STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

RICK SNYDER
GOVERNOR

C. HEIDI GRETHER
DIRECTOR

October 30, 2018

VIA EMAIL and U.S. MAIL

Ms. Sylwia Scott
Environmental Manager
Michigan Disposal Waste Treatment Plant
49350 North I-94 Service Drive
Belleville, Michigan 48111

Dear Ms. Scott:

SUBJECT: Completeness/Technical Notice of Deficiency for Waste Analysis Plan, Hazardous Waste Management Facility Operating License Application; Michigan Disposal Waste Treatment Plant, Belleville, Michigan; MID 000 724 831

The Michigan Department of Environmental Quality (MDEQ), Waste Management and Radiological Protection Division (WMRPD), in collaboration with the United States Environmental Protection Agency, Region 5 (EPA), reviewed the proposed Waste Analysis Plan (WAP) submitted on October 30, 2017, in response to the MDEQ August 28, 2017, *Completeness Review Notice of Deficiency* (Response). The proposed WAP was included in the hazardous waste management facility operating license application submitted by Michigan Disposal Waste Treatment Plant (MDWTP) pursuant to Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and its administrative rules.

Based on the review, the MDEQ and the EPA determined the WAP is deficient. The list of deficiencies, additional information justifying the deficiencies, and example tables for identifying required elements of the WAP are enclosed.

Revisions correcting the deficiencies must be submitted in electronic format and hardcopy within **120 days** of January 18, 2019, which is the due date for submitting revisions to the *Second Completeness Review Notice of Deficiency*:

Mr. Allan B. Taylor, Manager
Hazardous Waste Section
MDEQ – WMRPD
P.O. Box 30241
Lansing, Michigan 48909-7741

MDWTP is on notice that, in addition to any other Part 111 rule, the MDEQ Director shall deny the operating license application for an existing facility if the applicant has not submitted sufficiently detailed or accurate information to enable the Director to make reasonable judgments as to whether the license should be granted [R 299.9518(2)(c)].

When submitting the hardcopy version, please use the replacement page format with the revision date in the footer of each page. Pages should be three-hole punched and numbered to be placed into existing binders. Submit four copies of the revisions to the MDEQ Lansing office and one hardcopy to each of the following:

1. Mr. Todd Ramaly, EPA, Region 5, Land and Chemicals Division, RCRA/TSCA Programs Section, Mail Code LR-17J, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507.

2. Mr. James Blough, EPA, Land and Chemicals Division, Resource Conservation and Recovery Act Branch, Mail Code LR-17J, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507.

3. Mr. Michael Busse, Environmental Quality Analyst, MDEQ, WMRPD, Southeast Michigan District Office, 27700 Donald Court, Warren, Michigan 48092-2793.

4. Mr. Leo Parks, MDEQ On-site Coordinator for Wayne Disposal, Inc. and Michigan Disposal Waste Treatment Plant (hand deliver).

5. Mr. Matthew Best, Van Buren Charter Township, Clerk Office, 46425 Tyler Road, Van Buren Township, Michigan 48111.

When submitting the electronic version, please make each file less than 10 MB. The MDEQ email system cannot receive larger files.

The MDEQ and the EPA want to discuss the WAP deficiencies with MDWTP. Please contact Ms. Kimberly M. Tyson, Environmental Engineer Specialist, Hazardous Waste Section, WMRPD, at 517-284-6574; tysonk@michigan.gov; or MDEQ, WMRPD, P.O. Box 30241, Lansing, Michigan 48909-7741 within **15 days** of receipt of this letter to schedule a meeting or conference call.

Sincerely,

Allan B. Taylor

Allan B. Taylor, Manager
Hazardous Waste Section
Waste Management and Radiological
Protection Division
517-614-7335

Enclosures
cc/enc: Mr. Matthew Best, Van Buren Charter Township
Mr. Jim Blough, EPA
Mr. Todd Ramaly, EPA
Ms. Lisa Graczyk, EPA
Mr. Chris Lambesis, EPA
Ms. Tracy Kecskemeti, MDEQ
Ms. Virginia Himich, MDEQ
Mr. Jim Ferritto, MDEQ
Mr. Joe Rogers, MDEQ
Ms. Kimberly M. Tyson, MDEQ
Mr. Mike Busse, MDEQ
Mr. Clay Spencer, MDEQ
Mr. Leo Parks, MDEQ
Operating License File

ENCLOSURE 1

Notice of Deficiency

ENCLOSURE 1
Michigan Department of Environmental Quality
Waste Management and Radiological Protection Division
and
United States Environmental Protection Agency, Region 5

NOTICE OF DEFICIENCY

Michigan Disposal Waste Treatment Plant
Chemical and Physical Waste Analysis Plan
Belleville, Michigan
MID 000 724 831

United States Environmental Protection Agency, Region 5 Comments

The United States Environmental Protection Agency (EPA) conducted a review of the Resource Conservation and Recovery Act of 1976, as amended (RCRA), Waste Analysis Plan (WAP) for the US Ecology Michigan Disposal Waste Treatment Plant (MDWTP) facility in Belleville, Michigan, as part of a collaboration with the Michigan Department of Environmental Quality (MDEQ). The objective is to enhance compliance through more enforceable and scientifically sound waste analysis. At a minimum, the review is based on the required elements of a RCRA WAP paraphrased here, in part, from Title 40 of the Code of Federal Regulations (CFR) 264.13:

- *Specify parameters for which each waste will be analyzed and the rationale for selection of parameters.*
- *Specify test methods for these parameters.*
- *Specify sampling methods.*
- *Specify frequency with which initial analysis will be repeated or reviewed.*
- *For off-site facilities, specify the waste analyses that generators have agreed to supply.*
- *Where applicable, the methods used to meet the additional waste analysis for specific waste management methods:*
    - *264.17 (requirements for ignitable, reactive, incompatible)*
    - *264.314 (requirements for bulk and containerized liquids)*
    - *264.341 (for incinerators)*
    - *264.1034(d) (total organic concentrations for process vents)*
    - *264.1063(d) (organic concentration 10 percent for Subpart BB)*
    - *264.1083 (500 parts per million [ppm] volatile organic Subpart CC)*
- *For exemption from Subpart CC: data or provided general knowledge*

For off-site facilities:

- *Specify procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the manifest or shipping paper.*
- *The procedures used to identify each movement of waste managed at facility.*
- *The sampling method to be used.*
- *For waste destined for landfilling, the procedure used to determine if the generator added biodegradable sorbent.*

The comments herein generally follow the order they are encountered in the reviewed document.

1. **Cover Page.** Include a date and a document revision number.

2. **Section A2, Introduction.** Please reference the document title, date and revision number of the most current Quality Assurance/Quality Control (QA/QC) Plan.

3. **Section A2, Introduction.** Please ensure a copy of the current approved WAP is available on-site.

4. **Section A2.A.1(a), Acceptable Waste Type Description.** The second and third paragraphs are confusing. They appear to attempt to draw a distinction between how characteristic wastes are handled, as opposed to listed wastes. Assuming that the second paragraph refers exclusively to characteristic wastes, it is more appropriate to affirm that these wastes must be both decharacterized and meet all applicable LDR treatment standards for regulated constituents and underlying hazardous constituents (UHC) before disposal is allowed in a Subtitle D facility.

   The second sentence of the third paragraph appears to be missing a word (" . . . *may* be approved . . ."). Assuming that the third paragraph refers exclusively to listed wastes, it is too simplistic to refer to wastes that are "delisted through treatment"; as the only way this could be accomplished is through a petition process for each waste stream obtained via rulemaking in a process entirely separate from the license and license issuance. This reference should be removed as it incorrectly implies the waste could be delisted through licensing action. It is also incorrect to state that listed wastes could be sent to a Subtitle D landfill.

5. **Section A2.A.1(b), Restricted Waste Type Description.** Please clarify that although MDWTP and Wayne Disposal, Inc. (WDI) do not accept low level radioactive mixed waste, they do accept some radiological wastes in accordance with the WAP, Appendix B, Radiological Waste Acceptance Criteria.

6. **Section A2.A.1(b), Restricted Waste Type Description.** Clarify the following statement to read: In addition, the following waste types are **NOT ACCEPTABLE** for disposal at WDI, but may be accepted at MDWTP.

7. **Section A2.A.1(b), Restricted Waste Type Description.** Please give a clear description and rationale for treating and storing ignitable wastes in comparison to the definitions of ignitable wastes in 40 CFR 261.21. Please give a clear description and rationale for treating dioxin-containing wastes for constituents other than dioxin.

8. **Section A2.A.1(c), On-Site Generated Waste (Pre-Approval).** In this section, please provide some examples of the types of waste generated at MDWTP.

9. **Section A2.A.2, Pre-Approval Waste Characterization Requirements.** Please provide a clear description of the process to evaluate the waste and verify information if the generator does not provide sufficient information and the WAP does not require a representative sample for analysis. The last paragraph of page 7 is confusing and should state that the treatment, storage, and/or disposal (TSD) facility must determine if the generator supplied information is sufficient. This paragraph claims that the generator-provided profile definitively provides the TSD facility with sufficient information to meet the requirements of 40 CFR 264.13 (and R 299.9605 by reference). This is actually an expectation, not a definitive guarantee. In lieu of developing their own data (such as from sampling and

analysis), the TSD facility is ultimately responsible for accepting this information and is also responsible for accepting generator knowledge that proves to be incorrect. Please add a statement acknowledging the TSD facility's responsibility for accepting the generator knowledge in lieu of developing their own detailed chemical and physical analysis.

Also, please be consistent with facility acronyms such as Michigan Disposal, Inc. (MDI) versus MDWTP.

10. **Section A2.A.3, Sampling and Selection of Waste Analysis Parameters.** Here and throughout the WAP, the WAP must state specifically which sampling and analytical methods will be used to sample and analyze specific wastes for specific constituents. The stated methods should follow a guidance method, such as the EPA's SW-846 Compendium, but must be identified by the specific standard operating procedures (SOP) used by the facility and analytical laboratory.

11. **Section A2.A.3(a), On-Site Generated Waste.** Why are on-site wastes to be evaluated for characteristics only? Will some wastes, that are not treatment residues, be derived from listed wastes as well? It is not evident from either this section or Table A2.A.2 what the frequency, and rationale for frequency, of characterization is for each parameter. Regulatory requirements for the WAP require that a frequency for re-evaluation be specified. Reference to section A2.A.6 may have been the intent for this column in the table, as it appears to provide a frequency for re-evaluating waste characterization determinations.

12. **Section A2.A.3(b), Off-Site Generated Waste.** 40 CFR 262.11 refers to generators determining if their waste is hazardous for the management of the waste. The TSD facility has a further responsibility to characterize the waste for treatment or disposal. 40 CFR 264.13 states that the TSD facility must obtain detailed chemical and physical analysis, such that the analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with this part and Part 268 of this chapter. The WAP should state that the TSD facility is ultimately responsible for the collection of accurate information meeting this requirement.

13. **Section A2.A.4, Pre-Approval Land Disposal Restriction (LDR) Evaluation.** The language in the second paragraph implies that generator process knowledge may be used to determine that characteristic wastes and UHCs already meet LDR treatment standards. While a generator may make the determination in this manner, a TSD facility making the determination for the generator must use testing and analysis. A disposal facility, such as WDI, is also required to test the waste to corroborate the determination.

14. **A2.A.4(a), Dilution and Aggregation of Wastes**. Please describe the processes for ensuring that diluted characteristic wastes consistently meet the concentration-based treatment standards.

15. **A2.A.5, Pre-Approval Generator Waste Characterization Discrepancies.** Describe how the WAP ensures that the generator's characterization is representative and accurate.

16. **A2.A.6, Subsequent Waste Shipment Procedures.** Describe the notification documentation that the generator supplies that assures there has not been a change in a waste's characteristics or treatment requirements. The last statement: "The initial evaluation of waste from each generator will be reviewed or repeated at least once in a calendar year to ensure that the information provided is accurate and up-to-date" should address how the

TSD facility will characterize the waste and that they should perform more than just a paperwork review. Also "once in a calendar year" could at times be stretched to almost a two-year window. It would be more precise to require the re-evaluation annually so that it must occur within a year of its last completion.

17. **A2.B.1(b), Sampling Methods and Frequency.** Compositing the ten percent of containers sampled partially defeats the purpose of checking individual containers for excessive variability from the profile. The process depends entirely upon the ability for a visual determination of dissimilarity. Important changes in waste character or composition may not be visually evident. At a minimum, screening tests that are quick and efficient should be used first on individual samples, from individual containers, to assess conformity. Compositing in the fashion proposed could mask an errant container by diluting it into the others (in the laboratory compositing procedure). Also, analysis should be required on the visually dissimilar samples.

18. **Table A2.B.1, Representative Sampling Procedures.** Table A2.B.1 does not describe how a representative sample will be collected from waste shipments. This section should describe the procedure for collecting a representative sample. The sampling methods for both containers and bulk shipments lack sufficient detail. It is not evident in the case of bulk shipments that the sampling approach is justified. A single grab sample will not provide representative data, or any information on variability, if the waste is heterogeneous. *Chapter Nine of the SW-846 Compendium: Sampling Plans* provides examples and rationales for various sampling methods and equipment. US Ecology must specify which ones to use and why. While the sampling equipment is called out, the methods of collection are not well documented. Will full-depth cores be collected from containers? Will full-depth cores be collected from bulk shipments? Where in the bulk container will the sample be collected from? Random locations? Only the surface? What if multiple phases or layers are evident? The WAP should also specify the decontamination procedure if non-dedicated equipment is to be used.

    This table and similar Tables A2.C.2 and A2.D.2 contain parameters designed to assess the potential for wastes or treatment residuals to exhibit the reactivity characteristic. It is not clear exactly how US Ecology evaluates these parameters given the methods referenced. Are any detections considered indications that the wastes are reactive? Is there a concentration at which the determination will be met? Why is there no methodology for total sulfides? US Ecology must describe their parameter rationale for these tests. Also, the screening methods listed as internal should be provided for review in the application since they are not otherwise available.

19. **Table A2.B.1, Representative Sampling Procedures**. This table lists aqueous waste but does not list non-aqueous liquid waste. If MDWTP also accepts non-aqueous liquid waste, include this in this table and in other tables, as appropriate, in the WAP.

20. **A2.B.1(c), Waste Screening and Visual Inspection of Waste (Pre-Acceptance).** Are the waste screening procedures described in this section performed on all the samples collected as described in A2.B1(b) (i.e. samples from ten percent of non-bulk containers and 100 percent of bulk containers)? In this section, please clarify what these waste screening parameters apply to. Describe the acceptable variations in color, physical state, and consistency.

21. **A2.B.1(d), Sampling Methods and Frequency Exceptions.** Please list and explain the circumstances for which there will be no sampling and no visual inspection for air quality or safety issues. A hazardous waste management facility is expected to be able to conduct sampling and analysis of hazardous wastes; therefore, exemptions must be limited. Reword the first sentence, of the first paragraph, to make it clear that samples may need to be taken in order to conduct the visual inspection.

    Spent activated carbon and ion-exchange resins may be shipped as a bulk solid material in smaller containers or in bulk containers and pose no apparent barrier to sampling. While a visual inspection could corroborate that these materials are carbon or resins, the screening-type pre-acceptance analysis should be conducted. Also, discarded off-specification commercial products could be off-specification due to contamination that may not be reflected on Material Data Safety Sheets meant to describe the product when it is on-specification. These wastes should also be subject to pre-acceptance screening.

    The words "non-hazardous" should be inserted to describe wastes from food or animal processing, animal feces, non-putrescent medical waste, and septic or sewer treatment plant sludge. These wastes should be subject to pre-acceptance screening if any of these waste streams are RCRA hazardous.

    The EPA does not agree that pre-acceptance inspection, sampling, and analysis activities are appropriate to conduct off-site. 40 CFR 264.13(a)(4) and (c) require the TSD facility o "inspect . . . each hazardous waste movement received at the facility." This cannot be done off-site because the waste has not been "received."

22. **Table A2.B.2, Pre-Acceptance Analysis Procedures.** Under the “Frequency” column, “as needed” is listed several times. “As needed” is vague and does not describe when these tests would be performed. A description of when the test is performed is required for each instance when “as needed” is used. In some instances, the screening is specified for the first shipment only and later shipments are screened "as needed." In this way, the pre-acceptance screening only serves to confirm the first shipment matches the profile. Would later shipments also need this screening?

    Under the “Rationale for Frequency” column, the rationales described are more suited to the “Parameter Rationale” column. The “Rationale for Frequency” column should specify why the frequency was chosen. For example, “First shipment then as needed” is listed for frequency for some wastes. In these instances, the “Rationale for Frequency” should describe why only the first shipment is being tested for that parameter.

    In accordance with 40 CFR 264.13(b)(1), the WAP must specify the parameters for which each hazardous waste will be analyzed. Each hazardous waste is not listed here. There needs to be a correlation between each waste code listed in Appendix A and the parameters in Table A2.B.2.

    Note: pH screening with pH paper has a method reference (9041A) which should be followed. A number of screening methods are listed as internal procedures. If these are not externally referenced, they should be included with the application for review; called out as an SOP in the license, that should not be altered without license modification review; or included in the WAP outright.

23. **Section A2.B.2, Pre-Acceptance Discrepancy.** Describe how pre-acceptance discrepancies and resolutions are recorded.

24. **Section A2.C.1(a), Waste Container Compatibility.** What storage or processing of wastes occurs at WDI? The permitted activities appear to be limited to landfill disposal.

25. **Section A2.C.2(a), Tank Assignment (MDWTP).** The language here seems to specify that only the generator LDR notification can be used to verify constituents; thus, implies that other sources of this information, such as sampling and analysis by the TSD facility or other parties, is precluded from this determination. Please add that contaminants present that require treatment could also be identified through other means, such as sampling and analysis of the waste as provided for at the end of Section A2.A.2. If available, analytical data identifying additional constituents cannot be ignored, regardless of its source (the generator, the TSD facility, etc.).

26. **Section A2.C.2(b), Waste Compatibility With and Within Tanks.** The referenced table is incorrectly identified. The compatibility test is identified in *Table A2.B.2*, not *Table A2.A.2*. The internal procedure for compatibility should be provided for review.

27. **Section A2.C.3, Waste Bulking and/or Consolidation Compatibility.** The referenced table is incorrect. See comment on Section A2.C.2(b), above. Please describe how you will confirm that waste bulking and/or consolidation does not violate the LDR Dilution Prohibition. For example, you could demonstrate that the individual waste streams comprising the mixture are similar in composition and are amenable to the same type of treatment, or are treated by the same type of treatment on which the treatment standard for that prohibited waste is based. It is not clear what is meant by “same waste type.” Does this mean they carry the same hazardous waste codes? Does this mean they include the same target hazardous constituents, LDR treatment standards, or UHCs?

28. **Section A2.D.1, Treatment for Purpose of Land Disposal.** Are LDR-compliant wastes tested again after being used to absorb free-liquids from a non-hazardous waste? Could this activity affect whether the final material meets treatment standards? For example, what if the free liquids are not pH neutral or contained organics?

29. **Section A2.D.1, Treatment for Purpose of Land Disposal, Paragraph 1.** The second to last sentence reads, "Treatment of applicable waste codes and UHCs reasonably anticipated to be present at the point of generation as identified by the generator during the pre-approval process...". This sentence is not technically incorrect but it is not entirely clear either. LDR treatment standards must be met prior to land disposal. For listed wastes, 40 CFR 268.40 identifies those regulated hazardous constituents that must meet the specified treatment standards before land disposal can occur. For characteristic wastes, the generator or TSD facility [see 40 CFR 268.7(a)(2)] must identify those UHCs reasonably expected to be present, and treat those constituents to the Universal Treatment Standard (UTS) before land disposal can occur. See 40 CFR 268.40(e). UHCs are specific to characteristic wastes, and are constituents listed in the UTS table 40 CFR 268.48 (except for fluoride, selenium, sulfides, vanadium, and zinc), which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the UTS.

30. **Table A2.D.1, Treatment for Purpose of Land Disposal.** It is not clear how precipitation is used for the treatment of metal-bearing waste. Is stabilization necessary for the precipitate if it is destined for land disposal? Is chemical reduction used primarily for reducing hexavalent chromium to trivalent chromium, not all metal-bearing waste? If so, should this be a separate entry to the table? For hazardous debris, the table should specify whether macro, micro, or sealing is performed and should identify what the contaminants in the debris are.

31. **Section A2.D.1, Treatment for Purpose of Land Disposal.** The second paragraph only pertains to "characteristic" wastes. Treatment residuals that become characteristic due to a new property that was not identified as a UHC at the original point of generation would be considered a new point of generation and the treater would need to make a new determination of the UHCs present, either through knowledge or additional testing. This is the same obligation that attaches to any generator of a hazardous waste. See Land Disposal Restrictions - Summary of Requirements, pages 3 to 8.

32. **Section A2.D.1, Treatment for Purpose of Land Disposal.** The use of 40 CFR 268.44-49 is an old reference that should be updated. 40 CFR 268.44 pertains to treatment variances the EPA does not believe are applicable here. 40 CFR 268.45 are the debris standards that are also not applicable here. 40 CFR 268.46 refers back to 40 CFR 268.40, 40 CFR 268.47 does not exist, and 40 CFR 268.48 are the UTS already referred to in the previous sentence. Please describe how the soil standards in 40 CFR 268.49 would apply.

33. **Section A2.D.2, Land Disposal Restriction.** Add "WITH" - "in accordance with". In this sentence, it is not clear what is meant by an “authorized” landfill. Generally, listed waste meeting LDRs must go to a permitted Subtitle C landfill; whereas, characteristic wastes that are decharacterized and meet other applicable treatment standards (such as UHCs) can go to a non-hazardous permitted Subtitle D landfill.

34. **Section A2.D.2, Land Disposal Restriction, Bullet 1**: The MDEQ believes this bullet is trying to specify that the treatment standards for regulated organic hazardous constituents are based on a totals analysis (milligrams per kilogram), not a leach test (milligrams per liter). It is suggested that these bullets be revised to make this distinction clearer. Perhaps use "all organic regulated hazardous constituents" instead of all hazardous constituents. Use "treatment standards" instead of "values."

35. **Section A2.D.2, Land Disposal Restriction, Last Paragraph**. See previous comments on citing 40 CFR 268.44-49. The last sentence of this paragraph was true before the UTS standards were promulgated, however, it no longer applies.

36. **Section A2.D.2(a), Characteristic Wastes, Paragraph 1, Sentence 3.** What does "appropriate demonstrations that the waste has met..." mean? More detail is needed here. Also, the waste should be shown to meet applicable LDR treatment standards "and" (not "or") be appropriately decharacterized.

37. **Section A2.D.2(b), Listed Wastes, Paragraph 2.** This paragraph is referring to 40 CFR 268.40(f); however, the paragraph does not include the exact wording of the regulation. The regulatory language is clearer and should be incorporated into the WAP.

38. **Section A2.D.2(b), Listed Wastes, Paragraph 3**. Is this paragraph stating that the listed dioxin wastes will be accepted at the facility only if the dioxin regulated hazardous constituents meet LDRs, and that additional treatment may occur for other regulated hazardous constituents only if the dioxin regulated constituents are below LDRs? Also, are there circumstances in which the dioxins (that presumably already meet LDR treatment standards before treatment) could be concentrated as a result of treatment such that they no longer meet the standard? RCRA hazardous waste, K099, is described as a wastewater. If it is treated for other constituents and a filter cake residual is generated, dioxins could reasonably be expected to concentrate in the filter cake. In such scenarios, the treater must analyze the treated residual for LDR constituents, including dioxins.

39. **Section A2.D.2(c), Laboratory Packs.** Laboratory Packs accepted for disposal in the WDI landfill must also meet the requirements of 40 CFR 264.316. The WAP or the license should provide for these requirements.

40. **Section A2.D.2(d), Radioactive Mixed Waste.** Should this sentence state that the facility does not generate, treat, store, or dispose of mixed waste? (Note: Wastes that are both hazardous and radioactive are termed "mixed wastes").

41. **Section A2.D.2(e), Contaminated Debris, Paragraph 1.** This section should also state that if a treatment train is used for the treatment of debris, immobilization is the last treatment to be conducted before land disposal [see 40 CFR 268.45(a)(40)].

42. **Section A2.D.2.(e), Contaminated Debris, Paragraph 2**. "MDWTP does not knowingly accept hazardous debris deliberatively mixed with non-debris hazardous waste in order to change the treatment classification." What is the purpose of this sentence? If MDWTP receives a waste that is not comprised primarily of debris by volume, based on visual inspection, they should refuse it or treat it as a generated waste. **Paragraph 2** further states: "MDWTP treats hazardous debris in accordance to (sic) immobilization technologies specified in 40 CFR 268.45, where there are no contaminant restrictions for the immobilization technologies nor are there limitations on the type of debris that may be treated by the immobilization technologies." This statement incorrectly implies that EPA does not prohibit any organic constituent or organic concentration from being immobilized, and that immobilization can be used for any type of debris and any regulated constituent, not just metals and inorganics. The EPA has never stated that immobilization works for organics. In fact, our treatment technology background document lists organics as a waste characteristic affecting performance. Additional language should be added to state that if immobilization techniques are used, then macro, micro, and sealing must be conducted as defined in 40 CFR 268.45; and that the performance standard must be met so that the treated debris minimizes short-term and long-term threats to human health and the environment by reducing the toxicity or mobility of hazardous constituents before they are land disposed. **Paragraph 3.** Where is the microencapsulation process conducted?

43. **Section A2.D.2(f), Waste Mixtures and Wastes with Overlapping Requirements.** Characteristic hazardous wastes must be treated for both the characteristic and any UHC reasonably expected to be present at the point of generation. Paragraph 2 should be added to section A2.D.2(e).

44. **Section A2.D.2(g), Dilution and Aggregation of Wastes.** To avoid impermissible dilution to meet LDR treatment standards, the facility must also show that:
    - The treatment must destroy, remove, or immobilize the constituents.
    - Appropriate technology should be used for the constituents (organics not amenable to stabilization).
    - Aggregated wastes are amenable to the same treatment.
    - Whether the treatment is the same as the basis for the treatment standard (not required but proof of amenable treatment).
    - Must show that organic constituents in waste streams containing both organics and inorganics are treated to below treatment standards before treating the inorganics, in order to confirm the organics were not impermissibly diluted.

45. **Section A2.D.3, Post-Treatment Samples and Analysis (MDWTP), Paragraph 1.** 40 CFR 268.7(b) requires a treatment facility to test their waste in order to show compliance with LDRs. The frequency of this testing is to be identified in the treatment facility's WAP. Knowledge cannot be used to determine if the waste meets applicable standards. It is unclear if this paragraph is referring to the generator or the treatment facility. Furthermore, according to 40 CFR 268.7(c), disposal facilities (such as WDI) must also test each waste to ensure compliance with LDR treatment standards, including those certified by the generator and not treated by MDWTP. The citations referenced are incorrect. 40 CFR 268.41 refers to 40 CFR 268.40. 40 CFR 268.42 are not concentration-based standards, but methods of treatment. 40 CFR 268.43 refers to 40 CFR 268.40. See previous comments on 40 CFR 268.44-49.

46. **Section A2.D.3, Post-Treatment Sampling and Analysis (MDWTP), Second Paragraph.** The second paragraph of Section A2.D.3 states that “Consistent with 40 CFR 268.40(b), compliance with LDR numeric-concentrations based treatment standards for non-wastewaters is determined using one grab sample…”. 40 CFR 268.40(b) states that: “For all non-wastewaters, compliance with concentration level standards is based on grab sampling.” The EPA disagrees that the agency's compliance sampling method dictates "in turn" the facility's sampling method to ensure all treated waste is below the LDR standards. This does not state that only *one* grab sample is to be collected. More than one grab sample of a treated batch may be necessary to confirm that LDR program goals were met in that batch, especially when treating large batches, such as at MDWTP. The number of grab samples should be dependent on the size of the treated batch and the variability of the waste. The LDRs make a distinction between the sampling approach for compliance (such as from an enforcement inspection) and LDR verification in a WAP, which is to be evaluated for approval by the license writer on a case-by-case basis. It is important to understand that the method of one grab sample was developed to give the agency's compliance officer a generally easy approach to collecting a sample to meet a lenient treatment standard. The LDRs go on to mention that other types of sampling could be deployed within a WAP, if justified; but if grab samples were collected, they would be considered definitive for compliance.

    Page 31 of the December 1988 Methodology for Developing BDAT states that: “[as] a practical matter, facilities will have to be designed to meet an average level of performance that is more stringent than the standard in order to ensure continuous compliance with the standard.” It is not clear how a single grab sample of a very large batch could demonstrate that the whole batch is meeting a "more stringent" concentration than the treatment standard. The professed assessment of variability using grab sampling is entirely unjustified in the case of a single grab. A single grab could never provide information on variability.

EPA guidance states that: "The need for sampling and analysis depends on a variety of site-specific factors which the license writer should consider. Such factors include: the variability of the waste; the prior history of the waste generator's performance and reliability; the impact of improperly treated waste on the waste management process; and frequency and extent of testing performed by the generator or treater." This WAP does not definitively collect this information. Without such information (such as waste variability), it is impossible to assign a one-size-fits-all sampling approach to any and all treated wastes.

47. **Section A2.D.3, Post-Treatment Sampling and Analysis (MDWTP)**. How will a "random" sample be determined? What process or method will be used? There needs to be more explanation provided on how the sample is taken and how many samples. There also needs to be substantially more discussion/explanation on how treatment occurs. Os the waste mixed so it is homogeneous before addition of reagents, or afterwards? How long is the waste mixed? What equipment is used? How big are the batches? Is water, how much added during the mixing? The number of samples taken has a direct relationship to the volume of waste treated and the characteristic of the treatment process used. Is every batch of waste sampled? Where is the waste held until the sampling results come back? How long are the wastes typically held? What precautions are in place when re-treating to ensure that dilution is not occurring if additional reagents are added? Is it typically the same type of reagents or something else? A phosphate-based chemical? Is there a waste to reagent ratio that you typically do not exceed?

48. **Table A2.D.2, Land Disposal Restriction Verification.** In accordance with 40 CFR 264.13(b)(1), the WAP must specify the parameters for which each hazardous waste will be analyzed. Each hazardous waste is not listed here. There needs to be a correlation between *each* waste code listed in Appendix A and the parameters in Table A2.D.2. Also, according to 40 CFR 268.7(b), treaters (MDWTP) must test treated waste residue to determine compliance with LDR treatment standards. Treaters "may not rely on materials and process knowledge to make this determination" (62 FR 62083). Furthermore, according to 40 CFR 268.7(c), disposal facilities (such as WDI) must also test each waste to ensure compliance with LDR treatment standards, including those certified by the generator and not treated by MDWTP.

    Also, "as needed" is not a specified frequency of analysis for LDR verification. The table does not include mention of the toxicity characteristic leachate procedure (TCLP) test. Please note that some LDR treatment standards are based on the TCLP and some are based on the total. The two approaches are not interchangeable, except that the TCLP can be estimated conservatively from the total, but the reverse operation cannot be done. In order to meet LDR for characteristic wastes, the treatment residue may need to be tested for TCLP to verify it is no longer characteristic, while LDR demonstrations for the same constituents may be based on totals analysis. The table provides no specification of such details and it is not clear that the table will ensure the correct analysis is performed, nor prevent the wrong analysis from being performed.

49. **Section A2.D.4, Documentation of Variations of Test Methods Used for Waste Analysis.** The 25 parts per billion LDR treatment standard is for a particular type of mercury-bearing non-wastewater based on the TCLP and should include applicable UHCs.

50. **Section A2.E.1, Containerized or Bulk Wastes.** Note that the paint filter test is a method-defined parameter and cannot be replaced with a visual inspection. To be conservative, you could determine that the waste fails the paint filter test by visually observing liquids, but you cannot pass the paint filter test without conducting the test.

51. **Section A2.E.2, Procedures to Determine Addition of Biodegradable Sorbent.** How are wastes tested for biodegradable sorbents? Please describe the visual procedure and the sampling methodology referenced for this determination.

52. **Section A2.E.3, Waste Shipped to Subtitle C Facilities**. This comment applies throughout the document. The use of the term "restricted wastes" is out of date. All hazardous wastes have an LDR treatment standard in place, as such, all RCRA hazardous wastes are "prohibited wastes."

53. **Section A3.E.4, Waste Shipped to Subtitle D Facilities.** This section should be more specific. For example, the facility may ship RCRA hazardous waste to a permitted non-hazardous waste landfill if it is decharacterized and meets all applicable LDR treatment standards (including UHCs). Listed hazardous wastes that meet the criteria established in 40 CFR 261.3(g) may also be sent to a non-hazardous waste landfill. Hazardous debris that has been treated using the destruction or extraction method of treatment, described in 40 CFR 268.45 may be disposed in a non-hazardous waste landfill.

54. **Section A.2.F.3, Record Keeping, Bullet 7.** Is something missing from the end of this bullet?

55. **Appendix A, Hazardous Wastes Accepted at the Facility.** Why are all the estimated annual quantities the same? Why are all the process codes the same? Confirm that "G" represents "gallons." The title should match the narrative from A2.A.1(a) which indicates that this waste list applies to both MDWTP and WDI.

56. **Subpart CC determinations.** Ultimately, the TSD facility must determine the volatile organic compound (VOC) concentration for exemption from air controls.

    The WAP must describe the procedures and schedules for waste sampling and analysis, and the results of the analysis of test data to verify the exemption, if direct measurement is used for the waste determination that wastes are exempt from Subpart CC. If knowledge of the waste is used for the waste determination and the waste is received from off-site, any information prepared by the facility owner or operator, or by the generator of the hazardous waste, that is used as the basis for knowledge of the waste, must also be collected. The Waste Characterization Report form does not appear to require that generators submit, and that US Ecology collect, this information beyond a simple check-box certification.

57. **Subpart BB determinations.** It was not clear from the WAP alone that the facility must comply with 40 CFR 264 Subpart BB (Air Emission Standards from Equipment Leaks). If such equipment is used to handle hazardous waste, please elaborate on the WAP procedures necessary to document the organic content of wastes in accordance with 40 CFR 264.1063(d).

Michigan Department of Environmental Quality Comments

1. **Cover Page.** The cover page addresses only the MDWTP facility and makes no mention of the WDI facility. The text of the document references both facilities. Therefore, the cover page should also list each one.

2. **Section A2, Introduction.** In the opening paragraphs, the previously approved WAP lists more detail regarding the specific facility descriptions. It is unclear if the facility descriptions are included elsewhere in a related document. However, for consistency with the previously approved WAP, perhaps more detailed descriptions of the operations, and specific waste management units within each operation, should be included here.

3. **Section A2, Introduction.** What is meant by "trained and qualified" individuals? Will specific qualification, degrees in education, and particular training be required? This information is not provided in the personnel training section of the application to demonstrate compliance with 40 CFR 264.16. Specifically, 40 CFR 264.16(d) requires job descriptions that include requisite skill, education, or other qualifications, and duties of employees assigned to each position.

4. **Section A2, Introduction.** Please correct the reference "24.1063" in the last paragraph to "264.1063".

5. **Section A2.A.1(a), Acceptable Waste Type Description**, **First Paragraph**. The information within Appendix A and Appendix B does not correlate to what this section states. Specifically, the text states that: "The waste types that may be generated on-site or received from offsite generators and are acceptable for treatment and/or storage at MDWTP or disposal at WDI are defined in Appendix A and B. In addition to hazardous waste, nonhazardous waste may be accepted for treatment, storage and disposal at the facilities." However, the copy reviewed by MDEQ staff contains only a waste code table, without a key, in Appendix A and information on radiological waste in Appendix B.

   Within this section, Paragraph 2 states that characteristic waste codes that may be approved into MDWTP or WDI are provided in Appendix A. However, in Appendix A, there is no mention that the codes listed have been approved for acceptance into either facility.

   Within this section, Paragraph 4 mentions the use of a waste characterization form. MDEQ staff recommends that a copy of that form be consistent for both facilities and included in the WAP, such that it can be reviewed for completeness.

   Finally, since this is the first mention of the appendices within the text, there is no mention of WDI on the table headings within Appendix A, only MDWTP. This contradicts what the text in this section states are contained within Appendix A.

6. **Section A2.A.1(b), Restricted Waste Type Description.** Condition III.F., Special Requirements for Ignitable or Reactive Wastes, of the MDWTP hazardous waste management facility operating license restricts the storage or treatment of ignitable and reactive wastes. The restrictions may not be removed without acceptable justification and demonstration that MDWTP can store or treat the waste(s) in accordance with Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and its administrative rules.

7. **Section A2.A.1(b), Restricted Waste Type Description.** Additional wastes should be added to the bulleted list of waste types not acceptable for disposal at *WDI*. Specifically, it appears that asbestos waste contaminated with polychlorinated biphenyls (PCB) or RCRA waste, as well as wastes regulated by the Nuclear Regulatory Commission, are not permitted for disposal at WDI. A complete list of these waste types should be specified.

8. **Section A2.A.1(b), Restricted Waste Type Description.** The waste streams from Strebor, Inc. in Kalamazoo, Michigan, should be added; as well as the Guardian Industries air pollution dust.

9. **Section A2.A.2, Pre-Approval Waste Characterization Requirements.** Please provide the current waste profile form. Please clarify that the waste profile form requires the generator to include the additional waste analysis required by: R 299.9605, 40 CFR 264.17, 40 CFR 264.314, 40 CFR 264.1034(d), 40 CFR 264.1063(d), 40 CFR 264.1083, R 299.9627, 40 CFR 268.7, and R 299.9228. The text states that MDWTP and WDI will review the waste profile information to ensure that the facility is authorized to receive the waste, in accordance with the following requirements: ignitable, reactive, and incompatible waste; universal waste; RCRA waste with greater than 500 ppm VOC bearing waste. This statement does not state that these required elements are requested on the waste profile form. Also, it is uncertain what information or requirements the bulleted items are meant to convey.

10. **Section A2.A.2, Pre-Approval Waste Characterization Requirements.** Please confirm the data included in the generator provided profile information is analytical data.

11. **Section A2.A.2, Pre-approval Waste Characterization Requirements.** There is no mention whether special conditions should be included as there was in the previous WAP. For example, this would include exemptions for the requirement of a sample of waste for acceptance at either facility. Examples include wastes such as certain personal protective equipment (PPE) contaminated with chemicals, certain asbestos-containing wastes from demolition activities that are properly bagged, certain hazardous contaminated debris and demolition wastes, and specific State of Michigan regulated materials. Cite appropriate disclaimers as needed.

12. **Section A2.A.3 (a), On-site generated Waste.** Please clarify if MDWTP makes Subpart CC determinations for on-site generated waste at the point of waste origination. If yes, identify the analytical methods used to make those determinations.

13. **Section A2.A.3(a), Sampling and Selection of Waste Analysis Parameters.** Please identify the methods, other than EPA SW-846 methods, MDWTP uses for sampling equipment and methodologies. This information was not included in Table A2.A.1.

14. **Section A2.A.3(b), Off-site Generated Waste.** It appears that inbound load procedures for both facilities should be included in this section. The process for accepting waste as it arrives should be elaborated, including a discussion on load inspections, fingerprinting, off-site inspections and sampling (if necessary), truck unloading, off-specification and rejected load procedures, etc. This section should also provide a detailed summary on the management of containerized liquid and solid waste storage, as applicable, and specifically address wastes within containers and tanks, lab compatibility testing, and bulking/consolidation, consistent with the previously-approved WAPs for the facilities.

A discussion should also be provided with the specific measures used to manage those wastes that are characteristically hazardous for ignitability or reactive, and other incompatible waste streams. Information pertaining to specific waste treatment technologies used at the facilities that involve chemical stabilization, chemical oxidation, blending/mixing, comingling, and treatability studies should be included.

15. **Section A2.A.3(b), Off-site Generated Waste.** Please explain what conditions must be present to cause MDWTP to suspect additional contaminants of concern are present in a waste, other than those identified by the generator. Please correct the typo referencing the location of discrepancy procedures. It should state A2.A.5.

16. **Table A2.A.2, Pre-Approval/Waste Characterization Analysis Procedures.** Please submit the internal procedures referenced for reactivity and hydrogen sulfide screening for MDEQ review.

17. **Table A2.A.2, Pre-Approval/Waste Characterization Analysis Procedures.** The table states the rationale for mercury is to quantify PCB concentration. The table must provide the rationale for why mercury analysis is needed. Please refer to comment 5 and Attachment item c of the EPA June 8, 2018, *Response to Action Items Identified in the December 12, 2017 Meeting* letter. Copy enclosed.

18. **Table A2.A.2, Pre-Approval/Waste Characterization Analysis Procedures.** If generated on-site, it appears that asbestos-containing wastes should be included, as necessary.

19. **Section A2.A.5, Pre-Approval Generated Waste Characterization Discrepancies.** There should be a discussion as to the rationale used to select specific criteria used for sampling, and their relevant parameters. Within this section, a discussion on fingerprint analysis, and any necessary supplemental analysis, should be elaborated in the text.

20. **Section A2.A.6, Subsequent Waste Shipment Procedures.** A discussion should be provided as to some of the specific details that would be associated with this section. More specifically, US Ecology should elaborate as to the procedures used if an inspection of waste shows it is non-conforming. Also, a discussion as to the types of records that are kept from non-conforming shipments should be provided.

    It would be helpful if this section contained a discussion as to the procedures in place with regards to the handling of subsequent characteristic, listed hazardous wastes, and hazardous debris and their associated LDRs.

    This section should also contain a discussion of macro-encapsulation and capacity as it pertains to waste shipment procedures.

21. **Section A2.B.1(b), Sampling Methods and Frequency**, **Second Paragraph**. The text states that 10 percent of off-site shipments will be inspected and sampled for each non-bulk approval number per shipment. Since meeting LDRs is a goal of US Ecology, it appears that 10 percent is relatively low. The MDEQ recommends that US Ecology provide justification as to whether this number is effective at assuring conforming deliveries, or if a higher percentage of inspected loads should be proposed.

22. **Section A2.B.1(d), Sampling Methods and Frequency Exceptions.** According to the current WAP, Section 4.2, the Odor (Incidental) test is used to detect potentially problematic

odors in routine laboratory handling of a sample, which should indicate if the waste will cause odors when processed. This may dictate which side of the treatment plant is better capable of handling potential odors from waste processing. Identify whether this test is no longer being conducted. Also, explain why sampling odorous waste could not occur in container storage areas serviced by air pollution controls.

23. **Section A2.B.1(d) Sampling Methods and Frequency Exceptions.** According to the response, the waste types identified in Section A2.B.1(d) will not be sampled prior to disposal at WDI or treatment at MDWTP. The special conditions are too broad to include articles, equipment, activated carbon, filters, debris, demolition wastes, cathode-ray tubes, commercial products, medical and veterinarian wastes, lab packs, etc. To the greatest extent possible, wastes accepted for treatment or disposal should not be exempt from pre-acceptance sampling, as the successful treatment and disposal of such wastes depends on the accuracy of the detailed chemical and physical analysis required by the WAP. Many of the listed exempt waste streams seem to pose no challenge for sampling. For example, contaminated PPE, spent carbon, or paper filters appear to present no physical challenge to sampling and analysis. It is not clear why a sample would not be required (for example, spent activated carbon, hazardous contaminated debris and demolition wastes, and sewage treatment plant sludge). In this section, the rationale should be described as to why the items listed in this section do not require pre-acceptance sampling.

24. **Section A2.B.2, Pre-Acceptance Discrepancy.** What is the procedure to address discrepancies discovered as a result of waste screening/fingerprinting results? The procedures presented seem to apply mainly to manifest discrepancies. This section does not define or address significant manifest discrepancies as those listed in 40 CFR 264.72 and it should. Section A2.F.2 is not the correct location to discuss significant manifest discrepancies because this section deals with sending waste to another treatment or storage facility.

25. **Table A2.B.2, Pre-Acceptance Analysis Procedures.** The application must include SOPs that include QA/QC for any method deviations.

26. **Table A2.B.2, Pre-Acceptance Analysis Procedures.** It appears that several other parameters should be included in this table, as well as their accompanying information. The additional parameters should include: oxidizer, hydrogen sulfide, suspended solids, odor, total metals, VOCs, etc. In addition, this list may also need to include specific compounds, such as hexavalent chromium, and the list of compounds within 40 CFR 261 Appendix VII.

27. **Section A2.C.1(b), Containers Without Secondary Containment System.** A procedure should be prepared in the unexpected event that free liquids are discovered in the secondary containment system (SCS). This procedure should include a discussion as to regular SCS inspections, sampling procedures, laboratory analyses, and management of liquids removed from within the SCS.

28. **Section A2.C.2(b), Waste Compatibility With and Within Tanks.** The referenced table is incorrectly identified. The compatibility test is identified in *Table A2.B.2*, not *Table A2.A.2*. The internal procedure for compatibility should be provided for review, or include references to the approved Lab Compatibility Test and the Work Plan for Lab Compatibility Test, for determining waste compatibility prior to waste treatment. These documents were approved as part of the WAP and may not be deleted without MDEQ approval. All SOPs essential to waste analysis and required by the WAP must be included in the application. SOPs

determined to include required elements of the WAP should be retained as a formal part of the WAP. The laboratory's SOP for PCB analysis, including extraction procedures must also be provided in the application. Section 3.4.3, Lab Compatibility Test, of the approved WAP, states that MDWTP follows the current version of the Work Plan for the Lab Compatibility Test, maintained on-site, prior to transferring any wastes into a storage tank.

29. **Section A2.C.3, Waste Bulking and/or Consolidation Compatibility.** There should be a discussion regarding the fingerprinting of incoming bulked wastes. This discussion should include the appropriate sample methodologies, parameters, and laboratory analyses for both solid and liquid bulked waste streams. It should also include language on important factors such as equipment decontamination, sample preparation, QA/QC, health and safety, etc.

    There should be a discussion regarding if any bulked or comingled waste streams would be used as treatment reagents for other waste streams accepted at the US Ecology facilities. Should a waste stream be used as a reagent, there should be a well-documented procedure for its use, which will include information on its chemical assay and application to the process, prior to its approval for use.

30. **Section A2.C.4, Transshipped Waste.** Explain the flow process for a transshipped waste from receipt to transport off-site. In addition, describe how personnel distinguishes drums or other containers destined for transshipment from other drums or containers managed at the facility. The current WAP procedures state that transshipped waste will be managed in accordance with the WAP. Why was this statement not included in the proposed WAP?

31. **Section A2.D.1, Treatment for Purpose of Land Disposal.** This section discusses the use of well-designed treatment methods such as stabilization, immobilization, neutralization, deactivation, oxidation, and/or reduction. Each individual treatment method should be elaborated such that their respective processes can be consistently applied without having to look up methodology in RCRA or elsewhere.

32. **Section A2.D.2(a), Characteristic Wastes.** This section omits any discussion of decontamination procedures between the treatment of characteristic and listed waste streams. These decontamination procedures should be fully discussed and consistently applied anytime wastes of different hazardous natures are treated. It should be explained in this section, but also in other relevant sections within the WAP where treatment changes between characteristic and listed wastes.

33. **Section A2.D.3, Post-Treatment Sampling and Analysis (MDWTP)**, **First Paragraph**. This part describes how treatment standards must be used to evaluate if applicable concentration levels have been attained. Testing the waste is one way the standards can be evaluated. This paragraph should include a procedure that will be used to trigger testing of the waste versus using a previously-used treatment recipe or other means.

    Within this section, the second paragraph discusses sampling treated waste via one grab sample collected randomly from within the entire waste batch. US Ecology should explain why only one sample can be considered representative of the entire batch, regardless of quantity of waste being treated as part of that respective batch.

    The third paragraph within this section discusses the need to re-evaluate treatment batches that exceed LDRs. One of the options includes retesting. A discussion should be provided

as to what specifically triggers the need to re-evaluate the treatment batch. In addition, the variety of options used to re-evaluate the batch should be listed and described.

This section should also address whether or not there could be the need for any supplemental analysis not typically used as part of the post-treatment testing. This discussion should include method-specific sampling procedures, list of analytes, and QA/QC requirements.

34. **Table A2.D.2, Land Disposal Restrictions Verification.** Please submit the internal procedures referenced in the table for MDEQ review. Also, address the comments on *Table A2.D2 Land Disposal Restriction Verification* under Attachment item c of the EPA June 8, 2018, *Response to Action Items Identified in the December 12, 2017 Meeting* letter. Copy enclosed.

35. **Section A3.E.3, Waste Shipped to Subtitle C Facilities.** Please check if there is an error in the outline numbering. The headings go from A2.E.2 to A3.E.3.

36. **Section A.2.F.3, Record Keeping.** The operating log should include documentation on treatment failures.

37. **Appendix A XIII. Description of Hazardous Wastes.** In addition to the comments discussed above in Section A2.A.1(a), US Ecology should clearly and completely discuss the rationale for listing the same estimated quantities of code-specific waste in column “B”. In addition, US Ecology should also discuss, or include in a key, specifically why the same process code applies to all waste codes as listed in column “D1”.

MDEQ WAP Comments Not Addressed in the October 31, 2017, Response

1. Identify the facility personnel (e.g. lab manager, plant manager, supervisor) responsible for ensuring compliance and making key decisions for waste analysis. The QA/QC Plan identifies some of these positions. The QA/QC concepts should apply to all facility operations governed by the WAP, not just those operations performed in the laboratory. For example, chain of custody procedures or training may apply to samplers or treatment process operators that implement aspects of the WAP. The training program information provided in the application does not include job descriptions for personnel related to hazardous waste management.

2. Identify the actions performed by MDWTP to prevent accidental ignition or reaction of ignitable or reactive waste. The response provided a restatement of the 40 CFR 264.17 requirements, and does not identify the specific actions taken by MDWTP facility personnel.

3. MDWTP must determine if it operates any equipment that contacts hazardous waste streams containing at least 10 percent total organic concentrations by weight. Subpart BB standards may be applicable for pumps, pressure relief devices, sampling connecting systems, valves, flanges, or other connectors. The application does not specify whether organic wastes are stored in the vertical tanks 16-19, 21, and 25. If Subpart BB standards are applicable, the methods for organic content measurement to comply with 40 CFR 264.1063(d) must be included in the application.

The response provided for this deficiency states since the vertical tanks are restricted to less than 500 ppm it is not plausible for emissions from the equipment to exceed the amount of VOCs in the waste. At the December 12, 2017, meeting between the EPA, the MDEQ, and US Ecology, the EPA agreed to examine the approach of making the 40 CFR 264 Subpart BB waste determinations using 40 CFR 264 Subpart CC waste determinations at 500 ppm VOCs. Based on the EPA's review, they believe it is not proper to draw this equivalence. VOCs (the subject of Subpart CC) are only a subset of the organic compounds that may comprise the material subject to Subpart BB. The two categories are not directly comparable. Subpart BB waste determinations must be made in accordance with the Subpart BB requirements of 40 CFR, Part 264.1063(d). Please refer to comment 3 of the EPA June 8, 2018, *Response to Action Items Identified in the December 12, 2017 Meeting* letter. Copy enclosed.

4. Include methods for average volatile organic measurement to comply with Subpart CC, 40 CFR 264.1083. The methods are not included in Template A3, Section A3.A.2(c). If alternate methods are used, they must be included in the WAP. The WAP must specify if normal or alternative methods are used. This information is also necessary for all on-site generated waste.

5. Applicants proposing to treat hazardous waste shall submit all of the information in R 299.9504(5) in an operating license application for a new facility or the expansion, enlargement, or alteration of an existing facility. MDWTP is proposing to treat D003 sulfide waste, and hazardous waste debris, by macroencapsulation and sealing immobilization technologies. The application must provide evidence that MDWTP can successfully treat D003 sulfide waste and implement the immobilization technologies to meet the performance and/or design and operating standard to demonstrate compliance with the alternative treatment standards for hazardous debris.

6. Include the procedures or SOPs for how MDWTP will perform the proposed macroencapsulation and sealing treatment processes. These procedures must include, but are not limited to:
   - Identification of each licensed container storage area where treatment will be conducted.
   - On a map, define and identify the treatment boundaries within each licensed container storage area where treatment will be conducted.
   - The design capacity for each treatment process.
   - A flow diagram of the treatment processes.
   - A logical flow process for hazardous debris destined for macroencapsulation or sealing treatment from receipt to storage to treatment to disposal.
   - Define the measurement for treatment completion.

   The application must also demonstrate that conducting treatment processes in the container storage areas will have no air emissions, provide run-off controls to prevents risks to groundwater or surface water, prevent compatibility issues with containerized waste stored in the container storage areas, prevent compatibility issues with materials of construction of the container storage bases, aisle spacing in the container storage area will be unaffected by the treatment processes, etc.

7. Include justification for exempting waste, potentially capable of causing detectable odor at the facility property line, from sampling for acceptance. According to the current WAP, Section 4.2, the Odor (Incidental) test is used to detect potentially problematic odors in routine laboratory handling of a sample, which should indicate if the waste will cause odors. Identify whether this test is no longer being conducted or what is used as a replacement to obtain the information. The response failed to answer the question.

8. Include procedures for determining a significant manifest discrepancy and complying with R 299.9608(6) and 40 CFR 264.72(c) and (g), and to distribute copies of the manifest pursuant to subrules (1) and (2) of R 299.9608. The response stated the significant manifest discrepancies according to the pre-acceptance discrepancy procedures provided in A2.B.2. This section fails to explain what is considered a significant manifest discrepancy. It jumps to steps taken after the discrepancy is discovered. Section A2.F.2 defines a significant manifest discrepancy as a "variation in one-piece count or misrepresentation of the type of waste or corrosive rather than flammable". However, this definition is not complete according to 40 CFR 264.72(b). MDWTP receives bulk waste loads, truckloads of containers, and other containers which should be accounted for in the procedures.

   Two types of discrepancies can arise during waste pre-acceptance: 1) manifest discrepancies and 2) discrepancies between the incoming waste shipment and its profile. Section A2.B.2 is not clear regarding how MDWTP handles each type of discrepancy.

9. Clarify what is meant by the word "received" in the following statement in Section A2.B.1: *"If the discrepancy cannot be resolved, received waste will be rejected to the generator or an alternate facility."*
   If the waste is *received* at the facility for treatment or disposal, why would it be rejected?

   Identify the locations where rejected waste is stored until it is rejected to the generator or an alternate facility (See Sections A2.B.1 and A2.B.2).

   Identify the procedures for partial rejected waste loads [40 CFR 264.72(e)].

ENCLOSURE 2

United States Environmental Protection Agency, Region 5
Review of US Ecology – Belleville (aka Michigan Disposal Waste Treatment Plant- MDWTP)
A.2 Chemical and Physical Waste Analysis Plan, November 2017

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MEMORANDUM

SUBJECT: Review of US Ecology – Belleville (a.k.a. Michigan Disposal Waste Treatment Plant-MDWTP) *A.2 Chemical and Physical Waste Analysis Plan*, November 2017. Note that this document is also the WAP for the adjacent Wayne Disposal (WDI) hazardous waste landfill.

FROM: Elaine Eby, HQ/OLEM/ORCR
Jim Blough, R5/LCD/RB
Christopher Lambesis, R5/LCD/RB
Lisa J. Graczyk, R5/LCD/RB
Todd D. Ramaly, R5/LCD/RB

TO: File

DATE: January 25, 2018

The United States Environmental Protection Agency (EPA) conducted a review of the RCRA Waste Analysis Plan (WAP) for the US Ecology MDWTP facility, Belleville, Michigan, as part of a collaboration with the Michigan Department of Environmental Quality. The objective is to enhance compliance through more enforceable and scientifically sound waste analysis. The review is based at a minimum on the required elements of a RCRA WAP paraphrased here, in part, from 40 Code of Federal Regulations (CFR) 264.13:

- *Specify parameters for which each waste will be analyzed and the rationale for selection of parameters.*
- *Specify test methods for these parameters.*
- *Specify sampling methods.*
- *Specify frequency with which initial analysis will be repeated or reviewed.*
- *For off-site facilities, specify the waste analyses that generators have agreed to supply.*
- *Where applicable, the methods used to meet the additional waste analysis for specific waste management methods:*

  264.17 (req. for ignitable, reactive, incompatible);
  264.314 (req. for bulk & containerized liquids);
  264.341 (for incinerators);
  264.1034(d) (total organic concentrations for process vents);
  264.1063(d) (organic concentration 10% for Subpart BB);
  264.1083 (500ppm VO Subpart CC); and
  268.7 (Land Disposal Restrictions - LDR).
- *For exempt from Subpart CC: data or provided general knowledge*

For off-site facilities:

- *Specify procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the manifest or shipping paper.*
- *The procedures used to identify each movement of waste managed at facility.*
- *The sampling method to be used.*
- *For waste destined for landfilling, the procedure used to determine if generator added biodegradable sorbent.*

The comments herein follow generally in the order as encountered in the reviewed document.

1. **Cover Page.** Include a date and a document revision number.
2. **Section A2, Introduction.** Please reference the document title, date and revision number of the most current Quality Assurance/Quality Control (QA/QC) Plan.
3. **Section A2, Introduction.** Please ensure a copy of the current approved WAP be available on site.
4. **Section A2.A.1(a).** The second and third paragraphs are confusing. They appear to attempt to draw a distinction between how characteristic wastes are handled as opposed to listed wastes. Assuming that the second paragraph refers exclusively to characteristic wastes, it is more appropriate to affirm that these wastes must be both decharacterized and meet all applicable LDR treatment standards for regulated constituents and underlying hazardous constituents (UHCs) before disposal is allowed in a subtitle D facility.

   The second sentence of the third paragraph appears to missing a word (" . . . *may* be approved . . ."). Assuming that the third paragraph refers exclusively to listed wastes, it is too simplistic to refer to wastes that are "delisted through treatment," as the only way this could be accomplished is through a petition process for each wastestream obtained via rulemaking in a process entirely separate from the permit and permit issuance. This reference should be removed as it incorrectly implies the waste could be delisted through permit action. It is also incorrect to state that listed wastes could be sent to a subtitle D landfill.
5. **Section A2.A.1(b), Restricted Waste Type Description.** Please clarify that although MDWTP and WDI do not accept low level radioactive mixed waste, they do accept some radiological wastes in accordance with WAP Appendix B, Radiological Waste Acceptance Criteria.
6. **Section A2.A.1(b), Restricted Waste Type Description.** Clarify the following statement to read: In addition, following waste types are **NOT ACCEPTABLE** for disposal at WDI but may be accepted at MDWTP.
7. **Section A2.A.1(b), Restricted Waste Type Description.** Please give a clear description and rational for treating and storing ignitable wastes in comparison to the definitions of ignitable wastes in 40 CFR 261.21. Please give a clear description and rational for treating dioxin-containing wastes for constituents other than dioxin.
8. **Section A2.A.1(c), On-Site Generated Waste (Pre-Approval).** In this section, please provide some examples of the types of waste generated at MDWTP.
9. **Section A2.A.2 Pre-Approval Waste Characterization Requirements.** Please provide a clear description of the process to evaluate the waste and verify information if the generator does not provide sufficient information and the WAP does not require a representative sample for

analysis. The last paragraph of page 7 is confusing and should state that the treatment, storage, and/or disposal (TSD) facility must determine if the generator supplied information is sufficient. This paragraph claims that the generator-provided profile definitively provides the facility with sufficient information to meet the requirements of 264.13 (and R299 by reference). This is actually an expectation, not a definitive guarantee. The TSD is ultimately responsible for accepting this information in lieu of developing their own data (such as from sampling and analysis) and is also responsible for accepting generator knowledge that proves to be incorrect. Please add a statement acknowledging the TSD's responsibility for accepting the generator knowledge in lieu of developing their own detailed chemical and physical analysis.

Also, please be consistent with facility acronyms such as MDI vs. MWDTP.

10. **Section A2.A.3 Sampling and Selection of Waste Analysis Parameters.** Here and throughout the WAP, the WAP must state specifically which sampling and analytical methods will be used to sample and analyze specific wastes for specific constituents. The stated methods should follow a guidance method, such as SW846, but must be identified by the specific standard operating procedures (SOPs) used by the facility and analytical laboratory.
11. **Section A2.A.3(a) On-site generated Waste.** Why are on-site wastes to be evaluated for characteristics only? Will some wastes that are not treatment residues be derived from listed wastes as well? It is not evident from either this section or the table A2.A.2 what the frequency and rationale for frequency of characterization is for each parameter. Regulatory requirements for the WAP require that a frequency for reevaluation be specified. Reference to section A2.A.6 may have been the intent for this column in the table as is appears to provide a frequency for reevaluating waste characterization determinations.
12. **Section A2.A.3(b) Off-Site generated Waste.** 40 CFR 262.11 refers to generators determining if their waste is hazardous for the management of the waste. The TSD has a further responsibility to characterize the waste for treatment or disposal. 264.13 states that the TSD must obtain detailed chemical and physical analysis such that the analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with this part and part 268 of this chapter. The WAP should state that the TSD is ultimately responsible for the collection of accurate information meeting this requirement.
13. **Section A2.A.4.** The language in the second paragraph implies that generator process knowledge may be used to determine that characteristic wastes and UHCs already meet LDR treatment standards. While a generator may make the determination in this manner, a TSD making the determination for the generator must use testing and analysis. A disposal facility, such as WDI, is also required to test the waste to corroborate the determination.
14. **A2.A.4(a) Dilution and Aggregation of wastes**. Please describe the processes for ensuring that diluted characteristic wastes consistently meet the concentration-based treatment standards.
15. **A2.A.5 Pre-Approval Generator Waste Characterization Discrepancies.** Describe how the WAP ensures that the generator's characterization is representative and accurate.
16. **A2.A.6 Subsequent Waste Shipment Procedures:** Describe the notification documentation that the generator supplies that assures there has not been a change in a waste's characteristics or treatment requirements. The last statement "The initial evaluation of waste from each generator will be reviewed or repeated at least once in a calendar year to ensure that the information provided is accurate and up-to-date" should address how the TSD will characterize

the waste and that they should perform more than just a paperwork review. Also "once in a Calendar year" could at times be stretched to almost a two-year window. It would be more precise to require the re-evaluation annually so that it must occur within a year of its last completion.

17. **A2.B.1(b) Sampling Methods and Frequency.** Compositing the ten per cent of containers sampled partially defeats the purpose of checking individual containers for excessive variability from the profile. The process depends entirely upon the ability for a visual determination of dissimilarity. Important changes in waste character or composition might not be visually evident. At a minimum, screening tests that are quick and efficient should be used on individual samples from individual containers first to assess conformity. Compositing in the fashion proposed could mask an errant container by diluting it into the others (in the laboratory compositing procedure). Also, analysis should be required on the visually dissimilar samples.

18. **Table A2.B.1, Representative Sampling Procedures.** Table A2.B.1 does not describe how a representative sample will be collected from waste shipments. This section should describe the procedure for collecting a representative sample. The sampling methods for both containers and bulk shipments lacks sufficient detail. It is not clear in the case of bulk shipments that the sampling approach is justified. A single grab sample will not provide representative data or any information on variability if the waste is heterogeneous. *Chapter Nine of the SW-846 Compendium: Sampling Plans* provides examples and rationales for various sampling methods and equipment. US Ecology must specify which ones to use and why. While the sampling equipment is called out, the methods of collection are not well documented. Will full-depth cores be collected from containers? Will full-depth cores be collected from bulk shipments? Where in the bulk container will the sample be collected from? Random locations? Only the surface? What if multiple phases or layers are evident? The WAP should also specify the decontamination procedure if non-dedicated equipment is to be used.

    This table and similar tables A2.C.2 and A2.D.2 contain parameters designed to assess the potential for wastes or treatment residuals to exhibit the reactivity characteristic. It is not clear exactly how US Ecology evaluates these parameters given the methods referenced. Are any detections considered indications that the wastes are reactive? Is there a concentration at which the determination will be met? Why is there no methodology for total sulfides? US Ecology must describe their parameter rationale for these tests. Also, the screening methods listed as internal should be provided for review in the permit application since they are not otherwise available.

19. **Table A2.B.1, Representative Sampling Procedures.** This table lists aqueous waste but does not list non-aqueous liquid waste. If MDWTP also accepts non-aqueous liquids include this in this table and in other tables as appropriate in the WAP.
20. **A2.B.1(c), Waste Screening and Visual Inspection of Waste (Pre-Acceptance).** Are the waste screening procedures described in this section performed on all the samples collected as described in A2.B1(b) (i.e. samples from ten per cent of non-bulk containers and 100 percent of bulk containers)? Please clarify in this section what these waste screening parameters apply to. Describe the acceptable variations in color, physical state and consistency.

21. **A2.B.1(d) Sampling Methods and Frequency Exceptions.** Please list and explain the circumstances for which there will be no sampling and no visual inspection for air quality or safety issues. A hazardous waste facility is expected to be able to conduct sampling and analysis of hazardous wastes; therefore, exemptions must be limited. Reword the first sentence of the first paragraph to make it clear that samples may need to be taken in order to conduct the visual inspection.

    Spent activated carbon and ion-exchange resins may be shipped as a bulk solid material in either smaller containers or in bulk containers and pose no apparent barrier to sampling. While a visual inspection could corroborate that these materials are carbon or resins, the screening-type pre-acceptance analysis should be conducted. Also, discarded, off-specification commercial products could be off-specification due to contamination that might not be reflected on SDS's meant to describe the product when it is "on" specification. These wastes should also be subject to pre-acceptance screening.

    The words "non-hazardous" should be inserted to describe wastes from food or animal processing, animal feces, non-putrescent medical waste, and septic or sewer treatment plant sludge. These wastes should be subject to pre-acceptance screening if any of these waste streams are RCRA hazardous.

    EPA does not agree that pre-acceptance inspection, sampling, and analysis activities are appropriate to conduct off-site. 40 CFR 264.13(a)(4) and (c) require the TSD to "inspect . . . each hazardous waste movement received at the facility." This cannot be done off-site because the waste has not been "received."

22. **Table A2.B.2 Pre-Acceptance Analysis Procedures.** Under the "Frequency" column, "as needed" is listed several times. "As needed" is vague and doesn't describe when these tests would be performed. A description of when the test is performed is required for each instance "as needed" is used. In some instances, the screening is specified for the first shipment only and later shipments screened "as needed." In this way, the pre-acceptance only serves to confirm the first shipment matches the profile. Why wouldn't later shipments also need this screening?

    Under the "Rationale for Frequency" column, the rationales described are more suited to the "Parameter Rationale" column. The "Rationale for Frequency" column should specify why the frequency was chosen. For example, "First shipment then as needed" is listed for frequency for some wastes. In these instances, the "Rationale for Frequency" should describe why only the first shipment is being tested for that parameter.

    In accordance with 264.13(b)(1), the WAP must specify the parameters which each hazardous waste will be analyzed. Each hazardous waste is not listed here. There needs to be a correlation between each waste code listed in Appendix A and the parameters in Table A2.B.2.

    Note: pH screening with pH paper has a method reference (9041A) which should be followed. A number of screening methods are listed as internal procedures. If these are not externally referenced, they should be included with the permit application for review, called out as an SOP in the permit that should not be altered without permit modification review, or included in the WAP outright.

23. **Section A2.B.2.** Describe how pre-acceptance discrepancies and resolutions are recorded.
24. **Section A2.C.1(a).** What storage or processing of wastes occurs at WDI? The permitted activities appear to be limited to landfill disposal.
25. **Section A2.C.2(a).** The language here seems to specify that only the generator LDR notification can be used to verify constituents and thus implies that other sources of such information such as sampling and analysis by the TSD or other parties is precluded from this determination. Please add that contaminants present that require treatment could also be identified through other means such as sampling and analysis of the waste as provided for at the end of Section A2.A.2. Analytical data identifying additional constituents, if available, cannot be ignored, regardless of its source (the generator, the TSD, etc.).
26. **Section A2.C.2(b).** The referenced table is incorrectly identified. The compatibility test is identified in *Table A2.B.2* not *Table A2.A.2*. The internal procedure for compatibility should be provided for review.
27. **Section A2.C.3.** The referenced table is incorrect. See Comment on Section A2.C.2(b). Please describe how you will confirm that waste bulking and/or consolidation does not violate the LDR Dilution Prohibition. For example, you could demonstrate that the individual wastestreams comprising the mixture are similar in composition and are amenable to the same type of treatment, or are treated by the same type of treatment as that on which the treatment standard for that prohibited waste is based. It is not clear what you mean by "same waste type." Does this mean they carry the same hazardous waste codes? Does this mean they include the same target hazardous constituents, LDR treatment standards, or UHCs?
28. **Section A2.D.1.** Are LDR-compliant wastes tested again after being used to absorb free-liquids from a non-hazardous waste? Could this activity affect whether the final material meets treatment standards? For example, what if the free liquids are not pH neutral or contained organics?
29. **Section A2.D.1. Paragraph 1. T**he second to last sentence reads, "Treatment of applicable waste codes and UHCs reasonably anticipated to be present at the point of generation as identified by the generator during the pre-approval process..." This sentence is not technically incorrect but it is not entirely clear either. LDR treatment standards must be met prior to land disposal. For listed wastes, 40 CFR 268.40 identifies those regulated hazardous constituents that must meet the specified treatment standards before land disposal can occur. For characteristic wastes, the generator or the TSD (see 40 CFR 268.7(a)(2)) must identify, those UHCs reasonably expected to be present and treat those constituents to the Universal Treatment Standard (UTS) before land disposal can occur. See 40 CFR 268.40(e). UHCs are specific to characteristic wastes and are constituents listed in the UTS table 40 CFR 268.48 (except for fluoride, selenium, sulfides, vanadium, and zinc) which can reasonably be expected to be present at the POG of the hazardous waste, at a concentration above the UTS.
30. **Table A2.D.1.** It is not clear how precipitation is used for the treatment of metal-bearing waste. Is stabilization necessary for the precipitate if it is destined for land disposal? Isn't chemical reduction used primarily for reducing hexavalent chromium to trivalent chromium – not all metal-bearing waste? If so, shouldn't this be a separate entry to the table? For hazardous debris, the table should specify whether, macro, micro or sealing is performed and should identify what the contaminants in the debris are.

31. **Section A2.D.1.** The second paragraph only pertains to "characteristic" wastes. Treatment residuals that become characteristic due to a new property that was not identified as a UHC at the original point of generation would be considered a new point of generation and the treater would need to make a new determination of the UHCs present - either through knowledge or additional testing. This is the same obligation that attaches to any generator of a hazardous waste. See Land Disposal Restrictions - Summary of Requirements, page 3-8.
32. **Section A2D.1.** The use of 40 CFR 268.44-49. This is an old reference that should be updated. 268.44 pertains to treatment variances which I don't believe are applicable here. 268.45 are the debris standards that would also not be applicable? 268.46 refers back to 268.40, 268.47 doesn't exist, 268.48 are the UTS already referred to in the previous sentence. Please describe how the soil standards in 268.49 would apply.
33. **Section A2.D.2.** Add "WITH" - "in accordance with". The sentence is not clear what an "authorized" landfill means. Generally, listed waste meeting LDRs must go to a permitted Subtitle C landfill whereas, characteristic wastes that are de-characterized and meet other applicable treatment standards (such as UHCs) can go to a non-hazardous permitted Subtitle D landfill.
34. **Section A2.D.2. Bullet 1**: I think this bullet is trying to get to the point that the treatment standards for regulated organic hazardous constituents are based on a totals analysis (milligrams per kilogram - mg/kg) not a leach test (milligrams per liter - mg/L). I would suggest that these bullets be revised to make this distinction clearer. Perhaps use "all organic regulated hazardous constituents" instead of all hazardous constituents. Use "treatment standards" instead of "values."
35. **Section A2.D.2. Last paragraph.** See previous comments on citing 40 CFR 268.44-49. The last sentence of this paragraph was true before the UTS standards were promulgated, it however no longer applies.
36. **Section A2.D2(a) Paragraph 1, sentence 3.** What does "appropriate demonstrations that the waste has met..." mean? More detail is needed here. Also, the waste should be shown to meet applicable LDR treatment standards "and" (not "or") be appropriately decharacterized.
37. **Section A2.D.2(b) paragraph 2.** This paragraph is referring to 268.40(f), however the paragraph does not include the exact wording of the regulation. The regulatory language is more clear and should be incorporated into the WAP.
38. **Section A2.D.2(b). Paragraph 3.** Is this paragraph saying that the listed dioxin wastes will be accepted at the facility only if the dioxin regulated hazardous constituents meet LDRs and that additional treatment may occur for other regulated hazardous constituents only if the dioxin regulated constituents are below LDRs? Also, are there circumstances in which the dioxins (that presumably already meet LDR treatment standards before treatment) could be concentrated as a result of treatment such that they no longer meet the standard? RCRA hazardous waste K099 is described as a wastewater. If it is treated for other constituents and a filter cake residual is generated, dioxins could reasonably be expected to concentrate in the filter cake. In such scenarios, the treater must analyze the treated residual for LDR constituents, including dioxins.
39. **Section A2.D.2(c).** Lab Packs accepted for disposal in the WDI landfill must also meet the requirements of 264.316. The WAP or the permit should provide for these requirements.

40. **Section A2.D.2(d).** Should this sentence state that the facility does not generate, treat, store, or dispose of mixed waste? (Note: Wastes that are both hazardous and radioactive are termed "mixed wastes").
41. **Section A2.D.2(e) Paragraph 1.** This section should also state that if a treatment train is used for the treatment of debris, immobilization is the last treatment to be conducted before land disposal (see 40 CFR 268.45(a)(40)).
42. **Section A2.D.2.(e). Paragraph 2.** "MDWTP does not knowingly accept hazardous debris deliberatively mixed with non- debris hazardous waste in order to change the treatment classification." What is the purpose of this sentence? If they receive a waste that is not comprised primarily of debris, by volume based on visual inspection they should refuse it or treat it as a generated waste. **Paragraph 2** further states: "MDWTP treats hazardous debris in accordance to (sic) immobilization technologies specified in 40 CFR 268.45, where there are no contaminant restrictions for the immobilization technologies nor are there limitations on the type of debris that may be treated by the immobilization technologies." This statement incorrectly implies that EPA does not prohibit any organic constituent or organic concentration from being immobilized and that immobilization can be used for any type of debris and any regulated constituent not just metals and inorganics. EPA has never said that immobilization works for organics. In fact, our treatment technology background document lists organics as a waste characteristic affecting performance. I think that additional language should be added to state that if immobilization techniques are used then macro, micro, and sealing must be conducted as defined in 268.45 and that the performance standard must be met so that the treated debris minimizes short- and long-term threats to human health and the environment by reducing the toxicity or mobility of hazardous constituents before they are land disposed. **Paragraph 3.** Where is the microencapsulation process conducted?
43. **Section A2D.2(f).** Characteristic hazardous wastes must be treated for both the characteristic and any UHC reasonably expected to be present at the point of generation. Paragraph 2 should be added to A2.D.2(e).
44. **Section A2.D2(g).** To avoid impermissible dilution to meet LDR treatment standards, the facility must also show that:
    - the treatment must destroy, remove, or immobilize the constituents;
    - appropriate technology should be used for the constituents (organics not amenable to stabilization);
    - aggregated wastes are amenable to the same treatment;
    - whether the treatment is the same as the basis for the treatment standard (not required but proof of amenable treatment); and
    - must show that organic constituents in wastestreams containing both organics and inorganics are treated to below treatment standards before treating the inorganics in order to confirm the organics were not impermissibly diluted.
45. **Section A2.D.3. Paragraph 1.** 40 CFR 268.7(b) requires a treatment facility to test their waste in order to show compliance with LDRs. The frequency of this testing is to be identified in the facility's WAP. Knowledge cannot be used to determine if the waste meets applicable standards. Not sure if this paragraph is referring to the generator or the treatment facility. Furthermore, according to 268.7(c), disposal facilities (such as WDI) must also test each waste to ensure compliance with LDR treatment standards, including those certified by the generator and

not treated by MDWTP. The citations referenced are incorrect. 40 CFR 268.41 refers to 268.40 and 268.42 are not concentration-based standards but methods of treatment. 268.43 refers to 268.40. See previous comments on 268.44-49.

46. **Section A2.D.3, Post-Treatment Sampling and Analysis (MDWTP), Second Paragraph.** The second paragraph of Section A2.D.3 states that "Consistent with 40 CFR 268.40(b), compliance with LDR numeric-concentrations based treatment standards for non-wastewaters is determined using one grab sample...". 40 CFR 268.40(b) states that "For all nonwastewaters, compliance with concentration level standards is based on grab sampling." We disagree that the agency's compliance sampling method dictates "in turn" the facility's sampling method to ensure all treated waste is below the LDR standards. This does not state that only one grab sample is to be collected. More than one grab sample of a treated batch may be necessary to confirm that LDR program goals were met in that batch especially when treating large batches such as at MDWTP. The number of grab samples should be dependent on the size of the treated batch and the variability of the waste. The LDRs make a distinction between the sampling approach for compliance (such as from an enforcement inspection) and LDR verification in a WAP which is to be evaluated for approval by the permit writer on a case-by-case basis. It is important to understand that the method of one grab sample was developed to give the agency's compliance officer a generally easy approach to collecting a sample to meet a lenient treatment standard. The LDRs go on to mention that other types of sampling could be deployed within a WAP, if justified, but that grab samples, if collected, would be considered definitive for compliance.

    Page 31 of the December 1988 Methodology for Developing BDAT states that "[as] a practical matter, facilities will have to be designed to meet an average level of performance that is more stringent than the standard in order to ensure continuous compliance with the standard." It is not clear how a single grab sample of a very large batch could demonstrate that the whole batch is meeting a "more stringent" concentration than the treatment standard. The professed assessment of variability using grab sampling is entirely unjustified in the case of a single grab. A single grab could not ever provide information on variability.

    EPA guidance states that "The need for sampling and analysis depends on a variety of site-specific factors which the permit writer should consider. Such factors include: the variability of the waste; the prior history of the waste generator's performance and reliability; the impact of improperly treated waste on the waste management process; and frequency and extent of testing performed by the generator or treater." This WAP does not definitively collect this information. Without such information (such as waste variability), it is impossible to assign a one-size-fits-all sampling approach to any and all treated wastes.

47. **Section A2.D.3.** How will a "random" sample be determined? What process or method will be used? There needs to be more explanation given on how the sample is taken and how many samples. There also needs to be a lot more discussion/explanation on how treatment occurs, is the waste mixed so it is homogeneous before addition of reagents, afterwards? How long is the waste mixed, what equipment is used? How big are the batches? Is water, how much added during the mixing? The number of samples taken has a direct relationship to the volume of waste treated and the characteristic of the treatment process used. Is every batch of waste sampled? Where is the waste held until the sampling results come back? How long are the

wastes typically held? What precautions are in place when re-treating to ensure that dilution is not occurring if additional reagents are added? Is it typically the same type of reagents or something else? A phosphate-based chemical? Is there a waste to reagent ratio that you typically don't exceed?

48. **Table A2.D.2 Land Disposal Restriction Verification.** In accordance with §264.13(b)(1), the WAP must specify the parameters for which each hazardous waste will be analyzed. Each hazardous waste is not listed here. There needs to be a correlation between each waste code listed in Appendix A and the parameters in Table A2.D.2. Also, according to 40 CFR 268.7(b), treaters (MDWTP) must test treated waste residue to determine compliance with LDR treatment standards. They "may not rely on materials and process knowledge to make this determination" (62 FR 62083). Furthermore, according to 268.7(c), disposal facilities (such as WDI) must also test each waste to ensure compliance with LDR treatment standards, including those certified by the generator and not treated by MDWTP.

    Also, "as needed" is not a specified frequency of analysis for LDR verification. The table does not include mention of the toxicity characteristic leachate procedure (TCLP) test. Please note that some LDR treatment standards are based on the TCLP and some are based on the total. The two approaches are not interchangeable except that the TCLP can be estimated conservatively from the total, but not the reverse operation. In order to meet LDR for characteristic wastes, the treatment residue may need to be tested for TCLP to verify it is no longer characteristic while LDR demonstrations for the same constituents may be based on totals analysis. The Table provides no specification of such details and it is not clear that the table will ensure the correct analysis is performed nor prevent the wrong analysis from being performed.

49. **Section A2.D.4.** The 25 parts per billion (ppb) LDR treatment standard is for a particular type of mercury-bearing nonwastewater based on the TCLP and should include applicable UHCs.
50. **Section A2.E.1.** Note that the paint filter test is a method-defined parameter and cannot be replaced with a visual inspection. To be conservative, you could determine that the waste fails the paint filter test by visually observing liquids, but you cannot pass the paint filter test without conducting the test.
51. **Section A2.E.2.** How are wastes tested for biodegradable sorbents? Please describe the visual procedure and the sampling methodology referenced for this determination.
52. **Section A2.E.3.** This comment applies throughout the document. The use of the term "restricted wastes" is out of date. All hazardous waste have an LDR treatment standard in place, as such all RCRA hazardous wastes are "prohibited wastes."
53. **Section A3E.4.** This section should be more specific. For example, the facility may ship RCRA hazardous waste to a permitted non-hazardous waste landfill if it is decharacterized and meets all applicable LDR treatment standards (including UHCs). Listed hazardous wastes that meet the criteria established in 40 CFR 261.3(g) may also be sent to a non-hazardous waste landfill. Hazardous debris that has been treated using either the destruction or extraction method of treatment described in 40 CFR 268.45 may be disposed in a non-hazardous waste landfill.
54. **Section A.2.F.3. bullet 7.** Is something missing from the end of this bullet?

55. **Appendix A.** Why are all the estimated annual quantities the same? Why are all the process codes the same? Confirm that "G" represents "gallons." The title should match the narrative from A2.A.1(a) which indicates that this waste list applies to both MDWTP and WDI.
56. **Subpart CC determinations.** Ultimately the TSD must determine the VOC concentration for exemption from air controls.

    The WAP must describe the procedures and schedules for waste sampling and analysis, and the results of the analysis of test data to verify the exemption if direct measurement is used for the waste determination that wastes are exempt from CC. If knowledge of the waste is used for the waste determination, any information prepared by the facility owner or operator or by the generator of the hazardous waste, if the waste is received from off-site, that is used as the basis for knowledge of the waste, must also be collected. The WCR form does not appear to require that generators submit and that US Ecology collect this information beyond a simple check-box certification.

57. **Subpart BB determinations.** It was not clear from the WAP alone that the facility must comply with 40 CFR 264 Subpart BB (Air Emission Standards from Equipment Leaks). If such equipment is used to handle hazardous waste, please elaborate on the WAP procedures necessary to documentation of the organic content of wastes in accordance with 264.1063(d).

ENCLOSURE 3

United States Environmental Protection Agency, Region 5
Response to Action Items Identified in the December 12, 2017 meeting

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Reply to: LR-17J

June 8, 2018

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Waste Management and Radiological Protection Division
Michigan Department of Environmental Quality
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RE: Response to Action Items Identified in the December 12, 2017 Meeting

Dear Mr. Taylor,

On December 12, 2017, we met with members of your staff and representatives of US Ecology, Inc. (USE) to discuss improvements to USE's Waste Analysis Plans (WAPs) in their Resource Conservation and Recovery Act (RCRA) permits for three USE facilities in Michigan. *USE Detroit North* is a former Dynecol facility in Detroit, MI. *USE Detroit South* is a former EQ facility in Detroit, MI, and *USE Belleville* herein refers to two USE facilities that share a RCRA WAP, Michigan Disposal, Inc., and Wayne Disposal, Inc., both in Belleville, MI. EPA developed the following responses to several action items that were identified at the meeting and assigned to EPA.

1. The Environmental Protection Agency (EPA) completed review of the latest submitted WAP for the USE Belleville facility and provided review of Michigan Department of Environmental Quality (MDEQ) comments. EPA forwarded completed comments to MDEQ on January 25, 2018.

2. USE asked EPA to evaluate the results of an inspection at the USE Detroit South facility from the perspective of the WAP. The inspection took place from June 23, 2015 through July 1, 2015. The inspection sampled one treated waste batch for LDR compliance which passed. Potential conclusions of that inspection from the perspective of the WAP-improvement effort are:

a. The single sampled batch comprised many individual wastestreams. No data was provided on the wastes before treatment. Results of multiple random grab samples were uniform; however, it is inconclusive overall because it is not known if this was due to an effective treatment practice (i.e., well designed and operated) or if the wastestreams were already very similar prior to treatment. The facility did state that they mix batches for a minimum of 1 hour. If not already in the permit, we may want to consider adding a minimum mixing time.

b. EPA agrees with USE's procedure to sample each roll-off box of filter cake generated from characteristic wastewaters because the filter cake does occasionally exhibit the characteristics of hazardous waste (which could result in inappropriate and unprotective disposal if not discovered) and the raw ingredients to the generating process include many different wastes that are not generated by USE for which physical and chemical parameter information may be limited to generator knowledge and may vary from wastestream to wastestream.

c. EPA notes that sampling for hazardous waste determinations are generally made using representative sampling methods and that a single grab sample might not be representative of the entire roll-off box. Composite samples may be more representative for hazardous waste determinations.

3. EPA agreed to examine the approach of making the 40 CFR 264 Subpart BB waste determinations using 40 CFR 264 Subpart CC waste determinations at 500 parts per million (ppm) total volatile organic compounds (VOCs). Based on our review, EPA believes it is not proper to draw this equivalence. VOCs (the subject of Subpart CC) are only a subset of the organic compounds that may comprise the material subject to Subpart BB. The two categories are not directly comparable. Subpart BB waste determinations must be made in accordance with the Subpart BB requirements of 40 CFR Part 264.1063(d).

4. USE asked whether laboratory variability was considered in setting the LDR Treatment Standards. EPA agreed to verify this information.

   Laboratory accuracy had been considered and factored in when the LDR treatment standards were developed. Where LDR standards were derived from variability factors taken from the *Engineering and Analysis Database*, no further laboratory accuracy factor was used since this variability was already measured. All other LDR standards employed a laboratory accuracy factor to adjust the data. The correction was typically determined by dividing the sample results by the percent recovery from spike analysis (as a decimal). For details, please see the Federal Docket item EPA-HQ-RCRA-1998-0003-0151 and the *Final, Best Demonstrated Available Technology (BDAT) Background Document for*

Quality Assurance/Quality Control Procedures and Methodology, U.S. EPA, OSW, Wash., DC, October 23, 1991.

5. USE asked about their proposed rationale for ignitibility and mercury parameter analysis. The Agencies agreed to review and respond specifically. We did not take note of which facility's WAP we were being asked to review in this regard. The review is summarized below. Detailed comments on the rationales provided for ignitability and mercury parameter analysis in each facility's WAP are attached.

   Ignitability - All three facilities accept characteristic and listed wastes that may be ignitable. All three facilities may (potentially) store and treat ignitable nonwastewaters (solid materials in pits) and must show that treated residue meets the DEACT LDR standard (no longer ignitable). All three facilities may store ignitable liquids and wastewaters. Ignitable waste is prohibited in the waste water treatment plants (WWTPs) at USE Detroit North and USE Detroit South, raising a concern that incoming wastes are properly characterized. The WAPs state the pre-acceptance screening (profile) may include sampling and/or generator knowledge, however, for wastewaters destined for treatment in the WWTPs at USE Detroit North and USE Detroit South, the WAPs should prioritize testing to prevent ignitable waste from being introduced into the WWTP. It is appropriate to use an array of screening tests (observe organic layers, bench-top flame tests, etc.) to conduct acceptance sampling analysis (fingerprint). Treated residues that originate as ignitable must be tested for DEACT (i.e., remove the characteristic). The LDR standard is the same as the characteristic standard.

   The USE Belleville WAP has clearer rationales described for ignitability in that it states the purpose is to see if the waste is D001. However, the rationales do not include the parameter value of concern (140°F flashpoint) rather the rationales include alternate values which do not appear to have significance under RCRA and serve only to confuse the requirement. The rationale at USE Belleville for acceptance sampling (fingerprint) refers to the procedures as "verification" of the wastestream's characteristic. The WAPs for USE Detroit North and USE Detroit South do not emphasize ignitability testing for wastes destined for the WWTP but should do so since those activities prohibit ignitable wastes.

   The WAP rationales for parameter analysis should explain the importance of the test and may include the following examples:

   - Determine if the waste is characteristic for ignitability (i.e., D001) under 261.21(1) by measuring the flashpoint to see if it is less than 140°F.

- Determine if the waste is characteristic for ignitability (i.e., D001) under 261.21(2) by qualitatively determining if the waste causes fire or burns vigorously.
- Determine if the waste received matches the waste described on the profile by exhibiting consistent flashpoint, ignition, or burn tests.
- Determine if the waste meets the LDR DEACT standard by measuring the flashpoint of liquid wastes to see if it is less than 140°F, and conducting ignition and burn tests on solid-phase wastes (i.e., to demonstrate that the waste is no longer characteristic for ignitability).

Mercury - All three facilities accept mercury-bearing wastes either as characteristic (i.e., D009) and/or listed wastes (F039, K071, K088, K101, K102, K106, K175, K176, U151, P065, and P092). All three facilities may (potentially) store and treat mercury-containing nonwastewaters (solid materials in pits) and must show that treated residue meets mercury LDR standards depending on which D009 mercury subcategory has been identified (< 0.025 mg/L Toxicity Characteristic Leachate Procedure (TCLP) or <0.20 mg/L for high -mercury residues from mercury-recovery processes – See 40 CFR 268.40).

All three facilities may store mercury-containing liquids and wastewaters. Mercury-bearing liquid waste may be treated in the WWTPs at USE Detroit North and USE Detroit South and any resulting residue (such as filter cake or DAF float solids) may need to meet the LDR treatment standard or be evaluated for hazardous characteristic (< 0.025 or <0.20 mg/L TCLP mercury). The rationale for which of these standards applies depends on: if the liquid was a wastewater or nonwastewater as generated, whether the waste was listed or characteristic as generated, and whether the waste comprise residues from RMERC (mercury recovery by retorting or roasting in a thermal processing unit). The WAPs state the pre-acceptance screening (profile) may include sampling and/or generator knowledge. The WAPs acceptance sampling (fingerprint) does not currently include a screening test for mercury, although USE's WAPs could elect to test fingerprint samples using laboratory analysis at some interval as a check on generator knowledge. Treated residuals that do not undergo a change in treatability group must be tested to meet all applicable LDR treatment standards. It must be accurately demonstrated that treated residuals newly generated from a change in treatability group are not characteristic.

The USE WAPs are inconsistent in their approach to mercury as a parameter. South refers to the TCLP, but only mentions this in the context of the toxicity characteristic (TC) list at 261.24 while there are also TCLP mercury requirements in 268 (LDR). Depending upon the listing, the TCLP LDR standards include one that is different than that of the TC list at 261.24 (i.e., Low Mercury Subcategory D009 nonwastewaters that

are not residues from RMERC - 40 CFR 268.40). The USE Belleville WAP illustrates the issue. The apparent rationale is "quantification of mercury concentration." This appears to be an objective. A rationale should answer the question as to why the parameter is needed. The following are suggested rationales for parameter analysis:

- Measure total mercury concentration to confirm the waste received matches the profile.
- Measure the total mercury concentration to determine if the waste is in the high-mercury LDR category, ≥ 260 mg/kg total mercury.
- Measure or evaluate the presence of organics in high-mercury subcategory nonwastewaters to determine whether the waste is in the *High Mercury-Organic* or *High Mercury-Inorganic* subcategory.
- Measure TCLP mercury concentration to determine if the waste is characteristic hazardous waste, ≥ 0.20 mg/L TCLP mercury.
- Measure TCLP mercury concentration to determine if the waste meets LDR treatment standard for nonwastewaters that are not high-mercury and not residues from RMERC only, <0.025 mg/L TCLP mercury.
- Measure TCLP mercury concentration to determine if the waste meets LDR treatment standard for nonwastewaters that are not high-mercury and are residues from RMERC only, <0.20 mg/L TCLP mercury.

Please feel free to contact Todd Ramaly or Christopher Lambesis of my staff if you have any questions about these comments. Todd Ramaly can be reached at 312-353-9317 or via e-mail at ramaly.todd@epa.gov. Christopher Lambesis can be reached at 312-886-3583 or via e-mail lambesis.christopher@epa.gov.

Sincerely,

Mary S. Setnicar
Chief, RCRA/TSCA Programs Section

Cc: L. Graczyk, EPA
J. Blough, EPA
G. Cuerrington, EPA

Attachment

Attachment

Detailed comments on ignitability and mercury parameter rationales in the USE Michigan WAPs.

a. USE Detroit South – Ignitability - *Table C-4b* describes a flashpoint approvable limit of 90°F but does not note the consequence of exceeding this value. The value in RCRA for characteristic of ignitibility is 140°F (40 CFR 261.21 (a)(1)) so it is not clear what the basis for 90°F is. The test method for the solid describes waste being unacceptable for treatment but acceptable for storage. Again, it is not clear to what regulatory determination is being made here. The WAP should explain if the USE method described here for solids is meant to meet the narrative determination in 261.21 (2) for the characteristic of ignitability. *Table C-2* describes a process logic for ignitable wastes that implies that it is necessary to determine the TOC and TOX content of ignitable hazardous wastes. The table does not explain clearly the consequences of those determinations. The WAP should explain if low TOC wastes are to be tested for deactivation prior to stabilization. TOX appears on *Table C-3_Analytical Parameters and Test Methods*, but TOC does not.

   Mercury - *Table C-4b* describes the need for TCLP testing and identifies Method 1311. The rationale specifically links the TCLP to the parameters in 261.24 Table 1 – the characteristic TC list. Note that the TCLP is also used for numerous other parameters that are not in 261.24 *Table 1* and the LDR treatment standards that use the TCLP are usually different concentrations than the ones listed in 261.24. The total metals rationale is a generic description of the test method without a rationale as to why you would conduct such an analysis. Whole series of test methods are mentioned; however, none are specified. *Table C-2* states that TCLP metals are to be run for mercury, however, it is not clear what standard is being applied for what waste code or subcategory. For a characteristic determination, the TCLP mercury value is 0.20 mg/L TCLP (40 CFR 261.24). The LDR treatment standard is 0.025 mg/L or 0.20 mg/L depending upon which subcategory the waste is in. None of the rationale governing these choices is present in the table.

b. USE Detroit North – Ignitability – *Table A3-1* identifies two methods for determining the flashpoint and mentions the generic purpose for the test, but does not identify the value of concern (i.e., 140°F). Additional methods are mentioned in the *Table of Additional Methods*; however, it is not clear when and why these methods would be used. *Table A3-1a* provides a clearer stated rationale, however, the value of 90°F for flashpoint is confusing in that the RCRA limit for ignitable liquids is 140°F. *Table A3-1a* also has a method for ignitable solids like

that of USE Detroit North. It describes the operational consequence to a positive test. It should also state the consequence to the hazardous waste determination (i.e., the waste is D001 and must meet the LDR treatment standard of DEACT). *Table A3-2 Chemical Characterization Hierarchy* describes that wastes with a flashpoint less than or equal to 100°F must be designated flammable. It is not clear if this is a DOT requirement, a RCRA requirement, or a typographical error. DOT also uses 140°F for its general definition so it is not at all clear to what the 100°F value refers to.

Mercury – *Table A3-1* mentions the generic purpose for the TCLP test, but does not identify the value of concern (i.e., either 0.20 mg/L or 0.025 mg/L TCLP mercury depending on waste code and subcategory). TCLP mercury is likely to be needed for both characterization and LDR compliance purposes. Two additional methods for mercury analysis are provided in the *Table of Additional Methods* with a rationale that the selection of methods depends on whether the waste is liquid or solid. Further, the regulatory concentrations and consequence are not mentioned. *Table A3-1a* is identical to *Table C-4b* at USE Detroit South and the comments above for Mercury in *Table C-4b* also apply to USE Detroit North. *Table A3-5 – Additional Analysis Requirements for Treatment of Listed Waste* – has added rationale referring to characteristic and LDR determinations but does not specify what the concentrations are nor that they might not be identical depending on the specific waste code and waste subcategory identified.

c. USE Belleville – Ignitability - *Table A2.A.2 Pre-Approval/Waste Characterization* adequately discusses the rationale for characterization of the mercury-bearing waste and has appropriate methods. It does not, however, discuss the additional rationale of acceptance screening nor does it identify the flashpoint value critical to the test. *Table A2.B.2-Pre-Acceptance Analysis Procedures* does identify the rationale for acceptance as well as providing for a screening test to be done on each shipment. The flashpoint method does not specify the target flashpoint values of importance. *Table A2.D2 Land Disposal Restriction Verification* does call-out the method for DEACT but does not specify the flashpoint value. All three tables do not specify to which wastes or waste subcategories these requirements apply. Some of the analyses will not apply to some wastes, however, one cannot tell by the table entries which is which. The reader would need to research the regulations and other materials to figure this out. This does not meet the requirements of 40 CFR 264.13 to specify the parameter and rationale for each waste. [Note: *Table A2.D.2* claims that LDR demonstrations can be done by knowledge while 268.7(b) requires testing.]

Mercury - *Table A2.A.2 Pre-Approval/Waste Characterization* does not provide the rationale for mercury analysis. It appears to contain a typographical error in that it refers to PCB analysis. If we believe the intended phrase to be "Quantification of Mercury Concentration", this is not a rationale. Examples of adequate rationales would be:

- Measure total mercury concentration to confirm the waste received matches the profile.
- Measure TCLP mercury concentration to determine if the waste is characteristic hazardous waste, $\geq$ 0.20 mg/L TCLP mercury.
- Measure TCLP mercury concentration to determine if the waste meets LDR treatment standards, <0.025 mg/L TCLP mercury.

Table A2.D2 Land Disposal Restriction Verification mentions mercury but does not explain the criterion. The rationale refers to 40 CFR 268 for standards, however there are multiple standards for mercury including two different TCLP concentrations and a totals concentration (for subcategory identification). The table does not differentiate which apply. The methodology provided also fails to identify the TCLP method. All three tables do not specify to which wastes these requirements apply. Some of the analyses will not apply to some wastes, however, one cannot tell by the table entries which is which. The reader would need to research the regulations and other materials to figure this out. This does not meet the requirement to specify the parameter and rationale for each waste. [Note: *Table A2.D.2* claims that LDR demonstrations can be done by knowledge while 268.7(b) requires testing.]

ENCLOSURE 4

U.S. Environmental Protection Agency, Region 5
Draft Table Example of Waste Analysis Plan Required Analysis for Incoming Liquid Waste for Treatment at the Water Treatment Plant

US Ecology Detroit North

WAP-Required analysis for liquid wastes received for treatment in the water treatment plant

Waste Code	Parameter	Rationale	Analytical Method	Frequency
All Waste Codes	Color	Compare to profile to confirm waste matches the profile.	Visual	Each incoming shipment
	Physical state			
	pH	Confirm waste has the expected characteristic category (2.0<pH>12.5) and compare to profile to confirm waste is as expected (+/- 2 standard units from the profile).	SW 846 9040C SW846 9041A SW846 9045D	
	Consistency	Compare to profile to confirm waste matches the profile.	Visual	
	Homogeneity	Compare individual containers to assess homogeneity.		
	Organic layer?	Identify presence of organics.		
	Solids content?	Identify presence of solids.		
	Pumpability	Qualitatively evaluate pumpability.	Stir test?	
	TSS	Determine if waste is LDR-wastewater (< 1% TSS by weight) or LDR-nonwastewater.	EPA Method 160.2	?
	TOC	Determine if waste is LDR-wastewater (<1% TOC by weight) of LDR-nonwastewater and to confirm waste is <10 % TOC (Subpart BB applicability).	SW846 9060A	?
	Average VO	Determine if waste is exempt from Subpart CC (<500 ppmw).	EPA 25D Generator knowledge with analytical basis	?
	Flashpoint	Determine if waste exhibits the characteristic of ignitibility (< 140°F). Also – WAP has an alternate requirement of 90°F.	SW846 1010 ASTM D 93-79, D93-80 SW846 1020B ASTM D 3278-78	?
	Reactivity	Determine if waste exhibits the characteristic of reactivity.	? sulfide, CN analysis?	?
	Compatibility	Determine if waste will not cause adverse reaction if mixed with other wastes.	Method?	If all water treat is single batch, maybe not an issue.

ENCLOSURE 5

U.S. Environmental Protection Agency, Region 5
Draft Table Example of Waste Analysis Plan Required Analysis for Non-liquid Residuals
Generated from Treatment at the Water Treatment Plant

Waste Code (prior to treatment)	Waste form as generated (LDR wastewater or LDR nonwastewater)	Parameter	CAS#	Rationale	Sampling Method	Analytical Method	Frequency
D004	LDR-wastewater	TCLP arsenic	7440-38-2	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D004	LDR-nonwastewater	TCLP arsenic	7440-38-2	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D004	LDR-nonwastewater	TCLP arsenic	7440-38-2	Determine if waste or residual meets LDR treatment standard, < 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1-grab sample per roll-off box.	SW846 1311, 7010	weekly
D005	LDR-wastewater	TCLP barium	7440-39-3	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 100 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D005	LDR-nonwastewater	TCLP barium	7440-39-3	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 100 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D005	LDR-nonwastewater	TCLP barium	7440-39-3	Determine if waste or residual meets LDR treatment standard, < 21 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	weekly
D006	LDR-wastewater	TCLP cadmium	7440-43-9	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 1.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D006	LDR-nonwastewater	TCLP cadmium	7440-43-9	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 1.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D006	LDR-nonwastewater	TCLP cadmium	7440-43-9	Determine if waste or residual meets LDR treatment standard, < 0.11 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	weekly
D007	LDR-wastewater	TCLP chromium	7440-47-3	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D007	LDR-nonwastewater	TCLP chromium	7440-47-3	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D007	LDR-nonwastewater	TCLP chromium	7440-47-3	Determine if waste or residual meets LDR treatment standard, < 0.6 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	weekly
D008	LDR-wastewater	TCLP lead	7439-92-1	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D008	LDR-nonwastewater	TCLP lead	7439-92-1	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D008	LDR-nonwastewater	TCLP lead	9439-92-1	Determine if waste or residual meets LDR treatment standard, < 0.75 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	weekly
D009	LDR-wastewater	TCLP mercury	7439-97-6	Determine if waste is RCRA hazardous for characteristic of toxicity, < 0.2 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7471B, 7473	weekly
D009	LDR-nonwastewater	TCLP mercury	7439-97-6	Determine if waste is RCRA hazardous for characteristic of toxicity, < 0.2 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7471B, 7473	weekly
D009	LDR-nonwastewater	mercury	7439-97-6	Determine if waste or residue is High Mercury LDR category, >260 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box	SW846 7471B, 7473	weekly
D009	LDR-nonwastewater	TCLP mercury	7439-97-6	Determine if waste or residual meets LDR treatment standard, < 0.025 mg/L.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7471B, 7473	weekly
D010	LDR-wastewater	TCLP selenium	7782-49-2	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 1.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D010	LDR-nonwastewater	TCLP selenium	7782-49-2	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 1.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D010	LDR-nonwastewater	TCLP selenium	7782-49-2	Determine if waste or residual meets LDR treatment standard, < 5.7 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	weekly
D011	LDR-wastewater	TCLP silver	7440-22-4	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D011	LDR-nonwastewater	TCLP silver	7440-22-4	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 5.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 7010	weekly
D011	LDR-nonwastewater	TCLP silver	7440-22-4	Determine if waste or residual meets LDR treatment standard, < 0.14 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	weekly
D012	LDR-wastewater	TCLP Endrin	72-20-8	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 0.02 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8270	weekly
D012	LDR-nonwastewater	TCLP Endrin	72-20-8	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 0.02 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8270	weekly
D012	LDR-nonwastewater	Endrin	72-20-8	Determine if waste or residual meets LDR treatment standard, < 0.13 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8270	weekly
D013	LDR-wastewater	TCLP Lindane	319-84-6, 319-85-7, 319-86-8, 58-89-9	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 0.4 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8081	weekly
D013	LDR-nonwastewater	TCLP Lindane	319-84-6, 319-85-7, 319-86-8, 58-89-9	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 0.4 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8081	weekly
D013	LDR-nonwastewater	Lindane (as alpha-, beta-, delta-, and gamma-BHC)	319-84-6, 319-85-7, 319-86-8, 58-89-9	Determine if waste or residual meets LDR treatment standard, < 0.066 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8081	weekly
D014	LDR-wastewater	TCLP Methoxychlor	72-43-5	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 10.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8270	weekly

D014	LDR-nonwastewater	TCLP Methoxychlor	72-43-5	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 10.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8270	weekly
D014	LDR-nonwastewater	Methoxychlor	72-43-5	Determine if waste or residual meets LDR treatment standard, < 0.18 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8270	weekly
D015	LDR-wastewater	TCLP Toxaphene	8001-35-2	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 0.5 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8270	weekly
D015	LDR-nonwastewater	TCLP Toxaphene	8001-35-2	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 0.5 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8270	weekly
D015	LDR-nonwastewater	Toxaphene	8001-35-2	Determine if waste or residual meets LDR treatment standard, < 2.6 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8270	weekly
D016	LDR-wastewater	TCLP 2,4-D	94-75-7	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 10.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8321	weekly
D016	LDR-nonwastewater	TCLP 2,4-D	94-75-7	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 10.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8321	weekly
D016	LDR-nonwastewater	2,4-D	94-75-7	Determine if waste or residual meets LDR treatment standard, < 10.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8321	weekly
D017	LDR-wastewater	TCLP 2,4,5-TP (Silvex)	93-72-1	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 1.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8321	weekly
D017	LDR-nonwastewater	TCLP 2,4,5-TP (Silvex)	93-72-1	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 1.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8321	weekly
D017	LDR-nonwastewater	2,4,5-TP (Silvex)	93-72-1	Determine if waste or residual meets LDR treatment standard, < 7.9 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8321	weekly
D018	LDR-wastewater	TCLP benzene	71-43-2	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 0.5 mg/L TCLP.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 1311, 8260	weekly
D018	LDR-nonwastewater	TCLP benzene	71-43-2	Determine if waste is RCRA hazardous for characteristic of toxicity, ≥ 0.5 mg/L TCLP.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 1311, 8260	weekly
D018	LDR-nonwastewater	benzene	71-43-2	Determine if waste or residual meets LDR treatment standard, < 10.0 mg/kg.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 8260	weekly
D019	LDR-wastewater	TCLP carbon tetrachloride	56-23-5	Determine if waste is RCRA hazardous for characteristic of toxicity, < 0.5 mg/L TCLP.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 1311, 8260	weekly
D019	LDR-nonwastewater	TCLP carbon tetrachloride	56-23-5	Determine if waste is RCRA hazardous for characteristic of toxicity, < 0.5 mg/L TCLP.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 1311, 8260	weekly
D019	LDR-nonwastewater	carbon tetrachloride	56-23-5	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 8260	weekly
D020	LDR-wastewater	TCLP chlordane	57-74-9	Determine if waste is RCRA hazardous for characteristic of toxicity, < 0.03 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8270	weekly
D020	LDR-nonwastewater	TCLP chlordane	57-74-9	Determine if waste is RCRA hazardous for characteristic of toxicity, < 0.03 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8270	weekly
D020	LDR-nonwastewater	chlordane	57-74-9	Determine if waste or residual meets LDR treatment standard, < 0.26 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8270	weekly
D021	LDR-wastewater	TCLP chlorobenzene	108-90-7	Determine if waste is RCRA hazardous for characteristic of toxicity, < 100.0 mg/L TCLP.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 1311, 8260	weekly
D021	LDR-nonwastewater	TCLP chlorobenzene	108-90-7	Determine if waste is RCRA hazardous for characteristic of toxicity, < 100.0 mg/L TCLP.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 1311, 8260	weekly
D021	LDR-nonwastewater	chlorobenzene	108-90-7	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 8260	weekly
D022	LDR-wastewater	TCLP chloroform	67-66-3	Determine if waste is RCRA hazardous for characteristic of toxicity, < 6.0 mg/L TCLP.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 1311, 8260	weekly
D022	LDR-nonwastewater	TCLP chloroform	67-66-3	Determine if waste is RCRA hazardous for characteristic of toxicity, < 6.0 mg/L TCLP.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 1311, 8260	weekly
D022	LDR-nonwastewater	chloroform	67-66-3	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – low VOC in soil methodology, X grab samples per roll-off box.	SW846 8260	weekly
D023	LDR-wastewater	TCLP o-cresol	95-48-7	Determine if waste is RCRA hazardous for characteristic of toxicity, < 200.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8041	weekly
D023	LDR-nonwastewater	TCLP o-cresol	95-48-7	Determine if waste is RCRA hazardous for characteristic of toxicity, < 200.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8041	weekly
D023	LDR-nonwastewater	o-cresol	95-48-7	Determine if waste or residual meets LDR treatment standard, < 5.6 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8041	weekly
D024	LDR-wastewater	TCLP m-cresol	108-39-4	Determine if waste is RCRA hazardous for characteristic of toxicity, < 200.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8041	weekly
D024	LDR-nonwastewater	TCLP m-cresol	108-39-4	Determine if waste is RCRA hazardous for characteristic of toxicity, < 200.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8041	weekly
D024	LDR-nonwastewater	m-cresol	108-39-4	Determine if waste or residual meets LDR treatment standard, < 5.6 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8041	weekly
D025	LDR-wastewater	TCLP p-cresol	106-44-5	Determine if waste is RCRA hazardous for characteristic of toxicity, < 200.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. 1 composite sample per roll-off box.	SW846 1311, 8041	weekly

K061	LDR-wastewater	TCLP chromium (total)	7440-47-3	Determine if waste or residual meets LDR treatment standard, < 0.60 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-nonwastewater	TCLP chromium (total)	7440-47-3	Determine if waste or residual meets LDR treatment standard, < 0.60 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-wastewater	TCLP lead	7439-92-1	Determine if waste or residual meets LDR treatment standard, < 0.75 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-nonwastewater	TCLP lead	7439-92-1	Determine if waste or residual meets LDR treatment standard, < 0.75 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	initially and at repeated at least annually
K061	LDR-wastewater	TCLP mercury	7439-97-6	Determine if waste or residual meets LDR treatment standard, < 0.025 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7471B, 7473	Each batch
K061	LDR-nonwastewater	TCLP mercury	7439-97-6	Determine if waste or residual meets LDR treatment standard, < 0.025 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7471B, 7473	Each batch
K061	LDR-wastewater	TCLP nickel	7440-02-0	Determine if waste or residual meets LDR treatment standard, < 11.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-nonwastewater	TCLP nickel	7440-02-0	Determine if waste or residual meets LDR treatment standard, < 11.0 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-wastewater	TCLP selenium	7782-49-2	Determine if waste or residual meets LDR treatment standard, < 5.7 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-nonwastewater	TCLP selenium	7782-49-2	Determine if waste or residual meets LDR treatment standard, < 5.7 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-wastewater	TCLP silver	7440-22-4	Determine if waste or residual meets LDR treatment standard, < 0.14 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-nonwastewater	TCLP silver	7440-22-4	Determine if waste or residual meets LDR treatment standard, < 0.14 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-wastewater	TCLP thallium	7440-28-0	Determine if waste or residual meets LDR treatment standard, < 0.20 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-nonwastewater	TCLP thallium	7440-28-0	Determine if waste or residual meets LDR treatment standard, < 0.20 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-wastewater	TCLP zinc	7440-66-6	Determine if waste or residual meets LDR treatment standard, < 4.3 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K061	LDR-nonwastewater	TCLP zinc	7440-66-6	Determine if waste or residual meets LDR treatment standard, < 4.3 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Each batch
K062	LDR-wastewater	TCLP Chromium (Total)	7440-47-3	Determine if waste or residual meets LDR treatment standard, < 0.60 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Every batch
K062	LDR-nonwastewater	TCLP Chromium (Total)	7440-47-3	Determine if waste or residual meets LDR treatment standard, < 0.60 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Every batch
K062	LDR-wastewater	TCLP Lead	7439-92-1	Determine if waste or residual meets LDR treatment standard, < 0.75 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Every batch
K062	LDR-nonwastewater	TCLP Lead	7439-92-1	Determine if waste or residual meets LDR treatment standard, < 0.75 mg/L TCLP.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 1311, 7010	Every batch
K157	LDR-wastewater	carbon tetrachloride	56-23-5	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-nonwastewater	carbon tetrachloride	56-23-5	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-wastewater	Chloroform	67-66-3	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-nonwastewater	Chloroform	67-66-3	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-wastewater	Chloromethane	74-87-3	Determine if waste or residual meets LDR treatment standard, < 30 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-nonwastewater	Chloromethane	74-87-3	Determine if waste or residual meets LDR treatment standard, < 30 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-wastewater	Methomyl	16752-77-5	Determine if waste or residual meets LDR treatment standard, < 0.14 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8318A	Every batch
K157	LDR-nonwastewater	Methomyl	16752-77-5	Determine if waste or residual meets LDR treatment standard, < 0.14 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8318A	Every batch
K157	LDR-wastewater	Methyl ethyl ketone	78-93-3	Determine if waste or residual meets LDR treatment standard, < 36 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-nonwastewater	Methyl ethyl ketone	78-93-3	Determine if waste or residual meets LDR treatment standard, < 36 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-wastewater	Methylene Chloride	75-09-2	Determine if waste or residual meets LDR treatment standard, < 30 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-nonwastewater	Methylene Chloride	75-09-2	Determine if waste or residual meets LDR treatment standard, < 30 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch
K157	LDR-wastewater	Pyridine	110-86-1	Determine if waste or residual meets LDR treatment standard, < 16 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.	SW846 8260	Every batch

F039	LDR-wastewater	1,1,2,2-Tetrachloroethane	79-34-6	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,1,2,2-Tetrachloroethane	79-34-6	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	Determine if waste or residual meets LDR treatment standard, < 30 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.			Each batch
F039	LDR-nonwastewater	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	Determine if waste or residual meets LDR treatment standard, < 30 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.			Each batch
F039	LDR-wastewater	1,1,2-Trichloroethane	79-00-5	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,1,2-Trichloroethane	79-00-5	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,1-Dichloroethane	75-34-3	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,1-Dichloroethane	75-34-3	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,1-Dichloroethylene	75-35-4	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,1-Dichloroethylene	75-35-4	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	Determine if waste or residual meets LDR treatment standard, < 0.005 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8280	Each batch
F039	LDR-nonwastewater	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	Determine if waste or residual meets LDR treatment standard, < 0.005 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8280	Each batch
F039	LDR-wastewater	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Determine if waste or residual meets LDR treatment standard, < 0.005 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8280	Each batch
F039	LDR-nonwastewater	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Determine if waste or residual meets LDR treatment standard, < 0.005 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8280	Each batch
F039	LDR-wastewater	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	35822-46-9	Determine if waste or residual meets LDR treatment standard, < 0.0025 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8280	Each batch
F039	LDR-nonwastewater	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	35822-46-9	Determine if waste or residual meets LDR treatment standard, < 0.0025 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8280	Each batch
F039	LDR-wastewater	1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	55673-89-7	Determine if waste or residual meets LDR treatment standard, < 0.0025 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8280	Each batch
F039	LDR-nonwastewater	1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	55673-89-7	Determine if waste or residual meets LDR treatment standard, < 0.0025 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8280	Each batch
F039	LDR-wastewater	1,2,3-Trichloropropane	96-18-4	Determine if waste or residual meets LDR treatment standard, < 30 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,2,3-Trichloropropane	96-18-4	Determine if waste or residual meets LDR treatment standard, < 30 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,2,4,5-Tetrachlorobenzene	95-94-3	Determine if waste or residual meets LDR treatment standard, < 14 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8321	Each batch
F039	LDR-nonwastewater	1,2,4,5-Tetrachlorobenzene	95-94-3	Determine if waste or residual meets LDR treatment standard, < 14 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8321	Each batch
F039	LDR-wastewater	1,2,4-Trichlorobenzene	120-82-1	Determine if waste or residual meets LDR treatment standard, < 19 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,2,4-Trichlorobenzene	120-82-1	Determine if waste or residual meets LDR treatment standard, < 19 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,2-Dibromo-3-chloropropane	96-12-8	Determine if waste or residual meets LDR treatment standard, < 15 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,2-Dibromo-3-chloropropane	96-12-8	Determine if waste or residual meets LDR treatment standard, < 15 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,2-Dichloroethane	107-06-2	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,2-Dichloroethane	107-06-2	Determine if waste or residual meets LDR treatment standard, < 6.0 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,2-Dichloropropane	78-87-5	Determine if waste or residual meets LDR treatment standard, < 18 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-nonwastewater	1,2-Dichloropropane	78-87-5	Determine if waste or residual meets LDR treatment standard, < 18 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch
F039	LDR-wastewater	1,4-Dinitrobenzene	100-25-4	Determine if waste or residual meets LDR treatment standard, < 2.3 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8270	Each batch
F039	LDR-nonwastewater	1,4-Dinitrobenzene	100-25-4	Determine if waste or residual meets LDR treatment standard, < 2.3 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8270	Each batch
F039	LDR-wastewater	1,4-Dioxane	123-91-1	Determine if waste or residual meets LDR treatment standard, < 170 mg/kg.	Containers, Treatment Tanks – trowel or bucket auger. X grab samples per roll-off box.		SW-846 8260	Each batch