

Updated August 2016

Application of Finger Lakes LPG Storage, LLC to construct and operate Galleries 1 and 2 for the storage of liquefied petroleum gas at its Finger Lakes LPG storage facility

Draft permit conditions, which Department staff propose in the event that a determination is made, after the hearing process, to issue a permit

These draft conditions contain requirements and obligations which staff believes would be appropriate and necessary to be imposed upon the applicant in the event that a determination is made, after the hearing process, to issue a permit. They are based upon staff's review of all application materials and information available to staff up to this point in the process.

Staff remains cognizant that the Issues Conference process, including the filing of Petitions for Party Status and any adjudication that results therefrom, may result in a determination that denial of the permit is warranted, or that additional conditions may be necessary. However, staff believes that by providing detailed conditions at this time, the applicant and the interested public will have adequate time to review them prior to the deadline for the filing of Petitions for Party Status. We believe this will provide relevant information for members of the public considering formal participation in the process, and will assist all parties as they prepare to present their respective positions at the Issues Conference.

Finger Lakes LPG Storage, LLC ("Finger Lakes" or "Permittee") would be required to comply with all of the below and attached permit conditions as noted on Attachments 1, 2 and 3. If the terms of any approved documents or plans incorporated by reference into this Underground Storage Permit conflict with any of the following permit conditions, these permit conditions would govern. Any deviation from the below and attached conditions would need to be approved by the Department prior to making a change.

Unless otherwise specified, all submissions and/or notices to the Department required by the permit including Attachments 1, 2 and 3 would be made to the Division of Mineral Resources at the following address.

Director, Bureau of Oil & Gas Permitting and Management
New York State Department of Environmental Conservation
Division of Mineral Resources
625 Broadway, Third Floor
Albany, NY 12233-6500

Attachment 1

1. Construction and operation of the storage facility must be conducted in accordance with the plans and specifications submitted in the October 9, 2009 application for an Underground Storage Permit and all subsequent supporting information and responses (collectively "application") provided to the Department by the Permittee and/or consultants and/or other

parties acting on behalf of the Permittee. The construction and operating parameters include the following:

- a. storage in galleries and specific portions of galleries as identified in Attachment 2 and shown on the Permittee's *Brinefield Map Showing Galleries* ("storage map") dated August 28, 2014 is limited to liquefied petroleum gas ("LPG" or "product"), specifically propane, and blanket material and product displacement fluid. LPG storage is limited to Gallery 1 and Gallery 2 as noted in Permit Condition 1d of Attachment 1 and Attachment 2,
- b. product displacement fluid is limited to brine obtained from the base of the brine pond. Monitoring and record keeping of the salt-saturation level of the displacement fluid must be performed at least daily during product displacement, and made available to the Department upon request,
- c. any increase in storage capacity in any gallery subject to this permit shall solely be the result of operational solutioning during product displacement and/or tubular flushing during well maintenance, and individual gallery growth is limited to 2 percent by volume on a calendar year basis,
- d. storage capacity of each gallery shall not exceed the volume noted in Column B of Attachment 2. Wherever noted in this permit and for subsequent annual reporting purposes, storage capacity must be determined by a Department-approved method and is defined as the total volume of void space that exists within the cavern and any rubble pile above the cavern bottom, determined by the most recent sonar survey as of the issuance date of this permit, regardless of well or tubing configuration and accessibility or use of such void space for product storage and/or monitoring. However, the combined maximum volume allowed for product storage is 1,500,000 barrels in Gallery 1 and Gallery 2 at any time, as specified in Attachment 2, and in no case shall the maximum volume of product stored in Gallery 2 exceed 600,000 barrels,
- e. cavern span within the gallery, measured from the centerline of each well's casing shoe, at any depth in the cavern shall not exceed the ultimate cavern dimensions shown on the storage map dated August 28, 2014, as noted in Column C of Attachment 2. Wherever noted in this permit and for subsequent annual reporting purposes, cavern span must be determined by a Department-approved method,
- f. the Permittee must maintain a hydrocarbon and/or nitrogen blanket in Gallery 1 at Well FL1 and at any future replacement well for Well 33, and in Gallery 2 at Well 58 at all times during storage operations and/or shut-in periods. Blanket thicknesses for Well FL1 and Well 58 must be proposed by the Permittee and approved by the Department prior to the first injection of LPG into the respective gallery. A blanket thickness for any other well or wells servicing a gallery will be subject to Department approval prior to putting the well(s) into service. A Department-approved blanket thickness may be modified at any time upon request by the Permittee and subsequent Department approval or at the Department's discretion, provided casing seat and/or roof protection is maintained,
- g. pressure gradient of each cavern measured at each well's production casing shoe (depth

noted in Column G of Attachment 2) during injection, storage or withdrawal of LPG shall be a minimum of 0.52 psi/foot and the maximum pressure gradient noted in Column D of Attachment 2. Additionally, the product side and brine side wellhead pressures shall not exceed the pressures noted in Column E and Column F of Attachment 2 respectively,

- h. prior to the first injection of LPG into Gallery 1, Gallery 10 and its wells must be pressure tight (brine) and the results of the long-term brine pressure test demonstrating pressure integrity of Gallery 10 must be reviewed and approved by the Department. Further, the Permittee must install and maintain a digital pressure recorder on Well FL2 for the purpose of monitoring pressure and detecting any migration of LPG to the well, and a digital pressure recorder on Well 52 for the purpose of monitoring pressure and isolation of Gallery 10. In addition, the Permittee must file an application for a *Permit to Convert* with the Region 8 Avon office for Well 52, if not already filed, and receive said permit prior to converting the well to monitoring use. The pressure data from the recorders shall be monitored on a continuous basis to detect any pressure change in the wells. Pressure changes detected in Well FL2 or Well 52 during Gallery 1 storage operations shall be addressed as follows:
 - i. a pressure change at Well FL2 which indicates migration of product into Well FL2 and/or any subsequent removal of product from Well FL2 shall not be considered a non-routine incident for reporting purposes. However, the Permittee must inform the Department in writing of the occurrence of such a pressure change within 5 business days of the discovery of the pressure change. Additionally, within 10 business days of the completion of any associated product removal from Well FL2, the Permittee must provide a written report to the Department which describes the event including i) date of discovery of the pressure change, ii) date product removal initiated, iii) date product removal completed, iv) amount of product removed in gallons, v) disposition of product and vi) any mitigation measures either proposed or completed, and;
 - ii. a pressure change of more than 50 psig in a 24-hour period at Well 52's digital pressure recorder shall be considered a non-routine incident and must be reported in accordance with Permit Condition 8 of Attachment 1, and;
- i. a sonar survey must, at a minimum, be performed as follows:
 - i. when a well is newly re-entered or drilled to access either storage Gallery 1 or 2,
 - ii. in each well's cavern within the gallery at an interval not to exceed 10 years as noted in Column H of Attachment 2,
 - iii. when a gallery reaches its permitted maximum storage capacity or maximum cavern span within the gallery as noted in Permit Conditions 1d and 1e of Attachment 1, if a sonar survey has not been run at the applicable cavern within the gallery in the previous 5 years, and;
 - iv. prior to plugging a well if a sonar survey has not been run in the previous 5 years.

2. As noted above, the Permittee must continue its sonar survey program at intervals not to exceed 10 years as noted in Column H of Attachment 2.
 - a. Within 90 days of performing any sonar survey, the Permittee must provide a written report to the Department which compares the results of the sonar survey to the appropriate cavern growth model in its application and discusses the effects, if any, of the newly acquired information on the conclusions reached in the Finite Element Analysis (“FEA”) submitted with the Permittee’s September 28, 2010 response to comments document and the Permittee’s August 15, 2013 letter. The report to the Department must note any deviation and/or unexpected cavern growth, and provide proposed corrective actions, if appropriate, for Department review and approval. The Department may require additional analysis and corrective actions based on its review of the report.
3. The Permittee must conduct its mechanical integrity test (“MIT”) program, as described in its application, at intervals not to exceed 5 years with an MIT on each well to be performed as specified in Column I of Attachment 2. The Department may require modification of the Permittee’s MIT procedures with written notification at least 7 days prior to conducting such MIT. Unless otherwise approved by the Department, the MIT pressure in each well must be equivalent to at least 0.75 psi/ft, but no greater than 0.80 psi/ft calculated at the True Vertical Depth (“TVD”) of the shallowest production casing shoe in the respective gallery.
 - a. Within 90 days of performing any MIT, the Permittee must report the results of the testing, provide an analysis and narrative report, and note any unexpected occurrences including any proposed corrective actions, if appropriate, for Department review and approval. Prior to the first injection of LPG into Gallery 1 and Gallery 2, the Permittee must compile and report the results of the nitrogen-brine interface MITs, and other MITs and demonstrations approved by the Department, for all wells in the respective gallery for Department review and approval. The Department may require additional analysis and corrective actions based on its review of any report.
4. The Permittee must conduct its subsidence monitoring program as described in its application. Surveys must be performed at least every 2 years unless otherwise approved by the Department. All wells, including future wells and any plugged wells within Gallery 1 and Gallery 2, must be incorporated into the Permittee’s Subsidence Monitoring Plan.
 - a. Within 90 days of performing any subsidence survey, the Permittee must report the results of subsidence monitoring, provide an analysis and narrative report, and note any unexpected occurrences including any proposed corrective actions, if appropriate, for Department review and approval. Based on its review of any report, the Department may require additional analysis and corrective actions including the installation and surveying of additional subsidence monitoring monuments.
5. The Permittee must perform an evaluation and inspection of the production casing accessing each LPG storage gallery at the time a well is initially completed (i.e., base logs) prior to putting a well into storage service or monitoring use, and as specified in Column J of Attachment 2. Prior to the first injection of LPG into Gallery 1, the Permittee must compile and report the results of the production casing base log evaluations and inspections for all new wells in Gallery 1 for Department review and approval. As noted on Attachment 2,

subsequent evaluations and inspections of the production casing must be performed at intervals not to exceed 10 years. Evaluations and inspections of the production casing must, at a minimum, include a (i) cement bond log, (ii) gamma ray-neutron log, (iii) magnetic flux log and (iv) an electromagnetic thickness log, or equivalent logs approved by the Department.

- a. Within 90 days of performing any production casing evaluation and inspection, the Permittee must report the results of evaluation and inspection, provide an analysis and narrative report, and note any unexpected occurrences including any proposed corrective actions, if appropriate, for Department review and approval. The Department may require additional analysis and corrective actions based on its review of the report.
6. The Department may, for reasonable cause, require the Permittee to perform additional sonar surveys, well and/or cavern MITs, subsidence surveys, casing evaluation and inspection logs or any other tests or procedures and require reporting and analysis of such to verify compliance with this permit, Environmental Conservation Law (“ECL”) Article 23, 6 NYCRR Parts 550 - 559 or any other New York State statute, rule, regulation and/or order. Results and analysis must be submitted to the Department as described by Permit Conditions 2a, 3a, 4a and 5a of Attachment 1 unless otherwise specified by the Department at the time of notification of such requirement. The Department may require additional tests or procedures, analysis or corrective actions based on its review of any report.
 7. The Permittee must install and maintain appropriate safety and emergency shutdown devices at the storage facility. Prior to the injection of any LPG into any storage cavern subject to this permit, the Permittee must provide an electronic copy of its Operations, Maintenance and Contingency Plan to the Director of the Bureau of Oil & Gas Permitting and Management in the Albany office for its review and approval. The Operations, Maintenance and Contingency Plan must include, at a minimum, the Spill Prevention and Control Manual, Hazard Communication and Assessment Program, Safety Plan and Emergency Response Plan (“ERP”). The ERP must include, at a minimum, the following elements: (i) site name, facility type, location, map, and operator information, (ii) a chain of command including the identity and contact information of a knowledgeable and qualified individual or individuals with the authority to respond to emergency situations and implement the ERP, (iii) emergency notification and reporting procedures including a list of emergency contact numbers for the area in which the facility is located, (iv) identification, description and evaluation of potential LPG and/or brine releases, fire and explosion hazards, (v) description of fire and explosion prevention procedures and equipment, (vi) implementation plans for facility evacuation and shut down, as well as release containment and disposal, and a log to record any emergency events, (vii) relevant employee and site training, and (viii) security measures including signage, lighting and fencing. The Albany office and the Region 8 Avon Mineral Resources office must be on the call list included in the ERP for any well- or storage-related emergency. All updates to the ERP must be provided in electronic form to the Director of the Bureau of Oil & Gas Permitting and Management in the Albany office within 5 business days of implementing the update.
 8. The Permittee must report any non-routine incident that may affect the environment or the health, safety, welfare or property of any person as follows:

- a. within two (2) hours of discovery of the non-routine incident, orally in person or by telephone to the Department's Oil and Gas Regional Minerals Manager in the Region 8 Avon office and the Director of the Bureau of Oil & Gas Permitting and Management in the Albany office;
- b. within twenty-four (24) hours of discovery of the non-routine incident, in writing to the same offices using the Division of Mineral Resources' Non-Routine Incident Report ("NRIR") form (available at <http://www.dec.ny.gov/energy/4761.html>); and
- c. as required by all applicable statutes and regulations of the Department, including reporting to the DEC Spills Hotline if required.

Non-routine incidents shall include, but not be limited to i) any indication of the abnormal presence of storage gas and/or product displacement fluid outside the storage reservoir (i.e., storage galleries) authorized by this permit and/or the wells accessing the storage galleries, and ii) casing failures, cement failures, wellhead failures, fires, blowouts and spills.

The completed NRIR form must detail the non-routine incident, any corrective actions taken by the owner and/or owner's representative and include, as necessary, a proposed Corrective Action Plan for Department review and approval. Provided the environment or the health, safety, welfare or property of any person would not be further endangered, any action or condition known or suspected to cause or contribute to the non-routine incident must cease immediately upon discovery of the non-routine incident, and appropriate initial remedial actions must be commenced. This verbal and written non-routine incident reporting requirement does not replace or supersede any other required local, state and/or federal reporting requirements, including any required reporting to the DEC Spills Hotline.

For reasonable cause, the Department may require the cessation and/or suspension of the injection of LPG into any gallery or cavern, or partial or complete removal of LPG from any individual storage gallery or cavern and/or all storage galleries authorized by this permit. In accordance with ECL § 23-1301.2, the Department may revoke or suspend this permit for failure to comply with any of its provisions or for failure to comply with ECL § 23-1301.4.

9. The Permittee expressly accepts the full legal responsibility for all damages, direct or indirect, of whatever nature, and by whomever suffered, arising out of the storage facility's construction and operation to the extent such liability is attributable to the actions of the Permittee, its employees, agents, contractors or subcontractors, and to the extent the Permittee is liable under the law for such actions. The Permittee must indemnify and save harmless the State from suits, actions, damages, and costs of every nature and description resulting from such actions.
10. This permit shall not be construed as conveying to the Permittee any right to trespass upon the lands or interfere with the riparian rights of others to perform the permitted work, or as authorizing the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.
11. The Permittee is responsible for the security of the site during all phases of construction and operation of the facility. The Permittee must allow facility access to Department personnel at

all reasonable times for the purpose of conducting inspections or investigations in the regular course of their duties pursuant to ECL Article 23, 6 NYCRR Parts 550 - 559 or any other New York State statute, rule, regulation and/or order, notwithstanding signs or other notices purporting to limit access to the property.

12. The Permittee is responsible for securing all necessary approvals and permits, if any, from all local, state and/or federal agencies that may be required for construction, modification and/or operation of the storage facility.
13. This permit shall not be construed as authorizing underground storage of butane, natural gas or any other petroleum products/byproducts not described by Permit Condition 1a of Attachment 1.
14. Any change in the construction and/or operation of the subject project is considered an amendment to the project and must be approved by the Department prior to implementation. Any increase in storage capacity of any gallery or maximum volume allowed for product storage that is specified by Permit Condition 1d of Attachment 1 is considered a modification to the facility, and must be permitted and approved by the Department in accordance with ECL § 23-1301 prior to such modification.
15. This permit shall not be construed as authorizing use of galleries or caverns not specified in this permit for storage of hydrocarbons or authorizing the construction of any additional galleries or caverns for storage. The Permittee must file a *Notice of Intention to Plug and Abandon* Wells 33, 34, 43 and 44 with the Region 8 Avon office, if not already filed, and receive a *Permit to Plug and Abandon* prior to commencing work. Such well pluggings must be completed prior to the injection of LPG into Gallery 1, and within the terms of each *Permit to Plug and Abandon*. Additionally, a nitrogen-brine interface MIT, or other MIT or demonstration approved by the Department, must be performed on each well's (i.e., Wells 33, 34, 43, 44) casing seat prior to the permanent plugging of wells in Gallery 1.
16. A directional survey of any new well accessing Gallery 1 or Gallery 2 must be provided to the Albany office and the Region 8 Avon office at the same time the Well Drilling and Completion Report is filed with the Department, prior to putting the well or wells into storage service or other use.
17. The final disposition of Well 29 as a monitoring well or plugged well shall be proposed by the Permittee and approved by the Department, as appropriate. When a determination to convert or plug and abandon the well is made, the Permittee must file a *Request for Well Transfer* with the Albany office if the well is converted to monitoring use, and an application for a *Permit to Convert* or *Notice of Intention to Plug and Abandon* Well 29, as appropriate, with the Region 8 Avon office, if not already filed, and receive the applicable permit prior to commencing work. Such well conversion or plugging must be completed prior to the injection of LPG into Gallery 1, and within the time frames and terms of the *Permit to Convert* or *Permit to Plug and Abandon*. Further, if the Permittee elects to convert Well 29 to monitoring service, the well and associated cavern must be pressure tight (brine) and the results of the long-term brine pressure test demonstrating pressure integrity must be reviewed and approved by the Department prior to the first injection of LPG into Gallery 1.

Note: The corresponding API Numbers associated with wells referenced in the above permit conditions are provided as follows:

<i>Well Number</i>	<i>API Number</i>
Well 29	31-097-03940-00-01
Well 33	31-097-52932-00-01
Well 34	31-097-61190-00-01
Well 43	31-097-61199-00-01
Well 44	31-097-61200-00-01
Well 52	31-097-61208-00-01
Well 58	31-097-21467-00-01
Well FL1	31-097-26485-00-00
Well FL2	31-097-26489-00-00

Attachment 2

Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I	Column J	
Well	Maximum Capacity (barrels) ²	Maximum Span (feet)	Maximum Pressure Gradient at Production Casing Shoe (psi/foot) ⁵	Maximum Wellhead Pressure, Product Side (psig) ⁵	Maximum Wellhead Pressure, Brine Side (psig) ⁵	Depth of Production Casing Shoe (feet, TVD)	Schedule for Next Sonar Survey (on or before)	Schedule for Next MIT (on or before)	Schedule for Next Production Casing Evaluation & Inspection (on or before)	
Gallery 1 (See Note 1)	FL1	7,025,771 (See Note 3)	See Note 4	Not to exceed 0.75, See Note 6	See Note 6	See Note 6	To be determined. Not drilled as of issuance date of this permit (replacement for Well 34).	Ten years from date of first sonar, and at subsequent intervals not to exceed 10 years.	Nitrogen-brine interface MIT prior to injection of LPG into gallery, and at subsequent intervals not to exceed 5 years.	When well is initially completed prior to injection of LPG into gallery and at subsequent intervals not to exceed 10 years.
	FL2		See Note 4	Not to exceed 0.75, See Notes 6 & 7	See Note 6	See Note 6	To be determined. Not drilled as of issuance date of this permit (replacement for Well 44).	Ten years from date of first sonar, and at subsequent intervals not to exceed 10 years.	Nitrogen-brine interface MIT prior to injection of LPG into gallery, and at subsequent intervals not to exceed 5 years.	When well is initially completed prior to injection of LPG into gallery and at subsequent intervals not to exceed 10 years.
Gallery 2 (See Note 1)	58	1,101,590 (See Note 3)	See Note 4	0.62	824	516	2,157	Ten years from date of issuance of this permit, and at subsequent intervals not to exceed 10 years.	Nitrogen-brine interface MIT prior to injection of LPG into gallery, and at subsequent intervals not to exceed 5 years.	Ten years from date of issuance of this permit.

Notes:

- 1) For each storage gallery, the Permittee is limited by this permit to the “Maximum Capacity (barrels)” and “Maximum Span (feet),” whichever is reached first.
- 2) Barrel shall mean 42 U.S. gallons.
- 3) Maximum capacity is the maximum fluid capacity (i.e., water-filled capacity). The combined maximum volume allowed for product storage in Gallery 1 and Gallery 2 is 1,500,000 barrels at any time. Product storage in the vicinity of the cavern accessed by Well FL1 is limited to the portion of the cavern as shown on the Permittee’s *Brinefield Map Showing Galleries* (“storage map”) dated August 28, 2014. The maximum volume allowed for product storage in Gallery 1 is 1,500,000 barrels, provided the total volume of product storage in Gallery 1 and Gallery 2 does not exceed 1,500,000 barrels at any time. The maximum volume allowed for product storage in Gallery 2 is 600,000 barrels, provided the total volume of product storage in Gallery 1 and Gallery 2 does not exceed 1,500,000 barrels at any time. Additional storage wells and monitoring wells may be permitted by the Department and drilled into either gallery subsequent to the issuance of this permit without affecting the allowable maximum capacities and allowable maximum product capacities, provided product storage is limited as described above and the ultimate gallery dimensions due to operation of any such wells does not cause an exceedance of the ultimate cavern dimensions shown on the storage map dated August 28, 2014.
- 4) Maximum cavern span, measured from the centerline of each well’s casing shoe, at any depth in the cavern shall not exceed the ultimate cavern dimensions shown on the storage map dated August 28, 2014 and titled *Brinefield Map Showing Galleries*, which was submitted to the Department by transmittal dated October 23, 2014. Cavern dimensions shown on the storage map were developed by the Permittee using existing sonar surveys and anticipated operational solutioning. New sonar surveys and an updated storage map accounting for any operational solutioning and incorporating such sonar surveys shall be prepared by the Permittee, including at the Department’s request, and used to monitor and evaluate maximum cavern spans during operation of the facility. As approved by the Department, the Permittee must maintain a hydrocarbon and/or nitrogen blanket in Gallery 1 at Well FL1 and any future replacement well for Well 33, and in Gallery 2 at Well 58 at all times during storage operations and/or any shut-in periods. A blanket thickness for any other well or wells servicing a gallery will be subject to Department approval prior to putting the well(s) into service.
- 5) Except during MITs or other Department-approved test(s) or procedure(s).
- 6) To be determined by the Permittee based on known setting depth of production casing and approved by the Department at the time of well completion prior to storage service.
- 7) Well FL2 is a monitoring well. Routine storage of product in this portion of Gallery 1 is not permitted. However, product removal from Well FL2 is allowable on an as needed basis. See Permit Condition 1h of Attachment 1 for related reporting requirements.

Attachment 3

Special Conditions Section A: Water Quality Monitoring Program and Environmental Monitoring Plan (EMP)

Water Quality Monitoring Program. A water quality monitoring program must be implemented for all environmental monitoring points specified in the environmental monitoring plan for the West brine pond. This program must be tailored to the site to: establish existing water quality for the site prior to operation of the brine pond; monitor operational water quality during operation of the site brine pond and potentially during a post-closure period which may be required by the Department under this Permit if contamination is found to exist; require contingency water quality monitoring; and establish a procedure for a liner integrity investigation if brine contamination is detected at the West brine pond, all in accordance with the following conditions:

1. Environmental Monitoring Plan or EMP. Within 30 days of issuance of this Permit, a detailed written plan (EMP) for the water quality monitoring program must be submitted for Department approval. Operation of the West brine pond may not commence prior to the Department's approval of the EMP. Upon the Department's written approval of the EMP, the Permittee shall implement the water quality monitoring program described in the EMP and this Permit. The water quality monitoring program for the West brine pond must meet the following minimum requirements, which must also be included in the environmental monitoring plan:
 - a. Groundwater Quality Monitoring Program. The groundwater monitoring program must include: the location of all the proposed groundwater monitoring well and underdrain sampling locations; the sampling schedule; the analyses to be performed; discussion of the statistical and graphical methods used to evaluate the data; and the reporting requirements.
 - b. Existing Water Quality. The Permittee must establish an existing water quality database to characterize the site geochemistry. The database must include the information obtained from ongoing low water table conditions, high water table or spring-season water table conditions and subsequent groundwater sampling, including quarterly groundwater sampling. Existing water quality must be established for each hydrogeologic flow regime being monitored at the site prior to operation of the West brine pond.

The existing water quality for each hydrogeologic flow regime shall be the arithmetic mean, per parameter, of the analytical results of the samples obtained from those environmental monitoring points within that flow regime prior to the operation of the brine pond, provided there is no reason to believe that the distribution of the analytical results was non-uniform. The standard deviation of the analytical results for each parameter within each flow regime shall also be established at that time.

- c. Operational Water Quality.
 - i. The Environmental Monitoring Plan (EMP) must include a plan to monitor operational water quality monitoring during the operation, closure, and potentially post-

closure, of the facility. The operational water quality monitoring plan must be able to distinguish operational salt brine derived contamination from the existing water quality and other potential contaminants (such as road salt) at the site. Analytical data obtained through monitoring must be sufficient to evaluate potential contamination. The plan must also describe trigger mechanisms for initiating an investigation of suspected water quality impacts from potential brine pond liner system leakage. The Department may require modification of this plan as additional sampling data becomes available during the life of the facility.

ii. In each calendar year sampling and analysis must be performed quarterly at each monitoring point. Operational water quality analysis must include at least the following field parameters: Static water level and Specific Conductance, and the following indicators: Alkalinity (as HCO_3), Calcium (Ca), Chloride (Cl), Magnesium (Mg), Sodium (Na) and Sulfate (SO_4) as specified in the 6 NYCRR paragraph 360-2.11(d)(6) Water Quality Analysis Tables for routine parameters.

iii. The Department may allow modification of the sampling and analysis requirements once an adequate history of water chemistry has been obtained, provided that a demonstration of acceptable double-liner system performance is made to the Department.

iv. Within 90 days of completing the quarterly field sampling activities, the Permittee must determine whether or not there is a significant increase from existing water quality levels established for each parameter established for the existing water quality of the site.

v. In determining whether a significant increase has occurred, the Permittee must compare the groundwater quality of each parameter at each monitoring well to the existing water quality value established for that parameter. A significant increase has occurred if:

a. the groundwater quality for any parameter at any monitoring well exceeds the water quality value for that parameter, established for the existing water quality for the site, by three standard deviations; or

b. the groundwater quality for any parameter at any monitoring well exceeds the existing water quality value for that parameter, established for the existing water quality, and exceeds the water quality standards for that parameter as specified in Title 6 NYCRR Part 701, 702, or 703.

vi. The Permittee may petition the Department for approval for alternative exceedance values in determining if there is a significant increase in the existing water quality levels.

d. Contingency Water Quality Monitoring and Further Required Investigation and Action. If the Permittee determines that there is a significant increase from the existing water quality levels for one or more of the parameters during field sampling for routine parameters at any monitoring well, the Permittee:

i. must, within 14 days of this determination, notify the Department indicating which parameters have shown significant increases from the existing water quality levels; and

ii. must sample and analyze the groundwater. A minimum of one sample from each monitoring well (upgradient and downgradient) and underdrains must be collected and analyzed during this sampling. If any constituents are detected in the downgradient wells or underdrains as a result of the analysis, a minimum of two independent samples from each well (upgradient and down gradient) and underdrains must be collected within 30 days of obtaining the results of the routine parameter analysis. These samples must be collected within two weeks of each other and then compared to the existing water quality values established for the West brine pond; and

iii. if an increase in the existing water quality values in the upgradient wells is indicated by this comparison, the existing water quality values for these parameters shall be revised to be the arithmetic mean of the results of each parameter for which analyses were performed in the upgradient wells within each hydrogeologic flow regime; and

iv. the Permittee may attempt to demonstrate to the Department that the contamination or that the significant increase resulted from error in sampling, analysis, or natural variation in groundwater quality. A written report documenting the demonstration must be submitted to the Department for approval. If a successful demonstration is made, documented and approved by the Department, the Permittee may continue operational water quality monitoring as specified in the approved EMP.

v. if, after 90 days, a successful demonstration is not made, the Department must be notified in writing within 14 days. Such notice shall also include a proposed schedule for an investigation of the double-liner system performance, potentially including the analysis of the liquid in the pond leak detection system and the underdrain below the brine pond, to identify potential leakage from the double-lined brine pond to confirm the source of contamination. Upon identification of the pond being the contaminating source, a corrective measures report shall be submitted to detail measures and a schedule to either pursue necessary repairs or to pursue closure; such corrective measures report shall be subject to the Department's approval. All inspections and repairs must be certified by a licensed New York State Professional Engineer. A written engineering certification report must be submitted to the Department for approval within 45 days of the repairs; and

vi. Upon a schedule acceptable to the Department, the Permittee:

a. must characterize the extent of the contamination by installing additional monitoring wells and evaluating surface waters as deemed necessary by the Department; and

b. must install at least one additional monitoring well at the facility boundary in the direction of contamination migration, and sample this well the same as required for operational water quality analysis; and

c. must notify all persons who own the land or reside on the land that is directly over any part of the plume of contamination if contaminants have migrated off-site as indicated by sampling of the wells; and

d. the Permittee must submit a corrective measures report acceptable to the Department. This report must include a corrective measures assessment identifying possible corrective measures to bring the facility back into compliance with applicable water quality standards or to pursue closure. The corrective measures shall be implemented in accordance with the report and schedule as approved by the Department.

e. Reporting of data. All data shall be reported to the Department in accordance with Title 6 NYCRR subparagraph 360-2.11(c)(5)(iv).

Unless more rapid reporting is required to address an imminent environmental or public health concern, the Permittee must report all water quality monitoring results to the Department within 90 days of the conclusion of the sample collection.

f. Site analytical plan. As part of the water quality monitoring program and EMP, the Permittee shall develop a site analytical plan in accordance with Title 6 NYCRR subparagraph 360-2.11(d), to be submitted for Department approval within 30 days of the issuance of this Permit, including:

i. Laboratory analyses must be performed by a laboratory currently certified under the appropriate approval categories by the New York State Department of Health's Environmental Laboratory Approval Program (ELAP), and

ii. Groundwater samples shall not be filtered, unless otherwise approved by the Department. If, due to site-specific conditions, turbidity cannot be reduced to 50 nephelometric turbidity units (NTUs) or less by good sampling techniques or well redevelopment, the Department may approve collection of both filtered and unfiltered samples for analyses of the inorganic parameters. All other analyses required will be on unfiltered samples.

Special Conditions Section B: Brine Pond Liner Construction

1. All brine pond construction activities authorized by this Permit must be in strict conformance with the approved supporting documents and plans submitted by the applicant or his agent as part of the permit application. Such approved plans entitled "Finger Lakes LPG Storage, LLC, East and West Brine Ponds" were prepared by C.T. Male Associates, dated September 10, 2012.

The Permittee shall submit to the Department's Region 8 Division of Materials Management Engineer, prior to the commencement of construction, a construction schedule which indicates the anticipated beginning and end dates for all major construction activities. Within 5 business days of commencement of these activities the applicant shall provide written or electronic notice of the commencement of all major portions of on-site construction activities to the Department.

2. The Department must be notified immediately in case of any development during construction that warrants a request to modify the approved engineering plans. Deviation from the approved plans without the specific prior written approval of the Department will constitute a violation of this Permit.

3. All boreholes, wells, and monitoring devices found within the proposed brine pond area shall be properly abandoned by overboring, grouting using a tremie method or similar downhole pressure grouting system and cement-bentonite grout to ensure that all contaminant migration pathways are sealed. Casings shall be removed. This activity must be noted as accomplished in the construction certification report.
4. Extreme care and protective measures shall be taken to protect the integrity of the groundwater depression system, leak detection system, liners, geotextiles and all other brine pond structures. Only rubber tired vehicles shall be allowed in direct contact with HDPE or other synthetic materials.
5. As called for in the Technical Specifications which are part of the above-described approved plans, all field seaming of the geomembranes shall be predominantly by fusion welding with extrusion welding being limited to patching destructive seam sample locations and at pipe penetrations or as approved by the Engineer. Field seams shall be 100 percent tested for pinholes and other seaming/weld defect using a vacuum box tester or air tests, as specified in the approved Technical Specifications, as subject to Department approval. Records shall be kept showing weather conditions (cloudy, sunny) on days when field seaming is ongoing including air temperatures at beginning and end of the work day and precipitation. No welding shall take place when the ambient air or sheet temperature is below 32°F, when the sheet temperature exceeds 158°F, or when the air temperature is above 120°F.
6. All construction at the brine pond site shall be under the supervision of a licensed New York State Professional Engineer or an authorized representative of that individual. This requires that a representative of the Permittee's engineering consultant be present whenever construction is ongoing. This representative must maintain a daily log indicating work done that day, weather conditions, testing performed, quality control and quality assurance practices, problems encountered, and remedial activities undertaken to correct these problems. A copy of this log, certified by the supervising engineer as accurate and correct, must be submitted with the construction certification.

The certification with original signatures and stamped by the licensed engineer must indicate whether all work performed was in compliance with this Permit, and the plans and reports as detailed in special conditions section B, #1. The certification must be submitted within sixty (60) days after completion of construction.

The certification must include a statement from the supervising engineer that the double-liner system and leak detection and collection monitoring systems are functional and that the leak detection and collection system located between the upper and lower liner system is in a free flowing condition and are meeting the acceptable operational thresholds of 0.88 gpm for the West brine pond post-construction.

The certification must include color photographs of major project aspects; daily reports and results of all tests conducted to determine compliance shall also be included as part of the certification.

As-built engineering plans must also be certified containing at least the following:

- a. notation of any deviations from the plans and reports;
- b. completed sub-grade elevations;
- c. completed top of primary liner elevations;
- d. location and critical elevations of groundwater collection lines, leak detection lines, the top and bottom of the groundwater drainage blanket, valve pits, tanks, pond, containment berm, and manholes.

Department approval of the construction certification report must be obtained by the Permittee before the Department can grant approval to operate the specific brine pond. The Department will review the submitted report for approval within thirty days of receipt of the report. Any Department failure to perform such review within thirty days does not constitute a default approval of the report, nor authorization to operate the pond. In no event may brine be placed in a constructed brine pond prior to the Department's written approval of construction certification and authorization to operate the pond.

Special Conditions Section C: Brine Pond Operation

1. The West brine pond shall be operated in accordance with this Permit and in strict conformance with the approved supporting documents and plans submitted by the applicant or his agent as part of the permit application. Such approved documents and plans entitled "Finger Lakes LPG Storage, LLC, East and West Brine Ponds" were prepared by C.T. Male Associates, dated September 10, 2012.

2. The double-liner performance monitoring data that is collected from monitoring leakage from the upper liner into the leak detection and collection system located immediately above the lower liner shall be recorded daily for the West brine pond pursuant to the action thresholds addressed on pages 18 and 19 of Volume I of the September 10, 2012 Engineer's Report within the approved documents described above. The Permittee shall maintain on-site all the recorded daily data for Department staff review upon site inspections. The daily data shall be recorded and compiled monthly for annual reporting to Department. Notification of Exceedance of the "Initial" and "Immediate" Notification Thresholds for the West brine pond as enumerated in Table 2 on page 19 of the referenced Engineer's Report must be adhered to. Notification of threshold exceedances shall additionally comply with the following:

- a. Upon potential Initial Notification threshold exceedances of upper liner leakage into the leak detection and collection system, the Department must be notified in writing within 14 days of the exceedance. Such notice shall also indicate the anticipated schedule of the next scheduled drawdown of the impacted pond. In no case shall this duration exceed 1 year before the defects are located and repaired and acceptable operational thresholds are restored. Within 45 days of the completion of defect repairs, final certification of the completion of defect repairs, signed and stamped by a licensed New York State Professional Engineer, shall be submitted to Department. The licensed professional engineer shall also certify by this same document that acceptable operational thresholds in accordance with this permit have been restored.

b. Upon potential Immediate Notification threshold exceedances of the upper liner leakage into the leak detection and collection system, the Department must be notified in writing within 7 days of exceedance. Such notice shall also confirm that the impacted pond was removed from service and confirm repair of defects and the re-establishment of acceptable operational thresholds. Within 45 days of the completion of repairs, a final certification of the completion of the repairs signed and stamped by a licensed New York State Professional Engineer, shall be submitted to the Department. The licensed professional engineer shall also certify by this same document that acceptable operational thresholds in accordance with this permit have been restored.

3. Geomembrane service life monitoring: In accordance with the provisions of Section 5.7 of the referenced Engineer's Report the Permittee is required to assess the geomembrane service life on a 5 year cycle. The testing and analysis of the exposed geomembrane samples shall be submitted to the Department no later than 6 years from the initial anniversary date of this permit and every 5 years thereafter. Upon the compiled test data reflecting that more than 50% loss of the tested mechanical properties of the geomembrane will be achieved within the next 5 year test cycle the Permittee must submit an engineering report including a proposed work plan and schedule for the geomembrane replacement for the impacted pond. The geomembrane shall be replaced in accordance with the plan and schedule as approved by the Department.

Special Conditions Section D: Other

1. Sound Monitoring: Two confirmatory sound surveys must be performed. The first survey must be initiated within sixty days after the commencement of the first injection season. The second survey must be initiated within sixty days after the commencement of the first withdrawal season. The confirmatory sound surveys must be conducted consistent with the methodology and locations used in the Sound Study dated January, 2011 and revised July, 2013 for Finger Lakes LPG Storage, LLC, Proposed Watkins Terminal by Hunt Engineers Architects Surveyors.

The survey must be performed when injection is occurring into the caverns and the electronic driven injection pumps are in operation. Each survey report must be provided in paper and electronic format to the Department within 30 days of conducting the survey.

If noise attributable to these operations at receptors 1-6 exceeds ambient Leq noise levels provided at any receptor location included in Table 2 of the July, 2013 Sound Study by more than six (6) dBa Leq, or the measured Lmax noise level at any receptor exceeds any respective Lmax ambient noise level in Table 2 of the July, 2013 Sound Study, then the survey report submitted following the confirmatory sound survey must include recommended mitigation measures and a schedule for implementation of such measures that will prevent sound level exceedances from the project. If noise attributable to operations at receptor 7 exceeds the estimate sound levels contained in the March 7, 2014 sound study supplement, then the survey report submitted following the confirmatory sound survey must include recommended mitigation measures and a schedule for implementation of such measures that will prevent sound level exceedances from the project. These mitigation measures may include, but are not limited to: additional barrier attenuation, additional plantings, and muffling. Upon the Department's written approval of sound level mitigation measures, the Permittee must implement the approved sound level mitigation measures in accordance with the schedule and any conditions directed by the

Department in writing. A follow-up sound survey must then be conducted upon a schedule approved by the Department focused on all specific receptors where there was an exceedance of the predicted sound levels to ensure the effectiveness of the additional mitigation measures.

2. The West brine pond will be visually inspected at least monthly for the presence of waterfowl mortality as a result of exposure to the brine. Mortality will be reported to the Department's Region 8 Natural Resources Supervisor in writing within two business days of Permittee's discovery of the mortality. Upon notice of the Department, the applicant must submit for Department review a plan for corrective action to prevent future waterfowl mortalities, and must implement appropriate measures, as directed by the Department.

3. Human or Archaeological Remains: If any human remains or archaeological remains are encountered during excavation, the Permittee must immediately cease, or cause to cease, all work in the area of the remains and notify:

Regional Permit Administrator
Division of Environmental Permits
NYSDEC Region 8 Avon
6274 E Avon-Lima Road
Avon, NY 14414

Work shall not resume until written permission to do so has been received from the Department.