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October 30, 2014

**VIA Federal Express
(518) 402-8056**

Mr. Peter S. Briggs
Director, Bureau of Oil & Gas Permitting and Management
New York State Department of Environmental Conservation
625 Broadway, Third Floor
Albany, New York 12233-6500

Re: Wellhead Brine Pressures
Proposed Well FL-1
Finger Lakes Storage, Watkins Glen, NY



Dear Mr. Briggs:

Please find enclosed a copy of the response to Mr. Frank Brock, Region 2 U. S. Environmental Protection Agency, relative to the above captioned well.

Should you have any questions, please feel free to contact me at 832-519-2278.

Sincerely,

David L. Hayden
VP, Reservoir Engineering

Enclosure



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October 29, 2014

VIA Federal Express
(212) 637-3762

Mr. Frank Brock
Region 2 U. S. Environmental Protection Agency
290 Broadway
New York, New York 10007



Re: Wellhead Brine Pressures
Proposed Well FL-1
Finger Lakes Storage, Watkins Glen, NY

Dear Mr. Brock:

This letter is in response to your request for clarification on the maximum wellhead injection pressures related to the proposed FL-1 well. For background purposes, in a response dated July 10, 2012, Finger Lakes indicated that it expected the casing seat in FL-1 to be at 2,050 feet and maximum storage pressure gradient to be [REDACTED]. and had requested a maximum injection pressure of [REDACTED].

[REDACTED]

To clarify, Finger Lakes is now proposing that the FL-1 Well be drilled and completed utilizing a 10-3/4" production casing set at 2,050' with a 7" brine injection tubing hung at 2,325' and operating the storage cavern between an upper brine/product interface at [REDACTED] and a lower brine/product interface at [REDACTED]. [REDACTED]

[REDACTED]

The attachments summarize the minimum and



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maximum pressures on the brine tubing and the product annulus during injection and withdrawal of product showing the flow rates, product pressure at the casing seat, tubing and annular velocities and pressure losses due to friction.

Should you have any questions, please feel free to contact me at 832-519-2278.

Sincerely,

A handwritten signature in blue ink that reads 'David L. Hayden'.

David L. Hayden
VP, Reservoir Engineering



Attachments

Cc: James Johnston, Vice President, Associate General Counsel, Crestwood
Kevin Bernstein, Environmental and Energy Law Attorney, Bond Schoeneck & King PLLC
Peter S. Briggs, Director Bureau of Oil & Gas Permitting and Management, NYDEC



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Attachment 1

10 3/4" Production Casing, 7" Hanging String, Product Withdrawal

The tables below summarize scenarios in order to withdraw propane [REDACTED]
 [REDACTED]
 [REDACTED] (Product is Propane,
 SG=0.508, Brine SG=1.194)

Product Withdrawal – Cavern Empty		
Product Withdrawal, Interface at [REDACTED]	Min Press	Max Press
Surface tubing press	[REDACTED]	[REDACTED]
Surface product press	[REDACTED]	[REDACTED]
Press at casing seat	[REDACTED]	[REDACTED]
Flow rate (gpm)	[REDACTED]	[REDACTED]
dp in the tubing	[REDACTED]	[REDACTED]
dp in the annulus	[REDACTED]	[REDACTED]
Tubing velocity (ft/sec)	[REDACTED]	[REDACTED]
Annular velocity	[REDACTED]	[REDACTED]

Product Withdrawal – Cavern Full		
Product Withdrawal, Interface at [REDACTED]	Min Press	Max Press
Surface tubing press	[REDACTED]	[REDACTED]
Surface product press	[REDACTED]	[REDACTED]
Press at casing seat	[REDACTED]	[REDACTED]
Flow rate (gpm)	[REDACTED]	[REDACTED]
dp in the tubing	[REDACTED]	[REDACTED]
dp in the annulus	[REDACTED]	[REDACTED]
Tubing velocity (ft/sec)	[REDACTED]	[REDACTED]
Annular velocity	[REDACTED]	[REDACTED]



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Attachment 2

10 3/4" Production Casing, 7" Hanging String, Product Injection

While operating under the maximum allowable pressure at the casing seat, the maximum injection rate is shown at various interface depths. Two cases are summarized below:

Product Injection – Cavern Empty	
Product Injection, Interface at [REDACTED]	Max Rate
Surface tubing press	[REDACTED]
Surface product press	[REDACTED]
Press at casing seat	[REDACTED]
Flow rate (gpm)	[REDACTED]
dp in the tubing	[REDACTED]
dp in the annulus	[REDACTED]
Tubing velocity (ft/sec)	[REDACTED]
Annular velocity	[REDACTED]

Product Injection – Cavern Full	
Product Injection, Interface at [REDACTED]	Max Rate
Surface tubing press	[REDACTED]
Surface product press	[REDACTED]
Press at casing seat	[REDACTED]
Flow rate (gpm)	[REDACTED]
dp in the tubing	[REDACTED]
dp in the annulus	[REDACTED]
Tubing velocity (ft/sec)	[REDACTED]
Annular velocity	[REDACTED]