

Laurel Mountain Midstream Operating, LLC
SPRINGHILL COMPRESSOR STATION
Application for Authorization to use General Permit GP-5
Attachment A

APPLICATION SUPPLEMENT

A. Process Description

The LMM Springhill CS provides compression and dehydration for natural gas gathering in the Marcellus Shale. This Application has been prepared and submitted to request authorization for modifications at the existing facility with a GP-5 authorization.

B. Potential to Emit (PTE)

The facility continues to qualify as a Minor (or Area) Source for all regulated pollutants, as summarized below:

FACILITY-WIDE POTENTIAL TO EMIT (PTE)¹

(Emissions values reported in tons/year (tpy) on a rolling 12-month basis)

ID No	Description	Criteria Pollutants			HAP		GHG
		NOX	CO	VOC ²	HCHO ³	Tot HAP ³	CO2e ^{4,5}
CE-01	Electric Motor Driven Compressor	Electric Motor Driven Compressor					
CE-02	1,340 bhp CAT G3516LE Compressor Engine	Remove CE-02 (Replace w/ CE-04)					
CE-03	1,340 bhp CAT G3516LE Compressor Engine	Remove CE-03 (Replace w/ CE-05)					
CE-04	1,380 bhp CAT G3516B Compressor Engine	6.66	2.27	3.73	0.40	0.90	7,639
CE-05	1,380 bhp CAT G3516B Compressor Engine	6.66	2.27	3.73	0.40	0.90	7,639
RPC	Compressor Rod Packing / Engine Crankcase	---	---	0.39	0.10	0.12	1,092
SSM	Startup/Shutdown/Maintenance (Blowdown)	---	---	0.32	---	0.01	1,694
DEHY-01	25.0 MMscfd Dehydrator	---	---	9.90	---	3.50	14,750
BLR-01	0.25 MMBtu/hr Reboiler	0.12	0.10	0.01	8.9E-05	2.2E-03	144
DEHY-02	40.0 MMscfd Dehydrator	---	---	4.90	---	4.40	14,875
BLR-02	0.75 MMBtu/hr Reboiler	0.36	0.30	0.02	2.7E-04	0.01	431
TKS	424 bbl (Total) Produced Water Tanks	---	---	0.94	---	0.84	68
TLO	11,000 bbl/yr Produced Water Load-Out	---	---	0.37	---	0.11	---
FUG	Piping and Equipment Fugitives	---	---	0.15	---	4.4E-03	793
Total Point Source PTE:		13.80	4.93	24.45	0.90	10.80	49,125
Major Source Thresholds		100	100	50	10	25	na

Notes: 1 - Emissions are based on operation at 100% of rated load for 8,760 hrs/yr, except SSM and TLO emissions which are infrequent and intermittent.

2 - VOC is volatile organic compounds, as defined by EPA, and includes formaldehyde (HCHO).

3 - Total HAP includes, but not limited to: formaldehyde (HCHO), n-hexane, BTEX (benzene, toluene, ethylbenzene, xylene), 2,2,4-TMP (i-octane), acetaldehyde, acrolein, and methanol (CH₃OH).

4 - CO₂e is aggregated Greenhouse Gas (GHG), comprised of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), as adjusted for Global Warming Potential (GWP).

5 - The U.S. Supreme Court has ruled that greenhouse gas Major Source Thresholds are applicable only if other regulated air pollutants exceed the corresponding Thresholds.

C. Applicability of New Source Review (NSR) Regulations

The following New Source Review (NSR) regulations are potentially applicable to natural gas compressor stations. Applicability to the facility has been determined as follows:

1. **Prevention of Significant Deterioration (PSD)**

[Not Applicable]

This rule does not apply. The facility is a "PSD Natural Minor Source" for each regulated pollutant, as follows:

- NOX: Not Applicable – Ozone (O3) Non-Attainment Area
- CO: PSD Natural Minor Source with Pre-Controlled PTE < 250 tpy
- VOC: Not Applicable – Ozone (O3) Non-Attainment Area
- SO2: PSD Natural Minor Source with Pre-Controlled PTE < 250 tpy
- PM10/2.5: PSD Natural Minor Source with Pre-Controlled PTE < 250 tpy

2. **Non-Attainment New Source Review (NNSR)**

[Not Applicable]

This rule does not apply. The entire State treated as a Moderate Non-Attainment Area for Ozone (O3); however, the subject facility qualifies as an "NNSR Minor Source" as follows:

- NOX: NNSR Natural Minor Source with Pre-Controlled PTE < 100 tpy
- VOC: NNSR Natural Minor Source with Pre-Controlled PTE < 50 tpy

3. **Major Source of Hazardous Air Pollutants (HAPs)**

[Not Applicable]

This rule does not apply. The facility qualifies as a "HAP Area Source" as follows:

- Each HAP: HAP Area Source with Pre-Controlled Each Individual HAP PTE < 10 tpy
- Total HAPs: HAP Area Source with Pre-Controlled Total of All HAPs PTE < 25 tpy

4. **Title V Operating Permit (TVOP)**

[Not Applicable]

This rule does not apply. The facility qualifies as a "TVOP Minor Source" as follows:

- NOX: TVOP Natural Minor Source with Pre-Controlled PTE < 100 tpy
- CO: TVOP Natural Minor Source with Pre-Controlled PTE < 100 tpy
- VOC: TVOP Natural Minor Source with Pre-Controlled PTE < 50 tpy
- SO2: TVOP Natural Minor Source with Pre-Controlled PTE < 100 tpy
- PM10/2.5: TVOP Natural Minor Source with Pre-Controlled PTE < 100 tpy
- Each HAP: TVOP Natural Minor Source with Pre-Controlled PTE < 10 tpy
- Total HAPs: TVOP Natural Minor Source with Pre-Controlled PTE < 25 tpy

D. Applicability of Federal Regulations

The following federal regulations are potentially applicable to natural gas compressor stations. Applicability to the facility has been determined as follows:

1. **NSPS A, General Provisions**

40CFR§60.1-§60.19

[Applicable]

This rule does apply to all sources subject to an NSPS (unless a specific provision is excluded within the source NSPS), including the 1,380 bhp CAT G3515B (4SRB) compressor engines (CE-04 and -05). Requirements include notification, monitoring, and recordkeeping.

2. NSPS A, Control Devices - Flares

40CFR§60.18(b)

[Not Applicable]

This rule does not apply because there is no flare at the facility.

3. NSPS Dc, Steam Generating Units

40CFR§60.40c-§60.48c

[Not Applicable]

This rule does not apply because there is no steam generating unit at the facility with a maximum design heat input capacity ≥ 10 MMBtu/hr (§60.40c(a)).

4. NSPS Kb, Volatile Organic Liquid (VOL) Storage Vessels

40CFR§60.110b-§60.117b

[Not Applicable]

This rule does not apply because each tank that is used to store volatile organic liquids (VOL) has a design capacity < 75 m³ (19,800 gal, 471 bbl) (§60.110b(a)).

5. NSPS GG, Stationary Gas Turbines

40CFR§60.330-§60.335

[Not Applicable]

This rule does not apply because there is no stationary gas turbine at the facility (§60.330).

6. NSPS KKK, Leaks from Natural Gas Processing Plants

40CFR§60.630-§60.636

[Not Applicable]

This rule does not apply because the facility is not located at a natural gas processing plant that is engaged in the extraction of natural gas liquids from field gas (§60.630(e)).

7. NSPS LLL, Onshore Natural Gas Processing: SO₂ Emissions

40CFR§60.640-§60.648

[Not Applicable]

This rule does not apply because there is no gas sweetening operation at the facility (§60.640(a)).

8. NSPS IIII, Compression Ignition Reciprocating Internal Combustion Engines

CFR§60.4200-§60.4219

[Not Applicable]

This rule does not apply because there is no stationary compression ignition engine at the facility (§60.4200(a)).

9. NSPS JJJJ, Stationary Spark Ignition (SI) Internal Combustion Engines (ICE)

40CFR§60.4230-§60.4248

[Applicable]

This rule does apply to the NEW compressor engines (CE-04 and -05) because they were each constructed (ordered), modified or reconstructed after 06/12/06 (§60.4230(a)), are lean burn with $\geq 1,350$ bhp, and were manufactured on or after 07/01/07 (§60.4230(a)(4)(i)).

Requirements include NO_X, CO, and VOC emission limits (§60.4233(e), Table 1); operating limits (§60.4243); performance testing (§60.4244); and notification and recordkeeping requirements (§60.4245).

10. NSPS KKKK, Stationary Combustion Turbines

40CFR§60.4300-§60.4420

[Not Applicable]

This rule does not apply because there is no stationary combustion turbine at the facility (§60.4300).

11. NSPS OOOO, Crude Oil and Natural Gas Production

40CFR§60.5360-§60.5430

[Applicable]

This rule does apply to the NEW reciprocating compressors (driven by CE-04 and CE-05) because they were each constructed after 08/23/11 (§60.5360 and §60.5365(c)). Requirements include replacing rod packing systems on a specified schedule; also notification, monitoring, recordkeeping and reporting requirements (§60.5420).

This rule does not apply to the reciprocating compressor (driven by electric motor CE-01) or to the storage vessels (tanks) (TKS) because they were each constructed before 08/23/11 (§60.5360 and §60.5365(c)).

This rule does not apply to the pneumatic controllers because they are located between the wellhead and point of custody transfer, are not located at a natural gas processing plant, and their bleed rate is ≤ 6 scfh (§60.5365(d)(i)).

12. NESHAP, Designated Source Standards

40CFR§61.01-§61.359

[Not Applicable]

This rule does not apply because the facility is not a designated facility (or source) subject to any requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP).

13. NESHAP A, General Provisions (aka MACT)

40CFR§63.1-§63.16

[Applicable]

This rule does apply to the NEW compressor engines (CE-04 and -05) and to the Dehydrators (DEHY-01 and -02) because they are subject to NESHAP ZZZZ and NESHAP HH, respectively. Requirements include notification, monitoring, and recordkeeping.

14. NESHAP HH, Oil and Natural Gas Production Facilities

40CFR§63.760-§63.779

[Applicable]

This rule does apply to the dehydrator (DEHY-02). However, because the dehydrator has an actual average benzene emission rate < 0.90 megagram (1.0 ton) per year it is exempt from all requirements except to maintain records of actual benzene emissions to demonstrate continuing exemption status (§63.764(e)(1)).

This rule does not apply to storage vessels (tanks), compressors, or ancillary equipment because the facility is an area source of HAP emissions (§63.760(b)(2)). In no case does this rule apply to engines or turbines.

15. NESHAP HHH, Natural Gas Transmission and Storage Facilities

40CFR§63.1270-§63.1289

[Not Applicable]

This rule does not apply because the facility is not a natural gas transmission or storage facility transporting or storing natural gas prior to local distribution (§63.1270(a)).

16. NESHAP YYYY, Stationary Combustion Turbines

40CFR§63.6080-§63.6175

[Not Applicable]

This rule does not apply because there is no stationary combustion turbine at the facility (§63.6080).

17. NESHAP ZZZZ, Stationary Reciprocating Internal Combustion Engines (RICE)

40CFR§63.6580-§63.6675

[Applicable]

This rule does apply to the NEW compressor engines (CE-04 and -05). However, because each engine is “new” or “reconstructed”; i.e., commenced construction or reconstruction on or after 06/12/06 (§63.6590(a)(2)(iii)), the only requirement is compliance with 40CFR§60.4230-§60.4248 (NSPS JJJJ) for Spark Ignition Internal Combustion Engines.

18. NESHAP DDDDD, Industrial, Commercial, and Institutional Boilers and Process Heaters – Major Sources

40CFR§63.7480 – §63.7575

[Not Applicable]

This rule does not apply because the facility is not a major source of HAP (§63.7485).

19. NESHAP JJJJJJ, Industrial, Commercial, and Institutional Boilers – Area Sources

40CFR§63.11193 – §63.11237

[Not Applicable]

This rule does not apply because gas-fired boilers are not subject to the requirements of this subpart (§63.11195(e)). Specifically, “boiler” is defined as an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water.

20. Chemical Accident Prevention Provisions

40CFR§68.1-§68.220

[Not Applicable]

This rule does not apply because the facility does not store more than a threshold quantity of a regulated substance in a process (§68.115).

21. Compliance Assurance Monitoring (CAM)

40CFR§64.1-§64.10

[Not Applicable]

This rule does not apply. Although there are pollutant specific emission units subject to an emissions limitation and a control device is used to achieve compliance, the potential pre-control emissions do not exceed 100 tpy.

22. Mandatory Greenhouse Gases (GHG) Reporting

40CFR§98.1-§98.9

[Not Applicable]

This rule does not apply because the facility is not subject to a listed source category; the aggregate maximum heat input capacity of the stationary fuel combustion units is < 30 MMBtu/hr, and the facility has the potential to emit < 25,000 metric ton/yr (27,558 tpy) of CO₂e/yr from all stationary fuel combustion sources combined (§98.2(a)).

E. Applicability of State Regulations

The following State regulations are potentially applicable to natural gas compressor stations. Applicability to the facility has been determined as follows:

1. **Prohibition of Certain Fugitive Emissions**

25 Pa Code §123.1 and §123.2

[Applicable]

This rule does apply. Compliance will be achieved by ensuring proper maintenance of roadways, and other reasonable measures will be implemented as needed to prevent particulate matter from becoming airborne.

2. **Particulate Emissions: Combustion Units**

25 Pa Code §123.11

[Not Applicable]

This rule does not apply to the reboilers (BLR-01 and -02) because they each have a heat input rating < 2.5 MMBtu/hr (25 Pa Code §127.14(2)).

This rule does not apply to the compressor engines (CE-04 and -05) because they are not combustion units which are defined as “stationary units used to burn fuel primarily for the purpose of power or heat by indirect heat transfer, such as a boiler”.

3. **Particulate Emissions: Processes**

25 Pa Code §123.13

[Applicable]

This rule does apply to the engines (CE-04 and -05); however, all processes at the facility combust only natural gas which inherently conforms to the particulate emission standards.

4. **Sulfur Compound Emissions**

25 Pa Code §123.21

[Applicable]

This rule does apply to the emission sources at the facility; however, the potential SO₂ emissions are ≤ 500 ppmvd due to the exclusive use of “sweet” natural gas fuel.

5. **Odor Emissions**

25 Pa Code §123.31

[Applicable]

This rule does apply. No malodors are anticipated; however, appropriate measures will be implemented if malodors are detectable outside of the property boundaries.

6. **Visible Emissions**

25 Pa Code §123.41

[Applicable]

This rule does apply; however, all processes at the facility combust only natural gas which inherently conforms to the visible emission standards.

7. **Best Available Technology (BAT)**

25 Pa Code §127.1

[Applicable]

This rule does apply; however, all equipment, processes and activities at the facility are presumed in compliance because they satisfy the applicable control technology requirements as specified in the General Permit, NSPS, and NESHAP regulations.

8. Plan Approval Requirement

25 Pa Code §127.11

[Applicable]

This rule does apply. Except in situations where an exemption specifically applies, any construction or modification of an air contamination source is prohibited without authorization by PADEP. This authorization (in this instance, General Plan Approval and General Operating Permit (GP-5)) is legally enforceable at both federal and state levels and covers all sources of air pollution, process equipment, and air cleaning devices at the facility.

9. Municipality and County Notifications

25 Pa Code §127.43.a

[Applicable]

This rule does apply. A facility owner or operator proposing to use General Permit GP-5 shall notify the local municipality and county where the air pollution source is to be located that the applicant has applied for an authorization to use GP-5. The notification shall clearly describe the proposed sources and/or modifications. The owner or operator shall also submit to the Department proof of submittal of the municipal notification along with a copy of the Application for Authorization to Use GP-5.

10. Compliance Review Form (CRF)

25 Pa Code §127.412 (Attachment B-2)

[Applicable]

This rule does apply. An applicant proposing to operate under for General Plan Approval and General Operating Permit (GP-5) must submit a compliance review form (CRF). The CRF is verification that the information contained in the application is true and correct as verified by a corporate officer or other responsible official.

11. General Plan Approval and General Operating Permit

25 Pa Code §127.621(a)

[Applicable]

This rule does apply. The General Permit authorizes the construction, modification, and/or operation of natural gas compression and/or a gas processing facility. The applicability of this General Permit may include any of the following:

- (a) Natural gas-fired spark ignition internal combustion engines.
- (b) Natural gas-fired simple cycle turbines.
- (c) Centrifugal compressors.
- (d) Storage vessels/tanks.
- (e) Glycol dehydration units and associated equipment.
- (f) Natural gas fractionation process units.
- (g) Equipment leaks.
- (h) Pneumatic controllers.
- (i) Sweetening units.

The emissions from all sources and associated air pollution control equipment located at a natural gas compression facility shall not equal or exceed on a 12-month rolling sum basis:

- (a) NOX, CO, SO₂, PM₁₀, and PM_{2.5} – 100 tons
- (b) VOC – 50 tons
- (c) Any individual HAP – 10 tons
- (d) Total HAPs – 25 tons

[Note: NOX and VOC thresholds of 25 tons each apply in Bucks, Chester, Delaware, Montgomery and Philadelphia counties.]

(Note: Condition 14 of Section A in the final GP-5 requires maintenance of records that clearly demonstrate that the facility is not a Title V facility; therefore, the emission limits established in GP-5 are federally enforceable. Furthermore, in accordance with Condition 9d of Section A in the final GP-5, the owner or operator of the facility shall annually submit to the Department a certification of compliance with the terms and conditions in the GP-5, for the previous year, including the emission limitations, standards or work practices. The Compliance Certification Form must be signed by a Responsible Official and contain a certification as to truth, accuracy, and completeness. The Compliance Certification Form must be postmarked or hand-delivered to the appropriate DEP Regional Office, no later than March 1st each year for the previous calendar year.)

12. Storage tanks greater than 40,000 gallons capacity containing VOCs

25 Pa Code §129.57

[Not Applicable]

This rule does not apply because there is no storage tank > 40,000 gal (952 bbl) capacity at the facility.

13. Storage tanks less than or equal to 40,000 gallons capacity containing VOCs

25 Pa Code §129.57

[Not Applicable]

This rule does not apply to the produced water tanks (TKS) at the facility because the produced water has a vapor pressure ≤ 1.5 psia (10.5 kilopascals) under actual storage conditions.

Sampling of the produced water was conducted in 2010 at Laurel Mountain Midstream's Springhill Compressor Station (CS). The results show the produced water has a vapor pressure of less than 1.5 psia. The gas quality has changed little since 2010 and it is a reasonable assumption, based upon this information and our knowledge of the source, that the produced water tanks are exempt from this requirement.

The produced water tanks are wastewater collection tanks. Based on the gas analysis, this facility would not produce a volatile liquid layer (NGLs) or solubilized VOCs (such as benzene) in quantities to exceed the vapor pressure threshold. The gas analysis for the site shows very little VOC in the inlet gas stream, so a produced water vapor pressure greater than 1.5 psia would not be anticipated.

14. Control Standards for Major Stationary Sources (RACT)

25 Pa Code §129.91

[Not Applicable]

This rule does not apply to the facility because the PTE for each criteria pollutant (specifically VOC and NOX) is less than the Major Source Thresholds.

15. Pennsylvania Natural Diversity Inventory (PNDI)

DIN: 400-0200-001, Dated 07/16/05 (See Attachment D-4)

[Not Applicable]

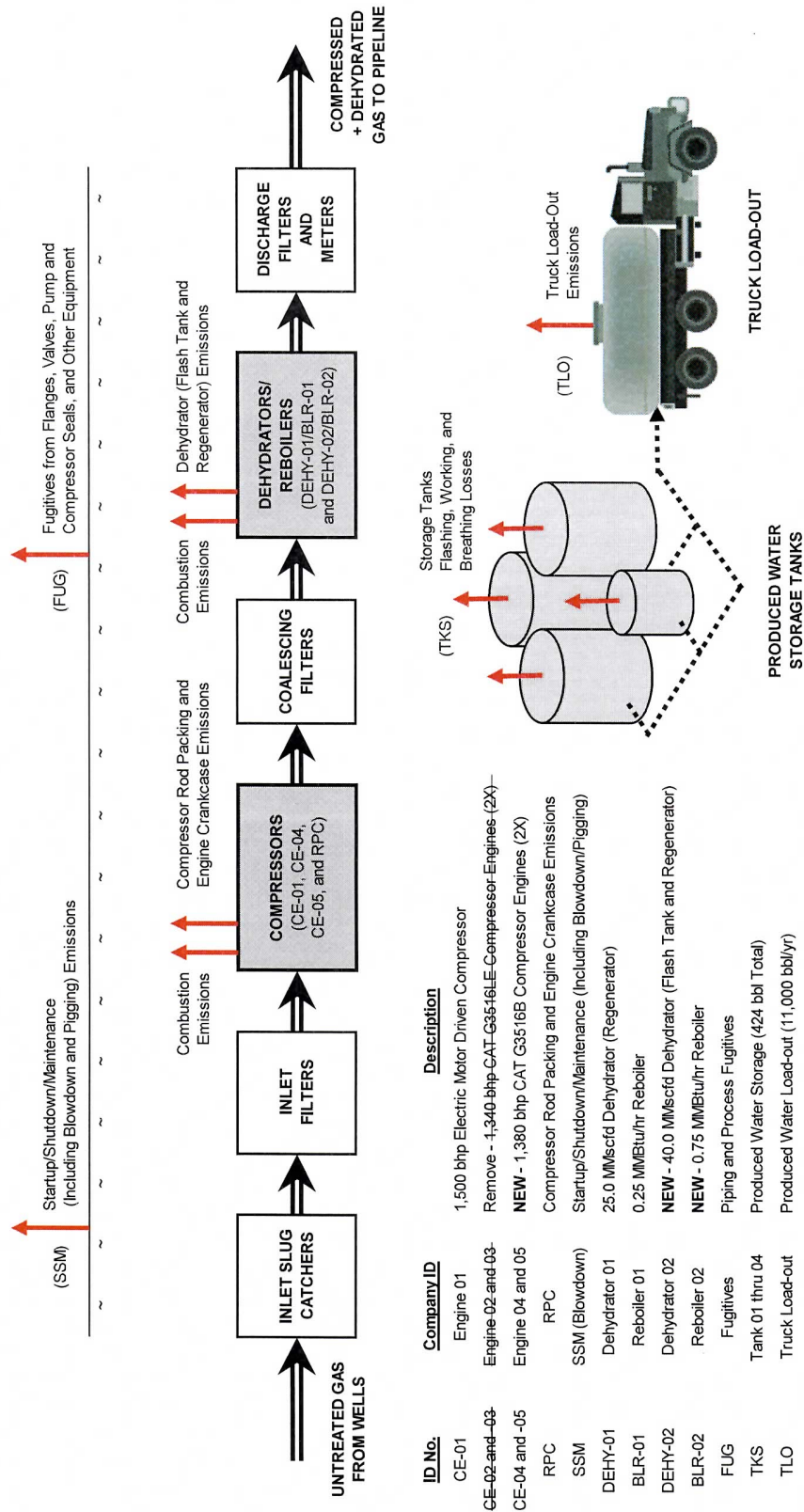
This rule does not apply. As per "Policy for Pennsylvania Natural Diversity Inventory (PNDI) Coordination During Permit Review and Evaluation"; Doc No. 400-0200-001, Dated July 16, 2005:

“Applications for modifications to the operation and management of existing facilities that do not involve activities having potential impacts to land or water resources, as well as those permit renewals with no significant changes to previously authorized activities, are exempt from this policy.”

F. Process Flow Diagram

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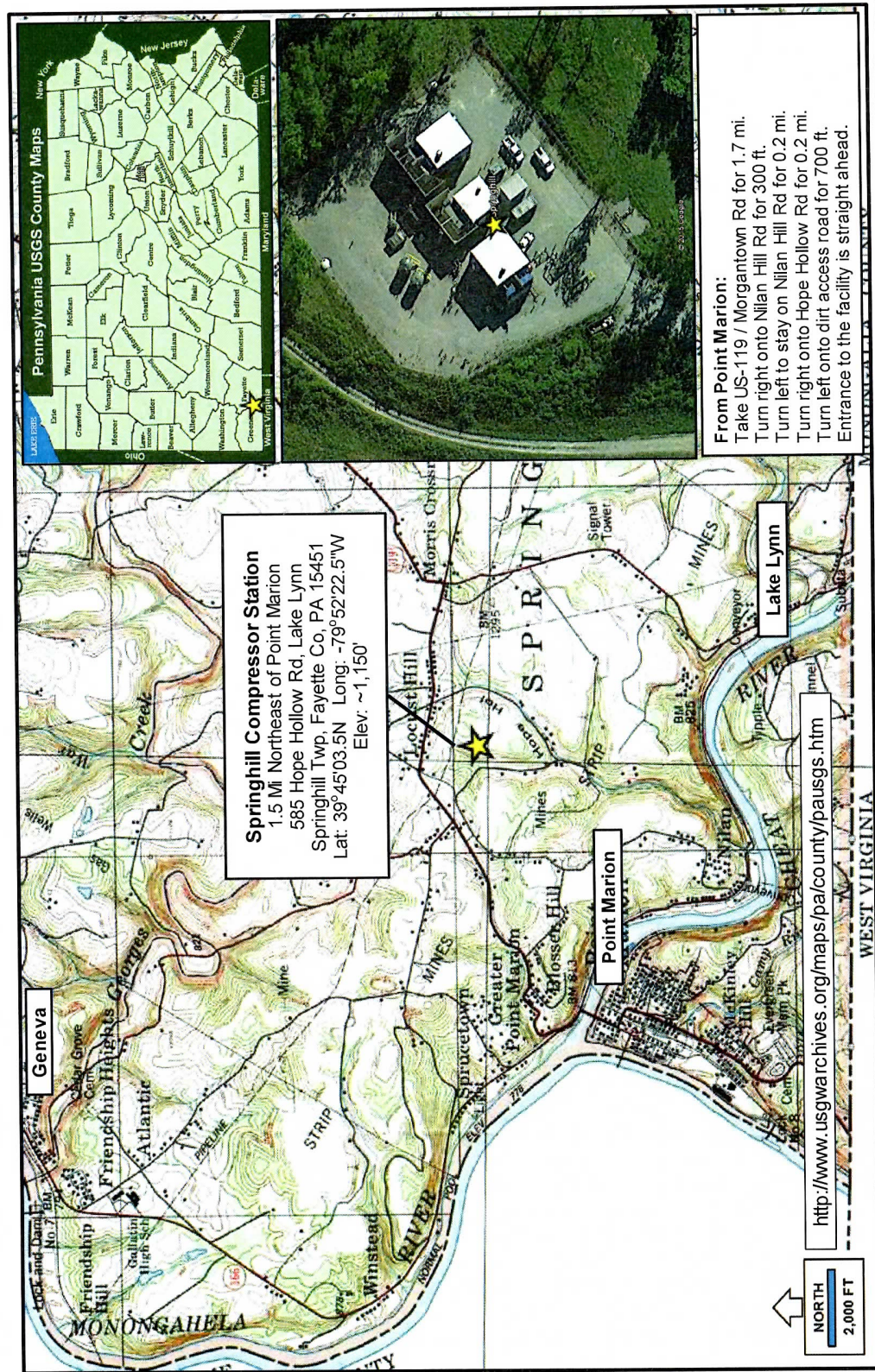
Process Flow Diagram (PFD)



G. Location/Topographic Map

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Location/Topographic Map



Modification at an Existing Facility w/ a GP-5 Authorization

Location/Topographic Map

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