



Pennsylvania
**Department of
Environmental Protection**

SOUTHWEST REGIONAL OFFICE – AIR QUALITY PROGRAM

TO Air Quality Permit File PA-04-00740D

FROM Alexander Sandy, P.E./AS
Air Quality Engineer
Air Quality Program

THROUGH Sheri L. Guerrieri, P.E./slg
Environmental Engineer Manager
Air Quality Program

Mark R. Gorog, P.E./MRG
Regional Manager
Air Quality Program

DATE September 21, 2026

RE Comment and Response Document
Shell Chemical Appalachia LLC
Shell Polymers Monaca Site
Potter and Center Townships, Beaver County
APS 1122267; Auth 1500641; PF 775836

BACKGROUND

On September 13, 2024, the Department of Environmental Protection (Department or DEP) received a plan approval application from Shell Chemical Appalachia, LLC (Shell) proposing the Wastewater Treatment Plant (WWTP) Permanent Controls Project, Ethylene Maximum Achievable Control Technology (EMACT) Project, as well as Plan Approval Reconciliations for the current plan approval at the existing ethylene and polyethylene production facility known as the Shell Polymers Monaca (SPM) Site located in Potter and Center Townships, Beaver County. The Department's review of the submitted application has been completed, and the public comment period has expired. This memo documents activity that has taken place since the Department's review memo was finalized.

Notice of intent to issue the plan approval, as well as notice of a public meeting and a separate public hearing, was published in the *Pennsylvania Bulletin* on February 14, 2026; published in *Beaver County Times-Ellwood City Ledger* on February 11, 12, and 13, 2026; sent to United States Environmental Protection Agency (EPA) on February 4, 2026; and sent to West Virginia DEP, Ohio EPA, and Maryland Department of the Environment on February 4, 2026, in accordance with the requirements of 25 Pa. Code §§127.44-127.46. The notice of intent to issue the plan approval, the Department's review memo (Review Memo¹), and proposed plan approval were also sent to the Federal Land Managers of the US National Park Service and Forest Service on February 4, 2026. The Department's review memo and proposed plan approval were sent to the applicant and the EPA on

¹ Plan Approval Application Review Memorandum from Alexander Sandy, DEP/SWRO/Air Quality/New Source Review, to Air Quality Permit File PA-04-00740D dated January 30, 2026.

February 4, 2026. The notice of intent to issue the plan approval was republished in the *Pennsylvania Bulletin* on February 28, 2026, to include the applicant's address to satisfy the requirements of 25 Pa. Code § 127.45.

Notice of intent to issue was provided to the applicant on February 4, 2026, and the applicant fulfilled the requirement to publish the notice within 10 days of receipt on at least three separate days in a newspaper of general circulation in the county in which the source is to be located, in accordance with the requirements of 25 Pa. Code §127.44(c).

The plan approval application, supplemental plan approval submittals, the proposed plan approval, and the Department's review memo, modeling review memo, and risk assessment review memo were made available for the public to view on the Department's regional webpage.

All required methods of public notice were fulfilled as of February 28, 2026, and the regulatory 30-day public comment period ended at the close of business on March 28, 2026; however, public comments were accepted until 10 days after the public hearing detailed below.

On March 19, 2026, the Department held a public meeting at the Penn State Beaver Auditorium, 100 University Drive, Monaca, PA 15061, where the public had an opportunity to learn about this proposed plan approval.

On April 7, 2026, the Department held a public hearing at the Penn State Beaver Auditorium where the public had an opportunity to present oral testimony regarding the proposed plan approval. In accordance with 25 Pa. Code § 127.49, "Persons unable to attend the conference or hearing may submit three copies of a written statement and exhibits within 10 days thereafter to the Department." Comments received by the Department no later than 10 days after the public hearing were considered. Any substantive comments received after the deadline of April 17, 2026, were considered prior to final disposition of the plan approval.

Received comments are substantively addressed in this document below the list of commentators. Comments have been identified, summarized, and categorized where possible. Numbers in parentheses following each comment identify to which commentators the comment applies.

Table 1: List of Commentators

ID	Name	Affiliation
1	Shell Polymers Monaca	Applicant
2	Dominique Edmondson	CWA Union
3	Zachary Rusk	
4	Kathryn Bluhm	
5	Jamie Shields	
6	Elle Thoni	People Over Petro
7	Karen Phillips	
8	Sharon Longyear	
9	Amy M.	
10	Michael Lawrence	
11	Tina Farina	
12	Frances M.	
13	Dan Horton	
14	Mark Spinner	
15	Dennis Carlson	
16	Tony Menechella	
17	Jo Ann McGreevy	
18	Rosemaria Root	
19	Elizabeth Lutz	
20	Jeffrey Wilson	
21	Jean Bevsek	
22	Jane Keefe	
23	Janice Bailey	
24	Sharon Paltin	
25	Brian M. Scott	
26	Maria Lofton	
27	David Del Sesto	
28	Kent Minault	
29	Terry Wilson	
30	Justin Truong	
31	Diane Basile	
32	Carl Prellwitz	
33	Dan Hubbard	
34	Joanne Husar	
35	Carol Painter	
36	Adriane Bucina	
37	Trisha Cooley	
38	Martin Horwitz	
39	Andrew Michaelson	
40	Rick Cameron	
41	Jason Crawford	
42		
43	Alton O'Tuel	
44	Allister Layne	
45	Penny Guinther	

ID	Name	Affiliation
46	Sophie Hannig	
47	Joseph Kenosky	
48	Susan Risinger	
49	Cathy Cronin	
50	Tracey Katsouros	
51	Maria Russo	
52	Daryth Morrissey	
53	Joe Swift	
54	Mike Lundgren	
55	Marsha Zeitlin	
56	Kathleen Miller	
57	Jeffrey Evans	
58	Diane Pierce	
59	James Mulcare	
60	Candace Gabriel	
61	Dawn Dulac	
62	Jesse Kessler	
63	Glen Williams	
64	Terence Hero	
65	Brian Meadows	
66	Soraya Barabi	
67	William Baker	
68	April Fennell	
69	Mike Brennan	
70	Amanda Nace	
71	Jorge Garcia	
72	Dena Lenard	
73	Heather Nelson	
74	Janet Klein	
75	Elsy Shallman	
76	Julie Griffith	
77	Ryan Baka	
78	Marcello Franciamore	
79	Linda Wiltse	
80	Sue Leonetti	
81	Barbara Buchman	
82	Chris McColl	
83	Dennis Calamusa	
84	Gregory Puppione	
85	Julio Aviles	
86	Sue Parsell	
87	Maria Baum	
88	Cheryl Fahlman	
89	Chilton Bowman	
90	Derek Gendvil	
91	Melissa Brooks	

ID	Name	Affiliation
92	Ron Mittan	
93	Suzanne Lamborn	
94	Gloria Morrison	
95	Scott Bishop	
96	Anne Heaney	
97	Michael Rynes	
98	Heidi Buech	
99	Monika Klein	
100	Andre Thomas	
101	Melody Farrin	
102	Jason Asbury	
103	Tia Triplett	
104		
105	Lorri Francis	
106	Jane Lyon	
107	Joan Kolessar	
108	Aubrey DeCesare	
109	Mark Trumbull	
110	Betty Stromberg	
111	Deidra Smith	
112	Grace Coleman	
113	Eric David Katz	
114	T.F.	
115	Davvon McKenzie	
116	Michal Everett	
117	Erin Enger	
118	Ed Grystar	
119	Elizabeth Kelly	
120	Cheryl Speer	
121	Sue Sullivan	
122	Alicia Williams	
123	Mark Meeks	
124	Lynda Kolesar	
125	Gerald Wolfe	
126	Devorah Soodak	
127	Karen Cotterell	
128	Thomas Schlesinger	
129	Linda Gilbert	
130	Char Esser	
131	Jody Baron	
132	Cheryl Whittaker	
133	Carrie Whitley	
134	Nancy Dollard	
135	Jim Rodrigue	
136	Karen Baum	
137		

ID	Name	Affiliation
138	Carole Campbell	
139	Linda Sizemore	
140	James Keenan	
141	Karen Watson	
142	Cathy Thornburn	
143	Kaneisha Lewis	
144	Melodi Gulsen	
145	Jennifer Roller	
146	Robert Lombardi	
147	Ellen Dryer	
148	Shawn Johnson	
149	Benjamin Martin	
150	William McGoldrick	
151	Barbara Wasserman	
152	Margaret Coyne	
153	Helen Young	
154	Chris Stangl	
155	Paul Markillie	
156	Erik Peterson	
157	Christina Farver	
158	Carol Berry	
159	Gail Fleischaker	
160	Ellen Homsey	
161	Barbara Hegedus	
162	Steven Begnoche	
163	Elaine Edell	
164	Dave Taylor	
165	Stephen La Serra	
166	Catena Galipo	
167	Marianna Mejia	
168	Pete Major	
169	Richard Gray	
170	Martha Gorak	
171	Nadine Parish	
172	Risa Wallach	
173	Dale Haas	
174	Jennifer Scott	
175	P.S. Naylor	
176	Linda Powers	
177	Tracy McGoldrick	
178	Gwen Tompkins	
179	Gary Leventhal	
180	Melissa Hathaway	
181	Robert Mceldowney	
182	Jenny Bramlette	
183	Tracy Gilbert	

ID	Name	Affiliation
184	Pat Lang	
185	Daniel Weinberger	
186	Melissa Grondin	
187	Carl Stapler	
188	Donald Leisman	
189	Philip Simon	
190	Sara Keesling	
191	Christian Camphire	
192	Sofia Montemayor-Thomas	
193	Melissa VerDuin	
194	Pamela Miller	
195	Marge White	
196	Madeline Shapiro	
197	Jared Cornelia	
198	Linda Higgins	
199	Anastasia Afanasieva	
200	Coree Spencer	
201	Elizabeth Enright	
202	Go Clemson	
203	Beth Goode	
204	Rory May	
205	Staci Revers	
206	Susannah Phillips	
207	Shirlene Harris	
208	Bob Moyer	
209	Micheal Erickson	
210		
211	Nicole Moore	
212	Kathryn Hill	
213	Ann Tretter	
214	Robin Hamlin	
215	Deann Darling	
216	Caryn Leifer	
217	Pete Cumming	
218	Fawn King	
219	Donald Houser	
220	Louis A. Esposito	
221	Nanette Crafton	
222		
223	Catherine Gonzales	
224	Tito Galdo	
225	John Rand	
226	David Miller	
227	Dana Barry	
228	Tiffany Marsh	
229	Lucy Hart	

ID	Name	Affiliation
230	Diane Winkler	
231	Libby Esther Berman	
232	Nancy McCullough	
233	Charles Reindl	
234	Bushra Qureshi	
235	Tarah Van Wyngaarden	
236	Sue Marks	
237	Marilyn Shepherd	
238	Sue Whitlock	
239	Sarah Robinson	
240	Lynn Van Eaton	
241	Christopher Dunn	
242	Carol Morrison	
243	Lisa-May Reynolds	
244	J. Fried	
245	Stephanie Ragusa	
246	Linda Daniel	
247	Maureen McCarthy	
248	Lorraine Foster	
249	I. Engle	
250	Kara Huberman	
251	Jamie Greer	
252	Brian Campbell	
253	Melissa Hutchinson	
254	Jennifer Baugh	
255	Catherine Williams	
256	John Schmittauer	
257	Jordan Glass	
258	Yvette Kuhns	
259	Bridget Irons	
260	William Welkowitz	
261	Doree Lopez	
262	David Luxem	
263	Sarah Daldrup	
264	Christine Caredda	
265		
266	Teresa Phillips	
267	Peter Gradoni	
268	Patricia Moening	
269	Robert Moening	
270	Sandra Hendricks	
271	David Cotner	
272	Kathy Cowles	
273	Wally Minnick	
274	Jane Moad	
275	Candace Arnold	

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276	DeeDee Tostanoski	
277	Michelle Wiky	
278	Sonja Koontz	
279	Wendy Fast	
280	Cathy Trick	
281	Carol Pennington	
282	Jay Mohr	
283	Nikki Nafziger	
284	L.E. Payne	
285	Lata Karna	
286	Jannon Fuchs	
287	Amanda Iorio	
288	V. Frick	
289	Esther Kronenberg	
290	Mary Seegott	
291	George Marano	
292	Dan Heffernan	
293	Peggy Ann Berry	Between The Waters
294	Sarah Livingston	
295	Michael Buescher	
296	Steve Gross	
297	Lisa Markwart	
298	Mary Riddle	
299	Pat Shore	
300	Jack Tripp	
301	Sue Maxam	
302	Tom Wardell	
303	James Pilewski	
304	Alan Wojtalik	
305	Jonathan Brier	
306	Stevyn Llewellyn	
307	Brooke Traut	
308	Joan Oosterwyk	
309	Marie Spaulding	
310	Derek Schmeh	
311	John Breiby	
312	Stewart Wilber	
313	Lauren Wantz	
314	Elizabeth Watts	
315	Joe Tilley	
316	Saffron Meli	
317	Donald Schuler	
318		
319	Karen Spradlin	
320	Valarie Little	
321	Johnnee MacLean	

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322	Mary Lynn Toth	
323	Carol Alley	
324	Arlene Baker	
325	Carrie Gleason	
326	Dan Harrigan	
327	Gehr Brown	
328	Susan Eckstein	
329	Gabriel Graubner	
330	Michele Hondo	
331	Michelle McKenney	
332	Wanda Webber	
333	Dolores Mauloff	
334	Jeff Kulp	
335	Ana Solá	
336	Elaine Tucker	
337		
338	Robin Craft	
339	Carolyn Lilly	
340	Tim Emineth	
341	Roger Lilly	
342	Gabriel German	
343	Marilyn Borges	
344	Beth Braun	
345	Donald Suzenski	
346	Mary Dieter	
347	Andrew Katsetos	
348	Julie McGowan	
349	Rod Moore	
350	Jeffrey Kaufman	
351	Sherry Weiland	
352	Jeffery Lockhart	
353	Joanne Fox	
354	Richard Tregidgo	
355	Cheryl Militello	
356	Rachel Sanborn	
357	Greg D.	
358	Wilma Wever	
359	Cheryl Emmons	
360	Liz Erpelding-Garratt	
361	Dianne Douglas	
362	Sandi Aden	
363	Richard Barker	
364	Phoenix Muchowski	
365	Stephen Boletchek	
366	Jessica Mannisi	
367	Antonette Clarke	

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368	Cynthia Rose	
369	Arlene Weiner	
370	Peter Monie	
371	Joanna Tang	
372	Ana Santomé Estévez	
373	Julie Kaye	
374	Sharyn Yulish	
375	Doug Landau	
376	Laura O'Donnell	
377	Ronald Wagner	
378	JoEllen Rudolph	
379	Paul Kirsch	
380	Gilda Levinson	
381	Ann Sandritter	
382	Robin Youngblood	
383	Laura Neiman	
384	Caleb Merendino	
385	Avril Harville	
386	Sandra M. Cobb	
387	Janet Rountree	
388	Laoise Mac Reamoinn	
389		
390	Kathryn Morrow	
391	Huron Wright-Campbell	
392	M. Langelan	
393	Sarah Geithmann	
394	Veronica Yuen	
395	Peggy York	
396	Annette OBrien	
397	Gabriel Stanley	
398	Amanda Clever	
399	Catherine Nelson	
400	Kim Jordan	
401	John Hagen	
402	Joyce Coogan	
403	Stephanie Mory	
404	Jean Hanson	
405	Robert Booth	
406	Ingrid Bangers	
407	Caren Shiloh	
408	Ernie Chavez	
409	Kimberly Panarelli	
410	Mozelle Bashen	
411	Daniel Erkkila	
412	Sunny Tabino	
413	Jan Steever	

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414	Dan Wagner	
415	Alfred Jonas	
416	Cecilia Fogarty	
417	Judith Embry	
418	Eileen Hemming	
419	Amanda Gordon	
420		
421	Kate Jamal	
422	Diana Kliche	
423	Fr. Dennis Schafer	
424	Eric Pash	
425		
426	Catherine Crow	
427	Jill Diane	
428	Robert Kyle	
429	Richard Gilman	
430	Karen Sage	
431	Ingrid Rochester	
432	Steven Nasta	
433	Carol Johnson	
434	Alison Carville	
435	Kimberly Gronemeyer	
436	Kathe Garbrick	
437	Justin Philipps	
438	Dana Bellwether	
439	Natalie Clark	
440	Diane Marks	
441	Alice Marie	
442	Lori Ugolik	
443	Barbara Klucsar	
444	Cynthia Brockway	
445	Myles Myles	
446	Lee Alekel	
447	Laura Long	
448	Heidi Huber	
449	Anthony R Telles Sr	
450	Valerie Rounds-Atkinson	
451	Calvin Rittenhouse	
452	Karen Anderson	
453	Darren Strain	
454	Kenneth Chay	
455	Greg Paige	
456	Christine O'Toole	
457	Gary Zimmermann	
458	Julie Long	
459	Julie Adelson	

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460	Dorothy Shelley	
461	Michael Horner	
462	Cheryl Herr-Rains	
463	Cory Hall	
464		
465	Maurine Canarsky	
466	Taylor Beishline	
467	Kathleen Nicholas	
468	Valerie Howell	
469	James Loppnow	
470	Taylor Samsel	
471	Mark Reback	
472	Lyle Funderburk	
473	Dawn Kimble	
474	Herb Caesar	
475	Mykel Reese	
476	Margaret Vernon	
477	Gene Tunnell	
478	Lenore Reeves	
479	Ann Cobb	
480	David Zanardelli	
481	Richard Vultaggio Vultaggio	
482	Didi Summerhawk	
483	Matt Courter	
484	John Moreau	
485	A.J. Cho	
486	Shari Johnson	
487	Theresa Thorsen	
488	Deborah Colotti	
489	Edward Rengers	
490	Gerry Milliken	
491	Laura Chinofsky	
492	Peter Mark	
493	Jennifer Maurizzio	
494	Elizabeth Ruegsegger	
495	Susan Wessner	
496	James Thoman	
497	Rita Kovshun	
498	Janice Zelazo	
499	Barbara Greenwood	
500		
501	Alexander Jones	
502	John Fournier	
503	Kim Ritter-Roth	
504	Ben Martin	
505	Elena Tillman	

ID	Name	Affiliation
506	Lorraine Brabham	
507	April Lasiter	
508	Leah Dunlevy	Pacific Environment
509	Minnie Li	
510	Kim Halizak	
511	Kimba Theurich	
512	Mary Tuma	
513	Kathryn Conrad	
514	Christoph Stannik	
515	Amy McCoy	
516	Joanna M Roberts	
517	Nancy Heintz	
518	Ann Wasgatt	
519	Nancy Sidebotham	
520	Dipali N.	
521	Andre Meaux	
522	Aaeron Robb	
523	Susan Jordan	
524	Cheri Dzubak	
525	William Johnson	
526	Chris Canter	
527	Laura Colston	
528	Peg Challgren	
529	Scott Korman	
530	Yolanda Berumen	
531	Ann E. Nowicki	
532	Lisa Gutheil	
533	K.L. Eckhardt	
534	Deirdre Downey	
535	Robin Patten	
536	Nikki Wojtalik	
537	Elizabeth Schauer	
538	Martha Ambrose	
539	Margie Armstrong	
540	Diane DiFante	
541	Laureen Coughlin	
542	Heather Braut	
543	Carlos Arce	
544	George Marsh	
545	Phoenix Giffen	
546	Debbie Carroll	
547	Sheila Tran	
548	Jon Kiesling	
549	Carolyn Fauquher	
550	Nichole Dandrea-Russert	
551	Michael Tanner	

ID	Name	Affiliation
552	Jeff Kutac	
553	Paul Alfano	
554	Harold Watson	
555	Gail McMullen	
556	Robin Weirich	
557	Richard Schloss	
558	Kaleigh Richards	
559	Leah Helmer	
560	Steven Andrychowski	
561	Rachel Wynnberry	
562	Debra Gonzalez	
563	James Baker	
564	Christian Seaton	
565		
566	David Schogel	
567		
568	Heather Reed	
569	Dan Begay	
570	Ryan Dodson	
571	Patrick Judge	
572	Jody Lewis	
573	Ann Unertl	
574	Tina Krauz	
575	Carol Tuveson	
576	Charlotta Ross	
577	Lara Ingraham	
578	Kathy Shores	
579	Anthony Wong	
580	Charles Rea III	
581	Maxine Bookbinder	
582	Brian Schwartz	
583	Filomeno Narvios	
584	Cassidy Thompson	
585	Phillip Hope	
586	Debi Chernak	
587		
588	John Dunn	
589	Linta Bryant	
590	Patricia Dishman	
591	Sharon Chambers	
592	William Hulme	
593	Felicity Hohenshelt	
594	Mandy Hahn	
595	Annita Bowman	
596	Caephren McKenna	
597	Jarrett Cloud	

ID	Name	Affiliation
598	Laura Molson	
599	Mary Seiler	
600	Eric Scheihagen	
601	B. Yohe	
602	Ann Dorsey	
603	Joyce Mast	
604	Karen Jacques	
605		
606	Ked Garden	
607	Rita Mullis	
608	Lorraine Martinez	
609	Michael Iltis	
610	Margie Halladin	
611	Wesley Andrews	
612	Angela Jones	
613	Gail Enomoto-Souza	
614	Irene Julian	
615	Noreen lassandrello	
616	Evangelina Serrano	
617	Sarah Kirton	
618	Diane Quinlivan Quinlivan	
619	Gary Nelson	
620	K. Pence	
621	Philip Dooley	
622	Andrej Béder	
623	Katherine Hinson	
624	Thomas Talbot	
625	Lauren Murdock	
626	Lawrence Mick	
627	B.G.	
628	Robert Machado	
629	Simon M.	
630	Barbara Addis	
631	Anette Stauske	
632	Janet Forman	
633	Linda Myers	
634	Jennifer McConnell	
635	Steve Kiffmeyer	
636	Bechi Currier	
637	Jennifer Taylor	
638	Max Herbert	
639	Kathy Lawless	
640	James Stratman	
641	Pam Novotny	
642	William Gleason	
643	A. Beato	

ID	Name	Affiliation
644	Ashley Yong	
645	Martha Brown	
646	Susan Zimny	
647	Nancy Sadowsky	
648	Paul Beach	
649	Karen Buder	
650	Beth Kuntz-Wineland	
651	Carol Wahl	
652	Loki Simmons	
653	Madeline Crane	
654	Jane Grove	
655	Sharon Hollander	
656	Joelle Porter	
657	Rilriia Kilurden	
658	Sara Wykes	
659	Rocio Luparello	
660	Karen Thomas	
661	Mark E. Billings	
662	Robin Lesko	
663	Timothy Shelley	
664	Laura Vera	
665	Robert Posch	
666	Catherine Gammon	
667	Jim Imlach	
668		
669	Barbara Ritchie	
670	Mary Gutierrez	Earth Ethics, Inc.
671	Michelle Cox	
672	Ericka Kreager	
673	L.L. Wilkinson	
674	Lauren Bouyea	
675	Catherine Ream	
676	Rose Reilly	
677	Maria Gillem	
678	Ronald Peterson	
679	William Insley	
680	Stephen Dutschke	
681	Kristin Toscano	
682	Daniarely Loma Jasso	
683	Juan Carlos Latorre	
684	Donna Crane	
685	Kim Perez	
686		
687	John Heinen	
688	Penelope Hoge	
689	Timothy Davis	

ID	Name	Affiliation
690	Kelly Padgett	
691	Cathy Stegman	
692	Mary Ann McDonald	
693	Robyn Johnson	
694	David Wendt	
695	Richard Jarvis	
696	Coleen Gowans	
697		
698	Eric Wheeler	
699	James Campbell	
700	Jenna Mulraney	
701	Nancy Porterfield	
702	Kenneth Rinaldo	
703	Anne Sousanis	
704	Ginger Lee Pierce	
705	Samuel Dickey	
706	Alexandra Napoleon	
707	Gabrielle Marks	
708	Dianne Faletti	
709	Abigail Moran	
710	Joel Eisenberg	
711	Maurice Forget	
712	I. Ettie	
713	Kathleen Ruiz	
714	Joanne LaFreniere	
715	Sarah Davis	
716	Lisa Stone	
717	James Burge	
718	Carole O'Connell	
719	Beth Czerwony	
720	Eric Czerwony	
721	Patricia Squiqui	
722	Bob Schildgen	
723	Marian Scena	
724	Diane Baldwin	
725	Kathleen Canavan	
726	Nancy Stamm	
727	Mary Jean Sharp	
728	BettyJean Wochinski	
729	Sister Bernie Galvin	
730	Kate Boxeth	
731	Karen Guarino Spanton	
732	Lois Karasek	
733	Kathy Flocco-McMaster	
734	Matt Santry	
735	Wendi Myers	

ID	Name	Affiliation
736	Matthew Lilyquist	
737	Sandra Goforth	
738	Dawn Florio	
739	Ann Bryan	
740	Doris Loud	
741	Ann R.	
742	Jackie Smith	
743	Richard Wengenroth	
744	Sherry Pimsler	
745	Tobey Thatcher	
746		
747	Mari Vanantwerp	
748	Barbara White	
749	Eric Cockrell	
750	Lauren Vangellow	
751	David Wang	
752	Sarah Moore	
753	Taylor Bright	
754	Karen Wonders	
755	Linc Conard	
756		
757	laura Dickey	
758	Marcus Perez	
759	Cheryl Eames	
760	Heather Hettick	
761	George Bourlotos	
762	N. Lacasse	
763	P.R. Sturm	
764	Ted Kallman	
765	Amanda Preston	
766	Robert Moore	
767	Barbara Dincau	
768	Rebekah Colours	
769	Jenny Thacker	
770	Sister Patricia Kirk	
771		
772	Julie Van Osdel	
773	Laurie Daniel	
774	Bonnie Watson	
775	Brenda Nelson	
776	Allison Everitt	
777	Heather Holden	
778	Richard Cornwall	
779	Aria Faamasino	
780	Anita Kreager	
781	Donna Jennings	

ID	Name	Affiliation
782	John Lynch	
783	Norma Blake	
784	Devany Solanki	
785	Elisabeth Zenker	
786	Allison Cook	
787	Laura Lavertu	
788	Michael Sileno	
789	Katie Hauke	
790	Christopher Geukens	
791	Linda Ferland	
792	John Beach	
793	Allen Strous	
794	Shelly Bell	
795	Tina Doolen	
796	Whitney Metz	
797	Sara Roderer	
798	Amanda Dickinson	
799	Lara Miller	
800	Carole Ackelson	
801	Laurie Strine	
802	Robyn Dolgin	
803	Bruno Bouyrat	
804	Michelle Sewald	
805	Deborah Costas	
806	Sylvia Carroll	
807	Rebecca Rottapel	
808	Renee C.	
809	Angela Cole	
810	Allyson Finkel	
811	Brenda Rollins	
812	Adam Freeberg	
813	Sharon Teagardin	
814	Mari Jo Vernarsky	
815	Lydia Bultemeyer	
816	Kate Skolnick	
817	Sharon Essey	
818	Dawson Pan	
819	Asphodel Denning	
820	Richard Stern	
821	Grace Ukoha	
822	John Clarke	
823	Marcel Duruisseau	
824	Elliott Bales	
825	Evan Hartman	
826	Robert McDonnell	
827	cheryl johncox	

ID	Name	Affiliation
828	Yolanda Poole	
829	Cinda Johansen	
830		
831	Emma Page	
832	Mandee Young	
833		
834	Lindsay Pugh	
835	Anita Sutton	
836	Michael R. Watson	
837	River Bradley	
838	Kathryn Morgen	
839	Michael Morgen	
840	Lisa Rollens	
841	Kevin Long	
842	Ron H	
843	Amanda	
844	Ajay Dagli	
845	Ann Nicholas	
846	Elijah Lopez	
847	R.S.	
848	Michael Drelich	
849	Stephen Bates	
850	MaryAnn McHugh	
851	Matt Hogue	
852	Sarah Thompson	
853	Cindy A Wilson	
854	Stuart Day	Ohio Valley Allies
855	Christina DiGiulio	Physicians for Social Responsibility Pennsylvania (PSR PA)
856	Eugene O'Donnell	
857	Erin LaRue	
858	Teri Supowitz	
859	Mark Dixon	
860	Wendy Jean Schell	
861	Julie DiCenzo	
862	Joanne Kilgour	Ohio River Valley Institute
863	Antoinette Fitch	
864	Paige Haring	
865	Anita Teresa Baumgardner	
866	Andie Grey	
867	Nicole Rella	
868	EJ Pavlinich	
869	Brooke Hamberger	
870	Chloe Hale	
871	Cindy Du	
872	Jacob Hamberger	
873	Janelle DesJardins	

ID	Name	Affiliation
874	Linda Taylor	
875	Mark Gogel	
876	Skyler Brimmeier	
877	Emily Klein	Project SPOTlight
878	Clifford Lau	
879	Christine Rockwell	
880	Kari Pohl	Sisters of St. Joseph of Baden
881	Lindsay Schultz	
882	Debra Smit	Breathe Project
883	Larisa Mednis	Clean Air Council
884	Lois Thompson	
885	Patrick Duffey	
886	Phoebe Reese	
887	Eric Brewer	Beaver County Emergency Services
888	Jennifer Dziabiak	
889	Anthony Pietromonaco	
890	Brian Patosky	
891	Christopher Sybo	
892	Donald Larter	
893	Eugene Schmuck	
894	Kevin Bolland	
895	Darrell Palmer	
896	Tricia Depenhart	
897	Ken Depenhart	
898	Penny Jones	
899	Leslie Orr	
900	Roberta Alston	
901	Russell DeJulio	
902	Tom O'Brien	
903	Bryson Smith	
904	Dan Focht	
905	Jewel Snyder	
906	Matt Doran	
907	Nico Montileone	
908	Richard Purdy	
909	Bill Lucas	
910	Bill Miller	Pennsylvania Chamber of Business and Industry
911	David Taylor	Pennsylvania Manufacturers' Association
912	Frederick Arnold	
913	Jim Christiana	
914	Lance Grable	Beaver County Chamber of Commerce
915	Margaret Bayuk	
916	Trish Digliodo	
917	Elder Vogel, Jr.	State Senator of 47th Senatorial District
918	Stephanie Wissman	American Petroleum Institute
919	Steven Kratz	Pennsylvania Chemical Industry Council

ID	Name	Affiliation
920	Patty Horvatic	Pittsburgh Regional Alliance
921	Mary Lou Harju	United Way of Beaver County
922	Kenneth Broadbent	Steamfitters Local #449
923	Ken Zapinski	Pittsburgh Works Together
924	Katie Klaber	
925	Jack Manning	Beaver County Commissioner
926	Josh Kail	State Representative of 15th Legislative District
927	Jim Marshall	
928	Michael Stanton	Beaver County Buildings Trades
929	Shelly Moore	Community College of Beaver County
930	Sean Foley	
931	Lisa Hallowell	Environmental Integrity Project
932	Lisa Graves-Marcucci	Environmental Integrity Project
933	Annie Fox	Clean Air Council
934	Hilary O'Toole	Beaver County Marcellus Awareness Community (BCMAC)
935	Dr. Matthew Mehalik	Breathe Project
936	Ana Hoffman	Carnegie Mellon University CREATE Lab
937	Joanne Martin	Reimagine Beaver County
938	Cheryl Johncox	People Over Petro Coalition
939	Rachel Meyer	Moms Clean Air Force, PA Chapter
940	Alison L. Steele	Environmental Health Project
941	Anaïs Peterson	Earthworks
942	Seth Sherman	Center for Coalfield Justice
943	Angela Kilbert	PennFuture
944	Heather Hulton VanTassel	Three Rivers Waterkeeper
945	Ashley Funk	Mountain Watershed Association
946	Gillian Graber	Protect PT (Penn-Trafford)
947	Ned Ketyer	Physicians for Social Responsibility PA
948		Hip Hop Caucus
949	Katie Jones	FracTracker Alliance
950	Michelle Naccarati-Chapkis	Women for a Healthy Environment
951	Megan McDonough	PA Food & Water Watch
952	Hilary Flint	Center for Oil & Gas Organizing

COMMENTS AND RESPONSES

1. **Comment:** Commenters argue that the Department may not issue draft Plan Approval D due to Shell's ongoing and unresolved noncompliance with air pollution control laws. Commenters assert that ongoing violations must be fully resolved or tied to an enforceable, time-bound compliance schedule before the Plan Approval can legally be granted. History of high priority violations and documented Plan Approval deviations include ongoing exceedance of the 12-month rolling NOx emission cap, repeated visible emissions from plant flares, and failures to conduct required root cause analyses for flare events on certain occasions. Many commenters argue that a record of non-compliance warrants rejecting an increase in emission limits and that Shell should be held accountable to the current permit limits rather than raising the limits for the appearance of compliance. (2 – 847, 848 – 886, 931 – 952)

Response: The Department acknowledges the commenters' concerns regarding violations and compliance issues at SPM and agrees that it is important to address them. The Department addressed violations and compliance matters separately on a parallel path from its technical evaluation of Shell's application for a plan approval. This plan approval application review focuses on whether Shell's application satisfies the requirements for issuance of a plan approval.

On September 4, 2026, a Consent Order and Agreement (COA) was entered into by and between the Commonwealth of Pennsylvania, Department of Environmental Protection, and Shell Chemical Appalachia, LLC in which Shell formally acknowledged that the company exceeded total emission limitations for air contaminants and violated other environmental requirements. The COA resolves air quality violations at Shell's petrochemical facility in Potter and Center townships, Beaver County, from 2023 through August 2026.²

2. **Comment:** Commenters assert that the Department should not authorize NO_x emission limit increases from the Facility, noting previous exceedances of the NO_x limits, and that Shell's failure to comply should not be absolved or rewarded with higher emission limits (2 – 847, 848, 849, 851, 854, 858, 859, 863, 864, 865, 869, 870, 872, 873, 875, 882, 885, 886, 931 – 952)

Response: The Department agrees that Shell is responsible for NO_x violations and has addressed these compliance matters separately. See response to Comment 1. This Plan Approval would not reward Shell. The plan approval modification simply recognizes that following rigorous review by the Department, Shell's proposed NO_x emission limit increase is lawful under the Clean Air Act (CAA) and Air Pollution Control Act (APCA). The additional emissions will not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS) or cause an impermissible risk to human health. This rigorous analysis is documented in the Department's Review Memo and three (3) appended review memorandum from the Department's Central Office Air Quality Modeling and Risk Assessment Section.^{3,4,5} See also responses to Comments 3 through 8.

Air Dispersion Modeling

3. **Comment:** Commenters have raised concerns that the increases in CO, NO₂, PM, SO₂, and CO_{2e} in PA-04-000740D would further endanger the health of Beaver County residents and allow the plant to contribute even more to climate change (865, 882)

Response: The Department shares your concerns. As such, the Department required Shell to address health impacts from the proposed modification, and carefully reviewed Shell's submissions. Based on this rigorous review, increased emissions from the proposed modifications do not present health concerns.

Source impact analysis requirement of the PSD regulations (which the Department has adopted under 25 Pa. Code § 127.83), specifically 40 CFR § 52.21(k)(1)(i), requires Shell to demonstrate that emissions increases due to its projects would not cause or contribute to air pollution in violation of NAAQS. There

² <https://www.pa.gov/agencies/dep/newsroom/2026-09-04-shapiro-administration-secures-15-million-settlement-from-shell>

³ Air Quality Analyses for Prevention of Significant Deterioration Memorandum from Henry F. Bonifacio, DEP/BAQ/Permits/Air Quality Modeling and Risk Assessment to Alexander Sandy, DEP/SWRO/Air Quality/New Source Review dated December 22, 2025.

⁴ Air Dispersion Modeling for Inhalation Risk Assessment Memorandum from Henry F. Bonifacio, DEP/BAQ/Permits/Air Quality Modeling and Risk Assessment to Alexander Sandy, DEP/SWRO/Air Quality/New Source Review dated December 22, 2025.

⁵ Inhalation Risk Assessment Memorandum from Stephen J. Steirer, DEP/BAQ/Permits/Air Quality Modeling and Risk Assessment to Alexander Sandy, DEP/SWRO/Air Quality/New Source Review dated December 22, 2025.

are two types of NAAQS, primary standards and secondary standards. Primary NAAQS are the standards set by the U.S. Environmental Protection Agency (EPA) at levels necessary to protect public health with an adequate margin of safety, including for sensitive populations such as children, the elderly, and individuals with respiratory conditions. Section 9.2.3 of 40 CFR Part 51, Appendix W describes the multi-stage approach recommended by the EPA in conducting source impact analysis, for each pollutant that triggers the PSD requirements, using air dispersion modeling. The first stage is the single-source impact analysis (also referred to as Significant Impact Level (SIL) analysis) that determines if emissions from a proposed source have the potential to cause or contribute to a violation of NAAQS. If the SIL analysis indicates that the source's emissions do not have the potential to cause or contribute to a violation of NAAQS, the SIL analysis is sufficient for the required compliance demonstration under PSD. However, if the SIL analysis indicates that the source's emissions have the potential to cause or contribute to a violation of NAAQS, the second stage, which is cumulative impact analysis that accounts for all sources affecting the air quality in the area in which the proposed source is modeled to have significant ambient impacts, is performed to determine if emissions from the proposed source would cause or contribute to a violation of NAAQS.

Shell's air quality analyses followed the recommended procedure by the EPA. The SIL analyses for the EMAX Project indicate that the project's emissions do not have the potential to cause or contribute to violations of NAAQS (i.e., pollutants that triggered the PSD requirements for the EMAX Project are CO, NO₂, and PM_{2.5}). Cumulative impact analyses for the WWTP Permanent Controls Project and the Plan Approval Reconciliation indicate that the projects' emissions would not cause or contribute to violations of NAAQS (i.e., pollutants that triggered the PSD requirements were CO, NO_x, and PM₁₀).

For PM_{2.5}, because the SIL analysis indicates that the EMAX Project's emission does not have the potential to cause or contribute to violation of any PM_{2.5} NAAQS, the corresponding SIL analysis is sufficient for the required compliance demonstration under PSD regulations. As part of its technical review of Shell's PSD air quality analyses, the Department conducted an additional analysis utilizing the modeled ambient impacts of PM_{2.5} emissions due to the EMAX Project and the monitored PM_{2.5} concentrations from a nearby monitoring site, which is also impacted by Shell's current emissions. The additional analysis indicates that emissions increase in PM_{2.5} would not cause or contribute to any PM_{2.5} NAAQS violations.

For SO₂, the net emissions increase due to the EMAX Project is not subject to PSD regulations because it does not exceed the PSD significant emission rate (SER) for SO₂. Thus, source impact analyses conducted did not include SO₂. Because it is a precursor of secondary PM_{2.5}, SO₂ was accounted for in the SIL analysis for PM_{2.5}.

Under PSD regulations, GHGs (CO₂e) are not subject to impact analysis through modeling. Health impacts from GHGs are restricted by requiring GHG sources to meet Best Available Control Technology (BACT). It has been determined that combusting low-carbon fuels, incorporating energy efficient design features on the cracking furnaces, minimizing flaring through a Flare Minimization Plan, and operating in accordance with good combustion practices represent BACT for the GHG emissions.

4. **Comment:** Commenters have expressed concern that although the cumulative 1-hour NO₂ impacts were below the NAAQS, concentrations were very close to exceeding NAAQS. (931 – 952)

Response: The Department confirmed that Shell's air quality analyses followed the multi-stage approach described by the EPA in Section 9.2.3 of 40 CFR Part 51, Appendix W in conducting source impact analysis for each pollutant that triggers the PSD requirements. The first stage is the single-source impact analysis (also referred to as SIL analysis) that determines if emissions from a proposed source

have the potential to cause or contribute to a violation of NAAQS. The second stage, which is required if the SIL analysis determines that emissions from the source have the potential to cause or contribute to a violation of NAAQS, is cumulative impact analysis that accounts for all sources affecting the air quality in the area in determining whether emissions from the proposed source would cause or contribute to a violation of NAAQS. This is the multi-stage approach recommended by the EPA for demonstrating compliance with NAAQS. There is no additional analysis recommended or required in Section 9.2.3 of 40 CFR Part 51, Appendix W as part of NAAQS compliance demonstration.

With regards to the 1-hour NO₂ NAAQS, the cumulative impact analysis conducted by Shell was also conservative for a couple reasons. First, the monitoring site used for the monitored component of background NO₂ concentrations is probably impacted by sources that are already explicitly modeled. Because no adjustments were made in the monitored concentration data to remove data points that are potentially affected by these sources, their NO₂ emissions impacts were double counted in the analysis. Second, as documented in Section 4.2.3.4(b) of 40 CFR Part 51, Appendix W, all tier options for NO_x-to-NO₂ conversion are screening techniques that “are conservative by their nature.”

5. **Comment:** The commenter suggests that the Department requires a comprehensive cumulative impact assessment from Shell before approving any permit revisions. They argue that evaluating Shell's emissions in isolation ignores the area's reality, where residents simultaneously endure emissions from a number of surrounding industrial, fracking, and pipeline sites.

Beaver County already carries an F grade for ozone from the American Lung Association, and SPM is permitted to be one of the largest VOC emitters in the Commonwealth. Approving revised PTE limits that consume 68% of the 24-hour PM₁₀ Class II PSD increment from a single source effectively forecloses future development options in this airshed while locking in pollution burdens that fall disproportionately on the environmental justice communities surrounding this plant. (848)

Response: The Department agrees with the commenter that contributions from other emission sources cannot be ignored in ambient air modeling and risk assessment. In fact, emissions from other sources were taken into account as appropriate.

For PSD modeling, the EPA described in Section 9.2.3 of 40 CFR Part 51, Appendix W its recommended multi-stage approach in conducting source impact analysis, for each pollutant that triggers the PSD requirements, using air dispersion modeling. The first stage is the single-source impact analysis (also referred to as SIL analysis) that determines if emissions from a proposed source have the potential to cause or contribute to a violation of NAAQS or PSD increment. The second stage, which is required if the SIL analysis determines that emissions from the source have the potential to cause or contribute to a violation of NAAQS or PSD increment, is a cumulative impact analysis that accounts for all sources affecting the air quality in the area in which the proposed source is modeled to have significant ambient impacts. Cumulative impact analyses for NAAQS use background concentration data that accounts for nearby sources affecting the air quality in the area modeled to be impacted by the proposed source.

Background concentration data is comprised of a monitored component (i.e., concentration data from a monitoring site) and a modeled component (i.e., impact based on explicit modeling of nearby sources whose emissions are not captured in the monitored concentration data).

Cumulative impact analyses for PSD increments consider the amount of air quality increment that has already been consumed by other sources affecting the air quality in the area in which the proposed source is modeled to have significant ambient impacts. Cumulative impact analyses for PSD increments also consider whether increments have expanded relative to the baseline concentrations.

The Department confirmed that Shell conducted a cumulative impact analysis for pollutants determined to have the potential to cause or contribute to violation of NAAQS or PSD increment following the EPA's recommendations in 40 CFR Part 51, Appendix W. In the cumulative impact analysis for NAAQS, Shell accounted for the contributions from other emissions sources by using monitored concentration data and by explicitly modeling nearby sources whose emissions are not captured in the monitored concentration data. In the cumulative impact analysis for PSD increments Shell used the source data in the cumulative impact analysis for NAAQS to conservatively represent potential increment consumption due to existing nearby sources.

Shell also did not account for any increment expansion resulting from emission decreases that could have occurred at existing nearby sources that would have increased the amount of air quality increment available for consumption by future sources.

For the inhalation risk assessment, chemicals of potential concern (COPC) emissions from other sources are addressed by using the DEP's benchmarks for risks due to long-term exposure to COPC emissions from a *single* facility that conservatively assume high background excess lifetime cancer risk (ELCR) and chronic noncancer risk. As detailed in an EPA document,⁶ the EPA generally uses a cancer risk range of 100 in a million to 1 in a million in evaluating potential cancer risks and a hazard index/quotient of 1.0 in evaluating potential non-cancer health effects. To account for background risks, which are risks due to sources other than the single facility being evaluated, a lower and narrower cancer risk range of 10 in a million to 1 in a million and a lower hazard index/quotient of 0.25 were recommended by the EPA as thresholds in evaluating long-term exposure to COPC emissions from a *single* facility.^{7,8} With these thresholds, which are used by the Department as its benchmarks for a *single* facility, a background cancer risk of 90 in a million and a background chronic noncancer risk of hazard index/quotient of 0.75 are assumed. These are conservative assumptions for background risks. Based on available data,⁹ estimated census block-based cancer risks in Beaver County, including those adjacent to Shell Polymers Monaca Site, were mostly 30 in a million. If using 30 in a million as background cancer risk, and with the highest cancer risk of 8.71 in a million due to Shell's COPC emissions, the highest ELCR due to COPC emissions from *all* sources would be 38.71 in a million, which is less than half of the EPA's cancer risk threshold of 100 in a million. In assessing acute noncancer risk due to short-term exposure to each COPC emission, only the contribution from the single facility being evaluated is considered.

In response to comments concerning ozone, the Department performed an assessment of ozone formation potential associated with emissions increase for NO_x (i.e., VOC was not considered because it will have an emissions decrease) following the EPA's guidance.^{10,11} The assessment utilized the EPA's photochemical grid modeling results for hypothetical sources¹² in the Northeast and Ohio Valley climate zones with 500 tons per year of emissions of either precursor. Based on these photochemical grid modeling results and an emissions increase for NO_x of 126.63 tons per year, an annual maximum daily 8-hour ozone concentration increase of 1.0079 ppb was calculated. With maximum certified 8-hour

⁶ U.S. EPA, 1998. Region 6 Risk Management Addendum – Draft Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. EPA-R6-98-002. July 1998. Page ADD-2.

⁷ Ibid, Page ADD-3.

⁸ As stated by the EPA, use of the narrower cancer risk range and the lower hazard index/quotient as target levels eliminates the need to collect background COPC concentration data.

⁹ EPA's Air Toxics Screening Assessment (AirToxScreen) tool (<https://www.epa.gov/AirToxScreen/airtoxscreen-mapping-tool>). The latest risk data in the EPA AirToxScreen is for year 2020.

¹⁰ Guidance for Ozone and Fine Particulate Matter Permit Modeling (EPA-454/R-22-005, July 2022).

¹¹ Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program (EPA-454/R-19-003, April 2019).

¹² Modeled Emission Rates for Precursors (MERPs) View Qlik (<https://www.epa.gov/scram/merps-view-qlik>).

ozone design values for 2023-2025 ranging from 63 to 67 ppb at the three ozone monitoring sites in Beaver County, Shell's NO_x emissions would not threaten the 2015 8-hour ozone NAAQS of 70 ppb.

6. **Comment:** PA DEP must require comprehensive air quality modeling consistent with EPA guidance, including:

- Use of AERMOD (Appendix W to 40 CFR Part 51)
- Evaluation of:
 - 1-hour NO₂ standard (100ppb)
 - Annual NO₂ standard (53 ppb)
- Application of Tier 3 NO_x modeling methods for combustion sources

Additionally, the Department should require an assessment of ozone formation potential associated with increased NO_x emissions.

Given the EJ designation of the affected census tract, PA DEP should also require a cumulative impact analysis incorporating emissions from all major on-site and nearby sources. (849)

Response: DEP's review confirmed that Shell's air quality analyses satisfy the requirements of the PSD regulations. In accordance with 40 CFR § 52.21(l), Shell used AERMOD, which is the EPA's required near-field air dispersion model as specified in 40 CFR Part 51, Appendix W (Guideline on Air Quality Models), in its air quality analyses. In accordance with 40 CFR § 52.21(k), Shell performed source impact analyses to demonstrate that it would not cause or contribute to air pollution in violation of NAAQS, including both the 1-hour NO₂ NAAQS and the annual NO₂ NAAQS, or PSD increments. Following the recommended procedure in Section 9.2.3 of 40 CFR Part 51, Appendix W, a single-source impact analysis or SIL analysis that evaluated emissions from Shell Polymers Monaca Site was first performed for each project and for each pollutant that triggered the PSD requirements. For each SIL analysis that showed that the impact of emissions from Shell Polymers Monaca Site exceeded the corresponding SIL, cumulative impact analysis, which accounted for nearby sources in demonstrating compliance with NAAQS and for increment-affecting sources in demonstrating compliance with PSD increments, was conducted. For NAAQS compliance demonstration, Shell incorporated the impacts of nearby sources into the modeling by using background concentration data that was comprised of a monitored component (i.e., concentration data from a monitoring site), and a modeled component (i.e., impact based on explicit modeling of nearby sources whose emissions are not captured in the monitored concentration data). For PSD increment compliance demonstration, Shell used the source data from NAAQS analysis to conservatively represent increment consumption.

For NO_x to NO₂ conversion in NO₂ modeling, Shell used Tier 1 (100% NO_x to NO₂ conversion) for the annual NO₂ PSD Class II increment analysis, Tier 2 Ambient Ratio Method – 2 (ARM2) for SIL analyses, and Tier 3 Plume Volume Molar Ratio Method (PVMRM) for NAAQS analyses¹³ These tier options are all regulatory default. The NO_x to NO₂ conversion applies to all NO_x-emitting sources, not just to combustion sources.¹⁴

¹³ Use of the Tier 3 Plume Volume Molar Ratio Method (PVMRM) was approved by the EPA during Shell's application for Plan Approval 04-00740A. For details, see "Air Quality Analyses for Prevention of Significant Deterioration. Shell Chemical Appalachia LLC. Application for Plan Approval 04-00740D. Memorandum from Henry F. Bonifacio, DEP/BAQ/Permits/Air Quality Modeling and Risk Assessment to Alexander Sandy, DEP/SWRO/Air Quality/New Source Review. December 22, 2025.

¹⁴ For Shell Polymers Monaca Site, NO_x-emitting sources include ethane cracking furnaces, combustion turbines, diesel and natural gas-fired generators, flares, and thermal oxidizers.

Because Pennsylvania is within the ozone transport region, Shell's emissions of ozone precursors (i.e., NO_x and VOC) were subject to NNSR regulations, which require Lowest Achievable Emission Rate (LAER) and emission offsets as part of the analyses and, consequently, not subject to source impact analysis requirement of § 52.21(k) of PSD regulations. Still, in response to this comment, the DEP performed an assessment of ozone formation potential associated with emissions increase for NO_x (i.e., VOC was not considered because it will have an emissions decrease, not an emissions increase) following the EPA's guidance.^{15,16} The assessment utilized the EPA's photochemical grid modeling results for hypothetical sources¹⁷ in the Northeast and Ohio Valley climate zones with 500 tons per year of emissions of either precursor. Based on these photochemical grid modeling results and an emissions increase for NO_x of 126.83 tons per year, an annual maximum daily 8-hour ozone concentration increase of 1.0079 ppb was calculated. With maximum certified 8-hour ozone design values for 2023-2025 ranging from 63 to 67 ppb at the three ozone monitoring sites in Beaver County, Shell's NO_x emissions would not threaten the 2015 8-hour ozone NAAQS of 70 ppb.

Air Toxics and Inhalation Risk Assessment

7. **Comment:** Commenters have raised concerns that the issuance of PA-04-00740D will impact the public health of the citizens in nearby communities. (848, 850, 852, 853, 854, 855, 857, 858, 860, 863, 864, 865, 869, 873, 874, 877, 879, 931 – 952)

Response: Shell conducted an inhalation risk assessment on 83 chemicals of potential concern (COPC), including benzene, which are potentially emitted from the facility. DEP thoroughly reviewed Shell's inhalation risk assessment and concluded that the excess lifetime cancer risk (ELCR), chronic noncancer risk, and acute noncancer risk would not exceed DEP's benchmarks¹⁸. The benchmarks serve as standards or reference points in an inhalation risk assessment, below which adverse health effects are unlikely to occur during a specified exposure period.

The benchmark values for acute, chronic and cancer risks from inhalation exposures are based on toxicity values (RfCs and IURs) that are derived using a conservative weight-of-evidence approach. RfCs, used as benchmarks for acute and chronic noncancer risks, are based on the most sensitive health effect and include uncertainty factors that account for methodological limitations, species differences and sensitive populations. IURs for cancer risks are developed using a conservative modeling approach that is likely to overestimate the cancer risk.

8. **Comment:** Commenters argue that Shell's Inhalation Risk Assessment is inadequate. Because Beaver County's background cancer risk is already near regulatory limits, they find Shell's reliance on a hypothetical modeling exercise with a slim safety margin unacceptable. The commenters suggest a more comprehensive study that accounts for existing pollution burdens. (877)

Response: The Department agrees that the inhalation risk assessment should account for existing pollution burden. Chemicals of potential concern (COPC) emissions from other sources are addressed by using the DEP's benchmark for excess lifetime cancer risk (ELCR) due to long-term exposure to emissions from a *single* facility that conservatively assumes high background cancer risk. As detailed by

¹⁵ Guidance for Ozone and Fine Particulate Matter Permit Modeling (EPA-454/R-22-005, July 2022).

¹⁶ Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program (EPA-454/R-19-003, April 2019).

¹⁷ Modeled Emission Rates for Precursors (MERPs) View Qlik (<https://www.epa.gov/scram/merps-view-qlik>).

¹⁸ U.S. EPA, 1998. Region 6 Risk Management Addendum – Draft Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. EPA-R6-98-002. July 1998.

EPA,¹⁹ the EPA generally uses a cancer risk range of 100 in a million to 1 in a million in evaluating potential cancer risks. To account for background risks, which are risks due to sources other than the single facility being evaluated, a lower and narrower cancer risk range of 10 in a million to 1 in a million was recommended by the EPA as threshold in evaluating cancer risks due to COPC emissions from a *single* facility.^{20,21} With this threshold, which is used by the Department as its benchmark for a *single* facility, a background cancer risk of 90 in a million is assumed. This is a conservative assumption for background cancer risk. Based on available data,²² estimated census block-based cancer risks in Beaver County, including those adjacent to Shell Polymers Monaca Site, were mostly 30 in a million. If using 30 in a million as background cancer risk, and with the highest cancer risk of 8.71 in a million due to Shell's COPC emissions, the highest ELCR due to COPC emissions from *all* sources would be 38.71 in a million, which is less than half of the EPA's cancer risk threshold of 100 in a million.

9. **Comment:** The public expressed concern that the Potential to Emit (PTE) used in the inhalation risk assessment is inaccurate or under protective because they rely on generic US EPA AP-42 emission factors rather than site specific data. Commenters suggest that Shell complete another Inhalation Risk Assessment that better reflects Shell's actual operations to date and their actual impact to public health in Beaver County rather than theoretical emissions data. (869)

Response: Inhalation risk assessments are conducted based on the best information available and purposefully conservative as the resulting emissions limits inserted into the Plan Approval must be met. If actual emissions are greater than those used in the risk assessment, the risk assessment may no longer be valid, and the permittee may be required to conduct another risk assessment.

When site specific emission data is not available, representative emission factors are used. During the initial design phase of the facility, specific site testing data did not exist for trace HAPs generated by the facility's specialized combustion processes. Consequently, the Department utilized U.S. EPA AP-42 emission factors to calculate the PTE for all listed COPCs where manufacture's guarantees or source specific factors were not available. In all cases the, the best available information is used to estimate potential emissions. In some instances, AP-42 represented the only universally available data repository capable of establishing a baseline for these trace compounds. AP-42 factors are developed through a rigorous evaluation process and are considered reliable and are commonly used by air quality professionals.

Since the original IRA, PTE from the facility has been fine tuned to incorporate as-built changes, site specific stack testing performed, and the use of more representative emissions factors.

The facility has conducted three (3) risk assessments which have been reviewed by the Department. Each time, the PTE input into the model was reviewed and determined to be representative by the Department.

The Department's initial independent inhalation risk assessment concluded that chronic cancer and noncancer risks as well as acute noncancer risks do not exceed the Department's benchmarks. The

¹⁹ U.S. EPA, 1998. Region 6 Risk Management Addendum – Draft Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. EPA-R6-98-002. July 1998. Page ADD-2.

²⁰ Ibid, Page ADD-3.

²¹ As stated by the EPA, use of the narrower cancer risk range as target level eliminates the need to collect background COPC concentration data.

²² EPA's Air Toxics Screening Assessment (AirToxScreen) tool (<https://www.epa.gov/AirToxScreen/airtoxscreen-mapping-tool>). The latest risk data in the EPA AirToxScreen is for year 2020.

original plan approval also required Shell conduct an inhalation risk assessment for the Facility based upon the final as-built design parameters of the air contamination sources in accordance with the protocol submitted to and approved by the Department.

The second risk assessment was independently reviewed by the Department's Modeling Section during the review of PA-04-00740C for as-built changes to the Facility. The Department's technical review again concluded that Shell's inhalation risk assessment was conducted according to the Department-approved protocol and is acceptable. Furthermore, the Department's independent inhalation risk assessment concluded that chronic cancer and noncancer risks as well as acute noncancer risks do not exceed the Department's benchmarks.

As part of this Plan Approval, Shell was again required by the Department to perform a risk assessment to account for the proposed modifications to the Facility and PTE calculations.

For example, for the ethane cracking furnaces, representative stack testing has been performed since the previous risk assessments. The stack testing included n-hexane, the highest single HAP from the ethane cracking furnaces. The stack test data showed that the facility's actual n-hexane emissions are significantly lower than the AP-42 emission factor previously used.

Because no new or alternative testing data exists for secondary trace HAPs, AP-42 remains the sole available mechanism to calculate their potential emissions to use in the risk assessment. However, because the cracking furnaces burn a low-impurity mix of pipeline quality natural gas and tail gas, the testing results for n-hexane confirm that the actual emissions are below historical industry averages used in the AP-42 factors. This indicates that the remaining untested trace HAPs are conservatively estimated within the risk assessment model.

The use of these combined site-specific and EPA approved emission factors establishes a protective, "worst-case" scenario. It ensures that the cumulative risk assessment model captures a conservative baseline, protecting public health while remaining strictly grounded in the best available federal and site-specific data.

The Department's technical review for the modifications in this Plan Approval concludes that Shell's inhalation risk assessment, in conjunction with the revisions made by the Department, demonstrates that the ELCR, chronic noncancer risk, and acute noncancer risk due to inhalation of the COPCs would not exceed the Department's benchmarks. The Department's full risk assessment review documents can be found on the Department's Southwest Regional Office webpage.²³

Emission Reduction Credits

10. **Comment:** Shell must be required to secure and apply additional emission reduction credits (ERCs) to offset NOx emissions by at least a 2:1 ratio to comply with EPA's sanctions against Pennsylvania. The Draft Permit only requires Shell to offset its proposed NOx emissions increases by a ratio of 1.15:1. (850, 855, 857, 864, 869, 878, 883, 931 – 952)

Response: The ERCs required in the Final Plan Approval will be based on the regulatory requirement of 25 Pa. Code § 127.210 of 1.15:1 for NOx.

²³ <https://www.pa.gov/agencies/dep/dep-regions/southwest-regional-office/shell>
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11. **Comment:** The applicant proposes offsetting their own elevated emissions with credits from several sources that are far from the site itself and the people who are affected by its operations. Northern Star Generation LLC - Cambria Cogeneration is both east and downwind of the main population center in the affected region, namely Allegheny County. Similarly, Indspec Chemical Corporation is northeast and downwind of Allegheny County. (856)

Response: The ERCs obtained by Shell meet the requirements for ERC creation and use set forth in 25 Pa. Code §§ 127.206 through 127.208 Shell is required to obtain ERCs from a nonattainment area in accordance with the provisions of 25 Pa. Code Chapter 127 Subchapter E.

Pursuant to 25 Pa. Code §127.208(10), “an owner or operator of a facility shall acquire ERCs for use as offsets from an ERC generating facility located within the same nonattainment area.” Additionally, pursuant to §127.208(9), “for the purpose of emissions offset transfers at VOC or NO_x facilities, the areas included within an ozone transport region established under section 184 of the Clean Air Act (42 U.S.C.A. § 7511c), which are designated in 40 CFR 81.339 (relating to Pennsylvania) as attainment, nonattainment or unclassifiable areas for ozone, shall be treated as a single nonattainment area.” The ERCs incorporated in this plan approval for use at SPM are all located within the ozone transport region and are therefore from within the same nonattainment area and valid for use for this project.

Pyrolysis Oil

12. **Comment:** Plan Approval D may not authorize use of pyrolysis oil as feedstock because this use was not disclosed in the application materials nor analyzed in emissions calculations and may increase emissions. Commenters assert that: (850, 855, 858, 861, 864, 865, 882, 883, 931 – 952)

- 1) Shell has contracted to use pyrolysis oil as feedstock in large quantities;
- 2) Shell and DEP failed to disclose, much less analyze, the use of pyrolysis oil as feedstock; and
- 3) Waste-derived pyrolysis oil contains contaminants, poses technical challenges for steam crackers, and may harm public health.
- 4) Shell’s use of pyrolysis oil as feedstock would be an unpermitted change to operations that may increase emissions and Shell must submit a new permit application for its use.

Response: Shell does not propose using pyrolysis oil as a feed stock, and the Plan Approval does not authorize using pyrolysis oil as a feed stock.

Pyrolysis involves the heating of organic materials in the absence of oxygen, such that thermal decomposition changes the chemical composition of the substance from solid to liquid. Pyrolysis oil is the resulting product of the pyrolysis process.

One type of pyrolysis oil is a by-product of the thermal cracking process (as part of the Ethane Cracking Unit), which at SPM is referred to as pyrolysis fuel oil (PFO). It is generally the heavier fractions that are separated out in the quench section of the ECU. The PFO generated at SPM is stored on-site in the pyrolysis fuel oil storage tanks, Source ID 407, which are subject to the storage tank requirements of 40 CFR Part 60 Subpart Kb. The PFO is not further processed or used at SPM, and is shipped off-site to other users. Vapors from the liquid loadout of PFO is required to be captured and routed through a closed system to the CVTO Header System or MPGF CVTO Trip Header

A different type of pyrolysis oil is produced by converting plastic waste through a pyrolysis process. Some ethylene production facilities can process this type of pyrolysis oil because they have cracking

furnaces capable of handling liquid feeds. However, SPM operates ethane (gas-only) cracking furnaces and cannot process any liquid feeds, including plastic derived pyrolysis oil.

SPM is not currently using pyrolysis oil from plastic waste conversion as a feed stock and asserts that it does not plan to do so in the future. The furnaces at SPM are not physically able to use pyrolysis oil as feedstock as currently configured. Therefore, no changes to the Plan Approval are needed.

Flare Requirements

13. **Comment:** DEP must revise draft Plan Approval D to clearly incorporate and strengthen requirements applicable to the plant's four distinct flares under Subparts CC and YY. Source-specific sections of Draft Plan Approval D are limited to general, vague references to the NESHAP flare requirements. The source group requirements for Subpart (G05) YY and Subpart FFFF (G09) are similarly vague (850, 855, 864, 931 – 952)

Response: Consistent with standard practice by the Department's SWRO, applicable Federal regulations are included in plan approvals by reference. It is the Department's position that the Plan Approval, as currently drafted, clearly and adequately incorporates the requirements of NESHAPS Part 63 Subparts CC, YY, and FFFF. As noted by the commenters, "...the flare requirements under Subpart CC and Subpart YY are specifically tailored to different flare assist media (pressure or air) to ensure that each type of flare is operated to achieve the requisite 98% destruction efficiency of VOCs and HAPs..."

In order to maintain a concise and clear plan approval document for the Department, Shell, and the public to navigate, the appropriate regulations are included by reference, and the Department has documented the specific requirements in the Review Memo and application materials.

The applicable requirements of Subpart CC are clearly summarized for Source IDs C205A and 205B (TEGF A and B), Source ID 205C (HP Elevated Flare), Source ID 207 (MPGF CVTO Trip Header), and Source ID 209 (MPGF PE Units 1/2 Episodic Vent Header) on pages 86 through 88 of the Department's Review Memo.

Additionally, Shell's "Fourth Response to Plan Approval Application Technical Deficiency Letter" dated March 7, 2025, includes a summary of the operational limits and work practice standards followed by SPM to ensure flares are operated properly to meet minimum destruction and removal efficiency (DRE). Specifically see Attachments 2 and 7 of the above-referenced letter. These requirements are also represented in the Proposed PA-04-00740D Conditions for Source IDs 205, 207, 208, 209 and Group Names G05 and G09.

14. **Comment:** Commenters assert that Subpart CC flare requirements apply to the MPGF as a whole (including the MPGF Ethylene Tank Header), not on a header-by-header basis. Alternatively, DEP must require Shell to control vents from the Ethylene Tank Header pursuant to Subpart CC (under Subpart YY or FFFF). (933 – 954)

Response: The Federal requirement applicability for the MPGF Headers as a flare control device is dictated by each rule's applicability for sources and vent streams which may send regulated material to the flare.

MPGF CVTO Trip Header

As stated in the Review Memo on page 93, “**40 CFR Part 63 Subpart YY (EMACT)** applies to the MPGF CVTO Trip Header. The MPGF CVTO Trip Header (during CVTO downtime) controls vents from storage vessels and transfer racks subject to the control standards of the EMACT. The EMACT flare control device requirements incorporate by reference the flare control device and flare monitoring system requirements in 40 CFR Part 63 Subpart CC. See Attachment 2 “Table 8a” of Shell’s January 23, 2025, deficiency letter response, for a summary of the requirements of 40 CFR 63 Subparts YY, FFFF, and CC (by reference).”

MPGF PE Units 1/2 Episodic Vent Header

As stated in the Review Memo on page 94, “**40 CFR Part 63 Subpart FFFF (MON)** applies to the MPGF PE Units 1/2 Episodic Vent Header. Under 40 CFR §63.2535(h) of the MON, SPM has elected to follow the overlap provisions and subject PE Units 1 and 2 to requirements of the MON. The MPGF PE Units 1/2 Episodic Vent Header controls process vents subject to the control standards of the MON. The MON flare control device requirements incorporate by reference the flare control device and flare monitoring system requirements in 40 CFR Part 63 Subpart CC as outlined in Attachment 4 “Table 8c” of Shell’s January 23, 2025, deficiency letter response.”

MPGF Ethylene Tank Header

The MPGF Ethylene Tank Header periodically receives relief vent gas from the refrigerated ethylene storage tank and connected boil off gas (BOG) recovery system. The normal baseline continuous flaring rate is zero. There are no HAPs contained within any potential vent stream to the MPGF Ethylene Tank Header.

40 CFR Part 63 Subpart YY (EMACT) does not apply to the MPGF Ethylene Tank Header. Per 40 CFR §63.1103(e)(1)(i)(A),

Affected source. For the ethylene production (as defined in paragraph (e)(2) of this section) source category, the affected source comprises all emission points listed in paragraphs (e)(1)(i)(A) through (G) of this section that are associated with an ethylene production unit that is located at a major source, as defined in section 112(a) of the Act.

(A) All storage vessels²⁴ (as defined in § 63.1101) that store liquids containing organic HAP.

The refrigerated ethylene storage tank receives on-spec ethylene from ECU. On-spec ethylene does not contain organic HAP²⁵ as defined under §63.1103(e)(2), or HAP listed in section 112(b) of the Clean Air Act (CAA).

40 CFR Part 63 Subpart FFFF (MON) does not apply to the MPGF Ethylene Tank Header. As defined in 40 CFR §63.2250 “*Storage Tank* means a tank or other vessel that is used to store liquids that contain organic HAP and/or hydrogen halide and halogen HAP and that has been assigned to an MCPU...” The refrigerated ethylene storage tank receives on-spec ethylene from ECU and is not part of the PE Units.

²⁴ *Storage vessel or tank*, for the purposes of regulation under the storage vessel provisions of this subpart, means a stationary unit that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) that provides structural support and is designed to hold an accumulation of liquids or other materials. Storage vessel includes surge control vessels and bottoms receiver vessels...

²⁵ As defined under 40 CFR 63.1103(e)(2), *Organic HAP* means the compounds listed in Table 1 to [subpart XX of this part](#) [referring to 40 CFR Part 63].

On-spec ethylene does not contain organic HAP listed in section 112(b) of the CAA or hydrogen halide and halogen HAP as defined under 40 CFR §63.2250.

40 CFR Part 60 Subpart Kb applies to the MPGF Ethylene Tank Header. Per 40 CFR §60.110b(a) “Except as provided in paragraph (b) of this section, the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984, and on or before October 4, 2023.” The refrigerated ethylene storage tank capacity is greater than 75 m^3 (30,000), stores volatile organic liquids (refrigerated ethylene), and construction commenced within the referenced timeframe. It does not meet any of the qualifiers or exemption criteria cited under §§60.110b(b) or (d). The applicable 40 CFR 60 Subpart Kb requirements are summarized on pages 83 – 84 of the Review Memo and included by reference in Section D, Source ID 411, Source Name: Refrigerated Ethylene Storage Tank, Conditions # 001, 002, 003, 006, 007, and 008. These include equipping with a closed vent system and control device. Per 40 CFR §60.112b(b)(1) and §60.112b(a)(3)(ii), the flare control device must meet the requirements specified in the general control device requirements, 40 CFR 60.18.

Per the 40 CFR Subpart Kb Initial Compliance Report re-submitted on February 26, 2026, per 40 CFR 60.18(f)(1), the MPGF must be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours, as required by §60.18(c)(1). In accordance with §60.18(f)(1), compliance with the visible emission standard is to be determined using Method 22 of Appendix A of 40 CFR Part 60, where the observation period is 2 hours.

Per 40 CFR 60.18(f)(2), the MPGF must be operated with a flame present at all times as required by §60.18(c)(2). The presence of a flare pilot flame must be monitored using a thermocouple (or equivalent) to detect the presence of a flame as required by §60.18(f)(2).

There are 17 pilots associated with the Ethylene Storage Tank Vent Header. Thermocouples are used to monitor the presence of a pilot flame for each pilot, and the data are collected by the site's Data Collection System (DCS).

Per 40 CFR 60.18(f)(4), (5), and (6), the MPGF must be designed for and operated with an exit velocity at the flare tip as outlined below.

- Less than 18.3 m/sec (60 ft/sec), calculated in accordance with §60.18(f)(4); or
- Greater than or equal to 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec), calculated in accordance with §60.18(f)(4), if the NHV of the gas being combusted is greater than 1,000 Btu/scf; or
- Less than V_{max} as determined by §60.18(f)(5) and less than 122 m/sec (400 ft/sec).

The actual exit velocity must be determined by dividing the volumetric flowrate in units of standard pressure/temperature by the unobstructed cross-sectional area of the flare tip.

Additionally, the MPGF Ethylene Tank Header is required to meet the general flaring requirements of 40 CFR 63.11. The general flaring of 40 CFR 63.11 (NESHAP General Provisions) and 40 CFR 60.18 (NSPS General Provisions) are functionally identical. The applicability of 40 CFR 63.11 is described below.

The facility-wide LDAR condition of Section C Condition # 024, requires the LDAR program to be consistent with 40 CFR Part 63 Subpart UU – National Emission Standards for Equipment

Leaks – Control Level 2 Standards (except the more stringent plan approval requirements specified). Certain equipment in ethylene service in this subset of equipment, including pressure relief devices (PRDs) in the BOG vent recovery system, vent emissions through a closed vent system (CVS) to the MPGF Ethylene Tank Header. For PRDs venting to a flare, §63.1034 of Subpart UU requires compliance with 40 CFR Part 63 Subpart SS, which requires compliance with the flare standards in 40 CFR 63.11. Note that the BOG compressor primary seals are routed to the HP Header System.

15. **Comment:** DEP must require Shell to demonstrate 98% VOC destruction efficiency at each flare based on compliance with flare operating limits and monitoring requirements under Subpart CC and Subpart YY. Shell must continuously comply with the applicable limits and monitoring requirements for flares under Subpart CC. (931 – 952)

Response: The commenters acknowledges that “Whether a flare achieves 98% destruction efficiency *depends* on whether the flare meets the required operating parameters under Subpart CC”²⁶ [emphasis in original] and that “to demonstrate compliance with the requisite 98% VOC destruction efficiency at each flare, Shell must continuously comply with the applicable limits and monitoring requirements for flares under Subpart CC.”²⁷

Overall, the requirements of 40 CFR Part 63 Subpart CC apply at all times. The primary operational standards such as maintaining pilot flames, minimizing visible emissions, and ensuring the combustion zone net heating value and flare tip velocity limits apply at all times including during startup, shutdown, and malfunction (SSM) events.

When determining compliance with specific operating limits like the NHVcz under 40 CFR 63.670(e)(1) or (2), the requirements apply continuously, but compliance is specifically demonstrated in 15-minute block periods.

The Department disagrees that the plan approval needs to be revised to clarify that to meet the 98% destruction efficiency that the applicable rules need to be met at all times. That is inherent in being subject to the applicable rules and properly meeting the requirements.

In addition to the standards described above, SPM also maintains a Flare Minimization and Management Plan (FMP) developed and implemented under 40 CFR 63.670(o) and the conditions of the Plan Approval to minimize flaring during startup, shutdown, or emergency releases must also be followed. If a flaring flow event exceeding the baseline occurs, Shell is required to conduct root cause and corrective action analyses within 45 days of the event.

The FMP contains additional detail regarding flare system upkeep and maintaining continuous parameter monitoring system (CPMS) equipment. CPMS accuracy and calibration are performed in accordance with the applicable 40 CFR Part 63 Subpart CC Table 13 requirements. To the maximum extent practicable, the individual equipment components of SPM’s flaring systems are maintained and operated in a manner consistent with good practices for minimizing emissions. Key parameters of SPM’s flaring systems are continuously monitored by Console Operators to ensure all flare compliance monitoring systems are kept in proper operating condition. When any such component fails to operate properly, an alarm will notify Console Operators, and the repair of malfunctioning compliance equipment is expedited. Turnaround maintenance plans are developed as needed for intrusive inspections and maintenance which can only be performed when a flare is offline. Together, these

²⁶ EIP CAC et al Shell PA-04-00740D Comments at 27.

²⁷ EIP CAC et al Shell PA-04-00740D Comments at 28.

programs maintain reliable flare systems and support early identification of abnormal conditions and timely corrective actions.

16. **Comment:** DEP should require Shell to conduct performance testing to demonstrate compliance with the NHV and other operating limits for all flares under all operating conditions. Additionally, a one-time test is not sufficient to ensure that each of Shell's flares consistently achieves 98% destruction efficiency of VOCs, particularly as the flares degrade over time. (931 – 952)

Response: Due to the design of the flares used at SPM, performance testing is not considered technically feasible. Compliance with the destruction efficiency requirement is demonstrated through design, monitoring, recordkeeping, and operational requirements; and the plan approval includes the applicable regulatory requirements. As discussed in the Department's review memo on pages 54-55, 71, and 115-116, the control device requirements of the EMAX have been designed to produce a stable flame capable of continuously meeting the underlying destruction efficiency of 98%. The EPA emphasizes that a flare achieves 98% destruction efficiency if the specific design and operating work practice standards are met and it is continuously monitored in accordance with the requirements of the rule. This is reiterated by the EPA in their July 15, 2024, letter to TCEQ²⁸ referenced in the Department's Review Memo on pages 115 and 116.

17. **Comment:** DEP must revise Plan Approval D to clearly state the applicable flare requirements under Subpart CC and Subpart YY for each flare. As drafted, Draft Plan Approval D only vaguely incorporates these requirements by reference, without necessary specificity. To ensure that the various flare-specific requirements in this rule are clear and enforceable, DEP must revise Plan Approval D to specifically state the operating, monitoring, reporting, recordkeeping and other flare requirements that apply to each individual flare. (850, 855, 864, 931 – 952)

Response: SPM is not an affected facility under 40 CFR Part 63 Subpart CC but is required to meet the applicable flare requirements to comply with 40 CFR Part 63 Subpart YY. The EPA explicitly structured the Generic MACT (40 CFR Part 63 Subpart YY or referred to as the EMAX in this plan approval) to reduce redundancies by pointing regulated sources directly to the overarching standards in Subpart CC (e.g., 40 CFR §§ 63.670 and 63.671). Following this framework mirrors standard best practices in permitting.

Including the 40 CFR Part 63 Subpart CC flare requirements by reference (specifically 40 CFR § 63.670) prevents rule misinterpretation, ensures compliance with future regulatory updates, and avoids creating an overly complex plan approval that inadvertently conflicts with the multi-faceted nature of the EPA's flare standards. Specifying every flare requirement for every flare type would create a large, unwieldy plan approval document that would be difficult for operators and inspectors to navigate. Additionally, by incorporating the requirements by reference, the facility is automatically subject to any changes to the Federal rules without a formal plan approval modification. Regardless of the manner in which the Federal requirements are included in the plan approval, Shell is required to meet all applicable state and Federal requirements.

As stated in response to Comment 13, the applicable requirements of Subpart CC are clearly summarized for Source IDs C205A and 205B (TEGF A and B), Source ID 205C (HP Elevated Flare),

²⁸ See Letter from David Garcia, Director, Air and Radiation Division, Region 6, U.S. EPA to Corey Chism, Director, Office of Air, TCEQ, Texas Commission on Environmental Quality Flare Operating and Monitoring Requirements as Specified in Clean Air Act New Source Review and Title V Operating Permits (July 15, 2024), available at <https://www.epa.gov/system/files/documents/2024-07/2024.07.15.epa-comments-on-tceq-flare-assumptions.pdf>.

Source ID 207 (MPGF CVTO Trip Header), and Source ID 209 (MPGF PE Units 1/2 Episodic Vent Header) on pages 86 through 88 of the Department's Review Memo.

The Department's Review Memo also points to Shell's January 23, 2025, deficiency letter response, which includes summary tables of the requirements for the TEGF A and B in Attachment 1, the MPGF CVTO Trip Header in Attachment 2, the MPGF Ethylene Tank Header in Attachment 3, and the MPGF PE Units 1/2 Episodic Vent Header in Attachment 4.

Shell is required to submit Semi-Annual Periodic Reports which is a mandatory environmental compliance documents required by the EPA every six months to document operational monitoring data, track equipment deviations, and certify ongoing compliance. Content includes a cover letter with facility details, a summary of required monitoring data, and full disclosure of any deviations, excess emissions, or malfunctions that occurred during the period. The most recent Semi-Annual Periodic Report for 40 CFR Part 63 Subpart YY submitted by Shell was dated February 24, 2026, and received by the Department on February 26, 2026, in accordance with 40 CFR 63.1110(e).

18. **Comment:** DEP must require Shell to establish a plan and report on a monthly basis that they are complying with the new NHVcz limits on each the Flares they have in operation. They must be required on a routine basis to report on their combustion efficiency and have those reports verified and available. (878)

Response: Shell is required by plan approval conditions to maintain the required NHVcz, keep appropriate records, and report semiannually to both the Department and the EPA. All records are required to be maintained on site, or at an alternative location acceptable to the Department, and be made available to the Department upon request. Records are verified by the Department or must be made available to the Department to verify. Records and reports available to the Department are also available to the public.

Section D, Source ID 205, Condition # 015 requires that "The Owner/Operator shall operate the TEGF A and TEGF B to maintain the net heating value of flare combustion zone gas (NHVcz) at or above 800 Btu/scf determined on a 15-minute block period basis when regulated material is routed to the flare for at least 15-minutes. The owner or operator shall monitor and calculate NHVcz as specified in 40 CFR 63.670(m)."

Additional authority for this condition is derived from 40 CFR 63.1103(e)(4)(vii)(B) and 40 CFR 63.670(e)(2).

40 CFR 63.1103(e)(4)(vii)(B), the owner or operator must comply with the NHVcz requirements in § 63.670(e)(2) of subpart CC. Per 40 CFR 63.670(e), the owner or operator shall operate the flare to maintain the net heating value of flare combustion zone gas (NHVcz) at or above the applicable limits in paragraphs (e)(1) and (2) of this section determined on a 15-minute block period basis when regulated material is routed to the flare for at least 15-minutes. The owner or operator shall monitor and calculate NHVcz as specified in paragraph (m) of this section.

Per 40 CFR 63.1103(e)(4)(xi), the owner or operator must comply with the reporting requirements specified in § 63.1110(d) and (e)(4). Per 40 CFR 63.1110(e)(4)(iii), periodic reports must include the net heating value operating parameter(s) and deviations.

The most recent semi-annual report was submitted by Shell to the EPA and DEP on February 24, 2026, for the period of July 1, 2025, through December 31, 2025. According to the report, "During the

reporting period, there were no Combustion Zone Net Heating Value deviations for the TEGF A/B, HPEF, or MPGF.”

19. **Comment:** DEP Must Revise the Root Cause Analysis and Corrective Action Analysis Requirements in Accordance with Subpart CC. DEP must revise Plan Approval D to (1) add the root cause and corrective action analysis trigger under Subpart YY, in addition to the existing trigger in the Plan Approval; and (2) specify that Shell must complete the analyses *as soon as possible*, but no later than 45 days after the triggering flare flow event; (3) require Shell to conduct separate initial root cause analyses for multiple flares; (4) state the proper corrective action deadlines under 40 C.F.R. section 63.670(o)(5)(i); (5) require compliance with the corrective action requirements under 40 C.F.R. sections 63.670(o)(5)((i) through (iii)); and (6) determine the annual number of root cause analysis and corrective action analysis events for each flare under 40 C.F.R. section 63.670(o)(6). (931 – 952)

Response: The root cause analysis (RCA) condition established in PA-04-00740A was prior to the revisions to the Refinery MACT that were subsequently incorporated into the EMACT; therefore, they are different but similar programs and Shell is required to meet both programs. For example, the plan approval conditions do not include the qualifiers in 40 CFR Part 63 Subpart CC that require an RCA to be conducted.

Per 40 CFR 63.670(o)(3), The owner or operator of a flare subject to this subpart shall conduct a root cause analysis and a corrective action analysis for each flow event that contains regulated material and that meets either the criteria in paragraph (o)(3)(i) or (ii) of this section.

- (i) The vent gas flow rate exceeds the smokeless capacity of the flare based on a 15-minute block average and visible emissions are present from the flare for more than 5 minutes during any 2 consecutive hours during the release event.
- (ii) The vent gas flow rate exceeds the smokeless capacity of the flare and the 15-minute block average flare tip velocity exceeds the maximum flare tip velocity determined using the methods in paragraph (d)(2) of this section.

Per Subpart CC, an RCA is required when the vent gas flow rate exceeds the smokeless capacity AND visible emissions are present or the flare tip velocity exceeds the maximum flare tip velocity. The plan approval conditions require an RCA after any flaring event which is defined as an event that exceeds the baseline by 500,000 scf within a 24 hour period.

The RCA and Corrective Action Analysis requirements required by federal regulations and those established within this Plan Approval are separate regulatory programs with distinct triggers. The facility is legally obligated to satisfy the specific triggers, engineering evaluations, and reporting structures of both programs independently.

To ensure clarity across all flare headers in this Plan Approval which requires a root cause analysis for flaring events (Source IDs 205, 207, 208, and 209), the Department provides the following regulatory interpretations regarding the six points raised by the commenter:

The standards under 40 CFR Part 63 Subparts CC and YY (applicable via cross-reference for ethylene production) are triggered by the flow rate exceeding smokeless capacity and visible emissions or flare tip velocity exceedances under § 63.670(o) identified above. Conversely, the flare-specific RCA requirements under this Plan Approval are triggered by a defined flaring event stated above.

Compliance with a Plan Approval requirement does not relieve Shell from performing an RCA under the federal rules, nor does a federal exception absolve Shell from a Plan Approval required engineering evaluation. Both programs carry a matching 45-day completion and submittal timeline for flare-specific RCAs, which operate entirely separate from the standard 30-day general malfunction reporting requirement for the entire facility (which itself requires a root cause analysis in certain instances).

For multiple flare events, under 40 CFR § 63.670(o)(4)(ii), if a single root cause results in a discharge from multiple flares simultaneously, the Permittee may evaluate them under a single root cause analysis, provided it thoroughly investigates the distinct parameters of each affected flare. However, for separate or unrelated operational upsets, Shell is strictly required to conduct separate initial root cause analyses for each individual flare header (Source IDs 205, 207, 208, and 209).

For corrective action deadlines and requirements, Shell must comply with all corrective action timelines and requirements under 40 CFR §§ 63.670(o)(5)(i) through (iii). This includes implementing all corrective actions as soon as practicable, but no later than 45 days after the event, or developing a formal, compliant schedule if the corrective action cannot be fully implemented within that 45-day window.

Regarding annual event determinations, the Department and the EPA track the annual number of root cause analysis and corrective action analysis events for each individual flare in accordance with 40 CFR § 63.670(o)(6) to identify chronic operational issues and determine potential work practice standard violations. As required by 40 CFR Part 63 Subpart YY, Shell submits Semi-Annual Periodic Reports in February and August of each year which include flaring deviations. Currently, prior to issuance of a site-wide Title V Operating Permit, Shell is required to extend their plan approvals semi-annually, in April and October of each year. As part of the plan approval extension applications, Shell is required to submit an Air Pollution Control Act Compliance Review Form or Compliance Review Form Supplemental Form listing all documented conduct of violations or enforcement actions identified by the Department pursuant to the APCA, regulations, terms and conditions of the plan approvals, or order by applicant or any related party and any incidents of deviations since the previous submittal. This list must include items both currently known and unknown to the Department.

20. **Comment:** DEP must revise draft Plan Approval D to ensure that Shell's flare minimization plan is enforceable, and DEP should require Shell to obtain DEP approval. (931 – 952)

Response: The FMP, required by 40 CFR Part 63 Subpart CC, exists outside the plan approval so it can be updated accordingly without a formal modification to the plan approval. The FMP is an operational document detailing site-specific prevention measures, root causes, and corrective action analyses. Keeping it as a standalone facility document allows operators to continuously improve procedures, such as updating process-specific mitigations or adding new safety procedures, without triggering a formal plan approval modification.

Approval of the FMP by the Department is not required by the plan approval or by 40 CFR Part 63 Subpart CC. Rather, 40 CFR 63.670(o) establishes that the owner or operator must:

- Develop and implement the FMP.
- Submit the plan to the Administrator.
- Maintain a current copy of the plan on-site.
- Update the plan when changes are made to flaring procedures, accordingly.

The FMP is practically enforceable through the general standards in 40 CFR 63.642, particularly paragraph (n) which states

At all times, the owner or operator must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the owner operator to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved. Determination of whether a source is operating in compliance with operation and maintenance requirements will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

The Department will enforce compliance through routine inspections, record keeping audits, and reviews of root cause/corrective action reports following flow events.

The most recent FMP dated July 5, 2023, was submitted by Shell pursuant to 40 CFR 63.670(o)(2) of Part 63 Subpart CC as referenced by Part 63 Subpart YY and in accordance with 40 CFR §63.1103(e)(4) and Group Name G05 Condition #015 of PA-04-00740C. The FMP must satisfy both the requirements of the plan approval and Subpart CC. Compliance with a Plan Approval requirement does not relieve Shell from the FMMP requirements under the federal rules, nor does a federal exception absolve Shell from a Plan Approval required FMP conditions.

The FMP is an evergreen document, and Shell is expected to submit a revised FMP by September 30, 2026, which will include the following:

- TEGFs as multi-stage pressure-assisted flares consistent with 40 CFR Part 63 Subpart YY (EMACT)
 - Related inclusion of updated pilots per stage, stage open/close valve indicators, and pressure and temperature instrumentation
- Calorimeters and new gas chromatographs installed for NHV and hydrogen measurement
- HPEF added steam temperature and pressure instrumentation
- Updated baseline and alternative baseline flows consistent with the PA-04-00740D application and baseline reviews
- Recent root cause analyses and preventative measures (in progress, evergreen)
- Reductions from PE1 and PE2 N2 silencer vent project
- Recent FGR analysis from PA-04-00740D technical review
 - Additional description of existing designed flare gas minimization
- Updated CPMS specifications for new analyzers and instrumentation and datasheets incorporation by reference table
- Flare drawings incorporation by reference table
- Flaring procedures review and updates
- Waste gas mapping additional detail (in progress)
- General naming, labeling, and terminology updates for consistency between regulations, PA-04-00740D application, and site naming conventions

21. **Comment:** DEP should reorganize Plan Approval D to group plan approval requirements for flares under Section E. (931 – 952)

Response: As discussed in response to Comment 13 and 17, each of the flares at SPM has different requirements and grouping them would be inaccurate.

Benzene and BWON

22. **Comment:** Commenters assert that the draft permit improperly authorizes Shell to generate far more benzene waste than existing limits allow. Shell’s existing Plan Approval C requires Shell to comply with the applicable standards of the Subpart FF benzene waste operation NESHAP (“BWON”) “for a facility with benzene waste less than 10 Mg per year (11 tons per year) as specified in 40 CFR §61.342(a), (g), and (h).”²⁹ In addition to complying with BWON, Plan Approval C requires Shell to limit the amount of total benzene quantity from facility waste to less than “11 tons per year as determined through 40 CFR § 61.355.”³⁰

Shell initially represented to DEP that Shell would design and operate the Plant to maintain total annual benzene quantity from facility waste below the 10 Mg/year applicability threshold in Subpart FF (BWON). However, on April 18, 2023, Shell reported to DEP that the amount of total annual benzene quantity generated in the facility’s waste is nearly 60 tons per year, far exceeding the 10 Mg/year TAB threshold under Subpart FF that triggers additional substantive requirements. (850, 854, 855, 858, 861, 864, 865, 867, 868, 869, 878, 881, 882, 884, 931 – 952)

Response: The following clarifications address the commenters concerns regarding inconsistent plan approval conditions, benzene waste generation, and compliance with the BWON requirements.

Plan Approval condition inconsistency

The proposed Plan Approval inadvertently includes the following condition in PA-04-00740D Section C, Condition #049 which was carried over from PA-04-00740C:

The Owner/Operator shall comply with the applicable general standards for a facility with benzene waste less than 10 Mg per year (11 tons per year) as specified in 40 CFR 61.342(a), (g), and (h).

This condition will be removed from the final plan approval. SPM is a facility with a total annual benzene quantity (TABQ) quantity greater than 10 Mg per year as identified in the plan approval application and Department’s Review Memo. This was also identified by Shell in the submitted Revised Initial Report for 40 CFR Part 61 Subpart FF, dated April 18, 2023. Therefore, there are no applicable general standards for a facility with TABQ less than 10 Mg per year. Removal of this proposed condition would be consistent with the proposed replacement of PA-04-00740C, Section C, Condition #008 (restriction on total annual benzene to not equal or exceed 10 Mg per year) with PA-04-00740D, Section C, Condition #007 (requiring treatment of facility waste such that benzene quantity for wastes does not exceed 6 Mg per year). SPM complies with the applicable general standards as specified in 40 CFR 61.342(b)-(h), specifically §61.342(e), or 6BQ Compliance Option, which is an alternate standard and text included in PA-04-00740D, Section C, Condition #007.

²⁹ Plan Approval C, Section C No. 048. Plan Approval C also requires Shell to properly calculate the total annual benzene in facility waste and includes requirements related to monitoring, recordkeeping, and reporting to ensure compliance with these requirements. *See id.* Section C, Nos. 010, 012, 015, 022.

³⁰ *Id.* Section C No. 008. Plan Approval C specifies that “[t]his limit is for the purpose of compliance with limited requirements of 40 CFR Part 61 Subpart FF for a facility with benzene waste less than 10 Mg (11 tons) per year[.]”

Summary of the point of waste generation (POG) interpretation and correction which changed the initial classification of less than 10 Mg to greater than 10 Mg.

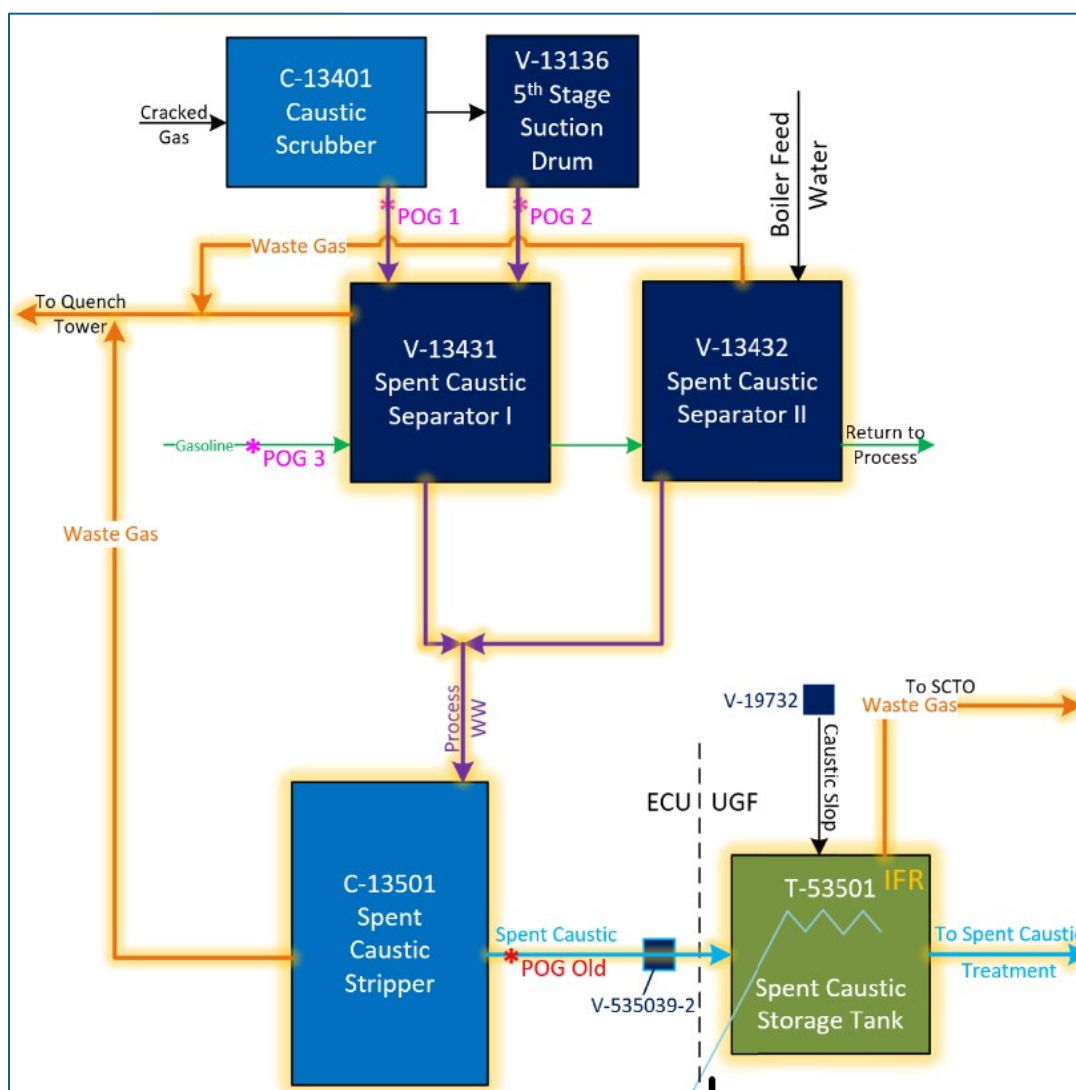
TABQ in the context of BWON applicability and general standards requirements is determined at the point of waste generation (POG). *Point of waste generation*³¹ “means the location where the waste stream exits the process unit component or storage tank prior to handling or treatment in an operation that is not an integral part of the production process...”

The determination which changed the calculated TABQ from less than 10 Mg/yr to greater than 10 Mg/yr was that the spent caustic stripper within the ethane cracking unit (ECU) was determined to not meet the definition of a ‘sour water stripper’ because it does not remove sulfur or ammonia compounds. Sulfur and ammonia compounds are not present in the spent caustic stream at SPM, and the stream therefore does not require a sour water stripper. This moved the POG from downstream of the stripper to locations upstream of the stripper. See 40 CFR 61.355(b) for TABQ calculation specifics and §61.355(b)(1) for where to determine TABQ from sour water strippers.

Shell has provided the block flow diagram shown in Figure 1 below for a visual representation of this change. “POG Old” was the original incorrectly interpreted location. POG 1, 2, and 3 are the corrected locations for the BWON applicability TABQ determination (other POGs not around the spent caustic stripper are not shown in the below diagram for simplicity).

³¹ See 40 CFR 61.341 Definitions.

Figure 1: BWON Point of Generation



There was no physical design or as-built change to the process, only a change to the equipment determination. By designating POG upstream of the spent caustic stripper, the spent caustic stripper functionally becomes equipment following best practice standards to reduce benzene from ECU waste. ECU is designed to remove benzene from the cracked gas stream and recover it as reasonably possible as part of the light gasoline or C3+ co-products. The spent caustic stripper removes volatile hydrocarbons including benzene from the spent caustic stream prior to spent caustic leaving the unit boundary and being routed to the spent caustic oxidization area. There is less benzene in the spent caustic stream downstream of the spent caustic stripper than upstream. Benzene and other hydrocarbons removed by the spent caustic stripper are recycled back to the quench tower which is an earlier point of the process within ECU. This constitutes recovery of most of the benzene from the upstream POGs. This recovered benzene does not result in air emissions or enter the WWTP. This recovered benzene is ultimately incorporated into light gasoline or C3+ co-products.

Clarification on what 6BQ compliance is and that 6Mg/yr does not represent air emissions

SPM complies with the BWON alternate general standard under 40 CFR § 61.342(e), which can be described as the “6BQ Compliance Option.” This means that the facility must select benzene-containing

waste streams to apply control by BWON standards such that the sum of TABQ for the selected streams post-control plus TABQ for any unselected streams uncontrolled is less than 6Mg/yr.

Applied BWON standards are in accordance with 40 CFR §§ 61.342 through 61.347 and under this compliance option, the spent caustic stripper becomes a miscellaneous control vessel subject to best practice standards. These standards include keeping each opening closed and sealed, periodically monitored to not exceed a 500 ppmv leak detection rate, periodically visually observed for proper closure and no gasket gaps or cracks, and subject to leak repair as soon as practicable but not to exceed 45 days after identification. The spent caustic stripper removes benzene from the waste which would otherwise and later enter the WWTP. The majority of benzene counted in the TABQ applicability determination for SPM is removed by the spent caustic stripper and returned to the process.

The 6Mg/yr limit is applied to the quantity of benzene present in wastewater streams. These are not direct air emissions, which are still calculated in accordance with the air emissions inventory protocol for all relevant emission sources. Air emissions subsequent to the 6BQ calculation are accounted for at Source ID 502 WWTP beginning at the biotreaters using USEPA Water9. The PTE calculation model used by Shell for the Wastewater Treatment Plant (Secondary and Tertiary Treatment) in PA-04-00740D was revised from WATER9 to Toxchem Version 4.4 and may be used for future emission reporting.

Any other remaining benzene after the 6BQ calculation is either degraded by the biotreaters or entrained within wastewater and subject to discharge outfall concentration limits or removed from the facility as hazardous waste.

23. **Comment:** If DEP authorizes Shell to generate more than 11 tons per year of benzene in facility waste, DEP must revise Plan Approval D to incorporate all applicable Subpart FF (BWON) Requirements. (931 – 952)

Response: As discussed in response to Comment 22, SPM has a TABQ greater than 10 Mg/yr. The BWON requirements were originally included in Section C – Site Level Requirements of the plan approval. After review, the appropriate BWON requirements will be moved to Section E in the Final Plan Approval, consistent other applicable Federal requirements:

The condition that was Section C, Condition # 046 has been updated as indicated below in the Final Plan Approval. The condition originally reflected the limited requirements based on the initial assessment by Shell that the benzene waste would be less than 10 Mg per year.

The site is subject to ~~limited~~ **the applicable** requirements of 40 CFR Part 61 Subpart FF – National Emission Standard for Benzene Waste Operations.

The condition that was Section C, Condition # 049 has been removed from the Final Plan Approval. See response to Comment 22.

Appropriate Restrictions, Testing, Recordkeeping, Reporting, Monitoring, and Additional Requirements of NESHAP Part 61 Subpart FF (BWON) will be included in the Final Plan Approval as Group G15, as shown at the end of this document.

24. **Comment:** DEP must include required monitoring and corrective action procedures within the Plan Approval – not in an external WWTP Control Plan. (931 – 952)

Response: The Department has elected to require Shell to develop a written WWTP Control Plan that is in addition to facility-wide requirements, BWON, and Source Level Requirements in Section D for Source ID 505 Wastewater Treatment Plant (Primary Treatment). The primary objective of the WWTP Control Plan is to ensure that the WWTP (Primary Treatment) is operating efficiently and effectively. The Plan Approval includes specific testing, monitoring, record keeping, and work practice requirements to ensure the Wastewater Treatment Plant (Primary Treatment) is operated properly. Values of monitored parameters are not directly correlated to an emission limit and not appropriate to be included as plan approval conditions. This is documented in the Department's Review Memo on pages 15 through 18.

Similar to the FMP, the WWTP Control Plan is evergreen and will remain outside of the plan approval to allow revisions to be made without modification to the plan approval.

25. **Comment:** DEP should strengthen inlet and outlet sampling requirements to ensure that Shell accurately estimates and reports VOCs and HAPs from the WWTP, DEP should require Shell to estimate emissions based on inlet and outlet sampling data and require shell to report monthly speciated benzene emissions from the WWTP. (931 – 952)

Response: The sampling has been updated in the final plan approval to the inlet of the secondary and tertiary treatment section of the WWTP. Shell has proposed the following sampling and record keeping conditions at the biotreaters' inlet to replace proposed sampling at the settlement drum inlet and DNF #2. This is in supplement to comments Shell submitted dated April 1, 2026, regarding proposed PA-04-00740D Section D, Source ID 505, Conditions #001 and #002. The following conditions are included in the Final Plan Approval.

- The Owner/Operator shall take a wastewater sample from the combined inlet to the biotreaters no less than once per calendar month. Sample(s) shall be analyzed by EPA Method 624.1 Purgeables [Volatile Organic Compounds] by GC/MS and EPA Method 625.1 Base/Neutrals and Acids [Semivolatile Organic Compounds] by GC/MS (or equivalent alternate methods approved by the Department). Analysis shall include benzene, toluene, ethylbenzene, xylenes (BTEX), styrene, and naphthalene at a minimum. Analysis shall be performed by a Pennsylvania accredited laboratory. Results of the analysis shall be incorporated as inputs to emissions calculations for the wastewater treatment plant (secondary & tertiary treatment). The Owner/Operator may request a reduction of the sampling frequency upon written request and approval from the Department.
- The Owner/Operator shall maintain records of biotreater inlet sample analysis results.

Emissions are calculated using USEPA Water9, Version 3 (or similar) currently and will be transitioned to Toxchem going forward as approved in this Plan Approval. Input data includes the flow rate to Biotreaters A/B, the wastewater composition based on sampling and laboratory analysis, and unit dimensions/data provided by Shell's Operations personnel. Shell currently samples the Biotreater A/B inlet in order to input the data into the model for emission calculations and reporting. The Plan Approval will require that the sampling occurs at the specified frequency.

The analytes required in the final Plan Approval condition include speciated HAPs of interest including benzene, toluene, ethylbenzene, xylenes (BTEX), styrene, and naphthalene at a minimum. Records are to be maintained for a minimum of five years and made available to the Department upon request. Annual emissions are also required to be submitted to the Department and include speciated emissions of HAPs (per the Department's Emissions Inventory Reporting Instructions).

26. **Comment:** The commenters requests that PADEP mandate third-party audits of Shell Polymers Monaca to ensure compliance with 40 CFR Part 61 Subpart FF (BWON), citing past inconsistencies and examples of EPA-mandated audits at other facilities. Given Shell's history of non-compliance with Subpart FF – including the failure to accurately calculate total annual benzene in facility waste before April 18, 2023 – DEP should require Shell to conduct a third-party audit to validate Shell's compliance with Subpart FF going forward. (931 – 952)

Response: Shell has corrected previous inconsistencies with BWON compliance, and the Department does not have reason at this time to require third-party audit of the facility. See also response to Comment 22.

In the instances identified for Lima Refining Company in Lima, Ohio and BP Products North America in Whiting, Indiana, EPA required third-party audits to validate that the plants comply with Subpart FF requirements. EPA has not required such audits for SPM, which remains subject to enforceable requirements of 40 CFR Part 61 Subpart FF (BWON) which will be more clearly identified as Source Group Plan Approval Restrictions in Section E in the Final Plan Approval.

Control Technology Analyses

27. **Comment:** Commenters assert that the draft permit is based upon improper NSR analyses and propose requirements that are not stringent enough because they do not reflect LAER, BACT, and BAT. (849, 931 – 952)

Response: Air contamination sources to be located at this facility are subject to BACT for NO₂, CO, PM, PM₁₀ (Plan Approval Reconciliations and WWTP Permanent Controls Project), PM_{2.5} (EMACT Project), and CO₂e; LAER for NO_x, VOC, and PM_{2.5} (Plan Approval Reconciliations and WWTP Permanent Controls Project); and BAT for all air contaminants.³² Review of this plan approval application has shown that the facility will meet these requirements.

The Department's New Source Review analysis is documented beginning on page 47 of the Review Memo. The analysis includes evaluation under the Prevention of Significant Deterioration (PSD) regulations, 40 CFR § 52.21, which have been adopted in their entirety and incorporated by reference in 25 Pa. Code Chapter 127 Subchapter D, and the Department's nonattainment new source review (NNSR) regulations, 25 Pa. Code Chapter 127 Subchapter E. PSD, among other things, requires a best available control technology (BACT) analysis. NNSR applies to non-attainment pollutants and their precursors, ozone (NO_x and VOC), PM_{2.5}, SO₂, and lead which requires evaluation of lowest achievable emission rate (LAER). Additionally, the Department's review includes evaluation of best available technology (BAT) for all pollutants from all new or modified sources under 25 Pa. Code § 127.1 and 25 Pa. Code § 127.12(a)(5).

For NNSR and LAER, the Plan Approval Reconciliations and WWTP Permanent Controls Project were evaluated together as part of the initial SPM construction for ozone (NO_x and VOC) and PM_{2.5} because SPM was estimated to have the potential to emit NO_x, VOC, and PM_{2.5} above the applicable NNSR major facility thresholds of 100 tpy, 50 tpy, and 100 tpy, respectively. A LAER analysis was performed on the new wastewater treatment vessels and was re-evaluated for certain existing sources and pollutants

³² BACT, LAER, and BAT are regulatory acronyms for Best Available Control Technology, Lowest Achievable Emission Rate, and Best Available Technology respectively. Each acronym is in reference to a particular level of regulatory review that is applicable to each air contaminant. Specific definitions of these terms may be found under 40 CFR §52.21(b)(12) for BACT, and 25 Pa. Code §121.1 for LAER and BAT.

in which an emissions increase was proposed. The NNSR evaluation was conducted in accordance with 25 Pa. Code Chapter 127 Subchapter E. *See* Review Memo at page 48.

The EMACT Project will result in a significant net emissions increase of NO_x. It is subject to NNSR and has been evaluated for LAER accordingly. Because the EMACT Project does not result in a significant net emissions increase of VOC, a LAER analysis for VOC was not required.

For PSD and BACT, the Plan Approval Reconciliations and WWTP Permanent Controls Project were evaluated under PSD for CO, NO₂ (NO_x), PM₁₀, and all other regulated PSD pollutants.

The EMACT Project is a major modification subject to PSD for CO, NO_x (NO₂), PM_{2.5}, and GHGs.

The Department's BACT/LAER/BAT summary is included in the Review Memo on pages 62 through 82. The Department has reviewed the comments raised and has concluded that the control technologies analyses conducted were adequate, satisfied the applicable rules and regulations, and these comments are addressed by the Review Memo.

28. **Comment:** The Draft Permit is deficient because it fails to require Flare Gas Recovery (FGR) systems as the Lowest Achievable Emission Rate (LAER) for Volatile Organic Compounds (VOCs) from all facility flares. Because Beaver County is in nonattainment for ozone, NNSR and LAER apply. FGR has been required under various Consent Decrees and implemented at other ethylene facilities, including Dow Freeport and Dow Orange, meaning it is "achieved in practice" and must be mandated here. (931 – 952)

Response: The Department disagrees that the proposed Plan Approval is deficient or that Flare Gas Recovery Systems (FGRS) or FGR constitute LAER for the specific class and category of sources located at SPM. While the Department recognizes that FGR has been successfully implemented at multiple domestic petrochemical complexes, a site-specific analysis demonstrates that FGRS is technically infeasible for the specific configurations and stream compositions at SPM.

Under 25 Pa. Code § 121.1, LAER is defined as the most stringent emission limitation contained in a State Implementation Plan (SIP) or achieved in practice by the "class or category of source." The commenter asserts that because FGR has been deployed at large integrated petroleum refineries and multi-train chemical hubs, it is automatically achieved in practice for SPM.

SPM is a standalone, single-train chemical facility consisting of one Ethane Cracking Unit (ECU) directly integrated with three Polyethylene (PE) manufacturing units. A comprehensive review of the EPA's RACT/BACT/LAER Clearinghouse (RBLC) and federal Consent Decrees confirms that FGRS has not been documented as achieved in practice for standalone polyethylene manufacturing lines, nor has it been integrated into identical single-train configurations. The control devices servicing PE manufacturing units across the industry are not universally required to employ FGRS due to fundamental differences in gas quality and consistency. PE line waste gases (like those from extruder vents, purging, or product degassing) are often episodic, low-pressure, and contain high amounts of nitrogen. Venting streams with high nitrogen content and low flow rates makes recovering them for onsite fuel use or product resale technically infeasible and economically impractical. When FGRS is not feasible, alternative requirements in the federal Consent Decrees include routing the gas to thermal oxidizers that operate with a high combustion efficiency of no less than 99.5%.³³ The CVTO at SPM

³³ [Exxon Mobil Corp Consent Decree](https://www.epa.gov/sites/default/files/2018-06/documents/exxonmobilcorp-cd.pdf) <https://www.epa.gov/sites/default/files/2018-06/documents/exxonmobilcorp-cd.pdf>
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controlling the PE lines is required to be designed and operated with, and has demonstrated a control efficiency of 99.9%.

Additionally, the commenter asserts that the Department's determination was based on an incorrect interpretation of the law by dismissing FGRS due to economic factors. The Department recognizes that under 25 Pa. Code § 121.1 and federal Clean Air Act guidance, economic cost-effectiveness calculations, such as those used in BACT analyses, are excluded from a LAER determination. The Department did not rule out FGRS based on economic costs; rather, the Department's determination is based entirely on technical infeasibility and the physical constraints of the source category. A technology that cannot physically operate under the specific design parameters cannot be considered "achieved in practice" or required as LAER.

The commenters claim that Shell failed to prove the technical infeasibility of fractionally blending recovered waste gas into the ethane feedstock stream. The SPM ECU was designed and manufactured to process high-purity ethane feedstock (>95% ethane and <1% ethylene) imported directly via an ethane pipeline. The unit's downstream fractionation and furnace piping do not have tolerance for the heavy hydrocarbons and highly reactive compounds present in the facility's waste gas streams (such as the C3+ streams containing cyclopentadiene). Introducing these unrefined streams into the primary gas-feed infrastructure introduces a severe operational risk of rapid coking within the furnace tubes and downstream catalyst contamination. The commenter claims that Shell's technical analysis is incomplete because public announcements suggest a "landmark feedstock agreement" to acquire and utilize pyrolysis oil at the Monaca facility, thereby proving the ECU can accommodate alternative feedstocks. The commenters' assertion that SPM has future plans to utilize pyrolysis oil as a feedstock lacks support and is addressed in response to Comment 12.

The commenters point to FGR systems at Dow Freeport and Dow Orange as transferable templates for SPM. However, a site-specific evaluation of SPM's flare headers reveals a fundamentally incompatible stream profile. Unlike the continuous hydrocarbon-rich streams found at diversified oil refineries, the routine and episodic vents routed to SPM's High Pressure (HP) and Low Pressure (LP) flare systems are heavily dominated by inert nitrogen sweep and purge gases. Due to this nitrogen dilution, the combined heating value of these streams falls below the standard engineering design benchmark of 25 MJ/kg required to qualify as a stable, recoverable fuel source. Compressors cannot alter the chemical heat content of a gas; compressing an inert stream provides no beneficial use as a fuel.

The facility's primary fuel consumers—the ECU furnaces and Cogeneration Units—are strictly designed to burn pipeline quality natural gas and specific unit tail gas (hydrogen and methane). Firing heavier hydrocarbons or highly variable, low-Btu nitrogen-diluted streams would cause rapid burner fouling, disrupt flame stability, and invalidate the manufacturer's ultra-low NO_x performance guarantees. Those guarantees are required to meet NO_x LAER limits.

Finally, Shell's site-specific technical analysis indicates that implementing an FGRS for routine baseline gases would create a heat input deficiency at the flares. To comply with federal EMACT and plan approval requirements, SPM's flares must maintain a net heating value in the combustion zone (NHV_{cz}) above 800 Btu/scf for TEGF A and TEGF B and above 500 Btu/scf for the HP Elevated Flare and MPGF. If the baseline hydrocarbon content were extracted from the flare headers via an FGRS, the facility would be forced to purchase and route an additional, equivalent volume of pipeline natural gas directly to the flares to maintain required combustion zone temperatures. Because the VOC emission factor of the flares is higher than that of the process furnaces, this substitution would result in a net increase in total VOC emissions.

Because FGRS has not been achieved in practice for this source category and because its deployment is determined to be technically infeasible, the current configuration represents LAER for VOC emissions. Commenters have not presented any new information that has changed the Department's original decision, and no changes have been made to the Final Plan Approval in response to this comment.

29. **Comment:** Waste Gas Minimization Plans represent LAER for VOCs for all flares at Shell and DEP must require them in the Draft Plan Approval as enforceable permit conditions for the Facility because they also constitute LAER controls. (931 – 952)

Response: The Department acknowledges the comment regarding the relationship between Waste Gas Minimization Plans (WGMPs), Flare Management Plans (FMPs), and Lowest Achievable Emission Rate (LAER) determinations for volatile organic compounds (VOCs).

The Department agrees with the conceptual premise that waste gas minimization represents a facility-wide strategy focused on source reduction and prevention, whereas an FMP specifically targets the minimizing of volumes routed to a flare system. However, the Department disagrees that the Draft Plan Approval lacks enforceable conditions to ensure that LAER controls are used.

LAER for VOC flaring emissions is achieved through a combination of built-in front-end design controls and process optimization to minimize the initial generation of waste gas. The Ethylene Cracking Unit (ECU) features an integrated Off-Spec Sphere designed to hold and recycle clean ethane/ethylene mixtures generated during process upsets or plant start-ups. This storage configuration serves to mitigate flaring by returning these streams into the production cycle rather than sending them to the flare headers as detailed in Shell's FMP submitted to the Department on July 5, 2023. Additionally, the facility's ECU is designed with an advanced process design that allows it to operate at a minimum turndown of 40% feed. This outperforms standard chemical plant crackers, which typically require a minimum throughput of 60%. This expanded flexibility reduces the volume of off-spec gas that must be sent to the flare system during low-load operations.

While the commenter references EPA consent decrees as a justification for adding separate WGMP conditions, the Department's technical evaluation shows that the substantive requirements of those decrees are already incorporated as enforceable conditions. The facility is legally bound through the Plan Approval to comply with federal standards that require minimization activities:

- 40 CFR § 63.670(o): Incorporated by reference, Shell is required to submit and follow a comprehensive flare management plan to minimize flaring during periods of startup, shutdown, and malfunction (SSM).
- Root-Cause Analysis (RCA): Shell is required to conduct mandatory RCAs and implement corrective action analyses for any specific, triggering flaring events to prevent recurrence, fulfilling a primary objective of a WGMP.
- Waste Gas Mapping and Characterization: Enforceable conditions require continuous volumetric and mass flow recording, baseload tracking under NSPS Subpart Ja, and real-time gas composition analysis.

Including a separate, redundant WGMP document as an independent plan approval condition is unnecessary because actions required to reduce emissions are already detailed and enforceable within the plan approval conditions and referenced Federal regulations. Additionally, as stated in the response to Comment 20, the revised FMP will include updated details on waste gas mapping. Commenters have not presented any new information that has changed the Department's original decision, and no changes have been made to the Final Plan Approval in response to this comment.

30. **Comment:** The Draft Permit's emission limit of 0.0075 lb/MMBtu is not LAER for PM_{2.5} from the MPGF; Shell's own analysis showed 0.007 lb/MMBtu has been achieved per EPA's RBL Database. (931 – 952)

Response: LAER and BACT for PM_{2.5} from the MPGF has been determined to be good combustion practices (i.e., flare designed and operated in accordance with 40 CFR Part 63 Subparts CC/YY flare control device design, operating, and monitoring requirements) and proper operation and maintenance including operating in accordance with an approved flare minimization plan. Good combustion practices will include maximizing the combustion of VOC waste gas streams and minimizing the products of incomplete combustion.

The primary objective is proper design and operation of the flare to achieve the VOC and HAP destruction. PM_{2.5} emissions are conservatively based on AP-42, Table 1.4-2; filterable plus condensable emission factors as a reasonable estimation that is not set artificially low.

Because actual PM_{2.5} emissions can vary based on the site-specific gas stream combusted by flares and the formation of condensable particulate matter, LAER for PM_{2.5} is not purely a numeric emission limit and cannot be universally applied to all similar sources in this source category. The control method of the flares identified in the RBL for the flare with a limit of 0.007 lb/MMBtu is good combustion practices including establishment of flare minimization practices.

The commenter specifies that Shell's Attachment 2-1 to their Fifth Response to Department's Technical Deficiency Letter confirms that at least three flares at the Indorama Lake Charles Facility are already achieving this standard, specifically: Flare No. 1 – 008, Pyrolysis Gasoline Tank Flare – 009, and vessel evacuation flare – 018. The description of these flares alone indicates they are used in a different service than the identified flare at SPM and are not comparable for LAER purposes.

31. **Comment:** The Draft Permit's emission limit of 0.0075 lb/MMBtu is not LAER for PM_{2.5} from the TEGF A, TEGF B, and HP Elevated Flare; Shell's own analysis showed 0.007 lb/MMBtu has been achieved per EPA's RBL Database. (931 – 952)

Response: See response to Comment 30.

32. **Comment:** 99% Control Efficiency Is LAER for Recovered Oil Truck Loadout and DEP Authorizing 95% Violates PSD Requirements. (931 – 952)

Response: Shell originally proposed to control the Recovered Oil Truck Loadout by capturing vapors and routing them to the SCTO with 99% control and the requirement was included as a plan approval condition. This was never done; the Recovered Oil Truck Loadout has been uncontrolled since commencing operation. Violation of this plan approval requirement will be handled as an enforcement matter.

The originally proposed control strategy has not been achieved in practice. The new proposal of carbon absorption with at least 95% control has been determined to be LAER in this plan approval action for this source. See pages 69 through 70 of the Department's Review Memo.

33. **Comment:** Various pieces of wastewater treatment equipment were not analyzed for LAER for VOCs, leaving out possible control for wastewater tanks and wastewater sumps. The biotreater aeration tanks,

secondary clarifiers, biosludge holding tanks, centrifuge, sand filter, centrate/sand filter backwash sump, and treated effluent sump are among the units that were not analyzed. (931 – 952)

Response: The identified equipment is existing equipment in the secondary and tertiary treatment section of the Wastewater Treatment Plant. As stated in the Review Memo, due to the relatively low concentration of VOC contained in the wastewater in this portion of the plant, only a small amount of VOC and HAP is emitted. The Department has determined that using biological treatment for secondary wastewater treatment represents LAER for the VOC emissions from wastewater treatment equipment that follows the primary wastewater treatment vessels in the Wastewater Treatment Plant.

The emissions from secondary and tertiary treatment vessels will benefit from the permanent WWTP Controls Project as more HAP and VOC will be removed from the wastewater prior to entering this section of the process.

Fenceline Monitoring

34. **Comment:** Fenceline monitoring should be required for benzene and additional constituents of potential concern to alert and protect local residents from dangerous releases beyond the facility boundary. Commenters note that emissions from certain sources are in a relatively uncontrolled manner, when compared to a flare, at a low elevation and at low velocity. (850, 855, 856, 859, 861, 864, 865, 867, 869, 877, 879, 881, 882, 883, 931 – 952)

Response: Fenceline monitoring is not federally mandated for ethylene production plants regulated solely under the Ethylene Production MACT (40 CFR Part 63 Subpart YY) and not subject to the National Emission Standards for Hazardous Air Pollutants that apply to the SOCOMI (commonly known as the Hazardous Organic NESHAP or “HON”).

The comprehensive inhalation risk assessment demonstrated that both acute and chronic ambient concentrations at and beyond the property boundary are below established health-based risk thresholds. DEP thoroughly reviewed Shell’s inhalation risk assessment and concluded that the ELCR, chronic noncancer risk, and acute noncancer risk would not exceed DEP’s benchmarks.

Shell is required to employ a leak detection and repair (LDAR) program that goes beyond traditional infrequent monitoring and inspection methods. Plan Approval PA-04-00740D requires that the entire facility implement a LAER-level LDAR program to be consistent with 40 CFR Part 63 Subpart UU with additional measures such as lower leak thresholds and expanded organic compound applicability.

Beyond the LDAR program, employees are required to conduct observations of all air contamination sources, air cleaning devices, stacks, fugitive emission areas, and process equipment at a minimum of once per shift while the Facility is in operation for the presence of visible stack emissions, fugitive emissions, and potentially objectionable odors. Employees will be required to undergo a training program to make these observations.

Additionally, in accordance with 40 CFR § 52.21(k), Shell’s source impact analyses demonstrate that the net emissions increase due to the EMACT Project would not cause or contribute to air pollution in violation of the health based National Ambient Air Quality Standards (NAAQS) for CO, NO₂, and PM_{2.5}, or the Class II Area and Class I Area PSD increments for NO₂ and PM_{2.5}.

Similar to the findings of previously conducted air quality analyses to support its applications for Plan Approvals 04-00740A and 04-00740C, Shell’s revised source impact analyses demonstrate that the

revised PTE that accounts for the WWTP Permanent Controls Project and Plan Approval Reconciliations, in conjunction with the net emissions increase due to the EMACT Project, would not cause or contribute to air pollution in violation of the NAAQS for CO, NO₂, and PM₁₀, or the Class II Area and Class I Area PSD increments for NO₂ and PM₁₀.

By employing required proactive measures to prevent releases from the facility including a federally enforceable, site-specific LDAR program, facility-wide inspections, and flare management plan in conjunction with demonstrating through a comprehensive risk assessment that off-site public health risks would not exceed DEP's benchmarks and that modeled emissions would not cause or contribute to air pollution in violation of the NAAQS, continuous fenceline monitoring is not considered necessary at this time.

Outside of the Plan Approval requirements, Shell currently conducts bi-weekly passive sampling for chemicals of potential concern, including benzene, 1,3-butadiene, n-hexane, naphthalene, and toluene. Shell has installed Passive Air Monitoring Systems (PAMS) at 20 locations on-site, and four Continuous Air Monitoring Systems (CAMS) on its property. Shell updates and posts their fenceline sampling data on a bi-weekly basis. Residents can access these reports on the Fence Line Monitoring (FLM) Program webpage.³⁴ The program was established as a direct result of a 2017 legal settlement between Shell Chemical Appalachia and environmental advocacy groups (including the Clean Air Council and the Environmental Integrity Project). The program began in March 2022, and it is the Department's understanding that Shell has committed to maintaining the fenceline monitoring program for the operational life of the facility.

Separately, the Department operates several permanent, independent ambient air quality monitoring stations in the vicinity of the plant. Per the Department's website³⁵, "The DEP operates the Commonwealth of Pennsylvania Air Monitoring System (COPAMS) to continuously monitor pollutant levels... The goals of the ambient air monitoring program are to evaluate compliance with national and state ambient air quality standards, provide real-time monitoring of air pollution episodes, develop data for trend analysis, develop and implement air quality regulations and provide information to the public on daily air quality conditions in their area." The following is a list of nearby COPAMS, the distance and direction from SPM, and pollutants monitored at each location:

- Beaver Falls, 9 km North of facility; Ozone, NO₂, PM_{2.5}, PM₁₀
- Beaver Valley, 2 km East; Lead, VOC, Metals
- Brighton Twp, 2.5 km Northwest; Ozone, SO₂
- Ellwood City, 21.5 km North; Lead, Metals
- Florence, 26 km South Southwest; Ozone, SO₂, PM_{2.5}
- Fort McIntosh, 4 km Northeast; Ozone, PM_{2.5}, VOC

35. **Comment:** DEP must require Shell to file Reports on its Leak Detection and Repair program to establish real effort to control and reduce Fugitive emissions which have been detected at the fence line and in the surrounding area. The Permit must state that these reports are reviewable by the public on a timely manner so that they can be aware of what they are being exposed to. This would reduce [the] amount of VOCs getting over the Fence line. (878)

³⁴ [Fence Line Monitoring \(FLM\) Program | About Us: https://www.shell.us/about-us/who-we-are/shell-usa-at-a-glance/projects-and-locations/shell-polymers/fenceline-monitoring-flm-program.html](https://www.shell.us/about-us/who-we-are/shell-usa-at-a-glance/projects-and-locations/shell-polymers/fenceline-monitoring-flm-program.html)

³⁵ [Pollutants Monitoring Sites | Department of Environmental Protection | Commonwealth of Pennsylvania: https://www.pa.gov/agencies/dep/programs-and-services/air/bureau-of-air-quality/pollutant-topics/pollutants-monitoring-sites](https://www.pa.gov/agencies/dep/programs-and-services/air/bureau-of-air-quality/pollutant-topics/pollutants-monitoring-sites)

Response: Plan Approval PA-04-00740D requires that the entire facility implement a LAER-level LDAR program to be consistent with 40 CFR Part 63 Subpart UU with additional measures such as lower leak thresholds and expanded organic compound applicability. Periodic or semi-annual reports are submitted to the Department and the EPA in accordance with 40 CFR 63.1039(b). All records are required to be maintained on site, or at an alternative location acceptable to the Department, and be made available to the Department upon request. Records are verified by the Department or must be made available to the Department to verify. Records and reports available to the Department are also available to the public.

Various Topics

36. **Comment:** Commenters have expressed support for the project primarily due to positive economic impact on the community and the creation of jobs. Conversely, other commenters have argued that the positive economic impact of the facility has not materialized and that economic activity should not impact the issuance of an air quality permit. (848, 862, 865, 867, 868, 886, 887 – 930)

Response: The Pennsylvania Air Pollution Control Act and the federal Clean Air Act (CAA) do not allow the EPA or state permitting agencies to issue or deny an air quality permit based on the general economic impact on a community.

Permitting decisions are strictly governed by whether the proposed facility or modification complies with strict environmental state and Federal standards and required emission limits.

37. **Comment:** Many statements were given during the public hearing and written comments submitted expressing support for the project for reasons including creation of jobs, economic impact on the community, and cleanup of the former zinc plant. (887 – 930)

Response: The Department acknowledges those comments submitted in favor of the project.

38. **Comment:** Commenters have raised concerns over the delay in alerting the public of potentially harmful releases from the facility and that residents need access to real-time information including measured peak exposures that are being released into the air by Shell. (860, 869, 870, 872, 873, 877, 879, 881, 882, 885, 886)

Response: Section C, Condition # 016 of the Plan Approval, requires Shell to report malfunctions to the Department and the County Emergency Management Agency by telephone no later than one hour after discovery if it poses an imminent and substantial danger to public health and safety or the environment. Appropriate responses to these malfunctions would be coordinated between Shell, local emergency services, and the Department as each situation dictates. Additionally, Shell is required to follow up with a written report detailing the emissions from the event, steps taken to limit the duration and quantity of emissions, root cause analysis, and corrective actions taken.

As stated in the Department's Review Memo on pages 28 through 29, The Department recognizes that the potential does exist for unforeseen events or malfunctions that may result in an emergency situation at an industrial site of this scale. Department field staff perform facility-wide compliance inspections and complaint response on a periodic and as-needed basis; however, Shell will in almost all cases be in position as the first identifier of any problems occurring at the facility whether related to air quality or otherwise. Responses to any problems or events at the facility which pose an immediate threat to the public would be coordinated between Shell and local emergency services such as the Center and Potter Townships and Beaver County Emergency Management Agencies as well as the Department's

Environmental Emergency Response Team and the Pennsylvania Emergency Management Agency (PEMA) as necessary.

The Department's Environmental Emergency Response Team is responsible for protecting public health and the environment by responding to and mitigating the effects of environmental emergencies. This includes spills, releases of hazardous materials, fires, and other incidents that threaten the environment or public safety. The program has emergency response team members available to respond on-site whenever there is an immediate threat to the public health, safety, or the environment. The team provides a 24-hour emergency response hotline,³⁶ with on-call duty officers in each regional office and emergency response team members available to respond to emergencies and incidents within DEP's range of experience. An environmental emergency is a situation requiring an immediate response.

Pennsylvania's Emergency Management Services Code, found in Title 35 of the Pennsylvania Consolidated Statutes, establishes the framework for disaster preparedness, response, and recovery within the Commonwealth. It outlines the responsibilities of the Governor, PEMA, and local political subdivisions in managing emergencies and disasters. Title 35 directs and authorizes every political subdivision (i.e. county, city, borough, and townships) to have an emergency management program.

PEMA plays a central role in coordinating emergency response and recovery efforts across the state. PEMA focuses on helping communities and individuals before, during, and after emergencies, including natural disasters, acts of terrorism, and other human-made disasters. This is achieved by assisting counties with emergency operations, providing incident command technical assistance, and managing a state-level multi-agency coordination system.

The Beaver County Emergency Management Coordinator (EMC) operates out of an Emergency Operations Center (EOC) at the Emergency Services Center in Ambridge, PA.³⁷ The EOC is activated in times of disaster and staffed by trained, mostly volunteer personnel, from throughout Beaver County representing various disciplines. Potter Township is served by the Center Township Police Department for its police services. For general emergency management and coordination, the Beaver County Emergency Services is the primary agency, encompassing both 911 dispatch and emergency management functions for both Potter and Center Townships.

Section B Condition #012 of the plan approval requires Shell to meet the requirements of Section 112(r) of the Clean Air Act, 40 CFR Part 68: Chemical Accident Prevention Provisions, Federal Chemical Safety Information, and Site Security and Fuels Regulatory Relief Act. This includes the development and implementation of an accidental release program and Risk Management Plan (RMP) as applicable under those statutes and regulations. Shell submitted their RMP to the EPA on April 6, 2022, establishing the anniversary date of April 6, 2027. Per the EPA's April 25, 2022, completeness review notification letter for Shell's RMP, Shell's RMP must be updated and submitted on or before the anniversary date as required by 40 CFR § 68.190.

Specific to air quality, the Department's Air Quality Monitoring Division (Division) oversees the monitoring of air quality throughout the state to ensure compliance with federal and state standards and protect public health. The Division collects current and maintains historical data on air pollution, conducts investigative sampling to determine the nature and extent of pollutants, initiates emergency control programs, and develops new sampling and analysis techniques.³⁸ The Division operates the

³⁶ <https://www.pa.gov/services/dep/report-an-environmental-emergency-to-the-department-of-environmental-protection>

³⁷ [https://www.beavercountypa.gov/departments/emergency-services/ema-\(emergency-management\)](https://www.beavercountypa.gov/departments/emergency-services/ema-(emergency-management))

³⁸ <https://www.pa.gov/agencies/dep/programs-and-services/air/air-quality-monitoring-division>

Commonwealth of Pennsylvania Air Monitoring System (COPAMS), which continuously monitors pollutants and weather conditions at various locations. This data is used to assess air quality, identify pollution episodes, and inform public awareness.

39. Comment: DEP should explain how they derived the new hexane emissions factor at ECUs.

Commenters reviewed the ECU stack test reports and averaged the hexane emissions rates and emissions factors for each valid run, and, by averaging the results of each valid run, we calculated an emissions factor that differs from the hexane emissions factor that DEP included in the Technical Review Memo (4.07E-04 lb/MMBtu). (931 – 952)

Response: The commenters have not indicated which test data was used or the result of their calculation. The n-hexane emission factor used to calculate potential to emit from the ethane cracking furnaces was based on stack test results. The specific value of 4.07E-04 lb/MMBtu is based on Run 1 of Furnace 6 from testing performed on January 18, 2023. Shell has chosen to use the total hydrocarbon result with a safety factor of 10% ($3.70\text{E-}04 \times 1.1 = 4.07\text{E-}04$). Test Run 1 of Furnace 6 corresponds to the highest valid n-hexane test result of all test runs. The resulting factor of 4.07E-04 lb/MMBtu is higher than the total average of all valid test runs for n-hexane for all furnaces of 1.96E-04 lb/MMBtu.

Table 2: ECU Hexane Testing Summary

Source	Pollutant	Test Date	Run 1	Run 2	Run 3	Average
			lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu
Furnace 1	Hexane	12/22/2022	1.10E-04	7.80E-05	5.40E-05	8.07E-05
Furnace 2	Hexane	2/8/2023	6.50E-05	1.10E-05	5.70E-05	4.43E-05
Furnace 3	Hexane	1/17/2023	4.20E-03	1.40E-04	1.10E-04	1.48E-03
	Hexane	8/22/2023	4.20E-05	4.20E-05	5.10E-05	4.50E-05
Furnace 4	Hexane	1/16/2023	1.40E-04	7.70E-03	2.40E-03	3.41E-03
	Hexane	8/25/2023	5.20E-05	5.10E-05	5.10E-05	5.13E-05
Furnace 5	Hexane	12/21/2022	3.10E-04	3.20E-04	3.50E-04	3.27E-04
Furnace 6	Hexane	1/18/2023	7.10E-04	3.20E-04	1.40E-04	3.90E-04
	THC		3.70E-04	7.80E-04	3.00E-04	4.83E-04
Furnace 7	Hexane	3/3/2023	1.10E-03	5.30E-04	2.00E-04	6.10E-04
	Hexane	7/29/2025	2.75E-04	2.55E-04	3.42E-04	2.91E-04
n-Hexane Average for all Valid Tests						1.96E-04

^a Results highlighted in gray were found to be not valid by the Department's Source Testing Section and subsequent retesting was performed for these units for n-hexane.

Averaging stack test results is insufficient for setting continuous emission limits, as compliance must be maintained at all times. By definition, an average would result in exceedances during half of the time. Therefore, emission limits established from stack testing results incorporate a built-in compliance margin. The derived emission factor has been accepted by the Department for use to calculate n-hexane PTE.

40. Comment: Shell and DEP should not estimate emissions of hazardous air pollutants based on AP-42 emissions factors, which have the lowest quality rating for emissions estimates, at the ECUs and various other sources. (931 – 952)

Response: See response to Comment 9.

41. Comment: Commenter requests the Department require source specific tests or CEMS on all emission sources from Shell, and that those tests be completed in several scenarios and periodically repeated to

account for aging equipment. They emphasize that testing should occur across every potential operational situation, including normal plant functions, startups, shutdowns, malfunctions, violations, and flaring. Other commenters suggest CEMS or equivalent monitoring should be required on all major combustion sources (848, 849, 855, 865, 867, 869, 877)

Response: Shell has received DEP certification of NO_x and CO CEMS on the three Combustion Turbines and seven Ethane Cracking Furnaces at the facility. Emissions data is monitored continuously by Shell on these sources and provided to the Department each calendar quarter. Detailed emission reports are generated and used to ensure that existing permit limits and conditions are met by Shell. Corrective action is taken whenever problems are encountered or violations of the standards occur.

A limited number of pollutants can be continuously monitored, and many may only be measured by a source test during a limited time and duration. It is not possible or practical to source test during upset events, as they are unique and not predictable. They are not indicative of emissions that the source experiences during a majority of their operations, which is most indicative of the effectiveness of emission controls.

The DEP Regional Permit Engineer determines if a DEP certified CEMS is required on a source when crafting a permit. There are a number of factors that go into this decision including technical feasibility, cost, availability of equipment, their applicable state and federal requirements, consistency in requirements amongst like sources, and DEP resource limitations to receive and process information from the CEMS in DEP applications.

Installing and operating a DEP certified CEMS is a resource intensive action which requires large upfront and ongoing expenses in terms of equipment, maintenance, manpower, etc. The Permit Engineer may determine that a continuous monitoring system (CMS) will suffice to meet the intended goal. In such cases, alarms may sound at the facility when a problem occurs so corrective action may be taken.

42. **Comment:** DEP should require annual stack testing at the ECUs to ensure compliance with applicable limits. Commenters acknowledge the CEMS for NO_x and CO but raise concerns that the VOC limit is only verified during a performance test every five years. (931 – 952)

Response: For a gaseous fuel-fired industrial source like an ethylene cracking furnace, an initial stack test combined with 5-year testing intervals, supported by active CEMS, is considered an appropriate monitoring approach. This specific testing cycle relies on a combination of operational stability, continuous surrogate monitoring (e.g. CO for VOC), and low variability. Gaseous fuels (like pipeline-quality natural gas or tail gas) lack the heavy metals, ash, and fluctuating sulfur/nitrogen contents associated with solid fuels (e.g., coal) or liquid fuels (e.g., fuel oil).

CO is widely considered an acceptable surrogate for combustion completeness. If the CO CEMS shows consistently low parts-per-million (ppm) values, the furnace is reasonably assumed to be operating efficiently, and unburned hydrocarbons (VOCs) are being successfully destroyed. Any major malfunction in the furnace's combustion zone would instantly trigger a spike in the CO CEMS, alerting operators to a potential rise in VOCs long before a 5-year test would.

43. **Comment:** Commenters assert that the Draft Permit must not weaken permit requirements for ammonia slip from the Cogeneration Turbine and Ethane Cracker. Commenters acknowledge that monitoring of ammonia slip at each ethane cracking unit has been updated to continuous monitoring using a tunable diode laser ("TDL") and the ammonia slip language has been modified from "shall not exceed 5 ppmvd at 15% O₂" to "shall not exceed 5ppmvd at 15% O₂ **on a daily average.**" [emphasis in original].

Commenters suggest that this proposed change weakens the existing permit requirement without providing any further support beyond “Shell asked us to.” (931 – 952)

Response: Shell has proposed that the condition be revised to specify the averaging period to demonstrate compliance with the ammonia slip emission limitation for the ethane cracking furnaces and cogeneration units. The method of monitoring ammonia slip was previously approved by the Department in a letter from the Department to Shell, *Alternative Measurement Method for Ammonia Slip for Ethane Cracking Furnaces and Cogeneration Units*, dated February 14, 2018.

The averaging period was previously undefined and monitoring to demonstrate compliance was required at a minimum of once each day with provisions to be reduced to weekly. The revised pair of conditions require continuous monitoring to verify compliance with the defined emission limit and memorializes the previously approved monitoring method as an enforceable condition. The Department disagrees that the requirements regarding ammonia slip are weakened.

44. **Comment:** The emission limits are not practically enforceable because the draft permit does not include sufficient monitoring, testing, recordkeeping, or reporting requirements to assure continuous compliance. The Permit must require reporting for all testing, monitoring, and recordkeeping requirements. (931 – 952)

Response: Facility-wide PTE is established in Section C of the plan approval along with short- and long-term limits for individual sources, and the facility must regularly demonstrate compliance with these limits.

These limitations must be Federally enforceable and legally and practically enforceable. The plan approval itself, as well as any applicable laws and regulations, make the requirements Federally enforceable. Practically enforceable means that there are appropriate monitoring, reporting, and/or record keeping requirements that allow the Department, other regulatory agency, or a third party entity to determine compliance with an operating hour restriction, emission limitation, etc. Examples include, but are not limited to, tracking actual emissions on a 12-month rolling basis; maintaining records of the hours of operation of a source; fuel usage; total ethylene and polyethylene production; periodic testing; operation by manufacturer’s specifications such as adjusting the burners as necessary to optimize the flame pattern for the ethane cracking furnaces and stage sequencing of the TEGFs; monitoring process parameters such as gas stream volumetric flow rate, utilizing gas chromatograph (or equivalent monitor), measuring the net heating value of the combustion zone gas, combustion chamber temperature for thermal oxidizers, crucial WWTP parameters; CEMS on the ethane cracking furnaces and cogeneration units; monitoring of fugitive emission components through a leak detection and repair (LDAR) program in accordance with plan approval conditions and Federal regulations; record keeping and reporting requirements; and properly installing and maintaining an air cleaning device, among others.

Testing, monitoring, and recordkeeping demonstrate compliance with plan approval requirements and some records are submitted to the Department, while some are maintained by Shell and required to be made available to the Department upon request by PA-04-00740D, Section C, Condition # 014.

As part of the general performance testing requirements of PA-04-00740D, Section C, Condition # 009, a test report is required to be submitted to the Department for *all* testing and is reviewed by the Department’s Source Testing Section. Specifically, in paragraphs c. and d. of Condition # 009:

c. Pursuant to 40 CFR Part 60.8(a) and 40 CFR Part 63.9(h), a complete test report shall be submitted to the Department no later than 60 calendar days after completion of the on-site testing portion of an emission test program.

d. Pursuant to 40 CFR Part 61.13(f), a complete test report shall be submitted to the Department no later than 31 calendar days after completion of the on-site testing portion of an emission test program.

Furthermore, additional reporting is required for the ethane cracking furnaces and cogeneration units which have Department approved CEMS. Design specifications, performance specifications, performance test procedures, data storage and reporting requirements, quality assurance criteria, and administrative procedures detailed in the Department's Continuous Source Monitoring Manual, Document No. 274-0300-001.

45. **Comment:** Commenters assert that additional plan approval conditions are necessary for the CVTO and SCTO to demonstrate continuous compliance with the required 99.9% destruction removal efficiency (DRE). (931 – 952)

Response: Shell is required by the Plan Approval to operate the CVTO and SCTO at or above the minimum temperature at which at least 99.9% destruction efficiency is guaranteed by the manufacturer or demonstrated during performance testing. The following is a detailed description of the applicable regulations and associated monitoring, recordkeeping, and reporting requirements as well as means of compliance for each thermal oxidizer.

Continuous Vent Thermal Oxidizer (CVTO)

The CVTO receives PE1, PE2, and PE3 process vents; vents from the hexene, pyrolysis fuel oil, and light gasoline storage tanks; as well as vapor balancing from hydrocarbon railcar loading and unloading activities. The emission points described are subject to EMACT (40 CFR Part 63 Subpart YY), MON (40 CFR Part 63 Subpart FFFF), or 40 CFR Part 60 Subpart Kb (hexene storage tanks) requiring the CVTO to adhere to the control device requirements included or referenced by EMACT/MON/Kb for non-flare control devices as well as any included in PA-04-00740A/C (and D once issued). Note that both EMACT and MON refer to the non-flare control device requirements of 40 CFR Part 63 Subpart SS and these are included as Proposed PA-04-00740D Section E Group Name G08.

Each cited regulation and plan approval requires identification of the parameter or parameters monitored to ensure the control device is operated properly and in compliance with destruction removal efficiency (DRE) requirements. In all cases, CVTO combustion chamber temperature is the parameter monitored to ensure compliance with DRE requirements. This is consistent with Proposed PA-04-00740D Section C Source ID 204 Condition #006, 40 CFR §63.985(a) and (c), 40 CFR §63.988(c), and 40 CFR §60.112b(c)(1)(ii).

CVTO combustion chamber temperature is monitored by three thermocouples installed downstream from and in proximity of the CVTO's combustion chamber burners, satisfying the temperature monitoring location requirement of §63.988(c)(1). The thermocouples are designed to monitor and record temperatures from 0°C to 1,300°C with an accuracy of ±1 percent of the temperature being monitored in °C. This satisfies the definition of a *temperature monitoring device* per §63.981. Values are measured continuously and recorded each minute. This satisfies the definition of a *continuous record* per §63.981. The operating range, or operating limitation, of the temperature monitoring parameter was initially set at a minimum of 870°C when waste gas is present per the manufacturer's design. This was

revised to a minimum of 850.32°C per the results of DRE compliance testing completed on May 21, 2024. This is consistent with Proposed PA-04-00740D Section D Source ID 204 Condition # 010. There is no maximum temperature limit for DRE, however high temperature value CVTO trip limits are in place to protect equipment internals.

Compliance for the CVTO is ensured through establishment of a minimum temperature setpoint above the minimum value for DRE compliance. Automated controls adjust fuel gas rate to maintain temperature above the minimum and within the design operating window of the CVTO. Temperature is also monitored by Operations in the Central Control Building. Multiple low and high value alarms on the 590TY406 temperature reading are in place to enable operator awareness and manual intervention as needed for any deviations from the design operating window. Compliance with the established minimum temperature is demonstrated on a daily average. Per §63.998(b)(6)(i), “For the purposes of this section, an excursion means that the daily average value of monitoring data for a parameter is greater than the maximum, or less than the minimum established value...”

Records for the CVTO are maintained per Proposed PA-04-00740D Section E Group Name G08 Condition # 003 and 40 CFR §63.998, and Proposed PA-04-00740D Section D Source ID 404 “Storage Tanks (Hexene)” Condition # 003 and 40 CFR §60.115b(c). These include the temperature values at a 15-minute (to meet the definition of continuous records), 1-hour, and daily compliance average basis. These also include any excluded data for periods of monitoring system breakdown, repairs, preventative maintenance, calibration checks, zero or high adjustments, non-operation of the emissions source(s), and isolation and diversion to the MPGF secondary control device. Finally, these also include any cause of deviations from the daily compliance average and corrective actions taken.

Reporting for the CVTO is performed per Proposed PA-04-00740D Section E Group Name G08 Condition # 004 and 40 CFR §63.999, and Proposed PA-04-00740D Section D Source ID 404 “Storage Tanks (Hexene)” Condition # 003 and 40 CFR §60.115b. This includes reporting of performance testing results and then compliance status for the CVTO combustion zone temperature on a semi-annual frequency as part of EMACT/MON/Kb. Reporting is also performed on a semi-annual frequency in Compliance Review Form Section D “Incidents of Deviation” for each plan approval extension application. Reporting will also be included in periodic Title V deviation reporting at the frequency specified in TV-04-00740 after it is issued.

Spent Caustic Thermal Oxidizer (SCTO)

The SCTO receives vapors from the spent caustic oxidation system; tanks in the wastewater treatment area including the Flow Equalization and Oil Removal (FEOR) Tanks, Recovered Oil Tank, and Spent Caustic Storage Tank; and temporary wastewater controls equipment (WEMCO and EC-15 referenced by RFD No. 10277). The emission points described are subject to EMACT/BWON (40 CFR Part 63 Subparts YY/XX and Part 61 Subpart FF) requiring the SCTO to adhere to the control device requirements for an enclosed combustion device as well as any included in PA-04-00740A/C (and D once issued). Note that EMACT refers waste streams to 40 CFR Part 63 Subpart XX which then refers to 40 CFR Part 61 Subpart FF and these are included in Proposed PA-04-00740D Section C and Section E Group Name G06.

The BWON cited regulation and plan approvals requires identification of the parameter or parameters monitored to ensure the control device is operated properly and in compliance with destruction removal efficiency (DRE) requirements. In all cases, SCTO combustion chamber temperature is the parameter monitored to ensure compliance with DRE requirements. This is consistent with Proposed PA-04-00740D Section C Source ID 206 Condition # 006, 40 CFR §63.985(c), and 40 CFR §61.354(c).

SCTO combustion chamber temperature is monitored by three thermocouples installed downstream from and in proximity of the SCTO's combustion chamber burners. The thermocouples are designed to monitor and record temperatures from 0°C to 1,300°C with an accuracy of ±1 percent of the temperature being monitored in °C. Values are measured continuously and recorded each minute. This satisfies the temperature monitoring location, accuracy, and continuous recorder requirements of §61.354(c)(1). The operating range, or operating limitation, of the temperature monitoring parameter is currently set at a minimum of 850°C when waste gas is present per the manufacturer's design. This is consistent with Proposed PA-04-00740D Section D Source ID 206 Condition # 009. There is no maximum temperature limit for DRE, however high temperature value SCTO trip limits are in place to protect equipment internals.

Compliance for the SCTO is ensured through establishment of a minimum temperature setpoint above the minimum value for DRE compliance. Automated controls adjust fuel gas rate to maintain temperature above the minimum and within the design operating window of the SCTO. Temperature is also monitored by Operations in the Central Control Building. Multiple low and high value alarms on the 535TY301 temperature reading are in place to enable operator awareness and manual intervention as needed for any deviations from the design operating window. Compliance with the established minimum temperature is demonstrated on a 3-hour average. Per §61.357(d)(7)(iv)(A), "...the owner or operator shall submit a report quarterly to the Administrator that includes: For a control device monitored in accordance with § 61.354(c) of this subpart... Each 3-hour period of operation during which the average temperature of the gas stream in the combustion zone of a thermal vapor incinerator, as measured by the temperature monitoring device, is more than 28°C (50°F) below the design combustion zone temperature"

Records for the SCTO are maintained per Proposed PA-04-00740D Section C Condition # 015 and 40 CFR §61.356. These include the temperature values on a continuous (at least one value every 15 minutes), 1-hour, and 3-hour compliance average basis. These also include any excluded data for periods of monitoring system downtime, non-operation of the emissions source(s), and SCTO downtime. Finally, these also include any cause of deviations from the 3-hour compliance average and corrective actions taken.

Reporting for the SCTO is performed per Proposed PA-04-00740D Section C Condition #0 22 and 40 CFR §61.357. This includes compliance status for the SCTO combustion zone temperature on a quarterly frequency as part of EMAX/BWON. Reporting is also performed on a semi-annual frequency in Compliance Review Form Section D "Incidents of Deviation" for each plan approval extension application. Reporting will also be included in periodic Title V deviation reporting at the frequency specified in TV-04-00740 after it is issued.

46. **Comment:** DEP needs to require Shell to confirm that the capacity of the two Thermal Oxidizers is able handle any increase in demand due to changes in operations. (878)

Response: The CVTO heat input was revised to 181.0 MMBtu/hr on an annual average basis for annual PTE. The basis for this change is process knowledge and engineering review of design vent flow rate maximums from PE1 and PE2 High Pressure Accumulator Vents. This resulted in higher flow rates than the original basis. Additionally, PE1 and PE2 can produce multiple different grades of polyethylene. The highest hydrocarbon percentage from any grade expected to be run has been applied to the flow rates. There was no physical change made to the CVTO to accommodate higher firing rates.

The SCTO heat input was revised from 10.7 MMBtu/hr to 11.7 MMBtu/hr on an annual average basis for annual PTE. The basis for this change is to include the additional amount of supplemental fuel gas that has been estimated to be required to maintain the thermal oxidizer's temperature at a level necessary to ensure the minimum destruction efficiency required and to include the vent streams from the new Wastewater Treatment Vessels that are proposed to be installed in the WWTP in association with the WWTP Permanent Controls Project. No physical change is required to the SCTO to accommodate the potential change in load due to the permanent primary treatment equipment compared to the temporary treatment equipment that currently vents to the SCTO. The burner replacement associated with the SCTO is to replace underperforming burners for the purposes of NOx emissions to meet the LAER limit.

47. **Comment:** Commenters acknowledge that the Plan Approval is replacing the monthly conductivity testing from the Cogeneration Plant Cooling Tower requirement with continuous online conductivity analyzer readings but has expressed concern that the Plan Approval lacks the appropriate recordkeeping or reporting requirements to determine compliance with the 12-month rolling total dissolved solid (TDS) limit. (931 – 952)

Response: The commenters have raised concern over the Cogeneration Plant Cooling Tower, Source ID 104. Because the testing requirement is also proposed to be changed for the Process Cooling Tower, Source ID 203, the Department's response addresses both cooling towers.

The Cogeneration Plant Cooling Tower and Process Cooling Tower are part of separate cooling systems at the facility. Electrical conductivity of the cooling water is measured continuously at the discharge of the recirculation pumps as part of cooling water quality monitoring. Conductivity is managed by changing the amount of blowdown water sent to wastewater treatment and makeup water added to maintain total volume. Measurements are performed by conductivity analyzers with outputs in $\mu\text{S}/\text{cm}$.

Sampling and then testing for TDS is performed periodically. Samples are taken also at the discharge of the cooling water recirculation pumps. Analysis of the cooling water samples has been performed by a 3rd party NELAP-accredited laboratory in Pennsylvania. The most recent analyzed samples were collected from both cooling water systems on November 21, 2022, while the facility was producing ethylene and polyethylene and operating the cogeneration plant. Samples were analyzed by Standard Method (SM) 2540C. This is an equivalent and more recently updated method compared to ASTM D5907-13. (In fact, D5907-13 has already been superseded by D5907-18). SM 2540C-2020 and ASTM D5907-18 are both gravimetric 180° methods for measuring filterable residue (TDS). Both methods are listed side-by-side in USEPA's Table IB—List of Approved Inorganic Test Procedures under 40 CFR Part 136 Guidelines Establishing Test Procedures for the Analysis of Pollutants³⁹. In consideration of this, Shell has requested that Proposed PA-04-00740D cooling tower TDS testing conditions be revised to allow for "(SM 2540C, ASTM D5907, or equivalent approved method)" for TDS testing.

Measured conductivity and TDS test results are correlated in time using the timestamp of the continuous conductivity measurement documented by the facility's PI historian and the date and time the sample was taken as documented in the chain of custody for the sample(s). A correlation factor is derived to allow for subsequent calculation of TDS per the formula below:

$$\text{TDS (mg/L)} = k \times \text{EC } (\mu\text{S}/\text{cm})$$

Where:

³⁹ eCFR :: 40 CFR Part 136 -- Guidelines Establishing Test Procedures for the Analysis of Pollutants:

<https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-136#136.3>

TDS = Total dissolved solids (mg/L)
k = Correlation Factor ((mg/L)/(μS/cm))
EC = Electrical conductivity (μS/cm)

The correlation factor “k” is maintained as a running average of all individual calculated factors. These are currently k = 0.64 for the cogeneration plant cooling water and k = 0.76 for the process cooling water, and are typical values for TDS as a fraction of measured conductivity in water. Calculated TDS is then used in monthly emissions of PM from each cooling tower and demonstrating compliance with monthly 12-month TDS limit of 2,000 ppm for each cooling tower. Emission calculations are consistent with the maintained “Air Emissions Inventory Protocol” and periodically provided to PADEP with monthly emissions.

Records maintained for each cooling tower include TDS testing results, continuous measured conductivity, conductivity to TDS correlation calculations, continuous calculated TDS values, monthly 12-month TDS averages, and cooling tower PM emissions. These records are consistent with and necessary to perform cooling tower PM emission calculations and to show compliance with Proposed PA-04-00740D Section D Source ID 104 Condition #001 and Source ID 203 Condition #001 TDS limits.

Reporting for both cooling towers’ TDS-dependent emissions is performed monthly to the Department via email and annually via AES*Online. This is consistent with existing agreements and Proposed PA-04-00740D Section C Condition #019. Any deviations of the monthly 12-month rolling average TDS limit would be reported on a semi-annual frequency in Compliance Review Form Section D “Incidents of Deviation” for each plan approval extension application. Reporting will also be included in periodic Title V deviation reporting at the frequency specified in TV-04-00740 after it is issued.

48. **Comment:** The March 19, 2026, Public Meeting violated the spirit and purpose of DEP’s Environmental Justice Policy by depriving residents of meaningful participation. (849, 879, 886, 931 – 952)

The Department appreciates the suggestions for improving public meetings. The Department and the Office of Environmental Justice acknowledge the concerns in this comment and will take them into consideration for future events. Enhanced Public Participation is conducted in a way that is consistent with other DEP policies, such as Policy on Public Participation in the Permit Review Process (Document Number 012-0900-003).

49. **Comment:** The proposed air quality plan approval includes an allowance to assign zero values to residual VOC emissions for several steps in the production process for Source ID 301, Polyethylene Pellet Material Storage/Handling/Loadout. This presents a potential loophole for the source to be monitored inappropriately and ultimately for the mischaracterization of the source's emissions. While the original permit required testing at least once per calendar month, there is a provision in the proposed approval that would allow the applicant to request a reduction in that testing frequency. In order to prevent intentional mischaracterization of emissions from this source, the testing frequency should remain as required by the original permit, not reduced. (856)

DEP should require Shell to measure the residual VOC of the PE pellets and not to assume that they are Zero, thus again reducing the overall VOC emissions from the Plant. (878)

Response: Assigning the residual VOC as zero assumes all VOC is emitted onsite and represents worst-case scenario. These emissions are required to be accounted for in the facility-wide emissions and reported to the Department. The provisions of the plan approval allow for Shell to sample and test the pellets to demonstrate that the amount of VOC retained in the pellets is less than zero, to more accurately estimate the on-site emissions. Otherwise, PTE and actual emissions from this source are calculated assuming 100% of the VOC contained in the pellets is emitted. Requiring testing of the residual VOC in the pellets would not reduce actual emissions from the facility.

Frequency of testing can only be reduced after review and written approval by the Department after Shell thoroughly justifies the reduction.

50. **Comment:** DEP should not delay approving or denying a Title V Permit for the Facility due to Shell's application for major modifications in this Draft Permit. (931 – 952)

Response: The Title V application for the facility is being reviewed concurrently and independently of PA-04-00740D and the final disposition is not reliant on PA-04-00740D.

51. **Comment:** The commenter has requested clarifications on the following:

- 1- Specifying safe levels of measured contaminant quantities, or specifying other actions that would violate this requirement.
- 2- Defining how the DEP determines whether a requirement is being met or violated, such as what data is used, what the source of it is (Shell, DEP), and how frequently it is reviewed by the DEP.
- 3- Understanding how the DEP will address violations, monitor corrective action taken by Shell when violations occur, and determine how effective it is.
- 4- Clarifying the role and authority of the DEP in revoking the Permit, and understanding if there are other actions the DEP is authorized to take.
- 5- Clarifying what circumstances would require the DEP to take enforcement action.

A Risk Management Plan is a great tool. For effective Risk Management, proper training is imperative. Reviewing Shell's personnel training program, and documenting how the Risk Management plan gets integrated into Beaver County's emergency planning, training and response is critical. Understanding Shell's timeline for preparation and submission of this plan, the DEP review timeline, and when it would be available to the public would be immensely helpful. (869)

Response: Applicable regulations and established permit limits specify the level of emissions considered acceptable. These requirements are verified by the Department on a case-by-case basis through reviewing submitted reports, stack test results, and monitoring records; conducting routine and incident response inspections; and responding to complaints to list a few ways in which this is conducted. If violations have occurred, the Department has established processes for investigation and enforcement, including NOVs, orders, penalties, or compliance schedules, where warranted, to bring a facility into compliance. The Department uses enforcement discretion in all instances.

Revoking a permit is an extreme enforcement tool that the Department has no reason to hypothesize over. By regulation, per 25 Pa. Code § 127.422,

The Department will deny or refuse to revise or renew an operating permit to a source to which one or more of the following applies:

- (1) The Department has determined it is likely to cause air pollution or to violate the act, the Clean Air Act or the regulations thereunder applicable to the source.
- (2) In the design of the source, provision is not made for adequate verification of compliance, including source testing or alternative means to verify compliance.
- (3) The EPA has notified the Department in writing that the permit is not in compliance with the requirements of the Clean Air Act or the regulations thereunder.
- (4) The applicant has constructed, installed, modified or operated an air contamination source or installed air pollution control equipment or devices on the source contrary to the plans and specifications approved by the Department.
- (5) The applicant or a related party has a violation or lack of intention or ability to comply that is listed on the compliance docket.

The Department's role in this permitting action is limited to evaluating whether the air contamination sources and associated air cleaning devices comply with applicable State and Federal air quality regulations. Permit decisions are based on technical, legal, and regulatory criteria—not on generalized concerns about a company's broader operations or unrelated incidents to the permitting action under review. Past violations do not automatically preclude permitting approval if the applicant demonstrates that the equipment meets all applicable standards.

Section B Condition #012 of the plan approval requires Shell to meet the requirements of Section 112(r) of the Clean Air Act, 40 CFR Part 68: Chemical Accident Prevention Provisions, Federal Chemical Safety Information, and Site Security and Fuels Regulatory Relief Act. This includes the development and implementation of an accidental release program and Risk Management Plan (RMP) as applicable under those statutes and regulations. Shell submitted their RMP to the EPA on April 6, 2022, establishing the anniversary date of April 6, 2027. Per the EPA's April 25, 2022, completeness review notification letter for Shell's RMP, Shell's RMP must be updated and submitted on or before the anniversary date as required by 40 CFR § 68.190.

See also Responses to Comments No. 2 and No. 5.

Article 1 Section 27

- 52. Comment:** Issuance of the Draft Permit Without the Changes Set Forth in these Comments Would Abrogate DEP's Duties Under Pennsylvania's Environmental Rights Amendment. Article I, Section 27 of the Constitution of the Commonwealth of Pennsylvania, known as the Environmental Rights Amendment (or "ERA"), protects the rights of the people and imposes a constitutional duty on the Commonwealth to conserve and maintain natural resources:

The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.⁴⁰

⁴⁰ Pa. Const. Art. I, § 27.

As an agency of the Commonwealth, DEP is bound as trustee by Article I, Section 27 of the Pennsylvania Constitution.⁴¹ “[T]he Commonwealth has a duty to prohibit the degradation, diminution, and depletion of our public natural resources, whether these harms might result from direct state action or from the actions of private parties.”⁴² The language of the Environmental ERA, its well-documented legislative history, and precedent leave no doubt that ambient air is a public natural resource within the text and meaning of the ERA.⁴³

DEP has a duty as trustee to consider this Draft Plan Approval and the significant increases in emissions of many harmful pollutants it proposes to generate in light of its obligations to conserve and maintain natural resources and ensure the people’s right to clean air in the ERA. When DEP exercises its discretion in “evaluat[ing] a permit . . . application, decid[ing] how to act on that application, and decid[ing] what permit conditions and . . . pollution control technologies[] that the operation would be subject to,” Article I, Section 27 directly bears on that exercise.⁴⁴

This Facility is not producing electricity necessary but is producing plastic, which creates pollution at every stage of its lifecycle. Shell has not demonstrated a need for this facility to be modified to increase emissions of several pollutants nor justified why continued production of plastic nurdles at Shell at the proposed rates outweighs the risks to the nearby environmental justice community that is already disproportionately bearing environmental burdens. DEP, as trustee, should limit air pollution from the Facility to the maximum extent possible, including by not approving the Draft Plan Approval without ensuring all the changes requested in these Comments are incorporated into the final permit. (Commenters 931 – 952)

53. **Comment:** Pennsylvania law imposes an affirmative duty on DEP to protect public health, safety, and the environment. The Pennsylvania Air Pollution Control Act and the Clean Streams Law require the Department to prevent pollution and enforce compliance.

In addition, Article I, Section 27 of the Pennsylvania Constitution guarantees the people the right to clean air and pure water and establishes a fiduciary duty on the Commonwealth to conserve and maintain these resources for present and future generations.

The Pennsylvania Supreme Court, in *Pennsylvania Environmental Defense Foundation v. Commonwealth* (2017), reaffirmed this obligation.

Expanding allowable emissions at a facility with a documented pattern of violations is difficult to reconcile with these legal responsibilities. . . .

This proposal asks the public to accept increased environmental and health risk from a facility that has not demonstrated the ability to operate within its existing limits and has not delivered the economic benefits used to justify its approval.

That is not a reasonable or defensible position.

If this facility is to continue operating, it should do so under stricter—not more permissive—conditions, with demonstrated compliance and full accountability.

⁴¹ See *Pa. Env’t Def. Found. v. Commw.* (“*PEDF I*”), 161 A.3d 911, 931 n.23 (Pa. 2017).

⁴² *PEDF II*, 161 A.3d at 933 (citing *Robinson Twp. v. Commonwealth*, 83 A.3d 901, 957 (Pa. 2013) (plurality opinion)).

⁴³ See, e.g., *Robinson Twp.*, 83 A.3d at 955 (Pa. 2013).

⁴⁴ *Montgomery Twp. Friends of Family Farms v. DEP*, No. 2020- 082-L (Pa. EHB) (Opinion and Order on Motion in Limine issued July 3, 2024).

Without clear, evidence-based justification grounded in performance, there is no basis for expanding emissions limits at this site. (854)

54. **Comment:** The Department of Environmental Protection's mission is to protect Pennsylvania's air, land, and water resources and to provide for the health and safety of its residents and visitors, consistent with the rights and duties established under the Environmental Rights Amendment (Article 1, Section 27 of the Pennsylvania Constitution). We will work as partners with individuals, organizations, governments, and businesses to conserve and restore our natural resources and to address all current and future environmental challenges including climate change and environmental justice.

There is nothing in your mission statement that says you will support economic expansion and development. Your mission is to protect Pennsylvania's air, land, and water and to provide for the health and safety of its residents. The DEP is an environmental arm of the state government. Shell is polluting PA air. They must be stopped NOW. NO to shell, NO to this permit. NO to any permit. (858)

Response to Comments 52 – 54: DEP agrees that ambient air is a public natural resource, and that the agency's review of these applications and final actions must also comport with Article I, Section 27 of the Pennsylvania Constitution.

DEP has considered the comments provided on the draft Plan Approval and has made changes in response, as appropriate. Significant statutory and regulatory requirements have been established to protect the Commonwealth's air quality consistent with the requirements of Article I, Section 27. DEP is satisfied that the Shell air quality plan approval application meets these applicable statutory and regulatory requirements and is protective of human and environmental health. Compliance with the constitution, statute and regulations is shown by, among other things, the plan approval application, the iterative review undertaken by the Department as described in the review memoranda, special conditions of the plan approval, and consideration of public comments.

DEP is satisfied that the proposed project will not cause unreasonable degradation because Shell has demonstrated that it:

- (1) Will not cause or contribute to NAAQS violations;
- (2) Nonattainment pollutants (NOx) are offset;
- (3) The risk assessment shows that cancer and non-cancer risk are below benchmarks;
- (4) The facility's potential to emit hazardous air pollutants and volatile organic compounds decreases; and
- (5) Compliance with EMAX will ensure the flares are operated so that VOC and HAP destruction efficiency will be achieved.

Further, DEP Air Quality reviewing staff have coordinated internally with the Clean Water Program and Environmental Cleanup and Brownfields Program, as well as with other local Article I, Section 27 trustees, including Potter Townships, Center Township, and Beaver County who raised no concerns to the Department regarding this plan approval. Additionally, the Department coordinated with the EPA, the Federal Land Managers of the US National Park Service and Forest Service, Ohio Environmental Protection Agency, West Virginia Department of Environmental Protection, and Maryland Department of the Environment.

The facility is located within an Environmental Justice Area, and enhanced public participation was conducted in accordance with the Department’s Environmental Justice Policy which included a public meeting and public hearing.

As part of DEP’s review, Shell’s compliance status was also carefully evaluated. There are currently no ongoing unresolved environmental regulatory violations that have not been addressed or are not in the process of being addressed to the satisfaction of DEP.

DEP has not however, been authorized by the Pennsylvania General Assembly to judge whether or not there is a “need” for Shell’s proposed continued production of plastic nurdles. Further, the courts have made clear that the peoples’ rights and the Commonwealth’s obligations under Article I, Section 27, must be balanced against other constitutional rights, which do allow for economic development. This plan approval’s purpose, however, is not increasing Shell’s production of polyethylene. The primary drivers are complying with federal requirements to ensure flare effectiveness, improving the wastewater plant’s effectiveness and control, and reexamining emissions using actual data. No new polyethylene manufacturing equipment is authorized by this plan approval.

Tank and Throughput Capacities

55. **Comment:** Commenters have requested that the DEP confirm whether the increases in tank sizes are warranted and underwent NSR analyses as a major modification. Commenters have provided the following tables showing proposed changes including increasing throughput for several processes and find it unclear if it is the reason for increases in tank sizes in Plan Approval D. (856, 931 – 952)

Table 3: Changes in Permitted Throughput in metric tons per year

System (metric tpy)	Plan Approval C	Plan Approval D	% difference
Ethylene manufacturing line	1,500,000	1,763,000	18%
Gas phase polyethylene manufacturing line (1)	550,000	605,000	10%
Gas phase polyethylene manufacturing line (2)	550,000	605,000	10%
Slurry polyethylene manufacturing line	500,000	550,000	10%

Table 4: Change in Permitted Tank Size

Source ID	Condition	Source Description	Initial Size (gallons)	Permit D Size (gallon)	Change In Size (gallons)	% Increase
403	#30 bullet 18	One light gasoline	85,856	152,000	66,144	77.04%
404	#30 bullet 18	Two hexene storage tanks	607,596	802,000	194,404	32.00%
407	#30 bullet 19	Two pyrolysis fuel oil storage tanks	85,856	127,000	41,144	47.92%
	#30 bullet 20	Misc storage tanks, diesel fuel	18,000	1,849	-16,151	-89.73%

Response: The changes identified by the commenters appear in Section C, Condition # 034 of the proposed Plan Approval in the list of air contamination sources and air cleaning devices authorized to be installed at the Facility under this Plan Approval. The throughputs and capacities listed in this condition are for informational purposes and not plan approval limits.

The throughputs of the ethylene and polyethylene manufacturing lines, shown in the Plan Approval C column in Table 2 above, are the design throughputs originally proposed by Shell and carried over into PA-04-00740C which was issued on February 18, 2021, before the operational commencement dates of the ethylene manufacturing line (September 7, 2022, feed into ECU) and polyethylene manufacturing lines⁴⁵.

Overall, no changes to plant equipment (e.g., new equipment, upgrades to compressors, etc.) were made that resulted in an increase in plant throughput. Numerous factors can contribute to estimating the annual capacity of an ethylene and polyethylene manufacturing facility like SPM during design compared to as-built conditions. At SPM, initial ethylene design capacity accounted for estimated equipment reliability and downtime over a long-projected timeframe, the expected frequency and duration of de-coking of the furnaces, and the estimated ethane to ethylene conversion percentage. Actual operational data has shown higher annual throughput than originally estimated based on these and other factors. Additionally, for polyethylene, different grades have different production rates and the frequency of switching between grades (and downtime during the switch) affects the predicted annual production.

The ethylene production rate referenced in the condition more closely matches the as-built ethylene production rate capability of the ethylene manufacturing line. Similarly, the polyethylene production rate referenced in the condition more closely matches the as-built total polyethylene production rate capability of the two (2) gas phase polyethylene manufacturing lines and the liquid phase slurry polyethylene manufacturing line.

Regarding the storage tank capacities, Shell did not modify or replace any of the listed tanks after initial installation. For example, the Aboveground Storage Tank Inspection Summary form submitted by Shell to the Department's Environmental Cleanup and Brownfields (ECUP) Section, completion of the initial inspection of the hexene tank (DEP ECUP Tank ID 072) was performed on August 23, 2021, and indicates a capacity of 802,026 gallons. The storage tank capacities referenced in the condition more closely match the as-built capacities of the storage tanks. Additional storage capacity was updated during development of the final design to allow greater operational flexibility prior to receiving material (i.e., hexene) or loading of materials into railcars to be transported offsite (i.e. light gasoline and pyrolysis fuel oil).

The miscellaneous diesel fuel storage tank capacities more closely match the as-built capacities of the storage tanks and reflect the capacities authorized under RFD 8799 on October 27, 2020.

Regarding NSR analysis, the tanks were evaluated under the original review of the proposed facility and included LAER and BAT analysis to minimize and/or control VOC and HAP emissions. The one (1) light gasoline and two (2) hexene storage tanks are controlled by IFR and vapor capture routed to the CVTO Header System or MPGF CVTO Trip Header. The two (2) pyrolysis fuel oil storage tanks are controlled by vapor capture routed to the CVTO Header System or MPGF CVTO Trip Header. Any

⁴⁵ PE1 Unit commissioned on October 1, 2022. PE2 Unit commissioned on November 1, 2022. PE3 Unit initially attempted commissioning November 21, 2022, but experienced equipment design deficiencies and was shut down since March 25, 2023, following limited commissioning attempts. PE3 Unit was re-commissioned and produced polyethylene on February 23, 2024.

changes to tank capacities or process throughput did not trigger additional requirements, and all sources were evaluated under all applicable regulatory requirements.

Additional Comments by Section

56. **Comment:** Commenters have suggested changes to Section B of the plan approval including cross-referencing Source IDs to relevant Group Numbers and listing all applicable regulatory requirements in Section B. (931 – 952)

Response: Section B, General Plan Approval Requirements, is standard boiler plate for all plan approvals and any modifications would need to be made on a state-wide basis by the Department's Central Office Bureau of Air Quality in Harrisburg. Additionally, because Section B is General Plan Approval Requirements, it is not the appropriate section to list site specific requirements. Those requirements are in Section C, Site Level Plan Approval Requirements.

57. **Comment:** DEP should require Shell to submit a WWTP Control plan for review and approval and incorporate the elements of the approved Control Plan, including monitoring, recordkeeping, and reporting requirements, as enforceable conditions in the Plan Approval. (931 – 952)

Response: The WWTP Control Plan will be required to be submitted to the Department and followed by Shell, similar to the procedures for the FMP. The information to be included in the WWTP Control Plan are operational procedures to be followed to ensure the WWTP (Primary Treatment) is operating effectively and efficiently to remove HAP and VOC from the wastewater. The thresholds established as normal operating ranges for certain parameters (e.g. minimum temperature, pressure of nitrogen, etc.) are not intended to be limits as Plan Approval or future Title Operating Permit conditions. The WWTP Control Plan will be practically enforceable through the Work Practice Requirements which require the WWTP's primary treatment system to be operated in accordance with the written WWTP Control Plan at all times.

58. **Comment:** Section D, Source ID 201 – DEP should indicate that the ethylene manufacturing line is subject to the entirety of 40 CFR Part 60, Subpart NNN and 40 CFR Part 60, Subpart RRR, not just the provisions of NNN and RRR cited in the Plan Approval. Also, it is incorrect and misleading to state that there are no additional recordkeeping and reporting requirements given that NNN and RRR contain recordkeeping and reporting requirements (*see* 40 CFR § 60.665 and 40 CFR § 60.705). (931 – 952)

Response: Section D, Source ID 201, Condition # 009 appropriately states that “The ethylene manufacturing line distillation units are subject to the requirements of 40 CFR Part 60 Subpart NNN - Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations.”

The appropriate requirements of 40 CFR Part 60, Subpart NNN are included by reference in Section D, including 40 CFR § 60.665 under Reporting Requirements as Condition # 005.

Section D, Source ID 201, Condition # 012 appropriately states that “The ethylene manufacturing line reactor processes are subject to limited requirements of 40 CFR Part 60 Subpart RRR - Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes.”

The appropriate requirements of 40 CFR Part 60, Subpart RRR are included by reference in Section D, including 40 CFR § 60.705 under Reporting Requirements as Condition # 006.

59. **Comment:** Section D, Source ID 202 – The Draft Permit must incorporate all regulatory requirements explicitly or by reference in Section D for Source ID 202. DEP should indicate that the polyethylene manufacturing line is subject to the entirety of 40 CFR Part 60, Subpart DDD, not just the provisions of DDD cited in the Plan Approval. Also, it is incorrect and misleading to state that there are no additional recordkeeping and reporting requirements given that DDD contains recordkeeping and reporting requirements (*see* 40 CFR § 60.565). (931 – 952)

Response: Section D, Source ID 202, Condition # 016 appropriately states that “The polyethylene manufacturing line affected process emissions and equipment leaks are subject to the requirements of 40 CFR Part 60 Subpart DDD - Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Polymer Manufacturing Industry.”

The appropriate requirements of 40 CFR Part 60, Subpart DDD are included by reference in Section D, including 40 CFR §60.565 under Reporting Requirements as Condition # 009.

60. **Comment:** Section D, Source ID 206 – DEP should require Shell to report results of performance testing as well as minimum operating temperature, burner replacement/upgrade, and flow rate records. This would enable regulators and the public to confirm compliance with applicable requirements. (931 – 952)

Response: The plan approval includes appropriate conditions in order for the Department and the public to confirm compliance with all applicable requirements. All testing must be reported to the Department in accordance with Section C, Condition # 009 and all stack test information provided to the Department is available for public review. In addition to Section D, Source ID 206, applicable requirements for the SCTO are included in Section E, Group G08, NESHAP Part 63 Subpart SS including testing, monitoring, recordkeeping, reporting, and work practice requirements.

61. **Comment:** Section D, Source ID 303, Liquid Loadout (Pyrolysis FO, LT Gasoline, PE3 Heavies) – Commenters assert that additional requirements are necessary so that DEP (and Shell) can verify that work practice standards in Section D are met. (931 – 952)

Response: In addition to the closed vent system Work Practice Requirement in Section D, this source is included in Section E, Group G05: NESHAP Part 63 Subpart YY and G10: Liquid Loadout. NESHAP Part 63 Subpart YY requires recordkeeping to verify that vapors are properly captured and routed through a closed vent system. Accordingly, the plan approval ensures work practice standards in Section D are met.

62. **Comment:** Section D: Source, Source ID 304, Liquid Loadout (C3+, Butene, Isopentane, Isobutane, C3 REF) – Commenters assert that additional requirements are necessary so that DEP (and Shell) can verify that work practice standards in Section D are met. (931 – 952)

Response: See response to Comment 61 regarding Source ID 303.

63. **Comment:** Section D, Source ID 305, Liquid Loadout (Blended Pitch) – Commenters assert that additional requirements are necessary so that DEP (and Shell) can verify that work practice standards in Section D are met. (931 – 952)

Response: See response to Comment 61 regarding Source ID 303.

64. **Comment:** Section D, Source ID 401, Storage Tanks (Recovered Oil, Equalization Wastewater) – Commenters assert that additional requirements are necessary so that DEP (and Shell) can verify that work practice standards in Section D are met. (931 – 952)

Response: In addition to the Work Practice Requirement in Section D, this source is included in Section E, Group G05: NESHAP Part 63 Subpart YY, G06: NESHAP Part 63 Subpart XX, G09: NESHAP Part 63 Subpart FFFF (partial), and G11: Storage Tanks which ensure that work practice standards in Section D are met and satisfy the commenters request.

65. **Comment:** Section D, Source ID 402, Storage Tanks (Spent Caustic) – Commenters assert that additional requirements are necessary so that DEP (and Shell) can verify that work practice standards in Section D are met. (931 – 952)

Response: In addition to the Work Practice Requirement in Section D, this source is included in Section E, Group G05: NESHAP Part 63 Subpart YY, G06: NESHAP Part 63 Subpart XX, and G11: Storage Tanks which ensure that work practice standards in Section D are met and satisfy the commenters request.

66. **Comment:** Section D, Source ID 403, Storage Tanks (Light Gasoline) – Commenters assert that additional requirements are necessary so that DEP (and Shell) can verify that work practice standards in Section D are met. (931 – 952)

Response: In addition to the Work Practice Requirement in Section D, this source is included in Section E, Group G05: NESHAP Part 63 Subpart YY and G11: Storage Tanks which ensure that work practice standards in Section D are met and satisfy the commenters request.

67. **Comment:** Section D, Source ID 404, Storage Tanks (Hexane) – Commenters assert that additional requirements are necessary so that DEP (and Shell) can verify that work practice standards in Section D are met. (931 – 952)

Response: Source ID 404 is subject to NSPS Subpart Kb, and the appropriate testing, monitoring, recordkeeping, and reporting requirements are included in the Plan Approval in the section referenced by the commenters which ensure that work practice standards in Section D are met and satisfy the commenters request.

68. **Comment:** Section D, Source ID 405, Storage Tanks (Pressurized) – Commenters assert that additional requirements are necessary so that DEP (and Shell) can verify that work practice standards in Section D are met. (931 – 952)

Response: Venting Source ID 405 to the HP Header System does not occur on a normal basis. Instances when Source ID 405 must be vented to the HP Header System are accounted for in accordance with the HP Header System requirements which ensure that work practice standards in Section D are met and satisfy the commenters request.

69. **Comment:** Source ID 203, 204, 205, 206, 207, 208, 209, 301, 302, and 505, and Group G10 and G11 – DEP should require Shell to report all the data gathered under the work practice, monitoring, and recordkeeping requirements sections for each source. (931 – 952)

Response: It would not be beneficial or necessary for all data gathered under these conditions to be reported to the Department. Because records must be maintained by Shell on site, or at an alternative

location acceptable to the Department, and made available to the Department upon request, the Department has access to the records to carry out its regulatory duties.

70. **Comment:** Section E, G01 Ethane Cracking Furnaces, Condition #10 – Shutdown and hot steam standby periods should have time limits. (931 – 952)

Response: Section E, G01 Ethane Cracking Furnaces, Condition # 010 does not refer to shut down or hot steam standby periods. Emissions during shutdown are limited to 31.1 lb/hr NO_x and during hot steam standby are limited to 6.20 lb/hr NO_x which is accounted for in the PSD modeling and 12-month rolling emissions.

71. **Comment:** Section E, G02 Cogeneration Units – The startup definitions for NO_x are different than CO, which could create compliance problems. DEP should align the criteria for both pollutants. For NO_x, startup is defined as beginning when fuel is introduced into the turbine and ending when the SCR catalyst bed reaches its design operating temperature of 316° C. For CO, startup is defined as beginning upon commencement of ignition and ending when the combustion turbine reaches 55% of its baseload operating level. Moreover, while the Draft Plan Approval limits shutdown events to no more than 30 minutes, it should also limit the time frame associated with startup. (931 – 952)

Response: See the Department's Review Memo on pages 41 and 42 regarding the startup definitions and method of compliance with the defined operating modes. No changes have been made to the Final Plan Approval in response to this comment.

72. **Comment:** Section E, G10 Liquid Loadout – The monitoring requirements of this section (#001) list records Shell is required to keep of any pressure relief events. In addition to what is listed in the draft Plan Approval, PADEP should also require Shell to record the date the corrective action was taken. The work practice requirements of this section (#007) require that Shell conduct pre-transfer leak checks and repair any leaks. PADEP should establish the time frame for leak repair. Most NESHAP standards require the first repair attempt within 5 days of detection and the final repair within 15 days of detection. (931 – 952)

Response: The Department disagrees that additional requirements are necessary. The condition specifically requires records of corrective action taken as a result of any pressure relief event. Regarding pre-transfer leak checks, these noncontinuous loadout activities are not comparable to equipment component LDAR. No changes have been made to the Final Plan Approval in response to this comment.

Shell Comments

Comments on the draft plan approval received from Shell and the Department's response are in the following table. The Department's responses which require additional clarification are noted in the table and included afterwards.

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department’s Response
A. Plan Approval Inventory List	5	204	CVTO Header System	N/A	CVTO Header System	<u>Continuous Vent Thermal Oxidizer</u> (CVTO) Header System	Define the CVTO acronym the first time it is presented in the plan approval.	The suggested change has been made to the final plan approval.
A. Plan Approval Inventory List	5	207	MPGF CVTO Trip Header	N/A	MPGF CVTO Trip Header	<u>Multipoint Ground Flare</u> (MPGF) CVTO Trip Header	Define the MPGF acronym the first time it is presented in the plan approval.	The suggested change has been made to the final plan approval.
A. Plan Approval Inventory List	5	403	Storage Tanks (Light Gasoline)	N/A	Storage Tanks (Light Gasoline)	Storage Tanks (Light Gasoline)	Only one Light Gasoline Storage Tank is present at SPM. This revision to the source name for the source is also requested to appear in other parts of the plan approval (e.g., Section D. Source Level Plan Approval Requirements, Section E. Source Group Plan Approval Restrictions). This would be consistent with the naming for Source ID 402 Storage Tank (Spent Caustic)	The suggested change has been made to the final plan approval.
A. Plan Approval Inventory List	6	C204A	CVTO	N/A	C204A	C204A	The Source ID for the control device is now C204. The MPGF backup is now C207 and there is no A/B division. This revision to the Source ID for the control device is also requested to appear in other parts of the plan approval (e.g., Permit Maps, Section D. Source Level Plan Approval Requirements).	The Source ID for the CVTO was retained in the proposed plan approval as C204A for continuity with previous stack testing and emission reporting. For constancy with future records, the Source ID will remain C204A.
A. Plan Approval Inventory List	6	C406	Carbon Canisters (Diesel Storage Tanks)	N/A	Carbon Canisters (Diesel Storage Tanks)	Carbon Canisters (Diesel Storage Tanks)	The Storage Tanks (Diesel Fuel > 150 Gallons) (Source ID 406) vent directly to the atmosphere instead of venting to carbon canisters. This is documented through approval of RFD 8799 and reflected in the PTE calculations for the fire pump engine diesel fuel storage tanks. The only permanent diesel fuel storage tanks > 150 gallon capacity are the fire pump engine diesel fuel storage tanks. This revision is necessary for factual accuracy.	The correction has been made to the final plan approval.
A. Plan Approval Inventory List	7	S204A	Stack (CVTO)	N/A	S204A	S204A	The Source ID for the stack is now S204. This revision to the Source ID for the stack is also requested to appear in other parts of the plan approval (e.g., Permit Maps, Section D. Source Level Plan Approval Requirements).	The Source ID for the CVTO was retained in the proposed plan approval as C204A for continuity with previous stack testing and emission reporting. For constancy with future records, the Source ID will remain C204A.
A. Plan Approval Inventory List	7	S207	MPGF CVTO Trip Stack	N/A	MPGF CVTO Trip Stack	<u>Stack</u> (MPGF CVTO Trip) Stack	The name for the stack is proposed to have the same structure/order as the source name for the other stacks in the plan approval.	The suggested change has been made to the final plan approval.
A. Plan Approval Inventory List	7	S208	MPGF Ethylene Tank Stack	N/A	MPGF Ethylene Tank Stack	<u>Stack</u> (MPGF Ethylene Tank) Stack	The name for the stack is proposed to have the same structure/order as the source name for the other stacks in the plan approval.	The suggested change has been made to the final plan approval.

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department's Response
A. Plan Approval Inventory List	7	S209	MPGF PE Units 1/2 Episodic Vent Stack	N/A	MPGF PE Units 1/2 Episodic Vent Stack	Stack (MPGF PE Units 1/2 Episodic Vent) Stack	The name for the stack is proposed to have the same structure/order as the source name for the other stacks in the plan approval.	The suggested change has been made to the final plan approval.
A. Plan Approval Inventory List	7	S302	Stack (Carbon Adsorption System)	N/A	-	<u>S302 Stack (Carbon Adsorption System)</u>	The stack for Liquid Loadout (Recovered Oil) (Source ID 302) is not currently identified in the source list in the plan approval.	Stack S302 has been added and Z302 has been removed in the final plan approval.
A. Plan Approval Inventory List	7	S406	Stacks (Carbon Canisters)	N/A	Stacks (Carbon Canisters)	Stacks (Carbon Canisters)	The Storage Tanks (Diesel Fuel > 150 Gallons) (Source ID 406) vent directly to the atmosphere instead of venting to carbon canisters. This is documented through approval of RFD 8799 and reflected in the PTE calculations for the fire pump engine diesel fuel storage tanks. The only permanent diesel fuel storage tanks > 150 gallon capacity are the fire pump engine diesel fuel storage tanks. This revision is necessary for factual accuracy.	The correction has been made to the final plan approval.
A. Plan Approval Inventory List	7	Z406	Fugitive Emissions (Diesel Fuel Tanks >150 Gallons)	N/A	-	<u>Fugitive Emissions (Diesel Fuel Tanks >150 Gallons)</u>	The fugitive emissions stack for the Storage Tanks (Diesel Fuel > 150 Gallons) (Source ID 406) is not currently identified in the source list in the plan approval. The diesel storage tanks were modeled as volume sources for the inhalation risk assessment and it would be accurate to apply a fugitive emissions ID.	The suggested change has been made to the final plan approval.
A. Plan Approval Inventory List, Permit Maps	9	302	Liquid Loadout (Recovered Oil)	N/A	CNTL C206-->STAC S206	CNTL C 206 <u>302</u> -->STAC S 206 <u>302</u>	The Source ID for the source's control device is C302 and the Source ID for the source's stack is S302. These revisions to the Source IDs for the source's control device and stack and permit mapping are also requested to appear in Section D. Source Level Plan Approval Requirements.	The correction has been made to the final plan approval.
A. Plan Approval Inventory List, Permit Maps	10	405	Storage Tanks (Misc Pressurized)	N/A	-	405 --> C205 --> C205C --> S205C -->C205B --> S205B -->C205A --> S205A	A permit map is not currently identified for the source in the plan approval. In accordance with Section D. Source ID 405 Condition #002, pressure relief from pressurized storage tanks will relieve to the HP Header System.	The permit map for Source ID 405 has been added to the final plan approval.
A. Plan Approval Inventory List, Permit Maps	10	406	Storage Tanks (Diesel Fuel >150 Gallons)	N/A	CNTL C406-->STAC S406	CNTL C406 -->STAC S 406 <u>Z406</u>	The source is not equipped with a control device and the Source ID for the source's stack is Z406. These revisions to the Source ID for the source's stack and permit mapping are also requested to appear in Section D. Source Level Plan Approval Requirements. The diesel storage tanks were modeled as volume sources for the inhalation risk	The control device has been removed from the map for this source and the suggested change to the stack from S406 to Z406 has been made to the final plan approval.

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							assessment and it would be accurate to apply a fugitive emissions ID.	
A. Plan Approval Inventory List, Permit Maps	10	502	Wastewater Treatment Plant (Secondary & Tertiary Treatment)	N/A	CNTL C206-->STAC S206	CNTL C206-->STAC S206	The source is not equipped with a control device. This revision to the permit mapping is also requested to appear in Section D. Source Level Plan Approval Requirements. This revision is necessary for factual accuracy.	The secondary and tertiary section of the WWTP is not controlled by the SCTO, C206. The permit map has been corrected to 502 > STAC Z502 in the final plan approval.
C. Site Level Plan Approval Requirements	19	N/A	N/A	# 013	b. Calendar year totals for each diesel-fired emergency generator, natural gas-fired emergency generator, and fire pump engine of (and as defined in 40 CFR Part 60 Subpart IIII and 40 CFR Part 60 Subpart JJJJ):	b. Calendar year totals for each diesel-fired emergency generator, natural gas- fired fired emergency generator, and fire pump engine of (and as defined in 40 CFR Part 60 Subpart IIII and 40 CFR Part 60 Subpart JJJJ):	The revision corrects a spelling error.	The correction has been made to the final plan approval.
C. Site Level Plan Approval Requirements	24	N/A	N/A	# 024	g. Compressors equipped with a closed vent system that captures and transports leakages to the HP System shall meet the LAER requirements for the HP System.	g. Compressors equipped with a closed vent system that captures and transports leakages to the HP Header System shall meet the LAER requirements for the HP Header System.	The complete name of the header system is the HP Header System.	The suggested change has been made to the final plan approval.
C. Site Level Plan Approval Requirements	24	N/A	N/A	# 029	Employees involved in the operation of any air contamination sources, air cleaning devices, stacks, fugitive emission areas, or process equipment at the Facility shall be trained to observe air contamination sources, air cleaning devices, stacks, fugitive emission areas, and process equipment to demonstrate compliance with Section C Condition #012.	Employees involved in the operation of any air contamination sources, air cleaning devices, stacks, fugitive emission areas, or process equipment at the Facility shall be trained to observe air contamination sources, air cleaning devices, stacks, fugitive emission areas, and process equipment to demonstrate compliance with the Section C monitoring requirement for visible stack emissions, fugitive emissions, and potentially objectionable odors Condition #012.	The correct condition reference in this proposed plan approval is # 011. Proposed to change this to a general reference to the monitoring requirement so as to avoid referencing incorrect conditions if plan approval generation changes condition appearance order.	The suggested change has been made to the final plan approval.
C. Site Level Plan Approval Requirements	25	N/A	N/A	# 034	•One (1) HP Header System; routed to two (2) totally enclosed ground flares 150 metric tons/hr capacity each, with a backup emergency elevated flare, 13,257 MMBtu/hr capacity.	•One (1) HP Header System; routed to two (2) totally enclosed ground flares 150 metric tons/hr capacity each , with a backup emergency elevated flare, 13,257 MMBtu/hr total capacity for the 2 totally enclosed ground flares.	The revisions remove the potentially contradictory mass basis capacity cited for the 2 totally enclosed ground flares; and clarify that the cited heat input capacity is the total capacity for the 2 totally enclosed ground flares.	The suggested change has been made to the final plan approval.
C. Site Level Plan Approval Requirements	26	N/A	N/A	# 034	•One (1) light gasoline, and two (2) hexene storage tanks; 152,000-gallon capacity and 802,000-gallon capacities; controlled by IFR and vapor capture routed to the CVTO Header System or MPGF CVTO Trip Header.	•One (1) light gasoline, and two (2) hexene storage tanks; 152,000-gallon capacity and 802,000-gallon capacities capacity each ; controlled by IFR and vapor capture routed to the CVTO Header System or MPGF CVTO Trip Header.	The proposed revision clarifies that each of the Hexene Storage Tanks has a capacity of 802,000 gallons.	The suggested change has been made to the final plan approval.

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D. Source Level Plan Approval Requirements	40	104	Cogeneration Plant Cooling Tower	# 004	The Owner/Operator shall perform TDS and electrical conductivity testing upon the Cogeneration Plant Cooling Tower water according to ASTM Methods D5907-13 and correlate the results with an online conductivity analyzer. Samples and/or measurements for both tests are required to be performed under identical operating conditions, at a point which is representative of the water being evaporated to the atmosphere. A factor shall be derived from test results correlating TDS and electrical conductivity such that TDS may be approximated by future electrical conductivity measurements. Initial testing is required within 180 days of startup of the cooling towers or on an alternative schedule as approved by the Department. Subsequent TDS and electrical conductivity testing is required at minimum of once every 5 years thereafter. Extension to the initial and subsequent performance testing deadlines may be granted by the Department in writing in response to a written request from the Owner/Operator and upon a satisfactory showing that an extension is justified.	The Owner/Operator shall perform TDS and electrical conductivity -testing upon the Cogeneration Plant Cooling Tower water according to ASTM Methods D5907-13 (or other methods deemed appropriate by the Department) and correlate the results with an online conductivity analyzer. Samples and/or measurements for both tests are required to be performed under identical operating conditions, at a point which is representative of the water being evaporated to the atmosphere. A factor shall be derived from test results correlating TDS and electrical conductivity such that TDS may be approximated by future electrical conductivity measurements. Initial testing is required within 180 days of startup of the cooling towers or on an alternative schedule as approved by the Department. Subsequent TDS and electrical conductivity -testing is required at <u>a</u> minimum of once every 5 years thereafter. Extension to the initial and subsequent performance testing deadlines may be granted by the Department in writing in response to a written request from the Owner/Operator and upon a satisfactory showing that an extension is justified.	ASTM Method D5907-13 is a standard test method for TDS in water. The revisions are necessary because an online electrical conductivity analyzer is used to routinely measure the electrical conductivity of the cooling water versus discrete sampling and analysis testing that is used to measure the TDS of the cooling water.	The requirement for TDS and electrical conductivity testing will be removed from the final plan approval condition as originally proposed in the application for this plan approval. High conductivity indicates high TDS, which correlates to higher particulate matter emissions when cooling water drifts into the air. An electrical conductivity analyzer is an acceptable measurement method to routinely measure the conductivity of cooling water compared to discrete, manual sampling. The TDS test method has been updated to allow for SM 2540C, ASTM D5907, or equivalent approved method. See response to Comment 47. The condition has been revised as follows: The Owner/Operator shall perform TDS and electrical conductivity testing upon the Cogeneration Plant Cooling Tower water according to ASTM Methods D5907-13 SM 2540C, ASTM D5907, or equivalent approved method and correlate the results with an online conductivity analyzer. Samples and/or measurements for both tests are required to be performed under identical operating conditions, at a point which is representative of the water being evaporated to the atmosphere. A factor shall be derived from test results correlating TDS and electrical conductivity such that TDS may be approximated by future electrical conductivity measurements. Initial testing is required within 180 days of startup of the cooling towers or on an alternative schedule as approved by the Department. Subsequent TDS and electrical conductivity testing is required at <u>a</u> minimum of once every 5 years thereafter. Extension to the initial and subsequent performance testing deadlines may be granted by the Department in writing in response to a written request from the Owner/Operator and upon a satisfactory showing that an extension is justified.

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department's Response
D. Source Level Plan Approval Requirements	49	201	Ethylene Manufacturing Line	# 008	Compressor seal vent, startup, shutdown, and maintenance gases associated with the ethylene manufacturing line shall be captured and routed to the HP System. Emergency and malfunction event gases shall be captured and routed to the HP System as practicable. Hydrocarbon-containing equipment shall be drained, depressurized, and purged with nitrogen to the HP System prior to being opened to the atmosphere.	Compressor seal vent, startup, shutdown, and maintenance gases associated with the ethylene manufacturing line shall be captured and routed to the HP Header System. Emergency and malfunction event gases shall be captured and routed to the HP Header System as practicable. Hydrocarbon-containing equipment shall be drained, depressurized, and purged with nitrogen to the HP Header System prior to being opened to the atmosphere.	The complete name of the header system that receives the vent streams from the ethylene manufacturing unit is the HP Header System.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	52	202	Polyethylene Manufacturing Lines	# 010	Compressor seal gas vents; intermittent VOC process vents; and startup, shutdown, and maintenance gases associated with the gas phase polyethylene manufacturing lines shall be routed to the HP Header System CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header. Emergency and malfunction event gases shall be captured and routed to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header as practicable. Hydrocarbon-containing equipment shall be drained, depressurized, and purged with nitrogen to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header prior to being opened to the atmosphere.	Compressor seal gas vents; intermittent VOC process vents; and startup, shutdown, and maintenance gases associated with the gas phase polyethylene manufacturing lines shall be routed to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header. Emergency and malfunction event gases shall be captured and routed to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header as practicable. Hydrocarbon-containing equipment shall be drained, depressurized, and purged with nitrogen to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header prior to being opened to the atmosphere.	The referenced PE Units 1 and 2 vent streams are both intermittent and continuous. As a result, the intermittent reference is proposed to be deleted.	The condition has been revised as follows in the final plan approval: Compressor seal gas vents; PE Units 1 and 2 intermittent and continuous VOC process vents; and startup, shutdown, and maintenance gases associated with the gas phase polyethylene manufacturing lines shall be routed to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header as practicable. Hydrocarbon-containing equipment shall be drained, depressurized, and purged with nitrogen to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header prior to being opened to the atmosphere.
D. Source Level Plan Approval Requirements	53	202	Polyethylene Manufacturing Lines	# 013	Compressor seal gas vents; intermittent VOC process vents; and startup, shutdown, and maintenance gases associated with the slurry phase polyethylene manufacturing lines shall be routed to the HP Header System, CVTO Header System, or MPGF CVTO Trip Header. Emergency and malfunction event gases shall be captured and routed to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header as practicable. Hydrocarbon containing equipment shall be drained, depressurized, and purged with nitrogen to the HP Header System, CVTO Header System, or MPGF CVTO Trip Header prior to being opened to the atmosphere.	Compressor seal gas vents; intermittent VOC process vents; and startup, shutdown, and maintenance gases associated with the slurry phase polyethylene manufacturing lines shall be routed to the HP Header System, CVTO Header System, or MPGF CVTO Trip Header. Emergency and malfunction event gases shall be captured and routed to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header as practicable. Hydrocarbon containing equipment shall be drained, depressurized, and purged with nitrogen to the HP Header System, CVTO Header System, or MPGF CVTO Trip Header prior to being opened to the atmosphere.	The referenced PE Unit 3 vent streams are both intermittent and continuous. As a result, the intermittent reference is proposed to be deleted.	The condition has been revised as follows in the final plan approval: Compressor seal gas vents; PE Unit 3 intermittent and continuous VOC process vents; and startup, shutdown, and maintenance gases associated with the slurry phase polyethylene manufacturing lines shall be routed to the HP Header System, CVTO Header System, or MPGF CVTO Trip Header. Emergency and malfunction event gases shall be captured and routed to the HP Header System, CVTO Header System, MPGF CVTO Trip Header, or MPGF PE Units 1/2 Episodic Vent Header as practicable. Hydrocarbon containing equipment shall be drained, depressurized, and purged with nitrogen to the HP Header

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department’s Response
								System, CVTO Header System, or MPGF CVTO Trip Header prior to being opened to the atmosphere.
D. Source Level Plan Approval Requirements	54	203	Process Cooling Tower	# 005	The Owner/Operator shall perform TDS testing upon the process cooling tower water according to ASTM Methods D5907-13 and correlate the results with an online conductivity analyzer. Samples and/or measurements for both tests are required to be performed under identical operating conditions, at a point which is representative of the water being evaporated to the atmosphere. A factor shall be derived from test results correlating TDS and electrical conductivity such that TDS may be approximated by future electrical conductivity measurements. Initial testing is required within 180 days of startup of the cooling towers or on an alternative schedule as approved by the Department. Subsequent TDS and electrical conductivity testing is required at minimum of once every 5 years thereafter. Extension to the initial and subsequent performance testing deadlines may be granted by the Department in writing in response to a written request from the Owner/Operator and upon a satisfactory showing that an extension is justified.	The Owner/Operator shall perform TDS testing upon the process cooling tower water according to ASTM Methods D5907-13 (or other methods deemed appropriate by the Department) and correlate the results with an online conductivity analyzer. Samples and/or measurements for both tests are required to be performed under identical operating conditions, at a point which is representative of the water being evaporated to the atmosphere. A factor shall be derived from test results correlating TDS and electrical conductivity such that TDS may be approximated by future electrical conductivity measurements. Initial testing is required within 180 days of startup of the cooling towers or on an alternative schedule as approved by the Department. Subsequent TDS and electrical conductivity testing is required at <u>a</u> minimum of once every 5 years thereafter. Extension to the initial and subsequent performance testing deadlines may be granted by the Department in writing in response to a written request from the Owner/Operator and upon a satisfactory showing that an extension is justified.	ASTM Method D5907-13 is a standard test method for TDS in water. The revisions are necessary because an online electrical conductivity analyzer is used to routinely measure the electrical conductivity of the cooling water versus discrete sampling and analysis testing that is used to measure the TDS of the cooling water.	The requirement for TDS and electrical conductivity testing will be removed from the final plan approval condition as originally proposed in the application for this plan approval. High conductivity indicates high TDS, which correlates to higher particulate matter emissions when cooling water drifts into the air. An electrical conductivity analyzer is an acceptable measurement method to routinely measure the conductivity of cooling water compared to discrete, manual sampling. The TDS test method has been updated to allow for SM 2540C, ASTM D5907, or equivalent approved method. See response to Comment 47. The condition has been revised as follows: The Owner/Operator shall perform TDS testing upon the process cooling tower water according to ASTM Methods D5907-13 SM 2540C, ASTM D5907, or equivalent approved method and correlate the results with an online conductivity analyzer. Samples and/or measurements for both tests are required to be performed under identical operating conditions, at a point which is representative of the water being evaporated to the atmosphere. A factor shall be derived from test results correlating TDS and electrical conductivity such that TDS may be approximated by future electrical conductivity measurements. Initial testing is required within 180 days of startup of the cooling towers or on an alternative schedule as approved by the Department. Subsequent TDS and electrical conductivity testing is required at <u>a</u> minimum of once every 5 years thereafter. Extension to the initial and

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								subsequent performance testing deadlines may be granted by the Department in writing in response to a written request from the Owner/Operator and upon a satisfactory showing that an extension is justified.
D. Source Level Plan Approval Requirements	56	204	CVTO Header System	# 001	Visible emissions from both the CVTO shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	Visible emissions from both the CVTO shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	The revision removes an unnecessary word from the condition.	The correction has been made to the final plan approval.
D. Source Level Plan Approval Requirements	57	204	CVTO Header System	# 009	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for all sources impacted by the gas stream.	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for all sources impacted by the gas stream <u>the CVTO</u> .	The VOC and GHG content measurements are used to calculate VOC and GHG emissions from the CVTO. All vent streams routed to the CVTO are included in these calculations.	The suggested change has been made to the final plan approval. As required by Condition # 011, vent gas from the CVTO Header shall be routed to the MPGF CVTO Trip Header when the CVTO is not available. The MPGF CVTO Trip Header includes the same requirement for VOC and GHG emissions to be based on VOC and GHG measured.
D. Source Level Plan Approval Requirements	57	204	CVTO Header System	# 011	Vent gas from the CVTO Header shall be captured and routed to the MPGF CVTO Trip Header when the CVTO is not available and during abnormal CVTO system operating conditions, such as high CVTO Header System pressure, high CVTO temperature, high CVTO combustion zone temperature, and low CVTO combustion air pressure.	Vent gas from the CVTO Header <u>System</u> shall be captured and routed to the MPGF CVTO Trip Header when the CVTO is not available and vent gas may be routed to the MPGF CVTO Trip Header during abnormal CVTO system operating conditions, such as high CVTO Header System pressure, high CVTO temperature, high CVTO combustion zone temperature, and low CVTO combustion air pressure.	The complete name of the header system is the CVTO Header System. Vent gas in the system is already captured as this is part of a closed vent system. Per RFD 10890 Shell had identified operating conditions under which a portion of the vent gas stream may be routed to the MPGF CVTO Trip Header in order to stabilize operations and avoid a trip of the CVTO. Other CVTO process controls may stabilize operating conditions so that vent gas shall not need to be routed to the MPGF CVTO Trip Header if possible to avoid.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	58	205	HP Header System	# 001	Visible emissions from both the HP ground flares and emergency elevated flare shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	Visible emissions from both the HP ground flares and emergency elevated flare <u>the TEGF A, TEGF B, and HP Elevated Flare, respectively</u> , shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	The revisions correct the names used for the specific control devices in the plan approval; and clarify that the visible emissions limitation separately applies to each of the flares.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	58	205	HP Header System	# 003	Monitoring for compliance with the 98% destruction efficiency requirement for the HP ground flares shall be performed in accordance with 40 CFR §63.987(c). Operating parameter monitoring shall include flame detection at a minimum.	Monitoring for compliance with the 98% destruction efficiency requirement for the HP ground flares <u>TEGFs</u> shall be performed in accordance with 40 CFR §63.987(c). Operating parameter monitoring shall include flame detection at a minimum. <u>40 CFR Part 63 Subpart YY, 40 CFR Part 63 Subpart FFFF, 40 CFR §63.670, and 40 CFR §63.671.</u>	The revisions correct the name used for the specific control devices in the plan approval; and the applicable flare monitoring citations. SPM is subject to 40 CFR Part 63 Subpart YY ("EMACT") and the flare compliance requirements of 40 CFR §63.1103(e)(4), which requires meeting applicable requirements of 40 CFR §63.670 and §63.671. These each require monitoring by a	The suggested change to the control device name and correction to the applicable Federal requirements has been made to the final plan approval. To ensure a 98% destruction efficiency, the important parameters to monitor continuously include the net heating value in the combustion zone, exit velocity, and the presence of a pilot flame.

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							thermocouple or equivalent device used to detect the presence of a flame. Monitoring in accordance with 40 CFR Part 63 Subpart YY, 40 CFR Part 63 Subpart FFFF, 40 CFR §63.670, and 40 CFR §63.671 is consistent with the subsequent Condition #004 in this proposed plan approval.	Condition # 004 referenced in the comment specifically identifies monitoring of the maximum exit velocity and minimum net heating value. Although the requirements of 40 CFR §63.670 and §63.671 each require monitoring by a thermocouple or equivalent device used to detect the presence of a flame, the language for specifically monitoring flame detection has been retained for clarity due to the importance of monitoring this parameter.
D. Source Level Plan Approval Requirements	58	205	HP Header System	# 005	The owner or operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate in the flare headers that feed each flare as well as any flare supplemental gas used.	The owner or operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate in the flare headers that feed each flare as well as any flare supplemental gas used.	The HP Header System is subject to 40 CFR 63 Subparts YY and FFFF and the flare compliance requirements of 40 CFR §63.1103(e)(4) and 40 CFR §63.2450(e)(5) respectively, which require meeting applicable requirements of 40 CFR §63.670 and §63.671. Flare vent gas, steam assist and air assist flow rate monitoring are required under 40 CFR §63.670(i) which states in relevant part: "The owner or operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate in the flare header or headers that feed the flare as well as any flare supplemental gas used..." Flare monitoring in accordance with 40 CFR §63.670 is included under Source ID 205 Proposed Condition #004. Shell proposes to remove the proposed condition as it is duplicative with already required monitoring, or revise the proposed condition to cite 40 CFR §63.670(i) in order to maintain a single flow monitoring requirement.	The condition identified is an existing plan approval requirement in PA-04-00740C, which has also been proposed in this plan approval. Although it would not be relaxing a previously established requirement by removing the condition since the specified monitoring is required by the applicable Federal requirement, the Department has elected to maintain the condition in the final plan approval with the addition of the specific regulatory citation as follows: The owner or operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate in the flare header or headers that feed the flare as well as any flare supplemental gas used, in accordance with 40 CFR §63.670(i).
D. Source Level Plan Approval Requirements	59	205	HP Header System	# 007	The Owner/Operator shall utilize a gas chromatograph (or equivalent monitor) to measure, calculate, and record VOC and GHG content at the HP header at a minimum of once every 15 minutes.	The Owner/Operator shall utilize a gas chromatograph (or equivalent monitor) to measure, calculate, and record VOC and GHG content at the HP header Header System at a minimum of once every 15 minutes.	The complete name of the header system is the HP Header System.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	59	205	HP Header System	# 008	Net heating value of the combustion zone gas at the HP ground flare header shall be measured and recorded at a minimum of once every 15 minutes. An adjusted net heating value of hydrogen of 1,212 Btu/scf may be used for this calculation.	Net heating value of the combustion zone gas at the HP ground flare header TEGFs and HP Elevated Flare shall be measured and recorded at a minimum of once every 15 minutes. An adjusted net heating value of hydrogen of 1,212 Btu/scf may be used for this calculation.	The revision corrects the names used for the specific control devices in the plan approval.	The suggested change has been made to the final plan approval.

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D. Source Level Plan Approval Requirements	59	205	HP Header System	# 009	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for all sources impacted by the gas stream.	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for all sources impacted by the gas stream. <u>the TEGFs and HP Elevated Flare.</u>	The VOC and GHG content measurements are used to calculate VOC and GHG emissions from the TEGFs and HP Elevated Flare.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	59	205	HP Header System	# 010	Vapors collected by the HP Flare System shall only be routed to the HP elevated flare in the event that the combined capacities of the HP ground flares is exceeded due to malfunction or emergency, or due to maintenance of the TEGFs.	Vapors collected by the HP Flare-Header System shall only be routed to the HP elevated flare Elevated Flare in the event that the combined capacities capacity of the HP ground flares TEGFs is exceeded due to malfunction or emergency , malfunction, emergency, or due to maintenance of the TEGFs.	The revisions identify the header system collecting the vapors rather than the flare system connected to the header system; and the names used for the specific control devices in the plan approval. The revision also separates malfunction and emergency from capacity of the TEGFs in the unexpected case where malfunction or emergency may preclude using the TEGFs to full capacity. The HP Elevated Flare remains the backup to normal operation of the TEGFs.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	59	205	HP Header System	# 012	f. The baseline flow to the HP System determined in accordance with the provisions of 40 CFR §60.103a(a)(4).	f. The baseline flow to the HP <u>Header</u> System determined in accordance with the provisions of 40 CFR §60.103a(a)(4).	The complete name of the flare system is the HP Header System.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	61	206	Spent Caustic Vent Header System	# 002	Emissions from the SCTO shall not exceed the following: a. NOx - 0.06 lb/MMBtu...	N/A	It is Shell's understanding from the context of Proposed Conditions #010 and #004 that compliance with this revised NOx limitation is required after upgrading or replacing the SCTO burners.	The revised NOx emission limit is applicable upon issuance of PA-04-00740D because the SCTO burner has been replaced since the submittal of this comment.
D. Source Level Plan Approval Requirements	61	206	Spent Caustic Vent Header System	# 004	The Owner/Operator shall perform NOx, CO, PM10, PM2.5, and Benzene emission testing upon the SCTO according to the requirements of 25 Pa. Code Chapter 139. Performance testing is required within 180 days of upgrading or replacing the burners of the SCTO or on an alternative schedule as approved by the Department...	The Owner/Operator shall perform NOx, CO, PM10, and PM2.5, and Benzene emission testing upon the SCTO according to the requirements of 25 Pa. Code Chapter 139. Performance testing is required within 180 days of upgrading or replacing the burners of the SCTO or on an alternative schedule as approved by the Department...	Shell requests that the benzene emission testing be removed from the testing contingent upon burner upgrade or replacement in Proposed Condition #004 and added to Proposed Condition #005 testing contingent on startup of the WWTP Permanent Controls Project Equipment. Benzene is expected as a process air contaminant and to be affected by the WWTP Permanent Controls Project.	The primary purpose of the testing after upgrading or replacing the SCTO burners is to demonstrate compliance with the combustion emission limits, particularly the reduced NOx LAER limit. Additionally, the previous SCTO stack testing resulted in noncompliant NOx results. Destruction efficiency testing will be required once the WWTP Permanent Controls Project is complete to ensure the SCTO can adequately handle the additional load. As such, the Department will remove the benzene testing requirement from Condition # 004 but add it to # 005 since benzene is a process contaminant being controlled by the SCTO and a minimal amount of benzene is expected as a product of combustion from the SCTO.

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D. Source Level Plan Approval Requirements	61	206	Spent Caustic Vent Header System	# 005	The Owner/Operator shall perform VOC destruction efficiency testing upon the SCTO in accordance with 40 CFR §63.985(b)(1)(ii). Performance testing is required within 180 days of startup of the WWTP Permanent Controls Project equipment...	The Owner/Operator shall perform VOC and Benzene destruction efficiency testing upon the SCTO in accordance with 40 CFR §63.985(b)(1)(ii). Performance testing is required within 180 days of startup of the WWTP Permanent Controls Project equipment...	Shell requests that the benzene emission testing be removed from the testing contingent upon burner upgrade or replacement in Proposed Condition #004 and added to Proposed Condition #005 testing contingent on startup of the WWTP Permanent Controls Project Equipment. Benzene is expected as a process air contaminant and to be affected by the WWTP Permanent Controls Project.	See the response to Condition # 004 above. Benzene destruction efficiency testing will be added to Condition # 005.
D. Source Level Plan Approval Requirements	62	206	Spent Caustic Vent Header System	# 009	The SCTO shall, at all times that vapors are being collected, be operated at or above the minimum temperature at which at least 99.9% destruction efficiency is guaranteed by the manufacturer or demonstrated during performance testing.	The SCTO shall, at all times that vapors are being collected by the Spent Caustic Vent Header System , be operated at or above the minimum temperature at which at least 99.9% destruction efficiency is guaranteed by the manufacturer or demonstrated during performance testing.	The specific header system collecting the vapors is the Spent Caustic Vent Header System.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	62	206	Spent Caustic Vent Header System	# 010	The Owner/Operator shall upgrade or replace the burners of the SCTO within 180 days of issuance of PA-04-00740D.	The Owner/Operator shall upgrade or replace the burners of the SCTO within 180 days of issuance of PA-04-00740D, or on an alternative schedule as approved by the Department.	The revision provides an alternative schedule for the burner change in the event a revised schedule is necessary.	This condition will be removed from the Final Plan Approval because the SCTO burner has been replaced since the submittal of this comment.
D. Source Level Plan Approval Requirements	63	207	MPGF CVTO Trip Header	# 001	Visible emissions from the MPGF shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	Visible emissions from the MPGF CVTO Trip shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	63	207	MPGF CVTO Trip Header	# 002	The MPGF shall be designed and operated to reduce collected VOC emissions by a minimum of 98%.	The MPGF CVTO Trip shall be designed and operated to reduce collected VOC emissions by a minimum of 98%.	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	63	207	MPGF CVTO Trip Header	# 003	Monitoring for compliance with the 98% destruction efficiency requirement for the MPGF shall be performed in accordance with 40 CFR Part 63 Subpart YY, 40 CFR Part 63 Subpart FFFF, 40 CFR 63.670, and 40 CFR 63.671.	Monitoring for compliance with the 98% destruction efficiency requirement for the MPGF CVTO Trip shall be performed in accordance with 40 CFR Part 63 Subpart YY, 40 CFR Part 63 Subpart FFFF, 40 CFR 63.670, and 40 CFR 63.671.	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	63	207	MPGF CVTO Trip Header	# 005	Net heating value of the combustion zone gas at the MPGF shall be measured and recorded at a minimum of once every 15 minutes. An adjusted net heating value of hydrogen of 1,212 Btu/scf may be used for this calculation.	Net heating value of the combustion zone gas at the MPGF CVTO Trip shall be measured and recorded at a minimum of once every 15 minutes. An adjusted net heating value of hydrogen of 1,212 Btu/scf may be used for this calculation.	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	63	207	MPGF CVTO Trip Header	# 006	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate in the MPGF CVTO Trip Header that	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of waste gas in the MPGF CVTO	The revisions clarify the total waste gas and supplemental fuel gas flow rate is to be measured; and remove unnecessary text from the condition.	The suggested change has been made to the final plan approval.

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					feeds the flare as well as any flare supplemental gas used.	Trip Header that feeds the flare as well as any flare supplemental gas used.		
D. Source Level Plan Approval Requirements	63	207	MPGF CVTO Trip Header	# 007	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of assist air used with the MPGF.	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of assist air used with the MPGF <u>CVTO Trip</u> .	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	64	207	MPGF CVTO Trip Header	# 008	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for the MPGF.	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for the MPGF <u>CVTO Trip</u> .	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	64	207	MPGF CVTO Trip Header	# 009	The MPGF shall be equipped with automated controls for control of the supplemental gas flow rate to the flare.	The MPGF <u>CVTO Trip</u> shall be equipped with automated controls for control of the supplemental gas flow rate to the flare.	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	64	207	MPGF CVTO Trip Header	# 010	The Owner/Operator shall minimize flaring resulting from startups, shutdowns, and unforeseeable events by operating the MPGF at all times in accordance with an approved flare minimization plan. The plan should be updated periodically per 40 CFR 63.670(o)(2)(ii). At a minimum, the plan shall include the following:	The Owner/Operator shall minimize flaring resulting from startups, shutdowns, and unforeseeable events by operating the MPGF <u>CVTO Trip</u> at all times in accordance with an approved flare minimization plan. The plan should be updated periodically per 40 CFR 63.670(o)(2)(ii). At a minimum, the plan shall include the following:	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	64	207	MPGF CVTO Trip Header	# 010	a. Procedures for operating and maintaining the MPGF during periods of process unit startup, shutdown, and unforeseeable events.	a. Procedures for operating and maintaining the MPGF <u>CVTO Trip</u> during periods of process unit startup, shutdown, and unforeseeable events.	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	64	207	MPGF CVTO Trip Header	# 010	c. Procedures to minimize discharges either directly to the atmosphere or to the MPGF during the planned and unplanned startup or shutdown of process unit and air pollution control equipment, including an evaluation of flaring that has occurred or may reasonably be expected to occur during planned maintenance activities, including startup and shutdown, that considers the feasibility of performing these activities without flaring.	c. Procedures to minimize discharges either directly to the atmosphere or to the MPGF <u>CVTO Trip</u> during the planned and unplanned startup or shutdown of process unit and air pollution control equipment, including an evaluation of flaring that has occurred or may reasonably be expected to occur during planned maintenance activities, including startup and shutdown, that considers the feasibility of performing these activities without flaring.	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	64	207	MPGF CVTO Trip Header	# 011	The Owner/Operator shall conduct a root cause analysis within 45 days after any startup flaring event, shutdown flaring event, or unforeseeable flaring event at the MPGF. Flaring event shall be defined as an event that exceeds the baseline by 500,000 scf within a	The Owner/Operator shall conduct a root cause analysis within 45 days after any startup flaring event, shutdown flaring event, or unforeseeable flaring event at the MPGF <u>CVTO Trip</u> . Flaring event shall be defined as an event that exceeds the baseline by	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.

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					24-hour period. At a minimum, the analysis shall address the following:	500,000 scf within a 24-hour period. At a minimum, the analysis shall address the following:		
D. Source Level Plan Approval Requirements	65	207	MPGF CVTO Trip Header	# 012	Net heating value of the combustion zone gas at the MPGF shall equal or exceed 500 Btu/scf on a three-hour rolling average, calculated every 15 minutes.	Net heating value of the combustion zone gas at the MPGF CVTO Trip shall equal or exceed 500 Btu/scf on a three-hour rolling average, calculated every 15 minutes.	The specific control device is the MPGF CVTO Trip.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	66	208	MPGF Ethylene Tank Header	# 001	Visible emissions from the MPGF shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	Visible emissions from the MPGF Ethylene Tank shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	66	208	MPGF Ethylene Tank Header	# 002	The MPGF shall be designed and operated to reduce collected VOC emissions by a minimum of 98%.	The MPGF Ethylene Tank shall be designed and operated to reduce collected VOC emissions by a minimum of 98%.	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	66	208	MPGF Ethylene Tank Header	# 003	Monitoring for compliance with the 98% destruction efficiency requirement for the MPGF shall be performed in accordance with 40 CFR §60.18. Operating parameter monitoring shall include flame detection at a minimum.	Monitoring for compliance with the 98% destruction efficiency requirement for the MPGF Ethylene Tank shall be performed in accordance with 40 CFR §60.18. Operating parameter monitoring shall include flame detection at a minimum.	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	66	208	MPGF Ethylene Tank Header	# 005	Net heating value of the combustion zone gas at the MPGF header shall be measured and recorded at a minimum of once every 15 minutes based on the volumetric flow rates of the waste gas and supplemental gas in the header and the compositions of the waste gas and supplemental gas. As an alternative, net heating value of the combustion zone gas at the MPGF Ethylene Tank Header may be calculated using the net heating value of ethylene if the vent stream is comprised of ethylene only.	Net heating value of the combustion zone gas at the MPGF Ethylene Tank header shall be measured and recorded at a minimum of once every 15 minutes based on the volumetric flow rates of the waste gas and supplemental gas in the header and the compositions of the waste gas and supplemental gas. As an alternative, net heating value of the combustion zone gas at the MPGF Ethylene Tank Header may be calculated using the net heating value of ethylene if the vent stream is comprised of ethylene only.	The revision identifies the name used for the specific control device in the plan approval rather than the header connected to the control device.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	66	208	MPGF Ethylene Tank Header	# 007	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of assist air used with the MPGF.	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of assist air used with the MPGF Ethylene Tank .	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	67	208	MPGF Ethylene Tank Header	# 008	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for the MPGF. As an alternative, engineering knowledge can be	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for the MPGF Ethylene Tank . As an alternative, engineering knowledge can be used to	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.

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					used to estimate the stream composition to calculate VOC and GHG emissions.	estimate the stream composition to calculate VOC and GHG emissions.		
D. Source Level Plan Approval Requirements	67	208	MPGF Ethylene Tank Header	# 009	The MPGF shall be equipped with automated controls for control of the supplemental gas flow rate to the flare.	The MPGF shall be equipped with automated controls for control of the supplemental gas flow rate to the flare.	Source ID 411 Refrigerated Ethylene Tank is the source controlled by C208 MPGF Ethylene Tank, and contains pure ethylene. Automated control supplemental gas is not proposed or required to maintain NHVez for the MPGF Ethylene Tank. This revision is necessary for factual accuracy.	The correction has been made to the final plan approval.
D. Source Level Plan Approval Requirements	67	208	MPGF Ethylene Tank Header	# 010	The Owner/Operator shall minimize flaring resulting from startups, shutdowns, and unforeseeable events by operating the MPGF at all times in accordance with an approved flare minimization plan. The plan should be updated periodically per 40 CFR 63.670(o)(2)(ii). At a minimum, the plan shall include the following:	The Owner/Operator shall minimize flaring resulting from startups, shutdowns, and unforeseeable events by operating the MPGF Ethylene Tank at all times in accordance with an approved flare minimization plan. The plan should be updated periodically per 40 CFR 63.670(o)(2)(ii). At a minimum, the plan shall include the following:	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	67	208	MPGF Ethylene Tank Header	# 010	a. Procedures for operating and maintaining the MPGF during periods of process unit startup, shutdown, and unforeseeable events.	a. Procedures for operating and maintaining the MPGF Ethylene Tank during periods of process unit startup, shutdown, and unforeseeable events.	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	67	208	MPGF Ethylene Tank Header	# 010	c. Procedures to minimize discharges either directly to the atmosphere or to the MPGF during the planned and unplanned startup or shutdown of process unit and air pollution control equipment, including an evaluation of flaring that has occurred or may reasonably be expected to occur during planned maintenance activities, including startup and shutdown, that considers the feasibility of performing these activities without flaring.	c. Procedures to minimize discharges either directly to the atmosphere or to the MPGF Ethylene Tank during the planned and unplanned startup or shutdown of process unit and air pollution control equipment, including an evaluation of flaring that has occurred or may reasonably be expected to occur during planned maintenance activities, including startup and shutdown, that considers the feasibility of performing these activities without flaring.	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	67	208	MPGF Ethylene Tank Header	# 010	f. The baseline flow to the MPGF determined in accordance with the provisions of 40 CFR § 60.103a(a)(4).	f. The baseline flow to the MPGF Ethylene Tank determined in accordance with the provisions of 40 CFR § 60.103a(a)(4).	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	67	208	MPGF Ethylene Tank Header	# 011	The Owner/Operator shall conduct a root cause analysis within 45 days after any startup flaring event, shutdown flaring event, or unforeseeable flaring event at the MPGF. Flaring event shall be defined as an event that exceeds the baseline by 500,000 scf within a 24-hour period. At a minimum, the analysis shall address the following:	The Owner/Operator shall conduct a root cause analysis within 45 days after any startup flaring event, shutdown flaring event, or unforeseeable flaring event at the MPGF Ethylene Tank . Flaring event shall be defined as an event that exceeds the baseline by 500,000 scf within a 24-hour period. At a minimum, the analysis shall address the following:	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.

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D. Source Level Plan Approval Requirements	68	208	MPGF Ethylene Tank Header	# 012	Net heating value of the combustion zone gas at the MPGF shall equal or exceed 500 Btu/scf on a three-hour rolling average, calculated every 15 minutes.	Net heating value of the combustion zone gas at the MPGF Ethylene Tank shall equal or exceed 500 Btu/scf on a three-hour rolling average, calculated every 15 minutes.	The specific control device is the MPGF Ethylene Tank.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	69	209	MPGF PE Units 1/2 Episodic Vent Header	# 001	Visible emissions from the MPGF shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	Visible emissions from the MPGF PE Units 1/2 Episodic Vent shall not exceed 0% except for a total of five minutes during any consecutive two-hour period.	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	69	209	MPGF PE Units 1/2 Episodic Vent Header	# 002	The MPGF shall be designed and operated to reduce collected VOC emissions by a minimum of 98%.	The MPGF PE Units 1/2 Episodic Vent shall be designed and operated to reduce collected VOC emissions by a minimum of 98%.	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	69	209	MPGF PE Units 1/2 Episodic Vent Header	# 003	Monitoring for compliance with the 98% destruction efficiency requirement for the MPGF shall be performed in accordance with 40 CFR §63.987(c). Operating parameter monitoring shall include flame detection at a minimum.	Monitoring for compliance with the 98% destruction efficiency requirement for the MPGF PE Units 1/2 Episodic Vent shall be performed in accordance with 40 CFR §63.987(c). Operating parameter monitoring shall include flame detection at a minimum. 40 CFR Part 63 Subpart FFFF, 40 CFR 63.670, and 40 CFR 63.671.	The revisions identify the specific control device; and correct the applicable flare monitoring citations. SPM is subject to 40 CFR Part 63 Subpart FFFF ("MON Rule") and the flare compliance requirements of 40 CFR §63.2450(e)(5), which requires meeting applicable requirements of 40 CFR §63.670 and §63.671. These each require monitoring by a thermocouple or equivalent device used to detect the presence of a flame. Monitoring in accordance with 40 CFR §63.670, and 40 CFR §63.671 is consistent with the subsequent Condition #004 in this proposed plan approval.	The suggested change has been made to the final plan approval to identify the specific control device and correct the flare monitoring citations. The final condition is consistent with Condition # 003 for Source ID 207, MPGF CVTO Trip Header
D. Source Level Plan Approval Requirements	69	209	MPGF PE Units 1/2 Episodic Vent Header	# 005	Net heating value of the combustion zone gas at the MPGF shall be measured and recorded at a minimum of once every 15 minutes. An adjusted net heating value of hydrogen of 1,212 Btu/scf may be used for this calculation.	Net heating value of the combustion zone gas at the MPGF PE Units 1/2 Episodic Vent shall be measured and recorded at a minimum of once every 15 minutes. An adjusted net heating value of hydrogen of 1,212 Btu/scf may be used for this calculation.	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	69	209	MPGF PE Units 1/2 Episodic Vent Header	# 006	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of waste gas in the MPGF PE Units 1/2 Header as well as any flare supplemental gas used.	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of waste gas in the MPGF PE Units 1/2 Episodic Vent Header as well as any flare supplemental gas used.	The complete name of the header is the MPGF PE Units 1/2 Episodic Vent Header.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	69	209	MPGF PE Units 1/2 Episodic Vent Header	# 007	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of assist air used with the MPGF.	The Owner/Operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of assist air used with the MPGF PE Units 1/2 Episodic Vent .	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.

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D. Source Level Plan Approval Requirements	70	209	MPGF PE Units 1/2 Episodic Vent Header	# 008	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for the MPGF.	VOC and GHG content measured by the gas chromatograph (or equivalent monitor) shall be used to calculate 12-month rolling total VOC and GHG emissions for the MPGF <u>PE Units 1/2 Episodic Vent</u> .	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	70	209	MPGF PE Units 1/2 Episodic Vent Header	# 009	The MPGF shall be equipped with automated controls for control of the supplemental gas flow rate to the flare.	The MPGF <u>PE Units 1/2 Episodic Vent</u> shall be equipped with automated controls for control of the supplemental gas flow rate to the flare.	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	70	209	MPGF PE Units 1/2 Episodic Vent Header	# 010	The Owner/Operator shall minimize flaring resulting from startups, shutdowns, and unforeseeable events by operating the MPGF at all times in accordance with an approved flare minimization plan. The plan should be updated periodically per 40 CFR 63.670(o)(2)(ii). At a minimum, the plan shall include the following:	The Owner/Operator shall minimize flaring resulting from startups, shutdowns, and unforeseeable events by operating the MPGF <u>PE Units 1/2 Episodic Vent</u> at all times in accordance with an approved flare minimization plan. The plan should be updated periodically per 40 CFR 63.670(o)(2)(ii). At a minimum, the plan shall include the following:	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	70	209	MPGF PE Units 1/2 Episodic Vent Header	# 010	a. Procedures for operating and maintaining the MPGF during periods of process unit startup, shutdown, and unforeseeable events.	a. Procedures for operating and maintaining the MPGF <u>PE Units 1/2 Episodic Vent</u> during periods of process unit startup, shutdown, and unforeseeable events.	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	70	209	MPGF PE Units 1/2 Episodic Vent Header	# 010	c. Procedures to minimize discharges either directly to the atmosphere or to the MPGF during the planned and unplanned startup or shutdown of process unit and air pollution control equipment, including an evaluation of flaring that has occurred or may reasonably be expected to occur during planned maintenance activities, including startup and shutdown, that considers the feasibility of performing these activities without flaring.	c. Procedures to minimize discharges either directly to the atmosphere or to the MPGF <u>PE Units 1/2 Episodic Vent</u> during the planned and unplanned startup or shutdown of process unit and air pollution control equipment, including an evaluation of flaring that has occurred or may reasonably be expected to occur during planned maintenance activities, including startup and shutdown, that considers the feasibility of performing these activities without flaring.	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	70	209	MPGF PE Units 1/2 Episodic Vent Header	# 010	f. The baseline flow to the MPGF determined in accordance with the provisions of 40 CFR § 60.103a(a)(4).	f. The baseline flow to the MPGF <u>PE Units 1/2 Episodic Vent</u> determined in accordance with the provisions of 40 CFR § 60.103a(a)(4).	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	70	209	MPGF PE Units 1/2 Episodic Vent Header	# 011	The Owner/Operator shall conduct a root cause analysis within 45 days after any startup flaring event, shutdown flaring event, or unforeseeable flaring event at the MPGF. Flaring event shall be defined as an event that exceeds the baseline by 500,000 scf within a 24-hour period. At a minimum, the analysis shall address the following:	The Owner/Operator shall conduct a root cause analysis within 45 days after any startup flaring event, shutdown flaring event, or unforeseeable flaring event at the MPGF <u>PE Units 1/2 Episodic Vent</u> . Flaring event shall be defined as an event that exceeds the baseline by 500,000 scf within a 24-hour period. At a minimum, the analysis shall address the following:	The specific control device is the MPGF PE Units 1/2 Episodic Vent.	The suggested change has been made to the final plan approval.

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department's Response
D. Source Level Plan Approval Requirements	71	209	MPGF PE Units 1/2 Episodic Vent Header	# 012	Net heating value of the combustion zone gas at the MPGF header shall equal or exceed 500 Btu/scf on a three-hour rolling average, calculated every 15 minutes.	Net heating value of the combustion zone gas at the MPGF <u>PE Units 1/2 Episodic Vent header</u> shall equal or exceed 500 Btu/scf on a three-hour rolling average, calculated every 15 minutes.	The revision identifies the name used for the specific control device in the plan approval rather than the header connected to the control device.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	76	303	Liquid Loadout (Pyrolysis FO, LT Gasoline, PE3 Heavies)	# 001	Vapors displaced or generated by the loadouting of pyrolysis fuel oil, or light gasoline, and PE3 heavies shall be captured and routed through a closed system to the CVTO Header System or MPGF CVTO Trip Header	Vapors displaced or generated by the loadout of pyrolysis fuel oil, or light gasoline, and PE3 heavies shall be captured and routed through a closed system to the CVTO Header System or MPGF CVTO Trip Header.	Minor grammatical revisions	The correction has been made to the final plan approval.
D. Source Level Plan Approval Requirements	81	403	Storage Tanks (Light Gasoline)	# 001	Light gasoline storage tanks shall be controlled by vapor recovery routed to the CVTO Header System or MPGF CVTO Trip Header.	The Light gasoline storage tanks shall be controlled by vapor recovery routed to the CVTO Header System or MPGF CVTO Trip Header.	Only one Light Gasoline Storage Tank is present at SPM.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	81	403	Storage Tanks (Light Gasoline)	# 002	Light gasoline storage tanks shall be equipped with an internal floating roof.	The Light gasoline storage tanks shall be equipped with an internal floating roof.	Only one Light Gasoline Storage Tank is present at SPM.	The suggested change has been made to the final plan approval.
D. Source Level Plan Approval Requirements	84	405	Storage Tanks (Misc Pressurized)	# 001	Ethylene, C3+, C3 refrigerant, butene, isopentane, isobutane, aqueous ammonia, dimethyl disulfide, methanol, and PE3 heavies shall be stored in pressurized and/or refrigerated storage tanks with no uncontrolled vent directed to the atmosphere.	Ethylene, C3+, C3 refrigerant, butene, isopentane, isobutane, aqueous ammonia, dimethyl disulfide, methanol, and PE3 heavies shall be stored in pressurized and/or refrigerated storage tanks with no uncontrolled vent directed to the atmosphere.	Refrigerated storage tanks are not covered by the Storage Tanks (Misc Pressurized) (Source ID 405). The Refrigerated Ethylene Storage Tank has been moved to Source ID 411.	The correction has been made to the final plan approval.
D. Source Level Plan Approval Requirements	86	407	Storage Tanks (Pyrolysis Fuel Oil)	# 001	The Owner/Operator shall comply with the applicable storage tank testing and procedures specified in 40 CFR §60.113b(c) or (d).	The Owner/Operator shall comply with the applicable storage tank testing and procedures specified in 40 CFR §60.113b(c) or (d).	Pursuant to 40 CFR 63.1100(g)(1)(ii) in 40 CFR 63 Subpart YY, the tanks are exempt from 40 CFR 60 Subpart Kb requirements and are required to comply only with 40 CFR 63 Subpart YY storage vessel requirements; therefore, 40 CFR 60 Subpart Kb requirements do not need to be applied to the tanks in the plan approval.	The suggested change has been made to the final plan approval. Per 40 CFR 63.1100(g)(1)(ii), “After the compliance dates specified in § 63.1102, a storage vessel that must be controlled according to the requirements of this subpart and subpart Ka or Kb of 40 CFR part 60 <u>is required to comply only with the storage vessel requirements of this subpart.</u> ” [emphasis added]. Source ID 407 is included in Group G05 for NESHAP Part 63 Subpart YY in the final plan approval.
D. Source Level Plan Approval Requirements	86	407	Storage Tanks (Pyrolysis Fuel Oil)	# 002	The Owner/Operator shall comply with the applicable storage tank monitoring requirements specified in 40 CFR §60.116b.	The Owner/Operator shall comply with the applicable storage tank monitoring requirements specified in 40 CFR §60.116b.	Pursuant to 40 CFR 63.1100(g)(1)(ii) in 40 CFR 63 Subpart YY, the tanks are exempt from 40 CFR 60 Subpart Kb requirements and are required to comply only with 40 CFR 63 Subpart YY storage vessel requirements; therefore, 40 CFR 60 Subpart Kb requirements do not need to be applied to the tanks in the plan approval.	See response to Condition # 001 under Source ID 407. The suggested change has been made to the Final Plan Approval.

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department’s Response
D. Source Level Plan Approval Requirements	86	407	Storage Tanks (Pyrolysis Fuel Oil)	# 003	The Owner/Operator shall comply with the applicable storage tank reporting and recordkeeping requirements specified in 40 CFR §60.115b(c) or (d).	The Owner/Operator shall comply with the applicable storage tank reporting and recordkeeping requirements specified in 40 CFR §60.115b(c) or (d).	Pursuant to 40 CFR 63.1100(g)(1)(ii) in 40 CFR 63 Subpart YY, the tanks are exempt from 40 CFR 60 Subpart Kb requirements and are required to comply only with 40 CFR 63 Subpart YY storage vessel requirements; therefore, 40 CFR 60 Subpart Kb requirements do not need to be applied to the tanks in the plan approval.	See response to Condition # 001 under Source ID 407. The suggested change has been made to the Final Plan Approval.
D. Source Level Plan Approval Requirements	86/87	407	Storage Tanks (Pyrolysis Fuel Oil)	# 005	The Owner/Operator shall comply with the applicable storage tank VOC standards specified in 40 CFR §60.112b(a).	The Owner/Operator shall comply with the applicable storage tank VOC standards specified in 40 CFR §60.112b(a).	Pursuant to 40 CFR 63.1100(g)(1)(ii) in 40 CFR 63 Subpart YY, the tanks are exempt from 40 CFR 60 Subpart Kb requirements and are required to comply only with 40 CFR 63 Subpart YY storage vessel requirements; therefore, 40 CFR 60 Subpart Kb requirements do not need to be applied to the tanks in the plan approval.	See response to Condition # 001 under Source ID 407. The suggested change has been made to the Final Plan Approval.
D. Source Level Plan Approval Requirements	87	407	Storage Tanks (Pyrolysis Fuel Oil)	# 006	The two pyrolysis fuel oil storage tanks are subject to the requirements of 40 CFR Part 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984.	The two pyrolysis fuel oil storage tanks are subject to the requirements of 40 CFR Part 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984.	Pursuant to 40 CFR 63.1100(g)(1)(ii) in 40 CFR 63 Subpart YY, the tanks are exempt from 40 CFR 60 Subpart Kb requirements and are required to comply only with 40 CFR 63 Subpart YY storage vessel requirements; therefore, 40 CFR 60 Subpart Kb requirements do not need to be applied to the tanks in the plan approval.	See response to Condition # 001 under Source ID 407. The suggested change has been made to the Final Plan Approval.
D. Source Level Plan Approval Requirements	87	407	Storage Tanks (Pyrolysis Fuel Oil)	# 007	All terms used in 40 CFR Part 60 Subpart Kb shall have the meaning given in 40 CFR §60.111b or else in the Clean Air Act and 40 CFR Part 60 Subpart A.	All terms used in 40 CFR Part 60 Subpart Kb shall have the meaning given in 40 CFR §60.111b or else in the Clean Air Act and 40 CFR Part 60 Subpart A.	Pursuant to 40 CFR 63.1100(g)(1)(ii) in 40 CFR 63 Subpart YY, the tanks are exempt from 40 CFR 60 Subpart Kb requirements and are required to comply only with 40 CFR 63 Subpart YY storage vessel requirements; therefore, 40 CFR 60 Subpart Kb requirements do not need to be applied to the tanks in the plan approval.	See response to Condition # 001 under Source ID 407. The suggested change has been made to the Final Plan Approval.
D. Source Level Plan Approval Requirements	91	411	Refrigerated Ethylene Storage Tank	# 001	The Owner/Operator shall comply with the applicable storage tank testing and procedures specified in 40 CFR § 60.113b(a) and/or (c) or (d).	The Owner/Operator shall comply with the applicable storage tank testing and procedures specified in 40 CFR § 60.113b(a) and/or (c) or (d).	The storage tank is not equipped with an internal floating roof.	The suggested change has been made to the final plan approval. 40 CFR § 60.113b(c) and (d) include requirements for each source that is equipped with a closed vent system and control device. The Refrigerated Ethylene Storage tank is controlled by vapor capture routed to the MPGF Ethylene Tank Header which is controlled by the MPGF Ethylene Tank.
D. Source Level Plan Approval Requirements	91	411	Refrigerated Ethylene Storage Tank	# 003	The Owner/Operator shall comply with the applicable storage tank reporting and recordkeeping requirements specified in 40 CFR § 60.115b(a) and/or (c) or (d).	The Owner/Operator shall comply with the applicable storage tank reporting and recordkeeping requirements specified in 40 CFR § 60.115b(a) and/or (c) or (d).	The storage tank is not equipped with an internal floating roof.	The suggested change has been made to the Final Plan Approval.

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department’s Response
D. Source Level Plan Approval Requirements	98	505	Wastewater Treatment Plant (Primary Treatment)	# 001	Within 180 days of the startup of the WWTP Permanent Controls Project and monthly thereafter, or an alternative schedule approved by the Department, the Owner/Operator shall conduct sampling and testing at the settlement drum inlet to determine the wastewater stream speciated HAP concentrations, including, but not limited to, 1,3-Butadiene, benzene, toluene, ethylbenzene, xylene, styrene, naphthalene, dibutyl phthalate, chloroform, acenaphthene, acenaphthylene, fluorene, anthracene, phenanthrene, fluoranthene, and pyrene. The report shall be submitted to the Department no later than 30 days from the date of completion of sampling and testing. The report shall include the following: a. Wastewater lab results and testing method used; b. Location the sample is taken; and c. Wastewater flow rate; The sampling frequency may be reduced upon the acquisition of a calendar years’ worth of data, the submittal of the data, and the receipt of written approval from the Department.	Within 180 days of the startup of the WWTP Permanent Controls Project and monthly thereafter, or an alternative schedule approved by the Department, the Owner/Operator shall conduct sampling and testing at the settlement drum inlet to determine the wastewater stream speciated HAP concentrations, including, but not limited to, 1,3-Butadiene, benzene, toluene, ethylbenzene, xylene, styrene, naphthalene, dibutyl phthalate, chloroform, acenaphthene, acenaphthylene, fluorene, anthracene, phenanthrene, fluoranthene, and pyrene. The report shall be submitted to the Department no later than 30 days from the date of completion of sampling and testing. The report shall include the following: a. Wastewater lab results and testing method used; b. Location the sample is taken; and c. Wastewater flow rate; The sampling frequency may be reduced upon the acquisition of a calendar years’ worth of data, the submittal of the data, and the receipt of written approval from the Department.	Shell proposes to delete this condition because the requested data is not directly associated with any emissions since the primary treatment equipment will vent to the SCTO and many of the referenced compounds may typically be below MDL values. The settlement drum inlet represents the incoming ECU wastewater to the WWTP. The TOC monitoring requirement included in Proposed Condition #003 represents the appropriate parameter to monitor to determine the organic (including HAP) removal performance of the primary treatment section of the WWTP rather than monitoring individual compounds that partially comprise TOC and may typically be below MDL values. Testing of the SCTO for emissions and destruction and removal efficiency is separately required under Source ID 206 Proposed Conditions #004 and #005. Biotreater inlet sampling is separately performed as part of the basis for emissions from the secondary and tertiary treatment sections of the WWTP. Outfall monitoring and sampling is separately required under the site's NPDES permit to demonstrate compliance with water quality effluent limitations determined by the Water Quality Program. Primary treatment section controls operation will be determined through Proposed Condition #013 WWTP Control Plan and other monitoring and records required under Source ID 505.	Section D, Source ID 505, Conditions # 001 and # 002 will not be included in the Final Plan Approval. See response to Comment 24. Biotreater inlet sampling has been added under Source ID 502 as shown at the end of this document. Section D, Source ID 505 requirements have been moved to Section E, Group G16 in the Final Plan Approval to include all Source IDs for the primary treatment section of the WWTP. The conditions are shown at the end of this document after this table.
D. Source Level Plan Approval Requirements	98	505	Wastewater Treatment Plant (Primary Treatment)	# 002	The Owner/Operator shall sample at the settlement drum inlet and DNF #2 outlet for concentration of benzene, toluene, ethylbenzene, xylene, and styrene at a minimum of once per calendar week. Sample analyses shall be conducted by methods and techniques acceptable to the Department.	The Owner/Operator shall sample at the settlement drum inlet and DNF #2 outlet for concentration of benzene, toluene, ethylbenzene, xylene, and styrene at a minimum of once per calendar week. Sample analyses shall be conducted by methods and techniques acceptable to the Department.	Shell proposes to delete this condition because the TOC monitoring requirement included in Proposed Condition #003 represents the appropriate parameter to monitor to determine the organic (including HAP) removal performance of the primary treatment section of the WWTP rather than monitoring individual compounds that partially comprise TOC and may typically be below MDL values. Testing of the SCTO for emissions and destruction and removal efficiency is separately required under Source ID 206 Proposed Conditions #004 and #005. Biotreater inlet sampling is separately performed as part of the basis for emissions	See response to Condition # 001 for Source ID 505.

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department’s Response
							from the secondary and tertiary treatment sections of the WWTP. Outfall monitoring and sampling is separately required under the site's NPDES permit to demonstrate compliance with water quality effluent limitations determined by the Water Quality Program. Primary treatment section controls operation will be determined through Proposed Condition #013 WWTP Control Plan and other monitoring and records required under Source ID 505.	
D. Source Level Plan Approval Requirements	99	505	Wastewater Treatment Plant (Primary Treatment)	# 008	The Owner/Operator shall monitor the total steam supplied to the steam stripper on an hourly average when the steam stripper is in operation.	The Owner/Operator shall monitor the total steam supplied to the steam stripper on an hourly average when the steam stripper is in operation.	Shell proposes to delete this condition because the steam flow rate to the steam stripper must be monitored in order to monitor the steam stripper’s steam-to-water ratio; therefore, this separate condition is not necessary. Steam-to-water ratio monitoring is required by the prior Condition #007.	The Department maintains that monitoring both the steam-to-water ratio and the total steam flow rate is necessary. Therefore, the requirement has been retained in the Final Plan Approval as proposed.
D. Source Level Plan Approval Requirements	99	505	Wastewater Treatment Plant (Primary Treatment)	# 009	The Owner/Operator shall monitor the steam pressure supplied to the steam stripper on an hourly average when the steam stripper is in operation.	The Owner/Operator shall monitor the steam pressure supplied to the steam stripper on an hourly average when the steam stripper is in operation.	Shell proposes to delete this condition because it is not necessary to monitor both the steam pressure and steam stripper bottoms temperature since the steam stripper bottoms temperature is dependent on the steam pressure and steam-to-water ratio, which is also separately monitored. In other words, it is redundant to monitor both the steam pressure and steam stripper bottoms temperature when the steam-to-water ratio is also separately monitored. Also, the steam pressure is an integrated steam header parameter, which is operated at a relatively steady pressure for facility-wide operability purposes; it is not a steam stripper-specific parameter.	The Department maintains that monitoring both the steam pressure and the stripper bottoms temperature is necessary. Therefore, the requirement has been retained in the Final Plan Approval as proposed.
D. Source Level Plan Approval Requirements	99	505	Wastewater Treatment Plant (Primary Treatment)	# 011	The Owner/Operator shall maintain the following comprehensive and accurate records at a frequency specified in the WWTP Control Plan: a. Speciated HAP, TOC, and O&G inlet and outlet concentrations b. Nitrogen pressure into the primary DNF c. Temperature of the steam stripper bottoms d. Steam stripper inlet steam-to-water ratio, total steam supplied, and pressure of the steam e. Steam stripper overhead condenser outlet temperature	The Owner/Operator shall maintain the following comprehensive and accurate records at a frequency specified in the WWTP Control Plan: a. Speciated HAP , TOC, and O&G inlet and outlet concentrations b. Nitrogen pressure into the primary DNF c. Temperature of the steam stripper bottoms d. Steam stripper inlet steam-to-water ratio; total steam supplied, and pressure of the steam e. Steam stripper overhead condenser outlet temperature	Shell proposes to remove speciated HAP per the above comment on Proposed Conditions #001 and #002. The requested data is not directly associated with any emissions since the primary treatment equipment will vent to the SCTO and many of the referenced compounds may typically be below MDL values. Shell proposes to remove total steam supplied and pressure of the steam per the above comments on Proposed Conditions #008 and #009.	See responses above. Speciated HAP will be removed from the record keeping requirement, but total steam and steam pressure will be retained in the Final Plan Approval. The final condition is shown under G16 after this table in this document.

Section	Page	Source ID	Source Name	Condition	Current Text	Proposed Revised Text	Reason for Proposed Revision	Department’s Response
D. Source Level Plan Approval Requirements	100	505	Wastewater Treatment Plant (Primary Treatment)	# 014	The Owner/Operator shall operate the WWTP’s primary treatment system in accordance with the written WWTP Control Plan at all times. At a minimum, the plan shall include the following: a. A description of the parameters to be monitored to ensure the effectiveness of the WWTP’s primary treatment system, and the frequency with which monitoring of these parameters will be performed. At a minimum, parameters to be monitored shall include the settlement drum inlet and DNF #2 outlet TOC, O&G, and speciated HAP concentration, DNF nitrogen pressure, steam stripper bottoms temperature, steam stripper steam-to-water ratio, total steam supplied, and steam pressure supplied, and steam stripper overhead condenser outlet temperature	The Owner/Operator shall operate the WWTP’s primary treatment system in accordance with the written WWTP Control Plan at all times. At a minimum, the plan shall include the following: a. A description of the parameters to be monitored to ensure the effectiveness of the WWTP’s primary treatment system, and the frequency with which monitoring of these parameters will be performed. At a minimum, parameters to be monitored shall include the settlement drum inlet and DNF #2 outlet TOC, and O&G, and speciated HAP concentration, DNF nitrogen pressure, steam stripper bottoms temperature, steam stripper steam-to-water ratio, total steam supplied, and steam pressure supplied, and steam stripper overhead condenser outlet temperature	Shell proposes to remove speciated HAP per the above comment on Proposed Conditions #001 and #002. The requested data is not directly associated with any emissions since the primary treatment equipment will vent to the SCTO and many of the referenced compounds may typically be below MDL values. Shell proposes to remove total steam supplied and pressure of the steam per the above comments on Proposed Conditions #008 and #009.	See responses above. Speciated HAP will be removed from the record keeping requirement, but total steam and steam pressure will be retained in the Final Plan Approval. The final condition is shown under G16 after this table in this document.
D. Source Level Plan Approval Requirements	100	505	Wastewater Treatment Plant (Primary Treatment)	# 015	The Settlement Drum, Dissolved Nitrogen Flotation (DNF) Unit #1, DNF Unit #2, Float/Sludge Drum, and above-ground piping shall meet the applicable control standards in 40 CFR § 61.343 through § 61.347.	The Settlement Drum, Dissolved Nitrogen Flotation (DNF)- Unit #1, DNF Unit #2, Float/Sludge Drum, and above-ground piping shall meet the applicable control standards in 40 CFR §61.343 through § 61.347.	The DNF acronym has already been defined in the plan approval.	The suggested change has been made to the final plan approval.
E. Source Group Plan Approval Restrictions	102	G01	Ethane Cracking Furnaces	# 008	• Hot Steam Standby – When the furnace COT is greater than or equal to 750°C, no hydrocarbon feed is being charged to the furnace, and not operating in decoking, startup, or shutdown mode.	• Hot Steam Standby – When the furnace COT is greater than or equal to 750°C, no hydrocarbon feed is being charged to the furnace, and <u>the furnace is</u> not operating in decoking, startup, or shutdown mode.	Minor addition for clarification	The suggested change has been made to the final plan approval.
E. Source Group Plan Approval Restrictions	107	G02	Cogeneration Units	# 018	The Owner/Operator shall continuously monitor for ammonia slip from each ethane cracking furnace via in-situ tunable diode laser (TDL), or equivalent monitor, as approved by the Department.	The Owner/Operator shall continuously monitor for ammonia slip from each ethane cracking furnace <u>combustion turbine with duct burner</u> via in-situ tunable diode laser (TDL), or equivalent monitor, as approved by the Department.	The revision corrects the source's description.	The correction has been made to the final plan approval.
E. Source Group Plan Approval Restrictions	125	G08	NESHAP Part 63 Subpart SS	N/A	205 / HP Header System	205 / HP Header System	The HP Header System is not subject to 40 CFR 63 Subpart SS. It is subject to 40 CFR 63 Subparts YY and FFFF and the flare compliance requirements of 40 CFR §63.1103(e)(4) and 40 CFR §63.2450(e)(5) respectively, which require meeting applicable requirements of 40 CFR §63.670 and §63.671. These are included under Source ID 205 Condition #004.	Source ID 205 has been removed from Group G08 in the final plan approval.

Department Initiated Changes

1. **Section C Site Level Plan Approval Requirements:** After review of the inhalation risk assessment (IRA), the Department noted that the top five (5) COPCs contributing to the highest cumulative ELCR are 1,3-butadiene, benzene, naphthalene, polycyclic aromatic hydrocarbon, and chromium VI. These pollutants have been added to the required pollutants to be included in annual emission reporting under Section C of the plan approval. Note that benzene is already currently listed. Additionally, the Department will require separate written notification if any of these COPCs exceed the emission rate evaluated in the IRA.

REPORTING REQUIREMENTS

- # 015 Upon commencement of operation of the WWTP Permanent Controls Project, if emissions of benzene, 1,3-butadiene, naphthalene, polycyclic aromatic hydrocarbons, or chromium VI exceed the corresponding 12-month emission rate evaluated in the Inhalation Risk Assessment approved with this application, the Owner/Operator shall notify the Department in writing within 30 days of identifying the exceedance.

Emissions shall be tracked on a 12-month rolling basis and calculated using the methodology in the Inhalation Risk Assessment approved with this application, or another method approved by the Department in writing. [25 Pa. Code §127.12b]

- # 016 Annual emission reporting shall be conducted as follows [25 Pa. Code §135.3]:

- a. In accordance with 25 Pa. Code §135.3, the permittee shall submit to the Department via AES*Online or AES*XML at www.depgreenport.state.pa.us/ by March 1 of each year, a facility inventory report for the preceding calendar year for all sources authorized under this plan approval. The inventory report shall include all emissions information for all sources operated during the preceding calendar year. Emissions data including, but not limited, to the following shall be reported: carbon monoxide (CO); oxides of nitrogen (NO_x); particulate matter less than 10 micrometers in diameter (PM₁₀); particulate matter less than 2.5 micrometers in diameter (PM_{2.5}); sulfur dioxide (SO₂); volatile organic compounds (VOC); total hazardous air pollutants (HAP); speciated HAP including, but not limited to, benzene, ethyl benzene, formaldehyde, n-hexane, toluene, isomers and mixtures of xylenes, 2,2,4-trimethylpentane, **1,3-butadiene, naphthalene, polycyclic aromatic hydrocarbon, and chromium VI**; carbon dioxide (CO₂); methane (CH₄); and nitrous oxide (N₂O).
- b. A source Owner/Operator may request an extension of time from the Department for the filing of a source report, and the Department may grant the extension for reasonable cause.

2. **Section D, Source ID 502: Wastewater Treatment Plant (Secondary & Tertiary Treatment)**

See response to Comment 24. The following conditions will be included in Section D, Source ID 502: Wastewater Treatment Plant (Secondary & Tertiary Treatment):

TESTING REQUIREMENTS

- # 001 The Owner/Operator shall take a wastewater sample from the combined inlet to the biotreaters no less than once per calendar month. Sample(s) shall be analyzed by EPA Method 624.1 Purgeables [Volatile Organic Compounds] by GC/MS and EPA Method 625.1 Base/Neutrals and

Acids [Semivolatile Organic Compounds] by GC/MS (or equivalent alternate methods approved by the Department). Analysis shall include benzene, toluene, ethylbenzene, xylenes (BTEX), styrene, and naphthalene at a minimum. Analysis shall be performed by a Pennsylvania accredited laboratory. Results of the analysis shall be incorporated as inputs to emissions calculations for the wastewater treatment plant (secondary & tertiary treatment). The Owner/Operator may request a reduction of the sampling frequency upon written request and approval from the Department. [25 Pa. Code §127.12b]

RECORDKEEPING REQUIREMENTS

002 The Owner/Operator shall maintain records of biotreater inlet sample analysis results. [25 Pa. Code §127.12b]

3. **Section E, Group G02: Cogeneration Units.** The CO and NO_x emission limits on a ppmvd @ 15% O₂ basis will be clarified as follows in the Final Plan Approval for compliance and CEMS coding purposes:

RESTRICTIONS

001 CO emissions from the combustion turbines with duct burners shall not exceed the following:

- ≥ 2.0 ppmvd @ 15% O₂ from each turbine/duct burner on a 1-hour average, excluding periods of defined startup or shutdown...

007 NO_x emissions from the combustion turbines with duct burners shall not exceed the following:

- ≥ 2.0 ppmvd @ 15% O₂ from each turbine/duct burner on a 1-hour average, excluding periods of defined startup or shutdown...

4. **Section E, Group G06: NESHAP Part 63 Subpart XX.** Source ID 505 Wastewater Treatment Plant (MISC Primary Treatment) is subject to the applicable requirements of 40 CFR Part 63 Subpart XX and has been added to Group G06 NESHAP Part 63 Subpart XX in the final plan approval.
5. **Section E, Group G15: New Source Group for NESHAP Part 61 Subpart FF (BWON)**
See response to Comment 23. NESHAP Part 61 Subpart FF (BWON) requirements have been moved to Section E of the Final Plan Approval as follows:

Group Name: G15

Group Description: NESHAP Part 61 Subpart FF (BWON)

Sources included in this group:

201: Ethylene Manufacturing Line
206: Spent Caustic Vent Header System
401: Storage Tanks (Recovered Oil, Equalization Wastewater)
402: Storage Tank (Spent Caustic)
502: Wastewater Treatment Plant (Secondary & Tertiary Treatment)
505: Wastewater Treatment Plant (Misc. Primary Treatment)

RESTRICTIONS

001: The Owner/Operator shall manage and treat facility waste with a flow-weighted annual average water content of less than 10% in accordance with 40 CFR § 61.342(c)(1). The Owner/Operator shall manage and treat facility waste (including remediation and process unit turnaround waste) with a flow-weighted annual average water content equal to or greater than 10%, on a volume basis as total water, and each waste stream that is mixed with water or wastes at any time resulting in a mixture that has an annual water content equal to or greater than 10% such that the benzene quantity for the wastes is less than or equal to 6 Mg/yr (6.6 ton/yr), as determined in accordance with 40 CFR 61.355(k). [25 Pa. Code §127.12b]

Condition # 007 in Section C of the proposed Plan Approval.

TESTING REQUIREMENTS

002: **40 CFR §40 CFR 61.355 Subpart FF – BWON Test methods, procedures, and compliance provisions.** The Owner/Operator shall determine total annual benzene quantity from facility waste as specified in 40 CFR §61.355(a) through (c).

Condition # 010 in Section C of the proposed Plan Approval.

MONITORING REQUIREMENTS

003: **40 CFR §40 CFR 61.354 Subpart FF – BWON Monitoring of operations.** The Owner/Operator shall comply with the applicable monitoring requirements for benzene waste operations specified in 40 CFR §61.354.

Condition # 012 in Section C of the proposed Plan Approval.

RECORDKEEPING REQUIREMENTS

004: **40 CFR §40 CFR 61.356 Subpart FF – BWON Recordkeeping requirements.** The Owner/Operator shall comply with the applicable recordkeeping requirements for benzene waste operations specified in 40 CFR §61.356.

Condition # 015 in Section C of the proposed Plan Approval.

REPORTING REQUIREMENTS

005: **40 CFR §40 CFR 61.357 Subpart FF – BWON Reporting Requirements.** The Owner/Operator shall comply with the applicable reporting requirements for benzene waste operations specified in 40 CFR §61.357.

Condition # 022 in Section C of the proposed Plan Approval.

ADDITIONAL REQUIREMENTS

006: **40 CFR §40 CFR 61.340 Subpart FF – BWON Applicability.** The site is subject to the applicable requirements of 40 CFR Part 61 Subpart FF – National Emission Standard for Benzene Waste Operations.

Condition # 046 in Section C of the proposed Plan Approval, modified as indicated previously.

007: **40 CFR §40 CFR 61.340 Subpart FF – BWON Applicability.** The following waste streams are exempt from the requirements of 40 CFR Part 61 Subpart FF:

- a. Waste in the form of gas or vapor emitted from process fluids.
- b. Waste that is contained in a segregated storm water sewer system.

Condition # 047 in Section C of the proposed Plan Approval.

008: **40 CFR §40 CFR 61.341 Subpart FF – BWON Definitions.** All terms used in 40 CFR Part 61 Subpart FF shall have the meaning given in 40 CFR §61.341 or else in the Clean Air Act.

Condition # 048 in Section C of the proposed Plan Approval.

6. Section E, Group G16: New Source Group for Wastewater Treatment Plant (Primary Treatment)

The conditions included under Section D, Source ID 505: Wastewater Treatment Plant (Primary Treatment) in the Proposed Plan Approval will be moved to a new Group in the Final Plan Approval, with the changes to the conditions detailed in this document. The sources in the Group will include new sources created for new components of the primary treatment section of the wastewater treatment plant approved under this plan approval. This Group will also include existing Source ID 401 for the FEOR A/B tanks which function in this portion of the wastewater treatment plant. Source ID 505 will be retained for the above-ground piping and any other associated equipment with the primary treatment section of the WWTP and inclusion in the appropriate Federal subpart Groups.

New Source IDs created are 506, 507, 508, and 509 which have also been included in Group G15 for BWON, consistent with conditions # 013 and # 014 below.

Group Name: G16

Group Description: Wastewater Treatment Plant (Primary Treatment)

Sources included in this group:

- 401: Storage Tanks (Recovered Oil, Equalization Wastewater)
- 505: Wastewater Treatment Plant (Misc. Primary Treatment)
- 506: Settlement Drum(s)
- 507: Steam Stripper with Overhead Condenser
- 508: DNF Units #1 and #2
- 509: Float/Sludge Drum

TESTING REQUIREMENTS

001: The Owner/Operator shall sample at the settlement drum inlet and DNF #2 outlet for concentration of Total Organic Compounds (TOC) at a minimum of once per calendar week to monitor for operational efficiency of the WWTP's primary treatment system. Sample analyses shall be conducted by methods and techniques acceptable to the Department.

002: The Owner/Operator shall sample at the settlement drum inlet and DNF #2 outlet for concentration of Oil and Grease (O&G), as referenced in 40 CFR 401, at least once per calendar

week to monitor for O&G removal efficiency of the WWTP's primary treatment system. Sample analyses shall be conducted by methods and techniques acceptable to the Department.

MONITORING REQUIREMENTS

- # 003: The Owner/Operator shall monitor the pressure of nitrogen once per calendar day into the primary DNF. The minimum nitrogen pressure target shall be set within 60 days of initial operation.
- # 004: The Owner/Operator shall monitor the temperature of the steam stripper bottoms each operating day. The specific location of the thermocouple shall be determined within 60 days of initial operation.
- # 005: The Owner/Operator shall monitor the steam stripper inlet steam-to-water ratio on an hourly average when the steam stripper is in operation.
- # 006: The Owner/Operator shall monitor the total steam supplied to the steam stripper on an hourly average when the steam stripper is in operation.
- # 007: The Owner/Operator shall monitor the steam pressure supplied to the steam stripper on an hourly average when the steam stripper is in operation.
- # 008: The Owner/Operator shall monitor the temperature at the outlet of the steam stripper overhead condenser on an hourly average when the condenser is in operation.

RECORDKEEPING REQUIREMENTS

- # 009: The Owner/Operator shall maintain the following comprehensive and accurate records at a frequency specified in the WWTP Control Plan:
 - a. TOC and O&G inlet and outlet concentrations
 - b. Nitrogen pressure into the primary DNF
 - c. Temperature of the steam stripper bottoms
 - d. Steam stripper inlet steam-to-water ratio, total steam supplied, and pressure of the steam
 - e. Steam stripper overhead condenser outlet temperature

WORK PRACTICE REQUIREMENTS

- # 010: During truck loading from the Settlement Drum or the Recovered Oil Storage Tank, carbon canisters shall be used to control vapors generated from the truck tank.
- # 011: The Owner/Operator shall develop and submit a written WWTP Control Plan to the Department within 60 days of commencing operation of the WWTP Permanent Controls Project. The plan shall be updated periodically to account for changes in the operation of the WWTP primary treatment system including, but not limited to, specifications, procedures, and corrective actions in the plan.
- # 012: The Owner/Operator shall operate the WWTP's primary treatment system in accordance with the written WWTP Control Plan at all times. At a minimum, the plan shall include the following:

- a. A description of the parameters to be monitored to ensure the effectiveness of the WWTP's primary treatment system, and the frequency with which monitoring of these parameters will be performed. At a minimum, parameters to be monitored shall include the settlement drum inlet and DNF #2 outlet TOC and O&G concentration, DNF nitrogen pressure, steam stripper bottoms temperature, steam stripper steam-to-water ratio, total steam supplied, and steam pressure supplied, and steam stripper overhead condenser outlet temperature.
- b. The operating range for each monitoring parameter identified. The specified operating range shall represent the conditions for which the WWTP's primary treatment system is being properly operated and maintained.
- c. A program of corrective action for WWTP primary treatment system equipment operating outside the specified parameter ranges.
- d. Procedures and timeline for taking identified corrective actions.

ADDITIONAL REQUIREMENTS

#013: The Settlement Drum, DNF Unit #1, DNF Unit #2, Float/Sludge Drum, and above-ground piping shall meet the applicable control standards in 40 CFR § 61.343 through § 61.347.

014: The Steam Stripper shall meet the treatment processes control standards in 40 CFR § 61.348.

Other

On April 16, 2026, Shell submitted an RFD to replace the existing burner of the SCTO with a new upgraded burner in order to achieve the NO_x limit of Plan Approvals PA-04-00740A and C. The burner was replaced pursuant to 25 Pa. Code § 127.14(c)(2) during an outage from May 16 through May 25, 2026, and the SCTO was brought back online on May 25, 2026.

CONCLUSION

I recommend the issuance of this Plan Approval for a period of up to 180 days from the date of issuance with the changes described in this document.