



APPLICATION FOR A COASTAL ZONE ACT PERMIT

**State of Delaware
Department of Natural Resources & Environmental Control
Office of the Secretary**

Date of submission
Combined Heat and Electric Power (CHEP) System
Croda, Inc.

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Permit Application Instructions

1. Complete all parts of the application. For sections which are not applicable to your project, do not leave blank; present a statement that clearly states why the section is not applicable to your project.
2. Because all applicants' projects are different, this word document template will provide you flexibility for needed space to answer the questions. Please insert additional lines for text where needed for your application. If appropriate, attach extra pages referencing each answer by the corresponding section and question number.
3. Submit eight complete hard copies of the permit application to:

Office of the Secretary
Department of Natural Resources & Environmental Control
State of Delaware
89 Kings Highway
Dover, DE 19901

In addition to the eight hard copies, submit a complete electronic "pdf" copy of the permit application and a copy of the Offset Matrix in Microsoft Word format on cd-rom.

4. Comply, if required, or as requested by the DNREC Secretary, with 7 Delaware Code, Chapter 79, Section 7902. If requested, but not completed, your application will not be considered administratively complete until this form is reviewed.
5. Be sure to include your permit application fee of \$3,000; otherwise the application will not be considered administratively complete. Make checks payable to the "State of Delaware."
6. Be advised that the application for a Delaware Coastal Zone Act Permit is a public document, which may be displayed at DNREC offices, public libraries, and the web, among others. If this application requires you to place confidential information or data in the application to make it administratively complete, note the Delaware Freedom of Information Act (29 Delaware Code, Chapter 100) and DNREC's Freedom of Information Act Regulation, Section 6 (Requests for Confidentiality), for the proper procedure in requesting confidentiality.

Note: This application template was last revised by DNREC on January 30, 2008. Please discard any previous versions.

PART 1

CERTIFICATION BY APPLICANT

Under the penalty of perjury pursuant to 11 Delaware Code §1221-1235, I hereby certify that all the information contained in this Delaware Coastal Zone Act Permit Application and in any attachments is true and complete to the best of my belief.

I hereby acknowledge that any falsification or withholding of information will be grounds for denial of a Coastal Zone Permit.

I also hereby acknowledge that all information in this application will be public information subject to the Delaware Freedom of Information Act, except for clearly identified proprietary information agreed to by the Secretary of the Department of Natural Resources & Environmental Control.

Robert Stewart on behalf of Croda Inc.

Print Name of Applicant



Signature of Applicant

Site Director

Title

September 22, 2011

Date

PART 2

APPLICANT INFORMATION AND SITE IDENTIFICATION

2.1 Identification of the applicant:

Company Name: Croda, Inc.
Address: 315 Cherry Lane, New Castle, DE, 19720
Telephone: 302-429-5599
Fax: 302-429-5304

2.2 Primary contact: Please list the name, phone number and email of a preferred contact within your company in case the DNREC needs to contact you regarding this permit application. Robert J. Touhey – Safety, Health & Environmental Manager

2.3 Authorized agent (if any): N/A

Name:
Address:
Telephone:
Fax:

If you have an authorized agent for this permit application process, provide written authorization from client for being the authorized agent.

2.4 Project property location (street address): 315 Cherry Lane, New Castle, DE, 19720

2.5 In a separate attachment, provide a general map of appropriate scale to clearly show the project site. See attachment A

2.6 Is the applicant claiming confidentiality in any section of their application?
YES
NO

If yes, see instructions on page 3.

PART 3

PROJECT SUMMARY

Provide a one-page summary describing the proposed project. Include a brief quantitative description of the anticipated environmental impacts, and how the Environmental Offset Proposal will "clearly and demonstrably" more than offset any negative impacts.

This project is a combined heat and electric power (CHEP) system featuring two 1.1 MW lean-burn gas generator sets, a waste heat recovery system, and an absorption chiller. The CHEP will utilize two Cummins C1100 N6C reciprocating engine generators with a total capacity of 2.2 MW. The engines will use landfill gas from the nearby Cherry Island Landfill facility as fuel. The landfill gas will be delivered to the Croda site via pipeline following any necessary pretreatment conducted at the Cherry Island landfill site. The transportation and treatment systems for the landfill gas will be provided by others and are not a part of this project.

Excess landfill gas available beyond fuel requirements for the CHEP reciprocating engines will be utilized to offset natural gas fuel requirements in existing steam boilers located in the Croda powerhouse building. The high temperature exhaust stream and two waste heat process loops from the CHEP engines will be further utilized to preheat feedwater for the steam boilers and supply energy to an absorption chiller system for process cooling needs.

The CHEP equipment will be installed adjacent to the existing Croda powerhouse building. Electrical output will be utilized throughout the Croda site via the existing power distribution system with necessary modifications to facilitate a standby service connection with the current electric utility supplier. Any electrical shortfall may be covered with imported power through the utility connection and likewise excess electricity may be exported to the power grid through the utility connection.

The environmental impacts of this project are minimal. The proposed CHEP system is a net environmental air emission improvement project and therefore the environmental offset is embodied within the project proposal. The CHEP system will lower environmental emissions by utilizing landfill gas fuel that is currently being flared directly to the atmosphere. Electricity generated at the Croda site through the CHEP system will significantly reduce if not eliminate the amount of utility purchased power for Croda and therefore displace a portion of emissions associated with commercial electric power generation. An added benefit will be the use of any excess landfill gas to displace a portion of utility natural gas currently used by the steam boilers at the Croda facility.

The present timetable for the CHEP project indicates permitting, detail design, procurement, construction, and commissioning to be complete by the beginning of the fourth quarter in 2012.

PART 4

**PROJECT PROPERTY RECORD AND
EVIDENCE OF LOCAL ZONING AND PLANNING APPROVAL**

PROJECT PROPERTY RECORD

- 4.1 Name and address of project premises owner(s) of record:
Croda Inc.
315 Cherry Lane
New Castle, DE 19720
- 4.2 Name and address of project premises equitable owner(s): **Same**
- 4.3 Name and address of lessee(s): **N/A**
- 4.4 Is the project premises under option by permit applicant? **No**
- 4.5 What is the present zoning of the land for this entire project site? **Heavy Industrial**

EVIDENCE OF LOCAL ZONING AND PLANNING APPROVAL

NOTE: New Castle Zoning Approval has been requested – see Attachment B

I, _____, for _____
(Name of County, City of Town)

do hereby affirm that the project proposed by _____
(Name of Applicant)

located at _____, in
(Address)

the _____ zoning district is in
full compliance with the zoning code as it applies to this project.

The above named applicant's project is in compliance with the adopted comprehensive development plan for the geographic area within which the project will be located.

(Signature)

(Title)

(Date)

This part is essential for a complete Coastal Zone Act Permit Application. No application will be considered administratively complete without it. While the applicant is strongly advised to use this form, the local zoning jurisdiction may utilize a different form or document to demonstrate "evidence of local zoning approval," provided such documents are signed and dated by the proper official.

PART 5

PROJECT OPERATIONS

- 5.1 Describe the characteristics of the manufactured product and all the process and/or assembly operations utilized by the proposed project. Include in the description (use attachments if necessary):
- a. the raw materials, intermediate products, by-products and final products and characteristics of each. Review any materials' risk of carcinogenicity, toxicity, mutagenicity and/or the potential to contribute to the formation of smog. Provide material safety data sheets (MSDS) if available; **Landfill gas supplied under contract from Cherry Island Landfill.**
 - b. the step-by-step procedures or processes for manufacturing and/or assembling the product(s). Provide a flow diagram to illustrate procedures; **See attachment C**
 - c. the nature of the materials mentioned above in 4.1(a) as to whether or not the materials require special means of storage or handling; **The landfill gas will be delivered directly to the CHEP by pipeline. It will not be stored and will be handled in the same manner that natural gas is currently handled.**
 - d. list the machinery (new and/or existing) to be utilized by this project; **Two internal combustion engines with electric generators and their associated control system. Heat exchangers and a chiller to cool the engines and to recover waste heat from the engine exhaust stream and captive coolant loops.**
 - e. list any new buildings or other facilities to be utilized; **No new buildings**
 - f. list the size and contents of any anticipated aboveground or underground storage tank systems that may be constructed or utilized in support of facility operations; **No storage tanks associated with this project.**
 - g. if this project represents an increase or decrease in production at an already existing facility, what will be the new rate of maximum production? **No production changes associated with this project.**
 - h. if this project represents a totally new facility at a new or existing site, what will be the maximum production rate? **The CHEP includes new equipment at an existing site. The maximum electric power production rate is 2.2 MW.**
- 5.2 Describe daily hours of plant operations and the number of operating shifts. **No change associated with this project. The CHEP will be operated 24 hours per day, with shutdown for regular and emergency maintenance only.**

5.3 Provide a site plan of this project with:

- a. a north arrow;
- b. a scale of not less than one inch to 200 feet;
- c. identity of the person responsible for the plan, including any licenses and their numbers;
- d. the acreage of the applicant's entire property and acreage of the proposed project;
- e. property lines of entire property;
- f. lines designating the proposed project area for which application is being made, clearly distinguished from present facilities and operating areas (if any);
- g. existing and proposed roads, railroads, parking and loading areas, piers, wharfs, and other transportation facilities;
- h. existing water bodies and wetlands and proposed dredge and fill areas, and;
- i. existing and proposed drainage ways, gas, electric, sewer, water, roads, and other rights-of-way.

See Attachment D

5.4 How many acres of land in total are required for this proposed project?

Existing/ currently utilized/ developed land: Less than 2 acres.

New land: No new land use associated with this project. acres.

5.5 Has the property been involved with a state or federal site cleanup program such as Superfund, Brownfields, HSCA Voluntary Cleanup Program, RCRA Corrective Action, Aboveground or Underground Storage Tank Cleanup Programs? If so please specify which program. **HSCA Voluntary Cleanup Program**

5.6 With regards to environmental cleanup actions, has a Uniform Environmental Covenant, Final Plan of Remedial Action, or no further action letter been issued by the Department? If so are the planned construction activities consistent with the requirements or conditions stated in these documents? **See attachment E – Summary of Areas of Concern which outlines the areas of the Croda facility that have been or are being addressed under the HSCA Voluntary Cleanup Program**

PART 6A

ENVIRONMENTAL IMPACTS

Air Quality

6.1 Describe project emissions (new, as well as any increase or decrease over current emissions) by type and amount under maximum operating conditions:

Pollutant	Existing Emissio		Net Increase/Decre		New Total Emissio		Percent Ch (compare ton
	Lbs/d	Tons/ye	Lbs/d	Tons/ye	Lbs/d	Tons/ye	
CO ₂			1476	26950			new
NO _x			80.8	14.76			new
SO _x			28.3	5.17			new
PM			2.40	0.44			new
CO			242.	44.3			new

Two - C1100 N6C Engines at 100% capacity.

- 6.2 Describe how the above emissions change in the event of a mechanical malfunction or human error. **Emissions of CO may increase temporarily if the air/fuel ratio controls on the engines should malfunction. However, these conditions are continuously monitored by the engine computer and will notify the operator via alarms if a malfunction has occurred.**
- 6.3 Describe any pollution control measures to be utilized to control emissions to the levels cited above in 5.1. **The engines will combust the landfill gas organic components to the emission levels stated with no additional controls.**
- 6.4 Show evidence that applicant has, or will have, the ability to maintain and utilize this equipment listed in 5.3 in a consistently proper and efficient manner. (For example, provide college transcripts and/or records of training courses and summary of experience with this pollution control equipment of person(s) responsible for pollution control equipment, and/or provide copies of contracts with pollution control firms to be responsible for maintaining and utilizing this equipment.) **Croda Inc. will contract all maintenance and routine inspections with the engine manufacturer's authorized representative to ensure proper maintenance is performed and that the engines operate in compliance with design parameters.**

Water Quality

- 6.5 Describe wastewater discharge (new, as well as any increase or decrease over current discharge levels) due to project operations: **No new water discharges, and no changes to current levels.**

Pollutant	Current Discharge Concentration (ppm)	New or Change Discharge Concentration (ppm)	Current Discharge		Net Increase/Decrease		New Total Emissions	
			Lbs/day	Tons/year	Lbs/day	Tons/year	Lbs/day	Tons/year

- 6.6 Describe the current method of employee sanitary wastewater disposal and any proposed changes to that system due to this proposed project. **Sanitary wastewater is discharged to the New Castle County sewer system and there are no proposed changes associated with this project.**
- 6.7 Identify the number, location, and name of receiving water outfall(s) of any and all process wastewater discharge (new or current) affected by this proposed project. Provide NPDES Permit Numbers for each discharge affected. **No surface water discharge will be affected by process wastewater from this project.**
- 6.8 If any effluent is discharged into a public sewer system, is there any pretreatment program? If so, describe the program. **This project will not create any new discharges to the New Castle County sewer system. Croda currently has a pretreatment permit from the County WDP-08-119.**
- 6.9 Stormwater:
- a. Identify the number, location, and name of receiving waters of stormwater discharges. Provide permit number for each discharge. **Site storm water is discharged through numerous outfalls to the Delaware River under NPDES permit DE0000621.**
 - b. Describe the sources of stormwater run-off (roofs, storage piles, parking lots, etc). **Buildings, roadways, parking lots and other paved and un-paved areas of the site.**
 - c. Describe the amount of stormwater run-off increase over current levels that will result from the proposed project. **No increase in stormwater is expected.**

- d. Describe any pollutants likely to be in the stormwater. **Pollutants currently limited in the permit are Biochemical Oxygen Demand (BOD), pH and temperature. No changes will result from this project.**
- e. Describe any pollution control device(s) or management technique(s) to be used to reduce the amount of stormwater generated, and devices to improve the quality of the stormwater run-off prior to discharge. **No new improvements are planned with this project.**
- f. Describe any new or improved stormwater drainage system required to safely carry off stormwater without flooding project site or neighboring areas down gradient. **No new improvements are planned with this project.**

6.10 Will this project use a new water intake device, or increase the use (flow) from an existing intake device?

YES

NO

If yes, state:

- a. the volume of water to be withdrawn, and;
- b. describe what will be done to prevent entrainment and/or entrapment of aquatic life by the intake device.

6.11 Will this proposed project result in a thermal discharge of water, or an increase in the flow or temperature of a current thermal discharge?

YES

NO

If yes, state:

- a. the volume of the new flow or increase from the existing thermal discharge, both in flow and amount of heat;
- b. how warm will the water be when it is discharged into a receiving waterway, discharge canal, or ditch, and what will be the difference in discharge temperature and ambient temperature (delta T) at various seasons of the year after all cooling water mechanisms have been applied to the hot water?
- c. the equipment and/or management techniques that will be used to reduce the thermal load of the discharge water.

6.12 Will any proposed new discharge or change in existing discharge cause, or have potential to cause, or contribute to, the exceedence of applicable criteria appearing in the “State of Delaware Surface Water Quality Standards”?

YES

NO

If yes, explain:

6.13 Describe any oils discharged to surface waters due to this proposed project.

No oil will be discharged to surface water due to this project.

6.14 Describe any settleable or floating solid wastes discharged to surface waters due to this project.

No solid wastes will be discharged to surface water due to this project.

Show evidence that the applicant has, or will have, the ability to maintain and utilize any water pollution control equipment listed in questions 6.5 through 6.14 in a consistently proper and efficient manner. (For example, provide operator license numbers, college transcripts and/or training courses and summary of prior experience with this pollution control equipment of person(s) responsible for pollution control equipment, and/or provide copies of contracts with pollution control firms.) **The stormwater discharges are not treated using pollution control equipment**

6.15 Estimate the amount of water to be used for each specified purpose including cooling water. State daily and maximum water use in the unit of gallons per day for each purpose and source of water. State if water use will vary with the seasons, time of day, or other factors. **N/A The cooling system will be a closed system**

6.16 Identify the source of water needed for the proposed project, including potable water supplies. **None – see response to 6.15**

6.17 Are wells going to be used?

YES

NO

If yes:

- a. Identify the aquifer to be pumped and the depth, size and pumping capacity of the wells.
- b. Has a permit been applied for to do this?
- c. How close is the proposed well(s) to any well(s) on adjacent lands?

Solid Waste

6.18 Will this project result in the generation of any solid waste?

YES

NO

If yes, describe each type and volume of any solid waste (including biowastes) generated by this project, and the means used to transport, store, and dispose of the waste(s).

6.19 Will there be any on-site recycling, re-use, or reclamation of solid wastes generated by this project?

YES

NO

If yes, describe:

6.20 Will any waste material generated by this project be destroyed on-site?

YES

NO

If yes, how will that be done?

Hazardous Waste

- 6.21 Will this proposed project result in the generation of any hazardous waste as defined by the “Delaware Regulations Governing Hazardous Waste”?

YES

NO

If yes, identify each hazardous waste, its amount, and how it is generated:

- 6.22 Describe the transport of any hazardous waste and list the permitted hazardous waste haulers that will be utilized. N/A

- 6.23 Will the proposed project cause the applicant to store, treat, and/or dispose of hazardous waste?

YES

NO

If yes, describe:

- 6.24 Does the applicant currently generate any hazardous waste at this site?

YES

NO

If yes, describe: **The site is currently a generator of hazardous waste under generator ID DED002342020**

Habitat Protection

6.25 What is the current use of the land that is to be used for the proposed project?
Land for this project is paved and adjacent to the existing powerhouse building.

6.26 Will the proposed project result in the loss of any wetland habitat?
YES
NO

If yes, describe:

6.27 Will any wastewater and/or stormwater be discharged into a wetland?
YES
NO

If yes, will the discharge water be of the same salinity as the receiving wetlands?

6.28 Will the proposed project result in the loss of any undisturbed natural habitat or public use of tidal waters?
YES
NO

If yes, how many acres?

6.29 Do threatened or endangered species (as defined by the DNREC and/or the Federal Endangered Species Act) exist at the site of the proposed project, or immediately adjacent to it?
YES
NO

If yes, list each species:

6.30 Will this proposed project have any effect on these threatened or endangered species (as defined by the DNREC and/or the Federal Endangered Species Act).
YES
NO

If yes, explain:

6.31 What assurances can be made that no threatened or endangered species exist on the proposed project site? The project involves a small area on an existing industrial site next to an existing building.

Describe any filling, dredging, or draining that may affect nearby wetlands or waterways.
No filling, dredging or draining will be performed by this project.

- 6.32** If dredging is proposed, how much will occur and where will the dredged materials go for disposal?
No filling, dredging or draining will be performed by this project.

Other Environmental Effects

- 6.33 Describe any noticeable effects of the proposed project site including: heat, glare, noise, vibration, radiation, electromagnetic interference, odors, and other effects. **The project's two internal combustion engines will generate heat that will be used to pre-heat boiler feed water with a heat recovery efficiency of 80%. The system will be enclosed within sound barriers to minimize noise beyond the barrier to acceptable levels, and the engines will be constructed with a vibration absorption system. No other noticeable environmental effects are anticipated.**
- 6.34 Describe what will be done to minimize and monitor such effects. **Sound level attenuation enclosures will minimize noise beyond the barriers. The site conducts periodic noise level surveys throughout the facility.**
- 6.35 Describe any effect this proposed project will have on public access to tidal waters. **There will be no effect on public access to tidal waters. The project will be constructed on a privately owned industrial site.**
- 6.36 Provide a thorough scenario of the proposed project's potential to pollute should a major equipment malfunction or human error occur, including a description of backup controls, backup power, and safety provisions planned for this project to minimize any such accidents. **The system will be automated, computer controlled and is designed to automatically shutdown in the event of a malfunction. Backup power is supplied by the area electric grid and natural gas is available for backup fuel to the site boilers.**
- 6.37 Describe how the air, water, solid and hazardous waste streams, emissions, or discharge change in the event of a major mechanical malfunction or human error. **No significant changes are anticipated since the system will immediately shut down in the event of malfunction.**

PART 6B

ENVIRONMENTAL OFFSET PROPOSAL REDUCTION CLAIM

Is applicant claiming the right to have a reduced offset proposal due to past voluntary improvements as defined in the “Regulations Governing Delaware’s Coastal Zone”?

YES

NO

If yes, provide an attachment to the application presenting sufficient tangible documentation to support your claim.

PART 6C

ENVIRONMENTAL OFFSET PROPOSAL

If the applicant or the Department finds that an Environmental Offset Proposal is required, the proposed offset project shall include all the information needed to clearly establish:

- A. A qualitative and quantitative description of how the offset project will “clearly and demonstrably” more than offset the negative impacts from the proposed project.
The project will offset the new emissions from the generators by eliminating current emissions from:
- **flaring the landfill gas at Cherry Island Landfill,**
 - **reducing current Croda boiler emissions by using generator exhaust heat to pre-heat Croda boiler feed water, and**
 - **reducing utility electric generation emissions by avoidance of the purchase of 2 megawatts of electric on average per day.**
- Two cases quantifying the offsets are presented. Attachment F describes the current emissions including the landfill flare and Croda boiler #3 compared to the project’s use of the landfill gas at the contracted minimum amount to fuel the generators at capacity and boiler #3 at approximately 21% of capacity (case 1). Attachment G again describes the current emissions including the landfill flare and Croda boiler #3 but in this case (case 2) they are compared to the project’s use of the landfill gas at the maximum amount Croda could utilize to fuel both the generators and boiler #3 at capacity. The resulting “net benefit” clearly and demonstrably shows the amount of emission reductions associated with this project. The Application Offset Matrix is Attachment H.**
- B. How and in what period of time the offset project will be carried out.
It is expected that the offsets will commence with the commissioning of the project and will continue throughout the life of the project except for occasional limited periods for maintenance.
- C. What the environmental benefits will be and when they will be achieved.
The environmental benefits are utilization of what is now waste gas for beneficial use in substituting for resources now used to generate electricity and steam. It is expected that the benefits will commence with commissioning of the project and will continue throughout the life of the project except for occasional limited periods for maintenance.

- D. What scientific evidence there is concerning the efficacy of the offset project in producing its intended results.
This is proven technology practiced worldwide and supported by the U.S. Environmental Protection Agency. See the following link <http://www.epa.gov/lmop/>
- E. How the success or failure of the offset project will be measured in both the short and long term.
Croda will realize reduction in utility costs and emissions.
- F. What, if any, negative impacts are associated with the offset project.
None are anticipated.
- G. How the offset will impact the attainment of the Department's environmental goals for the Coastal Zone and the environmental indicators used to assess long-term environmental quality within the Coastal Zone.
Reduction in the emission greenhouse gases and ozone precursors will assist DNREC in attaining its environmental air quality goals in the Coastal Zone and in the Region.

Additional Offset Proposal Information for the Applicant

1. The offset proposals must “*clearly and demonstrably*”¹ more than offset any new pollution from the applicant’s proposed project. The applicant can claim (with documentation) evidence of past voluntary environmental investments (as defined in the Regulations) implemented prior to the time of application. Where the Department concurs with the applicant that such has occurred, the positive environmental improvement of the offset proposal against the new negative impact can be somewhat reduced.
2. The applicant must complete the Coastal Zone Environmental Impact Offset Matrix. This matrix can be found on the CZA web page (<http://www.dnrec.delaware.gov/Admin/CZA/CZAHome.htm>), or by clicking on [this link](#). On page one, the applicant must list all environmental impacts in the column labeled “Describe Environmental Impacts.” In the column to the immediate right, the applicant should reference the page number of the application or attachment which documents each impact listed. In the “Describe Environmental Offset Proposal” column, applicant must state what action is offsetting the impact. The offset action shall be referenced by page number in the column to the right to show how the offset will work. The applicant shall not utilize the far right column. *Please ensure the matrix is complete, detailed, and as specific as possible, given the allotted space. Also, thoroughly proof-read to ensure there are no spelling or grammatical errors.* The applicant must submit a completed matrix both in hardcopy and electronic form.
3. Please note: the entire offset proposal, including the matrix, shall be available to the public, as well as the evidence of past voluntary environmental enhancements.

¹ For purposes of this requirement, the DNREC will interpret the phrase “clearly and demonstrably” to mean an offset proposal that is obviously so beneficial without detailed technical argument or debate. The positive environmental benefits must be obviously more beneficial to the environment than the new pollution that minimal technical review is required by the Department and the public to confirm such. The total project must have a positive environmental impact. The burden of proof is on the applicant.

PART 7

ECONOMIC EFFECTS

Construction

- 7.1 Estimate the total number of workers for project construction and the number to be hired in Delaware.
Approximately 20 workers with on average 15 from Delaware.
- 7.2 Estimate the weekly construction payroll.
Approximately \$36,000.
- 7.3 Estimate the value of construction supplies and services to be purchased in Delaware.
Capital cost estimate is \$5.75 million. Construction supplies, labor and materials are estimated to be \$2.0 million.
- 7.4 State the expected dates of construction initiation and completion.
Construction is expected to commence on or about March 1, 2012 and be completed within 6 months.
- 7.5 Estimate the economic impact from the loss of natural habitat, or any adverse economic effects from degraded water or air quality from the project on individuals who are directly or indirectly dependent on that habitat or air or water quality (e.g. commercial fishermen, waterfowl guides, trappers, fishing guides, charter or head boat operators, and bait and tackle dealers).
No loss of habitat or degradation of air or water quality are expected. On the contrary, improvement in air quality due to the net environmental benefits in emission reductions is expected. Therefore, no adverse economic impacts are expected.

Operations

- 7.6 State the number of new employees to be hired as a direct result of this proposed project and how many of them will be existing Delaware residents and how many will be transferred in from other states. **None. The system will be highly automated and will be monitored by the current powerhouse employees.**
- 7.7 If employment attributable to the proposed project will vary on a seasonal or periodic basis, explain the variation and estimate the number of employees involved. **N/A. See 7.6**
- 7.8 Estimate the percent distribution of annual wages and salaries (based on regular working hours) for employees attributable to this project: . **N/A. See 7.6**

<u>Wage/salary</u>	<u>Percent of employees</u>
<\$10,000	
\$10,000-14,999	
\$15,000-24,999	
\$25,000-34,999	
\$35,000-49,999	
\$50,000-64,999	
\$65,000-74,999	
\$75,000-99,999	
>\$100,000	

Estimate the annual taxes to be paid in Delaware attributable to this proposed project: . **N/A. See 7.6**

State personal income taxes:	\$
State corporate income taxes	\$
County and school district taxes:	\$
Municipal taxes:	\$

PART 8

SUPPORTING FACILITIES REQUIREMENTS

Describe the number and type of new supporting facilities and services that will be required as a result of the proposed project, including, but not limited to:

- a. Roads - **None**

- b. Bridges - **None**

- c. Piers and/or docks - **None**

- d. Railroads - **None**

- e. Microwave towers - **None**

- f. Special fire protection services not now available - **None**

- g. Traffic signals - **None**

- h. Sewer expansion - **None**

- i. Energy related facilities expansion – **This project will reduce demand on public utilities – see offset description Part 6C and Offset Matrix Attachment __**

- j. Pipelines – **the landfill gas delivery pipeline from Cherry Island landfill to the Croda property line will be constructed by others, and is not a part of this project. Approximately 300 feet of pipeline will be constructed on the Croda site by Croda as part of this project.**

PART 9

AESTHETIC EFFECTS

- 9.1 Describe whether the proposed project will be located on a site readily visible from a public road, residential area, public park, or other public meeting place (such as schools or cultural centers). **Project will not be readily visible from off site**
- 9.2 Is the project site location within a half mile of a place of historic or scenic value? **No known historic site within one-half mile. Lukens Marsh is within one-half mile but the project will have no impact on the Marsh.**
- 9.3 Describe any planned attempt to make the proposed facility aesthetically compatible with its neighboring land uses. Include schematic plans and/or drawings of the proposed project after it is complete, including any landscaping and screening.

The project will be constructed on an existing industrial site next to an existing building and will be compatible with existing uses.

PART 10

EFFECTS ON NEIGHBORING LAND USES

- 10.1** How close is the nearest year-round residence to the site of this proposed project? **Over one-half mile**
- 10.2** Will this proposed project interfere with the public's use of existing public or private recreational facilities or resources? **No**
- 10.3** Will the proposed project utilize or interfere with agricultural areas? **No**
- 10.4** Is there any possibility that the proposed project could interfere with a nearby existing business, commercial or manufacturing use? **No**

ATTACHMENTS

ATTACHMENT

A

ATTACHMENT

B



NEW CASTLE COUNTY

Request for Zoning Certification

DEPARTMENT OF LAND USE
87 READS WAY, NEW CASTLE, DE 19720
PHONE: 302-395-5400 • WWW.NCCDELU.ORG

REV. 7/06/09

Please note that a written response to a zoning certification application may take up to 20 working days from the receipt of a complete submission pursuant to UDC Section 40.31.330, and applications are processed in the order in which they are received.

Please Print All Information

Applicant Information (the certification will be mailed to this address)

Name: CRODA INC.
Address: 315 CHERRY LANE
NEW CASTLE DE 19720
c/o ROBERT J. TOUHEY
Daytime Phone Number: 302-429-5269

Property Information

I need certification of zoning for the following tax parcel number: 10-016.00-002
10-016.00-007
located at: 315 & 321 CHERRY
for the purpose of: COASTAL ZONE PERMIT - DELAWARE DNREC
(briefly state intended use of property) CONSTRUCTION OF ELECTRIC
GENERATORS

I need to know if the use described above is permitted in the zoning district.

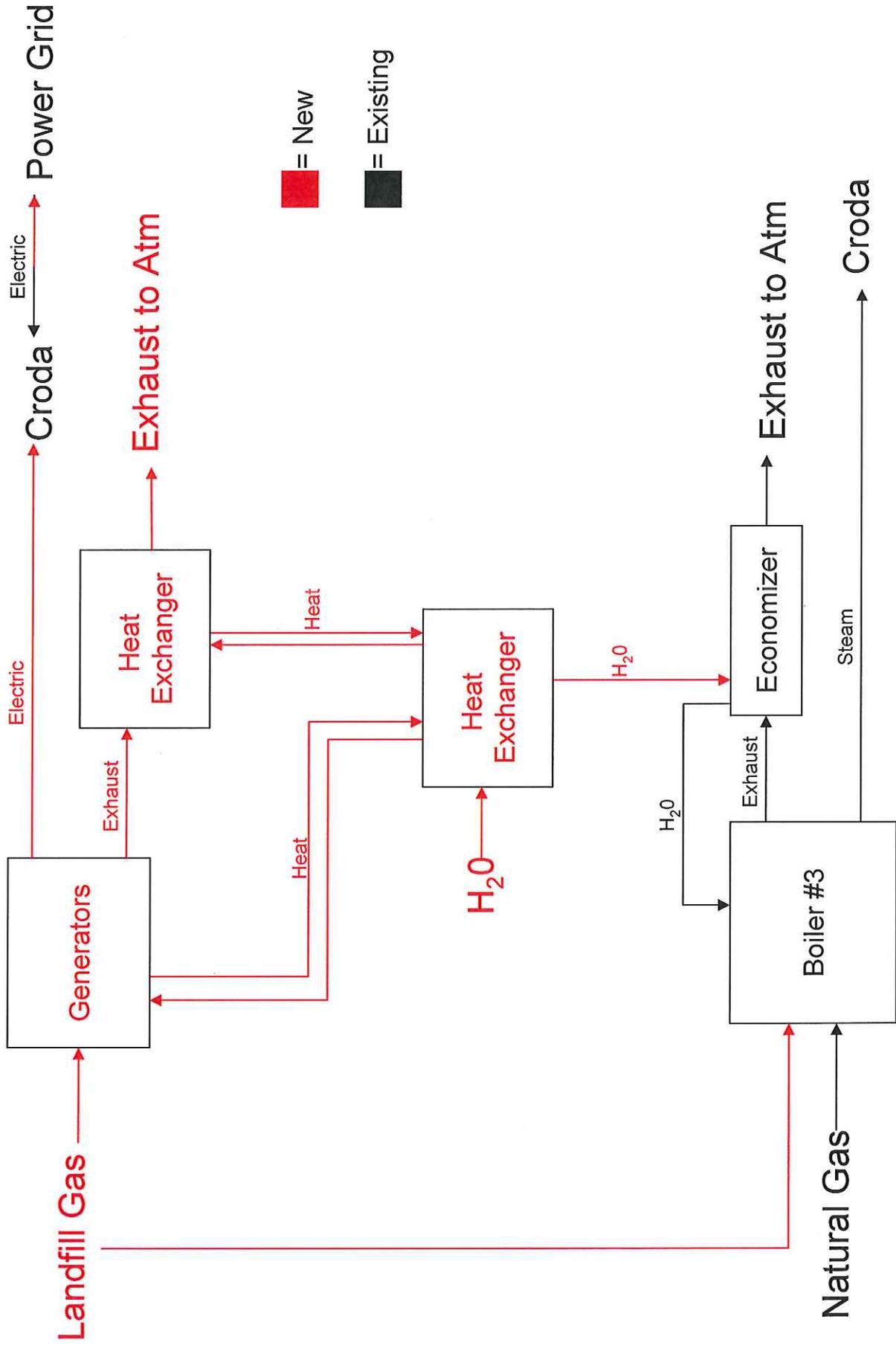
ROBERT J. TOUHEY ON BEHALF Robert J. Touhey
Applicant Name (please print) OF CRODA INC. Signature of Applicant
Date 8/31/11

Application Fee: \$75.00 per residential tax parcel
\$300 per non-residential tax parcel
(Make payable to New Castle County)

ATTACHMENT

C

Croda Inc. Combined Heat & Electric Power Project



ATTACHMENT

D

ATTACHMENT

E

SUMMARY OF AREAS OF CONCERN (AOCS) – Operable Unit 1

AOC	AOC Description	COCs	AOC Status
A	Former on-site solid waste disposal area located between Buildings 109 and 148. Used from 1937 to 1945.	NA	No further action per DNREC approval of Phase I RIR ¹ .
B	Former on-site solid waste disposal area located across Conrail RR tracks north of Building 97. Used from 1946 to 1949. All or part of area now State property.	NS	No further action per DNREC approval of Phase I RIWP ² .
C	Former Solid Waste Disposal Area	PCBS, pesticides, and metals	No further action - remediation complete. No further action per DNREC October 7, 2002 letter.
D	Former on-site solid waste	Biphenyl, Dibenzofuran, and 1,1:2,1-terphenyl	No further action per DNREC approval of Phase I RIR ¹ .
E	Delaware River dredging disposal area used by Army Corps of Engineers.	Mercury	No further action per DNREC's August 8, 2010 letter approving the July 2010 Closure Plan. Inspection and maintenance program in effect at the Facility to facilitate communication for restricted excavation area. AOC to be included in HSCA Operable Unit 1 Operation and Maintenance Plan (O&M Plan).
F	Building 100 (#4 Kettle) track area.	Biphenyl and lead	No further action per DNREC approval of Phase I RIR ¹ .
G	Original 1937 PA wastewater outfall located just north of Building 110.	NS	No further action per DNREC approval of Phase I RIR ¹ . Removed as an AOC; ICI Letter of November 25, 1997.

TAB: **SUMMARY OF AREAS OF CONCERN (AOCS) – Operable Unit 1**

AOC	AOC Description	COCs	AOC Status
H	Former #3 Kettle hot well overflow to sewer (1945-1976).	Ethylbenzene and toluene	No further action per DNREC approval of Phase I RIR ¹ .
I	Surface water drain near RR track area north of Building 30.	Benzene	No further action per DNREC approval of Phase II RIR ³ .
J	Former Dowtherm boiler and storage tank	Biphenyl	No further action required because capping remediation complete in accordance with DNREC approved Closure Plan dated February 2007. Operation and maintenance program in effect to facilitate communication for restricted excavation area and evaluate and maintain cap integrity. AOC to be included in HSCA O&M Plan.
K	Former 1,000 gallon fuel oil UST located outside of Building 30 (removed in mid-1995).	Total petroleum hydrocarbons	No further action per DNREC approval of Phase II RIR ³ .
L	Former 2,000 gal fuel oil UST located east of Building 100 and 7 feet east of RR tracks (removed in June 1995).	Total petroleum hydrocarbons	No further action under HSCA per DNREC approval of Phase I WP ² .

TAB1
SUMMARY OF AREAS OF CONCERN (AOCs) – Operable Unit 1

AOC	AOC Description	COCs	AOC Status
M	Former waste accumulation area	Lead, mercury, and biphenyl	No further action required because remediation completed by constructing a concrete drum storage pad which provides engineering control as approved in DNREC February 23, 1998 letter. Operation and maintenance program in effect to facilitate communication for restricted excavation area and evaluate and maintain cap integrity. AOC to be included in HSCA O&M Plan.
N	Former empty, un-rinsed raw material drum storage area.	Surfactants	No further action per DNREC approval of Phase I RIR ¹ .
O	Former Drum Storage Area	bis (2-chloroethyl) ether (BCEE)	No further action required because remediation complete by partial excavation and capping as approved in DNREC December 30, 2002 letter. Operation and maintenance program in effect to facilitate communication for restricted excavation area and evaluate and maintain cap integrity. AOC to be included in HSCA O&M Plan.
P	Former phenol drum melting pit.	NA	No further action per DNREC approval of Phase I RIR ¹ .
Q	Ejector discharge point in area of present #4 autoclave loading tank system.	NA	No further action - remediation completed as a capital improvement project. No further action per DNREC August 29, 1997 letter.

TAB1
SUMMARY OF AREAS OF CONCERN (AOCS) – Operable Unit 1

AOC	AOC Description	COCs	AOC Status
R	Former tank car washing station.	NA	No further action per DNREC approval of Phase II RIR ³ .
S	Field behind Building 80.	NA	No further action per DNREC approval of Phase I RIR ¹ .
T	Cement ramp to Building 80.	NA	No further action per DNREC approval of Phase I RIR ¹ .
U	Storage pad south of Building 112.	NA	No further action per DNREC approval of Phase I RIR ¹ .
V	Former 8,250 gallon fuel oil UST (closed in-place 9/82).	Total petroleum hydrocarbons	No further action per DNREC May 9, 1996 letter.
W	Abandoned sump.	Iron and cadmium	No further action per DNREC approval of Phase I RIR ¹ .
X	Site of historic MEA spill.	NA	No further action per DNREC approval of Phase I RIR ¹ .
Y	30,000 gallon heating oil UST north of power house (Building 97) across RR tracks that services the power house.	NA	No further action under HSCA per DNREC approval of Phase I RIWP ² .

TABI
SUMMARY OF AREAS OF CONCERN (AOCs) – Operable Unit 1

Z	Now part of AOC 1. # 3 Railroad track north of Building 3	Benzene, ethylbenzene, toluene, xylenes, naphthalene, BCEE, and lead	AOCs Z, AA, AB, and AC consolidated and Re-named AOC 1.
AA	Now part of AOC 1. Former lead and mercury recovery system associated with former electrolytic sorbitol process west of Building 3.	Lead and mercury	No further action required because capping remediation complete in accordance with Closure Plan dated February 2007 approved in DNREC April 8, 2007 letter.
AB	Now part of AOC 1. Just west of tanks at loading dock Building 3	Lead, mercury, zinc, and benzene.	Operation and maintenance program in effect to facilitate communication for restricted excavation area and evaluate and maintain cap integrity. AOC to be included in HSCA O&M Plan.
AC	Now part of AOC 1. Site of former tank (at least partially underground) used for fuel oil and spent sulfuric acid.	Benzene	
AD	Location of former mercury sump in northeast corner of Building 4.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AE	Location of product coolers used in former electrolytic sorbitol process. Were installed near wall of Building 4-68 adjoining courtyard.	NA	No further action per DNREC approval of Phase I RIR ¹ .

TAB1
 SUMMARY OF AREAS OF CONCERN (AOCs) – Operable Unit 1

AF	Now part of Building 4 AOC. Two former wooden ASTs used in former electrolytic sorbitol process were located just outside NE corner of Building 4-72.	Lead and mercury	AOCs AF, AG, AI and AM consolidated and Re-named Building 4 AOC.
AG	Now part of Building 4 AOC. Pit which housed accumulation tank and circulation pump for former electrolytic cells.	Biphenyl	No further action required because capping remediation complete as approved in DNREC May 10, 2006 letter.
AI	Now part of Building 4 AOC. Manhole in eastern corner of Building 4 courtyard.	Lead and mercury	Operation and maintenance program in effect to facilitate communication for restricted excavation area and evaluate and maintain cap integrity. AOC to be included in HSCA O&M Plan.
AM	Now part of Building 4 AOC. Site of former fuel oil UST located by Building 4-72.	Mercury, biphenyl, naphthalene, and dibenzofuran	
AH	Location of product coolers for former E Battery cells.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AJ	Former lead processing area.	NA	No further action per DNREC approval of Phase II RIR ³ .
AK	Former electrolytic hydrogen cell room.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AL	Former coke storage bins just south and adjacent to Building 95.	NS	No further action per DNREC approval of Phase I RJWP ² .

TABLE
SUMMARY OF AREAS OF CONCERN (AOCs) – Operable Unit 1

AN	Drainage channel and former pond area.	Pesticides, PCBs, and metals.	Remedial Action Work Plan scheduled to be submitted fourth quarter 2011. Proposed work includes excavation, off-site disposal and capping. Operation and maintenance program will be put in effect to facilitate communication for restricted excavation area and evaluate and maintain cap integrity. AOC to be included in HSCA O&M Plan.
AO	Former septic tank system under pad behind L-16.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AP	Former solvent disposal system.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AQ	Solvent drum storage rack and dispensing station.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AR	Former temporary drum storage location.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AS	Former drum storage location.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AT	Former 550 gallon gasoline UST (removed 12/93).	NA	No further action under HSCA per DNREC approval of Phase I RIWP ² .
AU	#4 Kettle basement drain to marsh.	NS	No further action per DNREC approval of Phase I RIWP ² .
AV	Sludge pile from cleaning out wastewater treatment plant equalization and neutralization tanks.	NS	No further action per DNREC approval of Phase I RIWP ² .
AW	Former coal storage area north of power house to RR property.	NA	No further action per DNREC approval of Phase I RIR ¹ .
AX	Ash pile from former production of producer gas.	NA	No further action per DNREC approval of Phase I RIR ¹ .

TABLE
SUMMARY OF AREAS OF CONCERN (AOCs) – Operable Unit 1

AY	Historic caustic spills at Chemical Engineering Laboratories portion of the Facility.	NS	No further action per DNREC approval of Phase I RIWP ² .
AZ	Brine pit for ion exchange regeneration.	Biphenyl	No further action per DNREC approval of Phase II RIR ³ .
BA	Former coal ash and cinder storage area.	Mercury	No further action per DNREC approval of Phase II RIR ³ .
BB	Former 30,000 gallon heating oil UST	NA	No further action under HSCA per DNREC approval of Phase I RIWP ² .
BC	Two former settling lagoons.	SVOCs, pesticides, and metals.	No further action - remediation complete. Remediation to the site- specific standards was achieved. Closure Report submitted to DNREC October 2009.
BD			No further action per DNREC approval in its December 1, 2009 and March 10, 2010 letters.
BE	Former unlined ditch to raw waste tanks.	VOCs and SVOCs	No further action required because capping remediation complete in accordance with DNREC approved Closure Plan dated April 2010 and approved in DNREC correspondence dated May 11, 2010.
BF	Former scrap metal accumulation area.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BG	Historic aromatic petroleum solvent spill.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BH	Historic fiber pack and wood pallet burning area.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BI	Former building drain.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BJ	Former Two 3,000 gallon gasoline USTs and one 3,000 gallon diesel UST removed 12/88.	NA	No further action under HSCA per DNREC approval of Phase I RIWP ² .

TABLE
SUMMARY OF AREAS OF CONCERN (AOCS) – Operable Unit 1

BK	Pit in Building 88.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BL	Pit in Building 87.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BM	Drainage swale to Magazine Ditch.	NA	No further action per DNREC approval of Phase I RIWP ² .
BN	Former storage area for drums of powdered nickel catalyst.	NS	No further action per DNREC approval of Phase I RIWP ² .
BO	Historic methylene chloride spills.	NS	No further action per DNREC approval of Phase I RIWP ² .
BP	Historic acetone and toluene spills at L-44.	NS	No further action per DNREC approval of Phase I RIWP ² .
BQ	Current sulfuric acid handling facility.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BR	Culvert near Building 183.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BS	Electrical Substation #3.	NA	No further action per DNREC approval of Phase I RIR ¹ .
BT	#1 Substation (Building 183).	NA	No further action per DNREC approval of Phase I RIR ¹ .
BU	Transformer at Building L-1.	PCB	NFA approved by DNREC in its December 12, 1997 letter.
BV	Building L-13 surfactants pilot plant.	NS	No further action per DNREC approval of Phase I RIWP ² .
BW	Transformer at Building 97.	NS	No further action per DNREC approval of Phase I RIWP ² .
BX	Transformer at Building 181.	NA	No further action per DNREC approval of Phase I RIR ¹ .

TABLE
SUMMARY OF AREAS OF CONCERN (AOCs) – Operable Unit 1

BY	Transformer at Building 205.	NS	No further action per DNREC approval of Phase I RJWP ² .
BZ	Transformer at Substation 170.	NA	No further action per DNREC approval of Phase I RIR ¹ .
CA	Cooling Tower 181 area.	NA	No further action per DNREC approval of Phase I RIR ¹ .
CB	Cooling Tower 203 area.	NA	No further action per DNREC approval of Phase I RIR ¹ .
CC	Historical Dowtherm™ - G spill area at L-44.	NA	No further action per DNREC approval of Phase I RIR ¹ .
CD	Former glycerin distillation area.	NA	No further action per DNREC approval of Phase I RIR ¹ .
CE	Nickel catalyst building area.	Nickel	No further action per DNREC approval of Phase II RIR ³ .
CF	Maintenance Building area.	NA	No further action per DNREC approval of Phase I RIR ¹ .
Magazine Ditch	Drainage Areas/Channels receiving Plant discharge north of the Site.	NA	No further action per DNREC's October 2, 2006 letter approving the November 2002 Phase II Screening-Level Environmental Risk Assessment.
Lukens Marsh	Drainage Areas/Channels receiving Plant discharge south and east of the Site.	NA	No further action per DNREC's October 2, 2006 letter approving the November 2002 Phase II Screening-Level Environmental Risk Assessment.
AOC 1	AOCs Z, AA, AB, and AC consolidated and Re-named AOC 1.	See individual AOCs above for COCs.	No further action required because capping remediation complete in accordance with DNREC approved Closure Plan dated February 2007. Operation and maintenance program in effect to facilitate communication for restricted excavation area and evaluate and maintain cap integrity. AOC to be included in HSCA O&M Plan.

SUMMARY OF AREAS OF CONCERN (AOCS) – Operable Unit 1

<p>Building 4 AOC</p>	<p>AOCs AF, AG, AI and AM consolidated and Re-named Building 4 AOC.</p>	<p>See individual AOCs above for COCs.</p>	<p>No further action required because capping remediation complete as approved in DNREC May 10, 2006 letter. Operation and maintenance program in effect to facilitate communication for restricted excavation area and evaluate and maintain cap integrity. AOC to be included in HSCA O&M Plan.</p>
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**Table 1 Notes:
Additional details regarding AOC status can be found in the referenced documents.**

AOC - Area of Concern.

NA - Not Applicable. If the target constituents that were analyzed for at a particular AOC were either not detected or detected below DNREC Screening Levels, then it is concluded that there are no COCs at that AOC. Therefore, COCs are not applicable.

NS - No samples collected for laboratory analyses

NFA - No Further Action

COC - Contaminant of concern

RIWP - Remedial Investigation Work Plan

RIR - Remedial Investigation Report

UST - Underground Storage Tank

VOCs - Volatile Organic Compounds

SVOCs Semi-volatile Organic Compounds

¹ - AOC approved for NFA based on NFA recommendation in September 1998 Phase I RI Report. Phase I RI Report approved by DNREC in letter dated November 9, 1998.

² - Phase I RI Work Plan. Phase I RI Work Plan approved by DNREC in letters dated October 17, 1996, October 31, 1996, and August 28, 1997.

³ - AOC approved for NFA based on NFA recommendation in October 1999 Phase II RI Report. Phase II RI Report approved by DNREC in letter dated January 26, 2000.

ATTACHMENT

F

Attachment F
Croda Inc. Landfill Gas Project
Emissions Offsets Summary - CASE 1 (tpy)

	CURRENT			CASE 1			OFFSET #1 BFW	OFFSET #2	NET Benefit
	LANDFILL FLARE	Croda Boiler #3	Total	Generators	Croda Boiler #3	Total			
CO ₂	42150	38650	80800	26950	49815	76765	1950	15590	21575
CO	140	27	167	44	22	66	1.4		102.4
NOX	7.5	16	23.5	14.8	15.6	30.4	0.8	7.4	1.3
SOX	36.5	0.2	36.7	5.2	4.5	9.636	0.8	8.2	36.1
PM	3.2	2.5	5.7	0.4	2.6	3	0.1		2.8
NOTES									
OFFSET #1 = emission reduction due to generator exhaust used to heat of boiler feed water									
OFFSET #2 = emission reduction from utility avoidance of electric generation 2.2 MW based on factors supplied by DNREC Air Quality Management Section									

Case 1
LFG 85616 scfh
Gens. and Boiler #3 @ capacity
LFG = 21% boiler heat input

ASSUMPTIONS
Complete combustion CH₄
S untreated LFG = 655 ppmv
S treated LFG = 170 ppmv

ATTACHMENT

G

Attachment G
Croda Inc. Landfill Gas Project
Emissions Offsets Summary - CASE 2
(tpy)

	CURRENT			CASE 2			OFFSET #1 BFW	OFFSET #2	NET Benefit
	LANDFILL FLARE	Croda Boiler #3	Total	Generators	Croda Boiler #3	Total			
CO ₂	115250	38650	153900	27000	92250	119250	1950	31078	67678
CO	385	27	412	44	2.3	46.3	1.4		367.1
NOx	20.5	16	36.5	14.8	13.5	28.3	0.8	48.5	57.5
SOx	100	0.2	100.2	5.2	20.8	26.0	0.8	7.5	82.5
PM	8.7	2.5	11.2	0.4	3.4	3.8	0.1		7.5
NOTES									
OFFSET #1 = emission reduction due to generator exhaust used to heat of boiler feed water									
OFFSET #2 = emission reduction from utility avoidance of electric generation 2.2 MW based on factors supplied by DNREC Air Quality Management Section									

Case 2
 LFG 234,100 scfh
 Gens. and Boiler #3 @ capacity
 LFG = 100% boiler heat input

ASSUMPTIONS
 Complete combustion CH4
 S untreated LFG = 655 ppmv
 S treated LFG = 170 ppmv

ATTACHMENT

H