 of each year. The permittee shall read source water meters to adequately report the following volumes to the reporting program referenced in condition No. 6 of this permit:
 - a) The 24-hour peak day volume withdrawn from the source during each month; and
 - b) The cumulative total volume withdrawn from the source during each month.
4. Monitoring and Reporting Requirements: The permittee shall establish and maintain the monitoring and reporting program as described below.
 - a) Groundwater Level Monitoring: The permittee shall implement the groundwater level monitoring program as described in the submittal prepared for the permittee by AECOM, Inc. (AECOM), dated April 29, 2010, incorporated herein by reference. Monitoring shall occur using the methods proposed, and at the frequency proposed, at the on-site and off-site groundwater monitoring locations listed in Table 1 titled "Impact Monitoring and Reporting Program" and depicted in Figure 2 titled "Impact Monitoring and Reporting Program" of this submittal.

Groundwater level monitoring shall commence at least 30 days prior to initiating a withdrawal from PB-1 and shall continue indefinitely as a condition of this permit. All water level monitoring shall be completed by a person who can demonstrate, by education or experience, competency in collecting and reporting hydrogeologic measurements.
 - b) Surface Water Monitoring: The permittee shall implement the surface water monitoring program as described in the submittal prepared for the permittee by AECOM, dated April 29, 2010, incorporated herein by reference, subject to the following conditions:
 - i. Monitoring shall occur using the methods proposed, and at the frequency proposed, at the on-site and off-site surface water monitoring locations listed in Table 1 titled "Impact Monitoring and Reporting Program" and depicted in Figure 2 titled "Impact Monitoring and Reporting Program" of the above-referenced submittal.
 - ii. At least 90 days prior to initiating a withdrawal from PB-1, the permittee shall submit a plan to NHDES describing the method proposed for monitoring stream flow in Moose Pond Brook at monitoring location MP-5. The permittee shall construct the monitoring station only after receiving approval from NHDES and acquiring any other necessary permits.

- iii. The permittee shall implement a low-flow pumping operation plan to protect low flows in Moose Pond Brook whereby the withdrawal from PB-1 is limited to times when flow in Moose Pond Brook exceeds a minimum flow threshold of 0.42 cubic feet per second (cfs) measured at monitoring location MP-5.
- iv. To determine whether the minimum flow threshold is met, the permittee shall review the stream flow monitoring data collected at monitoring location MP-5 on a daily basis.
- v. In the event that the minimum flow threshold is met, the permittee shall follow the Low Flow Management Procedures described in condition No. 5d of this permit.
- vi. The permittee shall maintain records of the daily stream flow measurements and the operation schedule and total daily withdrawal volume from PB-1. The withdrawal volume shall be recorded as total daily flow using a flow meter installed at the source. The permittee shall submit this information to NHDES in the annual monitoring report required by this permit.

Surface water monitoring and implementation of the low-flow pumping operation plan shall commence upon initiating a withdrawal from PB-1 and shall continue indefinitely as a condition of this permit.

- c) **Wetland Monitoring:** The permittee shall implement the wetland monitoring program as described in the submittal prepared for the permittee by AECOM, dated April 29, 2010, incorporated herein by reference. Monitoring shall occur using the methods proposed, and at the frequency proposed, at the on-site wetland monitoring locations listed in Table 1 titled "Impact Monitoring and Reporting Program" and depicted in Figure 2 titled "Impact Monitoring and Reporting Program" of this submittal; and the proposed reference wetland located at Harris Pond in Pittsburg, New Hampshire, which is outside of the zone of contribution of PB-1.

Wetland monitoring shall commence upon initiating a withdrawal from PB-1 and shall continue indefinitely as a condition of this permit. All work shall be conducted under the direct oversight of a New Hampshire Certified Wetland Scientist. Results of the wetland monitoring and surveys must provide a determination as to whether or not an adverse impact has occurred, may occur, or has not occurred over the monitoring period.

Monitoring locations and frequencies may be added or changed if the data obtained contradict the information provided in the permittee's application, or if additional data points are required to assess the potential for adverse impacts to occur.

An annual monitoring report and all monitoring data shall be submitted to NHDES annually by January 31 of each year. The annual monitoring report shall note any relevant observations that may affect the groundwater, surface water, or wetland observations and include all field notes documenting the monitoring activities for the preceding year. All field notes shall be signed and dated by the personnel responsible for collecting measurements. The results of the tri-annual wetland surveys and associated impact assessment shall be included in the annual monitoring report unless requested sooner by NHDES.

The annual monitoring report and all monitoring data collected per sections 4b and 4c above shall be submitted in an electronic format and hard copy format. All water level monitoring data collected per section 4a above shall be submitted in an electronic format only.

5. Mitigation Requirements

- a) In the event that an adverse impact occurs, the permittee shall comply with all of the requirements below and with the impact mitigation and source replacement requirements of Env-Wq 403.
- b) Prior to initiating the large groundwater withdrawal, the permittee shall notify in writing via certified mail the owners of all properties served by private wells within the area estimated to be the influence area of PB-1 labeled "Refined Cone of Depression," as depicted in Figure 7 Revised titled "180-Day Cone of Depression Evaluation" included in the Final Report Addendum prepared by AECOM for the permittee, dated February 12, 2010. The permittee shall provide a copy of the notification letter and copies of the certified return mail receipts to NHDES. The permittee shall explain to property owners with wells in the identified area that their well may be influenced by the withdrawal at PB-1. The permittee shall provide the property owners with contact information for both the permittee and NHDES in the event they believe they may be adversely impacted by the withdrawal.
- c) Where the status of an unanticipated impact is not clear, the permittee shall obtain information needed to quantify the impact and determine its status relative to the adverse impact criteria defined under RSA 485-C:21, V-c and provide this information to NHDES within 48 hours of being notified by NHDES. A verified adverse impact shall be mitigated in accordance with Env-Wq 403.
- d) NHDES will routinely review the results of all monitoring data, and if water level monitoring data indicate that groundwater is being extracted at a rate that exceeds natural recharge on average, then NHDES will modify the permit in accordance with Env-Wq 403 in order to prevent adverse impacts from occurring. In addition, the permittee shall operate the withdrawal in accordance with the management procedures described below:

LOW FLOW MANAGEMENT PROCEDURES

In the event that the minimum flow threshold of 0.42 cfs is met in Moose Pond Brook, the withdrawal from PB-1 shall cease and the permittee shall notify NHDES of the shutdown via e-mail.

If PB-1 is shutdown as a result of the minimum flow threshold being met, the operation of PB-1 shall resume only when the measured stream flow is at least equal to the minimum flow threshold of 0.42 cfs. The records maintained by the permittee per condition No. 4b of this permit shall indicate when PB-1 is shutdown due to the minimum flow threshold being met and when operation of PB-1 is resumed.

DROUGHT MANAGEMENT PROCEDURES

STAGE I

In the event that the following trigger occurs, production from PB-1 shall be reduced to 75% of the permitted withdrawal volume such that output does not exceed 270,000 gallons over any 24-hour period.

Trigger: Moderate Drought conditions as determined by the U.S. Drought Monitor which is administered by the U.S. Department of Agriculture, U.S. Department of Commerce/National Oceanic and Atmospheric Administration, and the National Drought Mitigation Center.

As part of Stage I Management Procedures, the permittee shall increase the frequency of reporting of all on-site and off-site water level measurements to NHDES, and submit all measurements electronically to NHDES by the 15th and last day of each calendar month.

STAGE II

In the event that the following trigger occurs, production from PB-1 shall be reduced to 50% of the permitted withdrawal volume such that output does not exceed 180,000 gallons over any 24-hour period.

Trigger: Severe Drought conditions as determined by the U.S. Drought Monitor which is administered by the U.S. Department of Agriculture, U.S. Department of Commerce/National Oceanic and Atmospheric Administration, and the National Drought Mitigation Center.

As part of Stage II Management Procedures, the permittee shall continue reporting all on-site and off-site water level measurements to NHDES electronically by the 15th and last day of each calendar month.

STAGE III

In the event that the following trigger occurs, production from PB-1 shall be reduced to less than 57,600 gallons over any 24-hour period.

Trigger: Extreme Drought Conditions as determined by the U.S. Drought Monitor which is administered by the U.S. Department of Agriculture, U.S. Department of Commerce/National Oceanic and Atmospheric Administration, and the National Drought Mitigation Center.

As part of Stage III Management Procedures, the permittee shall continue reporting all on-site and off-site water level measurements to NHDES electronically by the 15th and last day of each calendar month.

STAGE IV

In the event that the following trigger occurs, the withdrawal from PB-1 shall cease.

Trigger: Exceptional Drought conditions as determined by the U.S. Drought Monitor which is administered by the U.S. Department of Agriculture, U.S. Department of Commerce/National Oceanic and Atmospheric Administration, and the National Drought Mitigation Center.

6. The permittee shall register its new source of water with the NHDES Water Use Registration and Reporting Program and maintain the water use reporting requirements established by RSA 488, Env-Wq 2102, and this permit.
7. The permittee shall apply for renewal of this permit at least 365 days prior to its expiration date in accordance with Env-Wq 403. The permittee shall continue to comply with all conditions in this permit until the permit is renewed or the facility is closed in accordance with all applicable requirements, regardless of whether a renewal application is filed.

Any person aggrieved by any terms or conditions of this permit may appeal in accordance with RSA 21-O:7, IV within 30 days.



Harry T. Stewart, P.E.,
Director Water Division

PROJECT NARRATIVE

Bottled Water Source Approval/Large Groundwater Withdrawal Permit LGWP-2010-0004 Perry Stream Land & Timber Co., Inc., Borehole PB-1 Pittsburg, New Hampshire

May 17, 2010

BACKGROUND

Perry Stream Land & Timber, Co. Inc. (PSLT) of Pittsburg, New Hampshire has submitted an application to the New Hampshire Department of Environmental Services (NHDES) requesting approval of a groundwater source to be used in the production of bottled water and issuance of a large groundwater withdrawal permit for the withdrawal of up to 360,000 gallons per day (gpd) or 250 gallons per minute (gpm) over a 24-hour period from one overburden production borehole designated PB-1.

PSLT intends to develop a bulk spring water business using water that is withdrawn from PB-1, stored, and transferred to tanker trucks at PSLT's Clear Springs of New Hampshire site (Clear Springs) in Pittsburg, and is subsequently transported off-site. PSLT plans to construct a load out facility for bulk hauling with approximately 30,000 gallons of on-site storage.

PB-1 is located on the western flank of a north-south trending esker approximately 380 feet west of Moose Pond and 390 feet north of Moose Pond Brook at the Clear Springs site. The site is located approximately 3.2 miles north of Pittsburg Center on Moose Pond Road, approximately 1.5 miles from the intersection with Back Lake Road, and is part of an approximately 8,000 acre parcel owned by PSLT.

The site is underlain by a mapped stratified drift aquifer that extends generally from Mud Pond south of the site, north and northwestward toward the Indian Stream valley. The portion of the aquifer that underlies the site is a northwest-southeast trending band of drift deposits that are constricted between till-covered/bedrock hills to the north and south. The deposits underlying the site are comprised mostly of coarse-grained interlayered sands and gravels which appear to be part of an extensive kame deposit. The aquifer is unconfined and its thickness varies greatly across the site; depth to refusal of test borings completed at the site ranges from 12.5 feet to 65 feet. PB-1 is screened from a depth of 54 feet to 64 feet below ground surface in the stratified sand and gravel deposits. The drift deposits are underlain by till, which in turn is underlain by slate and metasedimentary bedrock of the Frontenac Formation.

Moose Pond Brook drains the valley between the hills to the north and south of the site and flows northwestward past PB-1 to Indian Stream approximately one mile downstream. The potential impact area for the withdrawal encompasses the eastern- and western-facing slopes of the Indian Stream watershed from a pinchout in the mapped stratified drift deposits, located approximately 0.75 miles downstream of the confluence of Moose Pond Brook and Indian Stream, to a point just north of the confluence of Roby Brook and Indian Stream, approximately 1.75 miles north of the site. The potential impact area includes the watershed of Moose Pond Brook and is contained entirely within the town of Pittsburg.

WITHDRAWAL TESTING AND CONCLUSIONS

A withdrawal testing program was conducted by AECOM, Inc. (AECOM) from October 23, 2008 through November 7, 2008. The purpose of withdrawal testing is to provide data to estimate long-term sustainable water quantity and quality; observe the response of the aquifer to pumping; evaluate the degree of hydraulic connection with overlying deposits; and, assess the potential for adverse impacts to water resources and users that may result from the proposed withdrawal. The withdrawal testing program included monitoring during pre-pumping, pumping, and water level recovery periods, where PB-1 was pumped at 250 gpm between October 30, 2008 and November 4, 2008.

Discharge from the borehole was metered during the withdrawal testing program to maintain a constant pumping rate, and water quality samples were collected during the pumping period to characterize the quality of the water derived from the borehole.

During the withdrawal testing program, water level measurements were collected at: PB-1; twelve on-site overburden monitoring wells; one off-site overburden monitoring well; one off-site private overburden water supply well; ten on-site piezometer couplets; one on-site spring; and one on-site surface water staff gauge. The private water supply well is located approximately 1,075 feet east of PB-1; no other private domestic wells were identified within the 180-day zone of influence of the withdrawal and its 1,000-foot buffer. Spring discharge measurements were also collected in three on-site springs; and surface water flow measurements were collected in Moose Pond Brook at four gauging stations. Piezometer, spring water level and discharge, and surface water level and flow measurements were recorded to assess the degree of hydraulic connection between the aquifer, springs, Moose Pond, Moose Pond Brook, and surrounding wetlands.

Water level measurements collected during the withdrawal testing program indicate that most of the on-site overburden monitoring wells and piezometer couplets responded to pumping of PB-1. Additionally, observations of spring water levels and discharge indicate that the four on-site springs also responded to pumping of PB-1. Water levels in the off-site overburden monitoring well and the private overburden water supply well did not respond to pumping of PB-1. Observations of surface water flow in Moose Pond Brook during the withdrawal testing program suggest that the withdrawal from PB-1 also did not have an appreciable affect on stream flow.

Pumping-induced drawdown of water levels in the on-site monitoring wells ranged from approximately 0.1 feet to 8.4 feet and was greatest in wells located closest to PB-1. In the piezometer couplets (predominantly located in wetland areas adjacent to Moose Pond and Moose Pond Brook), pumping-induced drawdown was on the order of 0.1 feet to 0.8 feet and was generally greater in piezometers screened at greater depth intervals than in those screened at shallower depth intervals.

Based on analytical projections of water level responses in the monitoring points that responded to pumping of PB-1 under the condition of 180 days of continuous pumping with no net recharge from precipitation to the aquifer, and inference from the refined conceptual hydrologic model of the withdrawal, pumping-induced drawdown is estimated to extend on the order of 1,100 feet to the east (upgradient) of PB-1. To the north and south (side-gradient) of PB-1, the 180-day zone of influence of the withdrawal is estimated to extend to the mapped limits of the stratified drift aquifer deposits. To the west (downgradient) of PB-1, the 180-day zone of influence is estimated to extend approximately 870 feet.

Overall, based on monitoring results presented in the final report, a production rate of 360,000 gpd (250 gpm) is a production rate that PB-1 can sustain. However, observations of the effects of pumping on spring discharge and shallow groundwater levels adjacent to Moose Pond Brook (including in wetland areas), which indicated some degree of baseflow capture by pumping, suggest that a groundwater withdrawal at this rate could cause water level drawdowns that may negatively affect more critical low surface water flows in Moose Pond Brook and result in a violation of the State's surface water quality standards specified in Env-Wq 1700, which is a criterion for adverse impacts under RSA 485-C:21, V-c. Additionally, the limited areal extent of the recharge area for the withdrawal [and Moose Pond Brook] and AECOM's recharge estimates suggest that a groundwater withdrawal at this rate could exceed the long-term predictable rate of replenishment of the aquifer, which is also a criterion for adverse impacts under RSA 485-C:21, V-c. These issues are addressed through conditions of the large groundwater withdrawal permit as described below.

Results of the water quality sampling conducted during the withdrawal testing program indicate that each parameter, with the exception of pH, was below the applicable Maximum Contaminant Level (MCL) or Secondary Maximum Contaminant Level (SMCL). Results of the water quality sampling program also indicate that the concentration of radon is slightly elevated in water derived from PB-1.

Sampling of water from the four on-site springs was also conducted at the end of the withdrawal testing program. A comparison of the spring and borehole water quality data, coupled with observations of reduced spring flow during the withdrawal testing program which indicate a direct hydraulic connection between PB-1 and the springs, support a spring water classification for water derived from PB-1. In order to maintain this classification, water must continue to flow naturally to the surface of the earth through the natural orifices of the on-site springs that are hydraulically connected to PB-1 while PB-1 is operating. If water ceases to flow from the on-site springs during the operation of PB-1, the source classification for water derived from PB-1 will be amended.

PUBLIC INVOLVEMENT

Pursuant to RSA 485-C:21, II through V-a, materials submitted in support of the large groundwater withdrawal permit (the preliminary application, final report, and supplemental materials) were sent (via certified mail) to municipalities and public water suppliers in the potential impact area of the withdrawal. The town of Pittsburg and the North Country Council were the only entities that were sent copies of the above-referenced materials; no other municipalities or public water suppliers are in the potential impact area. No public hearings were requested, and no public meetings were held regarding the application for this large groundwater withdrawal permit.

LARGE GROUNDWATER WITHDRAWAL PERMIT PUBLIC NOTIFICATION, MONITORING, REPORTING AND WITHDRAWAL REQUIREMENTS

To provide a means for notification in the event of an unforeseen impact, the large groundwater withdrawal permit requires PSLT to notify any property owner with a private well within the estimated zone of influence of PB-1 prior to initiating a large groundwater withdrawal from the borehole. As part of the notification, PSLT must explain to each property owner that their well may be influenced by the withdrawal at the production borehole and provide them with contact

information at PSLT and NHDES in the event they believe their well may be impacted by the withdrawal. More information concerning this requirement is provided in the large groundwater withdrawal permit under condition No. 5b.

The large groundwater withdrawal permit requires PSLT to implement an impact monitoring and reporting program that includes monitoring of on-site and off-site wells, Moose Pond Brook, and on-site wetlands. General monitoring requirements are summarized as follows:

- Groundwater – The permit requires that PSLT monitor water levels in PB-1, three on-site overburden monitoring wells, and one off-site overburden monitoring well to monitor the trend of groundwater levels in the aquifer over time.
- Surface water – The permit requires that PSLT establish a surface water monitoring program to assess the potential for and/or detect the occurrence of an adverse impact in Moose Pond Brook via observations of flow in the brook at a location downstream of PB-1. Condition No. 4b of the permit requires that PSLT implement a low-flow pumping operation plan upon initiating a withdrawal from PB-1 to protect low flows in Moose Pond Brook. The low-flow pumping operation plan requires cessation of the withdrawal from PB-1 if the flow measured in Moose Pond Brook is equal to or less than a minimum flow threshold of 0.42 cubic feet per second (approximately 190 gallons per minute). PSLT is also required to monitor the water level in Moose Pond as part of the surface water monitoring program.
- Wetlands – The permit requires that PSLT implement a wetland monitoring program to assess the potential for and/or detect the occurrence of an adverse impact in on-site wetlands via observations of shallow groundwater levels at piezometers and plant communities in the on-site wetlands, and a reference wetland located at Harris Pond in Pittsburg, outside the zone of contribution of the withdrawal.

The large groundwater withdrawal permit requires a reduction in the withdrawal from PB-1 if:

- The U.S. Drought Monitor declares a drought condition of moderate or greater; or
- NHDES determines that the withdrawal is not sustainable based on a review of the monitoring data.

In the event that an adverse impact is reported and verified, an impact mitigation program would be implemented in accordance with conditions of the large groundwater withdrawal permit and Env-Wq 403. More information concerning these requirements is provided in the large groundwater withdrawal permit under condition No. 5.

PSLT is required to submit an annual monitoring report in hard copy and electronic format to NHDES by January 31st of each year. As stipulated in the permit, the annual report shall include a summary of trends and variability observed in the monitoring data, all monitoring data and records required by the permit, and an assessment of the potential impacts associated with the withdrawal from PB-1. The annual report will be available to the public for review. A complete description of monitoring and reporting requirements is presented in more detail in the large groundwater withdrawal permit under condition No. 4.