

## Rowland, Eric (DNREC)

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**From:** Bard, Allison <Allison.Bard@croda.com>  
**Sent:** Monday, November 20, 2023 1:38 PM  
**To:** Rowland, Eric (DNREC)  
**Cc:** Mann, Amy (DNREC); Okesola, Olayiwola (DNREC)  
**Subject:** RE: Questions on Flare Permit Application  
**Attachments:** Flare Site Plan.pdf

Hi Eric,

Thank you for your email. Responses to your questions can be found below.

Best,

Allison Bard  
Lead SHE Advisor  
Croda Inc.



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**From:** Rowland, Eric (DNREC) <[Eric.Rowland@delaware.gov](mailto:Eric.Rowland@delaware.gov)>  
**Sent:** Tuesday, November 7, 2023 3:26 PM  
**To:** Bard, Allison <[Allison.Bard@croda.com](mailto:Allison.Bard@croda.com)>  
**Cc:** Mann, Amy (DNREC) <[Amy.Mann@delaware.gov](mailto:Amy.Mann@delaware.gov)>; Okesola, Olayiwola (DNREC) <[Olayiwola.Okesola@delaware.gov](mailto:Olayiwola.Okesola@delaware.gov)>  
**Subject:** Questions on Flare Permit Application

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Allison,

I've had the opportunity to re-visit the flare application and have questions I'd like to ask you and your staff concerning this flare.

- In your cover letter, you have requested that a public hearing be preemptively set up, but you do not mention if you wish for this permit application to be processed as a standard minor source 1102 permit or a Federally Enforceable 1102 Permit. Please advise how you would like this processed. **Process application as a Federally Enforceable 1102 Permit.**
- Could you provide a site plan showing where this flare will be located? I seem to recall discussing this in the past, or having been shown a site plan with it labeled, but I do not see it included with the application. The latitude given on the application is also incorrect (typographical error), if you could provide the correct lat/long, that would be appreciated. **Site Plan Attached. Latitude: 39° 41' 36"**
- I have a question regarding the process flow diagram (Form AQM-2) and the diagram provided as "Croda Atlas Plant, Ethylene Oxide Flare New Castle, Delaware, Elevated Self-Supported Stack" (vendor diagram). The vendor diagram shows both a 3" inlet (presumed to be the First Stage on the vendor diagram or Stg 1 inlet on the liquid seal data sheet) and a 16" inlet (presumed to be the "inlet" on the liquid seal data sheet). Are certain flows from your plant (as shown on Form AQM-2) plumbed to one or the other inlet, or are these two inlets somehow manifolded together. I would like to see a more in-depth explanation of how these two inlets are used/related. **The two inlets are manifolded together, one permitted point. The 16" inlet is the bigger subpart and the 3" inlet is the smaller subpart.**

- On Form AQM-4.3 in section 22, you briefly describe operation of the 20" flare, stating that an additional 25,500 SCFH of natural gas will be introduced when there is sufficient flow in the flare header to cause a breakthrough of the 20" flare liquid seal.
  - How will this breakthrough be detected? (flow rate, differential pressure, other?) **If pressure header increases to 9" then additional natural gas is added.**
  - You further state that additional natural gas could be added if the gas entering is below 300 Btu/scf. How is the heat content of the incoming gas determined? How is the amount of additional gas provided varied based on this value? Is there a design maximum on the additional amount of gas that could be provided? **BTU is measured. Design maximum is 53,000 SCFH.**
  - In this section no mention is given to the 3" "piggyback" or first stage flare. How is breakthrough measured for this flare? It is presumed to occur sooner than the 20" flare based on the data given (4" water seal depth vs. 21" water seal depth). Will additional natural gas be provided to this 3" flare if breakthrough occurs? If so, how much? Will additional natural gas be provided to this flare for low heat content gases? **Liquid depth above the 20" flare gas inlet is 10" not 21". Purge gas always flows and is sufficient to maintain 300 BTU/SCF, no additional natural gas provided.**
- Based on the provided Flare Emission Calculations and the specification sheets provided, am I correct in presuming that the 3" flare is "on" at all time, with the pilot on at all times, and the flare itself burning a purge flow of 473 CFH? (If not, please explain the natural gas purge flow in greater detail.) For the 16" flare, other than the pilots, is any flow occurring through the flare when it is not in operation? Nitrogen? **That is correct. There is a continuous nitrogen purge.**
- What is the rated destruction efficiency of the flare system? **98%**

I appreciate your help in answering these questions.

Best Regards,

Eric Rowland



## Eric Rowland

Engineer

📞 302-739-9402

✉ [eric.rowland@delaware.gov](mailto:eric.rowland@delaware.gov)

📍 100 W Water St, Suite 6A, Dover, DE 19904

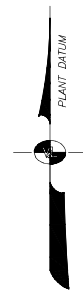
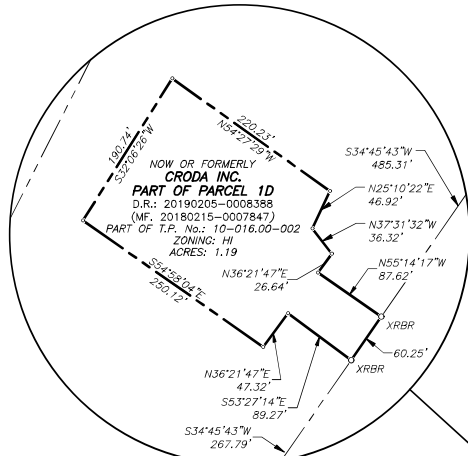
🌐 [dnrec.delaware.gov](http://dnrec.delaware.gov)



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1-295  
(DEDICATED TO PUBLIC USE)  
(VARIABLE WIDTH RIGHT-OF-WAY)

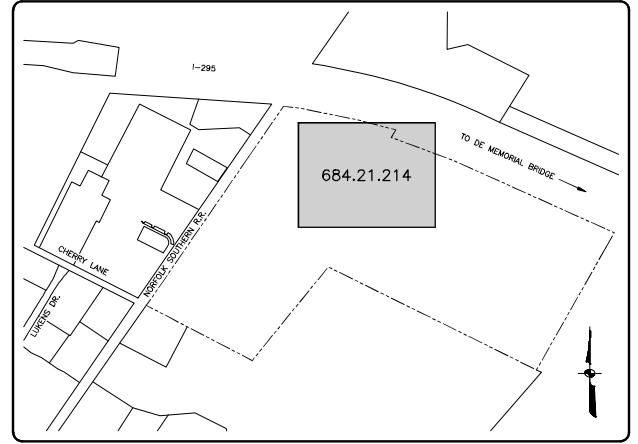
**GENERAL DATA:**

- OWNER: CRODA, INC.  
315 CHERRY LANE  
NEW CASTLE, DE 19720  
(302) 429-5249
- TAX PARCEL NO.: 10-016.00-002 (PARCEL 1D)
- SOURCE OF TITLE: DEED RECORD 20190205-0008388
- TOTAL AREA: 128.88± ACRES
- MODIFIED GRID: 106/346 & 108/344
- ZONING: HI - HEAVY INDUSTRIAL  
MIN. STREET SETBACK: 40'  
MIN. SIDE YARD SETBACK: 0' (20' ADJACENT RESIDENTIAL)  
MIN. REAR YARD SETBACK: 0' (50' ADJACENT RESIDENTIAL)  
MIN. PAVING SETBACK: 40' STREET, 10' OTHER
- MONUMENTS: EXISTING 11 PROPOSED 0

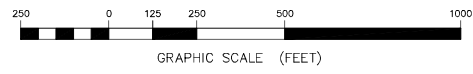
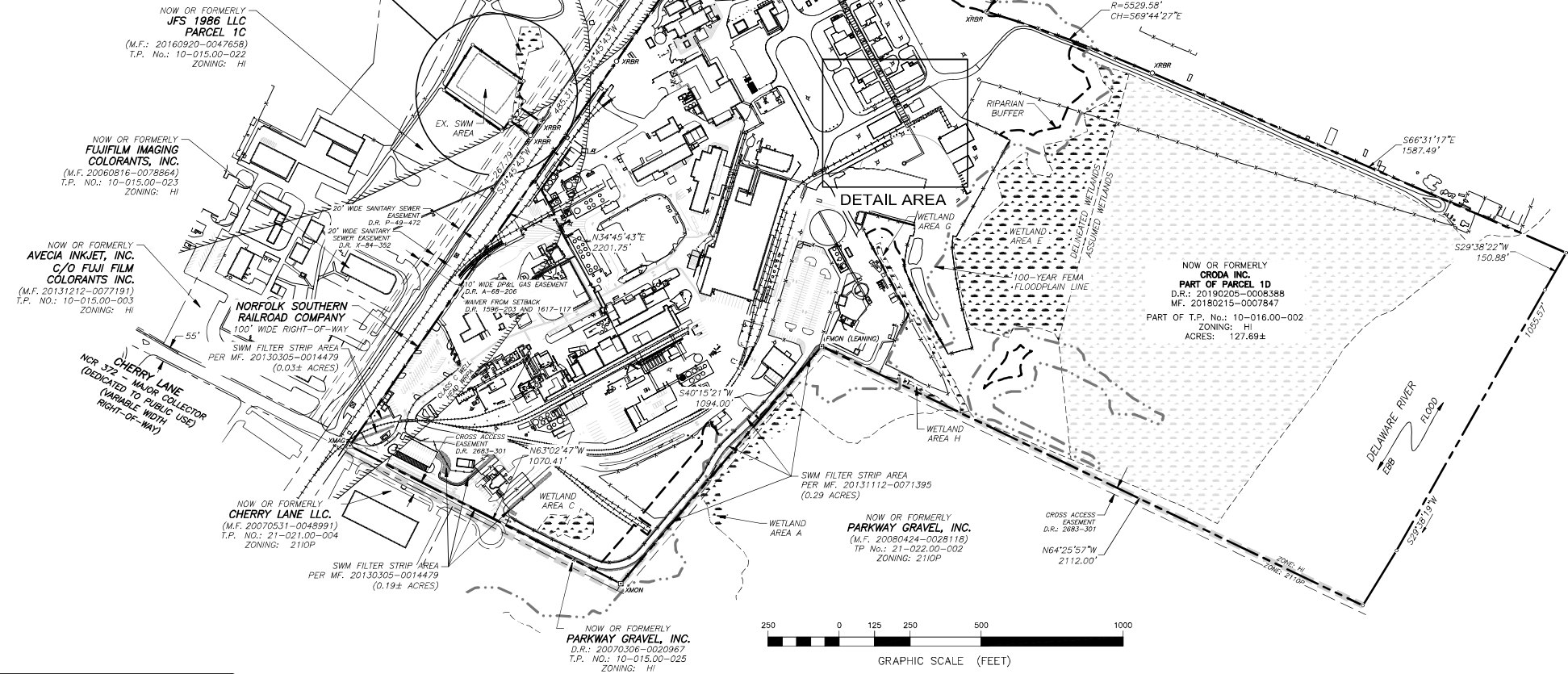
- DATUM: HORIZONTAL - NAD 1927  
VERTICAL - NGVD 1929 DATUM CONVERSION  
(NAVD 88 = NGVD 29 - 1.21')
- DATE OF FIELD SURVEY: VANDEMARK & LYNCH, INC. TOPOGRAPHY MARCH 17, 2014 TO JANUARY 20, 2015, JUNE 19, 2019 AND APRIL 22, 2021.
- BENCHMARK: SET BOXCUT ON TOP OF WALL ON WESTERLY CORNER OF AREA 99 - TANK CONTAINMENT AREA (EL.: 27.81 FEET)
- WATER: PRIVATE/SUEZ - WATER SUPPLY IS PRIVATE WITH MAKEUP WATER PROVIDED BY SUEZ. MAKEUP WATER IS SUBJECT TO THE APPROVAL OF THE DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL AND THE DELAWARE DEPARTMENT OF HEALTH.
- FIRE HYDRANTS: (55) EXISTING FH
- SEWER: NEW CASTLE COUNTY - SEWERAGE IS SUBJECT TO THE APPROVAL OF THE DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL AND NEW CASTLE COUNTY DEPARTMENT OF LAND USE.  
  
AN EXISTING INDUSTRIAL PERMIT #WPD 08-119 REV03 CALLS FOR A PERMITTED FLOW LIMIT OF 1,297,000 GPD. THE PROPOSED SANITARY SEWER FLOWS WILL NOT REQUIRE MODIFICATION OF THE EXISTING INDUSTRIAL PERMIT WITH RESPECT TO FLOW LIMITS, FLOW CONSTITUENTS, AND/OR THE FACILITY'S INDUSTRIAL CLASSIFICATION. ALL SANITARY SEWER COLLECTOR MAINS ON THE CRODA PROPERTIES ARE PRIVATE AND ARE PRIVATELY MAINTAINED. NO ADDITIONAL SEWER FLOWS ARE PROPOSED BY THIS PLAN.



NCC ZONING MAP No. 43 & No. 44 **LOCATION PLAN** SCALE: 1" = 2000'



ZONING MAP No. 43 & No. 44 **KEY PLAN** SCALE: 1" = 800'



**LEGEND**

EXISTING	PROPOSED
—	PROPERTY LINE
---	ADJACENT PROPERTY LINE
○	PROPERTY MONUMENT
---	EASEMENT LINE
---	BUILDING RESTRICTION LINE
---	WRPA AREA/CONSERV. ESMT.
---	100-YEAR FEMA FLOOD PLAIN
---	LINE/CONSERVATION ESMT.
---	RIPARIAN BUFFER/CONSERVATION ESMT.
---	WETLANDS/CONSERV. ESMT.
---	PAVEMENT/GRAVEL
---	RAILROAD
---	BUILDING
---	LIMIT OF DISTURBANCE
○	FIRE HYDRANT
---	ZONING BOUNDARY

**CERTIFICATION OF PROFESSIONAL ENGINEER**  
I, THE UNDERSIGNED, HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER WITH A BACKGROUND IN CIVIL ENGINEERING IN THE STATE OF DELAWARE AND THAT ALL OF THE INFORMATION ON THIS PLAN IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY ACCEPTED SURVEYING STANDARDS AND PRACTICES AND BY THE NEW CASTLE COUNTY UNIFIED DEVELOPMENT CODE.

*Douglas M. Etelman*  
SIGNATURE AND DATE 12.06.2022  
DOUGLAS M. ETELMAN, P.E. (DE 15860)  
PRINTED NAME

**DOUGLAS M. ETELMAN**  
No. 15860  
PROFESSIONAL ENGINEER  
DELAWARE

**CERTIFICATION OF OWNERSHIP**  
I, THE UNDERSIGNED, HEREBY CERTIFY THAT CRODA, INC. IS THE OWNER OF THE PROPERTY WHICH IS THE SUBJECT OF THIS PLAN AND THAT THE LAND USE ACTION PROPOSED BY THIS PLAN IS MADE AT ITS DIRECTION AND THAT IT AUTHORIZES THIS PLAN TO BE RECORDED IN ACCORDANCE WITH THE REGULATIONS OF THE NEW CASTLE COUNTY UNIFIED DEVELOPMENT CODE.

*Chris Barnett*  
OWNER  
CHRIS BARNETT, SITE DIRECTOR  
PRINTED NAME  
11-30-2022  
DATE  
CRODA, INC.  
315 CHERRY LANE  
NEW CASTLE, DE 19720

**PURPOSE NOTE:**  
THE PURPOSE OF THIS PLAN IS TO:  
CONSTRUCT SAFETY AND ENVIRONMENTAL IMPROVEMENTS TO THE ECO PLANT CONSISTING OF A 65'-FOOT TALL FLARE AND ANCILLARY EQUIPMENT.

THE TOTAL LAND DISTURBANCE PROPOSED BY THIS PLAN IS 2,500± SQUARE FEET

**SITE PLAN SHEET INDEX:**  
684 21 211: INDEX AND COVER PLAN  
684 21 212: NOTES  
684 21 213: BUILDING BREAKDOWN  
684 21 214: SITE PLAN



NCC APPLICATION NO.: 2022-0264-S  
ECO FLARE SITE PLAN  
PREPARED FOR  
**CRODA, INC.**  
NEW CASTLE HUNDRED  
NEW CASTLE COUNTY - DELAWARE

Atlas Point Site 23539.29E-SITE-01.DWG

NO.	DATE	BY	APP.	APP.	APC	PROJECT	REVISION	REFERENCE DRAWINGS	REFERENCE DRAWINGS	PROPRIETARY STATEMENT	ORIGINAL ISSUE APPROVALS
										D.R.E. 408 COMMUNICATION	
										STANDARDS AND SPECIFICATIONS	
B	11.11.22	MJC	DME				ISSUED FOR REVIEW				
A	03.28.22	EKV	DME				ISSUED FOR REVIEW				

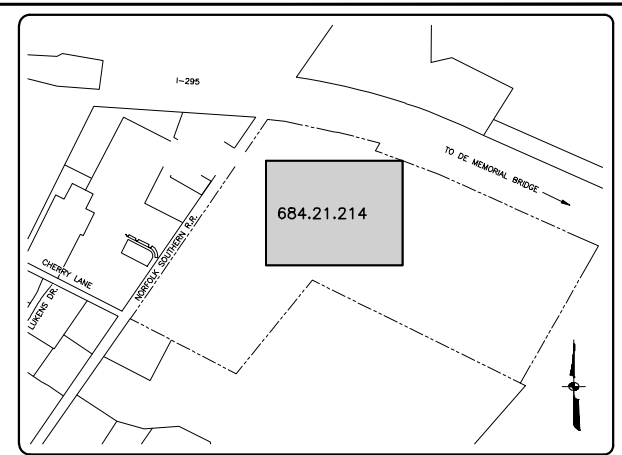
TITLE		REV.
ECO FLARE PROJECT		
INDEX & COVER PLAN		
SITE PLAN		
SIZE	DRAWING NUMBER	REV.
D	684 21 211	1 of 4
		B 11.11.22



THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED AND DATED APPROVED FOR CONSTRUCTION.  
APPROVED FOR CONSTRUCTION

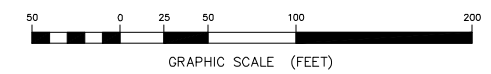
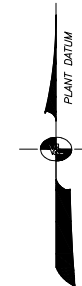
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ZONING MAP NO. 43 & NO. 44 **KEY PLAN** SCALE: 1" = 800'

EXISTING		PROPOSED
---	PROPERTY LINE	N/A
---	PROPERTY MONUMENT	N/A
---	ADJACENT PROPERTY LINE	N/A
---	EASEMENT LINE	N/A
---	BUILDING RESTRICTION LINE	N/A
---	WRPA AREA/CONSERV. ESMT.	N/A
---	100-YR FLOOD PLAIN/ CONSERVATION EASEMENT	N/A
---	RIPARIAN BUFFER/ CONSERVATION EASEMENT	N/A
---	TREE/BRUSHLINE	N/A
---	WETLANDS/CONSERVATION EASEMENT	N/A
---	PERVIOUS AREA	N/A
---	PAVEMENT	N/A
---	BUILDING	N/A
---	RAILROAD TRACK	N/A
---	CONCRETE	N/A
---	RAIL BALLAST / GRAVEL	N/A
---	STORMWATER MANAGEMENT AREA	N/A
---	FENCE	N/A
---	WATER LINE	N/A
---	FIRE WATER LINE	N/A
---	STORM SEWER LINE	N/A
---	COMBINED SEWER LINE	N/A
---	COMBINED SEWER MANHOLE	N/A
---	SEWER FORCE MAIN	N/A
---	ETHYLENE OXIDE LINE	N/A
---	FIRE HYDRANT	N/A
---	FIRE HYDRANT MONITOR	N/A
---	WATER VALVE-PIV	N/A
---	WATER VALVE-CURB BOX	N/A
---	LIGHT POLE	N/A
---	UTILITY POLE	N/A
---	SIGN	N/A
---	PARKING COUNT	N/A
---	RAILROAD TRACK NUMBER	N/A
---	LIMIT OF DISTURBANCE	LOD
---	ZONING BOUNDARY	N/A



NCC APPLICATION NO.: 2022-0264-S



Atlas Point Site 23539.29E-SITE-03.DWG

NO.	DATE	BY	APP.	APP.	AFC	PROJECT	REVISION	REFERENCE DRAWINGS	REFERENCE DRAWINGS	PROPRIETARY STATEMENT	ORIGINAL ISSUE APPROVALS
										D.R.E. 408 COMMUNICATION	
										STANDARDS AND SPECIFICATIONS	
B	11.11.22	MJC	DME				ISSUED FOR REVIEW				
A	03.28.22	EKV	DME				ISSUED FOR REVIEW				

**CRODA**

TITLE		
ECO FLARE PROJECT		
SITE PLAN		
SITE PLAN		
SIZE	DRAWING NUMBER	REV.
D	684 21 214	4 OF 4
		B 11.11.22

Plotted Project: 23539.29E-Site-03.DWG, 03/28/2022 11:58 AM  
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