From:	Juarez, Allie M.
To:	Tomko, Devin
Cc:	Gorog, Mark; Guerrieri, Sheri; Shaffer, Valerie; Heilman, Michael; Greenert, Brian L.; Trivedi, Viren; Wheldon, Nathan M.; Scott, Harold R.; Haley, Tim M.; Lazor, Nicholas; Wenrich, Sean
Subject:	RE: [EXTERNAL] Application for PA-63-01011B - MarkWest Liberty Midstream & Resources, LLC / Harmon Creek Gas Plant
Date:	Thursday, December 12, 2024 2:49:31 PM
Attachments:	image001.png 2024-1212 BAT Analysis.pdf

Devin,

The updated BAT analysis evaluating vapor recovery is attached. You will also see an update to the regenerative heater BAT analysis correcting for the difference in cost between the proposed FGR control level and the lower value the Department referenced in the second technical deficiency letter.

With the previously provided response and the attached update, MPLX believes we have addressed all the items in the technical deficiency letters.

Considering the project timing concerns noted during our meeting in Harrisburg earlier this month, MPLX would be appreciative of an update on when the proposed permit is anticipated to be sent to public comment.

Thank you,
Allie

From: Tomko, Devin <dtomko@pa.gov>
Sent: Monday, December 9, 2024 3:54 PM
To: Juarez, Allie M. <AJuarez@marathonpetroleum.com>
Cc: Gorog, Mark <mgorog@pa.gov>; Guerrieri, Sheri <shguerrier@pa.gov>; Shaffer, Valerie <valshaffer@pa.gov>; Heilman, Michael <mheilman@pa.gov>; Greenert, Brian L. <bgreenert@pa.gov>; Trivedi, Viren <vtrivedi@pa.gov>; Wheldon, Nathan M. <NMWheldon@marathonpetroleum.com>; Scott, Harold R. <hrscott@marathonpetroleum.com>; Haley, Tim M. <tmhaley@marathonpetroleum.com>; Lazor, Nicholas <nlazor@pa.gov>; Wenrich, Sean <sewenrich@pa.gov>
Subject: RE: [EXTERNAL] Application for PA-63-01011B - MarkWest Liberty Midstream & Resources, LLC / Harmon Creek Gas Plant

Good Afternoon Allie,

You're welcome. We're always willing to meet in person if needed and as our schedules permit. Thanks for the update and feel free to reach out if you'd like to walk me through any of the items in the new submittal.

Thanks,
Devin

Devin P. Tomko, P.E. | Air Quality Engineer
Pennsylvania Department of Environmental Protection
Southwest Regional Office
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From: Juarez, Allie M. <AJuarez@marathonpetroleum.com>
Sent: Monday, December 9, 2024 7:06 AM
To: Tomko, Devin <dtomko@pa.gov>
Cc: Gorog, Mark <mgorog@pa.gov>; Guerrieri, Sheri <shguerrier@pa.gov>; Shaffer, Valerie <valshaffer@pa.gov>; Heilman, Michael <mheilman@pa.gov>; Greenert, Brian L. <bgreenert@pa.gov>; Trivedi, Viren <vtrivedi@pa.gov>; Wheldon, Nathan M. <NMWheldon@marathonpetroleum.com>; Scott, Harold R. <hrscott@marathonpetroleum.com>; Haley, Tim M. <tmhaley@marathonpetroleum.com>; Lazor, Nicholas <nlazor@pa.gov>; Wenrich, Sean <sewenrich@pa.gov>
Subject: RE: [EXTERNAL] Application for PA-63-01011B - MarkWest Liberty Midstream & Resources, LLC / Harmon Creek Gas Plant

Good morning all,

Thank you for taking the time to meet with us last week to discuss BAT and open flares. We want to let the Department know that we are evaluating vapor recovery and plan to install a vapor recovery unit to control emissions from routine operations at the facility. The BAT analysis is being updated to reflect our discussion last week and we anticipate submitting it by the end of this week.

Please let us know if any other items need to be addressed for the Department to move forward with the permit application.

Thank you,
Allie

Allie Juarez
Advanced Environmental Engineer
4600 J Barry Court, Suite 500
Canonsburg, PA 15317
Mobile: 412-815-8886
ajuarez@marathonpetroleum.com

From: Tomko, Devin <dtomko@pa.gov>
Sent: Tuesday, November 26, 2024 3:24 PM
To: Juarez, Allie M. <AJuarez@marathonpetroleum.com>
Cc: Gorog, Mark <mgorog@pa.gov>; Guerrieri, Sheri <shguerrier@pa.gov>; Shaffer, Valerie <valshaffer@pa.gov>; Heilman, Michael <mheilman@pa.gov>; Greenert, Brian L. <bgreenert@pa.gov>; Trivedi, Viren <vtrivedi@pa.gov>; Wheldon, Nathan M. <NMWheldon@marathonpetroleum.com>; Scott, Harold R. <hrscott@marathonpetroleum.com>; Haley, Tim M. <tmhaley@marathonpetroleum.com>
Subject: RE: [EXTERNAL] Application for PA-63-01011B - MarkWest Liberty Midstream & Resources, LLC / Harmon Creek Gas Plant

Good Afternoon Allie,

Thank you for the update.

Devin

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Pennsylvania Department of Environmental Protection
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From: Juarez, Allie M. <AJuarez@marathonpetroleum.com>
Sent: Tuesday, November 26, 2024 3:14 PM
To: Tomko, Devin <dtomko@pa.gov>
Cc: Gorog, Mark <mgorog@pa.gov>; Guerrieri, Sheri <shguerrier@pa.gov>; Shaffer, Valerie <valshaffer@pa.gov>; Heilman, Michael <mheilman@pa.gov>; Greenert, Brian L. <bgreenert@pa.gov>; Trivedi, Viren <vtrivedi@pa.gov>; Wheldon, Nathan M. <NMWheldon@marathonpetroleum.com>; Scott, Harold R. <hrscott@marathonpetroleum.com>; Haley, Tim M. <tmhaley@marathonpetroleum.com>
Subject: RE: [EXTERNAL] Application for PA-63-01011B - MarkWest Liberty Midstream & Resources, LLC / Harmon Creek Gas Plant

Good afternoon Devin,

Please find MPLX's response to the technical deficiency/pre-denial letter attached. Due to the file size, the requested compiled response document has been submitted via PADEP's Public Upload website. In addition, a confidentiality request for proprietary information included in the flare

specifications document and the document itself has been submitted online. The submission details have been attached for your reference.

Please let us know if you have any questions.

Thank you,
Allie

Allie Juarez
Environmental Engineer
4600 J Barry Court, Suite 500
Canonsburg, PA 15317
Mobile: 412-815-8886
ajuarez@marathonpetroleum.com

From: Tomko, Devin <dtomko@pa.gov>
Sent: Tuesday, November 12, 2024 3:03 PM
To: Juarez, Allie M. <AJuarez@marathonpetroleum.com>
Cc: Gorog, Mark <mgorog@pa.gov>; Guerrieri, Sheri <shguerrier@pa.gov>; Shaffer, Valerie <valshaffer@pa.gov>; Heilman, Michael <mheilman@pa.gov>; Greenert, Brian L. <bgreenert@pa.gov>; Trivedi, Viren <vtrivedi@pa.gov>
Subject: [EXTERNAL] Application for PA-63-01011B - MarkWest Liberty Midstream & Resources, LLC / Harmon Creek Gas Plant

Good Afternoon Allie,

Please find attached the second technical deficiency/pre-denial letter for the MarkWest Liberty Midstream & Resources, LLC, application for Plan Approval PA-63-01011B for the "Harmon Creek III" project proposed at the Harmon Creek Gas Plant. Please let us know when would like to discuss the items in the letter.

Sincerely,

Devin P. Tomko, P.E. | Air Quality Engineer
Pennsylvania Department of Environmental Protection
Southwest Regional Office
400 Waterfront Drive | Pittsburgh, PA 15222
Phone: 412.442.5231 | Fax: 412.442.4194
www.depweb.state.pa.us

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Best Available Technology Review

Vapor Recovery Unit for Routine Emissions

MarkWest Liberty Midstream and Resources, L.L.C., a fully owned subsidy of MPLX, hereinafter referred to as MPLX, is seeking authorization to construct and operate the Harmon Creek 3 Cryo (HC3) and a second de-ethanizer (De-Eth 2). During maintenance and emergency situations, MPLX will require the blowdown of equipment associated with HC3 and De-Eth 2.

Vapor Recovery

As requested, MPLX evaluated the technical and economic feasibility for vapor recovery of sources from HC3 and De-Eth 2 that were proposed to be controlled by the existing process flare. The Department's position is that the existing open flare cannot be used to control routine HC3 and De-Eth 2 sources as it is no longer considered an acceptable control option in Pennsylvania, except at remote locations or for infrequent use. Thus, the Department requested an updated BAT analysis evaluating emission reductions with a vapor recovery unit (VRU) comparing to emissions going to atmosphere.

Vapors from plant shutdowns and PSV lifts must have access to an open flare due to high flow rates. All other sources, as listed in Table 1, have been evaluated for vapor recovery as a control option. For this evaluation, the VRU would be designed to capture 100% of the vapors while operating. However, the VRU would require downtime for maintenance and to ensure maximum operational time, a redundant compressor will be installed to allow the VRU to operate for 95% of the year. During the infrequent periods in which the VRU would be down for maintenance, this evaluation assumes the vapors would be routed to the existing flare for a 98% DRE.

The Department requested that MPLX evaluate emissions reduction achieved through the installation of a VRU vis-à-vis uncontrolled emissions from Harmon Creek 3. As shown in Table 1, the emission reduction achieved by installing a vapor recovery unit is 168.88 tpy VOC. Based on the quoted cost for a vapor recovery unit, installation, and annual operating and maintenance costs, the ten-year cost per ton reduction of potential VOC would be approximately $8,322 under the framework requested by the Department.

Table 1. Potential VOC emissions from the HC3 project uncontrolled versus controlled by a VRU.

	HC3 VOC Emissions (tpy)	
Source	Uncontrolled	VRU
Pigging	4.94	0.005
Maintenance Blowdowns	1.55	0.002
Dry Seal Vents	35.02	0.035
Loadout Operations	14.31	0.014
Closed Drain Tank	33.78	0.034
Amine Closed Drain	0.00	0.000
Total	**169.05**	**0.169**

Regenerative Heater

Based on a search in the RACT/BACT/LAER Clearinghouse (RBLC), the lowest value for NOx emissions for process heaters is 9 ppmv NOx. Additionally, in November 2022, the Department determined that the 9 ppmv NOx was BAT for the Harmon Creek 2 regenerative heater based on the GP-1 for the operation of combustion units. Thus, MPLX is proposing the same level of control through flue gas recirculation on the HC3 regenerative heater.

However, in response to the Department's request, MPLX contacted two vendors to evaluate options. One vendor does not have the technology available to reach <5ppmv NOx using flue gas recirculation without requiring factory testing. The second vendor has proven technology to reach <5 ppmv NOx and provided a quote to MPLX for BAT cost analysis purposes.

The capital cost for the equipment and installation is approximately $755,000 and the annual operating and maintenance costs are approximately $5,000 per blower, with two blowers required. The capital cost for the proposed heater with the FGR system to achieve 9 ppmv NOx is approximately $500,000. The technology that would reduce the NOx emissions to below 5 ppmv NOx has an additional cost of approximately $255,000. The potential emission reduction for this heater is 0.508 tpy NOx. Thus, the cost-per-ton reduction over a 10-year period is approximately $84,690.

In February 2022, the Department's SWRO reviewed a BAT analysis for the combustion of natural gas in a turbine which included the evaluation of an emission reduction from 15 ppmv NOx to 9 ppmv NOx. The Department made the determination that the cost to reduce emissions from 15 ppmv NOx to 9 ppmv NOx was not economically feasible due to the high removal cost of $12,858 to $16,351/ton NOx removed. The cost to reduce combustion emissions from 9 ppmv to <5 ppmv is more than five times the cost that was determined infeasible to reach 9 ppmv.

Thus, considering the high cost and the low reduction in emissions, MPLX is proposing flue gas recirculation on the regenerative heater to achieve 9 ppmv NOx as BAT.

Cost Estimate Information

Best Available Technology Supporting Information

Vapor Recovery Plant

Year	MPLX Cost of Capital	Capital	Annual Operating	Annual Total	Annual Total with Cost of Capital
2025	0.00%	$ 7,921,577	$ 350,000	$ 8,271,577	$ 8,271,577
2026	8.96%	$ -	$ 350,000	$ 350,000	$ 381,360
2027	8.96%	$ -	$ 350,000	$ 350,000	$ 415,530
2028	8.96%	$ -	$ 350,000	$ 350,000	$ 452,761
2029	8.96%	$ -	$ 350,000	$ 350,000	$ 493,329
2030	8.96%	$ -	$ 350,000	$ 350,000	$ 537,531
2031	8.96%	$ -	$ 350,000	$ 350,000	$ 585,694
2032	8.96%	$ -	$ 350,000	$ 350,000	$ 638,172
2033	8.96%	$ -	$ 350,000	$ 350,000	$ 695,352
2034	8.96%	$ -	$ 350,000	$ 350,000	$ 757,656
2035	8.96%	$ -	$ 350,000	$ 350,000	$ 825,542
				Ten-Year Total	$ 14,054,503
				Tons Reduced Over Ten Years	1688.78
				Ten-Year Cost/Ton Reduction	$ 8,322

Heater <5ppm NOx

Year	MPLX Cost of Capital	Capital	Annual Operating	Annual Total	Annual Total with Cost of Capital
2025	0.00%	$ 255,000	$ 10,000	$ 265,000	$ 265,000
2026	8.96%	$ -	$ 10,000	$ 10,000	$ 10,896
2027	8.96%	$ -	$ 10,000	$ 10,000	$ 11,872
2028	8.96%	$ -	$ 10,000	$ 10,000	$ 12,936
2029	8.96%	$ -	$ 10,000	$ 10,000	$ 14,095
2030	8.96%	$ -	$ 10,000	$ 10,000	$ 15,358
2031	8.96%	$ -	$ 10,000	$ 10,000	$ 16,734
2032	8.96%	$ -	$ 10,000	$ 10,000	$ 18,233
2033	8.96%	$ -	$ 10,000	$ 10,000	$ 19,867
2034	8.96%	$ -	$ 10,000	$ 10,000	$ 21,647
2035	8.96%	$ -	$ 10,000	$ 10,000	$ 23,587
				Ten-Year Total	$ 430,226
				Tons Reduced Over Ten Years	5.08
				Ten-Year Cost/Ton Reduction	$ 84,690

COST ESTIMATE OF VAPOR RECOVERY SYSTEM

TOTAL CONSTRUCTION COST		
AREA	COST	
PIPING		$1,055,700.00
ELECTRICAL/INSTRUMENTATION		$491,300.00
CIVIL		$384,930.00
STRUCTURAL		$142,025.00
INDIRECTS AND OVERHEAD		$248,874.60
TOTAL COST		**$2,322,829.60**
Mob/Demob		$20,000.00
Equipment		$4,275,498.00
VRU		$3,200,000.00
Measurement		$350,000.00
Instrumentation		$100,000.00
Valves		$80,000.00
MCC		$80,000.00
GC Building		$465,498.00
Engineering		$200,000.00
Commissioning and Startup		$70,000.00
Contingency		$1,033,249.14
TOTAL		**$7,921,576.74**