

US EPA ARCHIVE DOCUMENT

**HYDRODEC OF NORTH AMERICA,
LLC**

**PCB STORAGE PERMIT
APPLICATION**



June 16, 2017



PCB STORAGE PERMIT APPLICATION

PCB STORAGE FOR TREATMENT BY NON-THERMAL ALTERNATIVE METHODS

Hydrodec of North America LLC
2021 Steinway Boulevard SE
Canton, Ohio 44707

Submission Date: June 16, 2017

Submission Number: 002

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SECTION 1 – SUMMARY

Hydrodec of North America, LLC has designed a process that effectively treats transformer oils contaminated with polychlorinated biphenyls (PCBs). Hydrodec uses a hydrogenation process that chemically removes the chlorines from the PCB's rendering them harmless. The system is automated and consists of bulk shipment unloading, PCB storage tanks, a feedstock tank, heaters, reactors, heat exchangers, oil water and gas separation, and a recycle gas recovery system. Hydrodec has demonstrated the process effectively destroys PCB's without hazardous emissions or bi-products.

Hydrodec of North America, LLC is applying for a permit to receive PCB oils from transformers and treat the oil such that it no longer contains PCBs at the Canton, Ohio facility and all future facilities in the United States. This application describes:

- The qualifications of the owner, operator, and key employees to engage in the commercial storage of PCB wastes in a manner protective to human health and the environment.
- All relevant information bearing on the operation and design qualifications of the facility, as well as the results of a demonstration that the facility has the capacity to handle the quantities of PCB wastes that the owner or operator estimates will be the maximum quantities of PCB waste handled at any one time.
- A closure plan describing the procedures to be used to achieve clean closure of the Hydrodec facility including; a description of the design and operation of the facility, the disposal of PCB waste inventory, the sampling, decontamination, and compliance with the Spill Cleanup Policy, the closure plan schedule and checklist.
- A closure cost estimate based on the activities described in the closure plan to be updated annually for inflation or whenever a modification to the closure plan would increase the costs of closure.
- The mechanism that is to be used to meet the financial responsibility requirement based on the closure plan.



SECTION 2 – OWNER, OPERATOR, AND KEY EMPLOYEE QUALIFICATIONS

2.1 Organization and Qualifications

The Hydrodec facility has qualified operating staff to adequately meet the demands of safely processing PCB contaminated transformer oil. All Hydrodec equipment is operated by Hydrodec personnel, with supplemental staffing from qualified subcontractors such as laboratories, remedial service contractors or technical contractors. Figure 2-1 provides the organizational chart for Hydrodec of North America, LLC.

Hydrodec of North America, LLC is 42.64% owned by G&S Oil Recycling, LLC (EIN 46-2442045) and 57.35% owned by Hydrodec Inc. (EIN 20-8146438). Hydrodec Inc. is 100% owned by Hydrodec Group PLC, London, United Kingdom. Chris Ellis is CEO of Hydrodec Group PLC. Michael Pitcher is President of Hydrodec of North America, LLC. Michael Pitcher is also majority owner of Operations Excellence Consulting, Inc. (EIN 32-1590626).

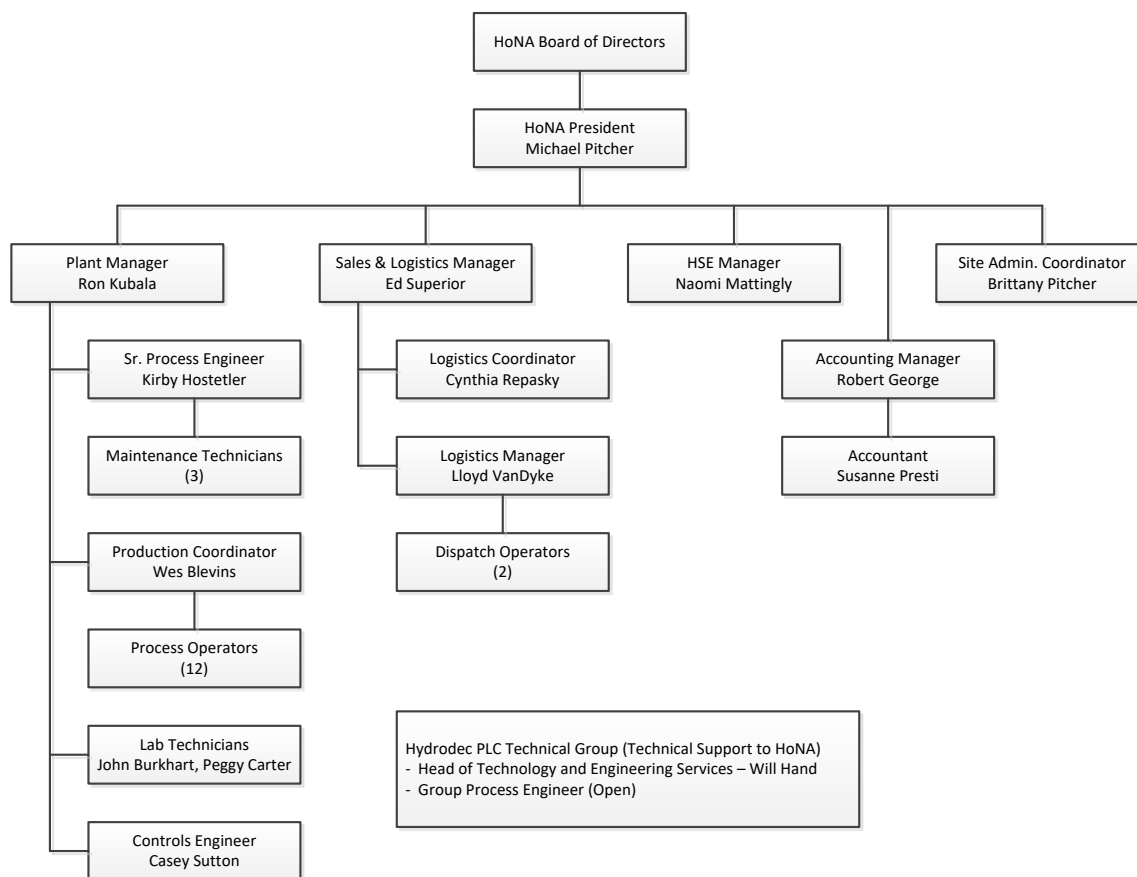
Hydrodec has authorized the Plant Manager to have overall responsibility for the process. The Senior Process Engineer is the lead resource for the unit, and is the principal technical resource for the unit. The Plant Manager, Production Coordinator and the Senior Process Engineer will review all test plans, operating data and any design changes that may be incorporated to improve the operation of the system. Normal operation of the system uses one Inside Operator and two Outside Operators per shift, who are supervised by the Production Coordinator. The Production Coordinator will have responsibility for the day-to-day operations, monitoring, recordkeeping, reporting, equipment maintenance, and personnel on-job training. The production Coordinator may also perform the duties of the Inside or Outside Operators to provide coverage for scheduled work breaks. All Plant Operators have environmental treatment equipment and chemical plant operation experience. These personnel are thoroughly trained by Hydrodec in operating the system, in the use of appropriate personal protective equipment, and in Hydrodec safety procedures.

The Quality Control Manager, Health, Safety & Environmental Manager, Controls Engineer, and Laboratory Technicians provide support services for operating the facility.

Hydrodec has not experienced State or Federal violations resulting in either civil penalty or judgment of conviction involving storage, disposal, transportation, or other waste handling activity.



Figure 2-1 Hydrodec of North America, LLC Organization Chart



Project Team Member Assignment Description

The following is a brief description of the roles and responsibilities of our key team members. All field personnel will meet the minimum safety training requirements of the OSHA 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER) training standard, in addition to the information provided below.

Plant Manager, Ron Kubala

Mr. Kubala is responsible for numerous operational and oversight functions in the Hydrodec manufacturing operation. He provides interface between the site operations personnel, technology providers and various regulatory agencies. Mr. Kubala is a degreed chemical engineer and has over 35 years of engineering and plant management experience in the chemical industry, including 4 years treating PCB-containing transformer oil.



Senior Process Engineer/Maintenance Coordinator, Kirby Hostetler

Mr. Hostetler has a degree in Chemical Engineering and has worked at various levels in the chemical processing industry for 20 years. Mr. Hostetler verifies that the operating, monitoring, sampling, and record keeping plans are being followed. He performs periodic reviews of the data generated and is capable of understanding and critically evaluating these data. He has the authorization of management to stop or request alterations to the operation if the data quality is not acceptable. He manages capital improvement projects, utilizing in house and outside contractors. Mr. Hostetler has been involved in mechanical integrity and preventative maintenance during his career. He directs maintenance on the site such as; implementing preventative maintenance procedures, repairing equipment, welding, spare part procurement, and electrical maintenance. He also supervises specialty service contractors such as instrument calibration technicians, manufacturer's representatives, and other specialty services.

Production Coordinator, Wes Blevins

Mr. Blevins has been involved in chemical processing for 8 years with 4 years as an operator and 4 years as the Production Coordinator for Hydrodec. He is capable of independent plant operation and collection of process samples according to the approved sampling and analysis plan. He provides support, organization and guidance to operations. He also aids in the diagnostics and troubleshooting of the process and its support functions.

HSE Manager, Naomi Mattingly

The HSE Manager is responsible for regulatory compliance on the project. The HSE Manager continues to maintain contact with the operation to assure that the regulatory requirements are being met according to the plans and permits. Ms. Mattingly has an Associates Degree in Applied Science, Environmental Health and Safety Management and has been working in the environmental and safety field for over 15 years. She is an active member of the Stark County Safety Council and recently completed a PCB Management and Record Keeping Workshop.

William Hand (Quality Manager): Mr. Hand is a Chemist with 15 years of experience in the sampling and analysis of transformer oils, and over 10 years of experience in PCB destruction technology. He is also a member of the ASTM committee responsible for development and maintenance of Standard test methods for PCB analysis.

Onsite Laboratory, John Burkhart and Peggy Carter

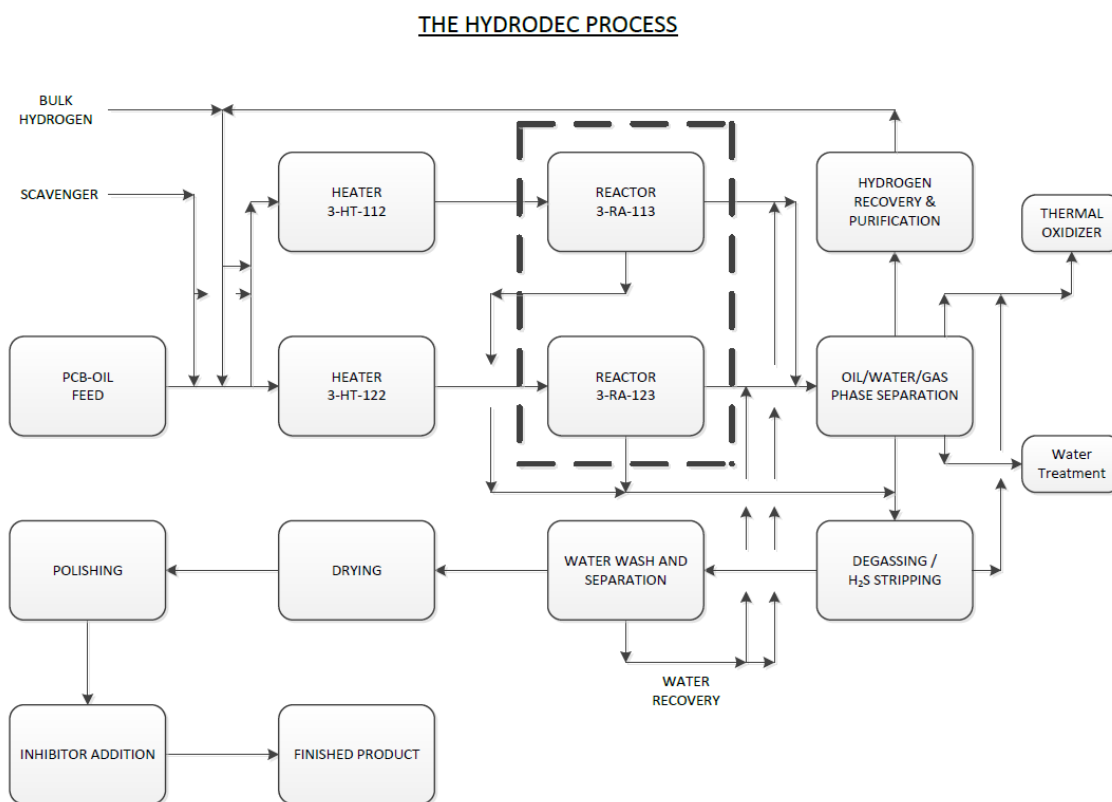
Mr. Burkhart has been involved in laboratory analyses for 14 years. He has worked as a Laboratory Technician at Hydrodec for the last 7 years. Mrs. Carter has a BS in Chemistry and an MA in Business-Organizational Development. She has over 35 years experience as a chemist and has been a Laboratory Technician at Hydrodec since 2011. PCB analyses are performed in accord with the principles of ASTM D4059. Other analytical procedures are also performed using consensus methods from SW-846, EPA Methods, ASTM, or similar reference standards.

SECTION 3 – FACILITY DESIGN AND OPERATION

3.1 General Description

The Hydrodec technology was developed specifically for the purpose of refining used oils and organic chemicals. It is as near to a closed loop near zero emission process for the complete treatment of PCBs as is available in the world at this point in time. The Canton facility consists of six reactor trains. The following provides a description of the Hydrodec process as it flows through one of these trains. Figure 3-1 provides a Process Flow diagram.

**Figure 3-1
Process Flow Diagram**



3.2 Hydrogenation

The PCB contaminated transformer oil requiring destruction is collected in feedstock tanks which feed an oil surge tank. From the feed oil surge tank it is introduced to the process at a defined pressure. The oil is pre-heated by passing it counter-current to a hot hydrogenation reactor effluent stream and through a heat exchanger. Fresh and recycled hydrogen, together with the scavenger, are then introduced.



The combined flow is heated to reaction temperature in a continuous direct contact finned electrical heater then enters the hydrogenation reactor at defined temperature and pressure. The reactor comprises a packed bed of a conventional hydro-treating catalyst.

During reaction, nitrogen or sulfur, also present as heteroatoms in the mineral oil, are largely converted to ammonia and hydrogen sulfide. Aged oil oxidation products present in the feed oil are also hydrogenated with the oxygen being removed as water.

In addition to extraction of heteroatoms and hydrodechlorination of PCB compounds, and depending on the carrier oil composition, a small quantity of hydrogen can be consumed in hydrogenating, to a small degree, the oil itself. This results in the possible generation of some saturated light hydrocarbon vapors and liquids in the boiling range below that of the parent oil and these are subsequently separated out within the hydrotreating system.

3.3 Reactor Effluent

Product oil leaving the Reactor (reactor bottoms) passes first to a Heat Exchanger where it is cooled against incoming feed oil.

Product oil leaving Heat Exchanger passes to a let-down valve where the pressure is reduced ahead of a Low Pressure Separator. Overhead vapors from this separator contain dissolved non-condensable hydrocarbons along with trace H_2S . The vapors pass to a Low Pressure Caustic Scrubber for trace residual hydrocarbon condensation and H_2S removal prior to venting to a thermal oxidizer.

Once the oil exits the Low Pressure Separator, it is cooled via heat exchangers before being sent to the degassing process where H_2S and other gases are removed. The effluent from the degassing process is then washed with sufficient de-mineralized wash water to ensure that a liquid phase is present to dissolve and wash out the Scavenger Salt system while minimizing the quantity of aqueous effluent to be discharged from the plant. The washed oil product is then passed to a phase separator after which the final oil product is recovered for polishing. The aqueous phase containing the Scavenger Salt system is re-used as quench water for the reactor gases, before being passed to a Waste Water surge tank prior to off-site shipment.

3.4 Reactor Gases

Reactor gases contain primarily excess hydrogen and are recycled back to the reactor feed. As they exit the reactor, gases are water quenched and passed to a High Pressure Separator. Vapor from the High Pressure Separator passes to a High Pressure Vent Condenser where it is cooled. Condensate, which is mainly water and small quantities of condensable hydrocarbons, is combined with the reactor bottoms before final wash water injection and product oil recovery.

Non-condensable gases from the High Pressure Separator comprise mainly hydrogen, but also contain light hydrocarbons and some H_2S . These are passed to a High Pressure Caustic Scrubber where H_2S is removed and collected into the caustic solution. Scrubbed gases are then chilled in a chiller, partially re-heated, passed through a sub-micron coalescer then recompressed for recirculation.

Build up of non-condensable hydrocarbon gases (methane, ethane) carried in the recycle gases are removed from the system through a slow bleed of purge gas flow from the Low



Pressure Separator, then topping up the recycle line with fresh hydrogen. Purged gases are passed to the Thermal Oxidation Unit for oxidation after which the product gases are released to the atmosphere.

3.5 Process Performance

The Canton processing plant has been in operation since 2008, and has been processing PCB contaminated material since 2012. Hydrodec has a plant in Australia that has been in operation since 2005.

Re-refining PCB contaminated transformer oil on a continuous process basis has yielded complete removal of PCB within the limits of detection using ISO 17025 certified laboratory analysis and with >99% recovery of the oil as re-refined transformer oils within the limits of accuracy of normal process mass balance measures. Results of the typical refining process relative to ASTM Standard D3487 for transformer oils are as follows.



Test Description	Test Method	Typical Values	ASTM D3487
Physical			
Aniline Point, (°C)	ASTM D611	73	63 min
Color	ASTM D1500	L0.5	0.5 max
Flash Point, (°C)	ASTM D92	153	145 min
Interfacial Tension @ 25°C, (mN/m)	ASTM D971	48	40 min
Pour Point, (°C)	ASTM D97	-57	-40 max
Relative Density @ 15°C/15°C	ASTM D1298	0.884	0.91 max
Viscosity @ 100°C, (cSt)	ASTM D445	2.36	3.0 max
Viscosity @ 40°C, (cSt)	ASTM D445	8.88	12.0 max
Viscosity @ 0°C, (cSt)	ASTM D445	56	76.0 max
Visual Examination	ASTM D1524	Clear and bright	
Electrical			
Breakdown Voltage, 2 mm gap, (kV)	ASTM D1816	54	35 min
Impulse Breakdown Voltage, (kV)	ASTM D3300	>200	145 min
Gassing Tendency, (μL/min)	ASTM D2300	Complies	+30 max
Power Factor @ 100°C, (%)	ASTM D924	0.038	0.30 max
Chemical			
Oxidation Stability, RPVOT (minutes)	ASTM D2112	298	195 min
Inhibitor Content (%)	ASTM D2668	0.29	0.30 max
Corrosive Sulfur	ASTM D1275	Not corrosive	Not corrosive
Water Content, (mg/kg)	ASTM D1533	15	35 max
Acid Number, (mg KOH/g)	ASTM D974	<0.01	0.03 max
PCB Content	ASTM D4059	Not detectable	Not detectable
Health Safety and Environment			
Polycyclic Aromatic Compounds, (wt %)	IP 346	<3.0	N/A
Modified Ames Assay	ASTM E1687	PASS	N/A

In addition, the oil produced by this process has been extensively tested by independent facilities and has been consistently demonstrated to be of comparable quality to other transformer oils in the market.



3.6 Emissions and By-Products

There are three exit points for materials from the process. These are the product oil, the wastewater and the oxidizer emission. In relative proportion the mass flow from each of these points is as follows

Product Oil - 90+%

Wastewater - <10%

Oxidizer Emission - <1%

The product oil has been shown non-detectable for all organochlorine chemicals.

3.6.1 Waste Water

Waste water is derived from the final oil wash and the water quench of the recycle gas. It has been shown free of chlorinated organic chemical but contains the scavenger salt system and trace product oil.

3.6.2 Oxidizer Emission

Process gaseous emissions are treated by a regenerative thermal oxidizer (RTO) with a greater than 99% destruction removal efficiency. Plant emissions and the RTO are covered under Ohio EPA air permit number P0117927.



SECTION 4 – FACILITY DESIGN

4.1 Facility Layout

The facility consists of a loading/unloading shelter for trucks, a rail spur, piping and tanks for storage of the oil, process and treatment buildings, office building, control room, and a laboratory, as shown on the facility Site Plan in Figure 2 in Appendix A.

The PCB-contaminated (feed) oil will be unloaded from trucks at Building A (loading/unloading building), piped to tanks in Dike C then to the feed tank and reactor in Building F and G for processing. The refined transformer oil (SuperFine™ transformer oil) will be placed in storage tanks in Dike B until transferred to Building A to be taken off site for commercial use. There are no hazardous wastes produced in the Hydrodec refining process, even when treating PCB-contaminated oils. The recovery rate of the feedstock oil is 99%. When refined, the materials found in the used oil from oxidation are selectively and quantitatively removed as a benign salt-water solution (acid groups (-O₂H) in oxidized oil form water, nitrate groups (-NO₃) form salts, and chloride groups from PCB (-Cl) form chloride salts and these salts are carried out of the process in the wash water). This is the only waste from refining.

The Hydrodec facility has been designed to operate in a manner that should prevent the contamination of soils beneath the facility. All PCB oils will be stored and managed within tanks or enclosed structures, and the floors of these structures are maintained to preclude releases to the environment in the event of a spill. Any spills will be addressed immediately to further reduce the potential for a release to the environment.

4.1.1 Tanks

The tanks for storing feedstock and the re-refined SuperFine® oil at the site are listed in the SPCC Plan found in Appendix B.

Concrete secondary containment systems for the outdoor oil storage tanks have been constructed with capacity sufficient for the entire contents of the largest single tank in addition to sufficient freeboard for a 25-year storm event (4 inches for this area). A building has been constructed around the PCB storage tanks. The tanks are equipped with a liquid-level sensor and alarm. Buildings F and G are equipped with perimeter containment trenches and sumps. Building A is equipped with a 9,400-gallon sump.

4.1.2 Piping

PCB oil will be unloaded from trucks at Building A and transferred to the PCB oil storage tanks (P-TK-734 and P-TK-735) in Dike C in aboveground single-walled piping. The oil will then be transferred via single-walled piping to Building G and Building F for processing, then to Dike B tanks, and then to Building A for truck loading. All piping is constructed of welded and flanged fittings and is located over the paved surfaces at the site. All piping, tanks, pumps and ancillary equipment used to store or transfer non-treated PCB oil is dedicated to this service and is totally segregated from all other systems. See Figure 3 in Appendix A.



4.1.3 Loading/Unloading

Tank trucks are loaded and unloaded at a loading rack inside Building A that is situated along the eastern side of the property. Building A is equipped with a floor sump that has a capacity of over 9,000 gallons which is sufficient to hold the capacity of the largest incoming truck with a sufficient safety factor. PCB oil handling will continue to use this unloading/loading process.

4.1.4 Secondary Containment

The secondary containment area for the PCB tanks (Dike C) meets all requirements of 40 CFR 761.65. It is constructed of continuous-poured concrete and is equipped with a vapor barrier between the walls for Dikes A and C as well as under the containment area for Dike C. The vapor barrier is lined on either side with sand and has frost walls located on three sides of the containment area. The total volume of this containment area is 21,207 gallons, or 2.5 times the volume of one of the storage tanks and is more than 25% of the volume of the total PCB oil contained in this area. The containment dimensions are 42' x 22.5' x 3'. There are no seams, expansion joints, drain valves, or sewer lines in this containment area. The entire containment area has a roof and walls and is protected from rain water and it is located above the 100-year flood water elevation. See Figure 4 in Appendix A.

The secondary containment area in Building A is protected from rain water by roof and walls. It is constructed of poured concrete block with an impervious stainless steel liner. The containment dimensions are 9.5' x 9.5' x 7.5" and has a total volume of 422 gallons, or 7.5 times the volume of the largest container in this area (55-gallon drum) and is more than 25% of the volume of the total PCB oil contained in this area. The containers are supported on racks above the containment area and do not consume volume in the containment area. There are no drain valves, floor drains, sewer lines, or other openings in this containment area. The containment area is located above the 100-year flood water elevation.

4.2 Facility Location

The Hydrodec site is approximately 8.4 acres in size and is located along the north side of Steinway Boulevard in the Stein Industrial Park in central Stark County, Canton, Ohio. Figure 1 in Appendix A shows the Facility Location on the U.S. Geological Survey (USGS) topographic map.

Elevations at the site are in the range of 1,050 feet to 1,090 feet above mean sea level (amsl). The site lies north of Sherrick Run, which drains north/northwest into Nimishillen Creek, which is within the Tuscarawas River watershed. The northern property boundary is adjacent to Mill Creek and an active rail line. The facility is not located at a site that is below the 100-year flood water elevation.



4.3 Estimate and Management of PCB Inventory

PCB oil storage maximums are limited by the tank capacities. Figure 4-2 shows the maximum potential PCB oil inventory for the site:

**Figure 4-2
PCB Oil Storage**

Location	PCBs Stored	Number and size(s) of tanks
Dike C	PCB oil feedstock in 2 8,200-gallon tanks (P-TK-734 and P-TK-735)	2 Tanks 8,200 gallons each 16,400 gallons total
Building A	Up to 16 55-gallon drums for the storage of PCB contaminated oil and other PCB contaminated waste (such as PPE)	16 x 55 gallon drums 880 gallons total
Building G	500-gallon blend tank (TK-785)	1 Tank 500 gallons
Building G	50-gallon Oil/Water Separator (VE-784)	1 Tank 50 gallons
Building F	350-gallon feed tank (TK-005)	1 Tank 350 gallons
TOTAL CAPACITY		18,180 gallons

Normal operation of the facility anticipates utilizing only the tanks in Dike C (P-TK-734 and P-TK-735) for PCB oil storage. These tanks meet API-650 requirements and have the following specifications:

Volume: 8,200 gallons each
Diameter: 10'0"
Height: 14'0"
Year Built: 2008
Manufacturer: Hamilton Tanks
Construction: ¼" A-36 Carbon Steel
Pressure Rating: Atmospheric

Hydrodec's EHS Manager performs monthly inspections of PCB storage areas in accordance with 40 CFR 761.65(c)(5). Reference Appendix B of the SPCC plan for details of the inspection program.

To comply with 40 CFR 761.65(c)(8) Hydrodec manages its waste inventory utilizing "Drum ID Cards" to inventory PCB items for disposal. On the date the PCB items are removed from service for disposal, the Drum ID Card is produced, dated, and numbered. Other pertinent information is also recorded such as a description of contents, PCB concentration, and name of employee recording the information. Information from the completed Drum ID Card is recorded on a spreadsheet titled "PCB Container ID List" by the EHS Manager. The container ID list is the method used to track and manage disposal of PCB items covered in 40 CFR 761.65.

In the event of closure of the facility, it is anticipated that all of the PCB oil inventory would be re-refined on site to render the oil non-PCB oil. If re-refining on site is not possible, the PCB oil inventory would be loaded onto trucks and/or rail cars and transported to another PCB oil re-refiner or to a licensed disposal or treatment facility.



transported to another PCB oil re-refiner or to a licensed disposal or treatment facility. The particular facility will be selected prior to commencing closure activities based on available, permitted facilities at the time. Currently, Environmental Protection Services, Inc. in Wheeling, West Virginia offers permitted dechlorination of PCB oil and may be used for treatment of PCB oil that remains at the site at closure.

Currently, Hydrodec does not anticipate that the maximum PCB oil inventory will increase. This Closure Plan will be updated if additional storage tanks are constructed at the facility. The amount of waste that could be generated during closure will depend upon the amount of contaminated materials that are found. Contamination will occur as a result of accidental spills, leaks, etc., at the facility and in the absence of these, significant contaminated media is not expected at this time.

4.4 Spill Prevention Control and Countermeasure (SPCC) Plan

Hydrodec maintains a Spill Prevention, Control, and Countermeasure (SPCC) Plan to describe measures implemented to prevent oil discharges from occurring, and to prepare the facility to respond in a safe, effective, and timely manner to mitigate the impacts of a discharge. This Plan has been prepared to meet the requirements of Title 40, *Code of Federal Regulations*, Part 112 (40 CFR part 112).

In addition to fulfilling requirements of 40 CFR part 112, this SPCC Plan is used as a reference for oil storage information and testing records, as a tool to communicate practices on preventing and responding to discharges with employees, as a guide to facility inspections, and as a resource during emergency response.

A copy of the Professional Engineer (PE) certified plan is available in Appendix B.

Prior to commencement of PCB storage at the site, the SPCC Plan will be amended to reflect the change in facility's design, construction, operation, and maintenance that materially affects the facility's spill potential. The revised Plan will be recertified by a PE.

4.5 Certification of Compliance

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Mr. Fisher, President

Name & Title

16 JUNE 2017

Date





SECTION 5 – DEMONSTRATION TEST AND RESULTS

5.1 Demonstration Test Summary

A demonstration test was conducted by Hydrodec at the Canton, Ohio facility from October 19 through October 23, 2009 with overview from the USEPA. Winston Lue, Chemical Engineer, and Molly Finn, Environmental Engineer, both with the USEPA, were onsite for the entirety of the demonstration. Figure 5-1 provides a summary of the 2009 demonstration test results and operational data.

Hydrodec is applying for renewed authorization and is proposing a new demonstration test for September, 2016. (See 2016 Demonstration Test Plan for more details)



Figure 5-1 Summary of Test Results and Operational Data

	Test 1	Test 2	Test 3	Test 4
Date	10-20-2009	10-21-2009	10-22-2009	10-23-2009
Time Test Began	08:50	08:40	08:40	09:05
Time Test Ended	14:30	11:32	14:40	14:30
Operating Parameters:				
Feed Rate (kg/h)	650	651	650	651
Batch Volumes Waste Feed (kg)	3,900	1,953	3,900	3,906
Batch Volumes Waste Feed (gal)	1,170	588	1,170	1,176
Batch Volumes Waste Feed (lbs)	8,588	4,316	8,588	8,632
PCB Concentration in Feed (g/kg)	1,892	1,921	2,074	1,952
Reaction Start Time (24 – clock)	08:50	08:40	08:40	09:05
Reaction End Time (24 – clock)	14:30	11:32	14:40	14:30
Final Batch Size (kg)	4,550	2,604	4,550	4,557
Final Batch Size (gal)	1,365	784	1,365	1,371
Average Reactor Temperature (°C)	305	305	305	305
Average Reactor Temperature (°F)	581	581	581	581
Average Reactor Pressure (kPa)	3,546	3,512	3,524	3,512
Average Reactor Pressure (PSI)	514	509	511	509
Sampling Analysis Results:				
Final PCB Concentration of Feedstock (ug/g/peak)	<1	<1	<1	<1
PCB Concentration of Wastewater (mg/L/peak)	None Generated	None Generated	None Generated	None Generated
Dioxin/Furan Analysis Results:				
Initial Dioxin/Furan (ng/g)	ND	ND	ND	ND
Final Dioxin/Furan (ng/g)	ND	ND	ND	ND



SECTION 6 – CLOSURE PLAN

Hydrodec has an approved Closure Plan included in Appendix C.



SECTION 7 – CLOSURE COST ESTIMATE

Hydrodec has an approved Closure Plan Cost Estimate included in the Closure Plan in Appendix C.



SECTION 8 – FINANCIAL RESPONSIBILITY

Hydrodec employs a Trust Fund as a mechanism to cover the costs associated with the closure of the facility as prescribed in the Closure Plan and Cost Estimate. The amount of financial assurance will be increased throughout the operating life of the facilities to account for annual adjustments in inflation and any changes to the closure plan which result in increases to the cost estimate. Decreases in the amount of financial assurance will only be allowed when cost estimates decrease and the remaining amount of assurance will still be adequate to cover all associated costs. In the event of a notice of cancellation, Hydrodec will ensure that alternate assurance is provided and that no lapse in coverage will result. Upon the completion of closure, Hydrodec will approve and request from the trustee, in writing, reimbursement of closure expenses only when itemized bills are submitted and the expenses are in accordance with the closure plan or otherwise justified. Hydrodec will be released from financial assurance requirements within 60 days after receiving certification from an independent registered professional engineer that final closure has been completed in accordance with the approved closure plans.

APPENDIX A

SITE LOCATION AND LAYOUT



FIGURE 1

USGS Map

(Canton East Quadrangle)

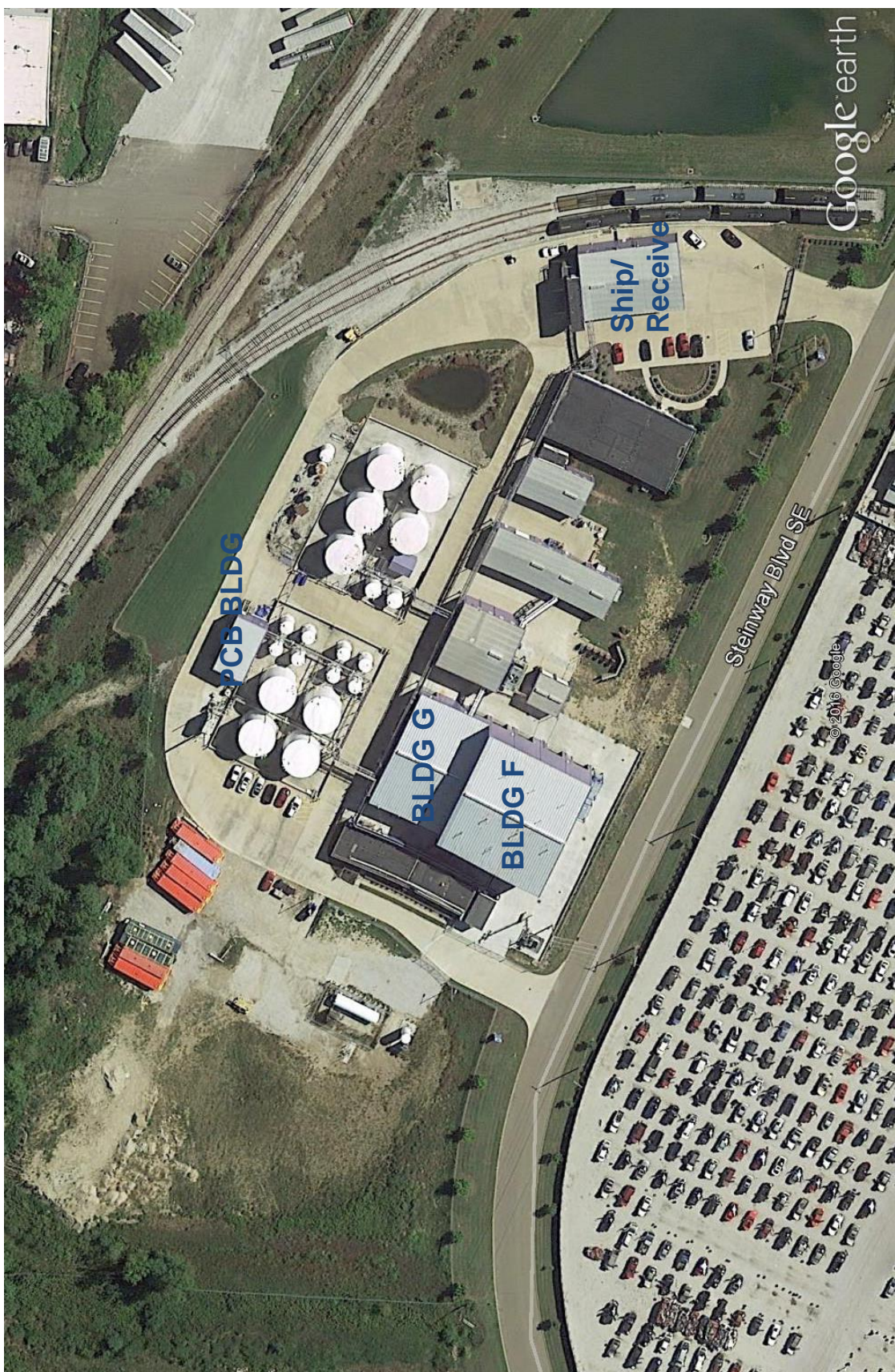


Site: Hydrodec, 8.4 Acres
Canton, Ohio

Scale: None



Figure 2 - Site Map



Hydrodec of North America, LLC – Site Map

Figure 3 - Piping Diagram

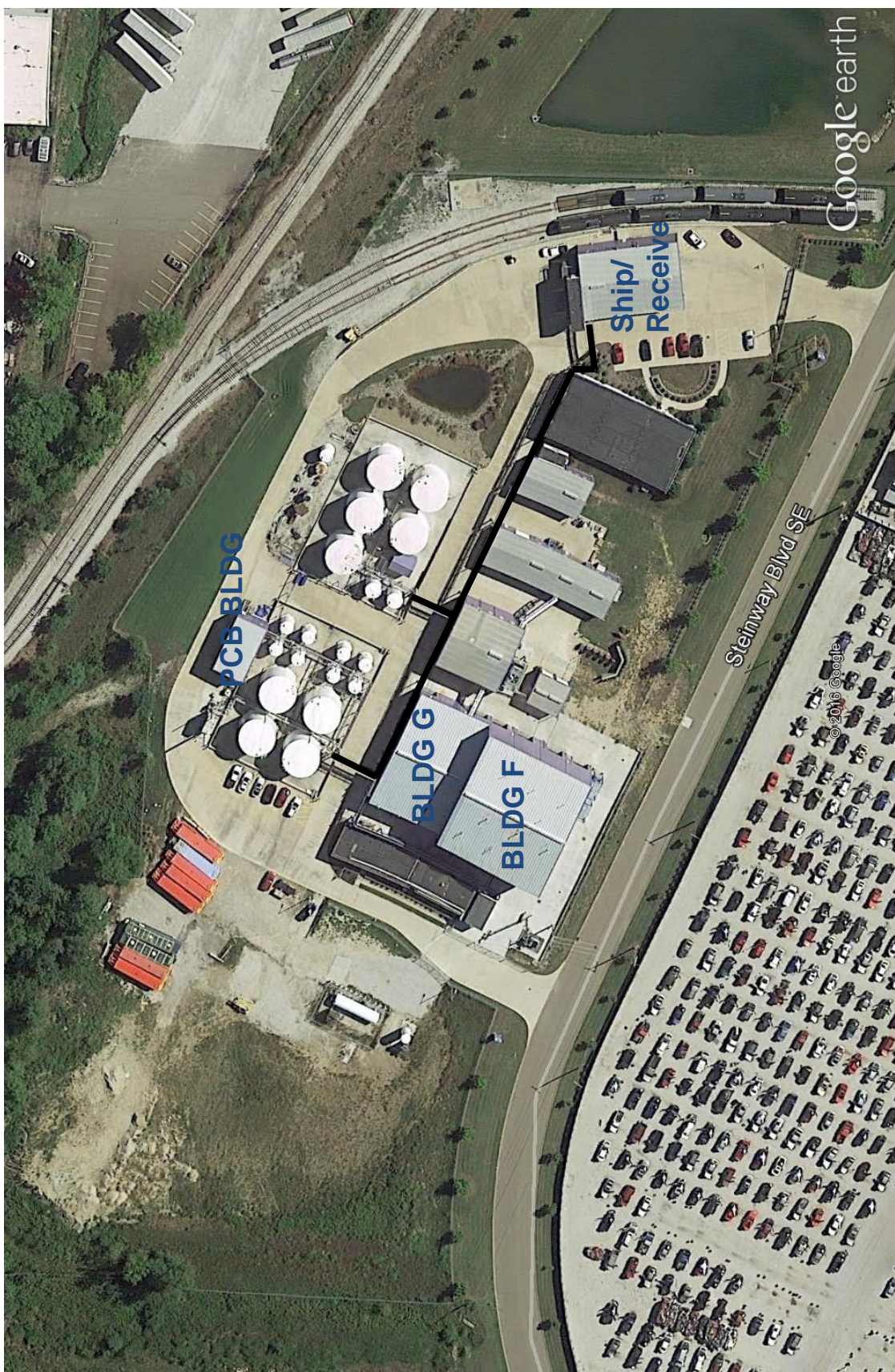


Figure 3. Facility Piping Diagram

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APPENDIX B

SPCC PLAN



APPENDIX C

PCB CLOSURE PLAN

PCB CLOSURE PLAN

HYDRODEC OF NORTH AMERICA, LLC

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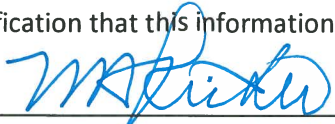
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CERTIFICATION

Under civil and criminal penalties of law for the making or submission of false and fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify, as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete.



Michael Pitcher, President

NOTARY

State of Ohio
Stark County

Michael Pitcher, appeared before me, the undersigned officer, on the 6th day of July 2017, known to me to be the person described in the foregoing certification and acknowledged that he executed the same in the capacity therein stated and for the purposes therein contained and that the statements contained therein are true and correct.

IN WITNESS WHEREOF, I HEREUNTO SET MY HAND AND OFFICIAL SEAL.



Notary Public



BRITTANY M. PITCHER
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES MARCH 19, 2018

My Commission expires: March 19, 2018

SECTION 1 INTRODUCTION

1.1 Introduction

This Closure Plan has been developed for the Hydrodec of North America, LLC (Hydrodec) facility located at 2021 Steinway Blvd S.E, Canton OH 44707.

This Closure Plan and the Financial Requirements have been prepared in accordance with the requirements of 40 CFR Part 761.65(d) & (e). This Plan identifies all the steps necessary to close the PCB portions of the facility at any point during its operational life.

Hydrodec will maintain an on-site copy of the approved Closure Plan at the facility office until the certification of closure has been submitted to and accepted by the U.S. Environmental Protection Agency (EPA). The Regional Administrator will be notified at least 60 days prior to the date Hydrodec expects to begin final closure. Initiation of closure activities will commence within 30 days of the receipt of the last regulated items at the facility. The closure date for the PCB portions of the facility is estimated to be 2033 A.D. This date will be dependent on the demand for Hydrodec's services for regulated PCB fluids. Upon completion of closure, Hydrodec will submit a certification by Hydrodec's owner and by an independent registered environmental professional that the facility has been closed in accordance with the specifications in the approved Closure Plan.

1.2 Final Closure Activities

All regulated material will be removed from the PCB portions of the facility as outlined in Section 4.2 and all necessary equipment, structures, wastes, soils, and/or other materials contaminated with regulated levels of PCBs will be decontaminated and/or disposed of according to their regulatory level during closure activities. Closure activities and prices are based on a 3rd party implementing all work.

The PCB levels to be achieved for final closure are as follows: (1) ≤ 1 ppm for high occupancy areas; and (2) ≤ 25 ppm for low occupancy areas; (3) $\leq 10 \mu\text{g}/100 \text{ cm}^2$ for non-porous surface areas in high occupancy areas and $< 100 \mu\text{g}/100 \text{ cm}^2$ for non-porous surface areas in low occupancy areas. (4) $\leq 10 \mu\text{g}/100 \text{ cm}^2$ for porous surfaces

1.3 Land Uses

Land use within the area, including the Hydrodec site, is zoned industrial and commercial. The immediate vicinity of the industrial park is mixed industrial, commercial, and some residential.

1.4 Traffic Patterns

Figure 1 shows traffic patterns around the facility.

1.5 Security Systems

Hydrodec is a gated, fenced area with controlled access 24/7/365. Unauthorized ingress and egress will be prohibited. A security system is installed at the facility and will remain operational at the facility until Closure is completed, certified, and accepted by the EPA.

SECTION 2 ENVIRONMENTAL CONDITIONS

As per the Operations and Maintenance (O&M) Agreement and the Environmental Covenant (EC) between the State of Ohio and the property owner, all requirements outlined have been implemented and/or are monitored for adherence. The Risk Mitigation Plan (RMP) (incorporated into the O&M Plan) will be implemented and documented during any subsurface excavations deeper than two feet at the property. Additionally, the EC prohibits groundwater excavation except for temporary dewatering, monitoring, and remediation. Any leaks at the facility of regulated PCB materials will be cleaned up in accordance with the PCB Spill Clean-Up Policy at 40 CFR 761, Subpart G.

SECTION 3 FACILITY DESIGN & LOCATION

3.1 Facility Layout & Description

The Hydrodec facility is approximately 8.4 acres in size and is located along the north side of Steinway Boulevard in the Stein Industrial Park in Stark County, Canton, Ohio.

The facility consists of a loading/unloading shelter for trucks, a rail spur, piping and tanks for storage of the regulated oil, process and treatment buildings, office building, control room, and a laboratory as shown in the Facility Site Map (Figure 2). The permitted portion of the facility receives PCB-regulated dielectric fluid (50 – 2000 ppm PCBs) via tanks and railcars. Hydrodec re-refines the used oil (aka Feed

Oil/Stock) into SUPERFINE™ transformer oil – a high-performance oil that meets international standards for insulating oils. The oil is also re-refined into SUPERFINE™ base oil, which is used in a variety of manufacturing applications. The facility also receives non-regulated dielectric fluid for re-refining. Building A where unloading of regulated PCB fluids takes place is equipped with a 9,400 gallon sump.

The Hydrodec facility has been designed to operate in a manner that should prevent the contamination of soils beneath the facility. All PCB regulated fluids will be stored and managed within enclosed structures, and the floors of these structures are maintained to preclude releases to the environment in the event of a spill. Any spills will be addressed immediately in accordance with the PCB Spill Cleanup Policy at 40 CFR 761 Subpart G to further reduce the potential for a release to the environment.

3.2 Facility Operations

Trucks transporting PCB regulated feed oil are unloaded in Building A (loading/unloading shelter). The feed oil will be piped to tanks in Dike C, and then piped to the mixing tank and reactor in Building F for processing, and then the refined transformer oil (SUPERFINE™ transformer and base oil) will be placed in storage tanks in Dike B until transferred to Building A to be shipped off site for commercial use. There are no hazardous wastes produced in the Hydrodec refining process, even when treating PCB- regulated oils. The feedstock oil is 99 percent recovered as new oil. When re-refined, the materials found in the used oil from oxidation are selectively and quantitatively removed as a benign salt-water solution (acid groups (-O₂H) in oxidized oil form water, nitrate groups (-NO₃) form salts, and chloride groups from PCB (-Cl) form chloride salts and these salts are carried out of the process in the wash water). This is the only waste from re-refining.

3.3 Bulk Storage Tanks for PCB Regulated Fluid

Tanks (P1 and P2) contain PCB-regulated fluids (50 - 2000 ppm PCBs) and are located indoors in Dike C (See Figure 2) at the facility. All other bulk storage tanks at the facility contain non-regulated fluids and are not subject to Closure. The Mixing tank in Building F contains 450 G of PCB-regulated fluid.

3.3.1 Design, Construction & Operation

The tanks are designed, constructed, and operated in accordance with the API650 standards. Tank specifications are provided in Figure 5.

3.4 Piping

PCB oil will be unloaded from trucks at Building A and transferred to the tanks in Dike C in aboveground single-walled piping. The oil will then be transferred via single-walled piping to Building F for processing, then to Dike B tanks for storage, and then to Building A for truck and rail car loading. All piping is constructed of welded fittings and is located over the paved surfaces at the site (Figure 3).

3.5 Loading & Unloading

Tank trucks are loaded and unloaded at a loading rack inside Building A that is situated along the eastern side of the property. Building A is equipped with a floor sump that has a capacity of 9,400 gallons (the largest truck to be unloaded has a capacity of 6,500 gallons). Regulated PCB fluid handling will use this unloading/loading process.

3.6 Site Drainage

The majority of drainage from the facility is to the east, where it enters an on-site lined retention pond. The pond is equipped with an inverted discharge that will maintain some level of water in the pond. Water is discharged from this pond to the City of Canton storm sewer. The storm sewer discharges into Mill Creek, with ultimate discharge to Nimishillen Creek. Additionally, all runoff from permanent building roofs flow to a 3,000-gallon underground cistern, where the water is available for reuse. Figure 3 shows the Facility Drainage Diagram.

3.7 100 Year Flood Plain

Elevations at the site are in the range of 1,050 feet to 1,090 feet above mean sea level (amsl). The site lies north of Sherrick Run, which drains north/northwest into Nimishillen Creek, which is within the Tuscarawas River watershed. The northern property boundary is adjacent to Mill Creek and an active rail line.

SECTION 4 INVENTORY, REMOVAL AND DISPOSAL OF PCB REGULATED WASTE MATERIAL

4.1 Maximum Regulated Inventory ¹

¹ Note: Hydrodec is currently operating its PCB regulated fluid storage differently than that set forth in the Permit. The quantities provided in Section 4.1 reflect the current operations and Maximum Inventory of PCB regulated material.

The maximum estimated inventory of regulated PCB material is set forth in the table following:

LOCATION	DESCRIPTION	QUANTITY
Dike C: Tanks P1 and P2	PCB-regulated fluid (50 -2000 ppm)	16,400 G (8,200 G per tank)
Mixing Tank in Building F	PCB-regulated fluid (50 – 2000 PPM)	450 G
Building A	PCB regulated solid wastes	8-55 G drums
Building A	PCB regulated fluid (50 -2000 ppm)	440 G in drums

4.2 Management of Regulated Material

As Hydrodec will operate at all times in compliance with the PCB Spill Clean-Up Policy at 40 CFR 761, Subpart G, and the EPA Alternate Disposal Approval dated June 26, 2012, any and all spills or releases of regulated materials will be cleaned up immediately; thus, it is not anticipated that there will be any outstanding environmental conditions at the time of closure and, therefore, Hydrodec is proposing closure of only the PCB Areas and equipment and structures associated therewith. This section provides a detailed description of the closure activities to be implemented in completing closure of the PCB portions of the Hydrodec facility. These activities are detailed below in their anticipated sequence of implementation.

4.2.1: Processing of Regulated PCB Fluids in Tanks (Dike C)

All regulated fluids held in the tanks (Dike C: Tanks P1 and P2) will be processed on-site through the Catalytic Hydrogenation System (CHS) in accordance with the Approval to Treat and Commercially Store PCBs (Dated: June 26, 2012) until analysis confirms the fluids <2 ppm PCBs in accordance with 40 CFR 761.65(f)(1)(iii). All regulated PCB-contaminated oil in the mixing tank (450 G), drums (440 G) and any and all drip pans will be drained and processed through the CHS as noted above until confirmation analysis of <2 ppm is reached. If the CHS is not operational at the time of closure, all PCB-contaminated fluids will be disposed of off-site by a third party per 40 CFR 761.79(a)(3).

Material Generated:

Cleaned Oil (generated from previous PCB inventory): 17,290 G (not requiring off-site disposal), or
PCB-contaminated fluids: 17,290 G (off-site disposal)

4.2.2: Decontamination of Piping (Building A to Dike C)

The piping that runs from the unloading area (Bldg A) to Dike C will be decontaminated following the self-implementing decontamination procedures set forth in 40 CFR 761.79(c)(3). The solvent will be reused until it reaches 50 ppm PCBs. The solvent used will meet the requirements of CFR 761.79(c)(3)(iii). At the completion of the decontamination process, the solvent will be collected for disposal. Records documenting the self-implementing procedures will be appended to the final Closure Report to meet the record requirements of 40 CFR 761.79(f)(2). Upon completion of the decontamination procedures, the piping and pumps will be put back in to use with the <50 ppm process in accordance with 40 CFR 761.30(u)(1)(i)(B).

Material Generated:

Used Solvent Generated: 250 G (requires off-site disposal)
PCB Solids Generated: 50 lbs (requires off-site disposal)

4.2.3: Decontamination of Tanks (Dike C and Building F)

The tanks in Dike C (2- 8200 G) and the mixing tank in Bldg. F (450 G) will be decontaminated in accordance with 40 CFR 761.79(c)(1). The rinsate used will include clean feed stock from the facility (<2 ppm PCBs). Following completion of the triple rinse process, the rinsate fluids will be processed on-site through the CHHS as set forth in the Alternate PCB Disposal approval until analysis confirms the fluids <2 ppm PCBs in accordance with 40 CFR 761.65(f)(1)(iii).

Material Generated

Decontamination Oil Generated: 5475 G (not requiring off-site disposal)
PCB Solids Generated: 150 lbs (requires off-site disposal)

4.2.4 Decontamination of Piping & Pumps (Dike C to Building F)

The pipes that run from Dike C to the processing area (Bldg F) will be decontaminated utilizing the self-implementing procedures set forth in 40 CFR 761.79(c)(3). The solvent will be reused until it reaches 50 ppm PCBs. The solvent used will meet the requirements of 40 CFR 761.79(c)(3)(iii). At the completion of the decontamination process, the solvent will be collected for disposal. Records documenting the self-implementing procedures will be appended to the final Closure Report to meet the record requirements of 40 CFR 761.79(f)(2). Upon completion of the decontamination procedures, the piping and pumps will be put back in to use with the <50 ppm process in accordance with 40 CFR 761.30(u)(1)(i)(B).

Material Generated

Used Solvent Generated: 150 G (requires off-site disposal)
PCB Solids Generated: 100 lbs (requires off-site disposal)

4.2.5 Decontamination of Facility/Sampling Equipment

All non-porous surfaces of pumps, other facility equipment, and sampling equipment will be decontaminated in accordance with 40 CFR 761.79(c)(3).

Material Generated

Decontamination Fluids Generated: 100 G (requires off-site disposal)

PCB Solids Generated: 200 lbs (requires off-site disposal)

4.2.6 Decontamination of Interior Areas of Buildings A & F and Dike C

As Hydrodec will strictly adhere to the cleanup and confirmatory sampling requirements of the PCB Spill Clean-Up policy throughout its operations, it is not anticipated that the floors, walls, and ceilings where regulated PCBs were handled at the facility will be contaminated $>10\mu\text{g}/100\text{ cm}^2$. These areas will, however, be double washed/rinsed in accordance with 40 CFR 761.123 prior to sampling. The wash/rinse water will be collected for disposal.

All areas in Buildings A and F and in Dike C will be cleaned as follows:

- A one-part Pentone Power Cleaner 155 and 20 parts water solution or equivalent will be used as a detergent. The floors will be scrubbed using a floor scrubber. The walls will be scrubbed with stiff, bristle brushes. The areas will then be vacuumed dry to remove any detergent residue.
- The ceilings will be wiped with dampened cloths (using Pentone Power Cleaner) to remove any potential PCB contaminated dust. The cloths will be rinsed and rung out for reuse until soiled.
- The wash/rinse fluids will be reused until they reach 50 ppm PCBs

The areas will be sampled in accordance with the requirements of 40 CFR 761 Subpart G, the guidance document entitled "Verification of PCB Spill Cleanup by Sampling and Analysis," and the sampling scheme set forth in "Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup." Verification of decontamination is indicated by all tests resulting in the following: $\leq 10\mu\text{g}/100\text{ cm}^2$.

If any wipe test results are greater than the allowed level, that portion of the walls, ceilings, or floors will be re-cleaned 55 feet in all directions from the sample locations. A second group of samples in the area

will be collected and analyzed. Cleaning and re-analysis will continue until results confirm the clean-up levels.

Material Generated

Decontamination Fluids Generated: 500 G of wash/rinse liquids (requires off-site disposal)

PCB Solids Generated: 1000 lbs (requires off-site disposal)

Samples to be analyzed: 70 ea

4.2.7 Soil Sampling of Outside Areas of Buildings A & F and Dike C

At time of closure, the areas outside the 3 buildings (Buildings A & F; Dike C) where PCB fluids were handled will be gridded and sampled for possible contamination. Soil samples will be taken in accordance with the requirements of 40 CFR 761 Subpart G the guidance document entitled "Verification of PCB Spill Cleanup by Sampling and Analysis," and the sampling scheme set forth in "Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup."

Material Generated

PCB Solids Generated: 100 lbs (requires off-site disposal)

Samples to be analyzed: 30 ea

4.3 Post-Closure Plan

Post-closure care will not be needed for this facility because there will not be "disposal" (RCRA definition) activities at this site. All contaminated material will be processed through the CHS system, decontaminated, and/or removed from the site, thus, there will be no need for further action in the designated areas as a result of closure activities.

4.4 Notice in Deed

Determination as to whether a deed restriction will be required will be dependent on the cleanup levels achieved during closure. It is not anticipated that a deed restriction, other than what already exists in the EC, will be required.

4.5 Expected Year of Closure

The expected year of closure is the year 2033 A.D.

SECTION 5

CERTIFICATION

This closure activity shall be attested, reported and certified by an independent registered Environmental Professional.

SECTION 6

SAFETY PROCEDURES FOR DECONTAMINATION PERSONNEL

All persons participating in decontamination for closure will be adequately trained for the preceding activities.

Safety equipment will include but not be limited to the following:

- Disposable protective coveralls
- Boots and Gloves
- Respirators, if necessary with the appropriate cartridge filters

All confined-space entry activities, if required, will fully comply with the applicable OSHA regulations (49 CFR 1910).

SECTION 7

REGULATED PCB WASTE INVENTORY AND MATERIALS GENERATED DURING CLOSURE ACTIVITIES

7.1 Regulated Inventory

LOCATION	DESCRIPTION	QUANTITY
Dike C: Tanks P1 and P2	PCB regulated fluid (50 -2000 ppm)	16,400 G (8,200 G ea)
Feed Tank in Building F	PCB Regulated fluid (50 – 2000 PPM)	450 G
Building A	PCB regulated solid wastes	8-55 G drums
Building A	PCB regulated fluid (50 -2000 ppm)	440 G in drums

7.2 Waste Material Generated During Closure Activities

Section	Waste Description	Quantity
4.2.2	Used Solvent Generated	250 G
4.2.2	PCB Solids Generated	50 lbs
4.2.3	PCB Solids Generated	150 lbs
4.2.4	Used Solvent Generated	150 G
4.2.4	PCB Solids Generated	100 lbs
4.2.5	Decontamination Fluids Generated	100 G
4.2.5	PCB Solids Generated	200 lbs
4.2.6	Decontamination Fluids Generated	500 G

4.2.6	PCB Solids Generated	1000 lbs
4.2.7	PCB Solids Generated	100 lbs
	TOTAL FLUIDS	1,000 G
	TOTAL SOLIDS	1,600 lbs

7.3 Disposal of Regulated Wastes

Waste material generated on-site will be transported by EnviroServe, Cleveland, Ohio (EPA ID No: OHD9870500564). The solid wastes will be containerized in DOT-approved solid waste drums. Decontamination fluids will be placed in the totes already on-site. PCB-contaminated oil will be placed in bulk tanker trucks for transport to EPC. The table below shows where solid and liquid wastes will be disposed and how they will be disposed of. In the event of closure of the facility, it is anticipated that all of the PCB oil inventory would be re-refined on site to render the oil non-PCB oil. The hydrotreatment system would be flushed with non PCB oil and additional costs are not expected to clean the hydrotreatment system.

Regulated Material	Designated Disposal Facility	Disposal Method
PCB Solids	Wayne Disposal, Inc (Site #2) 42350 N I-94 Service Drive Belleville, Mi 48111 EPA ID No.: MID048090663	Landfill
PCB Decontamination Fluids	Clean Harbors PPM, LLC 1672 E Highland Road Twinsburg Ohio 44087 EPA ID No.: OHD986975399	Incineration
PCB regulated fluids	Environmental Protective Services 4 Industrial Park Drive Wheeling, WV 26003 EPA ID No.: WVD988770673	De-chlorination

SECTION 8
CLOSURE COSTS ESTIMATE

The Closure Costs Estimate has been developed to ensure that adequate funds along with a viable financial instrument will be available to pay for costs in the event that Hydrodec is unable to complete closure.

A summary of the estimated costs of employing a third party to implement all closure activities is provided below.

Item	Description	Quantity	Unit	Unit Rate	Amount
1	4.2.1: Processing of PCB Regulated Inventory (17,290 G) <ul style="list-style-type: none"> 4 days (8 manhrs(MH)/day) 2 men per day 	64	MH	\$45/MH	\$2880
1a	4.2.1: Processing of PCB Regulated Inventory off-site <ul style="list-style-type: none"> PCB-contaminated oil Transportation 	17,290 4	G Per Load	0.95/G \$1000	\$16,425.50 \$4000
2	Material Costs for Processing: <ul style="list-style-type: none"> Hydrogen Scavenger NaOH Catalysts Expended Materials 	--	--	--	\$2750
3	4.2.2: Decontamination of Pipes <ul style="list-style-type: none"> 1 day (8 MH/day) 2 men per day 	16	MH	\$45/MH	\$720
4	4.2.3: Decontamination of PCB tanks and processing of rinsate <ul style="list-style-type: none"> 2 days (8 MH/day) 3 men per day 	48	MH	\$45/MH	\$2160
5	Material Costs for Processing: <ul style="list-style-type: none"> Hydrogen Scavenger NaOH 	--	--	--	\$920

	<ul style="list-style-type: none"> • Catalysts • Expended Materials 				
6	4.2.4: Decontamination of Pipes and Pumps <ul style="list-style-type: none"> • 1 day (8 MH/day) • 2 men per day 	16	MH	\$45/MH	\$720
7	4.2.5: Decontamination of Pumps & Equipment <ul style="list-style-type: none"> • 1 day (8 MH/day) • 2 men per day 	16	MH	\$45/MH	\$720
8	4.2.6: Decontamination of Interior Areas <ul style="list-style-type: none"> • 4 days (8 MH/Day) • 4 men per day 	128	MH	\$45/MH	\$5760
9	4.2.6 & 4.2.7: Sampling of Interior & Exterior Areas <ul style="list-style-type: none"> • 2 days (8 MH/Day) • 2 men per day 	32	MH	\$45/MH	\$1440
10	Solvent for decontamination of pipes, pumps, equipment	400	G	--	\$1500
11	Decontamination Fluid	600	G	--	\$250
12	Supplies for decontamination of floors, walls, ceilings	--	--	--	\$500
13	PPE for personnel	40	EA	\$75/EA	\$3000
14	Sampling Equipment	100	EA	\$15/EA	\$1500
15	Equipment for Decontamination: <ul style="list-style-type: none"> • Floor Scrubber • Wet/Dry Vac 	--	--	--	\$500
16	Drums for PCB Solids	5	Drums	\$65/Drum	\$325
17	Loading of drums of PCB solids and totes ¹ <ul style="list-style-type: none"> • 2 MH/day • 2 men 	4	MH	\$45/MH	\$180
18	Transportation (LTL) of drums and totes	1	LTL	\$718	\$718

19	Disposal of PCB solids	1600	LBS	\$00.46/LB	\$736
20	Disposal of solvent and decontamination fluids	1000	G	\$11.36/G	\$11,360
21	Sample Analysis (includes QA/QC Samples)	100	EA	\$50/EA	\$5000
				SUBTOTAL	\$64,064.50
22	Engineering Oversight & Supervision	--	--	--	\$5000
23	Certification of Closure (10%)	--	--	--	\$6406
24	Contingency (20%)	--	--	--	\$ 12813
				TOTAL	\$88,283.50

Notes:

¹ The DOT approved totes, already on-site, will be utilized for the collection of used solvents and decontamination fluids. The totes will then be transported off-site for disposal.

SECTION 9 CLOSURE SCHEDULE

Event	Days
Notification given to EPA of closure (60 days prior to start)	0
Last Regulated Material received at the facility	30
Closure Activities Begin	90
4.2.1 Processing of Regulated fluids (4 days)	94
4.2.2 Decontamination of Piping (1 day)	95
4.2.3 Decontamination of Tanks (2 days)	97
4.2.4 Decontamination of Pipes & Pumping (1 day)	98
4.2.5 Decontamination of Facility/Sampling Equipment (1 day)	99
4.2.6 Decontamination of Interior Areas (4 days)	103
4.2.7 Sampling/Analysis of Exterior Areas (16 days)	119
Re-cleaning/Resampling (if needed)	133
Final Analysis Received	150
Closure Activities Complete	155
Closure Certification	185
Final Certification and Report Submitted to EPA	200