

Summary of Site-Specific Acceptance Limits**Protocol BIO-1**

Underground storage tanks, above ground tanks, or spills containing leaded, unleaded, or aviation gasoline, diesel, fuel oil # 1,2, and 4 or crude oil, lube oil.

Protocol	Acceptance Limits	Analytical Methods ^A
Lead	TCLP extraction procedure <5.0 mg/L ^B	EPA Methods
Benzene	No Limit ^C	EPA Methods
GRO (for all gasoline, mineral spirits, Stoddard solvent, texsolve, naphtha)	No Limit	Wisconsin DNR Modified GRO
DRO (for diesel, jet fuel, kerosene # 1, 2, or 4 fuel oil, crude oil, lube oil)	No Limit	Wisconsin DNR Modified DRO

^A All analyticals must be performed by a WDNR certified laboratory or Waste Management certified laboratory.

^B For all constituents that are identified as TCLP extraction, it is permissible to do a totals analysis if <20 times the regulatory level. If the totals analysis is = 20 times regulatory limit, the TCLP extraction is required. TCLP extraction is required for benzene if tank is not regulated under 40 CFR 280. Lead test is only required for gasoline.

^C For above ground tanks or spills (tanks not regulated under 40 CFR 280), TCLP limit is 0.5 mg/L.

PROTOCOL BIO-2

Underground storage tanks subject to 40 CFR 280 Regulations containing waste oil or unknown petroleum product.

Protocol	Acceptance Limits	Analytical Methods ^A
Lead	TCLP extraction procedure <5.0 mg/L ^B	EPA Methods
Cadmium	TCLP extraction procedure <1.0 mg/L ^B	EPA Methods
Reactive Cyanide	<input type="checkbox"/> 200 ppm ^C	SW 846
Reactive Sulfide	<input type="checkbox"/> 200 ppm ^D	SW 846
GRO (unknown petroleum)	No limit	Wisconsin DNR modified GRO
DRO (unknown petroleum or waste oil)	No limit	Wisconsin DNR modified DRO

^A All analyticals must be performed by a WDNR certified laboratory or Waste Management certified laboratory.

^B For all constituents identified as TCLP extraction, it is permissible to do a totals analysis if <20 times the regulatory level. If the totals analysis \geq 20 times regulatory limit, the TCLP extraction is required. TCLP extraction is required for benzene if tank is not regulated under 40 CFR 280.

^C For facilities that have purchased cyanide or performed metal finishing such as heat treating, stripping, or plating.

^D For facilities that purchased metal cutting oils or performed metal finishing

Note: there is no Bio-3 protocol at this time.

PROTOCOL BIO-4

Above ground tanks or spills of waste oil contaminated soil

Protocol	Test Method & Acceptance Limits ^{A, B}
Lead	TCLP extraction procedure <5.0 mg/L
Chlorine	< 1.0%
If the Chlorine content is \geq 1%, acceptance of waste is still allowable if analyzed for the following compounds and the sum of the weight of the compounds is <1% of the total dry weight of the sample. (These are the F500 solvents)	
Carbon Tetrachloride	8240
Chloroform	8240
ortho-Dichlorobenzene	8240
Dichlorodifluoromethane	8240
1,1-Dichloroethylene	8240
1,2-Dichloroethylene	8240
Methylene Chloride	8240
Tetrachloroethylene	8240
1,1,1-Trichloroethane	8240
Trichloroethylene	8240
Trichlorofluoromethane	8240
1,1,2-Trichloro- 1,2,2-Trifluoroethane	8240
PCB's	< Detection limits
Benzene	TCLP extraction procedure <0.5 mg/L
Carbon Tetrachloride	TCLP extraction procedure < 0.5 mg/L
Chlorobenzene	TCLP extraction procedure <100.0 mg/L
Chloroform	TCLP extraction procedure <6.0 mg/L
o-Cresol	TCLP extraction procedure <200.0 mg/L ^C
m-Cresol	TCLP extraction procedure <200.0 mg/L ^C
p-Cresol	TCLP extraction procedure <200.0 mg/L ^C
1,4-Dichlorobenzene	TCLP extraction procedure <7.5 mg/L
1,2-Dichloroethane	TCLP extraction procedure <0.5 mg/L
1,1-Dichloroethylene	TCLP extraction procedure <0.7 mg/L
2,4-Dinitrotoluene	TCLP extraction procedure <0.13 mg/L ^D
Hexachlorobenzene	TCLP extraction procedure <0.13 mg/L ^D
Hexachloro-1,3-butadiene	TCLP extraction procedure <0.5 mg/L
Hexachloroethane	TCLP extraction procedure <3.0 mg/L
Methyl Ethyl Ketone	TCLP extraction procedure <200.0 mg/L
Nitrobenzene	TCLP extraction procedure <2.0 mg/L
Pentachlorophenol	TCLP extraction procedure <100.0 mg/L
Pyridine	TCLP extraction procedure <5.0 mg/L ^D
Tetrachloroethylene	TCLP extraction procedure <0.7 mg/L

PROTOCOL BIO-4 (cont'd)

Trichloroethylene	TCLP extraction procedure <0.5 mg/L
2,4,5-Trichlorophenol	TCLP extraction procedure <400.0 mg/L
2,4,6-Trichlorophenol	TCLP extraction procedure <2.0 mg/L
Vinyl Chloride	TCLP extraction procedure <0.2 mg/L
DRO (waste oil, unknown petroleum)	No Limit
GRO (unknown petroleum)	No Limit

^A For all constituents identified as TCLP extraction, it is permissible to do a totals analysis instead of the extraction. If the totals analysis < 20 times the acceptance limit, no extraction is required.

^B Note: All analyticals must be performed by a WDNR certified laboratory or Waste Management certified laboratory.

^C If o-m- and p- Cresol concentrations cannot be differentiated, the total Cresol (D026) concentration is used. The regulatory level for total Cresol is 200 mg/L.

^D Quantitation limit is greater than the calculated regulatory level. The quantitation limit, therefore becomes the regulatory level.

Onyx Waste Services Landfill Protocols

<i>Waste Category I</i>		
Waste Number	Waste Name	Analytical Protocol
I-01	Foundry Sand	1
I-02	Industrial Furnace & Boiler Ash	1
I-03	Ink Waste	1
I-04	Paint, Paint Filters & Paint Sludges	1
I-05	Metal Treatment/Preparation Sludges	1
I-06	Grinding Sludges & Swarfs	2
I-07	Waste Glues & Adhesives	1
I-08	Ceramic Production Wastes	1
I-09	Wastewater Treatment Wastes	2
I-10	Soils Contaminated with Petroleum Products	Protocols T1-T4 site dependent
I-11	Soils Contaminated with Heavy Metals	2
I-12	Single Chemical Substance ^A	1
I-13	Category III Waste where the total annual volume from one generator is 20 cubic yards or less.	See Waste Category III

^A Waste # I-12 may be profiled by Material Safety Data Sheets if sufficiently characterized, rather than under Analytical Protocol 1.

Onyx Waste Services Special Waste Categories

<i>Waste Category II</i>	
Waste Number	Waste Name
II-01	Asbestos
II-02	Hospital Waste, Non-Infectious
II-03	Off-Spec Food & Food Grade Products (excluding those which contain free liquids)
II-04	Commercial Equipment which is no longer used
II-05	Empty Containers ^B
II-06	Dead Animals or Unusable Meat
II-07	Tannery Waste
II-08	Vegetable Waste or Compost Waste

^B Waste # II-05 can be profiled if requested.

<i>Waste Category III</i>		
Waste Number	Waste Name	Analytical Protocol
III-01	General Sludge Waste	2
III-02	Pollution Control Waste	2 ^C
III-03	Remedial Projects, Investigative Wastes, Spill Cleanups	2 ^C
III-04	All other non-municipal wastes not categorized in Waste Categories I-III	1 ^C

^C Protocols may be modified depending upon waste; department approval may be required.

Onyx Waste Acceptance Analytical Testing Protocols

For all constituents identified as TCLP analyses, it is permissible to perform a totals analysis instead of the TCLP. If the totals analysis for each parameter < 20 times the acceptance limits, the TCLP need not be performed for the purposes of determining waste acceptance.

Analytical Protocol 1		
Parameter	Test Method	Acceptance Limits
General Parameters		
pH	9045	2.0 ≤ pH ≤ 12.5
Total Solids	160.3	
Free Liquids	Paint Filter (EPA 9095)	0 %
Acidity in %	305.2	Analyze if pH < 4
Alkalinity in %	310.2	Analyze if pH > 10
Flash Point	Closed cup	>140° F
Metals		
Arsenic	TCLP	<5.0 mg/L
Barium	TCLP	<100.0 mg/L
Cadmium	TCLP	<1.0 mg/L
Chromium	TCLP	<5.0 mg/L
Copper	TCLP	<200.0 mg/L
Lead	TCLP	<5.0 mg/L
Mercury	TCLP	<0.2 mg/L
Nickel	TCLP	<35.0 mg/L
Selenium	TCLP	<1.0 mg/L
Silver	TCLP	<5.0 mg/L
Zinc	TCLP	<500.0 mg/L
TCLP Organic Compounds (volatiles and semi-volatiles)		
Benzene	TCLP	<0.5 mg/L
Carbon Tetrachloride	TCLP	<0.5 mg/L
Chlorobenzene	TCLP	<100.0 mg/L
Chloroform	TCLP	<6.0 mg/L
o-Cresol	TCLP	<200.0 mg/L
m-Cresol	TCLP	<200.0 mg/L
p-Cresol	TCLP	<200.0 mg/L

Analytical Protocol 1		
Parameter	Test Method	Acceptance Limits
1,4-Dichlorobenzene	TCLP	<7.5 mg/L
1,2-Dichloroethane	TCLP	<0.5 mg/L
1,1-Dichloroethylene	TCLP	<0.7 mg/L
2,4-Dinitrotoluene	TCLP	<0.13 mg/L
Hexachlorobenzene	TCLP	<0.13 mg/L
Hexachloro-1,3-butadiene	TCLP	<0.5 mg/L
Hexachloroethane	TCLP	<3.0 mg/L
Methyl Ethyl Ketone	TCLP	<200.0 mg/L
Nitrobenzene	TCLP	<2.0 mg/L
Pentachlorophenol	TCLP	<100.0 mg/L
Pyridine	TCLP	<5.0 mg/L
Tetrachloroethylene	TCLP	<0.7 mg/L
Trichloroethylene	TCLP	<0.5 mg/L
2,4,5-Trichlorophenol	TCLP	<400.0 mg/L
2,4,6-Trichlorophenol	TCLP	<2.0 mg/L
Vinyl Chloride	TCLP	<0.2 mg/L
Other Parameters		
Phenol	9065	<2000.0 mg/L
Reactive Cyanide	7.3.3.2	<250.0 mg/L
Reactive Sulfide	7.3.4.2	<250.0 mg/L
Chlorine	9252	<1%
If the Chlorine content is $\geq 1\%$, acceptance of waste is still allowable if analyzed for the following compounds and the sum of the weight of the compounds is $<1\%$ of the total dry weight of the sample. (These are the F500 solvents)		
Carbon Tetrachloride	8240	
Chloroform	8240	
ortho-Dichlorobenzene	8240	
Dichlorodifluoromethane	8240	
1,1-Dichloroethylene	8240	
1,2-Dichloroethylene	8240	
Methylene Chloride	8240	
Tetrachloroethylene	8240	

Analytical Protocol 1		
Parameter	Test Method	Acceptance Limits
1,1,1-Trichloroethane	8240	
Trichloroethylene	8240	
Trichlorofluoromethane	8240	
1,1,2-Trichloro- 1,2,2-Trifluoroethane	8240	
Pesticides and Herbicides ^D		
Chlordane	TCLP	<0.03 mg/L
2,4 D	TCLP	<10.0 mg/L
Endrin	TCLP	<0.02 mg/L
Heptachlor	TCLP	<0.02 mg/L
Lindane	TCLP	<0.04 mg/L
Methoxychlor	TCLP	<10.0 mg/L
Toxaphene	TCLP	<0.05 mg/L
2,4,5-TP (Silvex)	TCLP	<1.0 mg/L

^D Generator may certify without testing, unless the waste is suspected to contain pesticides or herbicides.

Analytical Protocol 2		
Parameter	Test Method	Acceptance Limits
Same as Waste Testing Protocol 1 plus:		
PCBs	Method 8080	<50 ppm

Contaminated Soils Analytical Requirements

Waste Testing Protocols T-1 through T-4 are all applicable to contaminated soils (C-Soils) from the cleanup of petroleum products and wastes. The particular testing protocol to be applied depends upon the project conditions. Protocols T-1 and T-2 apply to soils from underground storage tanks. Protocols T-3 and T-4 apply to soils from aboveground tanks or spills.

Contaminated Soil Analytical Requirements - Protocol T1

Protocol T1 applies to contaminated soils from leaking underground storage tanks where the contents of the tank are known to be any of the following:

- gasoline (leaded or unleaded)
- aviation fuel
- diesel fuel
- fuel oil #1,2,4 or 6
- crude oil
- lube oil

Analytical Protocol T-1		
Parameter	Test Method	Acceptance Limits
Free Liquids	Paint Filter Test (9095)	0%
Flash Point	Closed Cup	>140° F
Lead	TCLP	<5.0 mg/L
Benzene, total	8020,8021 or 8260	<10.0 ppm
GRO	Wisc. Modified GRO	No Limit
DRO	Wisc. Modified DRO	No Limit

Protocol T-1 Notes:

- 1) Total lead analysis can be submitted in lieu of TCLP lead if the total lead is <100 ppm. If the total lead is >100 ppm, TCLP lead analysis will be required.
- 2) It is not necessary to test for both GRO and DRO. Select either GRO or DRO as appropriate based upon your knowledge of the contents of the tank. For example, select GRO for gasoline and select DRO for diesel fuel, fuel oils or lube oil.

Contaminated Soil Analytical Requirements - Protocol T2

Protocol T2 applies to contaminated soils from leaking underground storage tanks where the contents of the tank are waste oil or unknown petroleum products.

Analytical Protocol T-2		
Parameter	Test Method	Acceptance Limits
Free Liquids	Paint Filter Test (9095)	0%
Flash Point	Closed Cup	>140° F
Lead	TCLP	<5.0 mg/L
Cadmium	TCLP	<1.0 mg/L
VOC Scan	8021, 8260	Case-by-case
Reactive Cyanide	7.3.3.2	<250.0 mg/L
Reactive Sulfide	7.3.4.2	<250.0 mg/L
GRO	Wisc. Modified GRO	No Limit
DRO	Wisc. Modified DRO	No Limit
PCBs	Method 8080	<50 ppm

Protocol T-2 Notes:

1. Total lead analysis can be submitted in lieu of TCLP lead if the total lead is <100 ppm. If the total lead is >100 ppm, TCLP lead analysis will be required.
2. Total cadmium analysis can be submitted in lieu of TCLP cadmium if the total cadmium is <20.0 ppm. If the total cadmium is >20.0 ppm, TCLP cadmium analysis will be required.
3. Test for both GRO and DRO for unknown petroleum products. For waste oils, the GRO can be omitted.

Contaminated Soil Analytical Requirements - Protocol T3

Protocol T3 applies to soils contaminated with gasoline, diesel fuel or lube oil from sources other than leaking underground storage tanks (i.e. above ground tanks or spills).

Analytical Protocol T-3		
Parameter	Test Method	Acceptance Limits
pH	9045	2.0 ≤ pH ≤ 12.5
Total Solids	160.3	
Free Liquids	Paint Filter (EPA 9095)	0 %
Flash Point	Closed cup	>140° F
Acidity in %	305.2	Analyze if pH < 4
Alkalinity in %	310.2	Analyze if pH > 10
Lead	TCLP	<5.0 mg/L
GRO	Wisc. Modified GRO	No Limit
DRO	Wisc. Modified DRO	No Limit
Benzene, total	8020,8021 or 8260	<10.0 ppm
TCLP Organic Compounds (volatiles and semi-volatiles)		
Carbon Tetrachloride	TCLP	<0.5 mg/L
Chlorobenzene	TCLP	<100.0 mg/L
Chloroform	TCLP	<6.0 mg/L
o-Cresol	TCLP	<200.0 mg/L
m-Cresol	TCLP	<200.0 mg/L
p-Cresol	TCLP	<200.0 mg/L
1,4-Dichlorobenzene	TCLP	<7.5 mg/L
1,2-Dichloroethane	TCLP	<0.5 mg/L
1,1-Dichloroethylene	TCLP	<0.7 mg/L
2,4-Dinitrotoluene	TCLP	<0.13 mg/L
Hexachlorobenzene	TCLP	<0.13 mg/L
Hexachloro-1,3-butadiene	TCLP	<0.5 mg/L
Hexachloroethane	TCLP	<3.0 mg/L
Methyl Ethyl Ketone	TCLP	<200.0 mg/L
Nitrobenzene	TCLP	<2.0 mg/L
Pentachlorophenol	TCLP	<100.0 mg/L
Pyridine	TCLP	<5.0 mg/L
Tetrachloroethylene	TCLP	<0.7 mg/L

Analytical Protocol T-3		
Parameter	Test Method	Acceptance Limits
Trichloroethylene	TCLP	<2.0 mg/L
2,4,5-Trichlorophenol	TCLP	<400.0 mg/L
2,4,6-Trichlorophenol	TCLP	<2.0 mg/L
Vinyl Chloride	TCLP	<0.2 mg/L

Protocol T-3 Notes:

1. Total lead analysis can be submitted in lieu of TCLP lead if the total lead is <100 ppm. If the total lead is >100 ppm, TCLP lead analysis will be required.
2. It is not necessary to test for both GRO and DRO. Select either GRO or DRO as appropriate based upon your knowledge of the contents of the tank. For example, select GRO for gasoline and select DRO for diesel fuel, fuel oil or lube oil.
3. TCLP analysis required based only on applicable contaminants. For all constituents identified as TCLP analyses, it is permissible to perform a totals analysis instead of the TCLP. If the totals analysis for each parameter are < 20 times the acceptance limits, the TCLP need not be performed for the purposes of determining waste acceptance.

Contaminated Soil Analytical Requirements - Protocol T4

Protocol T4 applies to soils contaminated with waste oil or unknown petroleum products from sources other than leaking underground storage tanks (i.e. aboveground tanks or spills).

Analytical Protocol T-4		
Parameter	Test Method	Acceptance Limits
Same as Waste Testing Protocol T-3 plus:		
Cadmium	TCLP	<1.0 mg/L
Total VOCs	8021, 8260	Case-by-case
PCBs	Method 8080	<50 ppm

Protocol T-4 Notes:

Total cadmium analysis can be submitted in lieu of TCLP cadmium if the total cadmium is <20.0 ppm. If the total cadmium is >20.0 ppm, TCLP cadmium analysis will be required.