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B. Waste Analysis Plan

The WAP pertains to hazardous waste management activities conducted at the PFD facility.

A WAP has been developed for PFD in accordance with OAC 3745-54-13 and 40 CFR Part 264.13(b) & (c). This plan describes the procedures used by PFD to characterize potential incoming waste streams. Sampling methods and quality control and quality assurance procedures are also included in this plan. The results from the Waste Analysis Program are used to ensure that all incoming wastes are managed properly in accordance with OAC 3745-54 and 40 CFR Part 264.

1. Facility Description**a) Description of Facility Processes and Activities**

PFD conducts used oil recycling in accordance with the requirements of OAC 3745-58-54 and 40 CFR 279. PFD also operates a wastewater pretreatment facility in accordance with the requirements of the Montgomery County Ohio Sanitary Engineering Department, a non-hazardous waste fixation facility, and a hazardous waste storage facility. Hazardous waste management activities are conducted in accordance with the requirements of OAC 3745-54 and 40 CFR 264. Permitted hazardous wastes may be stored prior to management on-site or trans-shipment. In addition, PFD also operates as a transfer facility in accordance with the requirements of OAC 3745-53-12 and 40 CFR 263.12. Descriptions of Hazardous Waste Designations are located later in this WAP.

b) Identification/EPA Classification and Quantities of Hazardous Waste Managed

The types of hazardous wastes that PFD is seeking to receive under the Part B Permit for the facility are listed in the Part A Application, which is Section A of this document. Acceptance criteria for wastes managed on-site are listed below:

- No hazardous waste is accepted at PFD without evaluation of analytical data, "knowledge of process" information, or other suitable evaluation such as examination of applicable Material Safety Data Sheets (MSDS).
- Applicable EPA Hazardous Waste Codes for the hazardous waste accepted must be those that PFD is permitted to accept.

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- No hazardous waste shipment will be accepted at PFD unless the shipment is accompanied by a hazardous waste manifest which meets the requirements of OAC 3745-52 and 40 CFR Part 262.

2. Waste Characterization

a) Criteria and Rationale for Parameter Selection

The criteria selected in the WAP are designated to meet the following objectives:

(1) Pre-Screening

- Characterize potential incoming waste streams to ensure compatibility with the facility storage units and other wastes stored at PFD. Incompatible wastes will not be stored in common containment areas, and will be properly segregated.
- Qualify potential streams as to compliance with the RCRA permit.

(2) Fingerprint

- Verify that the hazardous waste shipping manifest is properly completed.
- Verify that the characteristics of the hazardous waste shipped to the facility are the same as those displayed by the pre-screen sample.

3. Approval Process (Pre-Screening)

Before accepting waste from any customer, PFD conducts a preliminary investigation (pre-screen) to determine whether the material is suitable for management at the facility. MSDS and/or analytical results (if available) for the prospective waste stream will be evaluated. The generator, or generator's designated representative, may be required to submit a representative sample of the waste stream for analysis. The PFD Approvals Committee consists of the Operations Manager, the Laboratory Manager, the Customer Service Manager, the Facility Manager, and the Compliance Officer. To accept a waste stream into the facility, at least three of the five aforementioned committee members must sign off on acceptability of the waste. The Approvals Committee may, however, waive the requirement for submittal of a waste sample if adequate information regarding the characteristics of the waste is provided to PFD. Acceptable information may

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include analytical data from a commercial laboratory, MSDS for off-specification/post-dated chemicals, the generator's own knowledge about the waste, or pre-screen information from a RCRA-permitted or affiliated Treatment, Storage, and Disposal Facility (TSDF).

A Waste Recycling Qualification Form (WRQF) must accompany the sample. See Attachment C-1, Example of Waste Recycling Qualification Form. This form will be revised to reflect any future regulatory requirements. Additionally, the generator is asked to provide all applicable MSDS, if available, for the raw materials entering the waste stream.

When a sample arrives at the PFD laboratory, a laboratory technician enters the information on the WRQF into the PFD tracking system. Although PFD does not conduct fuel blending operations, PFD uses a comprehensive WRQF, which includes information required for fuel blending or other types of waste treatment. Use of a comprehensive form allows PFD or other Perma-Fix subsidiaries to have needed information when wastes are managed at PFD prior to additional management at affiliated or other commercial facilities.

PFD uses sampling methods specified in SW-846 or the ASTM sampling methodology (as specified in Appendix I, Representative Sampling Methods of 40 CFR 261) to obtain representative samples when required. PFD will provide sampling reference information to the generator and, upon request, explain to the generator or his representative the importance of obtaining a representative sample.

Analytical methods used by PFD for pre-screening are chosen as appropriate for the types and characteristics of the waste. These analyses, along with the rationales for their selection, and the methods referenced are listed in Attachment C-2, Analytical Parameters – Methods and Rationale. Results from these analyses are entered into the database and referenced to the unique number assigned to the waste sample and/or data.

When a sample is received and analyzed by PFD laboratory personnel, the Laboratory Manager will review the sample results. If the analytical results are not in agreement with the description supplied by the generator on the WRQF, the Laboratory Manager will notify the Approvals Committee and the PFD Customer Service Representative (who is responsible for liaison with the party submitting the sample) that an information discrepancy exists. Notification to the sample submitter will request that a reason for this discrepancy must be provided to PFD before the waste may be classified and approved. Attachment C-3, Example of Waste Analysis Report, is an example of a waste analysis report for a selected representative sample.

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a) Acceptance of Listed K Wastes

As described in OAC 3745-51-31 and 40 CFR 261.32, K wastes are hazardous wastes from specific sources. The K wastes that PFD will accept are hazardous waste from specific industries. Generators' knowledge regarding the waste streams will include documents in the WRQF and supporting documents (MSDS and/or analytical data) provided by the generator during the pre-screening process.

Once this information is evaluated and wastes are characterized with regard to regulatory status, wastes from these specific sources may require laboratory analysis solely for confirmation and not for classification.

Thus, in determining whether or not a K waste is acceptable to PFD, analysis in the PFD laboratory (or alternate) will be limited to density. The method used and the rationale for its use is provided in Attachment C-2, Analytical Parameters – Methods and Rationale.

b) Acceptance of Listed U Wastes

As described in OAC 3745-51-33(F) and 40 CFR 261.33(f), U wastes are "discarded commercial chemical products, off-specification species, container residues and spill residues thereof." Generator knowledge regarding the waste stream will be documented on the WRQF and supporting documents (MSDS and/or analytical data) provided by the generator during the pre-screening process. Once this information is evaluated and waste is characterized with regard to regulatory status, waste meeting the definition of a U waste may require laboratory analysis solely for confirmation and not classification. Thus, in determining whether or not a U waste is acceptable to PFD, analysis in the PFD laboratory, or alternate laboratory, shall be limited to density.

c) Acceptance of Characteristic D Wastes or Listed F Wastes

As described in OAC 3745-51-20 to 3745-51-24 and 40 CFR 261.2, characteristic hazardous wastes are solid wastes which exhibit one or more of the following characteristics: ignitability, corrosivity, reactivity, or toxicity (as determined by TCLP limits).

As described in OAC 3747-41-31 and 40 CFR 261.31, F-listed wastes are listed hazardous wastes from non-specific sources. Since both characteristic waste and F-listed hazardous wastes tend to be more generic and non-industry-specific in origin, PFD conducts the most

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rigorous pre-screening evaluation on these wastes. Parameters and rationale for analytical parameters for evaluation of D and F wastes are shown in Attachment C-2, Analytical Parameters – Methods and Rationale.

In addition to the documented rationale, when the organic halogen level is over 4%, the halogenated organic compounds would be easily quantified by the gas chromatographic method PFD-91-001-FID, a copy of which is provided as Attachment C-4, PFI-91-001-FID: GC/Flame Ionization Detector Standard Operations Procedure. This method, which is based upon the general SW-846 "Test Methods for Solid and Hazardous Wastes," was developed internally by the PFD Laboratory Manager and is in the PFD Standard Operating Procedures. The procedure utilizes an ELCD system.

PFD-91-001-FID was developed to provide PFD with a simple, reliable, universal detection method applicable to waste samples following compound separation by Gas Chromatography (GC). Flame Ionization Detectors (FID) are capable of quantifying virtually any organic compound over a wide linear range. SW-846 does not include an actual method for FID suitable for the variety of hazardous wastes handled at PFD. This is due to the fact that SW-846 procedures are applicable to specific classes of compounds rather than to general mixtures such as the wastes the PFD receives. SW-846 Method 8000 outlines the general GC procedures for any detection system. Method PFD-91-001-FID simply adapts the practices in Method 8000 to a FID system.

Waste streams may be submitted to PFD when the generator has not classified his waste with any of the characteristic codes for metals, but the total metals analysis result indicates that the waste could contain sufficient levels of one or more of the RCRA metals to fail the characteristic of toxicity. In this event, the facility will contact the generator and inform him of the need to run the Toxicity Characteristic Leachate Procedure (TCLP) on the waste stream. Should the generator, after reviewing the process by which the waste was generated, decide to add the proper waste code(s) for the metal(s) in questions, the TCLP need not be run. If the generator will not add the codes that are requested by PFD, and cannot provide information to ensure that the metal(s) will not leach, PFD will insist on running TCLP prior to further review for approval. If the generator refuses, PFD will not be able to accept the material. If, after running the TCLP and the metals analysis on the leachate, the results indicate that the leachate contains RCRA metals above toxicity characteristic limits, PFD will

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advise the generator regarding the results of the analysis and proceed with review for acceptance.

Similarly, gas chromatographic analysis of a waste stream that does not carry a listed code (F, K, or U) may indicate that organic constituents found in the waste codes D018 through D043 are present. In this event, the facility would contact the generator and inform him of the need to run TCLP on the waste stream followed by volatile organic GC. This procedure would be necessary to determine if the waste stream contains compounds at levels that would make the waste hazardous for those particular organic constituents. If this were the case, PFD would recommend that the generator classify the waste stream with the appropriate codes prior to accepting the waste.

d) Waste Accepted from Other Treatment, Storage and Disposal Facilities

For PFD to consider accepting hazardous waste from other TSDFs, PFD deems it necessary to conduct a pre-screening of the waste stream to ensure that the material is acceptable to the facility. In general, wastes from other TSDFs will be subject to standard facility pre-screening or fingerprinting analyses based on the waste code groups of the waste stream.

e) Determination of Waste Stream Acceptability

Upon completion of the pre-screen evaluation, the PFD Laboratory Manger (or designee) will make the initial determination as to the acceptability of the stream. In making the initial determination, the Laboratory Manger (or designee) will utilize one or more of the following:

1. Analytical results from the PFD or affiliated laboratory.
2. MSDS and/or other informative material submitted to PFD by the generator.
3. OAC 3745.
4. 40 CFR.
5. PFD Part B Permit.

The criteria that the Laboratory Manger (or designee) will use in making the initial acceptability determination may include one or more of the following:

1. Accuracy of the analytical results.
2. Proper classification of the waste stream.

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3. PFD permit to handle the waste codes.
4. Confirmation that the material appropriately fits storage capacities.

Upon completion of the initial review by the Laboratory Manager (or designee), the Approvals Committee will review the waste stream utilizing the same information as the Laboratory Manager for final determination for acceptability and approval. The criteria the Approvals Committee will use in making the initial acceptability determination will be:

1. Proper classification of the waste stream.
2. PFD permit to handle the waste codes.
3. Confirmation that the material appropriately fits PFD storage capabilities.

f) Quotation

Once a waste has been established as acceptable, the party who submitted the sample is provided with a quotation. The quotation may contain the following information:

1. Analytical results for the sample submitted to PFD.
2. Information regarding consistency of EPA Hazardous Waste Codes assigned to the waste.
3. The unique number assigned to the waste stream that must be used to schedule the waste stream for management at PFD.
4. The cost per container or gallon for management of the waste at PFD.
5. A statement explaining that PFD reserves the right to reject any shipment deemed unacceptable due to any of the following:
 - A. Improper manifesting/manifest discrepancies.
 - B. Discrepancies or unacceptable variances between the pre-screening characterization results and the fingerprint characterization analysis.
 - C. Containers are found to be in poor condition and unacceptable for transportation and/or storage by or at PFD.
6. Notice by PFD to the generator that it has the appropriate permits for the acceptance of this waste, and is willing to accept this waste in accordance with all applicable federal, state, and local regulations.

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4. Incoming Waste Shipment Procedures

a) Manifest Inspection

Upon arrival of waste at PFD, trained personnel will review the hazardous waste manifest and the Land Disposal Restriction (LDR) notification for accuracy. As all hazardous wastes accepted by PFD are subject to LDRs, each generator is required to provide at least a one-time annual LDR notification/certification for each waste stream approved and shipped to the PFD facility. LDR notifications/certifications shall be updated annually, or whenever there is a change in the waste stream that would result in a change to the LDR, whichever is sooner. At a minimum, the review process will consist of the following:

1. Ensure a manifest document number is present.
2. The generator's name, address, and EPA identification number.
3. Each transporter's name and EPA identification number.
4. Proper DOT shipping description including:
 - A. Proper shipping name
 - B. DOT hazard class
 - C. UN or NA identification number
 - D. Packing group assignment
 - E. Any RQ materials
5. The quantity or volume of waste in the shipment.
6. A signed certification of the shipment's content.
7. EPA hazardous waste codes which match those required by the quotation.
8. An LDR form or written statement that a current LDR is on file with PFD.

If any inaccuracies are discovered, PFD will contact the generator, explain, and attempt to resolve the issue. If an agreement between PFD and the generator cannot be reached, the waste will be rejected and returned to the generator. Once the paperwork is accepted, the PFD representative will sign the manifest to accept the waste.

Once the manifest is signed, the waste is sampled in accordance with Section C, subsection 6, Sampling Plan. Samples are placed in a separate sample container and brought to the laboratory. As each line item on a Hazardous Waste Manifest denotes a separate waste stream, the technician may make a composite of all the samples taken from each separate stream.

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b) Laboratory Observation and Fingerprint Analytical Characterization

A subset of analyses conducted during pre-screening may be used as a fingerprint analysis for incoming waste shipments. Laboratory observation and fingerprint analytical characterization are used by trained, experienced technicians as the verification analysis; i.e., these procedures are used to determine whether the incoming wastes received at the facility conform to the previously submitted WRQF and pre-screening sample. The specific analyses that are performed, the method used, and the rationale for these analyses are given in Attachment C-2, Analytical Parameters – Methods and Rationale. The following criteria were used in establishing the fingerprint analysis:

1. The need to determine whether or not a waste is reactive and/or incompatible with other wastes stored at the facility.
2. The need to identify wastes for which PFD is not permitted.
3. The need to ensure that the waste that was shipped to the facility is the same waste as that described on the WRQF and the submitted pre-screening sample.

PFD maintains a modern, on-site laboratory; the laboratory is fully equipped to perform all fingerprint analyses referenced in this WAP. The laboratory has been analyzing hazardous and non-hazardous waste samples for over ten years. Within that time frame, thousands of waste streams have been both pre-screened and fingerprinted. PFD maintains a database that links the observations made by the laboratory technicians and all of the analytical results with the particular waste stream and its generator. The database is inter-relational; that is, it can be searched to determine the history of a particular waste stream and/or a particular generator.

Starting with this database and a representative sample from an incoming waste shipment, the technician will make a visual comparison of the sample to the information in the database. This comparison will consist of physical attributes of the sample such as color, layers, odor, and the presence of solids. Should the technician determine that the visual attributes of the sample do not coincide with the information in the database, the technician will make a notation as to what provoked the inconsistency. After the observation phase is complete, the applicable fingerprint analyses will be performed on the sample. These analyses may be conducted even if a discrepancy was noted in the observation phase, as the fingerprint will provide PDF personnel with additional information as to why the sample was observed to be different than expected.

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c) Additional Verification Analysis for Used Oil Streams

PFD manages used oil in accordance with the requirements of OAC 3745-58-50 and 40 CFR 279. In addition to the standard verification analyses, if the preliminary characterization of a waste stream indicated that the material was acceptable for the used oil fuel program, a Total Organic Halogen (TOX) content of over 1000 parts per million (ppm) would trigger further gas chromatographic analysis by Method 8021 to check for volatile halogenated organics. As discussed in the Federal Register, 50 FR 49164, "Hazardous Waste Management Systems; Burning of Waste Fuel and Used Oil Fuel in Boilers and Industrial Furnaces," used oil containing more than 1000 ppm total halogens is presumed to have been mixed with hazardous waste unless it can be shown that no individual halogenated solvents are present at greater than 100 ppm. If halogenated solvents are present in concentrations greater than 100 ppm, a discrepancy will exist.

If waste accepted into the used oil fuel program is found to have over 1000 ppm TOX and one or more halogenated compounds at over 100 ppm, the waste will no longer qualify for the used oil fuel program. A PFD customer service representative will contact the generator and apprise him/her of the situation and discuss rejection of the waste or shipment of the material to an appropriate TSDF. If PFD has adequate storage space and the waste is compatible with PFD from a classification as well as reactivity basis, PFD may store the material prior to shipment to an alternate TSDF capable of handling the material.

d) Rationale and Tolerance Limits for Verification Analysis

Numerical tolerance limits have been established with each particular fingerprint analysis whenever possible; numerical tolerances have been established for calorimetry and density. However, waste streams are by nature subject to rather large degrees of variability. PFD must be assured that the variability from the preliminary characterization analysis and the verification analysis can be accounted for. Therefore, the results of both observation and fingerprint analyses will be considered as a whole to determine if the waste stream matches the pre-screening evaluation.

As PFD has accepted hazardous wastes for over ten years, the wastes that are typical for each industry are well established and familiar to the PFD staff. Rationale for selection of individual limits is described in the following subsections. If the values of the parameters monitored by

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fingerprint analysis fall within these limits for each analysis, it is determined that the waste sample being analyzed exhibits an acceptable degree of variation. Additionally, sampling procedures as well as analytical procedures will have a degree of variability.

The amount of variability from each of these sources associated with a particular waste will be different for each waste stream. If, after the corrections for sampling and analysis have been applied, the results for the sample do not fall within the process tolerance limits, the Laboratory Technician will activate the discrepancy process.

Even if the corrected analytical results fall within the process tolerance limits, the Laboratory Technicians, through experience and training gained from conducting hundreds of analyses on waste streams, may yet have reason to suspect that a waste shipment is not the same material as the sample examined in the preliminary characterization analysis. If this situation should arise, the technicians will activate the discrepancy process.

If a waste should fall outside of the established tolerance limits, the Verification of Discrepancies and Corrective Action Plan, as described below in Section C, subsection B.4.j, will be implemented.

e) Total Organic Halogen Analysis (TOX)

EPA Method 9076 (Total Organic Halogen Analysis) will be used to determine if halogenated material has been added to a waste oil stream. If the TOX measurements are greater than 1000 ppm (0.1 percent), gas chromatography SW-846 Method 8021 may be conducted to determine the concentration of specific halogenated organic solvents present in the waste stream.

f) Gas Chromatography

SW-846 Method 8021 is used to determine the concentration of halogenated organic solvents in used oil samples with a total halogen concentration of over 1000 ppm. If the concentration of any individual halogenated organic solvent exceeds 100 ppm, a discrepancy will be considered to exist and corrective action will be taken.

Method 8080 is used for evaluation of PCB levels in waste oils and hazardous waste in accordance with the requirements of OAC 3745-58-50 through 3745-58-54 and 40 CFR 279. PFD performs Method 8080 on all non-aqueous hazardous waste and waste oil during the pre-screening process, if the TOX measurement is greater than 1,000

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ppm. Method 8080 is an optional fingerprint analysis performed on wastes that exceed expected TOX measurements, based on the pre-screening analysis and/or originate from generators where PCB contamination may occur. When the measurement obtained by Method 8080 exceeds 50 ppm, the waste will be deemed unacceptable for management at PFD.

g) Corrosivity

PFD does not manage corrosive wastes in container management units on-site; therefore, aqueous waste with a pH greater than or equal to 12.5 or less than or equal to 2.0 will be considered a discrepancy and rejected by PFD. Under OAC 3745-51-04(A)(1) and (2) and 40 CFR 261.4(a)(1)(ii), PFD can accept wastes which meet the above pH criteria, provided that material can be treated in PFD's wastewater treatment system. The system is a permitted pretreatment discharge to the Montgomery County wastewater treatment facility, a POTW. When accepting wastes which would be considered corrosive under the provisions of OAC 3745-51-22 and 40 CFR 261.22, PFD must ensure (prior to approval and acceptance of the material) that the material is compatible with and can be properly treated by the PFD wastewater treatment system. PFD will, when receiving corrosive materials under the Clean Water Act, ensure corrosive materials are introduced to the wastewater treatment system within 24 hours of fingerprint approval from the laboratory.

h) Density

Density is a simple, fast test performed on liquid waste streams that can help to determine if the waste stream shipped to the facility is the same material the generator described on the WRQF. Density measurements help to determine if the waste stream is predominantly organic, water, or halogenated organic material. The categories of organic, water, and halogenated organic are indicated by densities less than 1.0, 1.0, and greater than 1.0, respectively. Within categories, a tolerance of +/- 1 pound/gallon is acceptable; a wider tolerance may be acceptable if an explanation can be provided by the generator and other parameters are consistent. For example, consider a waste that through a pre-screening evaluation was determined to have a density of 7.5 pounds/gallon and thus organic. If this waste stream was shipped to PFD and had a density of 8.5 pounds/gallon, the technician would know the waste is either the wrong waste stream, or the waste has been mixed with another waste (or material) of much higher density.

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i) Flash Point Determination

EPA Method 1010 (Closed Cup Flash Point) is performed on all hazardous waste not designated as ignitable, then evaluated by PFD in the pre-screening process. Wastes designated by the generator as D001 will be managed as ignitable waste. Where applicable, wastes with flash points below 140 degrees Fahrenheit will be managed as ignitable hazardous waste (EPA waste code D001).

A flash point determination will also be conducted as a fingerprint evaluation on all non-aqueous liquid wastes received by PFD that are not characterized as D001 to confirm that the waste does not exhibit the characteristic of ignitability.

j) Verification of Discrepancies and Corrective Action

If discrepancies are noted in the results of a fingerprint analysis, the Discrepancy Notification and Corrective Action Plan (Attachment C-5) will be implemented.

Representative samples are collected from every waste stream received (see Section C, subsection B.6.b, Container (Drum) Sampling Methods). Individual or composite samples are then analyzed for "fingerprint parameters." If the analytical results for a composite sample are outside the fingerprint tolerance limits, a fingerprint analysis of each individual sample used to make the composite may be performed. This will identify which containers are Out of Specification (OOS). Samples from all OOS containers may be subject to the full battery of preliminary characterization analyses shown in Attachment C-2, Analytical Parameters – Methods and Rationale. The results will be compared with acceptance criteria, storage criteria, and process tolerance limits as specified in the operation permit. Materials that cannot be accepted for storage will be shipped back to the generator or to an alternate TSDF approved by the generator.

Materials acceptable for storage at PFD will be stored in a permitted portion of the facility. Materials acceptable for storage but which exceed fingerprint analysis tolerance limits may be stored on-site, pending re-characterization of the waste stream. PFD will implement the "Compatibility/Reactivity (PFD Protocol) Procedure" on containerized hazardous wastes prior to consolidation/bulking operations.

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The generator will be notified of all discrepancies and will always have the option of directing the material to be returned to him/her, or to the TSDf of his/her choice, in lieu of PFD processing.

Specific examples of verification discrepancies and corresponding corrective actions are described below.

Verification discrepancies may be of several types. If a discrepancy, as described above, is found in any waste stream, the following procedure will be implemented:

1. If the hazardous waste is found to be reactive (D003), or Corrosive (D002) and not able to be handled under the Clean Water Act Rules, the generator will be contacted and given an explanation of the problem. The generator will then be informed that the waste cannot be accepted, as PFD is not permitted to handle these waste codes. PFD will make an effort to work with the generator and arrange for these wastes to be shipped to a TSDf permitted to handle this type of waste. If PFD cannot make this arrangement, the waste will be rejected and returned to the generator.
2. If a discrepancy (as specified in 40 CFR 264.72) is observed, a PFD representative will contact the generator and explain the discrepancy. If the PFD representative and the generator decide that the discrepancy in the waste stream is simply due to waste variation, a full re-characterization of the waste, as discussed in Section C, subsection 3, Approval Process (Pre-Screening), will be conducted. If, after re-characterizing the waste, the material is deemed acceptable at PFD, the generator will be informed that PFD will accept the waste.

Should the generator not wish PFD to process the waste, or if the waste is not acceptable to PFD, PFD will make an effort to ship these wastes to a TSDf that is permitted to handle the waste. If PFD cannot make this arrangement, the waste will be rejected back to the generator.

PFD customer service representatives document resolutions of discrepancies, and any waste rejected to a generator or shipped to another TSDf will be documented in the PFD operations record.

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5. Waste Tracking and Record Keeping Procedures

When a generator desires to schedule a waste stream into the PFD facility, the generator, or the generator's representative, contacts PFD customer service. The generator provides the customer service representative with the approved profile number, which is the unique number previously assigned to the waste stream at the time of acceptance. The customer service representative will verify, via the PFD database, the profile number provided by the generator has been approved for shipment to PFD. Information from the generator, such as amount of waste, need for over-pack containers, etc., is also entered into the comments section of the database for each specific generator and/or profile. When all of the necessary information is collected, the customer service representative will, after confirmation with the dispatcher, issue a shipment date to the generator and enter the shipment information into the database to ensure the shipment is documented and scheduled.

Each operation day, PFD departmental managers attend a meeting to discuss the schedule for the next few operating days in detail. Such detail includes the type of wastes to be shipped, the amounts of the waste, the destination of the waste in the PFD facility, and the operations' experience with the waste collected from past shipments (such information is contained within the computer database). This meeting is designed to prevent any waste mishandling.

a) Laboratory Recordkeeping

Laboratory information is generated daily and is entered into the database. The database is electronically backed up each day to prevent loss of data. All original paperwork received (including manifests) is kept in file cabinets by generator name and/or broker name.

b) Re-Characterization of Waste Streams

As the potential exists for waste stream composition to change, PFD uses several procedures to ensure that a stream is compatible with both the facility and the permit:

1. Fingerprint analysis is performed on each waste stream shipment received at the facility, with discrepancies handled as previously described.
2. If a generator notifies PFD that there has been a change in the waste stream, the waste is re-characterized.

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3. Each active waste stream is fully evaluated annually, or whenever there is a change in the waste stream that would result in a change to the characterization, whichever is sooner. The computer database records each shipment date of a particular waste stream. Generators are contacted and informed of the need to have their waste streams evaluated, and are asked if they have knowledge of any change in the stream. A waste evaluation is required to re-activate any waste stream that has not been shipped to the facility during the previous twelve-month period.

6. Sampling Plan

The Sampling Plan utilized at PFD is described in this section. The basic components of this plan include: sampling locations, sampling methods, sampling parameters, sample handling, and sample identification and recording procedures. To facilitate the collection of representative samples of wastes, the sampling methods used by PFD are in accordance with OAC 3745-51-20 to 3745-51-24 and 40 CFR 261, Appendix I, or equivalent sampling methods. Sampling devices may include the following: weighted bottles, dippers, coliwasa, triers, or similar devices. The device selected is based on the characteristics of the waste to be sampled, and its container.

a) Sampling Locations

Waste arriving in containers is unloaded into the sampling area located in Building E (which is the hazardous waste container storage building). A concrete containment barrier surrounds the entire floor area of the building. Containers are sampled within 48 hours of arrival on-site.

b) Container (Drum) Sampling Methods

As recommended in SW-846, all sample containers used for sampling are made of linear polyethylene, with polyethylene screw-on caps. A Chain of Custody form (or equivalent) is completed for each waste stream. A sample Chain of Custody form is presented as Attachment C-6. Although PFD does not conduct fuel-blending operations on-site, PFD uses a Chain of Custody form, which includes information required for fuels blending or other types of waste treatment. Use of a comprehensive form allows PFD or other Perma-Fix subsidiaries to have needed information when wastes are managed at PFD prior to additional management at affiliated or other commercial facilities.

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If analytical results of a composite sample do not meet pre-screening parameters, individual containers may be sampled for analysis to identify potentially problematic containers of the waste stream. Subsequent shipments of the same waste stream will be sampled in accordance with the facility waste sampling protocol.

Standard facility waste sampling protocol for repeat waste streams (for waste acceptance) requires that a minimum of ten percent of the containers in a shipment will be sampled, and if applicable, composited for analysis. Standard facility waste acceptance protocol is waived for trans-shipped wastes, discarded commercial products, and site-generated wastes. Acceptance protocols for these wastes are discussed below.

- **Trans-Shipped Waste** – Waste acceptance for trans-shipped wastes will consist of verification of manifest information, container count, and container labels. In some cases, PFD may sample trans-shipped wastes prior to shipment to an affiliated facility, or if PFD has concerns regarding the identity of the waste. Trans-shipped wastes are wastes manifested to an alternate TSDF. When PFD is the designated facility, the wastes will be placed in permitted storage units.
- **Discarded Commercial Products** – Generator “Knowledge of Process” including applicable MSDS sheets provide adequate characterization of waste commercial products.
- **Site-Generated Wastes** – Site-generated wastes include used personal protective equipment and incidental wastes. Waste acceptance for site-generated wastes is not required. “Knowledge of Process” or WRQF information corresponding to accepted waste streams will adequately characterize these wastes for proper management. Analysis of the waste may be conducted at the discretion of PFD.

In determining whether or not the verification analysis of a particular waste stream is consistent enough to implement the container sampling protocol for repeat waste streams, the Laboratory Manager will consider two different parameters:

1. Consistency of the waste shipments, through the verification analysis, that have been received under the same WRQF number.
2. The industry to which the generator belongs and the other waste streams that are commonly produced by this industry.

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These parameters were chosen due to the fact that they indicate the likelihood of encountering a problem with a drum that was not sampled for the fingerprint analysis. For example, if there was inconsistency within the fingerprint analysis for a waste stream, PFD could not discontinue total container sampling as the possibility of a container of material containing waste, which could constitute a discrepancy, would be high. Similarly, should a generator fall within an industrial classification that generates a wide variety of waste streams, the possibility exists that a container of waste that is not appropriate for the PFD facility could be introduced into a container shipment.

c) Containers of Aqueous and Non-Aqueous Wastes

Either a coliwasa-type sampler or a sampling trier (or equivalent device) is used to obtain samples of liquid wastes and/or solid waste from drums and similar containers. Since ignitable solvents are received at the facility, only non-sparking samplers are used. Coliwasa and triers are constructed of brass, glass, or other suitable material and are of sufficient length to acquire a sample that is representative of the entire vertical volume of the drum or other container. The sampling procedure is as follows for drums or other containers of liquids or semi-liquid material:

1. Begin to fill out applicable Chain of Custody form (or equivalent document).
2. Don appropriate personal protective equipment.
3. Initial and place, on the sample vessel, the appropriate markings on the label for the waste.
4. Record the manifest line item number on the specific drum or container to be sampled.
5. Inspect the coliwasa to ensure that no blockage is present that could potentially prevent the waste from entering the sample tube.
6. Clean the coliwasa with technical-grade solvent followed by a water rinse (if applicable).
7. Slowly lower the sampler into the waste at a rate that permits the level of liquid inside and outside the sampler to remain the same.
8. After the sampler has been lowered all the way to the bottom of the drum or container, push down on the internal rod on the coliwasa to close the check valve.
9. If solid material is present that is hard enough to prevent the coliwasa from reaching the bottom without excessive downward force, obtain a sample to the deepest depth

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possible, followed by sampling with a trier for the solid portion.

10. Transfer the complete contents of the sampler into the sample container specific for that drum or container.
11. Repeat procedure for the next drum or container.
12. Complete applicable portions of the Chain of Custody form (or equivalent).
13. Deliver sample(s) to the laboratory.

7. Quality Assurance/Quality Control Program

a) Program Goal

The goal of the Quality Assurance/Quality Control (QA/QC) program is to provide analytical results that are both accurate and precise so that hazardous wastes accepted at PFD are within the scope of the Permit. Essential to this goal are the facts that:

1. All waste streams meet the predetermined characteristics.
2. No non-permitted wastes are accepted by PFD.

b) Sampling Program

Only designated, trained personnel are permitted to sample waste shipments. The Facility Manager (or his designee) evaluates employees' sampling skills quarterly. The results of this evaluation are documented, along with corrective actions. To ensure proper and safe handling of samples, PFD employs the following policy with regard to qualifications of personnel for sampling of containers:

The quarterly review that each qualified sampler receives focuses on the following:

1. Classroom instruction detailing the various SW-846 and ASTM sampling procedures, sampling equipment, and proper use of the equipment.
2. Field observation of several of the different sampling techniques on a variety of waste types including solids, single and multi-layered liquids, and sludge, as well as mixtures of solids and liquid.

Any sampler who fails to utilize, in the Facility Manager's (or his designee's) opinion, proper technique will be prevented from sampling any waste stream until, through individual instruction, he/she can demonstrate competency and proficiency.

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Sampling equipment is inspected for decontamination and operability before each type of waste is sampled. If contamination is present, the sampling device must be decontaminated prior to use, or a new sampling device obtained.

As PFD receives many different waste streams from a variety of generators, all samples are labeled with the manifest line item number (Section C, subsection B.6., Sampling Plan) to prevent confusion in sample identification. All drums/containers received at the facility are assigned a unique serial number for tracking purposes. Composite sample containers are labeled with the drum serial numbers, which were used to make up the composite sample for each manifest line item.

As with sampling personnel, laboratory personnel have been trained to perform the procedures outlined in Attachment C-2, Analytical Parameters – Methods and Rationale. The employees' analytical skills are randomly checked with blanks or standards that are included in each procedure. Additionally, the PFD Laboratory Manager provides initial instruction in all analytical techniques.

QA/QC program reports are generated annually by the PFD Facility Manager (or his/her designee). The quarterly lab personnel evaluation will include appraisal of analysts' adherence to laboratory method procedures. If during any evaluation a deficiency in adherence to laboratory procedures is found, the Facility Manager (or designee) will be responsible for taking corrective measures as deemed appropriate.

The QA/QC plan will be maintained in PFD's operating record.

Lab personnel document the receipt of each sample in the computer database. Waste samples are stored as to their expected contents until analysis. Samples submitted for acceptability analysis are analyzed as soon as possible, typically within 48 hours after arrival, to aid in shipment scheduling.

All samples are analyzed with equipment that utilizes the required detection limit in accordance with SW-846 or equivalent methods. The QA/QC procedures for analysis follow those outlined in each test method of SW-846, "Test Methods for Evaluating Solid Waste," or other EPA or ASTM approved methods.

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The Laboratory Manager, Facility Manager, or Vice President of PFD, or their designee, ensures that QA/QC occurs for lab activities. The time frame in which the following activities occur is as follows:

1. The check for completeness of records is performed annually.
2. Evaluation of the data with respect to detection and quantitation limits is performed annually.
3. Evaluation with respect to control limits is performed annually.
4. Review of holding times for samples is performed weekly.
5. Correlation of lab data with related tests is performed annually.

Leftover samples are disposed of according to the proper disposal procedure for the waste material.

Fingerprint samples sent to the laboratory from the sampling personnel are accompanied by the Perma-Fix of Dayton Haz Job Sheet or similar form. The form serves as a sample chain of custody and laboratory work sheet. Sample analyses from the various instruments are written onto the form. The sample is logged into the computer database and assigned a unique sample number. The analytical information off the form is then keyed into the computer database and stored electronically. The form is then attached to the TSDF copy of the inbound manifest and filed. Copies of the inbound manifest and corresponding fingerprint analysis are kept for a minimum of three years from the date of delivery. See Attachment C-7, Haz Job Sheet.

All analytical instruments are maintained on a strict preventive maintenance schedule. This schedule was developed using both the manufacturer's instructions, as well as past experience of PFD personnel.

c) Paperwork Program

As detailed in Section C, subsection 5, Waste Tracking and Record-Keeping Procedures, the paperwork associated with each shipment is thoroughly inspected for completeness and accuracy. The PFD customer service representative has several types of information on hand at all times to properly conduct this quality control procedure. Information sources include, but are not limited to, the following:

1. Part A Permit Application.
2. Part B permit.

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3. Hazardous waste manifests.
4. LDR forms.
5. DOT reference guides.
6. Various RCRA guides.
7. Access to Ohio Administrative Code and Code of Federal Regulations.
8. Access to the PFD database containing detailed information for each specific generator, WRQF profile, transporters and manifests, as well as current inventory, inventory locations, and information regarding inventory movements and final material disposition.

d) Quality Audits

Essential to the QA/QC plan of the WAP, are PFD quality audits. Audits of the PFD WAP are of three types:

1. **System Audits:** System audits are used to determine the qualitative operational details of the Waste Analysis Plan. They consist of an ongoing supervisory surveillance of the quality assurance practices of the PFD employees. Supervisors are responsible for the routine audits of procedural details such as utilization of proper sampling techniques, properly completed chain of custody forms, and periodic checks of laboratory notebooks. The Facility Manager or his designee reviews these items on a quarterly basis.
2. **Performance Audits:** Performance audits are used to quantitatively evaluate the output of the measurement system. Performance audits consist of reviewing the ongoing quality assessment program of a laboratory and are conducted by the Approvals Committee. The objective of a performance audit is to evaluate the accuracy of all data produced from waste analysis. Control charts are reviewed to assure that they are up-to-date and the control samples are being measured at specified intervals. The status of calibration samples is double-checked. Performance audits are conducted annually, at a minimum.
3. **Method Audits:** Method audits are used to determine if the laboratory is following the analytical methods as written. In a method audit, the Laboratory Manager obtains a copy of the analytical method and observes the analyst performing the analysis. Any discrepancies between the actual performance and the written method are noted. PFD analysts are to be audited annually.

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e) Corrective Action

The purpose of any audit is to verify both compliance and performance, and to identify discrepancies when they exist. In the latter case, any problems are addressed and remedied in the appropriate manner. Problems can ordinarily be classified as undesirable but not as critical, requiring immediate actions. Remedies could include closer adherence to some portion of the QA/QC program, amendment of the program or method if allowable, or incorporation of features not already addressed.

The organizational structure of PFD staff, as it pertains to the QA/QC program, is provided as Attachment C-8, PFD Organizational Chart.

8. Waste Characterization for the Land Disposal Restrictions

As stated in OAC 3745-59 and 40 CFR 268.7, generators of hazardous waste must, through either testing or knowledge, determine if the waste is restricted from land disposal. PFD receives listed wastes subject to the Land Disposal Restrictions for the purpose of storage on-site; therefore, for each outgoing shipment of hazardous waste, PFD notifies the receiving facility in writing, in accordance with Subpart D of 40 CFR 268, that the waste is subject to LDR. This information includes the following:

1. PFD EPA identification number.
2. Identity of the restricted constituents in the waste.
3. WRQF approved profile number assigned to the specific material.
4. Waste analysis data generated from and annual TCLP analysis of the wastes stream.

PFD maintains all hazardous waste manifests and analytical characterizations from incoming waste shipments for a minimum of 5 years in the PFD files and archives.

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