

Appendix B: Sediment Sampling and Analysis Guidelines

Introduction

These sediment sampling and analysis guidelines expand upon the description of sediment disposal in Chapter 5 of the Stream Maintenance Program (SMP) Manual, and identify disposal options based on the chemical quality of the sediment. Guidance is provided for identifying sediment sampling frequency, sampling methodology, sediment analysis, and other sediment characterization activities. Sediment sampling, disposal, monitoring, and reporting conditions issued by the North Coast Regional Water Quality Control Board (RWQCB) under Order No. R1-2009-0049 Waste Discharge Requirements and 401 Water Quality Certification are included by reference. The sediment sampling and disposal process will be coordinated annually between the RWQCB and SCWA as part of the review and approval process for annual SMP maintenance and disposal activities.

Sediment Disposal

Sediment disposal sites will be proposed to the RWQCB Executive Officer for approval on an annual basis. The conditions for site approval have not yet been established, but will rely on analytical results from sediment sampling at the channels to be maintained and at the proposed disposal site(s). The conditions for approval will evolve as the RWQCB and SCWA become familiarized with the characteristics of sediment removed as part of maintenance activities and with sediment disposal and reuse conditions.

In general, sediment disposal sites can be characterized into seven categories based on potential reuse or disposal opportunities. These categories include on-site reuse, other SCWA channel or easement reuse, other wetland supporting reuse, upland agricultural or commercial reuse (dry), upland agricultural or commercial reuse (wet), landfill disposal, and hazardous waste disposal options. These disposal options are listed below in preferential order according to how well they support program objectives for sustainability.

- **Option 1: On-site reuse.** This includes reusing the sediment on-site (i.e., at the project site) within the channel or easement area for various fill or restoration purposes. For example, sediment excavated from the channel bottom could be placed adjacent to the active channel (remaining within the easement area), to enhance soil, vegetation, and riparian habitat conditions. Sediment could also be used on-site for bank stabilization purposes.
- **Option 2: Other SCWA channel or easement reuse.** Similar to Option 1, this includes reusing the sediment within SCWA channel or easement areas for fill or restoration purposes. The key difference is that Option 2 would occur at a different channel or easement area within the program area, but in a similar setting to where the sediment was originally removed. For example, sediment removed from Colgan Reach 4 could be placed in Laguna Reach 1 to enhance channel habitats.

- **Option 3: Wetland or floodplain restoration or enhancement.** Option 3 consists of beneficial reuse of the sediment outside or off-site of SCWA channel or easement areas, but in a wetland or floodplain setting to support ecologic functioning and habitat. As examples, gravel removed from one creek that does not support steelhead or salmonids could be placed in another creek that does in order to enhance salmonid habitat. Additionally, excavated sediment could be reused as part of habitat enhancement activities in the Laguna area. Because reuse sites under this option would potentially be located farther from the work site, increased sediment hauling distances would result. For the purposes of the sediment criteria discussed below, Option 3 sites are located in the vicinity of and potentially drain to wetlands or water bodies.
- **Option 4: Upland agricultural or commercial reuse (dry).** Sediment would be reused for upland agricultural or commercial reuses that are dry, whereby the sediment would not be secondarily eroded to stream channels or water bodies. Demand for dry sediment is high, particularly for use as soil amendment for agricultural crops and construction of foundation pads for buildings or structures. It is likely that upland disposal sites within Sonoma County will be frequently available and can accept large quantities of sediment.
- **Option 5: Upland agricultural or commercial reuse (wet).** Under this option, sediment would be used as fill in an already approved and permitted wetland project. This is a specific case where an approved and permitted project requires the use of sediment to fill a wetland. It is important to note that this sediment disposal plan in no way encourages or sanctions the filling of existing wetlands. However, for projects that are already approved and permitted, it may be preferable to use sediment materials that share similar wetland properties. In this way, using good quality excavated channel sediment for reuse in a wetland setting may be preferable or advantageous to using other fill material or soils.
- **Option 6: Landfill disposal.** In this option the sediment would be disposed at an approved and operating landfill for use as daily cover material for landfill operations. . Currently, waste generated in the program area is hauled to a number of landfills in the greater Bay Area. The nearest operating landfill is the Redwood Landfill in Novato, California. Sediment would be taken to the nearest landfill in need of cover material.
- **Option 7: Hazardous waste disposal.** This option involves the disposal of sediments containing hazardous levels of contaminants. Hazardous waste will be disposed at appropriate hazardous waste facilities. The nearest hazardous waste landfill is located in Kettleman City, California.

These seven disposal options will be evaluated in decreasing preference with potential site selection based on the quality of sediment. Due to the range of site locations for excavation and disposal, hauling distances will vary depending on the sediment removal project site location and the disposal option selected. The preference is to select disposal options that most beneficially reuse the sediment with the least environmental effects.

Multiple options can be selected in a given maintenance season for sediment disposal. It is anticipated that off-site disposal (Options 3, 4, 5, 6, and 7) will be required for the majority of maintenance activities. Option 7 would only be used if the sediment is deemed hazardous. The specific disposal sites for the options selected will be identified as part of annual and long-term sediment planning and approved by the RWQCB Executive Officer.

Sediment Sampling and Analysis Approach

As required by the current conditions of the RWQCB Waste Discharge Requirements - Monitoring and Reporting Program (Order No. R1-2009-0049), all sediment samples will be analyzed for the parameters/analytes listed in Table 1. Sampling parameters/analytes listed in Table 1 may be modified after a history of sampling is obtained. This may result in not requiring monitoring for some of these contaminants under certain situations or at certain locations, or the addition of more parameters/analytes if deemed necessary by the RWQCB.

Sampling Frequency and Locations

- For localized sediment removal projects and bank stabilization projects that involve the removal and disposal of less than 250 cubic yards of sediment, one sample will be collected and analyzed. Details on the methodology used to collect and composite samples are described below.
- For sediment removal or bank stabilization projects that require the removal and disposal of more than 250 cubic yards of sediment, one sample will be collected for every increment of 500 cubic yards of sediment to be removed. Details on the methodology used to collect and composite samples are described below.
- For project sites that require more than one sample, sampling locations will be selected to represent overall reach conditions. Sampling sites will be selected to target conditions at the upstream and downstream ends of the project zone. Sampling sites will also specifically target conditions downstream of culvert crossings, culvert outfalls, and key stream confluences.
- There may be situations, where for long channel reaches that are not particularly wide or deep with sediment, it will be preferable to take sediment samples for every 1,000 feet of project length rather than per 500 cubic yards of sediment removal. SCWA shall use whichever approach results in requiring more samples. It is expected that most often, the 500 cubic yard requirement will result in more sampling, but for certain projects the 1,000 ft length requirement will require more sampling and provide better representation.

Sediment Sampling Methodology

This guidance applies to discrete (single) samples and composite samples. All samples shall be collected by means of a hand trowel, a hand auger, or another sampling method approved by the regulatory agencies. The individual collecting the sample will have the discretion of choosing the sampling method which is the most efficient to perform.

Sampling will be conducted in accordance with the methods described below:

Hand Trowel Procedure

1. Remove vegetation and woody debris from the ground surface.

2. If collecting a subsurface sample, use a shovel to dig down to the desired sampling interval.
3. Use a stainless steel hand trowel to collect soil.
4. Place soil in an appropriate sampling container.
5. Replace all excavated soils to their original location (i.e., backfill the sampling hole).

Hand Auger Procedure

1. Remove vegetation and woody debris from the ground surface.
2. Use the hand auger to advance down to the top of the sampling interval.
3. Use a hand auger to collect soil from the desired depth.
4. Use a clean (decontaminated) tool to scoop the soil out of the auger and place in an appropriate sampling container.
5. Replace all excavated soils to their original location (i.e., backfill the sampling hole).
6. If hand auger refusal is encountered, sample will be collected from an alternate location.

Continuous Core Sediment Sampling

Continuous core sediment samples from sediment designated for removal will be collected using hand auger at a frequency of a maximum of one sample per site. Each continuous core sample will be composited by the laboratory, and analyses will be performed on the composite sample.

Discrete Sediment Sampling

Discrete sediment samples from sediment designated for removal will be collected from desired depths using hand auger. Samples will be composited by the laboratory, and analyses will be performed on the composite sample.

Sampling Depth

The sampling depth will be determined in the field. At each sampling location, the staff collecting the samples shall make an estimate of the depth of the sediment using visual clues and/or existing data. Sediment samples shall be collected at the surface and at 1 ft. intervals down to a maximum 4 ft level. In the event that the depth of the sediment is less than 1 foot, then the sample shall be collected at the surface. Samples will be collected up to a maximum depth of 4 feet because collection of samples below that depth is prohibitively difficult due to the finite strength of the individual collecting the sample, and the wet properties of the sediment, which may cause a borehole to collapse. In some locations it may even be infeasible to collect a sample at 3 or 4 feet bgs due to the wet, unstable nature of the sediments. In the event that it is infeasible to collect a sample at the depth interval specified, the sample shall be collected at the deepest interval possible (using 1 foot increments). Also note that the maximum depth at the majority of sediment removal sites is not greater than 4 feet because sediment is removed at this threshold due to the significant reduction in channel conveyance capacity which occurs when sediment is accumulated higher than 4 feet.

Other Sediment Sampling Details

In general, samples will be taken from the finest sediment at a sampling site and every attempt will be made to collect sediments that are representative of the materials to be removed. Most contaminants are associated with fine-grained sediment, and it is therefore important that some of the samples contain the finest sediment that is present at a given project site. For SMP channels, fine sediments include mud, silts, and finer sandy materials. A suitable field test for grain size is to rub sediments between the fingers: finer sediments will feel smooth, whereas coarser sediments will be gritty (SWRCB 2008). As described above, two sub-samples will be collected at each sampling site with the sub-samples composited into a single representative sample. Every attempt will be made to collect representative samples, i.e. samples will be collected at least 10 feet apart from one another. As described above, sampling will target key locations such as culvert outfalls and stream confluences as actual site conditions dictate.

It is noted, in the past ten years of maintenance activities, sediment removal from a single reach has never resulted in the removal of more than 20,000 cubic yards of sediment in a single project. If more than 20,000 cubic yards of sediment will be removed from a single reach, the San Francisco Bay RWQCB Beneficial Reuse Guidelines (SFBRWQCB 2000) will be followed to determine the proper sampling plan.

Observed Contamination and Results That Exceed Water Quality Criteria

For all projects, any observed contamination as evidenced by chemical-like odors, oily sheens, or irregularly colored sediment would be immediately reported to the local fire department's hazardous materials team and the appropriate Regional Water Quality Control Board staff person in the Cleanups and Investigations Unit. These agencies will direct SCWA on how to handle and remove potentially hazardous sediment.

In addition, if results are found to exceed selected water quality criteria, SCWA will coordinate with the appropriate Regional Water Quality Control Board to develop a contingency sampling plan. In this event, additional samples will be taken to determine the extent of contamination and pinpoint potential contamination sources. Under the guidance of the RWQCB, selection of the number and location of additional samples will be determined based on potential contamination sources such as parking lots, automotive service centers, and dry cleaners. All excavated materials will be stockpiled separately on heavy plastic, covered, and stored until an appropriate disposal location is determined. Additional sampling results will then be compared to the Total Threshold Limit Concentrations (TTLCs) and STLCs specified in CCR Title 22 Chapter 11 for hazardous waste identification. Sediments not meeting the TTLC and/or STLC criteria will be disposed of at an appropriate treatment, storage, and/or disposal, facility.

Sediment Disposal Best Management Practices

Sediment Disposal Best Management Practices are discussed in Chapter 7 of the SMP Manual.

Reporting of Sediment Sampling Results

SCWA will maintain records of field sampling methods, locations, depths, analysis, and results.

SCWA will submit complete laboratory sediment sampling results to the RWQCB on an annual basis.

Table 1: Sediment Sample Analyte List

EPA Test Method ¹	Analyte	Reporting Limit for Soil ² (mg/kg)	Analyte (cont.)	Reporting Limit for Soil (mg/kg)
9045	pH	pH Units		
6010/ CAM 17	Metals			
	Antimony (total)	1.1	Lead (total)	1.1
	Antimony (soluble)	1.0 mg/l	Lead (soluble)	0.50 mg/l
	Arsenic (total)	0.086	Mercury (total)	0.10
	Arsenic (soluble)	0.10 mg/l	Mercury (soluble)	0.10 mg/l
	Barium (total)	0.13	Molybdenum (total)	0.36
	Barium (soluble)	1.0 mg/l	Molybdenum (soluble)	0.10 mg/l
	Beryllium (total)	0.11	Nickel (total)	1.1
	Beryllium (soluble)	0.050 mg/l	Nickel (soluble)	0.10 mg/l
	Cadmium (total)	0.12	Selenium (total)	0.074
	Cadmium (soluble)	0.10 mg/l	Selenium (soluble)	0.10 mg/l
	Chromium (total)	0.66	Silver (total)	0.33
	Chromium (soluble)	0.10 mg/l	Silver (soluble)	0.10 mg/l
	Cobalt (total)	0.30	Thallium (total)	1.1
	Cobalt (soluble)	1.0 mg/l	Thallium (soluble)	0.10 mg/l
	Copper (total)	0.26	Vanadium (total)	0.55
	Copper (soluble)	0.10 mg/l	Vanadium (soluble)	0.10 mg/l
	Fluoride (total)	1.0	Zinc (total)	2.4
			Zinc (soluble)	0.50 mg/l
8081	Organochlorine Pesticides			
	Aldrin	0.0050	Endosulfan I	0.0050
	α-HCH (hexachlorocyclohexane)	0.0050	Endosulfan II	0.0050
	β-HCH	0.0050	Endosulfan sulfate	0.0050
	γ-HCH (Lindane)	0.0050	Endrin	0.0050
	δ-HCH	0.0050	Endrin aldehyde	0.0050
	Chlordane (tech)	0.20	Heptachlor	0.0050
	4,4'-DDD	0.0050	Heptachlor epoxide	0.0050
	4,4'-DDE	0.0050	Kepone	1.0
	4,4'-DDT	0.0050	Methoxychlor	0.0050
	Dieldrin	0.0050	Mirex	0.10
			Toxaphene	0.20
8141	Organophosphorus Pesticides			
	Azinphos-ethyl	0.10	Famphur	0.10
	Azinphos-methyl	0.10	Fenthion	0.025
	Bolstar (Sulprofos)	0.050	Malathion	0.025
	Chlorpyrifos	0.025	Mevinphos	0.050
	Coumaphos	0.10	Parathion, ethyl	0.025

¹ The most recent version of EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", also known as SW-846, will be used.

² All laboratory analytical reports will include the detection and reporting limits, any flags, and a QA/QC report. Electronic (PDF) submittals are preferred.

EPA Test Method ¹	Analyte	Reporting Limit for Soil ² (mg/kg)	Analyte (cont.)	Reporting Limit for Soil (mg/kg)
	Demeton-O	0.050	Parathion, methyl	0.025
	Demeton-S	0.050	Phorate	0.025
	Diazinon	0.025	Ronnel	0.050
	Dichlorvos (DDVP)	0.050	Simazine	0.050
	Dimethoate	0.10	Stirophos	0.025
	Disulfoton	0.025	Thionazin	0.050
	EPN	0.050	Tokuthion	0.050
	Ethion	0.025	Trichloronate	0.0050
	Ethoprop	0.050		
8082	Polychlorinated biphenyls (PCBs)			
	Aroclor 1016	0.20	Aroclor 1242	0.20
	Aroclor 1221	0.20	Aroclor 1248	0.20
	Aroclor 1232	0.20	Aroclor 1254	0.20
			Aroclor 1260	0.20
8260	Volatile Organic Compounds (VOCs)			
	Acetone	0.020	1,1-Dichloropropene	0.0050
	Benzene	0.0050	cis-1,3-Dichloropropene	0.0050
	Bromobenzene	0.0050	trans-1,3-Dichloropropene	0.0050
	Bromochloromethane	0.0050	Ethylbenzene	0.0050
	Bromodichloromethane	0.0050	Hexachlorobutadiene	0.0050
	Bromoform	0.0050	Isopropylbenzene	0.0050
	Bromomethane	0.0050	p-Isopropyltoluene	0.0050
	n-Butylbenzene	0.0050	Methyl ethyl ketone	0.015
	sec-Butylbenzene	0.0050	Methyl isobutyl ketone	0.010
	tert-Bertylbenzene	0.0050	Methyl tert-butyl ether (MTBE)	0.0050
	Carbon tetrachloride	0.0050	Methylene chloride	0.0050
	Chlorobenzene	0.0050	Naphthalene	0.0050
	Chloroethane	0.0050	n-Propylbenzene	0.0050
	Chloroform	0.0050	Styrene	0.0050
	Chloromethane	0.0050	1,1,1,2-Tetrachloroethane	0.0050
	2-Chlorotoluene	0.0050	1,1,2,2-Tetrachloroethane	0.0050
	4-Chlorotoluene	0.0050	Tetrachloroethene	0.0050
	Dibromochloromethane	0.0050	Toluene	0.0050
	1,2-Dibromo-3-chloropropane	0.0050	1,2,3-Trichlorobenzene	0.0050
	1,2-Dibromoethane	0.0050	1,2,4-Trichlorobenzene	0.0050
	Dibromomethane	0.0050	1,1,1-Trichloroethane	0.0050
	1,2-Dichlorobenzene	0.0050	1,1,2-Trichloroethane	0.0050
	1,3-Dichlorobenzene	0.0050	Trichloroethene	0.0050
	1,4-Dichlorobenzene	0.0050	Trichlorofluoromethane	0.0050
	Dichlorodifluoromethane	0.0050	Trichlorotrifluoroethane	0.0050
	1,1-Dichloroethane	0.0050	1,2,3-Trichloropropane	0.0050
	1,2-Dichloroethane	0.0050	1,2,4-Trimethylbenzene	0.0050
	1,1-Dichloroethene	0.0050	1,3,5-Trimethylbenzene	0.0050
	cis-1,2-Dichloroethene	0.0050	Vinyl chloride	0.0050
	trans-1,2-Dichloroethene	0.0050	m,p-Xylene	0.0050
	1,2-Dichloropropane	0.0050	o-Xylene	0.0050
	1,3-Dichloropropane	0.0050	Xylenes (total)	0.0050

EPA Test Method ¹	Analyte	Reporting Limit for Soil ² (mg/kg)	Analyte (cont.)	Reporting Limit for Soil (mg/kg)
8270	Poly Aromatic Hydrocarbons (PAHs)			
	Acenaphthene	0.062	Dimethyl phthalate	0.33
	Acenaphthylene	0.062	4,6-Dinitro-2-methylphenol	1.6
	Anthracene	0.062	2,4-Dinitrophenol	1.6
	Benzidine	1.6	2,4-Dinitrotoluene	0.33
	Benzoic acid	1.6	2,6-Dinitrotoluene	0.33
	Benz(a)anthracene	0.33	1,2-Diphenylhydrazine	0.33
	Benzo(b)fluoranthene	0.062	Fluoranthene	0.062
	Benzo(k)fluoranthene	0.062	Fluorene	0.062
	Benzo(g,h,i)perylene	0.062	Hexachlorobenzene	0.33
	Benzo(a)pyrene	0.062	Hexachlorobutadiene	0.33
	Benzyl alcohol	0.66	Hexachlorocyclopentadiene	1.6
	Bis(2-chloroethoxy) methane	0.33	Hexachloroethane	0.33
	Bis(2-chloroethyl) ether	0.33	Indeno(1,2,3-cd)pyrene	0.062
	Bis(2-chloroisopropyl) ether	0.33	Isophorone	0.33
	Bis(2-ethylhexyl) phthalate	0.33	2-Methylnaphthalene	0.062
	4-Bromophenyl phenyl ether	0.33	2-Methylphenol (o-cresol)	0.33
	Butyl benzyl phthalate	0.33	3 & 4 -Methylphenol (m,p-cresol)	0.33
	4-Chloroaniline	0.66	N-Nitrosodi-n-propylamine	0.33
	4-Chloro-3-methylphenol	0.33	N-Nitrosodimethylamine	0.66
	2-Chloronaphthalene	0.33	N-Nitrosodiphenylamine	0.33
	2-Chlorophenol	0.33	Naphthalene	0.062
	4-Chlorophenyl phenyl ether	0.33	2-Nitroaniline	1.6
	Chrysene	0.010	3-Nitroaniline	1.6
	Dibenz(a,h)anthracene	0.062	4-Nitroaniline	1.6
	Dibenzofuran	0.33	2-Nitrophenol	1.6
	Di-n-butyl phthalate	2.0	4-Nitrophenol	1.6
	Di-n-octyl phthalate	0.33	Nitrobenzene	0.33
	1,2-Dichlorobenzene	0.33	Pentachlorophenol	1.6
	1,3-Dichlorobenzene	0.33	Phenanthrene	0.062
	1,4-Dichlorobenzene	0.33	Phenol	0.33
	3,3'-Dichlorobenzidine	0.66	Pyrene	0.062
	2,4-Dichlorophenol	0.33	1,2,4-Trichlorobenzene	0.33
	Diethyl phthalate	0.33	2,4,5-Trichlorophenol	0.33
	2,4-Dimethylphenol	0.33	2,4,6-Trichlorophenol	0.33
8015 ³	Total Extractable Petroleum Hydrocarbons (TPHs)			
	TPH as Diesel	1.0		
	Motor Oil	2.0		
	Gasoline (1,4-Bromofluorobenzene)	1.0		
8290 ⁴	Dioxin	1.0 pg/g		
	Asbestos	1% (PLM EPA Qualitative Method) 0.005 to 0.001 (TEM by EPA Quantitative Method)		
GCMSSIM	Nonylphenol	0.2		

³ The full list of TPHs will be reported with all peaks (rather than specific compounds).

⁴ For dioxin/furans all congeners and their TEQs will be reported.

References Cited

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8950 Redwood Highway, Novato, CA 94945
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Waste Acceptance Criteria

EPA ID: CAD982492795

Last Revised: June 2008

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Appendices

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Section 1. General Information

The Redwood Landfill (Redwood) is located at 8950 Redwood Highway in Novato, California. Redwood is owned and operated by Waste Management Inc., the nation's largest provider of environmental services. Redwood's full range of solid waste services provides the entire Bay Area Region with safe, economical and environmentally sound waste management.

Mailing Address: P.O. Box 793
Novato, CA 94948

Physical Address: 8950 Redwood Highway
Novato, CA 94945

Phone: 415-892-2851
Fax: 415-898-1354

Hours of Operation: Monday through Friday 7AM-3PM
Saturday 8AM-3:30PM

Redwood is subject to certain local and state regulatory restrictions on daily disposal tonnage and on traffic/truck trips. Haulers must have prior approval if planning to:

- Haul more than 4 loads or 40 yards of garbage or demo (disposal material) on one day, or
- Haul more than 4 loads of dirt or concrete in a day.

Please contact the scale house at 415-898-6098 to schedule loads.

When Redwood's daily limit of acceptable tons and traffic/truck trips has been fully scheduled and a hauler has not scheduled over 4 loads, the hauler's trucks may be rejected after the 4th load (or 40 yards or disposable material). This will depend on Redwood's traffic and tonnage at the time. The way to ensure that trucks are not rejected is to schedule in advance.

Section 2. Waste Management Services

Redwood presently operates a Class III cell. Redwood provides waste management services for Class III wastes, non-friable asbestos containing wastes, and various alternative daily cover materials.

Redwood operates an alternative daily cover (ADC) program. Redwood is presently approved to accept petroleum and metal contaminated soils, biosolids, green waste, and wood waste for ADC. Contact Redwood's technical staff for specific ADC approval requirements.

Section 3. Petroleum Contaminated Soils

Redwood's site permits do not require specific testing requirements for waste streams other than Petroleum Contaminated Soils, which are listed below. Contact Redwood technical staff for assistance in developing an appropriate sampling plan for other special wastes. If generator's knowledge is used in lieu of analytical testing, Redwood may require a written explanation and supporting documentation.

Specific Sampling Requirements – Petroleum Contaminated Soils

Gasoline:	TPH – Gasoline	EPA 5030/8015 Modified
	BETX	EPA 5030/8020
	Lead*	TTLC – Pb
Diesel & Virgin Oil:	TPH – Diesel/Motor Oil	EPA 3550/8015 Modified
Waste Oil:	TPH – Diesel/Motor Oil	EPA 3550/8015 Modified
	TPH – Gasoline	EPA 5030/8015 Modified
	Volatile Organics	EPA 8260 (or 8010 & 8020)
	Semi Volatile Organics	EPA 8270
	Total Oil & Grease	EPA 5520 E&F (or 1664)
	Metals: TTLC**	Metals – Cd, Cr, Pb, Ni, Zn, Cu

*TTLC for lead is required when the generator determines that leaded gasoline was or may have been present. In situations where there is proof that a generator's tank never contained leaded gasoline, the TTLC requirement for lead may be omitted.

**TTLC results may be used in lieu of STLC if TTLC value is less than 10 times the STLC.

NOTE: These requirements are minimum testing standards for Petroleum Contaminated Soils. Additional sampling may be required if levels do not meet threshold requirements or Redwood technical staff determine additional analyses is necessary to determine appropriate waste management.

Section 4. Special Waste Program

Special waste materials include, but are not limited to: non-friable asbestos, contaminated soils, and biosolids.

All special waste materials must be pre-approved prior to acceptance at Redwood. Redwood requires the completion of a service agreement, a generator's waste profile sheet, terms and conditions, and may include analytical reports and/or other information, needed to determine waste acceptability. A Waste Profile Sheet and Terms & Conditions is included in Appendix A. Once paperwork is completed, including requested analytical reports; standard approval turnaround time is 48 hours. Expedited approvals will be arranged on a case-by-case basis.

Section 5. Representative Sampling

It is the responsibility of the generator to certify that the materials requested for management at Redwood are non-hazardous per 22CCR66260. For materials which

require analysis, the generator must provide representative sampling as per Test Methods for Evaluation of Solid Waste, Volume II: Field Manual, Physical/Chemical Method, Chapter 9 (SW-846 Third Edition, 1997 EPA, and future additions or amendments).

Section 6. Class III Requirements

Table 1. Reactivity, Corrosivity, Ignitability

Reactivity:	Sulfide	500	H ₂ S/kg
	Cyanide	250	HCN/kg
	Reaction w/H₂O	Negative	
Corrosivity:	pH range	2.0 to 12.5	
Ignitability:	Flashpoint	>140 degrees F. or >60 degrees C.	

Moisture Content

The moisture content of bulk material must be < 50% with no free liquids (within moisture holding capacity). The only exception is sewage sludge. Sludge from Primary Treatment must be > 20% solids and Secondary Treatment must be >15% solids.

Table 2. Inorganic – Metals Requirements

CONTAMINANT	STLC (mg/l)
Aluminum	10.0
Antimony	1.5
Arsenic	0.25
Barium	50.0
Beryllium	0.05
Cadmium	0.25
Chloride	12,500.0
Chromium (VI)*	2.5
Cobalt	2.5
Copper	2.5
Lead	0.75
Manganese	2.5
Mercury	0.0006
Molybdenum	0.5
Nickel	5.0
Nitrate	500.0

CONTAMINANT	STLC
	(mg/l)
Nitrite	50.0
Selenium	0.5
Silver	2.5
Sulfate	12,500.0
Thallium	0.1
Vanadium	1.0
Zinc	100.0

NOTE: *At the discharger's discretion, may be met based on total Chromium analyses provided that the Total Chromium analyses is below 0.5 mg/l.
TTLC analysis is acceptable if results are below 10 times the STLC.

Table 3. Polychlorinated Biphenyls (PCBs)

CONTAMINANT	STLC (mg/l)
PCBs (All Aroclors)	0.0075

NOTE: Redwood cannot accept any TSCA regulated PCB materials.

Table 4. Volatile Organic Compounds (VOCs) – Requirements

CONTAMINANT	STLC (mg/l)
Benzene	0.015
Dichloromethane	0.075
Ethylbenzene	0.45
Methyl Ethyl Ketone (MEK)	3.0
Perchloroethylene (PCE)	0.075
Toluene	0.6
Trichloroethylene	0.075
Vinyl Chloride	0.03
Xylenes	0.3

Total VOC concentrations must be less than 50 ppm.

Table 5. Semi-Volatile Organic Compounds (SVOCs) – Requirements

CONTAMINANT	STLC (mg/l)
Diesel (TPH)	0.15
Phenol	0.075
Styrene	0.15

Table 6. TPH/BETX Requirements

Diesel:	100 ppm	EPA 8015M
Motor Oil:	100 ppm	EPA 8015M
Gasoline:	50 ppm	EPA 8015

Section 7. Non-Friable Asbestos Requirements

The following information provides general requirements for acceptance of non-friable asbestos containing wastes at Redwood.

Non-friable asbestos containing wastes and wastes containing less than 1% friable asbestos are non-hazardous wastes. For acceptance at Redwood, the procedures listed below must be followed:

- Analytical report from a State Certified Laboratory or Certificate from a certified asbestos inspector.
 - Analytical Reports/Certificate must state material is non-friable or material contains less than 1 percent friable asbestos.
- Waste must be wrapped and sealed in plastic so that none of the material is exposed,
- Each shipment must be accompanied Redwood approval number.

Section 8. Biosolids Requirements

Redwood requires contractual agreements with customers bringing in biosolids. Please contact Redwood if you wish to enter into a contract with Redwood to dispose of biosolids.

Redwood requires analytical data from contracted sludge customers twice yearly (composite samples from 1st and 3rd quarter sampling events). If results have not been received by the requested due dates, Redwood reserves the right to charge a five percent administration fee. Included with the requested data, completed forms shall be

sent to Redwood showing test results. Sludge analytical results may be used to help determine the acceptability of grit/screenings and grease.

Redwood requires results for the analytes listed in Schedule 1 (Appendix B) twice per year, due on May 15 and November 15 of each year. If any exceedances occur, the customer is contacted and informed that they will need to address the issue, either by re-sampling or retesting the original sample, if it is still available and holding times have not been exceeded.

Schedule 2 (Appendix C) Title 22 analytes are required to be tested for prior to bringing sludge to Redwood and then once every three years afterward. The TTLC for all analytes is required. If the results of the TTLC are equal to or greater than 10 times the STLC limit, then the STLC must also be run. If there is any significant change in the plant's operations, influent, or in the results of the "waste acceptance" tests, Redwood may ask that "Title 22" be run at annual intervals. The generator is required to state that the material is non-hazardous by completing the Waste Profile Sheet and Terms & Conditions that must be submitted with each analysis packet.

Delivery Restrictions

Grit/Screenings and grease that are less than 50% solids may be delivered between the hours of midnight and 11:00 AM. If these are greater than 50% solids then the delivery times are between midnight and 3:00 PM. They will be directed to off loading areas designated by Redwood personnel. Other delivery times must be approved by Redwood at least 24 hours prior to delivery.

Section 9. Empty Containers

Redwood accepts empty containers that meet the following requirements:

- For containers previously containing hazardous materials (pesticides, chemicals, etc.), the generator must either provide the scale house with signed documentation stating that the containers have been triple-rinsed or must sign the Empty Container Certification form (Appendix E).
- For latex and oil based empty paint containers, lids must be removed and all paint inside must be dry.