KEY (for internal Agency use only)
▶ = Permitting/Corrective Action
▶ = Engineering
▶ = Chemistry
▶ = Financial Assurance
▶ = Geology

Hazardous Waste "Part B" Operating Permit Application
Tank Module

The following link to guidance is for informational purposes only. Please do not include guidance with the permit application submittal.

Introduction to Tanks

Add the permit application module information below where designated in the base checklist (sequentially).

C. WASTE CHARACTERISTICS

C-1b ▶ ▶ Waste in Tank Systems: 40 CFR 264.190(a), 264.191(b)(2), 264.192(a)(2)

Provide the hazardous characteristics of the wastes to be handled in the tank systems. Identify the tank construction materials and demonstrate that the tank construction materials are compatible with the wastes stored in the tank.

Indicate that tank systems that store wastes containing free liquids have adequate secondary containment. For owners and operators that maintain waste tanks without a secondary containment system, provide test procedures and results, or other documentation or information, which show that the wastes do not contain free liquids. To test for free liquids, use the Paint Filter Liquids Test, Method 9095B in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846.

C-3a(6) ▶ Leachates: 40 CFR 260.10, 268.35(a)
Describe procedures that will be used to determine whether a single-source leachate meets the applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology. Single-source leachate generated from liquids percolating through a single waste (e.g., a monofill), is subject to the land disposal restrictions of the listed waste from which is derived. Single-source leachate cannot be combined to produce multi-source leachates. Multi-source leachates derived solely from dioxin-containing wastes (i.e., F020-F023 and F026-F028) are handled as though they are single-source leachates and must meet the treatment standards for dioxin-containing waste.

Describe procedures that will be used to determine whether F039 multi-source leachate meets the applicable treatment standards prior to land disposal. Multi-

source leachate F039 derives from liquids that percolate through land-disposed listed wastes. Multi-source leachate is subject to the treatment standards of P- and U-wastes from which the leachate may be derived. [Note that it is not necessary to test for every hazardous constituent that may comprise F039 multi-source leachate. EPA guidance requires an initial analysis of all regulated constituents in F039 and based on the results of the analysis, development of a reduced list of constituents to be monitored on a regular basis. The testing scheme must be supplemented with less-frequent, broader analyses to monitor for any changes in the chemical composition of the leachate.]

Leachate that originates from newly identified waste (i.e., those without treatment standards), is not coded as F039 waste but is labeled with the newly listed waste codes from which it is derived.

C-3c(2) ▶ ▶ Restricted Wastes Stored in Tanks: 40 CFR 268.50(a)(2)(ii)

If wastes are stored in tanks, the owner/operator must demonstrate that each tank will be clearly marked with a description of its contents, the quantity of each hazardous waste received, and the date each period of accumulation begins. Alternatively, the owner/operator may demonstrate that such information will be recorded and maintained in the operating record at the facility for each restricted waste storage tank.

D. ▶ PROCESS INFORMATION

D-2 Tank Systems: 40 CFR 270.16; 264.191 through 264.194

D-2a Tank Systems Description: 40 CFR 270.14(b)(1), 264.194(a)

Provide a description of the type (i.e. aboveground, underground), material of construction, volume, and number of tanks, as well as the specific location of each tank.

D-2a(1) Dimensions and Capacity of Each Tank: 40 CFR 270.16(b)

Provide the dimensions and capacity of each tank.

D-2a(2) Description of Feed Systems, Safety Cut-off, Bypass Systems and Pressure Controls: 40 CFR 270.16(c), 264.194(b)

Provide a description of the feed systems, spill prevention controls, safety cut-off, bypass systems, and pressure controls (e.g., vents).

D-2a(3) Diagram of Piping, Instrumentation and Process Flow: 40 CFR 270.16(d)

Provide a diagram of piping, instrumentation and process flow for each tank system.

D-2a(4) Ignitable, Reactive, and Incompatible Wastes: 40 CFR 270.16(j), 264.17(b), 264.198, 264.199

Indicate whether ignitable, reactive or incompatible wastes are to be managed in the tanks. Indicate the operating pressure and temperature of tanks.

If ignitable or reactive wastes are to be managed in tanks:

- Demonstrate that waste is treated, rendered or mixed before or immediately after placement in the tank systems so that it no longer is ignitable or reactive and that 40 CFR 264.17(b) is complied with (see checklist item F-5b);
- Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction; or
- Demonstrate that the tank system is used solely for emergencies.

If incompatible wastes are managed in tanks, demonstrate that they are not placed in the same tank system unless 40 CFR 264.17(b) is complied with (see checklist item F-5b). Provide procedures assuring that hazardous waste will not be placed in a tank that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 40 CFR 264.17(b) to prevent reactions.

Note: See checklist item F-5e

D-2b Existing Tank System

D-2b(1) Assessment of Existing Tank System's Integrity: 40 CFR 264.191, 270.16(a)

Provide a written assessment, that is reviewed and certified by an independent, qualified, registered professional engineer, on the structural integrity and suitability of each tank system for handling hazardous waste. At a minimum, this assessment must consider the following: (1) design standard(s), if available according to which the tank and ancillary equipment were constructed; (2) hazardous characteristics of the wastes that have been and will be handled; (3) existing corrosion protection measures (i.e., for underground tanks); (4) documented age of the tank system, if available (otherwise, an estimate of the age); and (5) results of a leak test, internal inspection, or other tank integrity examination.

D-2c New Tank Systems

D-2c(1) Assessment of New Tank System's Integrity: 40 CFR 264.192(a), 270.16(a) and (e)

Provide a written assessment that is reviewed and certified by an independent, qualified, registered professional engineer, on the structural integrity and suitability of each tank system for handling hazardous waste. The assessment must show that the foundation, structural support, seams, connections and pressure controls (if applicable) are adequately designed and that the tank system has sufficient structural strength and compatibility with the waste(s) to be stored or treated and corrosion protection to ensure that it will not collapse, rupture, or fail. At a minimum, this assessment must include the following: (1) design standard(s) according to which tank(s) and/or the ancillary equipment are constructed; (2) hazardous characteristics of the waste(s) to be handled; (3) a corrosion assessment by a corrosion expert for new tank systems or components

in which the external shell of a metal tank or any external metal component of the tank system will be in contact with the soil or with water; (4) a determination of design or operation measures that will protect underground tank systems against potential damage due to vehicular traffic; (5) design considerations to ensure that tank foundations will maintain the load of a full tank and that tank systems will be anchored to prevent flotation or dislodgement where the tank system is placed in a saturated zone or is located within a seismic fault zone; and (6) design considerations to ensure that tank systems will withstand the effects of frost heave. Provide a description of materials and equipment used to provide external corrosion protection.

D-2c(2) Description of Tank System Installation and Testing Plans and Procedures: 40 CFR 264.192(b)(e), 270.16(f)

Demonstrate that an independent, qualified installation inspector or an independent, qualified registered professional engineer will inspect each new tank system prior to covering, enclosing, or placing a new tank system or component in use. This inspection is to determine the presence of weld breaks, punctures, scrapes of protective coatings, cracks, corrosion and other structural damage or inadequate construction/installation. Specify how all discrepancies will be repaired.

Demonstrate that new tank systems or components that are placed underground and that are backfilled must be provided with a backfill material that is a non-corrosive, porous, homogeneous substance and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.

Demonstrate that all new tanks and ancillary equipment will be tested for tightness prior to being covered, enclosed, or placed in use. Specify how repairs will be made if the tank system is found not to be tight.

Demonstrate how ancillary equipment will be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

D-2d Containment and Detection of Releases: 40 CFR 264.193

D-2d(1) Plans and Description of the Design, Construction, and Operation of the Secondary Containment System: 40 CFR 264.193(b) through (f), 270.16(g)

D-2d(1)(a) Tank Age Determination: 40 CFR 264.193(a); 270.16(g)

Specify the age of all existing tank systems. If the age of a tank system cannot be determined, indicate the reason.

D-2d(1)(b) Requirements for Secondary Containment and Leak Detection: 40 CFR 264.193(b)(c), 264.1101(b)(3)(iii), 270.16(g)

Demonstrate that the secondary containment system has been (will be) designed, installed and operated to prevent any migration of waste or accumulated liquid from the tank system to the soil, groundwater, or surface water at any time during its use. Also, demonstrate that the secondary

containment system can detect and collect releases and accumulated liquids. This demonstration must include at least the following:

- Specify the materials of construction used to construct or line the system. Show that these materials are compatible with the wastes in the tank system.
- Demonstrate that the system has sufficient strength and thickness to prevent failure caused by any of the following:
  - pressure gradients (including static head and external hydrological forces),
  - physical contact with the wastes,
  - climatic conditions,
  - stress of daily operation (including stresses from nearby vehicular traffic).
- Present calculations to prove that the secondary containment system is placed on a foundation or base that can provide support, resisting pressure gradients above and below the system, and preventing failure due to settlement, compression, or uplift.
- Provide a description of the leak detection system, including its operating principle, design features and operating procedures. Demonstrate that the leak detection system will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours. If the prevailing site conditions or detection technologies will not allow detection of a release within 24 hours, then specify the earliest practicable time that detection can take place. Indicate why this longer period does not pose a threat to human health and the environment.
- Show how the secondary containment system is sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation.
- Document how it will be ensured that spilled or leaked wastes and precipitation will be removed for the secondary containment system within 24 hours. If wastes and precipitation cannot be removed within 24 hours, then specify the earliest practicable time that the removal can take place. Indicate why this longer period does not pose a threat to human health and the environment.

D-2d(1)(c) Requirements for External Liner, Vault, Double-Walled Tank or Equivalent Device: 40 CFR 264.193(d)-(e), 270.16(g)

Show that secondary containment for each tank includes at least one of the following: a liner external to the tank, a vault, a double-walled tank, or an equivalent device approved by IDEM.

For each external liner system, provide the following information:

- Present calculations to show that the external liner system is designed or operated to contain 100% of the capacity of the largest tank within its boundary.
- Show that the external liner system is designed or operated to prevent run-on or infiltration of precipitation. Alternatively, show that the collection

system has sufficient excess capacity to contain run-on and precipitation from a 25-year, 24-hour rainfall.
- Show that the external liner system is free of cracks or gaps.
- Demonstrate that the system is designed and installed to surround the tank completely and to cover all surrounding soil likely to come in contact with the wastes if they were released from the tank(s).

For each vault system, provide the following information:

- Present calculations to show that the vault system is designed or operated to contain 100% of the capacity of the largest tank within its boundary.
- Show that the vault system is designed or operated to prevent run-on or infiltration of precipitation. Alternatively, show that the collection system has sufficient excess capacity to contain run-on and precipitation. Alternatively, show that the collection system has sufficient excess capacity to contain run-on and precipitation form a 25-year, 24-hour rainfall.
- Demonstrate that the vault system is constructed using chemical-resistant water stops in place at any joints. Specify the material used.
- Demonstrate that the vault is provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the vault material. Specify coating or lining used, and provide the manufacturer's data sheet.
- Specify the method used to protect against the formation and ignition of vapors within the vault, if the waste being stored or treated is ignitable or reactive.
- Specify the exterior moisture barrier used and provide the manufacturer's data sheet. Alternatively, describe how the vault is designed or operated to prevent the migration of moisture into the vault if the vault is subject to hydraulic pressure.

For each double-walled tank, provide the following information:

- Demonstrate that the unit is designed as an integral structure so that any release from the inner tank is contained by the outer shell.
- If the unit is metallic, specify the type(s) of corrosion protection used both the internal and external shell. Corrosion protection is required for tanks in contact with soil and/or water.
- Describe the leak detection system used including the principle of operation, design, and operating characteristics. Demonstrate that it is a continuously operating unit, capable of detecting a release within 24 hours. If the prevailing site conditions or detection technologies will not allow detection of a release within 24 hours, then specify the earliest practical time that detection can take place. Indicate why this longer period does not pose a threat to human health and environment.

D-2d(1)(d) Secondary Containment and Leak Detection Requirements for Ancillary Equipment: 40 CFR 264.193(f), 270.16(g)

Demonstrate that each tank system's ancillary equipment is provided with secondary containment such as jacketing, double-walled piping, or a trench. Note that demonstration need not be made for: (1) aboveground piping

(exclusive of flanges, joints, valves, and other connections) that are visually inspected daily, (2) welded flanges, joints, and connections that are visually inspected daily, (3) seal-less or magnetic coupling pumps that are visually inspected daily, and (4) pressurized above-ground piping systems with automatic shut-off devices that are visually inspected daily.

Describe the containment system and demonstrate that it has been (will be) designed, installed and operated to prevent any migration of waste or accumulated liquid to the soil, groundwater, or surface water at any time during its use. Also, demonstrate that the containment system can detect and collect releases and accumulated liquids. This demonstration must include at least the following:

- Specify the materials of construction used to construct or line the system. Show that these materials are compatible with the wastes in the tank system.
- Demonstrate that the system has sufficient strength and thickness to prevent failure caused by any of the following:
  - pressure gradients (including static head external hydrological forces);
  - physical contact with the wastes;
  - climatic conditions; and/or
  - stress of daily operation (including stresses from nearby vehicular traffic).
- Present calculations to prove that the secondary containment system is placed on a foundation or base that can provide support, resisting pressure gradients above and below the system, and preventing failure due to settlement, compression, or uplift.
- Provide a description of the leak detection system, including its operating principle, design features and operating procedures. Demonstrate that the leak detection system will detect the failure of either the primary of secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours. If the prevailing site conditions or detection technologies will not allow detection of a release with 24 hours, then specify the earliest practical time that detection can take place. Indicate why this longer period does not pose a threat to human health and the environment.
- Show how the secondary containment system is sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation.
- Document how it will be ensured that spilled or leaked wastes and precipitation will be removed from secondary containment system within 24 hours. If wastes and precipitation cannot be removed within 24 hours, then specify the earliest practicable time that removal can take place. Indicate why this longer period does not pose a threat to human health and the environment.

D-2d(1)(e) Containment Buildings Used as Secondary Containment for Tank Systems: 40 CFR 264.1101(b)(3)(iii)

If a containment building serves as secondary containment for a tank system, demonstrate that the containment building can serve as an acceptable external

liner system for a tank, provided it meets the requirements of 264.193(b), 264.193(c)(1), 264.193(c)(2), and 264.193(d)(1). [See checklist Sections D-2d(1)(b) and D-2d(1)(c) above for compliance with these regulations.]

D-2d(2) Requirements for Tank Systems Until Secondary Containment is Implemented: 40 CFR 264.193(i)

For non-enterable underground tanks, present the results of a leak test (or other tank integrity test approved by IDEM). Indicate the procedures that will be repeated annually until secondary containment is provided. For other than non-enterable underground tanks, provide the results of a leak test or present a schedule and procedures for assessing the overall condition of the tank system by an independent, qualified registered professional engineer until secondary containment is provided. For ancillary equipment, present the results of a leak test (or other integrity assessment measures approved by IDEM). Indicate the procedures that will be used to ensure that such tests will be repeated annually until secondary containment is provided.

D-2d(3) Variance from Secondary Containment Requirements: 40 CFR 264.193(g), 270.16(h)

D-2d(3)(a) Variance Based on a Demonstration of Equivalent Protection of Groundwater and Surface Water: 40 CFR 264.193(g)(1), 264.193(h), 270.16(h)(1)

Provide detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous waste or hazardous constituents into the groundwater or surface water during the life of the facility.

D-2d(3)(b) Variance Based on a Demonstration of No Substantial Present or Potential Hazard: 40 CFR 264.193(g)(2), 264.193(h), 270.16(h)(2)

Provide a detailed assessment of the substantial present or potential hazards posed to human health or the environment, should a release enter the environment.

D-2d(3)(c) Exemption Based on No Free Liquids and Location Inside a Building: 40 CFR 264.190(a)

Demonstrate that tanks used to store or treat hazardous waste contain no free liquid as defined by Paint Filter Liquids Test, Method 9095B in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846). Show that such tanks are situated inside a building with an impermeable floor.

D-2e Controls and Practices to Prevent Spills and Overflows: 40 CFR 264.194(a) and (b), 264.195, 270.16(i)

Provide adequate information to ensure that the hazardous wastes or treatment reagents placed in a tank system will not cause any element of the system to rupture, leak, corrode, or otherwise fail.

Provide a detailed description of controls and practices used to prevent spills and overflows. At a minimum, this must include: (1) spill prevention controls (e.g., check valves, dry disconnect couplings); (2) overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank); and (3) maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave or wind action or by precipitation.

Provide detailed plans for the schedule and procedure for inspecting the following: (1) overfill controls; (2) aboveground portions of the tank system; (3) data from monitoring and leak detection equipment; (4) construction materials and the area immediately surrounding the externally accessible portion of the entire tank system; and (5) the cathodic protection system (for underground tanks).

Note: See checklist item F-2b(2).

F. ► PROCEDURES TO PREVENT HAZARDS

F-2b(2) Tank System Inspection: 40 CFR 264.195

F-2b(2)(a) Tank System External Corrosion and Releases: 40 CFR 264.195(b)(1)

Demonstrate that the above-ground portions of the tank system are inspected daily to detect external corrosion or releases of waste.

F-2b(2)(b) Tank System Construction Materials and Surrounding Area: 40 CFR 264.195(b)(3)

Demonstrate that the construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) are inspected daily to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

F-2b(2)(c) Tank System Overfilling Control Equipment: 40 CFR 264.195(a)

Develop a schedule and demonstrate that it will be followed for inspecting overfill controls.

F-2b(2)(d) Tank System Monitoring and Leak Detection Equipment: 40 CFR 264.195(b)(2)

Demonstrate that data gathered from monitoring and leak detection equipment (e.g., pressure and temperature gauges monitoring wells), where present, is inspected daily to ensure that the tank is operated according to design specifications.

F-2b(2)(e) Tank System Cathodic Protection: 40 CFR 264.195(c)

Demonstrate that the proper operation of the cathodic protection system (if present) for underground tanks is confirmed within six months after installation and at least annually thereafter. Demonstrate that all sources of impressed current are inspected and/or tested, as appropriate, at least bimonthly.

F-5e ▶ Management of Ignitable or Reactive Wastes in Tank Systems: 40 CFR 270.16(j), 264.198

Describe the operational procedures used for storing such wastes in tank systems that includes specific information on: (1) how the waste is treated, rendered, or mixed before or immediately after the placement in the tank so that it is no longer considered ignitable or reactive and complies with 40 CFR 264.17(b); or the waste is stored or treated in such a way that it is protected from any material or conditions that may cause the waste to react or ignite; or the tank is used solely for emergencies; (2) how facilities that treat or store ignitable or reactive waste in tanks maintain protective distance between the tank(s) and any public ways, streets, alleys, or adjoining property lines then can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code."

F-5f ▶ Management of Incompatible Wastes in Tank Systems: 40 CFR 270.16(j), 264.199

Demonstrate that incompatible wastes and materials are not stored in the same tank or in an unwashed tank that previously held an incompatible waste or material unless 40 CFR 264.17(b) is complied with.

G. ▶ CONTINGENCY PLAN

G-4j Tank Spills and Leakage

G-4j(1) Stopping Waste Addition: 40 CFR 264.196(a)

For a tank system or secondary containment system from which there has been a leak or spill, or that is unfit for use, document that the owner or operator will immediately stop the flow of hazardous waste into the tank system or secondary containment system and inspect the system to determine the cause of the release.

G-4j(2) Removing Waste: 40 CFR 264.196(b)

Specify that if the release was from the tank system, the owner/operator will, within 24-hours after detection of the leak, or if the owner/operator demonstrates that is not possible, at the earliest practicable time, remove as much of the waste as is necessary to prevent further releases of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed. If the material released was to a secondary containment system, specify that all released materials will be removed within 24 hours or in as timely manner as is possible to prevent harm to human health and the environment.

G-4j(3) Containment of Visible Releases: 40 CFR 264.196(c)

Specify that a visual inspection of the release will immediately be conducted. Demonstrate that based on the visual inspection, further migration of the leak or

spill to soils and surface water will be prevented. Indicate that any visible contamination of the soil or surface water will be removed and properly disposed.

G-4j(4) Notifications, Reports: 40 CFR 264.196(d)

Demonstrate that any release to the environment (except a leak or spill that is less than or equal to one pound and immediately contained and cleaned up) will be reported to the Commissioner within 24 hours of its detection.

G-4j(5) Provision of Secondary Containment, Repair, or Closure: 40 CFR 264.196(e)

If the release has not damaged the integrity of the system, demonstrate that the released waste will be removed and repairs, if necessary, will be made, prior to returning the system to service.

If the cause of the release is a leak from the primary tank system into the secondary containment system, demonstrate that the primary tank system will be repaired before returning it to service.

If the source of the release is a leak to the environment from a component of a tank system without secondary containment, demonstrate that secondary containment (satisfying 40 CFR 264.193) will be provided for the component from which the leak occurred, unless the component is an aboveground portion of a tank system that can be inspected visually. If the source is an aboveground component that can be inspected visually, demonstrate that the system will not be returned to service without a certification by an independent, qualified, registered, professional engineer [in accordance with 40 CFR 270.11(d)] that the repaired system is capable of handling hazardous waste without release for the intended life of the system. If a component is replaced to comply with the requirements of the subparagraph, demonstrate that the component will satisfy the requirements for new tank system or components in 40 CFR 264.192 and 264.193. Additionally, if a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection (e.g., the bottom of an in ground or on ground tank) demonstrate that the entire component will be provided with secondary containment in accordance with 40 CFR 264.193 prior to being returned to use.

I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

I-1e(5) ▶ ▶ ▶ Closure of Tanks: 40 CFR 270.14(b)(13), 264.197, 264.112(b)(3)

Describe how all hazardous waste residues, contaminated containment system components (liners, etc.), contaminated soils and structures and equipment contaminated with waste will be removed or decontaminated at closure and managed as hazardous waste.

- Waste removal from tanks and equipment;
- Decontamination of all components;
- Verification of decontamination;
- Disposal of wastes and residues; and

- Maximum inventory.

If not all contaminated soils can be practicably removed or decontaminated at closure, provide for closure and post-closure of the tank system as a landfill. Tank systems that do not have secondary containment that meets the requirements of 40 CFR 264.193(b) through (f) and are not exempt from the secondary containment requirements in accordance with 40 CFR 264.193(g), also must provide a contingent closure plan for closure as a landfill and a contingent post-closure plan.