



**New York State Department of Environmental Conservation**  
**Permit Review Report**

**Permit ID: 2-6005-00125/00003**

**Renewal Number: 2**

**04/20/2018**

**Facility Identification Data**

Name: BRONX ZOO

Address: 2300 SOUTHERN BLVD

BRONX, NY 10460

**Owner/Firm**

Name: NYC DEPT OF CULTURAL AFFAIRS

Address: 330 W 42ND ST

NEW YORK, NY 10036, USA

Owner Classification: Corporation/Partnership

**Permit Contacts**

Division of Environmental Permits:

Name: DENISE L GRATTAN

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47-40 21ST ST

LONG ISLAND CITY, NY 11101

Phone:7184824997

Division of Air Resources:

Name: CICYLY T NIRAPPEL

Address: HUNTERS POINT PLAZA

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Air Permitting Contact:

Name: BRENDA BURBACH

Address: WILDLIFE CONSERVATION SOCIETY

2300 SOUTHERN BLVD

BRONX, NY 10460

Phone:7182207153

**Permit Description**

**Introduction**

The Title V operating air permit is intended to be a document containing only enforceable terms and conditions as well as any additional information, such as the identification of emission units, emission points, emission sources and processes, that makes the terms meaningful. 40 CFR Part 70.7(a)(5) requires that each Title V permit have an accompanying "...statement that sets forth the legal and factual basis for the draft permit conditions". The purpose for this permit review report is to satisfy the above requirement by providing pertinent details regarding the permit/application data and permit conditions in a more easily understandable format. This report will also include background narrative and explanations of regulatory decisions made by the reviewer. It should be emphasized that this permit review report, while based on information contained in the permit, is a separate document and is not itself an enforceable term and condition of the permit.

**Summary Description of Proposed Project**



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**Attainment Status**

BRONX ZOO is located in the town of BRONX in the county of BRONX. The attainment status for this location is provided below. (Areas classified as attainment are those that meet all ambient air quality standards for a designated criteria air pollutant.)

<b>Criteria Pollutant</b>	<b>Attainment Status</b>
Particulate Matter (PM)	ATTAINMENT
Particulate Matter< 10µ in diameter (PM10)	ATTAINMENT
Sulfur Dioxide (SO2)	ATTAINMENT
Ozone*	SEVERE NON-ATTAINMENT
Oxides of Nitrogen (NOx)**	ATTAINMENT
Carbon Monoxide (CO)	ATTAINMENT

\* Ozone is regulated in terms of the emissions of volatile organic compounds (VOC) and/or oxides of nitrogen (NOx) which are ozone precursors.

\*\* NOx has a separate ambient air quality standard in addition to being an ozone precursor.

**Facility Description:**

The facility is a public zoo owned by the city and operated by Wildlife Conservation Society(WCS).

The facility operates a cogeneration plant consists of four natural gas-fired (spark ignition) Endyn Clean burn engines: Two(2) 895 bhp, one(1) 1650 bhp and one(1) 2250 bhp; an incinerator/ farm incinerator with a design capacity charge rate of 300 pounds per hour to dispose of animal tissues, carcasses medical supplies; a microturbine plant at the Center for Global Conservation (CGC) building consists of eight microturbines each rated at 60KW; one small sterilization unit with an abator; numerous exempt sources, such as small boilers, emergency generators, and maintenance, laboratory and graphics operations.

**Permit Structure and Description of Operations**

The Title V permit for BRONX ZOO

is structured in terms of the following hierarchy: facility, emission unit, emission point, emission source and process. A facility is defined as all emission sources located at one or more adjacent or contiguous properties owned or operated by the same person or persons under common control. The facility is subdivided into one or more emission units (EU). Emission units are defined as any part or activity of a stationary facility that emits or has the potential to emit any federal or state regulated air pollutant. An emission unit is represented as a grouping of processes (defined as any activity involving one or more emission sources (ES) that emits or has the potential to emit any federal or state regulated air pollutant). An emission source is defined as any apparatus, contrivance or machine capable of causing emissions of any air contaminant to the outdoor atmosphere, including any appurtenant exhaust system or air cleaning device. [NOTE: Indirect sources of air contamination as defined in 6 NYCRR Part 203 (i.e. parking lots) are excluded from this definition]. The applicant is required to identify the principal piece of equipment (i.e., emission source) that directly results in or controls the emission of federal or state regulated air pollutants from an activity (i.e., process). Emission sources are categorized by the following types:

- combustion - devices which burn fuel to generate heat, steam or power
- incinerator - devices which burn waste material for disposal
- control - emission control devices
- process - any device or contrivance which may emit air contaminants



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that is not included in the above categories.

BRONX ZOO is defined by the following emission unit(s):

Emission unit C00001 - This emissions unit (hereinafter the "cogen plant") presently consists of four natural gas-fired (spark ignition) Endyn Clean burn engines: Two( 2) 895 bhp and one(1) 1650 bhp and one(1) 2250 bhp.

In May of 2017 Engine 0416(2250 bhp) had an unexpected catastrophic crank shaft failure. Facility replaced the engine block on engine 0416 with a block of the same make, model (Endyn 16GTLX), vintage and size(2200 BHP , originally constructed in 1985/1986.

All four (4) engines are in compliance with the NOx RACT limit of 1.5 gr/bhp-hr for this type of engine.

All these engines were manufactured prior to June 12, 2006 , so these units are not subject to Subpart JJJJ.

Emission unit C00001 is associated with the following emission points (EP):  
00108, 00208, 00312, 00416

Process: 003 is located at FIRST FLOOR, Building JWC - The cogen plant will consist of four (4) 100% natural gas-fired (spark ignition) endyn cleanburn engines - two (2) 8 cylinder engines, one 12 cylinder engine and one 16 cylinder engine and associated waste heat boilers for the production of electricity and hot water for the Bronx Zoo.

Emission unit G00001 - The emission unit G-00001 consists of a total of eight(8) microturbines each rated at 60KW and a chiller/heating unit as supplied by UTC Power. All of the microturbine are Capstone Model C60. Six(6) of the microturbines are incorporated into the PureComfort Model 360M unit, and are directly connected to the chiller/heater to generate electricity as well as cooling and/or heating. Waste gases from these microturbines drive the chiller/heater at any operating level between full exhaust and complete diversion to the chiller/heater. The remaining two (2) Capstone Model C60 microturbine units are stand-alone and independent of the PureComfort Model 360M, and will provide peak electrical generation.

Emission unit G00001 is associated with the following emission points (EP):  
00010, 00011, 00012, 00013

Process: G10 is located at Building CGC - Natural gas fueled 8 microturbines to provide heating, cooling, electricity for the CGC building.



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Emission unit S00001 - This emission unit is comprised of one ethylene oxide (EtO) sterilization unit manufactured by Andersen Products Inc. This unit uses up to ten 11-gram cartridge charges of EtO, maximum usage of 110 grams total, for each batch cycle, which lasts 16 hours, and sterilizes instruments used to provide medical care to animals in the zoo which qualifies this unit as subject to Subpart WWWW per the definition of "hospital".

The EtO unit is equipped with an abator AN5200 which can abate 1800 11 gram Eto gas cartridges (41.47 pounds of EtO), extracting over 98% ethylene oxide in the exhaust stream.

The total potential EtO emissions from this unit are limited to 25 lbs per year.

Emission unit S00001 is associated with the following emission points (EP):

00009

Process: 00S is located at Ist Floor, Building AHC - This process represents the use of ethylene oxide (EtO) in the sterilization unit.

Emission unit 100001 - This emissions unit (hereinafter the "farm incinerator") is a model CT-5 incinerator manufactured by Silent Glow Corporation. The farm incinerator was installed at the facility in or around 1966 and is subject to 6 NYCRR PART 219-4. The farm incinerator has a design capacity charge rate of 300 pounds per hour and a thruput capacity of 2400 pounds per day based on an eight-hour operating day.

The design is similar to that of a "heated hearth" as the combustion gases pass under the primary section and re-enter the burner chamber before they are discharged through the stack. There are two temperature gauges, one is located in the primary chamber and one located in the secondary chamber. A continous strip chart temperature recorder, Omega Engineering, Model CT7100 was installed on January 3, 2008.

Emission unit 100001 is associated with the following emission points (EP):

00001

Process: 00A is located at FARM BUILDING - YARD, Building FARM - The farm incinerator is used to dispose of animal carcasses and animal tissues, and a small amount of clear plastic bags, latex gloves and paper used during necropsy procedures (less than 5% by weight). The farm incinerator is fired and used on an "as needed basis" (which at present is approximately three times per month) and runs for approximately five hours per operation. At all other times, the farm incinerator is in shut-down mode and is not running or fired. The actual hours/days of operation and quantity of material incinerate d at the farm incinerator typically are much less than its design capacity and the limitations imposed under the NYCDEP certificate of operation.

Emission unit E00001 - This emission unit has six(6) emergency generators (each with 500 hours of The combined potential NOx emissions from six generators (0EMG1-0EMG6) are 5.6 tons per year.



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Process: OEG Emergency generators on distillate oil.

**Title V/Major Source Status**

BRONX ZOO is subject to Title V requirements. This determination is based on the following information: This is a a Major facility since the potential to emit NOx, VOC and CO are greater than the major facility thresholds.

**Program Applicability**

The following chart summarizes the applicability of BRONX ZOO with regards to the principal air pollution regulatory programs:

Regulatory Program	Applicability
PSD	NO
NSR (non-attainment)	NO
NESHAP (40 CFR Part 61)	NO
NESHAP (MACT - 40 CFR Part 63)	YES
NSPS	YES
TITLE IV	NO
TITLE V	YES
TITLE VI	NO
RACT	YES
SIP	YES

**NOTES:**

**PSD** Prevention of Significant Deterioration (40 CFR 52, 6 NYCRR 231-7, 231-8) - requirements which pertain to major stationary sources located in areas which are in attainment of National Ambient Air Quality Standards (NAAQS) for specified pollutants.

**NSR** New Source Review (6 NYCRR 231-5, 231-6) - requirements which pertain to major stationary sources located in areas which are in non-attainment of National Ambient Air Quality Standards (NAAQS) for specified pollutants.

**NESHAP** National Emission Standards for Hazardous Air Pollutants (40 CFR 61, 6 NYCRR 200.10) - contaminant and source specific emission standards established prior to the Clean Air Act Amendments of 1990 (CAAA) which were developed for 9 air contaminants (inorganic arsenic, radon, benzene, vinyl chloride, asbestos, mercury, beryllium, radionuclides, and volatile HAP's).

**MACT** Maximum Achievable Control Technology (40 CFR 63, 6 NYCRR 200.10) - contaminant and source specific emission standards established by the 1990 CAAA. Under Section 112 of the CAAA,



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the US EPA is required to develop and promulgate emissions standards for new and existing sources. The standards are to be based on the best demonstrated control technology and practices in the regulated industry, otherwise known as MACT. The corresponding regulations apply to specific source types and contaminants.

**NSPS** New Source Performance Standards (40 CFR 60, 6 NYCRR 200.10) - standards of performance for specific stationary source categories developed by the US EPA under Section 111 of the CAAA. The standards apply only to those stationary sources which have been constructed or modified after the regulations have been proposed by publication in the Federal Register and only to the specific contaminant(s) listed in the regulation.

**Title IV Acid Rain Control Program** (40 CFR 72 thru 78, 6 NYCRR 201-6) - regulations which mandate the implementation of the acid rain control program for large stationary combustion facilities.

**Title VI Stratospheric Ozone Protection** (40 CFR 82, Subpart A thru G, 6 NYCRR 200.10) - federal requirements that apply to sources which use a minimum quantity of CFC's (chlorofluorocarbons), HCFC's (hydrofluorocarbons) or other ozone depleting substances or regulated substitute substances in equipment such as air conditioners, refrigeration equipment or motor vehicle air conditioners or appliances.

**RACT** Reasonably Available Control Technology (6 NYCRR Parts 212-3, 226, 227-2, 228, 229, 230, 232, 233, 234, 235, 236) - the lowest emission limit that a specific source is capable of meeting by application of control technology that is reasonably available, considering technological and economic feasibility. RACT is a control strategy used to limit emissions of VOC's and NOx for the purpose of attaining the air quality standard for ozone. The term as it is used in the above table refers to those state air pollution control regulations which specifically regulate VOC and NOx emissions.

**SIP** State Implementation Plan (40 CFR 52, Subpart HH, 6 NYCRR 200.10) - as per the CAAA, all states are empowered and required to devise the specific combination of controls that, when implemented, will bring about attainment of ambient air quality standards established by the federal government and the individual state. This specific combination of measures is referred to as the SIP. The term here refers to those state regulations that are approved to be included in the SIP and thus are considered federally enforceable.

**Compliance Status**

Facility is in compliance with all requirements.

**SIC Codes**

SIC or Standard Industrial Classification code is an industrial code developed by the federal Office of Management and Budget for use, among other things, in the classification of establishments by the type of activity in which they are engaged. Each operating establishment is assigned an industry code on the basis of its primary activity, which is determined by its principal product or group of products produced or distributed, or services rendered. Larger facilities typically have more than one SIC code.

**SIC Code**

**Description**

0742  
4911  
8422

VETERINARY SERV SPECIALTIES  
ELECTRIC SERVICES  
BOTANICAL AND ZOOLOGICAL GARDENS

**SCC Codes**

SCC or Source Classification Code is a code developed and used" by the USEPA to categorize processes



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which result in air emissions for the purpose of assessing emission factor information. Each SCC represents a unique process or function within a source category logically associated with a point of air pollution emissions. Any operation that causes air pollution can be represented by one or more SCC's.

<b>SCC Code</b>	<b>Description</b>
2-03-001-07	INTERNAL COMBUSTION ENGINES - COMMERCIAL/INSTITUTIONAL COMMERCIAL/INSTITUTIONAL IC ENGINE - DISTILLATE OIL (DIESEL) RECIPROCATING: EXHAUST
2-03-002-03	INTERNAL COMBUSTION ENGINES - COMMERCIAL/INSTITUTIONAL COMMERCIAL/INSTITUTIONAL IC ENGINE - NATURAL GAS
2-03-002-04	TURBINE: COGENERATION INTERNAL COMBUSTION ENGINES - COMMERCIAL/INSTITUTIONAL COMMERCIAL/INSTITUTIONAL IC ENGINE - NATURAL GAS
3-15-020-01	COGENERATION PHOTOGRAPHIC EQUIPMENT HEALTH CARE - HOSPITALS Sterilization w/ Ethylene Oxide
5-02-001-02	SOLID WASTE DISPOSAL - COMMERCIAL/INSTITUTIONAL SOLID WASTE DISPOSAL: COMMERCIAL - INCINERATION Single Chamber

**Facility Emissions Summary**

In the following table, the CAS No. or Chemical Abstract Service code is an identifier assigned to every chemical compound. [NOTE: Certain CAS No.'s contain a 'NY' designation within them. These are not true CAS No.'s but rather an identification which has been developed by the department to identify groups of contaminants which ordinary CAS No.'s do not do. As an example, volatile organic compounds or VOC's are identified collectively by the NY CAS No. 0NY998-00-0.] The PTE refers to the Potential to Emit. This is defined as the maximum capacity of a facility or air contaminant source to emit any air contaminant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or air contamination source to emit any air contaminant, including air pollution control equipment and/or restrictions on the hours of operation, or on the type or amount or material combusted, stored, or processed, shall be treated as part of the design only if the limitation is contained in federally enforceable permit conditions. The PTE for each contaminant that is displayed represents the facility-wide PTE in tons per year (tpy) or pounds per year (lbs/yr). In some instances the PTE represents a federally enforceable emissions cap or limitation for that contaminant. The term 'HAP' refers to any of the hazardous air pollutants listed in section 112(b) of the Clean Air Act Amendments of 1990. Total emissions of all hazardous air pollutants are listed under the special NY CAS No. 0NY100-00-0. In addition, each individual hazardous air pollutant is also listed under its own specific CAS No. and is identified in the list below by the (HAP) designation.

<b>Cas No.</b>	<b>Contaminant</b>	<b>PTE lbs/yr</b>	<b>PTE tons/yr</b>	<b>Actual lbs/yr</b>	<b>Actual tons/yr</b>
000630-08-0	CARBON MONOXIDE	220700			
000075-21-8	ETHYLENE OXIDE	25			
007439-92-1	LEAD	100			
0NY210-00-0	OXIDES OF	286500			



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	NITROGEN	
0NY075-00-0	PARTICULATES	20300
0NY075-00-5	PM-10	20300
007446-09-5	SULFUR	1800
	DIOXIDE	
0NY100-00-0	TOTAL HAP	5100
0NY998-00-0	VOC	56500

**NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS**

**Item A: Public Access to Recordkeeping for Title V Facilities - 6 NYCRR 201-1.10(b)**

The Department will make available to the public any permit application, compliance plan, permit, and monitoring and compliance certification report pursuant to Section 503(e) of the Act, except for information entitled to confidential treatment pursuant to 6 NYCRR Part 616 - Public Access to records and Section 114(c) of the Act.

**Item B: Timely Application for the Renewal of Title V Permits -6 NYCRR Part 201-6.2(a)(4)**

Owners and/or operators of facilities having an issued Title V permit shall submit a complete application at least 180 days, but not more than eighteen months, prior to the date of permit expiration for permit renewal purposes.

**Item C: Certification by a Responsible Official - 6 NYCRR Part 201-6.2(d)(12)**

Any application, form, report or compliance certification required to be submitted pursuant to the federally enforceable portions of this permit shall contain a certification of truth, accuracy and completeness by a responsible official. This certification shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

**Item D: Requirement to Comply With All Conditions - 6 NYCRR Part 201-6.4(a)(2)**

The permittee must comply with all conditions of the Title V facility permit. Any permit non-compliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

**Item E: Permit Revocation, Modification, Reopening, Reissuance or Termination, and Associated Information Submission Requirements - 6 NYCRR Part 201-6.4(a)(3)**

This permit may be modified, revoked, reopened and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

**Item F: Cessation or Reduction of Permitted Activity Not a Defense - 6 NYCRR 201-6.4(a)(5)**

It shall not be a defense for a permittee in an enforcement action to claim that a cessation or reduction in the permitted activity would have been necessary in order to maintain





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compliance with the conditions of this permit.

**Item G: Property Rights - 6 NYCRR 201-6.4(a)(6)**

This permit does not convey any property rights of any sort or any exclusive privilege.

**Item H: Severability - 6 NYCRR Part 201-6.4(a)(9)**

If any provisions, parts or conditions of this permit are found to be invalid or are the subject of a challenge, the remainder of this permit shall continue to be valid.

**Item I: Permit Shield - 6 NYCRR Part 201-6.4(g)**

All permittees granted a Title V facility permit shall be covered under the protection of a permit shield, except as provided under 6 NYCRR Subpart 201-6. Compliance with the conditions of the permit shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that such applicable requirements are included and are specifically identified in the permit, or the Department, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the major stationary source, and the permit includes the determination or a concise summary thereof. Nothing herein shall preclude the Department from revising or revoking the permit pursuant to 6 NYCRR Part 621 or from exercising its summary abatement authority. Nothing in this permit shall alter or affect the following:

- i. The ability of the Department to seek to bring suit on behalf of the State of New York, or the Administrator to seek to bring suit on behalf of the United States, to immediately restrain any person causing or contributing to pollution presenting an imminent and substantial endangerment to public health, welfare or the environment to stop the emission of air pollutants causing or contributing to such pollution;
- ii. The liability of a permittee of the Title V facility for any violation of applicable requirements prior to or at the time of permit issuance;
- iii. The applicable requirements of Title IV of the Act;
- iv. The ability of the Department or the Administrator to obtain information from the permittee concerning the ability to enter, inspect and monitor the facility.

**Item J: Reopening for Cause - 6 NYCRR Part 201-6.4(i)**

This Title V permit shall be reopened and revised under any of the following circumstances:

- i. If additional applicable requirements under the Act become applicable where this permit's remaining term is three or more years, a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which this permit is due to expire, unless the original permit or any of its terms and conditions has been extended by the Department pursuant to the provisions of Part 201-6.7 and Part 621.
- ii. The Department or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.



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iii. The Department or the Administrator determines that the Title V permit must be revised or reopened to assure compliance with applicable requirements.

iv. If the permitted facility is an "affected source" subject to the requirements of Title IV of the Act, and additional requirements (including excess emissions requirements) become applicable. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit.

Proceedings to reopen and issue Title V facility permits shall follow the same procedures as apply to initial permit issuance but shall affect only those parts of the permit for which cause to reopen exists.

Reopenings shall not be initiated before a notice of such intent is provided to the facility by the Department at least thirty days in advance of the date that the permit is to be reopened, except that the Department may provide a shorter time period in the case of an emergency.

**Item K: Permit Exclusion - ECL 19-0305**

The issuance of this permit by the Department and the receipt thereof by the Applicant does not and shall not be construed as barring, diminishing, adjudicating or in any way affecting any legal, administrative or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the Department may have against the Applicant for violations based on facts and circumstances alleged to have occurred or existed prior to the effective date of this permit, including, but not limited to, any enforcement action authorized pursuant to the provisions of applicable federal law, the Environmental Conservation Law of the State of New York (ECL) and Chapter III of the Official Compilation of the Codes, Rules and Regulations of the State of New York (NYCRR). The issuance of this permit also shall not in any way affect pending or future enforcement actions under the Clean Air Act brought by the United States or any person.

**Item L: Federally Enforceable Requirements - 40 CFR 70.6(b)**

All terms and conditions in this permit required by the Act or any applicable requirement, including any provisions designed to limit a facility's potential to emit, are enforceable by the Administrator and citizens under the Act. The Department has, in this permit, specifically designated any terms and conditions that are not required under the Act or under any of its applicable requirements as being enforceable under only state regulations.

**NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS**

**Item A: Emergency Defense - 6 NYCRR 201-1.5**

An emergency, as defined by subpart 201-2, constitutes an affirmative defense to penalties sought in an enforcement action brought by the Department for noncompliance with emissions limitations or permit conditions for all facilities in New York State.

(a) The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant



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evidence that:

- (1) An emergency occurred and that the facility owner or operator can identify the cause(s) of the emergency;
- (2) The equipment at the permitted facility causing the emergency was at the time being properly operated and maintained;
- (3) During the period of the emergency the facility owner or operator took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and
- (4) The facility owner or operator notified the Department within two working days after the event occurred. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

(b) In any enforcement proceeding, the facility owner or operator seeking to establish the occurrence of an emergency has the burden of proof.

(c) This provision is in addition to any emergency or upset provision contained in any applicable requirement. item\_02

**Item B: General Provisions for State Enforceable Permit Terms and Condition - 6  
 NYCRR Part 201-5**

Any person who owns and/or operates stationary sources shall operate and maintain all emission units and any required emission control devices in compliance with all applicable Parts of this Chapter and existing laws, and shall operate the facility in accordance with all criteria, emission limits, terms, conditions, and standards in this permit. Failure of such person to properly operate and maintain the effectiveness of such emission units and emission control devices may be sufficient reason for the Department to revoke or deny a permit.

The owner or operator of the permitted facility must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility regulated by this Subpart, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations or law.

**Regulatory Analysis**

<b>Location Facility/EU/EP/Process/ES</b>	<b>Regulation</b>	<b>Condition</b>	<b>Short Description</b>
FACILITY	ECL 19-0301	44	Powers and Duties of the Department with respect to air pollution control
FACILITY	40CFR 60-IIIII	28, 29	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines



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S-00001	40CFR 63-WWWW.10390	41	Area Source NESHAP for Hospital Ethylene Oxide Sterilizers - Standards
S-00001	40CFR 63-WWWW.10432	42	Area Source NESHAP for Hospital Ethylene Oxide Sterilizers - Recordkeeping
FACILITY	40CFR 68	20	Chemical accident prevention provisions
FACILITY	40CFR 82-F	21	Protection of Stratospheric Ozone - recycling and emissions reduction
FACILITY	6NYCRR 200.6	1	Acceptable ambient air quality.
FACILITY	6NYCRR 200.7	10	Maintenance of equipment.
FACILITY	6NYCRR 201-1.4	45	Unavoidable noncompliance and violations
FACILITY	6NYCRR 201-1.7	11	Recycling and Salvage
FACILITY	6NYCRR 201-1.8	12	Prohibition of reintroduction of collected contaminants to the air
FACILITY	6NYCRR 201-3.2(a)	13, 14	Exempt Activities - Proof of eligibility
FACILITY	6NYCRR 201-3.3(a)	15	Trivial Activities - proof of eligibility
FACILITY	6NYCRR 201-6	22, 30, 31	Title V Permits and the Associated Permit Conditions
FACILITY	6NYCRR 201-6.4(a)(4)	16	General Conditions - Requirement to Provide Information
FACILITY	6NYCRR 201-6.4(a)(7)	2	General Conditions - Fees
FACILITY	6NYCRR 201-6.4(a)(8)	17	General Conditions - Right to Inspect
FACILITY	6NYCRR 201-6.4(c)	3	Recordkeeping and Reporting of Compliance Monitoring
FACILITY	6NYCRR 201-6.4(c)(2)	4	Records of Monitoring, Sampling and Measurement
FACILITY	6NYCRR 201-6.4(c)(3)(ii)	5	Reporting Requirements - Deviations and Noncompliance
FACILITY	6NYCRR 201-6.4(d)(4)	23	Compliance Schedules - Progress Reports
FACILITY	6NYCRR 201-6.4(e)	6	Compliance Certification
FACILITY	6NYCRR 201-6.4(f)(6)	18	Off Permit Changes
FACILITY	6NYCRR 201-7	24, 32	Federally Enforceable Emissions Caps
FACILITY	6NYCRR 202-1.1	19	Required emissions tests.
FACILITY	6NYCRR 202-2.1	7	Emission Statements - Applicability
FACILITY	6NYCRR 202-2.5	8	Emission Statements - record keeping



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FACILITY	6NYCRR 211.1	25	requirements. General Prohibitions - air pollution prohibited Limiting of Opacity
S- 00001/00009/00S/STER2	6NYCRR 212-1.6(a)	43	
S-00001/-/00S/STER2	6NYCRR 212-2.1	54	Requirements
FACILITY	6NYCRR 215.2	9	Open Fires - Prohibitions
1-00001	6NYCRR 219-4.10	51	Operator training and certification.
1-00001	6NYCRR 219-4.3	47	Particulate emissions.
1-00001	6NYCRR 219-4.5(a)	48	Operating requirements.
1-00001	6NYCRR 219-4.5(b)	49	Operating requirements.
1-00001/-/00A/00001	6NYCRR 219-4.5(b)	52, 53	Operating requirements.
1-00001	6NYCRR 219-4.6	50	Other wastes.
FACILITY	6NYCRR 225-1.2(h)	26	Sulfur-in-Fuel Limitations
C-00001	6NYCRR 227-1.3(a)	34	Smoke Emission Limitations.
G-00001	6NYCRR 227-1.3(a)	38	Smoke Emission Limitations.
G-00001/-/G10	6NYCRR 227-2.4(d)	40	Small boilers, small combustion turbines, and small stationary internal combustion engines.
C-00001	6NYCRR 227-2.4(f)(1)	35	Emission limit for natural gas fired engines.
FACILITY	6NYCRR 230.2(b)	27	New tanks after 1/1/79 in NYCMA require Stage I
FACILITY	6NYCRR 231-1.5	46	Emission offsets
C-00001/-/003/00416	6NYCRR 231-11.1	36	Permit requirements for new major facilities, NSR major mods, and netting

**Applicability Discussion:**

Mandatory Requirements: The following facility-wide regulations are included in all Title V permits:

ECL 19-0301

This section of the Environmental Conservation Law establishes the powers and duties assigned to the Department with regard to administering the air pollution control program for New York State.

6 NYCRR 200.6

Acceptable ambient air quality - prohibits contravention of ambient air quality standards without mitigating measures

6 NYCRR 200.7

Anyone owning or operating an air contamination source which is equipped with an emission control device must operate the control consistent with ordinary and necessary practices, standards and procedures, as per manufacturer's specifications and keep it in a satisfactory state of maintenance and repair so that it operates effectively



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6 NYCRR 201-1.4

This regulation specifies the actions and recordkeeping and reporting requirements for any violation of an applicable state enforceable emission standard that results from a necessary scheduled equipment maintenance, start-up, shutdown, malfunction or upset in the event that these are unavoidable.

6 NYCRR 201-1.7

Requires the recycle and salvage of collected air contaminants where practical

6 NYCRR 201-1.8

Prohibits the reintroduction of collected air contaminants to the outside air

6 NYCRR 201-3.2 (a)

An owner and/or operator of an exempt emission source or unit may be required to certify that it operates within the specific criteria described in this Subpart. All required records must be maintained on-site for a period of 5 years and made available to department representatives upon request. In addition, department representatives must be granted access to any facility which contains exempt emission sources or units, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations, or law.

6 NYCRR 201-3.3 (a)

The owner and/or operator of a trivial emission source or unit may be required to certify that it operates within the specific criteria described in this Subpart. All required records must be maintained on-site for a period of 5 years and made available to department representatives upon request. In addition, department representatives must be granted access to any facility which contains trivial emission sources or units subject to this Subpart, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations, or law.

6 NYCRR Subpart 201-6

This regulation applies to those terms and conditions which are subject to Title V permitting. It establishes the applicability criteria for Title V permits, the information to be included in all Title V permit applications as well as the permit content and terms of permit issuance. This rule also specifies the compliance, monitoring, recordkeeping, reporting, fee, and procedural requirements that need to be met to obtain a Title V permit, modify the permit and demonstrate conformity with applicable requirements as listed in the Title V permit. For permitting purposes, this rule specifies the need to identify and describe all emission units, processes and products in the permit application as well as providing the Department the authority to include this and any other information that it deems necessary to determine the compliance status of the facility.

6 NYCRR 201-6.4 (a) (4)

This mandatory requirement applies to all Title V facilities. It requires the permittee to provide information that the Department may request in writing, within a reasonable time, in order to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. The request may include copies of records required to be kept by the permit.

6 NYCRR 201-6.4 (a) (7)

This is a mandatory condition that requires the owner or operator of a facility subject to Title V requirements to pay all applicable fees associated with the emissions from their facility.

6 NYCRR 201-6.4 (a) (8)

This is a mandatory condition for all facilities subject to Title V requirements. It allows the Department to



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inspect the facility to determine compliance with this permit, including copying records, sampling and monitoring, as necessary.

6 NYCRR 201-6.4 (c)

This requirement specifies, in general terms, what information must be contained in any required compliance monitoring records and reports. This includes the date, time and place of any sampling, measurements and analyses; who performed the analyses; analytical techniques and methods used as well as any required QA/QC procedures; results of the analyses; the operating conditions at the time of sampling or measurement and the identification of any permit deviations. All such reports must also be certified by the designated responsible official of the facility.

6 NYCRR 201-6.4 (c) (2)

This requirement specifies that all compliance monitoring and recordkeeping is to be conducted according to the terms and conditions of the permit and follow all QA requirements found in applicable regulations. It also requires monitoring records and supporting information to be retained for at least 5 years from the time of sampling, measurement, report or application. Support information is defined as including all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

6 NYCRR 201-6.4 (c) (3) (ii)

This regulation specifies any reporting requirements incorporated into the permit must include provisions regarding the notification and reporting of permit deviations and incidences of noncompliance stating the probable cause of such deviations, and any corrective actions or preventive measures taken.

6 NYCRR 201-6.4 (d) (5)

This condition applies to every Title V facility subject to a compliance schedule. It requires that reports, detailing the status of progress on achieving compliance with emission standards, be submitted semiannually.

6 NYCRR 201-6.4 (e)

Sets forth the general requirements for compliance certification content; specifies an annual submittal frequency; and identifies the EPA and appropriate regional office address where the reports are to be sent.

6 NYCRR 201-6.4 (f) (6)

This condition allows changes to be made at the facility, without modifying the permit, provided the changes do not cause an emission limit contained in this permit to be exceeded. The owner or operator of the facility must notify the Department of the change. It is applicable to all Title V permits which may be subject to an off permit change.

6 NYCRR 202-1.1

This regulation allows the department the discretion to require an emission test for the purpose of determining compliance. Furthermore, the cost of the test, including the preparation of the report are to be borne by the owner/operator of the source.

6 NYCRR 202-2.1

Requires that emission statements shall be submitted on or before April 15th each year for emissions of the previous calendar year.

6 NYCRR 202-2.5

This rule specifies that each facility required to submit an emission statement must retain a copy of the statement and supporting documentation for at least 5 years and must make the information available to



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department representatives.

6 NYCRR 215.2

Except as allowed by section 215.3 of 6 NYCRR Part 215, no person shall burn, cause, suffer, allow or permit the burning of any materials in an open fire.

40 CFR Part 68

This Part lists the regulated substances and their applicability thresholds and sets the requirements for stationary sources concerning the prevention of accidental releases of these substances.

40 CFR Part 82, Subpart F

Subpart F requires the reduction of emissions of class I and class II refrigerants to the lowest achievable level during the service, maintenance, repair, and disposal of appliances in accordance with section 608 of the Clean Air Act Amendments of 1990. This subpart applies to any person servicing, maintaining, or repairing appliances except for motor vehicle air conditioners. It also applies to persons disposing of appliances, including motor vehicle air conditioners, refrigerant reclaimers, appliance owners, and manufacturers of appliances and recycling and recovery equipment. Those individuals, operations, or activities affected by this rule, may be required to comply with specified disposal, recycling, or recovery practices, leak repair practices, recordkeeping and/or technician certification requirements.

**Facility Specific Requirements**

In addition to Title V, BRONX ZOO has been determined to be subject to the following regulations:

40 CFR 63.10390

This requirement applies to the sterilizer. The facility must sterilize full loads of items having a common aeration time, except under medically necessary circumstances, as that term is defined in §63.10448.

40 CFR 63.10432

Recordkeeping and reporting requirement for sterilizer.

40 CFR Part 60, Subpart IIII

Facilities that have stationary compression ignition internal combustion engines that commenced construction or modified/reconstructed after 7/11/2005 must comply with applicable portions of 40 CFR 60 Subpart IIII.

6 NYCRR 211.1

This regulation requires that no person shall cause or allow emissions of air contaminants to the outdoor atmosphere of such quantity, characteristic or duration which are injurious to human, plant or animal life or to property, or which unreasonably interfere with the comfortable enjoyment of life or property.





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6 NYCRR 212-1.6 (a)

This provision requires that the facility owner or operator not cause or allow emissions having an average opacity during any six consecutive minutes of 20 percent or greater from any process emission source or emission point, except for the emission of uncombined water.

6 NYCRR 212-2.1

Emissions of air contaminants to the outdoor atmosphere from any process emission source or emission point are restricted as follows:

(a) For an air contaminant listed in section 212-2.2 table 2 – high toxicity air contaminant list, of this Subpart, the facility owner or operator shall either limit the actual annual emissions from all process operations at the facility so as to not exceed the mass emission limit listed for the individual HTAC; or demonstrate compliance with the air cleaning requirements for the HTAC as specified in subdivision 212-2.3(b), table 4 – degree of air cleaning required for non-criteria air contaminants, of this Subpart for the environmental rating assigned to the contaminant by the department.

(b) For any air contaminant not listed on table 2, unless it is a solid particulate described in subdivision (c) of this section, the facility owner or operator shall not allow emissions of an air contaminant to violate the requirements specified in subdivision 212-2.3(a), table 3 – degree of air cleaning required for criteria air contaminants of this Subpart, or subdivision 212-2.3(b), table 4 – degree of air cleaning required for non-criteria air contaminants of this Subpart, as applicable, for the environmental rating assigned to the contaminant by the department.

(c) For a solid particulate assigned an environmental rating of B or C emitted from a process emission source, the facility owner or operator shall not allow emissions of particulate to exceed the requirements specified in section 212-2.4 of this Subpart.

6 NYCRR 219-4.10

This section sets forth the operator training and certification requirements which prohibit the operation of crematories except under the onsite direction of a person possessing an appropriate incinerator operator certification issued by the commissioner. The section further indicates that persons operating this facility must be certified in writing by the holder of an incinerator operator certification, relative to:

- (1) proper operation and maintenance of equipment at that facility; and
- (2) knowledge of environmental permit conditions and the impact of plant operation on emissions for that facility.



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6 NYCRR 219-4.3

This section sets forth the emission standards of particulates for the crematories, which is 0.08 grains per dry standard cubic foot of flue gas, corrected to seven percent oxygen.

6 NYCRR 219-4.5 (a)

This section sets forth the emission standards of six-minute average opacity for the crematories, which is less than 10 percent.

6 NYCRR 219-4.5 (b)

This section sets forth the primary combustion chamber temperature of the crematories and pathological incinerator(s), which is described in section 219-4.4 of this subpart.

6 NYCRR 219-4.6

This section sets forth the requirements of not to burn other wastes such as municipal solid waste, infectious waste (in excess of 5 percent of the total permitted hourly charging rate), radioactive waste, and hazardous waste, in the crematories.

6 NYCRR 225-1.2 (h)

Sulfur-in-fuel limitation for the firing of distillate oil on or after July 1, 2016.

6 NYCRR 227-1.3 (a)

This regulation prohibits any person from operating a stationary combustion installation which emits smoke equal to or greater than 20% opacity except for one six-minute period per hour of not more than 27% opacity.

6 NYCRR 227-2.4 (d)

This section includes NO<sub>x</sub> RACT requirements for small boilers, small combustion turbines, and small stationary internal combustion engines.

6 NYCRR 227-2.4 (f) (1)

Presumptive NO<sub>x</sub> RACT emission limit for natural gas fired stationary internal combustion engines.

6 NYCRR 230.2 (b)



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This regulation requires gasoline tanks greater than or equal to 250 gallons and installed after January 1, 1979 to install Stage I vapor collection systems in the New York City Metropolitan Area.

6 NYCRR 231-1.5

6 NYCRR 231-11.1

This section contains the permit requirements for new major facilities, NSR major modifications, and netting for this Part.

6 NYCRR Subpart 201-7

This regulation sets forth an emission cap that cannot be exceeded by the facility.

**Compliance Certification**

**Summary of monitoring activities at BRONX ZOO:**

<b>Location Facility/EU/EP/Process/ES</b>	<b>Cond No.</b>	<b>Type of Monitoring</b>
S-00001	42	record keeping/maintenance procedures
FACILITY	14	work practice involving specific operations
FACILITY	5	record keeping/maintenance procedures
FACILITY	6	record keeping/maintenance procedures
C-00001	33	work practice involving specific operations
E-00001	37	monitoring of process or control device parameters as surrogate
G-00001/-/G10	39	record keeping/maintenance procedures
FACILITY	7	record keeping/maintenance procedures
S-00001/00009/00S/STER2	43	monitoring of process or control device parameters as surrogate
S-00001/-/00S/STER2	54	monitoring of process or control device parameters as surrogate
1-00001	47	monitoring of process or control device parameters as surrogate
1-00001	48	record keeping/maintenance procedures
1-00001	49	record keeping/maintenance procedures
1-00001/-/00A/00001	52	continuous emission monitoring (cem)
1-00001/-/00A/00001	53	continuous emission monitoring (cem)
FACILITY	26	work practice involving specific operations
C-00001	34	monitoring of process or control device parameters as surrogate
G-00001	38	monitoring of process or control device parameters as surrogate
G-00001/-/G10	40	record keeping/maintenance procedures
C-00001	35	intermittent emission testing
FACILITY	46	record keeping/maintenance procedures
C-00001/-/003/00416	36	monitoring of process or control device parameters



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as surrogate

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**Basis for Monitoring**

The facility is a public zoo owned by the city and operated by WCS. The facility operates a cogeneration plant, an incinerator, a microturbine plant at the Center for Global Conservation (CGC) building consists of eight microturbines, a sterilizer and numerous exempt sources, such as small boilers, emergency generators, and maintenance, laboratory and graphics operations:

The Farm Incinerator listed in Emission Unit 100001 is subject to the requirement of 6 NYCRR Part 219-4. Facility is required to maintain specific temperatures: 1400 deg. F in primary chamber and 1800 deg. F in secondary chamber when the incinerator is operational. The ramp up time to achieve these temperature was determined to be two hours during the April 2008 stack test, which is also a requirement in this permit.

The Cogeneration plant listed in Emission Unit C00001 is subject to 6 NYCRR part 227-2 RACT limit, and four engines have permit NOx limits of 1.5 grams/bhp-hr. Compliance with the NOx limit will be demonstrated thru stack emission testing once during the permit term.

Facility emergency generators listed in Emission Unit E00001: The NOx emissions from six generators are limited to 5.6 tons per year to avoid any 231 applicability.

Eight microturbines in Emission Unit G00001 are subject to 6 NYCRR Part 227 2.4(d), which requires annual tune up as NOx RACT. NOx emissions from the eight microturbines are limited to 8.33 tons per year to avoid any 231 applicability.

Emission unit S0001 is comprised of one ethylene oxide (EtO) sterilization unit which uses up to ten 11-gram cartridge charge of EtO for each batch cycle, which last 16 hours, and sterilize instruments used to provide medical care to animals in the zoo which qualifies this unit as subject to Subpart WWWW per the definition of "hospital". Facility has proposed to limit the EtO gas (HTAC) emissions to 25 pounds per year as per 6 NYCRR part 212-2.2 Table 2. The EtO unit is equipped with an abator which can abate up to 1800 11 gram EtO gas cartridges (43.61 pounds of EtO) by extracting over 98% ethylene oxide in the exhaust stream. The permit has work practice, monitoring and recordkeeping conditions to ensure that the proposed limit will be met.

Emission Unit C00001, NYCRR Part 231-11.1

Total annual NOx emissions of engine 00416 is limited to 31.9 tons per year, due to the fact that facility has netted out Part 231 applicability.

In May of 2017 Engine 0416 had an unexpected catastrophic crank shaft failure. Bronx Zoo has replaced it with a crank shaft and block of identical make,model (Endyn 16GTLX), vintage, year and size.

With this renewal application, facility has performed a New Source Review analysis as shown below demonstrating that the modification is minor since the net emission increase for the criteria contaminant NOx due to the replacement project is below the significant net emission increase threshold of 25 tons per year.

NOx net emission increase(NEI) = 16.2 tpy

NEI = 16.2 tpy = Project emission Potential with replaced block, 16 (31.9- 15.9)tpy + 0.2tpy (contemporaneous creditable emission increases) + 0 (ERCs during contemporaneous period), where 31.9 tpy is the Engine 00416 NOx PTE with the replaced block, 15.9 tpy is the baseline



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actual emission of Engine 00416, and 0.2 tpy is NO<sub>x</sub> PTE of 70 KW emergency generator (Emission Source OEMG6 in Emission Unit 0000E) installed during the contemporaneous period.