

Tioga Energy Partners, LLC Well Drilling Permit Applications
Attachment 2 - Snyder E 1-A (API 31-107-30000-01-00)

Comment 1. *1. Safety and Emergency Response Plans: It is acknowledged that TEP submitted "Safety and Emergency Response Plans" with its drilling permit application dated July 7, 2015 which specifically reference GASFRAC Energy Services LP (Gasfrac) safety and emergency literature. With its October 22, 2015 correspondence, TEP submitted an "Emergency Response Plan" (ERP) dated October 2015. The ERP does not reference specific information provided in the July 7th submittal. Additionally, the Department understands that Gasfrac may not be the company that ultimately provides the stimulation services, and that another company or TEP employees may perform the work. It is unclear what portions, if any, of the Safety and Emergency Response Plans submitted with the July 7, 2015 application are still applicable to the proposed operation, and how they relate to the October 2015 ERP. Applicable safety plans (e.g., establishment of hot zone for hydraulic fracturing, safety monitoring equipment such as lower explosive limit (LEL) and/or infrared monitors) provided in the July 7, 2015 submittal should be added to TEP's ERP "Appendix E – Security, Signs & Safety Equipment."*

Response 1: The requested changes have been made to the ERP (updated as of May, 2017), attached as **EXHIBIT 3**.

Comment 1(a): *With respect to "5. Incident Management Team Structure" on Page 12 of the ERP, the identities of applicable team members must be provided to the Department (i.e., Linda Collart) whenever a non-routine incident notification is made within two (2) hours of an incident. Please include this as a footnote on Page 12 or other appropriate location within the ERP;*

Response 1(a): The requested changes have been made to page 12, and page C-11 of the ERP (updated as of May, 2017). See, Exhibit 3.

Comment 1(b): *The heading "Drilling Notices Required" on Page C-13 of the ERP should be amended to read "Drilling, Hydraulic Fracturing and Flowback Notices Required." This section should be amended to include any pre-stimulation notification (i.e., at least 24 hours prior to the commencement of pumping the first stage for hydraulic fracturing) that would be provided to the Department (Linda Collart). The section should also be amended to include any pre-flaring notification (i.e., at least 24 hours prior to the first flaring event for each phase of hydraulic fracturing and flowback) that would be provided to the Department (Linda Collart), town supervisor, adjacent landowners, local law enforcement, county emergency management office and local fire department; and*

Response 1(b): The heading "Drilling Notices Required" has been changed to "Drilling, Hydraulic Fracturing and Flowback Notices Required." Additional notices include those described by Supplementary Permit Conditions For High-Volume Hydraulic Fracturing, such as Emergency Management Office notification, and cementing of surface, intermediate, and production casing. The 'pre-stimulation notification' and 'pre-flaring notification' have been

included under the EMO notification at pages C-15 & C-16. See ERP updated as of May, 2017. See, Exhibit 3.

***Comment 1(c):** The text under the subheading “Completion” on Page C-13 of the ERP should be amended to read “Within thirty (30) days after the well has been completed (after stimulation and testing), TIOGA shall file a Completion Report Form [85-15-17 (4/09)--28a] containing all requested information, two copies of all logs run on the well, and a directional drilling report.”*

Response 1(c): The requested change has been made to the ERP (updated as of May, 2017). See, Exhibit 3.

***Comment 2.** TEP provided information on an accident attributed to propane hydraulic fracturing in a July 30, 2015 letter to the Department where GasFrac employees were injured when they did not follow established procedures. Please provide any available company and regulatory reports on any investigations that resulted from the referenced incident.*

Response 2: TEP’s letter to the Commissioner on July 30, 2015, provided information on each of these incidents and confirmed that measures to prevent future occurrences were implemented, and no further incidents have occurred. TEP will be utilizing the referenced protocols in its operations.

On or about May 11, 2016, TEP representatives made Freedom of Information and Protection of Privacy Act requests to Alberta Labour, Canada regarding the January 14, 2011 incident referenced above. Attached hereto as **EXHIBIT 4** are copies of the available reports on investigations that occurred related to this incident. TEP is unaware of any other reports or investigations regarding these matters.

***Comment 3.** If available, provide information on any subsurface faulting in the subject area, including structure maps. Have any seismic surveys been performed by TEP or does TEP have access to any seismic survey data for the subject area?*

Response 3:

No Project-specific geophysical seismic surveys have been performed for the area surrounding the Project. However, TEP is including with this response an analytical report prepared by Continental Placer, Inc. (“Geology Report”) regarding regional and site-specific geology, seismicity (including the potential for induced seismicity) and the porosity and permeability of the geologic structure surrounding and overlying the proposed Project. A copy of the Geology Report is attached hereto as **EXHIBIT 5**. The Geology Report is based upon an exhaustive review of publicly available well log data, published academic studies and articles, GIS data, the 2015 SFGEIS and other information.

Based upon the detailed information and analysis contained in the Geology Report, the following observations, conclusions and recommendations can be made:

1. The geology surrounding the Project location is unremarkable, and typical of this part of New York's Southern Tier;
2. There are no known seismically active faults within 100 miles of the proposed well;
3. The closest fault to the well is more than a mile to the west of the western edge of the well spacing unit (known as a wrench fault), which is a significant separation distance;
4. The induced fractures created during well completion will not extend beyond the edge of the well spacing unit;
5. Faults within Tioga County are not believed to extend to basement bedrock, rendering their potential to be geologically active exceedingly small;
6. There is 2,800 feet of cap rock above the top of the fracture zone and below the fresh groundwater zone;
7. The porosity and permeability of the cap rock prevents the upward migration of gases and fluids. Additionally, there will be no persistent, long-term driving pressure gradients (head) created after well completion activities are complete;
8. The localized induced seismicity from completion activities will be below human detection limits; and
9. Completion activities will be focused on a singular borehole, and will not use high volume water development.

Nevertheless, in an abundance of caution and to address any concerns regarding induced seismicity, seismic monitoring in the area of the Project will be conducted before, during and after drilling and completion activities.

If required by the Department, TEP will evaluate and consult with the agency regarding any seismic activity above 1.5, but below 2.5 (on the Richter Scale); and an immediate cessation of drilling or completion activities if seismic activity exceeds 2.5. For complete details, see the Geology Report (Exhibit 5).

The following information associated with the flowback phase must be provided:

Comment 1. *It is stated that flowback will not be vented or flared unless there is an upset condition requiring temporary venting or flaring, and that recaptured LPG would be returned to the supplier.*

Provide details on how any natural gas contained in the flowback will be handled and separated, including any storage in tanks on location and transportation off site. If transportation of produced natural gas during flowback is by truck, provide an amended "Schedule of Propane Trucking Requirements During LPG Fracturing & Propane Recovery (Flowback) Operations" indicating days, amount and number of truckloads anticipated. If appropriate, edit title of said schedule to include natural gas recovery. If temporary storage tanks are added to the well site to accommodate the produced natural gas, provide an updated "Tioga-Proposed Propane Recovery Flowback Schematic." Provide natural gas trucking routes from the site to

destination(s). Identify roads as private, town, county or state. If trucking will not be used to move natural gas produced during the flowback phase, please explain how the natural gas will be managed and transported.

Response 1:

TEP does not propose to transport any produced natural gas by truck and therefore, no trucking routes for natural gas are necessary and the Schedule of Propane Trucking Requirements During LPG Fracturing & Propane Recovery (Flowback) Operations” remains accurate for LPG.

Due to the differing densities of methane and propane, the gases can be separated and recovered separately. The details of the separation process were provided in the Flowback Procedure submittal contained in TEP’s July 7, 2015 application materials, and are attached hereto as **EXHIBIT 6**, which has been updated to reflect refinements to the project since July 2015.

Post-well completion and prior to construction of the gathering line, TEP will flare any natural gas contained in the flowback in accordance with 6 NYCRR 556.2(b), but only until establishing that the Snyder E 1A well is a producing well, and then shut the well in, if necessary. Included in this submission as **EXHIBIT 7** is TEP’s Application for Approval to Flare.

Further, TEP is applying to construct a gathering line to allow any natural gas contained in the flowback to be productively recovered as soon as the gathering line is permitted and constructed in accordance with Department and Department of Public Service rules and regulations.

Comment 2. *It is understood that a refrigeration unit will be used to recapture propane and natural gas during the flowback phase.*

The Department further understands that a natural gas/LP-powered standby generator(s) will be used to power the refrigeration unit and other equipment as necessary. Please confirm the Department’s understanding, and provide the number and size of generators proposed to be used on site during the flowback phase. In its October 22, 2015 submittal, TEP provided the manufacturer’s noise/sound-level operating data for the standby-generator(s). Please provide the manufacturer’s noise/sound-level operating data for the refrigeration unit.

Response 2:

The Department’s understanding is correct. There will be a refrigeration unit as well as one-1,000 kW, diesel powered generator on site for purposes of powering the refrigeration unit. It is the diesel generator that will be the noise source associated with this operation. TEP has previously provided sound level data for the generators to be used at the project site. In addition, as noted previously, the distance (more than ½ a mile) to the nearest non-company owned receptor ensures that there will be no adverse noise impacts from the operation of the refrigeration unit.

Comment 3. The Department understands that equipment associated with the flowback phase would be on site for 66 total days while equipment for hydraulic fracturing would be in operation for a maximum of 5 days (during daylight hours only). Please confirm the Department's understanding.

Response 3:

The Department's understanding is correct, TEP proposes to have flowback phase equipment on site for 66 total days, and five total days, maximum, would be dedicated to hydraulic fracturing, during daylight hours only.

The following information associated with the production phase must be provided:

Comment 1: The production phase is a potential contributor of greenhouse gas emissions. Please provide information on any equipment and practices which would be employed at the wellsite to reduce or prevent methane venting and leakage, including any required by the United States Environmental Protection Agency (USEPA). In addition to any federal requirements, such equipment and practices may include those described under the USEPA's Natural Gas Star Program.

Response 1:

Based on the extensive analysis of greenhouse gases ("GHG") contained in the 2015 SFGEIS and the Project's proposed operations, potential sources of GHG generation during the production phase would include emissions resulting from operating the equipment necessary to process and flow the natural gas from the well into the sales line. 2015 SFGEIS at 6-201. This Project will have the following equipment at the wellsite with the potential to generate GHGs: Pneumatic Controllers and leaks or fugitive emissions from equipment.

The potential GHG emissions from this equipment will be managed in accordance with 40 CFR Part 60 OOOOa, as applicable, as well as best management practices. The equipment and practices that TEP proposes to utilize to reduce or prevent methane venting and leakage are set forth in **EXHIBIT 8**.

The following information must be provided to determine whether a permit or registration from the Department's Division of Air Resources is required for this project in accordance with 6 NYCRR Part 201:

Comment 1. Identify any fuel-fired stationary combustion equipment that will be brought on site for all phases (drilling, completion including hydraulic fracturing, and production) of the project. This includes compressors, engines/generators, heaters, flares, boilers or any other non-mobile combustion source. For each source, please provide the following information:

1a. Size of the unit (e.g., maximum rated break horsepower (BHP) for engines, heat input capacity for flares/heaters or other combustion sources);

1b. Fuel burned in the source;

1c. Duration that the source will be physically located on site, and the expected total duration of operation for each source in terms of operating hours; and

1d. Estimated maximum hourly emissions for each source, and the anticipated total actual emissions for each source.

Response 1: TEP will not be using any fuel-fired stationary combustion equipment for drilling, completion or hydraulic fracturing. Drilling, completion and hydraulic fracturing operations will be powered by exempt non-road engines (see, 6 NYCRR §200.1(aw)). Notwithstanding, the attached as Exhibit 1, Air Emission Calculation Summary and its attached tables provide significant detail on the potential and expected emissions generated by non-road engines, and other equipment utilized as part of the Project. Within Exhibit 1 is a list of the equipment anticipated to be used during all phases of operations for Snyder E1-A well. These exhibits also provide a description of the unit, fuel burned in the unit, duration of operations and estimated emissions are provided for each piece of equipment. Drilling of the Snyder E1-A Well is expected to take 8 days.

Comment 2. *Identify whether any gas venting can or will occur on site during any phase of the project. If gas venting can occur, identify the anticipated composition of the vented gas, anticipated gas flow rate, and anticipated or possible duration of any gas venting.*

Response 2: This Project does not anticipate the need for any gas venting. Shale formations such as the Marcellus targeted in this application are typically tight formations that do not release any natural gas absent stimulation. Further, the well will be constructed consistent with sound engineering principles to include casing and cement, which precludes shallow gas migration. The use of fluid in deep drilling, as will occur here, is completed with a hydrostatic head which generally prevents gas flow. Nonetheless, if any formation gas is encountered, it will be captured by the Project's closed loop drilling system and sent to the drill rig flare.

Please see also the response to Comment 2 on page 2 of Attachment 1 - Snyder E 1 (API 31-107-30000-00-00), above.

Comment 3. *For each project phase, identify whether any storage tanks will be located on site. For each storage tank, identify the material being stored, the size of the storage tank, and an analysis of whether the storage tank is exempt from permitting under NYSDEC air regulations (ref. 6 NYCRR Part 201-3). For any tank not exempt from air permitting, an application for an air permit or registration must be submitted.*

Response 3: There will be several storage tanks onsite as part of Snyder E1-A. The storage tanks to be used during each phase of the Snyder E1-A operation are identified by phase in Exhibit 1, Table 4 and Table 5. These materials identify the material being stored, the volume of each tank, and the number of each tank type. These tanks include several tanks containing oil, diesel fuel, and propane, as well as tanks containing water, and various wastes that do not

generate air emissions. The storage tanks with a potential to emit are exempt from air permitting pursuant to the following provisions:

- 6 NYCRR 201-3.2(c)(21) (exempting certain petroleum storage tanks with capacities below 300,000 barrels from air permitting);
- 6 NYCRR 201-3.2(c)(25) (exempting storage tanks containing less than 10,000 gallons from air permitting); and
- 6 NYCRR 201-3.2(c)(26) (exempting horizontal petroleum or volatile organic liquid storage tanks from air permitting).

Please see also the response to Comment 3 on page 2 of Attachment 1 - Snyder E 1 (API 31-107-30000-00-00), above.

Comment 4. Identify whether any gas treatment (e.g., dehydration) will occur on site. If so, please provide a description of the equipment and anticipated potential and actual emissions from this source(s).

Response 4:

Gas treatment using Ethylene Glycol (“EG”) dehydration will take place on site. The dehydrator is a self-contained unit consisting of tanks, pumps, a condenser, cross-exchanger and a reboiler. There are no emissions from the dehydrator. The only combustion source is the heater for the reboiler which will be fueled with natural gas. The combustion source and its related emissions are listed in Exhibit 1, Table 3. Any water removed by the dehydration process will be directly piped to a produced water tank.

Status of Additional Coverages/Agreements/Approvals

Please provide the status of the following additional determinations and approvals:

Comment 1. Coverage under the General Permit for Construction Stormwater Management from the Department’s Division of Water.

Response 1: Please see the response to Status of Additional Coverages/Agreements/Approvals, Comment 1 on page 2 of Attachment 1 - Snyder E 1 (API 31-107-30000-00-00), above.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY BLANK]

Comment 2. *Truck Traffic - TEP provided “preferred alternative trucking routes” as Exhibit 4 with its October 15, 2015 submittal. Please confirm that these are the routes that would be used for the transportation of propane for the hydraulic fracturing and flowback phases. If applicable, provide trucking routes for natural gas associated with the flowback phase. Has TEP been provided any input from the Town of Barton and/or Tioga County, as appropriate, relative to any proposed traffic on town and/or county roads or any required road-use agreement(s) as a result of transportation for the hydraulic fracturing and flowback phases? If “yes,” please provide details.*

Response 2:

This Project includes a single well, and utilizes a technology that will avoid the use of water. Accordingly, it is expected that this Project will require several hundred fewer truck trips than that evaluated in the 2015 SFGEIS associated with high volume hydraulic fracturing.

The routes set forth in TEP’s October 15, 2015 submittal will be used for the transportation of propane for the hydraulic fracturing and flowback phases. TEP has met with local officials with jurisdiction over the roads constituting TEP’s proposed trucking route. The local officials are in agreement that proposed propane delivery truck traffic will not impact the county road.

Comment 3. *SRBC approval(s).*

Response 3: Please see the response to Status of Additional Coverages/Agreements/Approvals, Comment 2 on page 2 of Attachment 1 - Snyder E 1 (API 31-107-30000-00-00), above.