APPENDIX D.

ENVIRONMENTAL IMPROVEMENT PILOT TEST PERMIT
ISSUED TO ECH BY NJ-DEP – MAY 2007

FOR EXTENDED DURATION TEST

POTENTIAL-TO-EMIT CALCULATIONS

RISK SCREENING WORKSHEET

GRANULATOR VAPOR PRESSURE CALCULATIONS

Environmental Regulation
Division of Air Quality
Air Quality Permitting Element
P.O. Box 027
Trenton, New Jersey 08625-0027

Environmental Improvement Pilot Test Approval

Permit Activity ID Number: EIP070001
Approval Date: 05/14/2007

Facility ID Number: 12454
Expiration Date: 08/12/2007

Mailing Address	Plant Location
Attention: Michael J. Roberts President 1700 S MT PROSPECT RD DES PLAINES, IL 60018-1804	ENDESCO CLEAN HARBORS CEMENT LOCK DEMO PLNT 250 E 22nd St Bayonne City Hudson County, NJ

Dear Mr. Roberts:

On March 6, 2007 the New Jersey Department of Environmental Protection (Department) received your Application for an environmental improvement pilot test.

In accordance with the provisions for an environmental improvement pilot test specified in N.J.A.C. 7:27-8.9(e), the Department hereby approves this permit application with an effective start date of May 14, 2007 and an effective end date (expiration date) of August 13, 2007, no longer than 90 days from the effective start date.

Pursuant to N.J.A.C. 7:27-8.9(e) this approval may be renewed by application to the Department. The Department shall renew the environmental improvement pilot test approval only if the applicant demonstrates that continued testing of the equipment or process is needed, and that the proposed activities remain within the definition of an environmental improvement pilot test at N.J.A.C. 7:27-8.1.

The Department hereby issues this permit under the authority of chapter 106, P.L. 1967 (N.J.S.A. 26:2C-9.2). The referenced equipment and/or control apparatus shall be operated in accordance with the Facility Specific Requirements (attached). The conditions specified in the Facility Specific Requirements are applicable to all referenced pieces of equipment during the pilot tests.

In addition to the facility specific requirements listed in this permit, the facility must comply with all applicable rules and requirements as well as the information contained in the approved application. The facility must also comply with any applicable requirements of the NJAC 7:27-8.1 et.seq. and other state rules summarized in **The General Provisions for Pre-Construction Permits.** The general provisions for pre-construction permits can be found at www.state.nj.us/dep/aqpp/applying.html. The facility should take note, however, that this website may not always contain the most up-to-date version of these provisions. It remains the facility's responsibility to keep apprised of and comply with all applicable regulations and changes thereto. A copy of current regulations can be obtained from the Department's Website at www.state.nj.us/dep/aqm/, BNA Library, or by calling or writing to your Regional Enforcement Office.

In accordance with the provisions for an environmental improvement pilot test specified in N.J.A.C. 7:27-8.9(h), upon completion of the environmental pilot test, the equipment involved shall cease operating, or shall return to operating under conditions of the existing permit, if any.

If, in your judgement, the Department is imposing any unreasonable condition of approval, you may contest the Department's decision and request an adjudicatory hearing pursuant to the Administrative Code at N.J.A.C. 52:14b-1 et seq. All requests for an adjudicatory hearing must be received in writing by the Department within twenty (20) calendar days of the date you receive this permit approval. The request must contain the information requested in N.J.A.C. 7:27- 1.32 and the information on the enclosed Administrative Hearing Request Checklist and tracking Form.

If you have any questions on this matter, please call Dr. Negib Harfouche of the Bureau of Pre-construction Permits at (609) 292-2137.

Approved by:

Lou Mikolajczyk, Chief
Bureau of Preconstruction Permits

C: file
Regional Enforcement Office

Administrative Hearing Request Checklist and Tracking Form

I. Document Being Appealed

Name of the Facility	Program Interest (PI) Number	Permit Activity Number	Issuance Date

II. Contact Information

Name of Person Requesting Hearing	Name of Attorney (if applicable)
Address:	Address:
Telephone:	Telephone:

III. Please include the following information as part of your request:

A. The date the permittee received the permit decision,
B. **A copy of the document being appealed,**
C. The legal and factual questions you are appealing;
D. A statement as to whether or not you raised each legal and factual issues during the permit application process;
E. Suggested revised or alternative permit conditions;
F. An estimate of the time required for the hearing;
G. A request, if necessary, for a barrier-free hearing location for physically disabled persons;
H. A clear indication of any willingness to negotiate a settlement with the Department prior to the Departments processing of your hearing request to the Office of Administrative Law;

Mail this form, completed, signed and dated with all of the information listed above, including attachment, to:

1. New Jersey Department of Environmental Protection
Office of Legal Affairs
Attention: Adjudicatory Hearing Requests
401 E. State Street, P.O. Box 402
Trenton, New Jersey 08625

2. Lou Mikolajczyk, Chief
Bureau of Preconstruction Permits
New Jersey Department of Environmental Protection
401 E. State Street, 2nd Floor, P.O. Box 027
Trenton, New Jersey 08625
Phone: <<<Insert phone number>>>

_____ _____

Signature **Date**

Administrative Hearing Request Checklist and Tracking Form

IV. If you are not the applicant but rather an interested person claiming to be aggrieved by the permit decision, please include the following information:

1. The date you or your agent received notice of the permit decision (include a copy of that permit decision with your hearing request);
2. Evidence that a copy of the request has been delivered to the applicant for the permit which is the subject of the permit decision;
3. A detailed statement of which findings of fact and/or conclusion of law you are challenging;
4. A description of your participation in any public hearings held in connection with the permit application and copies of any written comments you submitted;
5. Whether you claim a statutory or constitutional right to a hearing, and, if you claim such a right, a reference to the applicable statute or explanation of how your property interests are affected by the permit decision;
6. If the appeal request concerns a CAFRA permit decision, evidence that a copy of the request has been delivered to the clerks of the county and the municipality in which the project which is the subject of the permit decision is located;
7. Suggested revised or alternative permit conditions;
8. An estimate of the time required for the hearing;
9. A request, if necessary, for a barrier-free hearing location for physically disable persons;
10. A clear indication of any willingness to negotiate a settlement with the Department prior to the Department's transmittal of the hearing request to the Office of Administrative Law;

Mail this form, completed, signed and dated with all of the information listed above, including attachment, to:

1. New Jersey Department of Environmental Protection
   Office of Legal Affairs
   Attention: Adjudicatory Hearing Requests
   401 E. State Street, P.O. Box 402
   Trenton, New Jersey 08625

2. Lou Mikolajczyk, Chief
   Bureau of Preconstruction Permits
   New Jersey Department of Environmental Protection
   401 E. State Street, 2nd Floor, P.O. Box 027
   Trenton, New Jersey 08625
   Phone: <<<Insert phone number>>>

_____ _____

Signature **Date**

ENVIRONMENTAL IMPROVEMENT PILOT TEST APPROVAL

Table of Contents

Facility Name: ENDESCO CLEAN HARBORS CEMENT LOCK DEMO PLNT
Facility ID No.: 12454
Activity ID No.: EIP070001

ENVIRONMENTAL IMPROVEMENT PILOT TEST APPROVAL

Section A

Facility Name: ENDESCO CLEAN HARBORS CEMENT LOCK DEMO PLNT
Facility ID No.: 12454
Activity ID No.: EIP070001

AUTHORIZED SOURCE OPERATIONS

Description of Source Activity

Source Operation Type: Passaic River sediment dredged from the Harrison Reach are processed in the Cement-Lock demonstration-scale facility located at the IMTT site in Bayonne, Hudson County.

Source Operation Description: The objective of this test is to complete the initial pilot test performed under the previous EIP #06/0001. The Cement-Lock pilot-scale demonstration facility will be operated at a maximum of 2,000 pounds per hour (wet basis) for a total of 112-tons of dredge sediment (wet basis). The facility incorporates a pug mill, a natural-gas fired rotary kiln, a secondary combustion chamber, a baghouse, an activated carbon and a diesel-fired emergency generator.

ENVIRONMENTAL IMPROVEMENT PILOT TEST APPROVAL

Section B

Facility Name: ENDESCO CLEAN HARBORS CEMENT LOCK DEMO PLNT
Facility ID No.: 12454
Activity ID No.: EIP070001

ACRONYMS

BPP	Bureau of Preconstruction Permits
BOP	Bureau of Operating Permits
BTS	Bureau of Technical Services
CEM	Continuous Emissions Monitor
CFR	Code of Federal Regulations
COM	Continuous Opacity Monitor
EPA	United States Environmental Protection Agency
HAP	Hazardous Air Pollutant
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
PST	Performance Specification Test
REO	Regional Enforcement Office - NJDEP
TSP	Total Suspended Particulate Matter
VOC	Volatile Organic Compound

ENVIRONMENTAL IMPROVEMENT PILOT TEST APPROVAL

Section C

Facility Name: ENDESCO CLEAN HARBORS CEMENT LOCK DEMO PLNT
Facility ID No.: 12454
Activity ID No.: EIP070001

FACILITY PROFILE

ENDESCO CLEAN HARBORS CEMENT LOCK DEMO PLNT (12454)
EIP70001

Date: 5/14/2007

New Jersey Department of Environmental Protection
Facility Profile (General)

Facility Name (AIMS): Cement-Lock Demonstration Plant

Facility ID (AIMS): 12454

Street Address: INTERNATIONAL MATEX TANK TERMINAL
IMTT
250 EAST 22ND ST
BAYONNE, NJ 07002

Mailing Address: MR MICHAEL J ROBERTS
ENDESCO CLEAN HARBORS LLC
1700 SOUTH MOUNT PROSPECT RD
DES PLAINES, IL 60018-1804

State Plane Coordinates:

X-Coordinate:	604,000
Y-Coordinate:	663,800
Units:	Feet
Datum:	NAD27
Source Org.:	Other/Unknown
Source Type:	Hard Copy Map

County: Hudson

Location Description: Located on 2 acres of fenced property at the International Matex Tank Terminal, Bayonne, NJ

Industry:

Primary SIC:	1796
Secondary SIC:	
NAICS:	

ENDESCO CLEAN HARBORS CEMENT LOCK DEMO PLNT (12454)
EIP70001

New Jersey Department of Environmental Protection
Facility Profile (General)

Contact Type: Air Permit Information Contact

Organization: GAS TECHNOLOGY INSTITUTE
Name: MICHAEL C MENSINGER
Title: SENIOR CHEMICAL ENGINEER
Phone: (847) 768-0602 x
Fax: (847) 463-0575 x
Other: (630) 518-2920 x
Type: Mobile
Email: mike.mensinger@gastechnology.org

Org. Type: Corporation
NJ EIN:

Mailing Address: 1700 SOUTH MOUNT PROSPECT RD
DES PLAINES, IL 60018-1804

Contact Type: BAQE - Engineering

Organization: NJ Department of Environmental Protection
Name: Negib Harfouche, Ph.D.
Title: Principal Environmental Engineer (APC)
Phone: (609) 292-2137 x
Fax: (609) 984-6369 x
Other: ( ) - x
Type:
Email: negib.harfouche@dep.state.nj.us

Org. Type: State
NJ EIN:

Mailing Address: Bureau of Preconstruction Permits
401 East State Street - 2nd Floor
P.O.Box 027
Trenton, NJ 08625-0027

Contact Type: Consultant

Organization: AMBIENT ENGINEERING, INC.
Name: DR. JOHN YAVORSKY
Title: PRINCIPAL
Phone: (609) 279-6888 x
Fax: (609) 279-9444 x
Other: ( ) - x
Type:
Email: john@ambienteng.com

Org. Type: Private
NJ EIN:

Mailing Address: P.O. BOX 279
5 CRESCENT AVENUE
ROCKY HILL, NJ 08553

New Jersey Department of Environmental Protection
Facility Profile (General)

Contact Type: On-Site Manager

Organization: RPMS CONSULTING ENGINEERS
Org. Type: Private
Name: STEVE STETKA
NJ EIN:
Title: ON-SITE MANAGER
Phone: (201) 243-0027 x
Fax: (201) 243-0072 x
Other: (609) 234-7614 x
Type: Mobile
Email: sstetka@rpmsengineers.com
Mailing Address: 1 ROSSMOOR DRIVE
SUITE 300
MONROE TOWNSHIP, NJ 08831

Contact Type: Owner (Current CO-1)

Organization: ENDESCO CLEAN HARBORS LLC
Org. Type: LLC
Name: MICHAEL J. ROBERTS
NJ EIN:
Title: PRESIDENT
Phone: (847) 768-0518 x
Fax: (847) 768-0600 x
Other: (847) 219-5783 x
Type: Mobile
Email: mike.roberts@gastechnology.org
Mailing Address: 1700 SOUTH MOUNT PROSPECT RD
DES PLAINES, IL 60018-1804

Contact Type: Responsible Official

Organization: ENDESCO CLEAN HARBORS LLC
Org. Type: LLC
Name: MICHAEL J. ROBERTS
NJ EIN:
Title: PRESIDENT
Phone: (847) 768-0518 x
Fax: (847) 768-0600 x
Other: (847) 219-5783 x
Type: Mobile
Email: mike.roberts@gastechnology.org
Mailing Address: 1700 SOUTH MOUNT PROSPECT RD
DES PLAINES, IL 60018-1804

ENVIRONMENTAL IMPROVEMENT PILOT TEST APPROVAL

Section D

Facility Name: ENDESCO CLEAN HARBORS CEMENT LOCK DEMO PLNT
Facility ID No.: 12454
Activity ID No.: EIP070001

FACILITY SPECIFIC REQUIREMENTS

New Jersey Department of Environmental Protection
Facility Specific Requirements

Emission Unit: U1 200 Ton Cement-Lock Demo Plant, Bayonne, NJ

Operating Scenario: OS Summary

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	This EIPT Permit is for the processing of up to 112 tons of Passaic River sediment dredged from the Harrison Reach within the NY/NJ Harbor, at a maximum rate of 1 ton per hour. The objective of this test, is to complete the initial pilot test performed under the previous EIPT No. 06/0001. The test will also include air sampling and testing at the main stack (PT1) and at the ecomelt quencher opening, by the drop-out box. [N.J.A.C. 7:27- 8]			
2	Hours of Operation <= 120 hours for the entire test. This test shall include the operation of all equipment included in the Cement-Lock Demonstration Scale Facility, as covered by this Permit. An hour of test run time shall be any hour, or part of an hour, during which the EIPT is conducted. [N.J.A.C. 7:27- 8.13(a)]	Hours of Operation: Monitored by hour/time monitor daily, based on one calendar day. The permittee shall monitor the daily operating hours of the EIPT. [N.J.A.C. 7:27-8.13(d)]	Hours of Operation: Recordkeeping by manual logging of parameter or storing data in a computer data system daily during operation. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8.13(d)]	
3	No more than 112 tons (wet basis) of Passaic River sediment shall be dredged from the Harrison Reach and processed through the Cement-Lock Demonstration Scale Facility, under slagging conditions, for the entire test. [N.J.A.C. 7:27- 8]	Monitored by material feed/flow monitoring daily, based on an instantaneous determination. The permittee shall monitor the total amount of "raw" (feed material) dredge sediment processed daily at the facility, using common feed/flow monitoring tools or standard engineering practice. [N.J.A.C. 7:27- 8]	Recordkeeping by manual logging of parameter or storing data in a computer data system daily. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
4	The period for which the Environmental Improvement Pilot Test (EIPT) may be performed is from May 14, 2007 until August 13, 2007. During this period of time, the permittee shall conduct the EIPT in compliance with the conditions described in this permit. [N.J.A.C. 7:27- 8.13(a)]	Monitored by hour/time monitor at the approved frequency, based on an instantaneous determination. The permittee shall monitor the initial start-up and shutdown dates and hours of operation of all equipment included in the Cement-Lock Demonstration Scale Facility, as specified in the conditions of this permit. [N.J.A.C. 7:27- 8.13(d)]	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event during operation. The permittee shall maintain records of the initial start-up and shutdown dates and hours of operation of all equipment included in the Cement-Lock Demonstration-Scale Facility upon occurrence of event. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8.13(d)3]	None.
5	Total "Raw" (feed material) Dredge Sediment Processed Hourly <= 2,000 pounds per hour (lbs/hr) (wet basis). [N.J.A.C. 7:27- 8.13(a)]	Monitored by material feed/flow monitoring daily, based on an instantaneous determination. The permittee shall monitor the hourly "raw" dredge sediment processed through the Cement-Lock Demonstration-Scale Facility, using common feed/flow monitoring tools and standard engineering practice, once per day, based on hours of operation per day. [N.J.A.C. 7:27- 8.13(d)]	Recordkeeping by manual logging of parameter or storing data in a computer data system daily. The permittee shall maintain records of the hourly dredge sediment feedrate through the Cement-Lock Demonstration-Scale Facility, at least once per day. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8.13(d)3]	
6	During the EIPT, the permittee shall confirm that the dredge sediment is moist enough not to result in visible emissions, and that there are no visible emissions from the handling and mixing operations, throughout the Cement-Lock Demonstration-Scale Facility, at any time. The permittee shall use water sprays or other wetting agents if visible emissions are sustained after continuing or resuming the processing of dredge sediment, in a manner to prevent and avoid visible emissions, as necessary. [N.J.A.C. 7:27- 8]	Monitored by visual determination daily, based on an instantaneous determination during operation. All employees shall be trained to notify the on-site supervisor, if they see any visible emissions. [N.J.A.C. 7:27- 8]	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. The permittee shall record the date and time and corrective measures taken to prevent and avoid visible emissions when they occur. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
7	The Cement-Lock Demonstration-Scale Facility shall incorporate the following main equipment and control devices: 1. A pugmill (E4) for mixing dredge sediment and modifier; 2. Ecomelt generator (E2) or rotary kiln firing natural gas only and operating at less than or equal to 2,600 degrees Fahrenheit. 3. A secondary combustion chamber (CD5) for burning-off volatile organic compounds in exhaust gas before they reach the stack (PT1). 4. A baghouse (CD2), 5. An activated carbon bed (CD3), and 6. An Emergency Generator (E5) [General Permit GEN#06-0001] of 306 BHP (max @ 100% load). The transfer or drop points between conveying and processing equipment shall be covered with metal sheeting or heavy tarp to form a chute that minimizes the potential for particulate emissions from the transfer of screened material into the processing equipment. [N.J.A.C. 7:27- 8]	Monitored by documentation of construction once initially, based on an instantaneous determination. Documentation of construction shall consist of, but not limited to, Operation and Maintenance manuals (O&M), as-built equipment inventory, equipment specifications and operator's logbook. [N.J.A.C. 7:27- 8]	Recordkeeping by manual logging of parameter or storing data in a computer data system once initially. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	
8	There shall be water available on-site to be immediately used within the Cement-Lock Demonstration-Scale Facility in order to prevent dust formation. [N.J.A.C. 7:27- 8]	Monitored by visual determination daily, based on an instantaneous determination. The permittee shall check on a daily basis, that there is water available on-site and that the water sprays are operative and can be used immediately, within the facility, when needed. [N.J.A.C. 7:27- 8]	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. The permittee shall record the date, time and the location within the Cement-Lock Demonstration-Scale Facility where water sprays are used. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	
9	The permittee shall notify the Department and the NJDEP Northern Regional Office at least five (5) days prior to the startup, and after the completion of the EIPT. [N.J.A.C. 7:27- 8]			Submit notification: As per the approved schedule. The permittee shall notify the NJDEP Northern Regional Office five (5) days prior to the startup, and after the completion of the EIPT. [N.J.A.C. 7:27- 8]

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
10	The Bin Vent Filters (CD1) and (CD4) shall be installed as an integrated part of the Modifier 1 Hopper (E1) and Lime Hopper (E3), respectively, and shall be operated at all times during operation of the Cement-Lock Demonstration Plant. [N.J.A.C. 7:27- 8]	Monitored by visual determination daily, based on an instantaneous determination. The permittee shall monitor the operation of CD1 and CD4 at least once daily, during operation. [N.J.A.C. 7:27- 8]	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. The permittee shall record the date and time when CD1 and CD4 are not operative, at least once daily, upon occurrence. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	
11	"Raw" (feed material) sediment dredged from the Passaic River, Harrison Reach Site, will be processed through the Cement-Lock Demonstration-Scale Facility, located at IMTT 250 East 22nd Street in Bayonne, Hudson County, New Jersey. The permittee shall obtain written approvals from the Department for processing "raw" (feed material) dredge sediment other than from the Harrison Reach Site. [N.J.A.C. 7:27- 8]	Monitored by sludge sampling once initially, based on an instantaneous determination. The permittee shall ensure that the average composition of the "raw" (feed material) dredge sediment processed through the Cement-Lock Demonstration-Scale Facility, is within the same order of magnitude as the average composition of the "raw" (feed material) dredge sediment provided originally in the air permit application. [N.J.A.C. 7:27- 8]	Recordkeeping by manual logging of parameter or storing data in a computer data system once initially. The permittee shall maintain records pertaining to the source, characteristics and geographical location within the NY/NJ Harbor of the "raw" (feed material) dredge sediment processed at the facility, once initially. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	
12	Emergency Generator (E5) Hours of Operation <= 30 hr/yr. [N.J.A.C. 7:27- 8]	Hours of Operation: Monitored by hour/time monitor daily, based on an instantaneous determination. The permittee shall monitor the daily operating hours of the Emergency Generator (E5). [N.J.A.C. 7:27- 8]	Hours of Operation: Recordkeeping by manual logging of parameter or storing data in a computer data system daily during operation. All monitoring records, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
13	During the EIPT, the permittee shall monitor the following air pollutants: 1. At the main stack (PT1): a) NOx b). Particulates, i.e., TSP and PM-10 c) Semi-Volatile Organic Compounds (SVOCs), including Bis(2-Ethylhexyl)phtalate and Benzo(a)pyrene d) Volatile Organic Compounds (VOC) or Total Hydrocarbons (THC). e) Polychlorinated Biphenyls (PCBs) f) Dioxins/Furans (D/F) g) Metals h) HCl/Cl2 and i) Mercury Compounds (total). 2. At the ecomelt quencher opening, located by the drop-out box (below invert level): a) SVOCs b) VOCs or THC c) PCBs d) D/Fs, and e) Mercury. The permittee shall also continuously monitor for NOx, SO2, CO, THC, CO2 and O2 at the stack. [N.J.A.C. 7:27- 8]	Other: The permittee shall monitor for the required applicable air pollutants using State and USEPA approved analytical laboratory air sampling and testing methodologies, during the time at which the Ecomelt Generator (E2) is operating at full capacity under steady state conditions. At the same time, continuous air emission monitoring shall be conducted for the applicable air pollutants.[N.J.A.C. 7:27- 8].	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. All monitoring records, as specified in Ref. No. 14, including any analytical laboratory air sampling and testing results, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
14	The following records shall be maintained: 1. The start and end dates of the Environmental Improvement Pilot Test (EIPT. 2. Continuous emissions monitoring data for applicable air pollutants. 3. Analytical air sampling and monitoring data collected during the EIPT. 3. Any operating restrictions or contingencies, and corrective measures (if any) which were implemented during the EIPT. 4. "Raw" (feed material) dredge sediment and drop-out box quench wastewater flow rates, dredge sediment/modifier percent mixtures and other process flow parameters that were determined during the EIPT. 5. Air emissions calculations and emission factors determined during the EIPT. 6. Hours of operation of the Cement-Lock Demonstration Plant. 7. Hours of operation of the Emergency Generator (E5). 8. Specifications of any air monitoring equipment, instrumentation or device as well as analytical laboratory sampling and testing methodologies (as applicable) that were used during the EIPT. [N.J.A.C. 7:27-8.13(a)]		Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. All monitoring records shall be kept in a separate bound logbook, or in an electronic storage filing system, i.e. computer, on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27-8.13(d)3]	Submit a report: Upon occurrence of event. This information shall be summarized in a report which shall be submitted to the Chief, NJDEP, Bureau of Preconstruction Permits, P.O. Box 027, Trenton, NJ 08625-0027, upon request by the Department. [N.J.A.C. 7:27- 8.13(d)3]

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
15	The permittee shall not cause or use the equipment and control devices specified in this permit in a manner that will result in the emission of any air contaminant from the Cement-Lock Demonstration Plant in excess of below listed yearly emissions; CO <= 0.44 ton/year (including 0.14 tpy CO emissions from E5) Dioxins/Furans <= 1.24E-08 lb/year PCBs <= 5.81E-02 lb/year HCl <= 0.30 ton/year Mercury Compounds <= 0.113 lb/year NOx <= 2.14 ton/year (including 0.66 tpy NOx from E5) Lead <= 0.116 lb/year PM-10 <= 0.05 ton/year (including 0.05 tpy PM10 emissions from E5). SO2 <= 0.240 ton/year (including 0.03 tpy SO2 emissions from E5) TSP <= 0.05 ton/year (including 0.05 tpy TSP emissions from E5) VOC (total) <= 0.06 ton/year (including 0.05 tpy VOC emissions from E5) HAPs (total) <= 0.30 ton/year [N.J.A.C. 7:27- 8.4(k)1]	Monitored by calculations once initially, based on an instantaneous determination using analytical laboratory sampling and testing results and continuous air emission monitoring data, where applicable. [N.J.A.C. 7:27- 8]	Recordkeeping by manual logging of parameter or storing data in a computer data system once initially. All monitoring records, including air emission calculations, as specified in Ref. No. 14, shall be kept on-site or at the permittee's main office, for at least five (5) years, readily made available to the Department upon request. [N.J.A.C. 7:27- 8]	Submit notification: Upon occurrence of event. The permittee shall comply with all air contaminant emissions limits as specified in the conditions of this permit at all times during operation. The NJDEP Northern Regional Enforcement Office must be notified no later than seven (7) calendar days following the completion of air emissions calculations or monitoring, if any of the air contaminants would be emitted at a rate higher than the applicable reporting, and SOTA threshold levels as set forth in N.J.A.C. 7:27-8 Appendix I, Table A or B. [N.J.A.C. 7:27- 8.4(k)1]
16	All conditions and restrictions specified in this EIPT Permit shall apply and are enforceable. After the EIPT has been completed, the permittee shall dismantle and remove all equipment included in the Cement-Lock Demonstration-Scale Dredge Sediment Facility, and refrain from performing any site operations or activities without obtaining the necessary approvals from the Department. [N.J.A.C. 7:27- 8]			

Summary of Operating Scenarios

MCM 3/30/07 -- REVISED 5/2/07

4000 lb/hour maximum of Passaic River sediment (wet basis)

2 TPH maximum

		Planned	As fed	120 Maximum hours of operation
Feed Rate Factor (FRF Planned/As fed)	3.03	4000	1320	

OS0 Summary

Scenarios	Post Control	Post Control	Pre Control	Post Control		Pre Control	Control
	lb/hr	X FRF, lb/hr	lb/hr	lb/year	ton/yr	ton/yr	Effic. %
CO	2.73	8.27		606.7	0.303		
Dioxins/Furans	3.40E-11	1.030E-10		1.236E-08	6.182E-12		
PCBs	1.60E-04	4.848E-04		5.818E-02	2.909E-05		
HCl	1.52	4.61	30.71	552.7	0.276	1.84242	85%
Hg compounds	3.10E-04	9.394E-04	7.226E-03	1.127E-01	5.636E-05	4.336E-04	87%
NOx	13.32	40.36		2960.0	1.480		
Pb	3.20E-04	9.697E-04		1.164E-01	5.818E-05		
PM-10	0.01	0.01	0.857	4.286E-02	2.143E-05	2.143E-03	99%
SO2	1.14	3.45	23.03	414.5	0.207	1.38182	85%
TSP	0.09	0.09	8.571	4.286E-01	2.143E-04	0.02143	99%
VOC	0.04	0.12		14.5	7.273E-03		
HAPs (HCl, Pb, Hg, D/F, PCBs)	1.521	4.608	30.714	553.015	0.2765		

------ hr/year ------		
Min.	Max.	Rationale/Remarks
72	120	Operating hours
0	100	Start-up/Shutdown
2	5	Other (CaCO3 loading)

draft AirNova results 12/2006 (average of 2 samples)

OS1 T-103 Loading hopper with 22 tons of limestone

	Post Control	Post Control	Pre Control	Post Control		Pre Control	Control
	lb/hr	X FRF=1, lb/hr	lb/hr	lb/year	ton/yr	ton/yr	Effic. %
CO	0.00	0.00		0.00	0.00		
Dioxins/Furans	0.00	0.00		0.00	0.00		
PCBs	0.00	0.00		0.00	0.00		
HCl	0.00	0.00		0.00	0.00		
Hg compounds	0.00	0.00		0.00	0.00		
NOx	0.00	0.00		0.00	0.00		
Pb	0.00	0.00		0.00	0.00		
PM-10	8.57E-03	8.57E-03	0.857	4.29E-02	2.143E-05	2.143E-03	99%
SO2	0.00	0.00		0.00	0.00		
TSP	8.57E-02	8.57E-02	8.571	4.29E-01	2.143E-04	2.143E-02	99%
VOC	0.00	0.00		0.00	0.00		
HAPs (HCl, Pb, Hg, D/F, PCBs)	0.0000	0.0000	0.0000	0.0000	0.0000		

Min.	Max.
------ hr/year ------	
2	5

22	tons x 2000 =	44,000	lb
40000	lb/hour pneumatic	1.1	hours
1000	acfm	66,000	ft3
0.01	grains/ft3	660	grains
7000	grains/lb	0.094	lb
	rate	0.0857	lb/hour

Engineering estimate

Engineering estimate

OS2 Start-Up (R-201) 25 hours for two tests (no feed)

	Post Control	Post Control	Pre Control	Post Control		Pre Control	Control
	lb/hr	X FRF, lb/hr	lb/hr	lb/year	ton/yr	ton/yr	Effic. %
CO	0.910	2.758		137.9	6.89E-02		
Dioxins/Furans	0.00	0.00		0.00	0.00		
PCBs	0.00	0.00		0.00	0.00		
HCl	0.00	0.00	0.00	0.00	0.00		
Hg compounds	0.00	0.00	0.00	0.00	0.00		
NOx	4.440	13.455		672.7	0.336		
Pb	0.00	0.00		0.00	0.00		
PM-10	0.00	0.00		0.00	0.00		
SO2	0.00	0.00	0.00	0.00	0.00		
TSP	0.00	0.00		0.00	0.00		
VOC	0.00	0.00		0.00	0.00		
HAPs (HCl, Pb, Hg, D/F, PCBs)	0.0000	0.0000	0.0000	0.0000	0.0000		

Min.	Max.	Rationale/Remarks
------ hr/year ------		
0	50	

draft AirNova results 12/2006
No sediment feed
No sediment feed
No sediment feed
No sediment feed
draft AirNova results 12/2006
No sediment feed
No sediment feed
No sediment feed
No sediment feed
No sediment feed
No sediment feed

OS3 Shutdown (R-201) 25 hours for two tests (no feed)

	Post Control lb/hr	Post Control X FRF, lb/hr	Pre Control lb/hr	Post Control lb/year	Post Control ton/yr	Pre Control ton/yr	Control Effic. %	Min. hr/year 0	Max. hr/year 50	Rationale/Remarks
CO	0.910	2.758		137.9	6.89E-02					draft AirNova results 12/2006
Dioxins/Furans	0.00	0.00		0.00	0.00					No sediment feed
PCBs	0.00	0.00		0.00	0.00					No sediment feed
HCl	0.00	0.00	0.00	0.00	0.00					No sediment feed
Hg compounds	0.00	0.00	0.00	0.00	0.00					No sediment feed
NOx	4.440	13.455		672.7	0.336					draft AirNova results 12/2006
Pb	0.00	0.00		0.00	0.00					No sediment feed
PM-10	0.00	0.00		0.00	0.00					No sediment feed
SO2	0.00	0.00	0.00	0.00	0.00					No sediment feed
TSP	0.00	0.00		0.00	0.00					No sediment feed
VOC	0.00	0.00		0.00	0.00					No sediment feed
HAPs (HCl, Pb, Hg, D/F, PCBs)	0.0000	0.0000	0.0000	0.0000	0.0000					No sediment feed

OS4 R-201 Test with Passaic River sediment at 4000 lb/hour

	Post Control lb/hr	Post Control X FRF, lb/hr	Pre Control lb/hr	Post Control lb/year	Post Control ton/yr	Pre Control ton/yr	Control Effic. %	Min. hr/year 72	Max. hr/year 120	Rationale/Remarks
CO	0.91	2.76		330.91	0.1655					draft AirNova results 12/2006
Dioxins/Furans	3.40E-11	1.03E-10		1.236E-08	6.18E-12					draft AirNova results 12/2006
PCBs	1.60E-04	4.85E-04		5.818E-02	2.91E-05					draft AirNova results 12/2006
HCl	1.52	4.61	30.71	552.7	0.2764	1.842	85%			draft AirNova results 12/2006
Hg compounds	3.10E-04	9.39E-04	7.226E-03	1.127E-01	5.636E-05	4.336E-04	87%			draft AirNova results 12/2006 (average of 2 samples)
NOx	4.44	13.45		1614.5	0.8073					draft AirNova results 12/2006
Pb	3.200E-04	9.697E-04		0.116	5.818E-05					draft AirNova results 12/2006
PM-10	0.0000	0.0000		0.000E+00	0.000E+00		99%			Engineering estimate
SO2	1.140	3.455	23.03	414.5	0.20727	1.38182	85%			draft AirNova results 12/2006
TSP	0.000	0.000		0.000E+00	0.000E+00		99%			Engineering estimate
VOC	0.0400	0.1212		14.55	7.273E-03					draft AirNova results 12/2006
HAPs (HCl, Pb, Hg, D/F, PCBs)	1.5208	4.6085	30.7143	553.0145	0.2765					

Emergency generator use for 30 hours maximum -- Not included in the above Operating Scenarios

	Post Control lb/hr	Post Control X FRF=1, lb/hr	Pre Control lb/hr	Post Control lb/year	Post Control ton/yr	Pre Control ton/yr	Control Effic. %	Min. hr/year 0	Max. hr/year 30	Rationale/Remarks
CO	9.33	9.33		280.0	0.14	0.14	0%			From NJ-DEP GP005 for Emergency Generators
Dioxins/Furans	0.00	0.00		0	0.00					Category EG-A1 (1-10 MM Btu/hr up to 30 hours/yr)
PCBs	0.00	0.00		0	0.00					
HCl	0.00	0.00		0	0.00					
Hg compounds	0.00	0.00		0	0.00					
NOx	44.00	44.00		1320.0	0.66	0.66	0%			
Pb	0.00	0.00		0	0.00					
PM-10	3.33	3.33		100.0	0.05	0.05	0%			
SO2	2.00	2.00		60.0	0.03	0.03	0%			
TSP	3.33	3.33		100.0	0.05	0.05	0%			
VOC	3.33	3.33		100.0	0.05					
HAPs (HCl, Pb, Hg, D/F, PCBs)	0.0000	0.0000		0.0000	0.0000					

Summary of Operating Scenarios MCM 3/30/07 -- REVISED 5/2/07

4000 lb/hour maximum of Passaic River sediment (wet basis)
2 TPH maximum
120 Maximum hours of operation

				------ hr/year ------		
				Min.	Max.	
Scenarios				72	120	Operating hours
OS0	**Summary**	**lb/hr**	**lb/yr**	**ton/year**	0	100	Start-up/Shutdown
CO		2.73	200.2	1.00E-01	2	5	Other (CaCO3 loading)
Dioxins/Furans		3.40E-11	4.08E-09	2.04E-12			
PCBs		1.60E-04	0.0192	9.60E-06			
HCl		1.52	182.4	0.091			
Hg compounds		3.10E-04	0.0372	1.86E-05			
NOx		13.32	976.8	0.49			
Pb		3.20E-04	0.0384	1.92E-05			
PM-10		8.57E-03	0.0	2.14E-05			
SO2		1.14	136.8	0.068			
TSP		0.09	0.4	2.14E-04			
VOC		4.00E-02	4.8	2.40E-03			
HAPs (HCl, Pb, Hg, D/F, PCBs)		1.5208	182.4948	0.0912			

OS1 T-103 Loading hopper with 22 tons of limestone

	lb/hr	lb/yr	ton/year	2	5				
CO	0	0.00	0.00E+00			22	tons x 2000	44,000	lb
Dioxins/Furans	0	0.00	0.00E+00			40,000	lb/hour pneu	1.1	hours
PCBs	0	0.00	0.00E+00			1,000	acfm	66,000	ft3
HCl	0	0.00	0.00E+00			0.010	grains/ft3	660	grains
Hg compounds	0	0.00	0.00E+00			7,000	grains/lb	0.094	lb
NOx	0	0.00	0.00E+00				rate	0.0857	lb/hour
Pb	0	0.00	0.00E+00						
PM-10	8.57E-03	4.29E-02	2.14E-05			Engineering estimate			
SO2	0	0.00	0.00E+00						
TSP	8.57E-02	4.29E-01	2.14E-04			Engineering estimate			
VOC	0	0.00	0.00E+00						
HAPs (HCl, Pb, Hg, D/F, PCBs)	0.0000	0.0000	0.00E+00						

OS2 Start-Up (R-201) 25 hours for two tests (no feed)

	lb/hr	lb/yr	ton/year	0	50	
CO	0.91	45.50	0.0228			draft AirNova results 12/2006
Dioxins/Furans	0.00	0.00	0.00			
PCBs	0.00	0.00	0.00			
HCl	0.00	0.00	0.00			
Hg compounds	0.00	0.00	0.00			
NOx	4.44	222.00	0.1110			draft AirNova results 12/2006
Pb	0.00	0.00	0.00			
PM-10	0.00	0.00	0.00			
SO2	0.00	0.00	0.00			
TSP	0.00	0.00	0.00			
VOC	0.00	0.00	0.0000			
HAPs (HCl, Pb, Hg, D/F, PCBs)	0.0000	0.0000	0.00E+00			

OS3 Shutdown (R-201) 25 hours for two tests (no feed)

	lb/hr	lb/yr	ton/year	0	50	
CO	0.91	45.50	0.023			draft AirNova results 12/2006
Dioxins/Furans	0.00	0.00	0.00			
PCBs	0.00	0.00	0.00			
HCl	0.00	0.00	0.00			
Hg compounds	0.00	0.00	0.00			
NOx	4.44	222.00	0.1110			draft AirNova results 12/2006
Pb	0.00	0.00	0.00			
PM-10	0.00	0.00	0.00			
SO2	0.00	0.00	0.00			
TSP	0.00	0.00	0.00			
VOC	0.00	0.00	0.00			
HAPs (HCl, Pb, Hg, D/F, PCBs)	0.0000	0.0000	0.00E+00			

OS4 R-201 Test with Passaic River sed. At 1320 lb/hr

	lb/hr	lb/yr	ton/year	72	120	
CO	0.91	109.2	5.46E-02			draft AirNova results 12/2006
Dioxins/Furans	3.40E-11	4.08E-09	2.04E-12			draft AirNova results 12/2006
PCBs	1.60E-04	1.92E-02	9.60E-06			draft AirNova results 12/2006
HCl	1.52	182.4	9.12E-02			draft AirNova results 12/2006
Hg compounds	3.10E-04	0.0372	1.86E-05			draft AirNova results 12/2006
NOx	4.44	532.8	2.66E-01			draft AirNova results 12/2006
Pb	3.20E-04	3.84E-02	1.92E-05			draft AirNova results 12/2006
PM-10	0.00E+00	0.00E+00	0.00E+00			Engineering estimate
SO2	1.14	136.8	6.84E-02			draft AirNova results 12/2006
TSP	0.00E+00	0.00E+00	0.00E+00			Engineering estimate
VOCs	0.04	4.80	2.40E-03			draft AirNova results 12/2006
HAPs (HCl, Pb, Hg, D/F, PCBs)	1.5208	182.4948	9.12E-02			

Emergency generator use for 30 hours maximum -- Not included in the above Operating Scenarios

	lb/hr	lb/yr	ton/year	0	30	
CO	9.33	280	0.14			From NJ-DEP GP005 for Emergency Generators
Dioxins/Furans	0.00	0	0.00			Category EG-A1 (1-10 MM Btu/hr up to 30 hours/yr)
PCBs	0.00	0	0.00			
HCl	0.00	0	0.00			
Hg compounds	0.00	0	0.00			
NOx	44.00	1320	0.66			
Pb	0.00	0	0.00			
PM-10	3.33	100	0.05			
SO2	2.00	60	0.03			
TSP	3.33	100	0.05			
VOCs	3.33	100	0.05			
HAPs (HCl, Pb, Hg, D/F, PCBs)	0.0000	0.0000	0.00E+00			

NJDEP DIVISION OF AIR QUALITY RISK SCREENING WORKSHEET
For Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects

For review of new and altered permits. NOT TO BE USED FOR SOURCES WITHOUT STACKS, such as certain dry cleaners, degreasers, storage tanks, and gasoline stations. For information on how to evaluate risk from other kinds of sources, contact the Bureau of Air Quality Evaluation (609-633-1110).

Chemicals in italics are listed elsewhere with another name (see attached comment or appropriate letter at the bottom of the spreadsheet).

For a listing of chemicals by CAS number, see the next worksheet in this spreadsheet ("CAS Index").

This is a protected file. Changes are allowed only to certain cells (those in yellow). It is also a "read only" file. To save the data you input, go to "File;" then "Save as" wherever you like, under the name of your choice. Input data only to yellow fields. Incremental cancer risk (IR) and hazard index (HI) will calculate automatically when you type in the normalized ambient air concentrations and an emission rate.

For references for toxicity data (URFs and RfCs), see lists compiled by the Bureau of Air Quality Evaluation (609-633-1110).

Date	4/6/2007
Facility ID No.	12454
Activity ID No.	EIP#07/0001
Facility name	Cement-Lock Demonstration Plant Facility
Facility location	IMTT - BX, 250 East 22nd Street, Bayonne, New Jersey 07002
File name (.xls)	Cement-Lock Demo plant risk3 (120 hours)

Stack height	50.0	ft
Distance to property line	95	ft
Normalized long-term ambient air concentration, C' (look up in nomographs A or B)	0.83	$(ug/m^3)/(ton/yr)$
Normalized short-term ambient air concentration, C'_{st} (look up in nomographs C or D)	190	$(ug/m^3)/(lb/hr)$

KEY:

Long-Term Effects

Q = Annual emission rate (in tons per year)
C = C' x Q = Annual average ambient air concentration
URF = Unit risk factor (for carcinogenic risk)
IR = C x URF = Incremental risk (for carcinogen)
RfC = Reference concentration (for noncarcinogenic effects)
HQ = C/RfC = Hazard quotient (for noncarcinogenic risk)

Short-Term Effects

Q_h = Hourly emission rate (in pounds per hour)
C_{st} = C'_{st} x Q_h = Short-term average ambient air concentration
RfC_{st} = Short-term reference concentration (for noncarcinogenic effects)
HQ_{st} = C_{st}/RfC_{st} = Hazard quotient for short-term noncarcinogenic effects

Cement-Lock Demonstration Plant Facility

	CAS No.	Chemical	LONG-TERM EFFECTS Q (ton/yr)	C (ug/m^3)	URF [$(ug/m^3)^{-1}$]	IR	RfC (ug/m^3)	HQ	SHORT-TERM EFFECTS Q_h (lb/hr)	C_{st} (ug/m^3)	RfC_{st} (ug/m^3)	HQ_{st}
*	75070	Acetaldehyde		0.0E+00	2.2E-06	**0.0E+00**	9	**0.0E+00**				
*	60353	Acetamide		0.0E+00	2.0E-05	**0.0E+00**						
	67641	Acetone		0.0E+00			31000	**0.0E+00**		0.0E+00	62000	**0.0E+00**
	75865	Acetone cyanohydrin		0.0E+00			10	**0.0E+00**				
*	75058	Acetonitrile		0.0E+00			60	**0.0E+00**				
*	98862	Acetophenone		0.0E+00			0.02	**0.0E+00**				
*	107028	Acrolein		0.0E+00			0.02	**0.0E+00**		0.0E+00	0.19	**0.0E+00**
*	79061	Acrylamide		0.0E+00	1.3E-03	**0.0E+00**						
*	79107	Acrylic acid		0.0E+00			1	**0.0E+00**		0.0E+00	6000	**0.0E+00**
*	107131	Acrylonitrile		0.0E+00	6.8E-05	**0.0E+00**	2	**0.0E+00**				
	309002	Aldrin		0.0E+00	4.9E-03	**0.0E+00**						
*	107051	Allyl chloride		0.0E+00	6.0E-06	**0.0E+00**	1	**0.0E+00**				
	117793	Aminoanthraquinone (2-)		0.0E+00	9.4E-06	**0.0E+00**						
*	92671	Aminobiphenyl (4-)		0.0E+00	6.0E-03	**0.0E+00**						
	7664417	Ammonia		0.0E+00			100	**0.0E+00**		0.0E+00	3200	**0.0E+00**
*	62533	Aniline		0.0E+00	1.6E-06	**0.0E+00**	1	**0.0E+00**		0.0E+00	380	**0.0E+00**
*	90040	Anisidine (o-)		0.0E+00	4.0E-05	**0.0E+00**						
**	1309644	Antimony trioxide		0.0E+00			0.2	**0.0E+00**				
	140578	Aramite		0.0E+00	7.1E-06	**0.0E+00**						
*		Arsenic (inorganic)	7.5E-06	6.2E-06	4.3E-03	**2.7E-08**	0.03	**2.1E-04**	1.2E-04	5.3E-02	0.19	**2.8E-01**
**	7784421	Arsine		0.0E+00			0.05	**0.0E+00**		0.0E+00	160	**0.0E+00**
*	1332214	Asbestos		0.0E+00	7.7E-03	**0.0E+00**						
	103333	Azobenzene		0.0E+00	3.1E-05	**0.0E+00**						
		Barium	7.3E-06						1.2E-04	2.3E-02	0.5	**4.6E-02**
*	71432	Benzene		0.0E+00	7.8E-06	**0.0E+00**	30	**0.0E+00**		0.0E+00	1300	**0.0E+00**
*	92875	Benzidine		0.0E+00	6.7E-02	**0.0E+00**						
**	50328	Benzo(a)pyrene	6.6E-10	5.5E-10	1.1E-03	**6.0E-13**			1.1E-08			
*	98077	Benzotrichloride		0.0E+00	3.7E-03	**0.0E+00**						
*	100447	Benzyl chloride		0.0E+00	4.9E-05	**0.0E+00**				0.0E+00	240	**0.0E+00**
*		Beryllium		0.0E+00	2.4E-03	**0.0E+00**	0.02	**0.0E+00**				
a	111444	*Bis(2-chloroethyl)ether*										
	108601	Bis(2-chloroisopropyl)ether		0.0E+00	1.0E-05	**0.0E+00**						
*	117817	Bis(2-ethylhexyl)phthalate	9.1E-04	7.6E-04	2.4E-06	**1.8E-09**	70	**1.1E-05**	1.5E-02			
*	542881	Bis(chloromethyl)ether		0.0E+00	6.2E-02	**0.0E+00**						
	7440428	Boron (elemental)		0.0E+00			20	**0.0E+00**				
	7637072	Boron trifluoride		0.0E+00			0.7	**0.0E+00**				

NJDEP DIVISION OF AIR QUALITY RISK SCREENING WORKSHEET
For Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects

Cement-Lock Demonstration Plant Facility

			LONG-TERM EFFECTS						SHORT-TERM EFFECTS			
	CAS No.	Chemical	Q (ton/yr)	C (ug/m^3)	URF [$(ug/m^3)^{-1}$]	IR	RfC (ug/m^3)	HQ	Q_h (lb/hr)	C_{st} (ug/m^3)	RfC_{st} (ug/m^3)	HQ_{st}
b	593602	*Bromoethene*										
*	75252	Bromoform		0.0E+00	1.1E-06	**0.0E+00**						
c	74839	*Bromomethane*										
*	106990	Butadiene (1,3-)		0.0E+00	3.0E-05	**0.0E+00**	2	**0.0E+00**				
*		Cadmium	2.5E-06	2.1E-06	4.2E-03	**8.9E-09**	0.02	**1.1E-04**	4.2E-05			
*	133062	Captan		0.0E+00	6.6E-07	**0.0E+00**						
*	75150	Carbon disulfide		0.0E+00			700	**0.0E+00**		0.0E+00	6200	**0.0E+00**
*	56235	Carbon tetrachloride		0.0E+00	1.5E-05	**0.0E+00**	40	**0.0E+00**		0.0E+00	1900	**0.0E+00**
*	57749	Chlordane		0.0E+00	1.0E-04	**0.0E+00**	0.7	**0.0E+00**				
	108171262	Chlorinated paraffins		0.0E+00	2.0E-05	**0.0E+00**						
*	7782505	Chlorine	0.0E+00	0.0E+00			0.2	**0.0E+00**	0.0E+00	0.0E+00	210	**0.0E+00**
	10049044	Chlorine dioxide		0.0E+00			0.2	**0.0E+00**		0.0E+00	28	**0.0E+00**
	75683	Chloro-1,1-difluoroethane (1-) *(HCFC-142b)*		0.0E+00			50000	**0.0E+00**				
d	126998	*Chloro-1,3-butadiene (2-)*										
*	532274	Chloroacetophenone (2-)		0.0E+00			0.03	**0.0E+00**				
*	108907	Chlorobenzene		0.0E+00			1000	**0.0E+00**				
*	510156	Chlorobenzilate		0.0E+00	7.8E-05	**0.0E+00**						
	74456	Chlorodifluoromethane *(HCFC-22)*		0.0E+00			50000	**0.0E+00**				
*	67663	Chloroform		0.0E+00	2.3E-05	**0.0E+00**				0.0E+00	150	**0.0E+00**
e	74873	*Chloromethane*										
*	107032	Chloromethyl methyl ether		0.0E+00	6.9E-04	**0.0E+00**						
	95860	Chloro-o-phenylenediamine (4-)		0.0E+00	4.6E-06	**0.0E+00**						
	95692	Chloro-o-toluidine (p-)		0.0E+00	7.7E-05	**0.0E+00**						
	76062	Chloropicrin		0.0E+00			0.4	**0.0E+00**		0.0E+00	29	**0.0E+00**
*	126998	Chloroprene		0.0E+00			1	**0.0E+00**				
	75296	Chloropropane (2-)		0.0E+00			100	**0.0E+00**				
**		Chromic acid mists (Cr VI)		0.0E+00			0.008	**0.0E+00**				
**	18540299	Chromium VI (total)	8.2E-05	6.8E-05	1.2E-02	**8.1E-07**			1.4E-03			
**		Chromium VI dissolved aerosols		0.0E+00			0.008	**0.0E+00**				
**		Chromium VI particulates		0.0E+00			0.1	**0.0E+00**				
*		Cobalt	1.1E-06	9.1E-07			0.005	**1.8E-04**	1.8E-05			
*	8007452	Coke oven emissions		0.0E+00	6.2E-04	**0.0E+00**						
		Copper	2.9E-05	2.4E-05			2.4	**1.0E-05**	4.8E-04	2.3E-01	100	**2.3E-03**
	120718	Cresidine (p-)		0.0E+00	4.3E-05	**0.0E+00**						
*		Cresol mixtures		0.0E+00			600	**0.0E+00**				
	98828	Cumene		0.0E+00			400	**0.0E+00**				
	135206	Cupferron		0.0E+00	6.3E-05	**0.0E+00**						
	110827	Cyclohexane								0.0E+00	6000	**0.0E+00**
	50293	DDT		0.0E+00	9.7E-05	**0.0E+00**						
f	117817	*Di(2-ethylhexyl)phthalate*										
	615054	Diaminoanisole (2,4-)		0.0E+00	6.6E-06	**0.0E+00**						
g	95807	*Diaminotoluene (2,4-)*										
*	96128	Dibromo-3-chloropropane (1,2-)		0.0E+00	2.0E-03	**0.0E+00**	0.2	**0.0E+00**				
h	106934	*Dibromoethane (1,2-)*										
	764410	Dichloro-2-butene (1,4-)		0.0E+00	2.6E-03	**0.0E+00**						
	95501	Dichlorobenzene (1,2-)		0.0E+00			200	**0.0E+00**				
*	106467	Dichlorobenzene (1,4-)		0.0E+00	1.1E-05	**0.0E+00**	800	**0.0E+00**				
*	91941	Dichlorobenzidine (3,3'-)		0.0E+00	3.4E-04	**0.0E+00**						
	75718	Dichlorodifluoromethane		0.0E+00			200	**0.0E+00**				
i	75343	*Dichloroethane (1,1-)*										
j	107062	*Dichloroethane (1,2-)*										
*	111444	Dichloroethyl ether		0.0E+00	3.3E-04	**0.0E+00**						
k	75354	*Dichloroethylene (1,1-)*										
l	75092	*Dichloromethane*										
m	78875	*Dichloropropane (1,2-)*										
*	542756	Dichloropropene (1,3-)		0.0E+00	4.0E-06	**0.0E+00**	20	**0.0E+00**				
*	62737	Dichlorvos		0.0E+00	8.3E-05	**0.0E+00**	0.5	**0.0E+00**				
	77736	Dicyclopentadiene		0.0E+00			0.2	**0.0E+00**				
	60571	Dieldrin		0.0E+00	4.6E-03	**0.0E+00**						
		Diesel particulate matter		0.0E+00			0.5	**0.0E+00**				
*	111422	Diethanolamine		0.0E+00			3	**0.0E+00**				
	112345	Diethylene glycol monobutyl ether		0.0E+00			20	**0.0E+00**				
	75376	Difluoroethane (1,1-)		0.0E+00			40000	**0.0E+00**				
*	77781	Dimethyl sulfate		0.0E+00	4.0E-03	**0.0E+00**						
*	60117	Dimethylaminoazobenzene (4-)		0.0E+00	1.3E-03	**0.0E+00**						

NJDEP DIVISION OF AIR QUALITY RISK SCREENING WORKSHEET
For Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects

Cement-Lock Demonstration Plant Facility

			LONG-TERM EFFECTS						SHORT-TERM EFFECTS			
	CAS No.	Chemical	Q (ton/yr)	C (ug/m^3)	URF $[(ug/m^3)^{-1}]$	IR	RfC (ug/m^3)	HQ	Q_h (lb/hr)	C_{st} (ug/m^3)	RfC_{st} (ug/m^3)	HQ_{st}
*	79447	Dimethylcarbamyl chloride		0.0E+00	3.7E-03	**0.0E+00**						
*	68122	Dimethylformamide (N,N-)		0.0E+00			30	**0.0E+00**				
*	57147	Dimethylhydrazine (1,1-)		0.0E+00	1.0E-03	**0.0E+00**						
	540738	Dimethylhydrazine (1,2-)		0.0E+00	1.6E-01	**0.0E+00**						
*	121142	Dinitrotoluene (2,4-)		0.0E+00	8.9E-05	**0.0E+00**						
*	123911	Dioxane (1,4-)		0.0E+00	7.7E-06	**0.0E+00**				0.0E+00	3000	**0.0E+00**
n		*Dioxin*										
*	122667	Diphenylhydrazine (1,2-)		0.0E+00	2.2E-04	**0.0E+00**						
*	106898	Epichlorohydrin		0.0E+00	1.2E-06	**0.0E+00**	1	**0.0E+00**		0.0E+00	1300	**0.0E+00**
*	106887	Epoxybutane (1,2-)		0.0E+00			20	**0.0E+00**				
o	110805	*Ethoxyethanol (2-)*										
*	140885	Ethyl acrylate		0.0E+00	5.0E-07	**0.0E+00**						
*	51796	Ethyl carbamate		0.0E+00	2.9E-04	**0.0E+00**						
*	75003	Ethyl chloride								0.0E+00	10000	**0.0E+00**
*	100414	Ethylbenzene								0.0E+00	1000	**0.0E+00**
*	106934	Ethylene dibromide		0.0E+00	6.0E-04	**0.0E+00**	0.8	**0.0E+00**				
*	107062	Ethylene dichloride		0.0E+00	2.6E-05	**0.0E+00**	400	**0.0E+00**				
*	107211	Ethylene glycol		0.0E+00			400	**0.0E+00**				
*	111762	Ethylene glycol monobutyl ether		0.0E+00			13000	**0.0E+00**		0.0E+00	14000	**0.0E+00**
**	110805	Ethylene glycol monoethyl ether		0.0E+00			200	**0.0E+00**		0.0E+00	370	**0.0E+00**
**	111159	Ethylene glycol monoethyl ether acetate								0.0E+00	140	**0.0E+00**
**	109864	Ethylene glycol monomethyl ether		0.0E+00			20	**0.0E+00**		0.0E+00	93	**0.0E+00**
**	110496	Ethylene glycol monomethyl ether acetate		0.0E+00			90	**0.0E+00**				
*	75218	Ethylene oxide		0.0E+00	8.8E-05	**0.0E+00**	30	**0.0E+00**		0.0E+00	42	**0.0E+00**
*	96457	Ethylene thiourea		0.0E+00	1.3E-05	**0.0E+00**						
*	151564	Ethyleneimine		0.0E+00	1.9E-02	**0.0E+00**						
*	75343	Ethylidene dichloride		0.0E+00	1.6E-06	**0.0E+00**	500	**0.0E+00**				
	16984488	Fluoride		0.0E+00			13	**0.0E+00**				
*	50000	Formaldehyde		0.0E+00	1.3E-05	**0.0E+00**	3	**0.0E+00**		0.0E+00	94	**0.0E+00**
	98011	Furfural		0.0E+00			50	**0.0E+00**				
		Gasoline vapors		0.0E+00	1.0E-06	**0.0E+00**	15	**0.0E+00**				
	111308	Glutaraldehyde		0.0E+00			0.08	**0.0E+00**				
	765344	Glycidaldehyde		0.0E+00			1	**0.0E+00**				
*	76448	Heptachlor		0.0E+00	1.3E-03	**0.0E+00**						
	1024573	Heptachlor epoxide		0.0E+00	2.6E-03	**0.0E+00**						
*	118741	Hexachlorobenzene		0.0E+00	4.6E-04	**0.0E+00**						
*	87683	Hexachlorobutadiene		0.0E+00	2.2E-05	**0.0E+00**						
**	319846	Hexachlorocyclohexane (alpha-)		0.0E+00	1.8E-03	**0.0E+00**						
**	319857	Hexachlorocyclohexane (beta-)		0.0E+00	5.3E-04	**0.0E+00**						
*	58899	Hexachlorocyclohexane (gamma-)		0.0E+00	3.1E-04	**0.0E+00**						
**	608731	Hexachlorocyclohexane (technical grade)		0.0E+00	5.1E-04	**0.0E+00**						
*	77474	Hexachlorocyclopentadiene		0.0E+00			0.2	**0.0E+00**				
	19408743	Hexachlorodibenzo-p-dioxin, mixture		0.0E+00	1.3E+00	**0.0E+00**						
*	67721	Hexachloroethane		0.0E+00	4.0E-06	**0.0E+00**						
*	822060	Hexamethylene diisocyanate		0.0E+00			0.01	**0.0E+00**				
*	110543	Hexane (N-)		0.0E+00			200	**0.0E+00**				
*	302012	Hydrazine		0.0E+00	4.9E-03	**0.0E+00**	0.2	**0.0E+00**		0.0E+00	10	**0.0E+00**
	10034932	Hydrazine sulfate		0.0E+00	4.9E-03	**0.0E+00**						
*	7647010	Hydrogen chloride	2.8E-01	2.3E-01			20	**1.1E-02**	4.6E+00	2.2E+03	2100	**1.0E+00**
**	74908	Hydrogen cyanide		0.0E+00			3	**0.0E+00**		0.0E+00	340	**0.0E+00**
*	*7664393*	Hydrogen fluoride		0.0E+00			14	**0.0E+00**		0.0E+00	240	**0.0E+00**
**	7783075	Hydrogen selenide		0.0E+00						0.0E+00	5	**0.0E+00**
	7783064	Hydrogen sulfide		0.0E+00			2	**0.0E+00**		0.0E+00	42	**0.0E+00**
*	78591	Isophorone		0.0E+00			2000	**0.0E+00**				
	67630	Isopropanol		0.0E+00						0.0E+00	3200	**0.0E+00**
*		Lead	5.8E-05	4.8E-05	1.2E-05	**5.8E-10**			9.7E-04	1.8E-01	0.1	**1.8E+00**
p	58899	*Lindane*										
*	108316	Maleic anhydride		0.0E+00			0.7	**0.0E+00**				
*		Manganese	1.7E-04	1.4E-04			0.05	**2.8E-03**	2.8E-03			
*		Mercury (elemental)	5.6E-05	4.7E-05			0.3	**1.6E-04**	9.4E-04	4.5E-01	1.8	**2.5E-01**
	126987	Methacrylonitrile		0.0E+00			0.7	**0.0E+00**				
*	67561	Methanol		0.0E+00			4000	**0.0E+00**		0.0E+00	28000	**0.0E+00**
q	109864	*Methoxyethanol (2-)*										
*	74839	Methyl bromide		0.0E+00			5	**0.0E+00**		0.0E+00	3900	**0.0E+00**
*	74873	Methyl chloride		0.0E+00	1.8E-06	**0.0E+00**	90	**0.0E+00**				

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	CAS No.	Chemical	LONG-TERM EFFECTS						SHORT-TERM EFFECTS			
			Q (ton/yr)	C (ug/m^3)	URF [$(ug/m^3)^{-1}$]	IR	RfC (ug/m^3)	HQ	Q_h (lb/hr)	C_{st} (ug/m^3)	RfC_{st} (ug/m^3)	HQ_{st}
*	71556	Methyl chloroform		0.0E+00			1000	**0.0E+00**		0.0E+00	68000	**0.0E+00**
*	78933	Methyl ethyl ketone								0.0E+00	5000	**0.0E+00**
*	108101	Methyl isobutyl ketone								0.0E+00	3000	**0.0E+00**
*	624839	Methyl isocyanate		0.0E+00			1	**0.0E+00**				
**		Methyl mercury		0.0E+00			1	**0.0E+00**				
*	80626	Methyl methacrylate		0.0E+00			700	**0.0E+00**				
	25013154	Methyl styrene (mixed isomers)		0.0E+00			40	**0.0E+00**				
*	1634044	Methyl tert butyl ether		0.0E+00	2.6E-07	**0.0E+00**	3000	**0.0E+00**				
	108872	Methylcyclohexane		0.0E+00			3000	**0.0E+00**				
*	101144	Methylene bis(2-chloroaniline) (4,4'-)		0.0E+00	4.3E-04	**0.0E+00**						
*	75092	Methylene chloride		0.0E+00	4.7E-07	**0.0E+00**	400	**0.0E+00**		0.0E+00	14000	**0.0E+00**
	101779	Methylenedianiline (4,4-)		0.0E+00	4.6E-04	**0.0E+00**	20	**0.0E+00**				
*	101688	Methylenediphenyl diisocyanate (4,4'-)		0.0E+00			0.6	**0.0E+00**				
	90948	Michler's ketone		0.0E+00	2.5E-04	**0.0E+00**						
*		Mineral fibers (<1% free silica)		0.0E+00			24	**0.0E+00**				
*	91203	Naphthalene		0.0E+00	3.4E-05	**0.0E+00**	3	**0.0E+00**				
*		Nickel and compounds	2.4E-05	2.0E-05	2.4E-04	**4.7E-09**	0.05	**3.9E-04**	3.9E-04	1.9E-01	6	**3.1E-02**
**	1313991	Nickel oxide		0.0E+00			0.1	**0.0E+00**				
**		Nickel, soluble salts		0.0E+00			0.2	**0.0E+00**				
	7697372	Nitric acid								0.0E+00	86	**0.0E+00**
	88744	Nitroaniline (o-)		0.0E+00			0.2	**0.0E+00**				
*	98953	Nitrobenzene		0.0E+00			1.7	**0.0E+00**				
*	79469	Nitropropane (2-)		0.0E+00	2.7E-03	**0.0E+00**	20	**0.0E+00**				
	55185	Nitrosodiethylamine (N-)		0.0E+00	4.3E-02	**0.0E+00**						
*	62759	Nitrosodimethylamine (N-)		0.0E+00	1.4E-02	**0.0E+00**						
	924163	Nitrosodi-n-butylamine (N-)		0.0E+00	1.6E-03	**0.0E+00**						
	621647	Nitrosodi-n-propylamine (N-)		0.0E+00	2.0E-03	**0.0E+00**						
	86306	Nitrosodiphenylamine (N-)		0.0E+00	2.6E-06	**0.0E+00**						
	156105	Nitrosodiphenylamine (p-)		0.0E+00	6.3E-06	**0.0E+00**						
	10595956	Nitrosomethylethylamine (N-)		0.0E+00	6.3E-03	**0.0E+00**						
*	59892	Nitrosomorpholine (N-)		0.0E+00	1.9E-03	**0.0E+00**						
	759739	Nitroso-n-ethylurea (N-)		0.0E+00	7.7E-03	**0.0E+00**						
*	684935	Nitroso-n-methylurea (N-)		0.0E+00	3.4E-02	**0.0E+00**						
	100754	Nitrosopiperidine (N-)		0.0E+00	2.7E-03	**0.0E+00**						
	930552	Nitrosopyrrolidine (N-)		0.0E+00	6.1E-04	**0.0E+00**						
*	87865	Pentachlorophenol		0.0E+00	5.1E-06	**0.0E+00**						
r	127184	*Perchloroethylene*										
*	108952	Phenol		0.0E+00			200	**0.0E+00**		0.0E+00	5800	**0.0E+00**
*	75445	Phosgene								0.0E+00	4	**0.0E+00**
*	7803512	Phosphine		0.0E+00			0.3	**0.0E+00**				
*	7664382	Phosphoric acid		0.0E+00			10	**0.0E+00**				
*		Phosphorus (white)		0.0E+00			0.07	**0.0E+00**				
*	85449	Phthalic anhydride		0.0E+00			20	**0.0E+00**				
*	1336363	Polychlorinated biphenyls (PCBs)	2.9E-05	2.4E-05	1.0E-04	**2.4E-09**			4.8E-04			
s		*Polycylic aromatic hydrocarbons (PAHs)*										
s		*Polycylic organic matter (POM)*										
	7758012	Potassium bromate		0.0E+00	1.4E-04	**0.0E+00**						
*	1120714	Propane sultone (1,3-)		0.0E+00	6.9E-04	**0.0E+00**						
*	57578	Propiolactone (beta-)		0.0E+00	4.0E-03	**0.0E+00**						
	115071	Propylene		0.0E+00			3000	**0.0E+00**				
*	78875	Propylene dichloride		0.0E+00	1.0E-05	**0.0E+00**	4	**0.0E+00**				
	57556	Propylene glycol		0.0E+00			6000	**0.0E+00**				
	107982	Propylene glycol monomethyl ether		0.0E+00			2000	**0.0E+00**				
*	75569	Propylene oxide		0.0E+00	3.7E-06	**0.0E+00**	30	**0.0E+00**		0.0E+00	3100	**0.0E+00**
*	91225	Quinoline		0.0E+00	8.6E-04	**0.0E+00**						
**		Selenium and compounds	3.5E-06	2.9E-06			20	**1.4E-07**	5.8E-05			
	7631869	Silica (crystalline, respirable)		0.0E+00			3	**0.0E+00**				
	1310732	Sodium hydroxide		0.0E+00						0.0E+00	8	**0.0E+00**
*	100425	Styrene		0.0E+00	5.7E-07	**0.0E+00**	1000	**0.0E+00**		0.0E+00	21000	**0.0E+00**
*	96093	Styrene oxide		0.0E+00	4.6E-05	**0.0E+00**						
		Sulfates								0.0E+00	120	**0.0E+00**
	7664939	Sulfuric acid		0.0E+00			1	**0.0E+00**		0.0E+00	120	**0.0E+00**
*	1746016	Tetrachlorodibenzo(p)dioxin (2,3,7,8-)	6.2E-12	5.1E-12	3.7E+01	**1.9E-10**			1.0E-10			
	630206	Tetrachloroethane (1,1,1,2-)		0.0E+00	7.4E-06	**0.0E+00**						
*	79345	Tetrachloroethane (1,1,2,2-)		0.0E+00	5.8E-05	**0.0E+00**						

NJDEP DIVISION OF AIR QUALITY RISK SCREENING WORKSHEET
For Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects

Cement-Lock Demonstration Plant Facility

			LONG-TERM EFFECTS						SHORT-TERM EFFECTS			
	CAS No.	Chemical	Q (ton/yr)	C (ug/m^3)	URF [$(ug/m^3)^{-1}$]	IR	RfC (ug/m^3)	HQ	Q_h (lb/hr)	C_{st} (ug/m^3)	RfC_{st} (ug/m^3)	HQ_{st}
*	127184	Tetrachloroethylene		0.0E+00	5.9E-06	**0.0E+00**	35	**0.0E+00**		0.0E+00	20000	**0.0E+00**
	811972	Tetrafluoroethane (1,1,1,2-)		0.0E+00			80000	**0.0E+00**				
	62555	Thioacetamide		0.0E+00	1.7E-03	**0.0E+00**						
*	7550450	Titanium tetrachloride		0.0E+00			0.1	**0.0E+00**				
*	108883	Toluene		0.0E+00			400	**0.0E+00**		0.0E+00	37000	**0.0E+00**
*	584849	Toluene diisocyanate (2,4-)		0.0E+00	1.1E-05	**0.0E+00**	0.07	**0.0E+00**		0.0E+00	7	**0.0E+00**
*	26471625	Toluene diisocyanate (2,4-/2,6-)		0.0E+00	1.1E-05	**0.0E+00**	0.07	**0.0E+00**				
*	91087	Toluene diisocyanate (2,6-)		0.0E+00	1.1E-05	**0.0E+00**	0.07	**0.0E+00**				
*	95807	Toluene-2,4-diamine		0.0E+00	1.1E-03	**0.0E+00**						
*	95534	Toluidine (o-)		0.0E+00	5.1E-05	**0.0E+00**						
*	8001352	Toxaphene		0.0E+00	3.2E-04	**0.0E+00**						
	76131	Trichloro-1,2,2-trifluoroethane (1,1,2-)		0.0E+00			30000	**0.0E+00**				
*	120821	Trichlorobenzene (1,2,4-)		0.0E+00			200	**0.0E+00**				
t	71556	*Trichloroethane (1,1,1-)*										
*	79005	Trichloroethane (1,1,2-)		0.0E+00	1.6E-05	**0.0E+00**						
*	79016	Trichloroethylene		0.0E+00	2.0E-06	**0.0E+00**	600	**0.0E+00**				
	75694	Trichlorofluoromethane		0.0E+00			700	**0.0E+00**				
*	88062	Trichlorophenol (2,4,6-)		0.0E+00	3.1E-06	**0.0E+00**						
*	121448	Triethylamine		0.0E+00			7	**0.0E+00**		0.0E+00	2800	**0.0E+00**
*	1582098	Trifluralin		0.0E+00	2.2E-06	**0.0E+00**						
u	51796	*Urethane*										
	1314621	Vanadium pentoxide		0.0E+00						0.0E+00	30	**0.0E+00**
*	108054	Vinyl acetate		0.0E+00			200	**0.0E+00**				
*	593602	Vinyl bromide		0.0E+00	3.2E-05	**0.0E+00**	3	**0.0E+00**				
*	75014	Vinyl chloride		0.0E+00	8.8E-06	**0.0E+00**	100	**0.0E+00**		0.0E+00	180000	**0.0E+00**
*	75354	Vinylidene chloride		0.0E+00			200	**0.0E+00**				
*		Xylene (m-,o-,p-, or mixed isomers)		0.0E+00			100	**0.0E+00**		0.0E+00	22000	**0.0E+00**
		Zinc/zinc oxide	9.8E-05	8.1E-05			35	**2.3E-06**	1.6E-03			

TOTALS

Total Cancer Risk: **8.6E-07**

Total Hazard Index: **1.5E-02**

Total Short-term Hazard Index: **3.5E+00**

NOTE:

* **Clean Air Act hazardous air pollutant**

** **Clean Air Act hazardous air pollutant, but not listed individually (part of a group)**

a See dichloroethyl ether
b See vinyl bromide
c See methyl bromide
d See chloroprene
e See methyl chloride
f See bis(2-ethylhexyl)phthalate
g See toluene-2,4-diamine
h See ethylene dibromide
i See ethylidene dichloride
j See ethylene dichloride
k See vinylidene chloride
l See methylene chloride
m See propylene dichloride
n May be considered to be all 2,3,7,8-tetrachlorodibenzo(p)dioxin), or separated into congeners (contact BAQEv).
o See ethylene glycol monoethyl ether
p See gamma-Hexachlorocyclohexane
q See ethylene glycol methyl ether
r See tetrachloroethylene
s May be considered to be all benzo(a)pyrene, or separated into individual PAHs (contact BAQEv).
t See methyl chloroform
u See ethyl carbamate

Calculation of Volatilization of PCBs and Dioxins/Furans from Quencher Water at 190 F (~90 C)

Dioxins and Furans are included if present in the quench water above the detection limit

Concentration in Water Phase		M.W. (2)	Aqueous Phase Concentration		Henry's Law H^C @ 25 C	Vapor Pressure @ 25 C	Vapor Pressure @ 90 C (4)		Est. Analyte Emission Rate		Demo Plant Test (12/05) AirNova Report Results, lb/hour	
PCBs	pg/L (1)	gr/mole	mole/L	mole/m^3	atm-m^3/ mole (3)	atm	atm	mole fraction	mole/hour	lb/hour	Inlet	Outlet
Mono	107.0	188.65	5.671E-13	5.671E-10	1.700E-03	9.641E-13	1.960E-11	3.084E-11	7.217E-10	7.721E-08	--	--
Di	1162.7	223.10	5.212E-12	5.212E-09	2.000E-03	1.042E-11	2.119E-10	3.334E-10	7.803E-09	9.073E-06	--	--
Tri	5419.4	257.54	2.104E-11	2.104E-08	1.600E-04	3.367E-12	6.845E-11	1.077E-10	2.520E-09	1.366E-05	--	--
Tetra	8670.7	291.99	2.970E-11	2.970E-08	7.700E-05	2.287E-12	4.649E-11	7.314E-11	1.712E-09	1.484E-05	--	--
Penta	7295.3	326.43	2.235E-11	2.235E-08	6.000E-05	1.341E-12	2.726E-11	4.289E-11	1.004E-09	7.323E-06	--	--
Hexa	6037.8	360.88	1.673E-11	1.673E-08	1.515E-04	2.535E-12	5.153E-11	8.108E-11	1.897E-09	1.146E-05	--	--
Hepta	2757.4	395.32	6.975E-12	6.975E-09	8.600E-06	5.998E-14	1.220E-12	1.919E-12	4.490E-11	1.238E-07	--	--
Octa	861.2	429.77	2.004E-12	2.004E-09	1.100E-05	2.204E-14	4.481E-13	7.051E-13	1.650E-11	1.421E-08	--	--
Nona	167.5	464.21	3.607E-13	3.607E-10	6.400E-05	2.309E-14	4.694E-13	7.385E-13	1.728E-11	2.894E-09	--	--
Deca	90.1	498.66	1.808E-13	1.808E-10	3.500E-05	6.326E-15	1.286E-13	2.024E-13	4.736E-12	4.269E-10	--	--
									Total PCBs	**5.657E-05**	**1.70E-03**	**1.60E-04**
Dioxins/Furans					Note 5							
1,2,3,4,6,7,8-HpCDD	8.790	425.31	2.067E-14	2.067E-11	1.991E-06	4.115E-17	8.366E-16	1.316E-15	3.080E-14	2.708E-13	--	--
1,2,3,4,6,7,8-HpCDF	6.583	409.31	1.608E-14	1.608E-11	9.130E-09	1.468E-19	2.986E-18	4.698E-18	1.099E-16	7.237E-16	--	--
1,2,3,4,7,8-HxCDF	2.403	374.86	6.411E-15	6.411E-12	2.501E-08	1.603E-19	3.260E-18	5.129E-18	1.200E-16	2.885E-16	--	--
1,2,3,6,7,8-HxCDF	2.249	374.86	6.000E-15	6.000E-12	2.777E-08	1.666E-19	3.388E-18	5.330E-18	1.247E-16	2.806E-16	--	--
1,2,3,7,8-PeCDF	2.510	340.42	7.373E-15	7.373E-12	1.241E-06	9.150E-18	1.860E-16	2.927E-16	6.850E-15	1.719E-14	--	--
2,3,4,7,8-PeCDF	2.063	340.42	6.061E-15	6.061E-12	1.724E-06	1.045E-17	2.124E-16	3.343E-16	7.822E-15	1.614E-14	--	--
OCDD	77.600	459.75	1.688E-13	1.688E-10	5.215E-06	8.802E-16	1.790E-14	2.816E-14	6.589E-13	5.113E-11	--	--
OCDF	12.667	443.75	2.854E-14	2.854E-11	1.028E-08	2.934E-19	5.966E-18	9.387E-18	2.197E-16	2.782E-15	--	--
									Total Dioxins/Furans	**5.144E-11**	**7.20E-10**	**3.40E-11**
									mole/hour	lb/hour		
Water (steam table)		18.0153				0.0313	0.636	1.000E+00	23.402	**421.6**	**Water Vapor (9)**	
							0.636	1.000E+00	2.340E+01			

Notes:
1. Tetra Tech analytical results
2. See Tab "M.W. Calc"
3. EPA 560/5-83-025, Environmental Transport and Transformation of PCBs (1983)
4. Based on proportionate increase in vapor pressure for water from 25 to 90C (77 to 190 F).
5. Science Ventures Inc. (San Diego, CA) spreadsheet for dioxins/furan Henry's Law constants

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TABLE 1. ANALYTICAL RESULTS OF QUENCHER WATER SAMPLES

PHASE 2 CEMENT-LOCK DEMONSTRATION, Bayonne, New Jersey

Compound	Class	Units	P2-LQ-01	P2-LQ-02	P2-LQ-03	Average
1 -MoCB	Congeners	pg/L	38	38.9	33.3	37
2 -MoCB	Congeners	pg/L	61.6	5.35 U	53	40
3 -MoCB	Congeners	pg/L	29.4 Q	30	31.4	30
4 -DiCB	Congeners	pg/L	156	96.1	16.9 U	90
5 -DiCB	Congeners	pg/L	34.1	38	10.5 U	28
6 -DiCB	Congeners	pg/L	79.6	110	75	88
7 -DiCB	Congeners	pg/L	21.8	19.7	11.3 U	18
8 -DiCB	Congeners	pg/L	255	339	248	281
9 -DiCB	Congeners	pg/L	7.45 U	8.85 U	11.6 U	9 U
10 -DiCB	Congeners	pg/L	14.2 U	15.5 U	14 U	15 U
11 -DiCB	Congeners	pg/L	343	452	338	378
12 -DiCB	Congeners	pg/L	56.4 C	67.7 C	50.7 C	58 C
13 -DiCB	Congeners	pg/L	C12	C12	C12	
14 -DiCB	Congeners	pg/L	7.42 U	8.82 U	11.6 U	9 U
15 -DiCB	Congeners	pg/L	177	218	175	190
16 -TrCB	Congeners	pg/L	305	322	250	292
17 -TrCB	Congeners	pg/L	432	495	360	429
18 -TrCB	Congeners	pg/L	911 C	990 C	694 C	865 C
19 -TrCB	Congeners	pg/L	103	89.3	45.4	79
20 -TrCB	Congeners	pg/L	993 C	1270 C	942 C	1068 C
21 -TrCB	Congeners	pg/L	330 C	443 C	355 C	376 C
22 -TrCB	Congeners	pg/L	311	385	286	327
23 -TrCB	Congeners	pg/L	6.78 U	13.3 U	7.44 U	9 U
24 -TrCB	Congeners	pg/L	25.9	22.9	16.2	22
25 -TrCB	Congeners	pg/L	138	182	143	154
26 -TrCB	Congeners	pg/L	199 C	269 C	213 C	227 C
27 -TrCB	Congeners	pg/L	86.6	15.1 U	74.8	59
28 -TrCB	Congeners	pg/L	C20	C20	C20	
29 -TrCB	Congeners	pg/L	C26	C26	C20	
30 -TrCB	Congeners	pg/L	C18	C18	C18	
31 -TrCB	Congeners	pg/L	821	1170	864	952
32 -TrCB	Congeners	pg/L	351	375	279	335
33 -TrCB	Congeners	pg/L	C21	C21	C21	
34 -TrCB	Congeners	pg/L	7.69 U	15U U	8.44 U	8 U
35 -TrCB	Congeners	pg/L	29.7	37.6	34.6	34
36 -TrCB	Congeners	pg/L	8.82 U	9.16 U	12.7 U	10 U
37 -TrCB	Congeners	pg/L	135	179	140	151
38 -TrCB	Congeners	pg/L	8.95 U	9.3 U	12.8 U	10 U
39 -TrCB	Congeners	pg/L	8.53 U	10.7 J	12.3 U	11
40 -TeCB	Congeners	pg/L	496 C	676 C	444 C	539 C
41 -TeCB	Congeners	pg/L	75.8	55.2	73.1	68
42 -TeCB	Congeners	pg/L	365	463	327	385
43 -TeCB	Congeners	pg/L	46.7	69	42.6	53
44 -TeCB	Congeners	pg/L	1470 C	1870 C	1310 C	1550 C
45 -TeCB	Congeners	pg/L	473 C	519 C	380 C	457 C
46 -TeCB	Congeners	pg/L	5.04 U	108	66.6	60
47 -TeCB	Congeners	pg/L	C44	C44	C44	
48 -TeCB	Congeners	pg/L	223	290	205	239
49 -TeCB	Congeners	pg/L	886 C	1160 C	817 C	954 C
50 -TeCB	Congeners	pg/L	304 C	338 C	256 C	299 C
51 -TeCB	Congeners	pg/L	C45	C45	C45	
52 -TeCB	Congeners	pg/L	1390	1780	1310	1493
53 -TeCB	Congeners	pg/L	C50	C50	C50	

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TABLE 1. ANALYTICAL RESULTS OF QUENCHER WATER SAMPLES

PHASE 2 CEMENT-LOCK DEMONSTRATION, Bayonne, New Jersey

Compound	Class	Units	P2-LQ-01	P2-LQ-02	P2-LQ-03	Average
54 -TeCB	Congeners	pg/L	40.1	7.98 U	4.85 U	18
55 -TeCB	Congeners	pg/L	6.34 U	22.8	14.1	14
56 -TeCB	Congeners	pg/L	152	198	275	208
57 -TeCB	Congeners	pg/L	6.47 U	7.46 U	5.43 UJ	6
58 -TeCB	Congeners	pg/L	24.4	7.09 U	5.16 U	12
59 -TeCB	Congeners	pg/L	106 C	152 C	99.5 C	119 C
60 -TeCB	Congeners	pg/L	6.26 U	7.21 U	81.1	32
61 -TeCB	Congeners	pg/L	630 C	1780 C	1280 C	1230 C
62 -TeCB	Congeners	pg/L	C59	C59	C59	
63 -TeCB	Congeners	pg/L	27.4	46.4	29.5	34
64 -TeCB	Congeners	pg/L	420	583	390	464
65 -TeCB	Congeners	pg/L	C44	C44	C44	
66 -TeCB	Congeners	pg/L	299	7.4 U	599	302
67 -TeCB	Congeners	pg/L	28.2	35	4.69 U	23
68 -TeCB	Congeners	pg/L	5.83 UJ	9.59 J	4.88 U	7
69 -TeCB	Congeners	pg/L	C49	C49	C49	
70 -TeCB	Congeners	pg/L	C61	C61	C61	
71 -TeCB	Congeners	pg/L	C40	C40	C40	
72 -TeCB	Congeners	pg/L	11.8	13.4	5.08 UJ	10
73 -TeCB	Congeners	pg/L	4.08 U	6.16 U	5.04 U	5
74 -TeCB	Congeners	pg/L	C61	C61	C61	
75 -TeCB	Congeners	pg/L	C59	C59	C59	
76 -TeCB	Congeners	pg/L	C61	C61	C61	
77 -TeCB	Congeners	pg/L	98.3	69.1	5.62 U	58
78 -TeCB	Congeners	pg/L	6.64 U	7.66 U	5.57 U	7 U
79 -TeCB	Congeners	pg/L	11.1 J	12.6	4.85 U	10
80 -TeCB	Congeners	pg/L	5.73 UJ	12.8	4.8 U	8
81 -TeCB	Congeners	pg/L	6.2 U	7.22 U	5.3 U	6 U
82 -PeCB	Congeners	pg/L	121	152	129	134
83 -PeCB	Congeners	pg/L	905	1240	41.3 U	729
84 -PeCB	Congeners	pg/L	283	366	275	308
85 -PeCB	Congeners	pg/L	184 C	242 C	190 C	205 C
86 -PeCB	Congeners	pg/L	670 C	877 C	692 C	746 C
87 -PeCB	Congeners	pg/L	C86	C86	C86	
88 -PeCB	Congeners	pg/L	103 C	254 C	201 C	186 C
89 -PeCB	Congeners	pg/L	18.1 U	39.9 U	30.3 U	29 U
90 -PeCB	Congeners	pg/L	999 C	1270 C	1030 C	1100 C
91 -PeCB	Congeners	pg/L	C88	C88	C88	
92 -PeCB	Congeners	pg/L	195	284	205	228
93 -PeCB	Congeners	pg/L	84.1 C	132 C	90.8 C	102 C
94 -PeCB	Congeners	pg/L	26.2	37.7 U	28.6 U	31
95 -PeCB	Congeners	pg/L	907	1110	867	961
96 -PeCB	Congeners	pg/L	15.3 U	32.6 U	22.4 U	23 U
97 -PeCB	Congeners	pg/L	C86	C86	C86	
98 -PeCB	Congeners	pg/L	76.7 C	92.4 C	26.7 U	65
99 -PeCB	Congeners	pg/L	12.9 U	28.5 U	478	173
100-PeCB	Congeners	pg/L	C93	C93	C93	
101-PeCB	Congeners	pg/L	C90	C90	C90	
102-PeCB	Congeners	pg/L	C98	C98	C98	
103-PeCB	Congeners	pg/L	34.3	34.4 U	41.4	37
104-PeCB	Congeners	pg/L	11.8 U	24.5 U	17 U	18 U
105-PeCB	Congeners	pg/L	217	297	252	255
106-PeCB	Congeners	pg/L	7.66 U	7.36 U	4.47 U	6 U

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PHASE 2 CEMENT-LOCK DEMONSTRATION, Bayonne, New Jersey

Compound	Class	Units	P2-LQ-01	P2-LQ-02	P2-LQ-03	Average
107-PeCB	Congeners	pg/L	26.3 C	32.5 C	30.4 C	30 C
108-PeCB	Congeners	pg/L	C86	C86	C86	
109-PeCB	Congeners	pg/L	7.57 U	77.5	60.4	48
110-PeCB	Congeners	pg/L	995 C	1320 C	1090 C	1135
111-PeCB	Congeners	pg/L	12.4 U	27.3 U	20.7 U	20 U
112-PeCB	Congeners	pg/L	11.8 U	26 U	19.7 U	19 U
113-PeCB	Congeners	pg/L	C90	C90	C90	
114-PeCB	Congeners	pg/L	7.91 U	20.3	18.3	16
115-PeCB	Congeners	pg/L	C110	C110	C110	
116-PeCB	Congeners	pg/L	C85	C85	C85	
117-PeCB	Congeners	pg/L	C85	C85	C85	
118-PeCB	Congeners	pg/L	516	719	611	615
119-PeCB	Congeners	pg/L	C86	C86	C86	
120-PeCB	Congeners	pg/L	12.4 U	27.5 U	20.8 U	20 U
121-PeCB	Congeners	pg/L	12 U	26.6 U	20.2 U	20 U
122-PeCB	Congeners	pg/L	8.67 U	8.32 U	5.05 U	7 U
123-PeCB	Congeners	pg/L	7.73 U	13.9	12.6	11
124-PeCB	Congeners	pg/L	C107	C107	C107	
125-PeCB	Congeners	pg/L	C86	C86	C86	
126-PeCB	Congeners	pg/L	10.3 U	8.96 U	5.51 U	8 U
127-PeCB	Congeners	pg/L	8.26 U	7.93 U	4.81 U	7 U
128-HxCB	Congeners	pg/L	150 C	217 C	172 C	180 C
129-HxCB	Congeners	pg/L	1060 C	1460 C	1210 C	1243 C
130-HxCB	Congeners	pg/L	72.2	80.3	11.9 U	55
131-HxCB	Congeners	pg/L	11.4 U	10.6 U	11.7 U	11 U
132-HxCB	Congeners	pg/L	383	510	407	433
133-HxCB	Congeners	pg/L	26.8	10 U	28.7	22
134-HxCB	Congeners	pg/L	75.7	11.1 U	12.2 U	33
135-HxCB	Congeners	pg/L	461 C	611 C	464 C	512 C
136-HxCB	Congeners	pg/L	188	248	171	202
137-HxCB	Congeners	pg/L	55.2	46.7	49.5	50
138-HxCB	Congeners	pg/L	C129	C129	C129	
139-HxCB	Congeners	pg/L	23.6 C	33.1 C	9.8 U	22
140-HxCB	Congeners	pg/L	C139	C139	C139	
141-HxCB	Congeners	pg/L	177	257	202	212
142-HxCB	Congeners	pg/L	10.7 U	9.96 U	11 U	11 U
143-HxCB	Congeners	pg/L	10.1 U	9.39 U	10.4 U	10 U
144-HxCB	Congeners	pg/L	60.4	71.4	54.9	62
145-HxCB	Congeners	pg/L	5.93 U	14.3 U	8.44 U	10
146-HxCB	Congeners	pg/L	192	264	205	220
147-HxCB	Congeners	pg/L	996 C	1350 C	1060 C	1135 C
148-HxCB	Congeners	pg/L	10.5 J	20 U	11.8 U	14
149-HxCB	Congeners	pg/L	C147	C147	C147	
150-HxCB	Congeners	pg/L	9.93 J	13.6 U	9J	12
151-HxCB	Congeners	pg/L	C135	C135	C135	
152-HxCB	Congeners	pg/L	6.46 J	14.5 U	8.53 U	10
153-HxCB	Congeners	pg/L	1010 C	1380 C	1060 C	1150 C
154-HxCB	Congeners	pg/L	6.79 U	16.4 U	39.1	21
155-HxCB	Congeners	pg/L	54	62.9	6.63 U	41
156-HxCB	Congeners	pg/L	77.7 C	99.3 C	89.2 C	89 C
157-HxCB	Congeners	pg/L	C156	C156	C156	
158-HxCB	Congeners	pg/L	86.6	126	102	105
159-HxCB	Congeners	pg/L	5.34 U	25.2	8.82 U	13

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TABLE 1. ANALYTICAL RESULTS OF QUENCHER WATER SAMPLES

PHASE 2 CEMENT-LOCK DEMONSTRATION, Bayonne, New Jersey

Compound	Class	Units	P2-LQ-01	P2-LQ-02	P2-LQ-03	Average
160-HxCB	Congeners	pg/L	7.77 U	7.25 U	8 U	8 U
161-HxCB	Congeners	pg/L	7.93 U	7.39 U	8.16 U	8 U
162-HxCB	Congeners	pg/L	4.9 U	14.3 U	10.4 J	10
163-HxCB	Congeners	pg/L	C129	C129	C129	
164-HxCB	Congeners	pg/L	67.9	104	79.5	84
165-HxCB	Congeners	pg/L	8.34 U	7.78 U	8.58 U	8 U
166-HxCB	Congeners	pg/L	C128	C128	C128	
167-HxCB	Congeners	pg/L	30	38.8	29.4	33
168-HxCB	Congeners	pg/L	C153	C153	C153	
169-HxCB	Congeners	pg/L	4.89 U	14.9 U	7.69 U	9 U
170-HpCB	Congeners	pg/L	281	346	258	295
171-HpCB	Congeners	pg/L	98.8 C	115 C	92.1 C	102 C
172-HpCB	Congeners	pg/L	13 U	70.1	9.45 U	31
173-HpCB	Congeners	pg/L	C171	C171	C171	
174-HpCB	Congeners	pg/L	322	420	316	353
175-HpCB	Congeners	pg/L	9.12 U	9.6 U	7.72 U	9 U
176-HpCB	Congeners	pg/L	54.7	69.8	57.7	61
177-HpCB	Congeners	pg/L	12.7 U	249	192	151
178-HpCB	Congeners	pg/L	77.8	104	84.8	89
179-HpCB	Congeners	pg/L	164	238	188	197
180-HpCB	Congeners	pg/L	632 C	795 C	649 C	692 C
181-HpCB	Congeners	pg/L	11.8 U	10.8 U	8.58 U	10 U
182-HpCB	Congeners	pg/L	8.56 U	9.02 U	7.25 U	8 U
183-HpCB	Congeners	pg/L	11.7 U	273 C	228 C	171
184-HpCB	Congeners	pg/L	7.19 U	7.57 U	6.09 U	7 U
185-HpCB	Congeners	pg/L	C183	C183	C183	
186-HpCB	Congeners	pg/L	7.33 U	7.72 U	6.21 U	7 U
187-HpCB	Congeners	pg/L	402	570	462	478
188-HpCB	Congeners	pg/L	5.78 U	5.97 U	5.2 U	6 U
189-HpCB	Congeners	pg/L	8.16 U	12.5	8.99 U	10
190-HpCB	Congeners	pg/L	56.9	71.3	56.8	62
191-HpCB	Congeners	pg/L	9.73 U	8.9 U	14.4	11
192-HpCB	Congeners	pg/L	9.91 U	9.07 U	7.23 U	9 U
193-HpCB	Congeners	pg/L	C180	C180	C180	
194-OcCB	Congeners	pg/L	165	222	179	189
195-OcCB	Congeners	pg/L	9.39 U	91.8	6.87 U	36
196-OcCB	Congeners	pg/L	97.2	135	101	111
197-OcCB	Congeners	pg/L	8.29 U	8.38 U	30.8 C	16
198-OcCB	Congeners	pg/L	228 C	319 C	230 C	259 C
199-OcCB	Congeners	pg/L	C198	C198	C198	
200-OcCB	Congeners	pg/L	C197	C197	C197	
201-OcCB	Congeners	pg/L	27.7	48.9	36.8	38
202-OcCB	Congeners	pg/L	55	68.5	52.4	59
203-OcCB	Congeners	pg/L	125	165	127	139
204-OcCB	Congeners	pg/L	8.33 U	8.41 U	7.67 U	8 U
205-OcCB	Congeners	pg/L	7.35 J	8.7 U	5.11 U	7
206-NoCB	Congeners	pg/L	112	136	96	115
207-NoCB	Congeners	pg/L	21	27	9.78 U	19
208-NoCB	Congeners	pg/L	41.8	16.1 U	42.7	34
209-DeCB	Congeners	pg/L	86.3	111	73.1	90
PCB CONGENERS TOTAL		pg/L	29185.4	38827.8	29674.3	32569.1
	AVERAGE of 3	pg/L	32562.5			
TEQ (PCB)	TEQ	pg/L	0.665	0.694	0.492	

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TABLE 1. ANALYTICAL RESULTS OF QUENCHER WATER SAMPLES

PHASE 2 CEMENT-LOCK DEMONSTRATION, Bayonne, New Jersey

Compound	Class	Units	P2-LQ-01	P2-LQ-02	P2-LQ-03	Average
						pg/L
Mono			129	74.25	117.7	107.0
Di			1152.0	1373.7	962.6	1162.7
Tri			5212.0	6287.4	4750.7	5419.4
Tetra			7630.4	10321.1	8060.8	8670.7
Penta			6507.4	8837.2	6541.4	7295.3
Hexa			5358.1	7166.2	5577.4	6037.8
Hepta			2204.2	3402.4	2665.5	2757.4
Octa			731.3	1075.7	776.7	861.2
Nona			174.8	179.1	148.5	167.5
Deca	Congeners	pg/L	86.3	111.0	73.1	90.1
			29185.35	38827.83	29674.29	32569
1,2,3,4,6,7,8-HpCDD	Dioxins-Furans	ng/L	0.00652 JA	0.0122 J	0.00765 J	0.00879 J
1,2,3,4,6,7,8-HpCDF	Dioxins-Furans	ng/L	0.00508 JA	0.00909 J	0.00558 J	0.00658333 J
1,2,3,4,7,8,9-HpCDF	Dioxins-Furans	ng/L	0.00291 U	0.00333 U	0.00347 U	0.00323667 U
1,2,3,4,7,8-HxCDD	Dioxins-Furans	ng/L	0.0029 U	0.00291 U	0.00274 U	0.00285 U
1,2,3,4,7,8-HxCDF	Dioxins-Furans	ng/L	0.00139 JA	0.00291 U	0.00291 U	0.00240333
1,2,3,6,7,8-HxCDD	Dioxins-Furans	ng/L	0.0029 U	0.00291 U	0.00291 U	0.00290667 U
1,2,3,6,7,8-HxCDF	Dioxins-Furans	ng/L	0.000928 JA	0.00291 U	0.00291 U	0.00224933
1,2,3,7,8,9-HxCDD	Dioxins-Furans	ng/L	0.0029 U	0.00291 U	0.00291 U	0.00290667 U
1,2,3,7,8,9-HxCDF	Dioxins-Furans	ng/L	0.0029 U	0.00291 U	0.00291 U	0.00290667 U
1,2,3,7,8-PeCDD	Dioxins-Furans	ng/L	0.0029 U	0.00291 U	0.00291 U	0.00290667 U
1,2,3,7,8-PeCDF	Dioxins-Furans	ng/L	0.0029 U	0.00291 U	0.00172 J	0.00251
2,3,4,6,7,8-HxCDF	Dioxins-Furans	ng/L	0.0029 U	0.00291 U	0.00291 U	0.00290667 U
2,3,4,7,8-PeCDF	Dioxins-Furans	ng/L	0.00135 JA	0.00193 J	0.00291 U	0.00206333
2,3,7,8-TCDD	Dioxins-Furans	ng/L	0.00352 U	0.00363 U	0.00422 U	0.00379 U
2,3,7,8-TCDF	Dioxins-Furans	ng/L	0.00177 U	0.00253 U	0.00241 U	0.00223667 U
OCDD	Dioxins-Furans	ng/L	0.085 JA	0.0973 J	0.0505 UJ	0.0776 J
OCDF	Dioxins-Furans	ng/L	0.0111 JA	0.0165 J	0.0104 UJ	0.01266667 J
Total HpCDDs	Dioxins-Furans	ng/L	0.0176	0.0303	0.0174	0.02176667
Total HpCDFs	Dioxins-Furans	ng/L	0.00726	0.0127	0.00558	0.00851333
Total HxCDDs	Dioxins-Furans	ng/L	0.0132	0.0273	0.0192	0.0199
Total HxCDFs	Dioxins-Furans	ng/L	0.00599	0.00547	0.0019	0.00445333
Total PeCDDs	Dioxins-Furans	ng/L	0.0118	0.0401	0.0205	0.02413333
Total PeCDFs	Dioxins-Furans	ng/L	0.00346	0.013	0.0068	0.00775333
Total TCDDs	Dioxins-Furans	ng/L	0.0118	0.0463	0.0231	0.02706667
Total TCDFs	Dioxins-Furans	ng/L	0.00174	0.00926	0.00926	0.00675333
D/F CONGENERS TOTAL			0.16895	0.29823	0.16464	
AVERAGE of 3 Total DD/DFs			0.21061			
TEQ (Dioxin)	TEQ	pg/L	5.14	5.69	5.47	
Total TEQ	TEQ	pg/L	5.81	6.39	5.96	
						AVERAGE
Arsenic	Metals	ug/l	236	282	333	284
Barium	Metals	ug/l	211	217	240	223
Cadmium	Metals	ug/l	61.5	188	235	162
Chromium	Metals	ug/l	762	1320	2460	1,514
Cobalt	Metals	ug/l	50 U	50 U	56.7	52.2
Copper	Metals	ug/l	460	1250	438	716
Lead	Metals	ug/l	1670	6910	4890	4,490

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TABLE 1. ANALYTICAL RESULTS OF QUENCHER WATER SAMPLES

PHASE 2 CEMENT-LOCK DEMONSTRATION, Bayonne, New Jersey

Compound	Class	Units	P2-LQ-01	P2-LQ-02	P2-LQ-03	Average
Manganese	Metals	ug/l	3380	1950	2910	2,747
Mercury	Metals	ug/l	4.1	29.6	8.3	14.0
Nickel	Metals	ug/l	1100	825	1810	1,245
Selenium	Metals	ug/l	22.8	17.3	16.4	18.8
Silver	Metals	ug/l	32.4 J	25 J	26.4 J	27.9
Zinc	Metals	ug/l	8370	24600	29100	20,690
						AVERAGE
4,4'-DDD	Pest	ug/l	0.0024 U	0.0026 U	0.0024 U	0.0025 U
4,4'-DDE	Pest	ug/l	0.0017 U	0.0018 U	0.0017 U	0.0017 U
4,4'-DDT	Pest	ug/l	0.0049 U	0.0053 U	0.0049 U	0.0050 U
Dieldrin	Pest	ug/l	0.0017 U	0.0019 U	0.0017 U	0.0018 U
						AVERAGE
Acenaphthene	SVOC	ug/l	0.022 U	0.02 U	0.018 U	0.0200 U
Acenaphthylene	SVOC	ug/l	0.012 U	0.011 U	0.01 U	0.0110 U
Anthracene	SVOC	ug/l	0.027 U	0.025 U	0.022 U	0.0247 U
Benzo(a)anthracene	SVOC	ug/l	0.0087 U	0.008 U	0.0073 U	0.0080 U
Benzo(a)pyrene	SVOC	ug/l	0.022 U	0.02 U	0.018 U	0.0200 U
Benzo(b)fluoranthene	SVOC	ug/l	0.046 U	0.043 U	0.039 U	0.0427 U
Benzo(g,h,i)perylene	SVOC	ug/l	0.023 U	0.021 U	0.019 U	0.0210 U
Benzo(k)fluoranthene	SVOC	ug/l	0.02 U	0.018 U	0.017 U	0.0183 U
bis(2-Ethylhexyl)phthalate	SVOC	ug/l	0.26 U	0.24 U	0.22 U	0.2400 U
Chrysene	SVOC	ug/l	0.021 U	0.02 U	0.018 U	0.0197 U
Dibenzo(a,h)anthracene	SVOC	ug/l	0.021 U	0.019 U	0.018 U	0.0193 U
Di-n-octyl phthalate	SVOC	ug/l	0.26 U	0.24 U	0.22 U	0.2400 U
Fluoranthene	SVOC	ug/l	0.012 U	0.011 U	0.0097 U	0.0109 U
Fluorene	SVOC	ug/l	0.026 U	0.024 U	0.022 U	0.0240 U
Indeno(1,2,3-cd)pyrene	SVOC	ug/l	0.014 U	0.013 U	0.012 U	0.0130 U
Naphthalene	SVOC	ug/l	0.033 U	0.03 U	0.028 U	0.0303 U
Phenanthrene	SVOC	ug/l	0.027 U	0.025 U	0.023 U	0.0250 U
Pyrene	SVOC	ug/l	0.018 U	0.016 U	0.015 U	0.0163 U
TOTAL of SVOCs			0.8727 U	0.804 U	0.736 U	
	Average of Totals		0.8042 U			

U - Analyte was not detected. The associated value is the estimated detection limit.

J - The analyte is present, but the concentration is below the quantitation limit. The concentration is estimated.

UJ - The detection limit is estimated.

C - The isomer coeluted with another of its homologue group. If followed by a number, the number inicates the lowest numbered congener among the coelution set.

Water Balance Calculations

MCM 4/19/2007

Water In (Sources of Water) lb/hour

Sediment

1320 lb/hour (wet) 20 % Moisture ======> 264

Water from Natural Gas Combustion

17,000 Average Flow of Natural Gas (primarily CH_4), SCFH

378.5 ft^3/lb-mole

44.91 lb-moles CH_4 yields

89.83 lb-moles H_2O by Stoichiometry

18.015 lb/lb-mole H_2O ======> 1,618

Quencher Spray Cooling Water (DAC)

26.00 gpm (adjusted for material balance)

8.34 lb/gal 60 min/hour ======> 13,009

Water Evaporation from Granulator

787,380 Btu/hour heat loss to steam in granulator (estimated)

Slag flow rate 1193 lb/hour (estimated)

Slag temp 2400

Quench temp 200

Slag Cp 0.3 Btu/lb-F (estimated)

984.1 Btu/lb heat of vaporization (steam table)

800.1 lb/hour of water evaporated (total)

0.47 Fraction of surface area for SCC ======> 379

=======

Total Water Sources In **15,270** lb/hour

Water Out (Averaged values from AirNova Report)

Outlet from AC Bed (Stack)

292.4 F

14,803 ACFM

5060.8 DSCFM

51.7 % M.C.

30.07 Inches Hg (calculated from AirNova data)

5035 DCFM MCM Calculation

7653.0 ACFM H_2O

5417.0 SCFM H_2O

14.0 lb-moles H_2O

18.015 lb/lb-mole H_2O

252.3 lb/min H_2O 60 min/hour ======> 15,138

Water with Ecomelt from Granulator Discharge (estimate)

Ecomelt flow rate 1193 lb/hour (dry basis, estimated)

10 % Moisture Content (estimated)

Water out 132.6 ======> 133

=======

Total Water Sources Out **15,270**

Overall Balance of Water Out - Water In 0.0

Water to Granulator Discharge as vapor **421.6 lb/hr H_2O**

(to be used in vapor pressure calculation -- 50.6 gal/hr H_2O

See Tab "Organic Emission Calc") 0.84 gpm H_2O

Molar Volume		70 F
386.81 ft^3/lb-mole		29.92 inches Hg

Fraction of Granulator Tank Surface Area to SCC or to Granulator

Lower Discharge Chute (O.D)

10' 4 1/2" long x 2' 4" wide

10.375	2.333	24.21 ft^2

Lower Discharge Chute (I.D) to SCC

10' 4" long x 2' 3 1/2" wide

10.333	2.292	23.68 ft^2

Granulator Water Surface Area

17.343' long x 2' 11" wide

17.343	2.917	50.58 ft^2
Subtract metal area		0.53 ft^2
		50.06

Relative Areas for Water Evaporation from Granulator

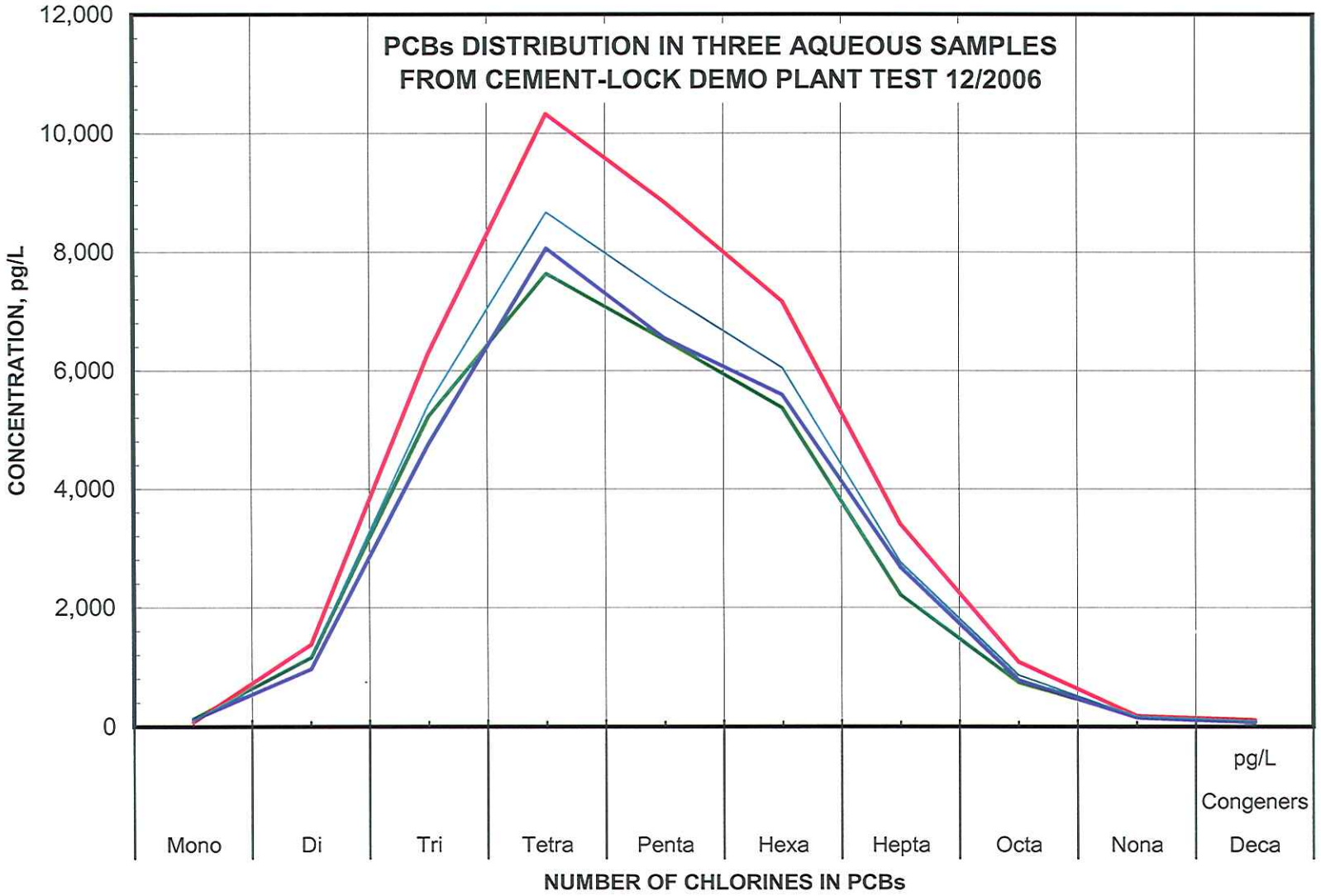
To SCC	23.68 ft^2
	0.47 fraction
To Granulator Discharge	26.38 ft^2
	0.53 fraction

Molecular Weight Calculation for PCBs, Dioxins/Furans

PCBs	$C_{12}H_{10-X}Cl_X$					
	H	C	Cl	O	PCB	Cl, wt %
M.W.	1.00797	12.0107	35.453	15.9994	M.W.	
Mono	9	12	1	0	188.7	18.8
Di	8	12	2	0	223.1	31.8
Tri	7	12	3	0	257.5	41.3
Tetra	6	12	4	0	292.0	48.6
Penta	5	12	5	0	326.4	54.3
Hexa	4	12	6	0	360.9	58.9
Hepta	3	12	7	0	395.3	62.8
Octa	2	12	8	0	429.8	66.0
Nona	1	12	9	0	464.2	68.7
Deca	0	12	10	0	498.7	71.1
Water	2	0	0	1	18.015	0.0

Dioxin	$C_{12}H_{8-X}Cl_XO_2$				Dioxins	Cl, wt %
	H	C	Cl	O	M.W.	
Mono	7	12	1	2	218.64	16.2
Di	6	12	2	2	253.08	28.0
Tri	5	12	3	2	287.53	37.0
Tetra	4	12	4	2	321.97	44.0
Penta	3	12	5	2	356.42	49.7
Hexa	2	12	6	2	390.86	54.4
Hepta	1	12	7	2	425.31	58.4
Octa	0	12	8	2	459.75	61.7

Furans	$C_{12}H_{8-X}Cl_XO$				Furans	Cl, wt %
	H	C	Cl	O	M.W.	
Mono	7	12	1	1	202.64	17.5
Di	6	12	2	1	237.08	29.9
Tri	5	12	3	1	271.53	39.2
Tetra	4	12	4	1	305.97	46.3
Penta	3	12	5	1	340.42	52.1
Hexa	2	12	6	1	374.86	56.7
Hepta	1	12	7	1	409.31	60.6
Octa	0	12	8	1	443.75	63.9


PCBs DISTRIBUTION IN THREE AQUEOUS SAMPLES
FROM CEMENT-LOCK DEMO PLANT TEST 12/2006
CONCENTRATION, pg/L
12,000
10,000
8,000
6,000
4,000
2,000
0
Mono
Di
Tri
Tetra
Penta
Hexa
Hepta
Octa
Nona
pg/L
Congeners
Deca
NUMBER OF CHLORINES IN PCBs