ENVIRONMENTAL MANAGEMENT PLAN

80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

USEPA Assistance ID No. BF97298603

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APPENDICES

1.0 INTRODUCTION

This site-specific Environmental Management Plan (EMP) was developed for the property located at 80-100 Charlotte Street, City of Rochester, County of Monroe, New York (Site). The general location of the Site is depicted on Figure 1 (Project Locus Map) and Figure 2 (Site Location Plan). This EMP should be implemented when work performed at the Site has the potential to disturb contaminated soil, fill or groundwater remaining at the Site following the previous remedial activities. Further details regarding the EMP are provided below.

1.1 Statement of Purpose

The purpose of this EMP is to mainly address the following three conditions:

1. Management of residual contamination in soil, fill and groundwater;

2. Development and implementation of environmental engineering controls (ECs), such as a vapor intrusion mitigation system and Site cover; and

3. Development and implementation of environmental institutional controls (ICs).

This EMP addresses how to identify, characterize, handle, and dispose or re-use soil, fill and groundwater during construction or post-development activities. The EMP also establishes goals, procedures, and appropriate response actions to be used by on-site personnel should contaminated material be encountered and disturbed.

1.2 Site Description

The Site is an approximate 0.78-acre vacant parcel that is currently used as an open parking lot (refer to Figure 2). In September 2003, the City of Rochester (City) demolished an approximate 18,988-square foot one and two story building at the Site that was most recently occupied by an electrical contractor and electric motor repair business.

It is currently anticipated that the Site will be redeveloped with a condominium or apartment complex that may also include some commercial storefront space. It is anticipated that there will be no sub-grade living space.

2.0 SUMMARY OF SITE CONDITIONS

Current areas/types of environmental impact are listed below:

Residual petroleum impact from a Former Underground Storage Tank System

Evidence of petroleum impact was detected in proximity to, and hydraulically downgradient from, a former underground storage tank (UST) system on the Site that was used to store gasoline (refer to Figure 3). The contamination that exceeded regulatory criteria was generally present in an approximately 2-foot to 4-foot thick layer of soil immediately above bedrock and also in the uppermost groundwater-bearing unit located at the overburden/bedrock interface. The New York State Department of Environmental Conservation (NYSDEC) was notified regarding the petroleum contamination that was encountered, and the NYSDEC subsequently generated a spill file (NYSDEC Spill #0270474).

In February and March 2006, a source removal program was completed that physically and permanently removed the majority of accessible petroleum-impacted soil and fill materials from the Site. This work was performed as part of a Corrective Action Plan (CAP) that was approved by the NYSDEC. Further details beyond those provided herein that pertain to the source removal work are provided in a document titled "*Remedial Construction/Closure Report; 80-100 Charlotte Street, Rochester, New York; NYSDEC Spill #0270474; USEPA Assistance ID No. BF97298603*" dated February 2007. As part of the source removal program, an initial waste characterization study was completed to assist in characterizing the waste to be disposed and to further define the source removal area (refer to Figure 3). Subsequently, approximately 1,257 tons of petroleum-impacted soil/fill, including some loose bedrock from the former tank pit area, were then loaded onto trucks from Silvarole Trucking (NYSDEC Part 364 permit #8A-190) and transported to Mill Seat Landfill in Riga, New York for disposal. During the soil removal work, 125 pounds of Regenesis' Oxygen Release Compound (ORC) Advanced™ were placed in the bottom of the excavation adjacent to Haags Alley to enhance in-situ bioremediation of contamination that had to be left in-place on this portion of the Site. Figure 4 shows the limits of the source-removal excavation and locations where ORC Advanced™ was placed in the excavation. During the source removal work, approximately 12,000 gallons of standing water from the excavation was removed, characterized and discharged to the public combined sewer system located in Charlotte Street under a Sewer Use Permit with Monroe County Pure Waters (MCPW).

Assuming that an average 0.33-foot thick layer of petroleum-impacted soil was left in-place in a 15-foot wide strip around the perimeter of the source removal excavation on the Site, it is estimated that approximately 60 cubic yards (i.e., about 100 tons) of petroleum-impacted soil exhibiting olfactory or visual evidence of impact and/or yielding elevated photoionization detector (PID) readings that exceed approximately 50 parts per million (ppm) remains on this area of the Site immediately above the bedrock. As such, it is estimated that the soil removal work resulted in an approximate 93% reduction in the volume of petroleum-impacted soil that was initially present at the Site.

Based on olfactory, visual and PID readings, the majority of the excavation sidewalls appeared free of petroleum impact with the exception of the intersection of the excavation sidewalls and floor of the excavation. Confirmatory soil samples were collected from sidewalls along the perimeter of the source removal excavation. Since soil in the excavation was generally removed to the top of bedrock, confirmatory soil samples were not collected from the bottom of the excavation. Based on the test results, only one soil sample contained individual volatile organic compounds (VOCs) that exceeded recommended soil cleanup objectives (RSCOs), and four samples contained total VOC concentrations that exceeded the RSCO for total VOCs of 10,000 ug/kg as referenced in the NYSDEC document titled "Technical and Administrative Guidance Memorandum: *Determination of Soil Cleanup Objectives and Cleanup Levels*" (TAGM 4046) dated January 24, 1994, as amended by the NYSDEC's supplemental tables dated August 22, 2001. These samples were collected from the northern wall of the excavation along the right-of-way of Haags Alley. The analytical laboratory test results for confirmatory soil samples collected from east, west and south walls of the excavation did not exceed RSCOs (refer to Figure 5 and Figure 6, and Table 2).

In conclusion, the source removal program removed approximately 93% of petroleum-contaminated soil on the Site that exceeds NYSDEC TAGM 4046 RSCOs. Field observations, field measurements, and analytical laboratory test results for confirmatory soil samples indicate that the majority of overburden soil in proximity to the soil removal area excavation does not contain petroleum-related VOCs, and the vertical extent of contamination left in-place in the sidewalls of the excavation is limited to a relatively thin seam of contamination that is situated on the top of bedrock. In most cases, this seam of contamination above the top of bedrock is less than six inches thick. However, the seam of contamination left in-place along portions of the excavation sidewall that abuts Haags Alley ranges between approximately 1.0 and 1.5 feet thick.

Only relatively low concentrations of petroleum-related VOCs and naphthalene were detected in post-source removal groundwater samples, with some specific compound concentrations exceeding regulatory criteria at three of the eight monitoring wells (refer to Figure 7, and Table 3). Some VOCs were also detected in post-source removal soil vapor air samples at concentrations exceeding regulatory criteria (refer to Figure 8, and Table 4).

Fill Material

Heterogeneous fill material generally consisting of re-worked soil with lesser amounts of coal, ash, concrete, asphalt, brick, slag and wood is present across the Site starting at the ground surface with an average thickness of approximately 4.7 feet. Analytical laboratory test results for samples of fill material indicate it contains concentrations of some heavy metals (e.g., arsenic, barium, cadmium, lead or mercury) that exceed NYSDEC TAGM 4046 RSCOs (refer to Table 1). Based on previous studies, it is anticipated that approximately 5,900 cubic yards of fill is present on the Site, and it is likely the result of historic demolition and backfilling of former residential structures, and may also include the historic placement of some fill materials that were sourced off-site.

Former Areas of Stained Surface Soils

Several approximate three-foot diameter or less areas of stained surface soils, observed on an unpaved area on the northwest portion of the Site, were determined to be impacted with: between 5,450 and 5,940 ppm of heavy-weight total petroleum hydrocarbons (TPH) designated as lube oil; semi-volatile organic compounds (SVOCs) such as benzo(b)fluoranthene (3.46 ppm), fluoranthene (5.55 ppm), phenanthrene (3.15 ppm) and pyrene (5.7 ppm); and the metal cadmium (1.09 ppm). The SVOC benzo(b)fluoranthene and the metal cadmium concentrations detected in a sample from an area of stained surface soil exceeded RSCOs or typical background ranges as referenced in NYSDEC TAGM 4046. The Site has been disturbed as a result of the building demolition work and subsequent remediation activities. The areas of stained soil are no longer visible (i.e., likely covered by a new pedestrian walkway, new gravel parking lot, etc.) and there is no documentation to show they were remediated. As such, it is presumed that the stained soil areas are still present at the Site. Based on available data, it is anticipated that this stained former surface soil consists of only a few cubic yards of material.

Contamination from Adjoining/Nearby Properties

Evidence of petroleum-type contamination was previously detected in saturated soil and groundwater on the northwest and southwest portions of the Site. This contamination appears attributable to active spills on adjoining/nearby properties located west and northwest of the Site that has migrated onto the Site. Light-weight TPH designated as gasoline was detected in groundwater on the northwest portion of the Site.

Based upon the findings of the previous environmental studies and subsequent remediation efforts, the remaining areas of impacted media (soil, fill, groundwater) at the Site are considered non-hazardous material for the parameters tested. However, if these media are disturbed, the NYSDEC requires that the material be handled, treated/re-used, or disposed of, in accordance with applicable regulations.

2.1 Qualitative Human Health Exposure Assessment

A qualitative human health exposure assessment was conducted as part of the Remedial Construction/Closure Report dated February 2007. The site-specific soil vapor sampling and analysis results and initial post source removal groundwater monitoring results were considered during performance of the exposure assessment. The findings of the human health exposure assessment identified the following potential exposure pathway: Future site workers, and occupants of future buildings that are constructed over areas of soil or fill material, could be exposed to VOCs, SVOCs and metals that are present in the media at concentrations exceeding regulatory criteria. Routes of exposure to future Site workers and occupants could include inhalation, ingestion, dermal contact, eye contact, and puncture/injection. Based on presence of residual VOCs in soil, groundwater and soil vapor at the Site, the potential exposure pathway of VOC vapor intrusion needs to be considered on new buildings at the Site. Regulatory agencies have recently promulgated guidance documents to assist in evaluating and addressing the VOC vapor intrusion exposure pathway (refer to Section 4.1).

3.0 ENVIRONMENTAL MANAGEMENT PLAN

It is currently anticipated that the Site will be redeveloped with a condominium or apartment complex that may also include some commercial storefront space. It is anticipated that there will be no sub-grade living space.

This EMP provides options regarding the disposal and/or re-use of petroleum-contaminated media (e.g., surface soil, subsurface soil, and groundwater), and also fill material potentially containing elevated concentrations of heavy metals remaining at the Site following previous remedial efforts. This EMP also provides a protocol for preventing fugitive emissions during disturbance of these materials, and reducing future impacts associated with these materials. The EMP also describes the procedures to be implemented in order to manage these materials if encountered and/or disturbed during re-development activities, in accordance with applicable regulations. The procedures presented are intended to reduce potential exposure to construction workers and nearby residents during re-development; and Site workers, Site residents, and nearby workers and residents during future operation and/or occupation of the Site. The Summary Flow Chart included in Appendix A provides a matrix of the recommended handling and disposal options for materials covered by this EMP.

As part of this EMP, the City and appropriate regulatory authorities, such as the NYSDEC, the New York State Department of Health (NYSDOH) and the Monroe County Department of Health (MCDOH) must be notified at least two business days prior to performing activities that have the potential to disturb contaminated material at the Site.

3.1 Potentially-Contaminated Media

This section describes the types of contaminated media documented at the Site and provides information on the identification, handling, analytical laboratory testing, disposal or re-use of these materials.

3.1.1 In-Field Identification

Based on the previous studies completed at the Site, the petroleum impact identified generally consists of gasoline that is associated with historic leakage from a former on-site UST system. This petroleum-impacted soil and/or fill may appear stained black and/or gray, and petroleum-like odors may be detected on the material. The remaining petroleum impact on soil or fill is expected within, or near, the top of the uppermost groundwater table that exists near the overburden/bedrock interface. In addition, screening the ambient air above this material should result in positive responses on a PID or flame ionization detector (FID). As previously identified, approximately 93% of the on-site petroleum-impacted soil within the former UST system plume was removed to the top of bedrock and disposed off-site. The remaining 7% is generally a half-foot or less layer of petroleum-impacted soils immediately above bedrock that was left in-place on-site around the perimeter of the source removal excavation. As an exception, a one to 1.5 foot layer of petroleum-impacted soil was left in-place along some portions of the northern wall of the excavation along Haags Alley.

A layer of heterogeneous fill material is located from the ground surface to an average depth of 4.7 feet across the Site. This fill generally consists of re-worked soil with lesser amounts of coal, ash, concrete, asphalt, brick, slag and wood. Previous analytical laboratory testing indicates this fill material contains elevated concentrations of heavy metals. This fill material does not emit discernable odors, and should not result in positive responses when the ambient air above the material is screened with a PID or FID, unless the fill is also impacted with petroleum from the source identified above.

Petroleum-impacted groundwater may be present at, or in proximity to, the Site. Post source-removal groundwater monitoring suggests petroleum-related constituents are present in groundwater, and concentrations detected at three of eight monitoring wells exceed groundwater standards or guidance values as referenced in the NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 document titled "*Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*" (TOGS 1.1.1) dated June 1998 (as amended by an April 2000 addendum). Petroleum impacted groundwater that appears attributable to off-site unknown sources on adjoining/nearby properties may be present on the northwest and southwest portions of the Site. Screening the ambient air above samples of saturated soil or groundwater from these areas may result in positive PID or FID responses.

To a lesser degree, stained former surface soils generally comprised of heavy weight TPH designated as lube oil may be present beneath stone fill or near the newly installed pedestrian walkway on the northwest portion of the Site. These former surface soil stained areas may appear black, gray or dark brown, and may emanate a weathered petroleum odor. Screening the ambient air above this type of material may not result in a positive response on a PID or FID due to the lack of VOC vapors. The stained former surface soil is impacted with heavier non-volatile petroleum-related constituents, such as polynuclear aromatic hydrocarbon SVOCs and some heavy metals.

3.1.2 Handling

Soil or fill that are excavated, disturbed, etc. and appear to be impacted by petroleum-related compounds or other VOCs (e.g., based on visual and olfactory assessment, PID/FID readings, etc.) will be removed, segregated from non-impacted media, and be placed on, and covered with, plastic sheeting that is at least 10 mil thick. The contaminated material's location, appearance, and quantity (if possible) must be documented. The appropriate regulatory authorities (e.g., NYSDEC, MCDOH) and the City must be notified regarding the contamination. If contaminated material is to be staged on-site, any disposal, treatment, etc. must be conducted within 60 days, unless otherwise authorized by the NYSDEC.

Groundwater, standing water, or decontamination water, etc. removed (e.g., dewatering of excavations, sampling groundwater monitoring wells, etc.) that has the potential to be impacted by petroleum-related compounds, must be containerized (i.e., placed in sealed drums or holding tanks).

If fill material is encountered that differs from that identified in Section 3.1.1, it must be removed, segregated from other material, and placed on, and covered with, plastic sheeting. The unknown fill material’s location, appearance, and quantity (if possible) must be documented.

The appropriate regulatory authorities and the City must be notified regarding the unknown fill material. This fill must be addressed (e.g., characterized, disposed of off-site, etc.) in accordance with applicable regulations within 60 days, unless otherwise authorized by the NYSDEC.

It is possible that regulatory agencies may require groundwater monitoring before, during and after redevelopment of the Site. During the installation of any new wells, any displaced soil cuttings must be containerized in New York State Department of Transportation (NYSDOT)-approved 55-gallon drums, or staged with other contaminated soils. Decontamination water, drilling water, and water removed from wells during their development and sampling, must also be containerized (e.g., placed in NYSDOT-approved 55-gallon drums, storage tank, etc.).

3.1.3 Analytical Laboratory Testing

Table 5 presents the recommended analytical laboratory program for various media that may be disturbed/displaced at the Site during future redevelopment or site activities. The recommended analytical laboratory testing program for anticipated types of impacted media is summarized below:

- Samples of soil or fill that are suspected to contain petroleum-related compounds or other VOCs must be tested for United States Environmental Protection Agency (USEPA) target compound list (TCL) and NYSDEC Spill Technology and Remediation Series (STARS)-list VOCs, NYSDEC STARS-list SVOCs. This type of material may also warrant Toxicity Characteristic Leaching Procedure (TCLP) VOC testing.
- Samples of fill that are suspected to contain heavy metals must be tested for USEPA Resource Conservation and Recovery Act (RCRA) metals. This type of material may also warrant TCLP metals testing.
- Samples of drilling water, decontamination water, groundwater or standing water that are removed and are suspected to contain petroleum-related VOCs must be tested for 40 CFR 136 purgeable aromatics.
- Samples of soil or fill that are suspected to contain unknown contamination will be tested for USEPA TCL and NYSDEC STARS-list VOCs, NYSDEC STARS-list SVOCs, USEPA RCRA Metals, TCLP VOCs and/or metals, pH, reactivity, corrosivity, or other parameters, to the extent warranted.

[Note: Construction and demolition (C&D) material and solid waste are considered uncontaminated and do not require analytical laboratory testing, unless there is a specific requirement of the off-site disposal facility or the material is suspected to be contaminated.]

The actual parameters to be tested for must be approved by the appropriate regulatory authorities, and these parameters may be selected based upon the field observations, PID/FID readings measured, and testing requirements of a NYSDEC-approved disposal facility, such as landfill, or a publicly owned treatment works (POTW), if warranted. The laboratory testing will also be used to assist regulatory agencies in determining whether contaminated media can be re-used on-site or require off-site disposal, and assist in characterizing the contaminated media as hazardous or non-hazardous.

The analytical laboratory test results for samples of Site media will be compared to the appropriate criteria identified in Table 6 and Table 7.

- A comparison to Part 371 waste criteria will be used to assist in evaluating if the material is a hazardous waste or a non-hazardous waste. Further information on these criteria is included in Appendix B.
- A comparison to NYSDEC TAGM 4046 RSCOs, NYSDEC TAGM 4046 typical background ranges (metals only), and NYSDEC STARS Memo #1 petroleum soil guidance values will be used to assist in determining if soil or fill media require further removal, off-site disposal or treatment, or can be re-used on-site (copies of these documents are included in Appendix B).
- A comparison to the NYSDEC TOGS 1.1.1 groundwater standards and guidance values will be used to evaluate if groundwater: 1) requires pre-treatment and/or can be discharged to the public combined sewer system under a sewer use permit; or 2) requires off-site disposal at a regulated facility (copy included in Appendix B).
- A comparison to applicable portion of the MCPW Rules and Regulations, and Sewer Use Law, will be used to assist in determining if water from the Site (groundwater, excavation water, well water, etc.) requires pre-treatment and/or can be discharged to the public combined sewer under a Sewer Use Permit, or requires off-site disposal at a treatment/disposal facility (copy included in Appendix B).

3.1.4 Disposal of Contaminated Media

Comparison of analytical laboratory test results to the appropriate criteria set forth in Table 6 and Table 7 may indicate that contaminated soil and/or fill encountered during Site activities requires disposal off-site in accordance with applicable regulations. Based on existing data and information, contaminated soil or fill will likely be characterized as non-hazardous petroleum-impacted waste, industrial waste or construction and demolition debris. However, contingency provisions should be considered in case the soil or fill requires off-site disposal at a regulated facility as a hazardous waste.

Water (e.g., groundwater, standing water, decontamination water, well water) that is generated at the Site must be: 1) discharged to the public combined sewer under a sewer use permit; or, 2) transported and disposed off-site at a regulated facility. If the water contains free petroleum product, a petroleum sheen, or total VOC concentration greater than 2.13 mg/l, it should be anticipated that MCPW will require pre-treatment and confirmatory sampling prior to authorizing discharge to the public combined sewer system under a sewer use permit. Based on existing data and information, it is anticipated that Site water will not require pre-treatment and can be discharged to the public combined sewer system under a sewer use permit.

Transporters removing contaminated media from the Site must have the appropriate regulatory permits (e.g., NYSDEC Part 364 permit, etc.), and the selected disposal facility of each waste stream (e.g., soil/fill to landfill, water to POTW, etc.) must first be approved by the NYSDEC. This includes contaminated material that may be defined as hazardous waste and non-hazardous waste.

3.1.5 Contingency Option for Re-Use of Contaminated Soil/Fill

As indicated in New York Codes, Rules and Regulations (NYCRR) Part 360, Section 360-1.15 (b)(8), non-hazardous soil, ceases to be solid waste when it is excavated as part of a construction project (e.g., re-development project), other than a department-approved or undertaken inactive hazardous waste disposal site remediation program, and the material is used as backfill for the same excavation or excavations containing similar contaminants at the same site. As such, non-hazardous soil/fill at the Site that is excavated during re-development, is not a solid waste if re-used on-site in areas where similar material already exists. However, criteria for re-use established in this EMP (e.g., petroleum soil guidance values listed in the August, 1992 NYSDEC STARS Memo #1, etc.) must be achieved.

If the detected concentrations of constituents of concern (i.e., VOCs, SVOCs, and heavy metals) in samples of the contaminated soil or fill material are below the appropriate criteria set forth in Table 7, then the media represented by the samples can be deemed as "suitable" for re-use on-site with the permission of the appropriate regulatory authorities, and the following conditions will apply:

- Soil or fill material containing detectable concentrations of VOCs and SVOCs, or that emanates petroleum-type or chemical odors, can not be located in the vicinity of existing or planned residential buildings, or other subsurface structures where the potential for human exposure, vapor accumulation, or nuisance odors could arise. Acceptable uses of contaminated soil/fill designated as suitable for re-use may include backfill under parking lots, grading, etc.

- Soil or fill material that potentially contains elevated concentrations of heavy metals, but does not contain VOCs or SVOCs, may also be acceptable for re-use in the vicinity of existing or planned residential buildings, or other subsurface structures; however, this fill material can not be re-used below the groundwater table or between 0 and 1 foot below the ground surface of the final planned grade unless covered with an impervious material (e.g., asphalt pavement). Contaminated soil/fill that is re-used on-site must be covered with a minimum one-foot layer of clean soil or impervious material and can not be re-used on-site in planters, landscaping beds or in areas that may be used as gardens.

Prior to re-using contaminated soil or fill, its effect on geotechnical requirements associated with the redevelopment plans for the Site or off-site must be evaluated.

[Note: Soil or fill that are characterized as uncontaminated may be approved by regulatory agencies for off-site re-use. Prior to taking material off-site for re-use, the off-site re-use location must be authorized in writing by the appropriate regulatory agencies (e.g., NYSDEC, NYSDOH, MCDOH), the owner of the Site, and the owners of the off-site property that is to receive the material.]

3.2 Health and Safety Plan and Air Monitoring

A site-specific Health and Safety Plan (HASP) dated August 2005 for the Site is included in Appendix C. This HASP was previously included in the September 2005 CAP for the project. The HASP outlines policies and procedures that can protect workers and the public from potential environmental hazards posed during future site activities including redevelopment activities.

During activities that have the potential to disturb contaminated media (e.g., soil, fill and groundwater), air monitoring must be conducted. This includes during re-development activities and during post-development activities as they arise (e.g., repairs to buried utilities, etc.). Further details pertaining to the required air monitoring are provided in the HASP. Air monitoring for particulates and VOCs will be required on-site for protection of Site workers, and along the perimeters of the Site as part of the community air monitoring plan (CAMP) as specified in section 8.0 of the HASP.

3.3 Dust Suppression

If particulate concentrations exceed action levels outlined in the HASP, dust suppression will be required during those site activities that are causing the elevated concentrations of particulates. Dust suppression techniques that can be implemented include: applying water to haul roads; wetting equipment and excavation faces; spraying water on buckets during excavation and dumping; covering materials that are being hauled; restricting equipment speeds; and covering excavated areas and exposed areas of fill and/or petroleum-contaminated material. Dust suppression techniques will be utilized until air monitoring indicates that particulate levels are within an acceptable range.

3.4 Site Controls

If contaminated media of unknown type is encountered, a fence must be placed around its location in order to restrict access and exposure. Fencing should also be placed around excavations into contaminated materials that are to be left open over night, the weekend, or for other extended periods of time.

3.5 Management of Potential Future Disturbances

Workers involved with future on-site work (e.g., new installation/repair of buried utilities, etc.) that have the potential to disturb contaminated media (e.g., soil, fill, groundwater) should be made aware of the potential exposure hazards. The owner of the Site will be responsible for notifying future on-site workers of potential exposure hazards. The owner will be in possession of the previous reports, this EMP, and the associated HASP. These documents contain information on the type and location of contaminants at the Site, and address how to handle, treat, transport and dispose of impacted materials in a manner that precludes exposure. Precautions should be implemented to minimize disturbance of soil or fill that result in air-borne release of particulates. Areas where work has been completed should be repaired (e.g., clean soil/fill re-applied, paved, etc.).

4.0 ENGINEERING CONTROLS

As identified in the September 2005 CAP, engineering controls (ECs) are likely warranted as part of the redevelopment of this Site. Regulatory agencies (i.e., the NYSDEC the NYSDOH, and MCDOH) must approve proposed EC designs for the Site prior to starting redevelopment activities at the Site. The specific ECs will depend on the planned design of buildings (such as whether buildings will have habitable basement space, a sub-grade parking garage, uninhabited crawlspace, slab-on-grade construction, etc.) and other property improvements (e.g., walkways, vehicle parking, landscaping, etc.). The ECs may include a vapor intrusion mitigation system on new buildings, and covering portions of the Site beyond building footprints to preclude direct exposures to underlying potentially impacted materials. The potential types of ECs for this Site are further outlined in this section of the EMP.

4.1 Vapor Intrusion Mitigation System

A vapor intrusion mitigation system may be required on buildings that are constructed on the Site. Such a system needs to be designed, constructed and operated in accordance with protocols set forth in Section 4 of the NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006. The cover and Section 4.0 of this document are included in Appendix B. The complete document can be obtained by contacting the NYSDOH Bureau of Environmental Exposure Investigation at: 1-800-458-1158 (ext. 27850) or by visiting the following web site link:

- http://www.health.state.ny.us/environmental/investigations/soil_gas/svi_guidance/

There are two primary types of EC vapor intrusion mitigation systems that may be required by themselves or in combination for new building(s) at the Site depending upon their construction:

1) Sub-Slab Depressurization (SSD) System

   The SSD system is typically comprised of a ventilation system installed beneath a concrete slab. Penetrations (i.e., sumps, elevator shaft drains, floating slabs, cracks, etc.) are also sealed to assist in controlling vapor migration to interior spaces. Perforated vent piping is typically installed within a porous permeable stone sub-base beneath the concrete slab. This perforated piping is connected to solid piping, and one or more active vent fan is connected to the solid piping, which ultimately exhausts the sub-slab vapors to the exterior of the building. The active vent system is typically equipped with a warning system or indicator to alert building occupants if the system malfunctions.

2) Sub-Membrane Depressurization (SMD) System

   The SMD system is similar to the SSD, but utilizes a synthetic membrane or other acceptable material as a soil vapor retarder. This type of system also requires the sealing of penetrations, vent piping beneath the membrane that is connected to one or more active vent fan(s) for vapor depressurization, and a warning system.

If installation of a SSD system or SMD system is not feasible or is not warranted, regulatory agencies may also entertain sealing the space and installing/operating: a ventilating system (e.g., air handling unit in sub-grade parking garage); a crawlspace ventilation system; a soil vapor extraction (SVE) system to mitigate potential VOC vapors; etc.

The EC vapor intrusion mitigation system components described above are provided for information purposes only. Actual components required will be dependant upon building construction specifications and may include one or more of these or other EC components. A professional engineer or environmental professional should design the ECs for this Site, and the ECs must be approved by the appropriate regulatory agencies (e.g., NYSDOH, NYSDEC, MCDOH).

Once the EC vapor intrusion mitigation system is installed and operational, post-mitigation or confirmation testing must be completed to the satisfaction of the appropriate regulatory agencies. The purpose of this testing is to confirm the proper installation and effectiveness of this EC system.

In addition, Operations, Maintenance and Monitoring (OM&M) protocols may be required, and these protocols are dependant on the design components of the ECs. For SSD and SMD systems, the following items should be minimum components of OM&M: visual observation of the complete system; identification and repair of any leaks or malfunctioning system components; and visual observation of the system's exhaust or discharge point(s) to verify no air intakes have recently been installed close by.

As identified in the CAP for this Site, EC vapor intrusion mitigation system(s) will be observed and monitored monthly for a period of at least one year, and will also include screening the air exiting vent piping for VOCs using a PID. OM&M activities should be documented and reported to the City and appropriate regulatory agencies. In the event of an incident where VOC vapors or nuisance odors are reported in an on-site indoor space, the City and appropriate regulatory agencies must be notified, and the performance of the ECs in that area must be evaluated and repaired/upgraded as deemed necessary (e.g., installation of larger in-line fan, etc.). Preventative maintenance (such as replacement of an in-line fan) should also be considered as part of the system OM&M.

If subsequent to one year after redevelopment there has been no evidence of vapors or nuisance odors in the vapor intrusion mitigation system that present an unacceptable potential exposure, and there have been no reported on-site incidents involving the presence of vapors or nuisance odors in indoor spaces, then PID monitoring of the EC vapor intrusion mitigation system will be terminated. However, the vapor intrusion mitigation system must continue to operate, and the other components of the OM&M will continue to be required. In order to terminate operation of the vapor intrusion mitigation system, a formal proposal to do so must be reviewed and accepted by the appropriate regulatory agencies.

4.2 Site Cover

In order to preclude direct exposure to underlying existing fill material that may contain elevated concentrations of heavy metals, and also potential intermittent areas of soil staining containing SVOCs and metals that may be present (e.g., areas of stained surface soils observed during the 2002 Phase II ESA), the Site will be covered by the building(s), paved surfaces or a minimum one-foot layer of "clean" soil/select fill. Potentially impacted fill material or soil cannot be used on-site in planters, landscaping beds or in areas that may be used as gardens. This Site cover must be maintained as long as the Site is occupied.

5.0 INSTITUTIONAL CONTROLS

As an institutional control (IC), the City will "flag" the Site on its building information system so that environmental conditions are evaluated and addressed prior to issuing new permits for this Site that involve potentially disturbing any impacted materials. This process identifies environmental conditions at the Site and ensures that these existing environmental conditions are considered prior to issuing a permit. Furthermore, this process ensures that the proposed permit action does not result in disturbances to planned ECs, and that the proposed permit does not result in an unacceptable exposure to Site contamination by on-site construction workers, on-site occupants or the nearby community. This process also allows the City and regulatory agencies the opportunity to require:

- Implementation of components of the site-specific HASP or EMP for the proposed work;
- modifications to environmental monitoring points; and
- modifications to ECs; etc. prior to issuing the permit.

6.0 PROJECT DELIVERABLES

The following deliverables must be provided and accepted by the City and appropriate regulatory agencies:

1. EC plans must be provided to the City and the appropriate regulatory agencies (e.g., NYSDEC, NYSDOH and MCDOH). The plans must show the proposed ECs in relation to the proposed redevelopment of the Site. The City will review the EC Plans in relation to the City's permit flagging system that is utilized as an IC for this Site. The regulatory agencies must approve these plans prior to starting redevelopment activities at the Site.

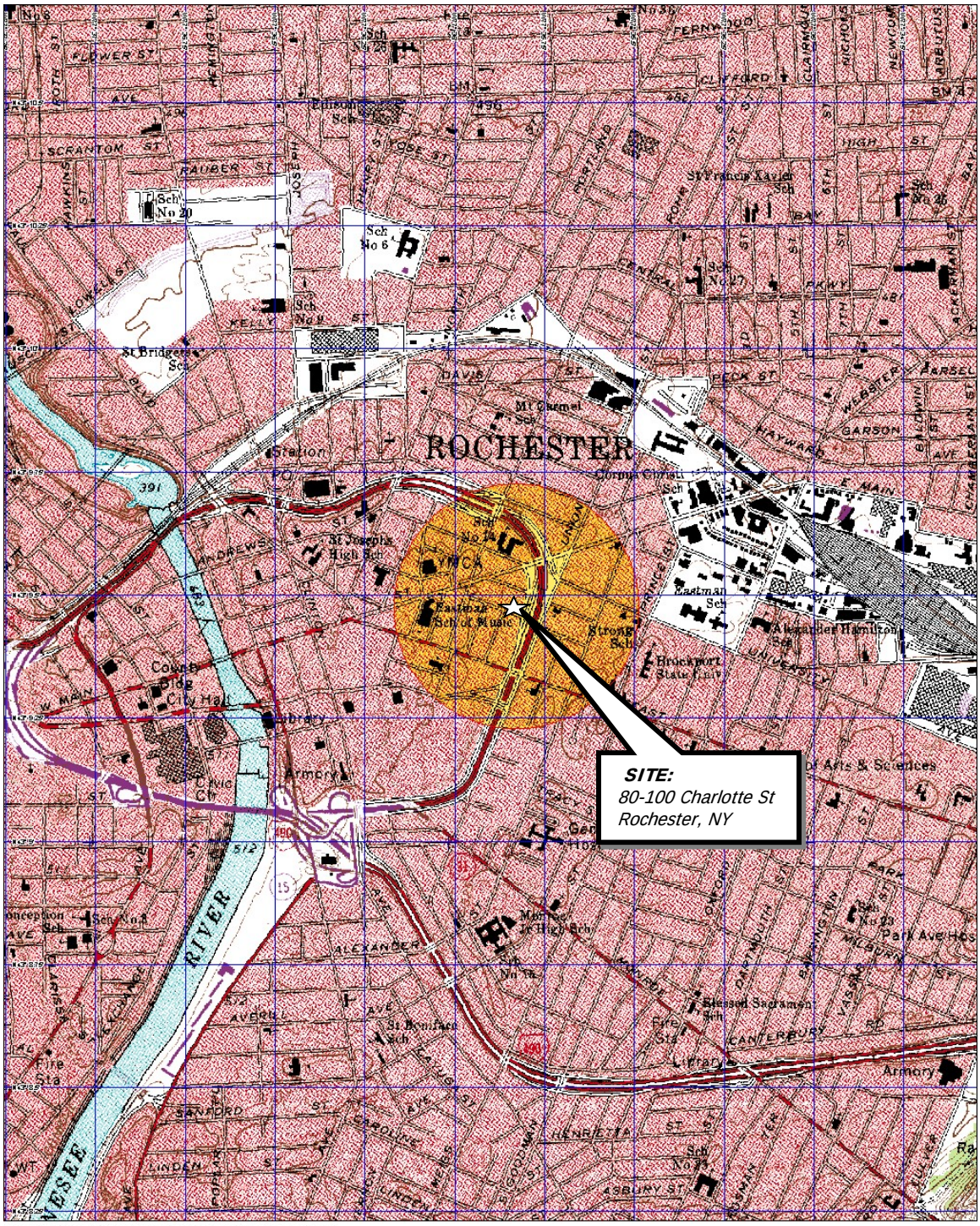
2. Post-construction report from a professional engineer, environmental professional, or other entity accepted by the NYSDEC, must be provided to the City and the appropriate regulatory agencies (e.g., NYSDEC, NYSDOH and MCDOH). The report must state the provisions, protocols and components of the EMP, HASP and ECs were satisfactorily implemented. The document must also identify modifications to the EMP, HASP or ECs that were first approved by regulatory agencies and subsequently made during redevelopment of the Site.

3. Depending upon the actual redevelopment of the Site, an OM&M monitoring report may need to be developed and provided to the City and appropriate regulatory agencies. This report should be developed by a professional engineer, environmental professional, or other entity accepted by the NYSDEC.

7.0 ABBREVIATIONS

CAMP	Community Air Monitoring Plan
CAP	Corrective Action Plan
C&D	Construction and Demolition
City	City of Rochester
EC	Engineering Control
EMP	Environmental Management Plan
FID	Flame Ionization Detector
HASP	Health and Safety Plan
IC	Institutional Control
MCDOH	Monroe County Department of Health
MCPW	Monroe County Pure Waters
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OM&M	Operation, Maintenance and Monitoring
ORC	Oxygen Release Compound
PID	Photoionization Detector
POTW	Publicly Owned Treatment Works
PPM	Part Per Million
RCRA	Resource Conservation and Recovery Act
RSCO	Recommended Soil Cleanup Objective
SMD	Sub-Membrane Depressurization
SSD	Sub-Slab Depressurization
STARS	Spill Technology and Remediation Series
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbons
TOGS	Technical and Operational Guidance Series
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound

FIGURES



Drawing Produced From: 3-D TopoQuads, DeLorme Map Co., referencing USGS quad map Rochester East (NY) 1995. Site Lat/Long: N43°09.48' – W77°35.83'

DATE **05-30-2002** DRAWN BY **Jad** SCALE **1" = 2000'**	day DAY ENVIRONMENTAL, INC. ENVIRONMENTAL CONSULTANTS ROCHESTER, NEW YORK 14614-1008	PROJECT TITLE **80-100 CHARLOTTE STREET** **ROCHESTER, NY** **BROWNFIELD CLEANUP PROJECT** DRAWING TITLE **PROJECT LOCUS MAP**	PROJECT NO. **3638R-05** **FIGURE 1**

S:\GPS Data2005\Charlotte Street Real\Rocity3638R-05\EMP\ Site Location - Figure 2.mxd

NOTE:

Site plan produced Parcel data provided by the City Of Rochester and site visits by representatives of Day Environmental, Inc. Street data, manholes, fire hydrants and catch basins provided by the City Of Rochester 2005. Orthoimagery provided by NYSGIS Clearinghouse 2005.

Project No.
3638R-05
FIGURE 2

day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project Title
BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title
Site location plan

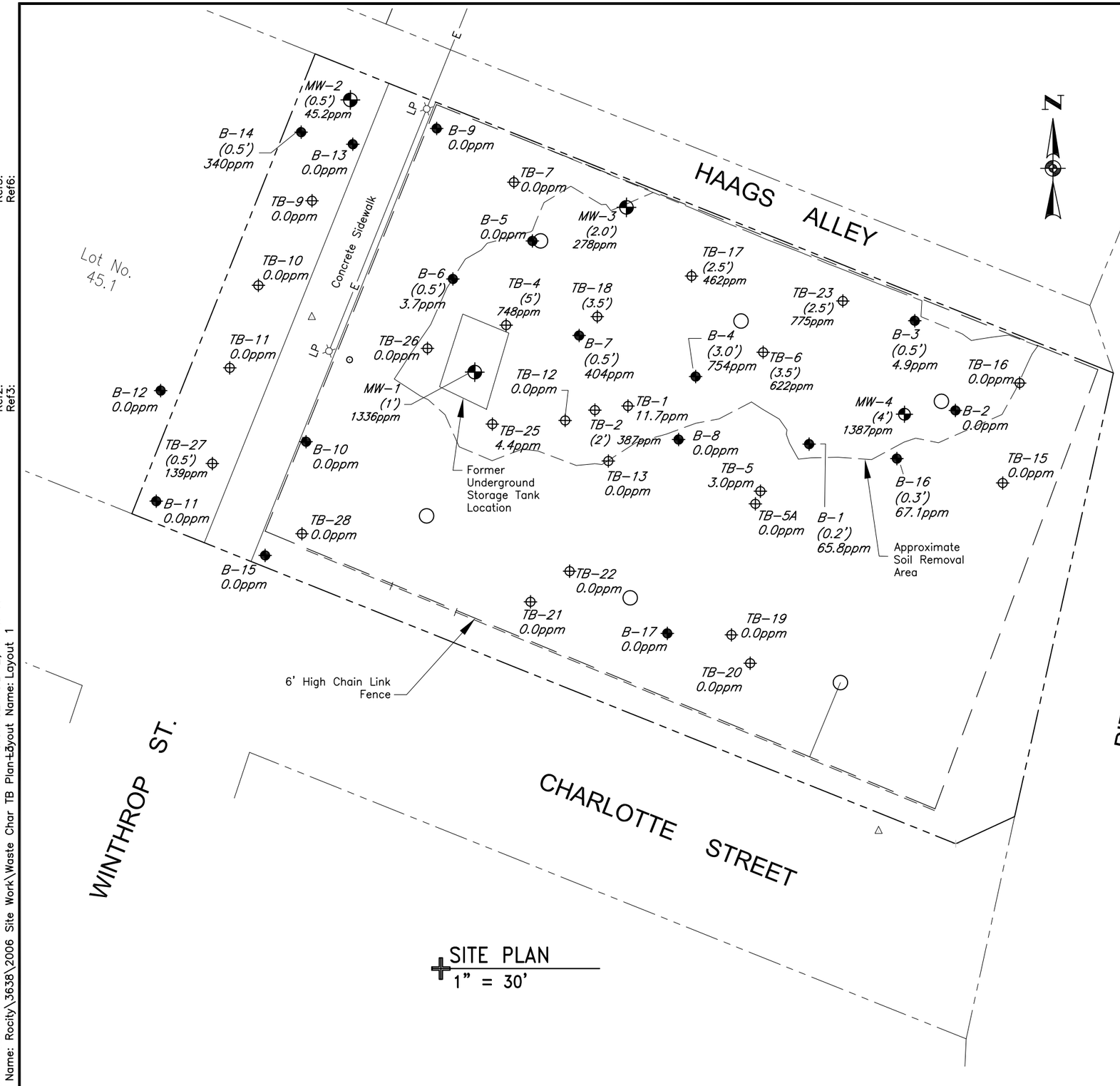
Date
07/18/2006

Drawn By
CPS

Scale
1" = 100'

Ref4:
Ref5:
Ref6:

Ref1:
Ref2:
Ref3:



SITE PLAN
1" = 30'

NOTES

1. Site plan produced from a tax map of The City Of Rochester; an architectural drawing for Vanderlinde Electric Corp, drawing number B–1, Site Plan, dated 3–12–1962; and notes of site visit by representatives of Day Environmental, Inc. On 6–07–2002.

2. Locations of test borings and sample points tape–measured from existing site structures or surveyed, and are considered accurate to the degree implied by the method used.

LEGEND

MW–3 (2.0') — Previous Overburden groundwater monitoring well with thickness of petroleum impacted overburden soils in parentheses and peak PID reading in parts per million (ppm)

TB–18 (3.5') — Previous Test Boring with thickness of petroleum impacted overburden soils in parentheses and peak PID readings in parts per million (ppm)

B–1 (0.2') — Waste Characterization Test Boring with thickness of petroleum impacted overburden soils in parentheses and peak PID readings in parts per million (ppm)

0' 30' 60' 90'

DESIGNED BY	JAD
DATE	07-2006
DRAWN BY	RJM/Tww/CPS
DATE DRAWN	07-2006
SCALE	As Noted
DATE ISSUED	12-20-2006

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10165-1617

PROJECT TITLE
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

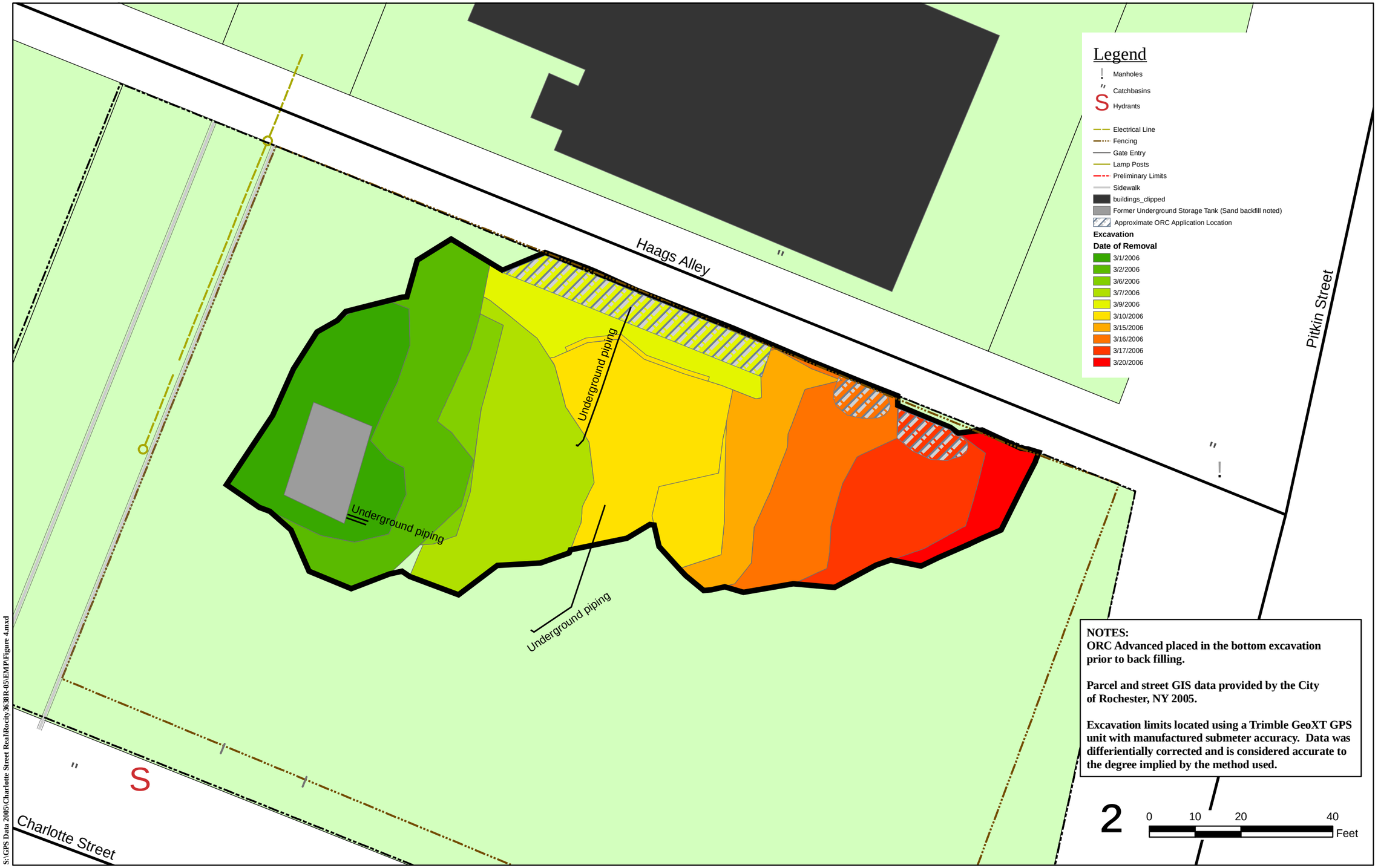
BROWNFIELD CLEANUP PROJECT

DRAWING TITLE
Site Plan Depicting February 2006 Waste Characterization Test Borings and Previous Test Locations

PROJECT NO.
3638R-05

FIGURE 3

Time Plotted: Wed Dec 20 13:05 2006 Xerox432AnsiB–2: 11 x 17
File Name: Rocity\3638\2006 Site Work\Waste Char TB Plan-Layout Name: Layout 1



S:\GPS Data 2005\Charlotte Street Real\Rocity\3638R-05\EMF\Figure 4.mxd

Date: 12-18-2006

Drawn By: CPS

Scale: 1" = 20'

Project Title: BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title: Source Removal by Day and Areas of Excavation treated with ORC Advanced

day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project No.

3638R-05

FIGURE 4

Haags Alley

Pitkin Street

Charlotte Street

C-1 (0.0 ppb)
C-2 (6.0 ppb)
C-3 (0.0 ppb)
C-4 (0.0 ppb)
C-5 (0.0 ppb)
C-6 (0.0 ppb)
C-7 (10,243 ppb)
C-8 (21,394 ppb)
C-9 (0.0 ppb)
C-10 (0.0 ppb)
C-11 (238,040 ppb)
C-12 (0.0 ppb)
C-13 (0.0 ppb)
C-14 (32,061 ppb)
C-15 (0.0 ppb)
C-16 (0.0 ppb)
C-17 (0.0 ppb)
C-18 (0.0 ppb)

Legend

Peak Total VOC and TIC Results

- 0
- 1 - 6
- 7 - 10243
- 10244 - 32061
- 32062 - 238040
- Streets
- Parcel Boundary
- Fencing
- Lamp Posts
- Preliminary Limits
- Sidewalk
- SourceRemoval
- Parcel

NOTES:

Highest Total STARS-List VOC and TIC results from sample locations used on map.

Parcel and street GIS data provided by the City of Rochester, NY 2005.

Confirmatory samples and excavation limits located using a Trimble GeoXT GPS unit with manufactured submeter accuracy. Data was differientially corrected and are considered accurate to the degree implied by the method used.

4

0 10 20 40 Feet

Date	Drawn By	Scale
08/25/2006	CPS	1" = 20'

Project Title
BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title
Confirmatory Soil Sample Locations with Peak Total VOC and TIC Results

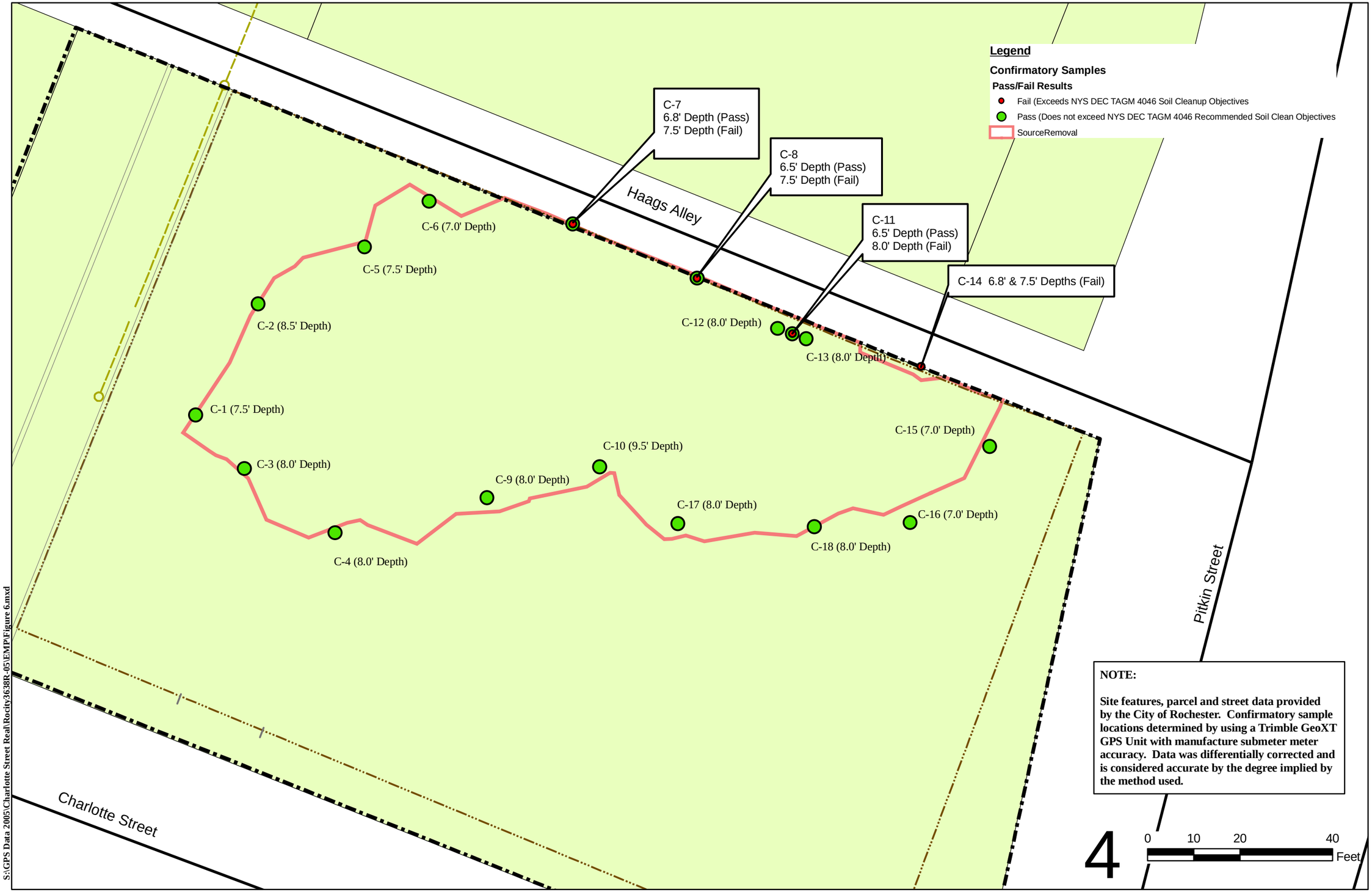
day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project No.

3638R-05

FIGURE 5

S:\GPS 2005\CharlotteStreetReal\Rocity\3638R-05\EMP\Figure 5.mxd



S:\GPS Data 2005\Charlotte Street Real\Rocity3638R-05\EMP\Figure 6.mxd

Date: 07/18/2006

Drawn By: CPS

Scale: 1" = 20'

Project Title: BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title: Source Removal Area Extent
and Confirmatory Soil Sample Results

day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project No.

3638R-05

FIGURE 6

Date
02-22-2006

Drawn By
CPS

Scale
AS NOTED

day

DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project Title
BROWNFIELD CLEANUP PROGRAM
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title
TOTAL VOCs AND NAPHTHALENE IN APRIL 2006 GROUNDWATER SAMPLES

Project No.
3638R-05

FIGURE 7

S:\GPS 2005\CharlotteStreetReal\Rocity3638R-05\EMP\Figure 8.mxd

Date	10/03/2006
Drawn By	CPS
Scale	1" = 30'

Project Title
BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title
September 2006 Soil Vapor Sample Locations

day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project No.
3638R-05

FIGURE 8

TABLES

Table 1

80-100 Charlotte Street
Rochester, New York

Summary of Total RCRA Metals Detected in Previous Surface Soil and Fill Samples
Collected in June 2002
Results in Mg/Kg or Parts Per Million (ppm)

RCRA METALS	RSCOs (1)	TYPICAL BACKGROUND RANGE (1)	SAMPLE DESIGNATION AND LOCATION					
			2957-01 SS-1 (0-6")	2957-03 TB-24 (1.0-2.0')	2957-04 TB-11 (3.0')	2957-05 TB-14 (3.0')	2957- 06 TB-12 (3.5-4.0')	2957- 07 TB-20 (2.0')
Arsenic	7.5 or SB	3 - 12	3.73	**15.9**	6.99	**7.73**	**15.5**	**8.06**
Barium	300 or SB	15 - 600	21.3	171	54.0	88.3	**733**	271
Cadmium	10*	0.1 - 1	**1.09**	**1.55**	ND(<0.454)	0.533	**2.99**	0.882
Chromium	50*	1.5 - 40	5.42	10.0	6.64	8.21	14.2	7.41
Lead	SB	200 - 500**	21.6	**519**	103	195	242	422
Mercury	0.1	0.001 - 0.2	ND(<0.084)	**2.82**	**0.124**	**0.765**	**0.417**	**0.397**
Selenium	2 or SB	0.1 - 3.9	ND(<0.405)	ND(<0.501)	ND(<0.454)	ND(<0.481)	ND(<0.565)	ND(<0.452)
Silver	SB	NA	1.37	ND(<1.00)	ND(<0.908)	ND(<0.962)	1.60	ND(<0.905)

SB = Site background
ND = Not detected above reported laboratory detection limits.
(1) = Recommended soil cleanup objective(RSCO) and typical background ranges as referenced in the NYSDEC January 1994, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046).
* = 1995 TAGM 4046 "proposed" recommended soil cleanup objective for cadmium and chromium
** = Average background range in metropolitan or suburban areas or near highways as referenced in TAGM 4046
NA = Not available

Bolded and underlined denotes exceedance of the NYSDEC recommended soil cleanup objective and/or typical background range.

Table 2 (Page 1 of 3)

80 – 100 Charlotte Street
Rochester, New York

Summary of Volatile Organic Compounds (VOCs)
and Naphthalene Detected in Post-Source Removal Confirmatory Soil Samples

Results Reported in ug/kg or Parts Per Billion (PPB)

DETECTED COMPOUNDS	RSCOs (1)	011 C-1 (7.5') 03/01/06		012 C-2 (8.5') 03/01/06		013 C-3 (8.0) 03/02/06		014 C-4 (8.0') 03/02/06		015 C-5 (7.5') 03/02/06		016 C-6 (7.0') 03/02/06		017 C-7 (6.8') 03/09/06		018 C-7 (7.5) 03/09/06	
Ethylbenzene	5,500	--		--		--		--		--		--		--		--	
n-Butylbenzene	10,000	--		--		--		--		--		--		--		92	-
sec-Butylbenzene	10,000	--		--		--		--		--		--		--		85	-
n-Propylbenzene	3,700	--		--		--		--		--		--		--		110	-
Isopropylbenzene	2,300	--		--		--		--		--		--		--		18	-
p-Isopropyltoluene	10,000	--		--		--		--		--		--		--		--	
1,3,5-Trimethylbenzene	3,300	--		--		--		--		--		--		--		--	
1,2,4-Trimethylbenzene	10,000	--		--		--		--		--		--		--		--	
Total Xylenes	1,200	--		--		--		--		--		--		--		--	
Total TICS	NA	--		6	J	--		--		--		--		--		9,938	NJ
Total VOCs	10,000	--		6	J	--		--		--		--		--		**<u>10,243</u>**	NJ
Naphthalene	13,000	--		--		--		--		--		--		--		5	JB

(1) = Recommended soil cleanup objectives (RSCOs) as referenced in the January 1994, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels as amended by NYSDEC Table 1 dated December, 2000.

B = Compound also detected in associated method blank.

E = Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis**.**

J = Indicates an estimate value.

D = Identifies compounds identified in an analysis at a secondary dilution factor.

N = Indicates presumptive evidence of tentatively identified compounds.

-- = Not detected above reported laboratory detection limit value.

Bolded and underlined denotes exceedance of the NYSDEC recommended soil cleanup objective.

Table 2 (Page 2 of 3)

80 – 100 Charlotte Street
Rochester, New York

Summary of Volatile Organic Compounds (VOCs)
and Naphthalene Detected in Post-Source Removal Confirmatory Soil Samples

Results Reported in ug/kg or Parts Per Billion (PPB)

DETECTED COMPOUNDS	RSCOs (1)	019 C-8 (6.5') 03/09/06		020 C-8 (7.5') 03/09/06		021 C-10 (9.5') 03/14/06		022 C-9 (8.0') 03/14/06		023 C-11 (6.5') 03/16/06		024 C-11 (8.5') 03/16/06		025 C-12 (8.0') 03/16/06	
Ethylbenzene	5,500	--		9	-	--		--		--		1,100	-	--	
n-Butylbenzene	10,000	-		2,600	D	--		--		--		**17,000**	D	--	
sec-Butylbenzene	10,000	--		510	DJ	--		--		--		3,900	D	--	
n-Propylbenzene	3,700	--		620	E	--		--		--		**19,000**	D	--	
Isopropylbenzene	2,300	--		160	DJ	--		--		--		**4,900**	D	--	
p-Isopropyltoluene	10,000	--		110	-	--		--		--		1,400	-	--	
1,3,5-Trimethylbenzene	3,300	--		1,000	D	--		--		--		**22,000**	D	--	
1,2,4-Trimethylbenzene	10,000	--		3,800	D	--		--		--		**81,000**	D	--	
Total Xylenes	1,200	--		75	-	--		--		--		**4,400**	-	--	
Total TICS	NA	--		12,510	NJ	--		--		--		83,340	NJ	--	
Total VOCs	10,000	--		**21,394**	NDJ	--		--		--		**238,040**	NJD	--	
Naphthalene	13,000	--		720	D	--		--		--		**11,000**	D	--	

(1) = Recommended soil cleanup objectives (RSCOs) as referenced in the January 1994, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels as amended by NYSDEC Table 1 dated December, 2000.

E = Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

J = Indicates an estimate value.

D = Identifies compounds identified in an analysis at a secondary dilution factor.

N = Indicates presumptive evidence of tentatively identified compounds.

-- = Not detected above reported laboratory detection limit value.

Bolded and underlined denotes exceedance of the NYSDEC recommended soil cleanup objective.

Table 2 (Page 3 of 3)

80 – 100 Charlotte Street
Rochester, New York

Summary of Volatile Organic Compounds (VOCs)
and Naphthalene Detected in Post-Source Removal Confirmatory Soil Samples

Results Reported in ug/kg or Parts Per Billion (PPB)

DETECTED COMPOUNDS	RSCOs (1)	026 C-13 (8.0') 03/16/06		027 C-14 (6.8') 03/17/06		028 C-14 (7.5') 03/17/06		033 C-15 (7.0') 03/20/06		034 C-16 (7.0') 03/20/06		035 C-17 (8.0') 03/21/06		036 C-18 (8.0') 03/21/06	
Ethylbenzene	5,500	--		--		59	-	--		--		--		--	
n-Butylbenzene	10,000	--		--		590	-	--		--		--		--	
sec-Butylbenzene	10,000	--		--		300	-	--		--		--		--	
n-Propylbenzene	3,700	--		--		820	-	--		--		--		--	
Isopropylbenzene	2,300	--		--		220	-	--		--		--		--	
p-Isopropyltoluene	10,000	--		--		88	-	--		--		--		--	
1,3,5-Trimethylbenzene	3,300	--		--		--		--		--		--		--	
1,2,4-Trimethylbenzene	10,000	--		--		1,300	-	--		--		--		--	
Total Xylenes	1,200	--		--		64	-	--		--		--		--	
Total TICS	NA	--		14	J	28,620	NJ	--		--		--		--	
Total VOCs	10,000	--		14	J	**32,061**	NJ	--		--		--		--	
Naphthalene	13,000	--		--		280	-	4	JB	2	JB	2	JB	2	JB

(1) = Recommended soil cleanup objectives (RSCOs) as referenced in the January 1994, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels as amended by NYSDEC Table 1 dated December, 2000.

E = Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

J = Indicates an estimate value.

D = Identifies compounds identified in an analysis at a secondary dilution factor.

N = Indicates presumptive evidence of tentatively identified compounds.

B = Compound also detected in associated method blank.

-- = Not detected above reported laboratory detection limit value.

Bolded and underlined denotes exceedance of the NYSDEC recommended soil cleanup objective.

Table 3
80 - 100 Charlotte Street
Rochester, New York

Summary of Detected VOCs, TICs, and Naphthalene
(April 2006 Groundwater Samples)

Results Reported in ug/l or Parts Per Billion (ppb)

Detected Constituents	Groundwater Standards and Guidance Values (1)	MW-101 043 04/28/06	MW-102 042 04/27/06	MW-103 044 04/28/06	MW-104 037 04/26/06	MW-105 038 04/26/06	MW-106 039 04/26/06	MW-107 041 04/27/06	MW-108 040 04/27/06
Ethylbenzene	5	2 J	U	**7**	U	U	U	U	U
Total Xylenes	5	4 J	U	**40**	U	U	U	1 J	**13**
Isopropylbenzene	5	U	U	**12**	U	U	U	1 J	4 J
n-Propylbenzene	5	2 J	U	**30**	U	U	U	U	2 J
1,3,5-Trimethylbenzene	5	1 J	U	**29**	U	U	U	1 J	3 J
1,2,4-Trimethylbenzene	5	**6**	U	**120**	U	U	U	4 J	**19**
sec-Butylbenzene	5	U	U	**8**	U	U	U	U	U
n- Butylbenzene	5	U	U	**22**	U	U	U	U	U
Total VOCs	N/A	15 J	U	268	U	U	U	7 J	41 J
Total TICS	N/A	U	U	825	U	6 J	U	129 NJ	72 NJ
Total VOCs and TICs	N/A	15 J	U	1093	U	6 J	U	136 NJ	113 NJ
Naphthalene	10	1 J	U	**14**	U	U	U	U	3 J

(1) = New York State Department of Environmental Conservation (NYSDEC) June 1998 Division of Water Technical Operational and Guidance Series 1.1.1 (TOGS 1.1.1) Ambient Groundwater Standards and Guidance Values as amended by April 2000 Supplemental Table.
U = Not detected at concentration above reported laboratory detection limit.
VOCs = Samples analyzed for Volatile Organic Compounds (VOCs) using USEPA Method 8260
J = Indicates an estimate value.
N = One or more tentatively identified compound (TIC) is considered to be positively identified.
Bolded and underlined denotes exceedance of the NYSDEC TOGS 1.1.1 groundwater standard or guidance value.

Table 4

Soil Vapor Study Air Sample Results

80-100 Charlotte Street, Rochester, New York
Summary of Detected Volatile Organic Compounds Reported in ug/m^3
Post Source Removal Air Samples Collected September 28, 2006

Detected Constituent	NYSDOH Indoor (ug/m3)[1]	NYSDOH Outdoor (ug/m3)[2]	Sample Location						
			060/SV-1	061/SV-2	062/SV-3	063/SV-4	064/SV-5	065/SV-6	066/BKG-1
Acetone	10 - 52	3.4 - 14	**157** [4]	**1,740** [4][5]	**337** [4][5]	**3,630** [4][5]	**638** [4][5]	**2,280** [4][5]	NA
Benzene	1.1 - 5.9	0.57 - 2.3	**14.4**	**20.3**	**13.6**	**18.9**	**46.3**	**21.3**	NA
2-Butanone (MEK)	1.4 - 7.3	0.76 - 2.6	ND (<5.36)	**107**	**7.39**	ND (<5.60)	**180**	ND (<5.60)	NA
Carbon Disulfide	NA	NA	15.4 [4]	29.7 [4]	12.0 [4]	17.1 [4]	25.5 [4]	13.9 [4]	NA
Chloroform	<0.25 - 0.54	<0.25 - <0.25	ND (<8.78)	**14**	ND (<9.17)	ND (<9.17)	**31.9**	**120**	NA
1,1-Dichloroethane	<0.25 - <0.25	<0.25 - <0.25	ND (<7.29)	ND (<7.29)	ND (<7.62)	ND (<7.46)	**56.5**	**24**	NA
Ethylbenzene	0.41 - 2.8	<0.25 - 0.48	ND (<7.89)	**24.1**	ND (<8.24)	**9.93**	**8.32**	**16.2**	NA
Freon 11	NA	NA	ND (<10.1)	13.2	12.5	ND (<10.6)	17.6	19.3	NA
4-Methyl-2-Pentanone	<0.25 - 0.86	<0.25 - <0.25	ND (<7.44)	ND (<7.44)	**62.2**	ND (<7.77)	ND (<7.77)	ND (<7.77)	NA
Methylene Chloride [3]	0.31 - 6.6	<0.25 - 0.73	ND (<31.2)	ND (<31.2)	ND (<32.7)	**51.9**	ND (<32.7)	ND (<32.7)	NA
Styrene	<0.25 - 0.64	<0.25 - <0.25	ND (<7.74)	ND (<7.74)	ND (<8.08)	ND (<8.08)	ND (<8.08)	**17.1**	NA
Toluene	3.5 - 24.8	0.6 - 2.4	**59.8**	**111**	**64.3**	**61**	**72.2**	**116**	NA
1,1,1-Trichloroethane	<0.25 - 1.1	<0.25 - 0.33	ND (<9.83)	**80.4** [4]	**14.4** [4]	ND (<10.3)	ND (<10.3)	ND (<10.3)	NA
m/p-Xylene	0.5 - 4.6	<0.25 - 0.48	**18.3**	**78.5**	**19.3**	**24.1**	**21.2**	**16.9**	NA
o-Xylene	0.39 - 3.1	<0.25 - 0.56	ND (<7.89)	**32.4**	ND (<8.24)	ND (<8.24)	ND (<8.24)	**59.4**	NA

ND = Not detected at concentration above analytical laboratory reporting limit noted in parentheses.

NA = Not Available.

[1] 25th to 75th percentile range of indoor levels of volatile organic compounds (VOCs) referenced in the New York State Department of Health (NYSDOH) document titled "Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997 2003", Revised November 14, 2005 (Used to compare soil vapor sample ID: SV-1, SV-2, SV-3, SV-4, SV-5, and SV-6).

[2] 25th to 75th percentile range of outdoor levels of VOC referenced in the NYSDOH document titled "Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003", Revised November 14, 2005 (Used to compare outdoor air background sample ID: BKG-1).

[3] The NYSDOH document titled "Final - Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 lists an air guidance value of 60 ug/m^3 for Methylene Chloride.

12 = exceeds 75th percentile of corresponding indoor or outdoor levels referenced in the NYSDOH document titled "Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003", Revised November 14, 2005.

[4] This compound was also detected in the Method Blank.

[5] This value is estimated.

TABLE 5

RECOMMENDED ANALYTICAL PROGRAM

80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

TYPE OF MATERIAL	ANALYTICAL PARAMETERS						
	TCL and STARS VOCs EPA Method 8260	**STARS SVOCs EPA Method 8270**	**Total RCRA Metals**	**TCLP VOCs and/or Metals**	**pH, Reactivity, ignitability(1)**	**Purgeable Aromatics using Method 602 or equivalent**	**No Testing Recommended**
Soil/fill with suspect petroleum-related constituents and/or other VOCs	X	X		X(2)			
Fill suspected of containing heavy metals			X	X(3)			
Groundwater with suspect petroleum-related constituents and/or other VOCs						X	
Unanticipated soil/fill contamination of unknown type	X	X	X	X(3)	X		
C&D fill							X(5)
Solid Waste							X(5)

Footnotes:
(1) Ignitability and corrosivity for liquid wastes only.
(2) If required by disposal facility.
(3) If required by disposal facility.
(4) Upon request by disposal facility.
(5) In accordance with Part 360, treat as uncontaminated unless suspected and proven otherwise via analytical testing. Disposal facilities may require some analytical testing.

TABLE 6

CLEANUP OBJECTIVES

80-100 CHARLOTE STREET
ROCHESTER, NEW YORK

TYPE OF MEDIA ANALYZED	RSCOs for VOCs and SVOCS [1]	RSCOs and/or background ranges for Metals [1]	Part 371 Waste Criteria [2]	Groundwater Standards and Guidance Values [3]	MCPW Sewer Limit [4]
Specific petroleum constituents in soil/fill	X		X		
Heavy metals and specific non-petroleum constituents in soil/fill	X	X	X		
Constituents in Groundwater				X	X

Footnotes:

(1) Recommended soil cleanup objectives (RSCOs) and/or background ranges for metals as referenced in the January 24, 1994 NYSDEC TAGM 4046 as amended by the NYSDEC's supplemental Tables dated August 22, 2001

(2) 6 NYCRR Part 371 (Identification And Listing of Hazardous Wastes) http://www.dec.state.ny.us/website/regs/part371a.html

(3) Groundwater Standards and guidance values as referenced in the June 1998 NYSDEC TOGS 1.1.1 as amended by a NYSDEC supplemental Tables dated April 2000

(4) MCPW sewer use limit of all purgeable halocarbons, aromatics, and polynuclear aromatic hydrocarbons is 2.13 mg/l. MCPW Sewer Use Law, Rules and Regulations also apply.

TABLE 7

OBJECTIVES FOR RE-USE OF CONTAMINATED SOIL/FILL

14-60 CHARLOTE STREET
ROCHESTER, NEW YORK

TYPE OF SOIL/FILL MATERIAL ANALYZED	STARS MEMO #1 Soil Guidance Values for VOCs and SVOCs (1)	NYSDEC TAGM #4046 RSCOs for VOCs and SVOCS (2)	NYSDEC TAGM #4046 RSCOs and/or background ranges for Metals (2)
Specific petroleum constituents in soil/fill	X		
Heavy metals and specific non-petroleum constituents in soil/fill		X	X

Footnotes: (1) If petroleum impacted material is proposed for re-use on-site, compare to petroleum soil guidance values a referenced in the August 1992 NYSDEC STARS Memo #1

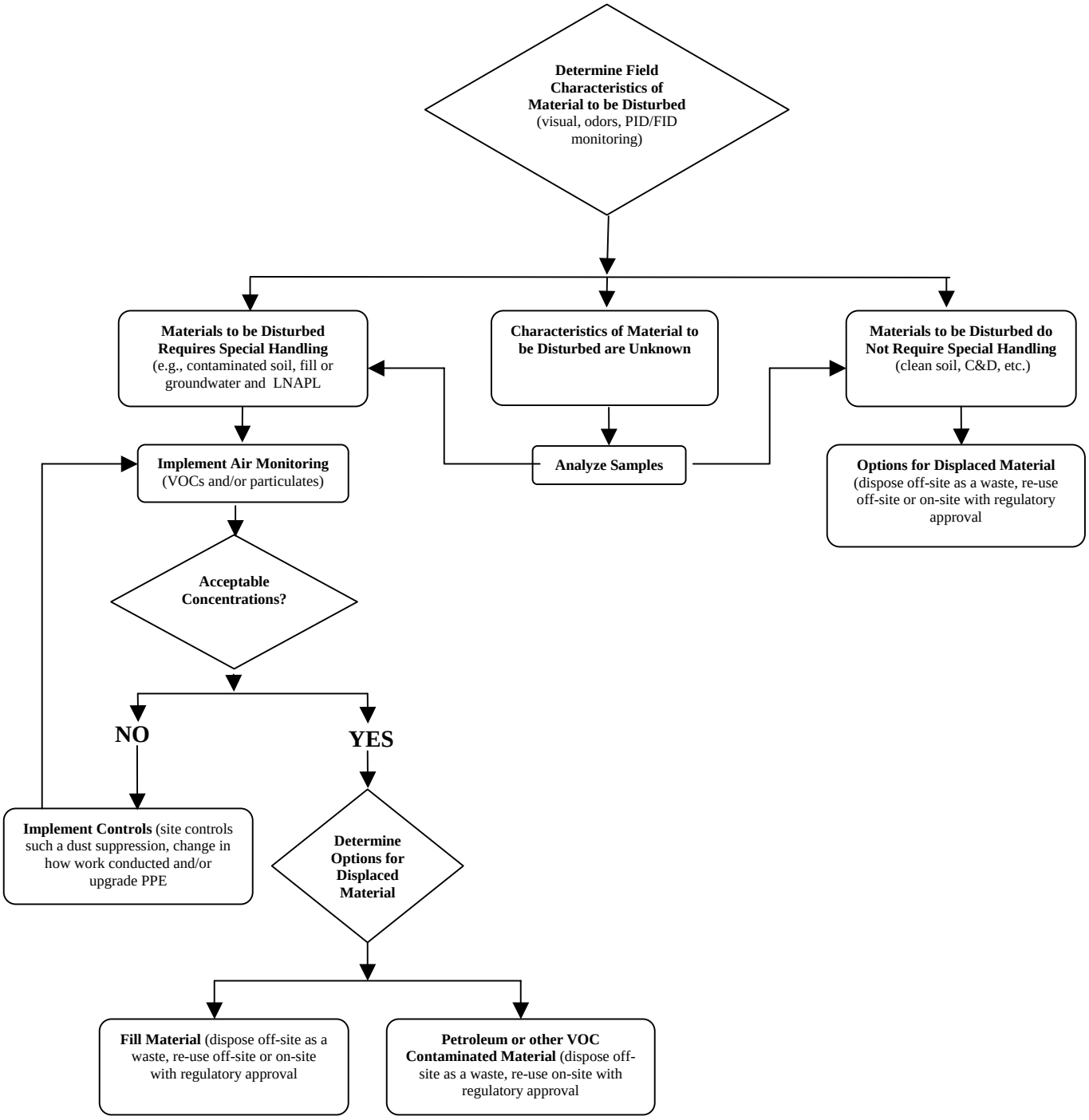
(2) If non-petroleum impacted material is proposed for re-use on-site, compare to recommended soil cleanup objectives (RSCOs) and/or background ranges as referenced in the January 24, 1994 NYSDEC TAGM 4046 as amended by the NYSDEC's Table 1 dated 1998

APPENDIX A

Summary Flow Chart for EMP

SUMMARY FLOW CHART

ENVIRONMENTAL MANAGEMENT PLAN
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK



APPENDIX B

Regulatory Guidance Documents

NYSDEC

Part 371 Regulations

6 NYCRR Part 371

Identification And Listing of Hazardous Wastes

(Statutory Authority: Environmental Conservation Law Section 27-0900 et seq)

[Effective September 5, 2006]

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Section 371.1 General

(a) Purpose and scope. This Part establishes the procedures for identifying those solid wastes which are subject to regulation as hazardous wastes under Parts 370 through 373, and 376 of this Title. However, even though a given material is defined as a hazardous waste under this Part, it may be exempt from one or more of the substantive provisions of those Parts, as specified in each respectively. Definitions for terms used in this Part are given in Part 370 of this Title. For the purposes of subdivision 371.1(c) and subdivision 371.1(g):

(1) A material is "accumulated speculatively" if it is accumulated before being recycled. A material is not accumulated speculatively, however, if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that -- during the calendar year (commencing on January 1) -- the amount of

material that is recycled, or transferred to a different site for recycling, equals at least 75 percent by weight or volume of the amount of that material accumulated at the beginning of the period. In calculating the percentage of turnover, the 75 percent requirement is to be applied to each material of the same type (e.g. slags from a single smelting process) that is recycled in the same way (i.e. from which the same material is recovered or that is used in the same way). Materials accumulating in units that would be exempt from regulation under section 372.1(e)(7) of this Title are not to be included in making the calculation. (Materials that are already defined as solid wastes also are not to be included in making the calculation.) Materials are no longer in this category once they are removed from accumulation by recycling, however.

(2) A "by-product" is a material that is not one of the primary products of a production process and is not solely or separately produced by the production process. Examples are process residues such as slags or distillation column bottoms. The term does not include a co-product that is produced for the general public's use and is ordinarily used in the same form as produced by the process.

(3) A material is "reclaimed" if it is processed to recover a useable product, or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents.

(4) A material is "recycled" if it is used, reused, or reclaimed.

(5) A material is "regenerated" if it is restored to its original physical and chemical properties.

(6) "Scrap metal" is bits and pieces of metal parts (e.g. bars, turnings, rods, sheets, wire) or metal pieces that may be combined together with bolts and soldering (e.g. radiators, scrap automobiles, railroad boxcars), which when worn or superfluous can be recycled.

(7) A "Spent material" is any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing.

(8) A material is "used or reused" if it is either:

(i) employed as an ingredient (including use as an intermediate) in an industrial process to make a product (for example, distillation bottoms from one process used as feedstock in another process). However, a material will not satisfy this condition if distinct components of the material are recovered as separate end products (as when metals are recovered from metal containing secondary materials);

(ii) employed in a particular function or application as an effective substitute for a commercial product (for example, spent pickle liquor used as phosphorous precipitant and sludge conditioner in wastewater treatment).

(9) "Excluded scrap metal" is processed scrap metal, unprocessed home scrap metal, and unprocessed prompt scrap metal.

(10) "Processed scrap metal" is scrap metal which has been manually or physically altered to either separate it into distinct materials to enhance economic value or to improve the handling of materials. Processed scrap metal includes, but is not limited to scrap metal which has been baled, shredded, sheared, chopped, crushed, flattened, cut, melted, or separated by metal type (i.e., sorted), and, fines, drosses and related materials which have been agglomerated.(Note: shredded circuit boards being sent for recycling are not considered processed scrap metal. They are covered under the exclusion from the definition of solid waste for shredded circuit boards being recycled (see subparagraph 371.1(e)(1)(xiv)).

(11) "Home scrap metal" is scrap metal as generated by steel mills, foundries, and refineries such as turnings, cuttings, punchings, and borings.

(12) "Prompt scrap metal" is scrap metal as generated by the metal working/fabrication industries and includes such scrap metal as turnings, cuttings, punchings, and borings. Prompt scrap is also known as industrial or new scrap metal.

(b) Applicability. The identification and listing of hazardous waste given in this Part supersedes any other definition given in any other Part of this Title.

(c) Definition of Solid Waste.

(1) A solid waste is any discarded material that is not excluded under paragraph (e)(1) of this section or that is not excluded by variance granted under sections 370.3(d) and (e) of this Title.

(2) A discarded material is any material which is:

(i) abandoned as explained in paragraph (c)(3) of this section; or

(ii) recycled as explained in paragraph (c)(4) of this section; or

(iii) considered inherently waste-like as explained in paragraph (c)(5) of this section; or

(iv) a "military munition" identified as a solid waste in subdivision

374-1.13(c) of this Title.

(3) Materials are solid wastes if they are abandoned by being:

(i) disposed of; or

(ii) burned or incinerated; or

(iii) accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned or incinerated.

(4) Materials are solid wastes if they are recycled - or accumulated, stored, or treated before recycling - as specified in subparagraphs (c)(4)(i) through (c)(4)(iv) of this section.

(i) Used in a manner constituting disposal.

('a') Materials noted with an "*" in column 1 of Table 1 are solid wastes when they are:

('1') applied to or placed on the land in a manner that constitutes disposal; or

('2') contained in products that are applied to the land (in which case the product remains a solid waste).

('b') Commercial products listed in section 371.4(d) of this Part are not solid wastes if they are applied to the land and that is their ordinary manner of use.

(ii) Burning for energy recovery.

('a') Materials noted with an "*" in column 2 of Table 1 are solid wastes when they are:

('1') burned to recover energy; or

('2') used to produce a fuel or are otherwise contained in fuels (in which case the fuel itself remains a solid waste).

('b') However, commercial products listed in section 371.4(d) of this Part are not solid wastes if they are fuels.

(iii) Reclaimed materials noted with an "*" in column 3 of Table 1 are solid wastes when reclaimed.

(iv) Materials accumulated speculatively noted with an "*" in column 4 of Table 1 are solid wastes when accumulated

speculatively.

(5) Inherently waste-like materials. The following materials are solid wastes when they are recycled in any manner:

(i) hazardous waste numbers F020, F021 (unless used as an ingredient to make a product at the site of generation), F022, F023, F026, and F028.

(ii) Secondary materials fed to a halogen acid furnace that exhibit a characteristic of a hazardous waste or are listed as a hazardous waste as defined in sections 371.3 or 371.4, except for brominated material that meets the following criteria:

('a') the material must contain a bromine concentration of at least 45 percent; and

('b') the material must contain less than a total of 1 percent of toxic organic compounds listed in appendix 23; and

('c') the material is processed continually on-site in the halogen acid furnace via direct conveyance (hard piping).

(iii) the commissioner will use the following criteria to add waste to that list:

('a') the materials are ordinarily disposed of, burned, or incinerated; or

('b') the materials contain toxic constituents listed in Appendix 23 of Part 371 and these constituents are not ordinarily found in raw materials or products for which the materials substitute (or are found in raw materials or products in smaller concentrations) and are not used or reused during the recycling process; and

('c') the materials may pose a substantial hazard to human health and the environment when recycled.

(6) Materials that are not solid wastes when recycled.

(i) Materials are not solid wastes when they can be shown to be recycled by being;

('a') used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed; or

('b') used or reused as effective substitutes for commercial

products; or

('c') returned to the original process from which they are generated, without first being reclaimed or land disposed. The material must be returned as a substitute for feedstock materials. In cases where the original process to which the material is returned is a secondary process, the materials must be managed such that there is no placement on the land.

(ii) The following materials are solid wastes, even if the recycling involves use, reuse, or return to the process as described in clause (i)('a') through (i)('c') of this paragraph:

('a') materials used in a manner constituting disposal, or used to produce products that are applied to the land; or

('b') materials burned for energy recovery, used to produce a fuel, or contained in fuels; or

('c') materials accumulated speculatively; or

('d') materials listed in subparagraphs (5)(i) and (5)(ii) of this subdivision.

(7) Parties who raise a claim that a certain material is not a solid or hazardous waste, or is exempt or conditionally exempt from regulation, based on the intent to reclaim, recycle or reuse, must notify the Department, in writing, before utilizing the exemption or exclusion. Such notification shall give the names and locations of the generating and receiving facilities, if different, identify all exemptions or exclusions that the party is claiming, and describe the activity or activities which are believed to qualify for such exemptions or exclusions. Respondents in actions to enforce regulations, implementing Article 27, who raise a claim that a certain material is not a solid or hazardous waste, or is exempt or conditionally exempt from regulation, when intended for reclamation, recycling, or reuse, must demonstrate:

(i) for on-site reclamation, recycling, or reuse, that the party meets the terms of the exclusion or exemption; or

(ii) for off-site reclamation, recycling, or reuse:

('a') that there is a known market or disposition for the material; and

('b') that the owner or operator of the receiving facility has the necessary equipment and capacity to process the entire volume of material offered; and

('c') through appropriate documentation, such as contracts, that the receiving party will reclaim, recycle, use, or reuse the material in such a manner as to qualify it for the exemption or exclusion.

TABLE 1

Solid Waste Material Use

	Use Constituting Disposal (1)	Energy Recovery/ Fuel (2)	Reclama-tion (3)	Speculative Accumulation (4)
Spent materials	(*)	(*)	(*)	(*)
Sludges listed in 371.4(b) and (c)	(*)	(*)	(*)	(*)
Sludges exhibiting a characteristic of hazardous waste	(*)	(*)	--	(*)
By-products listed in 371.4 (b) and (c)	(*)	(*)	(*)	(*)
By-products exhibiting a characteristic of hazardous waste	(*)	(*)	--	(*)
Commercial chemical products listed in 371.4(d)	(*)	(*)	--	--
Scrap Metal other than excluded scrap metal (see 371.1(a)(9)	(*)	(*)	(*)	(*)

Note: the terms "spent materials," "sludges," "by-products," and "scrap metal" and "processed scrap metal" are defined in subdivision 371.1(a) of this section.

(d) Definition of hazardous waste.

(1) A solid waste, as defined in subdivision (c) of this section, is a hazardous waste if:

(i) It is not excluded from regulation as a hazardous waste under paragraph (e)(2) of this section; and

(ii) It meets any of the following criteria:

('a') It exhibits any of the characteristics of hazardous waste identified in section 371.3 of this Part. However, any mixture of a waste from the extraction, beneficiation, and processing of ores and minerals excluded under 371.1(e)(2)(vi) of this Part and any other solid waste exhibiting a characteristic of hazardous waste under section 371.3 of this Part is a hazardous waste only if it exhibits a characteristic that would not have been exhibited by the excluded waste alone if such mixture had not occurred or if it continues to exhibit any of the characteristics exhibited by the non-excluded wastes prior to mixture. Further, for the purposes of applying the Toxicity Characteristic to such mixtures, the mixture is also a hazardous waste if it exceeds the maximum concentration for any contaminant listed in Table 1 to subdivision 371.3(e) that would not have been exceeded by the excluded waste alone if the mixture had not occurred or if it continues to exceed the maximum concentration for any contaminant exceeded by the nonexempt waste prior to mixture.

('b') It is listed in section 371.4 of this Part and has not been excluded from the lists in section 371.4 under the provisions of subdivisions 370.3(a) and (c) of this Title.

('c') Reserved.

('d') It is a mixture of solid waste and one or more hazardous wastes listed in section 371.4 of this Part and has not been excluded from subparagraph (1)(ii) of this subdivision under section 370.3(a) and (c) of this Title, or paragraph (6) or (7) of this subdivision; however, the following mixtures of solid wastes and hazardous wastes listed in section 371.4 are not hazardous wastes (except by application of clause (1)(ii)('a') or ('b') of this subdivision) if the generator can demonstrate that the mixture consists of wastewater the discharge of which is subject to regulation under either section 402 or section 307 (b) of the Clean Water Act (see section 370.1(e)(7)(iii)) (including wastewater at facilities which have eliminated the discharge of wastewater) and;

('1') one or more of the following spent solvents listed in section 371.4(b)--carbon tetrachloride,

tetrachloroethylene, trichloroethylene--provided that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed 1 mg/l; or

('2') one or more of the following spent solvents listed in section 371.4(b)--methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, spent chlorofluorocarbon solvents--provided that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed 25 mg/l; or

('3') one of the following wastes listed in section 371.4(c) of this Part, provided that the wastes are discharged to the refinery oil recovery sewer before primary oil/water/solids separation -- heat exchanger bundle cleaning sludge from the petroleum refining industry (EPA Hazardous Waste No. K050), crude oil storage tank sediment from petroleum refining operations (EPA Hazardous Waste No. K169), clarified slurry oil tank sediment and/or in-line filter/separation solids from petroleum refining operations (EPA Hazardous Waste No. K170), spent hydrotreating catalyst (EPA Hazardous Waste No. K171), and spent hydrorefining catalyst (EPA Hazardous Waste No. K172); or

('4') a discarded commercial chemical product, or chemical intermediate listed in section 371.4(d) arising from "de minimis" losses of these materials from manufacturing operations in which these materials are used as raw materials or are produced in the manufacturing process. For purposes of this subparagraph, "de minimis" means unintentional and minor losses of hazardous materials which occur unavoidably as a result of normal manufacturing processes. "De minimis" losses include those from normal material handling operations (e.g. spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials); minor leaks of process equipment,

storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers and rinsing and cleaning of personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing; or

('5') wastewater resulting from laboratory operations containing any toxic (T) wastes listed in section 371.4, provided that the annualized average flow of laboratory wastewater does not exceed one percent of total wastewater flow into the headworks of the facility's wastewater treatment or pretreatment system, or provided the wastes' combined annualized average concentration does not exceed one mg/l in the headworks of the facility's wastewater treatment or pretreatment facility. The annualized average flow means the total flow registered for the calendar year divided by the number of operating days of the laboratory. The combined annualized average concentration means the weight of the combination of wastes divided by the annualized average flow. Toxic (T) wastes used in laboratories that are demonstrated not to be discharged to wastewater are not to be included in this calculation; or

('6') One or more of the following wastes listed in subdivision 371.4(c) of this Part-wastewaters from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157)-Provided that the maximum weekly usage of formaldehyde, methyl chloride, methylene chloride, and triethylamine (including all amounts that can not be demonstrated to be reacted in the process, destroyed through treatment, or is recovered, i.e., what is discharged or volatilized) divided by the average weekly flow of process wastewater prior to any dilutions into the headworks of the facility's wastewater treatment system does not exceed a total of 5 mg/l; or

('7') Wastewaters derived from the treatment of one or more of the following wastes listed in subdivision 371.4(c) of this Part-organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K156).-Provided, that the maximum concentration of formaldehyde, methyl chloride, methylene chloride, and triethylamine prior to any dilutions into the headworks of the facility's wastewater treatment system does not

exceed a total of 5 milligrams per liter.

('e') Rebuttable presumption for used oil. Used oil containing more than 1000 ppm total halogens is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in section 371.4. Persons may rebut this presumption by demonstrating that the used oil does not contain hazardous waste (for example, by using an analytical method from SW-846, Third Edition, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in appendix 23). EPA Publication SW-846, Third Edition, is available from the Government Printing Office, Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250-7954, 202-783-3238 (document number 955-001-00000-1).

('1') The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling agreement, to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

('2') The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

(2) A solid waste which is not excluded from regulation under subparagraph (1)(i) of this subdivision becomes a hazardous waste when any of the following events occur:

(i) In the case of a waste listed in section 371.4, when the waste first meets the listing description therein.

(ii) In the case of a mixture of solid waste and one or more listed hazardous wastes, when a hazardous waste listed in section 371.4 is first added to the solid waste.

(iii) In the case of any other waste (including a waste mixture), when the waste exhibits any of the characteristics identified in section 371.3.

(3) Unless and until it meets the criteria of paragraph (4) of this subdivision.

(i) A hazardous waste will remain a hazardous waste.

(ii)('a') Except as otherwise provided in clause (3)(ii)('b'), paragraph (6) or paragraph (7) of this subdivision, any solid waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust, or leachate (but not including precipitation run-off), is a hazardous waste. (However, materials that are reclaimed from solid waste and used beneficially are not solid wastes and hence are not hazardous waste under this provision unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal).

('b') The following solid wastes are not hazardous even though they are generated from the treatment, storage, or disposal of a hazardous waste, unless they exhibit one or more of the characteristics of hazardous waste:

('1') Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC codes 331 and 332).

('2') Waste from burning any of the materials exempted from regulation by clauses 371.1(g)(1)(iii)('c') and ('d').

('3') ('i') Nonwastewater residues, such as slag, resulting from high temperature metals recovery (HTMR) processing of K061, K062 or F006 waste, in units identified as rotary kilns, flame reactors, electric furnaces, plasma arc furnaces, slag reactors, rotary hearth furnace/electric furnace combinations or industrial furnaces (as defined in the definition for "Industrial furnace" in subdivision 370.2(b) of this Title), that are disposed in solid waste management facilities, provided that these residues meet the generic exclusion levels identified in the tables in this subparagraph for all constituents, and exhibit no characteristics of hazardous waste. Testing requirements must be incorporated in a facility's waste analysis plan or a generator's self-implementing waste analysis plan; at a minimum, composite samples of residues must be collected and analyzed quarterly and/or when the process or operation generating the waste changes. Persons claiming this exclusion in an enforcement action will have the burden of proving by clear and convincing evidence that the material meets all of the exclusion requirements.

TCLP Maximum Constituent Level

Constituent	Maximum for any single composite sample -- TCLP (mg/l)
Generic exclusion levels for K061 and K062 nonwastewater HTMR residues	
Antimony	0.10
Arsenic	0.50
Barium	7.6
Beryllium	0.010
Cadmium	0.050
Chromium (total)	0.33
Lead	0.15
Mercury	0.009
Nickel	1.0
Selenium	0.16
Silver	0.30
Thallium	0.020
Zinc	70
Generic exclusion levels for F006 nonwastewater HTMR residues	
Antimony	0.10
Arsenic	0.50
Barium	7.6
Beryllium	0.010
Cadmium	0.050
Chromium (total)	0.33
Cyanide (total) (mg/kg)	1.8
Lead	0.15
Mercury	0.009
Nickel	1.0
Selenium	0.16
Silver	0.30
Thallium	0.020
Zinc	70

('ii') A one-time notification and certification must be placed in the facility's files and sent to the Department for K061, K062 or F006 HTMR residues that meet the generic exclusion levels for all constituents, and do not exhibit any

characteristics that are sent to solid waste management facilities. The notification and certification that is placed in the generator's or treater's files must be updated if the process or operation generating the waste changes and/or if the solid waste management facility receiving the waste changes. However, the generator or treater need only notify the Department on an annual basis if such changes occur. Such notification and certification should be sent to the Department no later than the end of the calendar year. The notification must include the following information: The name and address of the solid waste management facility receiving the waste shipments; the EPA Hazardous Waste Number(s) and treatability group(s) at the initial point of generation; and, the treatment standards applicable to the waste at the initial point of generation. The certification must be signed by an authorized representative and must state as follows: "I certify under penalty of law that the generic exclusion levels for all constituents have been met without impermissible dilution and that no characteristic of hazardous waste is exhibited. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

('4') Biological treatment sludge from the treatment of one of the following wastes listed in subdivision 371.4(c) of this Part-organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K156), and wastewaters from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157).

('5') Catalyst inert support media separated from one of the following wastes listed in section 371.4(c) of this Part - Spent hydrotreating catalyst (EPA Hazardous Waste No. K171), and Spent hydrorefining catalyst (EPA Hazardous Waste No. K172).

(4) Any solid waste described in paragraph (3) of this subdivision is not a hazardous waste if it meets the following criteria:

(i) In the case of any solid waste, it does not exhibit any of the characteristics of a hazardous waste identified in section 371.3. (However, wastes that exhibit a characteristic at the point of generation may still be subject to the requirements of Part 376, even if they no longer exhibit a characteristic at the point of land disposal.)

(ii) In the case of a waste which is a waste listed under section 371.4, contains a waste listed under section 371.4 or is derived from a waste listed under section 371.4, it also has been excluded from paragraph (3) of this subdivision under subdivisions 370.3(a) and (c) of this Title. Subdivision 370.3(c) provides for the petitioning for exclusion of a listed waste produced at a particular facility.

(5) Notwithstanding paragraphs (1) through (4) of this subdivision and provided the debris as defined in Part 376 of this Title does not exhibit a characteristic identified at section 371.3 of this Part, the following materials are not subject to regulation under Parts 370 through 374 or 376 of this Title:

(i) Hazardous debris as defined in Part 376 of this Title that has been treated using one of the required extraction or destruction technologies specified in Table 1 of subdivision 376.4(g) of this Title; persons claiming this exclusion in an enforcement action will have the burden of proving by clear and convincing evidence that the material meets all of the exclusion requirements; or

(ii) Debris as defined in Part 376 of this Title that the commissioner, considering the extent of contamination, has determined is no longer contaminated with hazardous waste.

(6)(i) A hazardous waste that is listed in section 371.4 of this Part solely because it exhibits one or more characteristics of ignitability as defined under subdivision 371.3(b) of this Part, corrosivity as defined under subdivision 371.3(c) of this Part, or reactivity as defined under subdivision 371.3(d) of this Part is not a hazardous waste, if the waste no longer exhibits any characteristic of hazardous waste identified in section 371.3 of this Part.

(ii) The exclusion described in subparagraph (i) of this paragraph also pertains to:

('a') Any mixture of a solid waste and a hazardous waste listed in section 371.4 of this Part solely because it exhibits the characteristics of ignitability, corrosivity, or reactivity as regulated under subparagraph (1)(ii)('d') of this subdivision; and

('b') Any solid waste generated from treating, storing, or disposing of a hazardous waste listed in section 371.4 of this Part solely because it exhibits the characteristics of ignitability, corrosivity, or reactivity as regulated under clause (3)(ii)('a') of this subdivision.

(iii)Wastes excluded under this paragraph are subject to Part 376

of this Title (as applicable), even if they no longer exhibit a characteristic at the point of land disposal.

(iv)Any mixture of a solid waste excluded from regulation under subparagraph 371.1(e)(2)(vi) of this section and a hazardous waste listed in section 371.4 of this Part solely because it exhibits one or more of the characteristics of ignitability, corrosivity, or reactivity as regulated under clause (1)(ii)('d') of this subdivision is not a hazardous waste, if the mixture no longer exhibits any characteristic of hazardous waste identified in section 371.3 of this Part for which the hazardous waste listed in section 371.4 of this Part was listed.

(7)(i)Hazardous waste containing radioactive waste is no longer a hazardous waste when it meets the eligibility criteria and conditions of section 374-1.9 of this Title ("eligible radioactive mixed waste").

(ii)The exemption described in subparagraph (i) of this paragraph also pertains to:

('a') Any mixture of a solid waste and an eligible radioactive mixed waste; and

('b') Any solid waste generated from treating, storing, or disposing of an eligible radioactive mixed waste.

(iii)Waste exempted under this paragraph must meet the eligibility criteria and specified conditions in paragraphs 374-1.9(b)(2) and 374-1.9(b)(3) (for storage and treatment) and in 374-1.9(i)(1) and 374-1.9(j)(1) (for transportation and disposal) of this Title. Waste that fails to satisfy these eligibility criteria and conditions is regulated as hazardous waste.

(e) Exclusions.

(1) Materials which are not solid wastes. The following materials are not solid wastes for the purpose of this Part:

(i) ('a') domestic sewage; and

('b') any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment. "Domestic sewage" means untreated sanitary wastes that pass through a sewer system;

(ii) industrial wastewater discharges that are surface water point source discharges subject to permits under Article 17 of the Environmental Conservation Law;

(Note: This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored or treated before discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.)

(iii) irrigation return flows.

(iv) radioactive materials which are source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended through 1984, 42 USCA 2011 et seq. (see section 370.1 (e) of this Title).

(v) materials subject to in-situ mining techniques which are not removed from the ground as part of the extraction process;

(vi) black liquor that is reclaimed in a Kraft pulping liquor recovery furnace and then used in the Kraft process unless it is accumulated speculatively as defined in paragraph 371.1(a)(1) of this Part;

(vii) spent sulfuric acid used to produce virgin sulfuric acid, unless it is accumulated speculatively as defined in paragraph 371.1(a)(1) of this Part;

(viii) Secondary materials that are reclaimed and returned to the original process or processes in which they were generated where they are reused in the production process provided:

('a') only tank storage is involved, and the entire process through completion of reclamation is closed by being entirely connected with pipes or other comparable enclosed means of conveyance;

('b') reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, or incinerators);

('c') the secondary materials are never accumulated in such tanks for over twelve months without being reclaimed; and

('d') the reclaimed material is not used to produce fuel, or used to produce products that are used in a manner constituting disposal.

(ix) ('a') Spent wood preserving solutions that have been reclaimed and are reused for their original intended purpose; and

('b') wastewaters from the wood preserving process that have been reclaimed and are reused to treat wood.

('c') Prior to reuse, the wood preserving wastewaters and

spent wood preserving solutions described in (1)(ix)('a') and (1)(ix)('b') of this paragraph, so long as they meet all of the following conditions:

('1') The wood preserving wastewaters and spent wood preserving solutions are reused on-site at water borne plants in the production process for their original intended purpose;

('2') Prior to reuse, the wastewaters and spent wood preserving solutions are managed to prevent release to either land or groundwater or both;

('3') Any unit used to manage wastewaters and/or spent wood preserving solutions prior to reuse can be visually or otherwise determined to prevent such releases;

('4') Any drip pad used to manage the wastewaters and/or spent wood preserving solutions prior to reuse complies with the standards in section 373-3.23 of this Title, regardless of whether the plant generates a total of less than 100 kg/month of hazardous waste; and

('5') Prior to operating pursuant to this exclusion, the plant owner or operator submits to the Commissioner a one-time notification stating that the plant intends to claim the exclusion, giving the date on which the plant intends to begin operating under the exclusion, and containing the following language: "I have read the applicable regulation establishing an exclusion for wood preserving wastewaters and spent wood preserving solutions and understand it requires me to comply at all times with the conditions set out in the regulation." The plant must maintain a copy of that document in its on-site records for a period of no less than 3 years from the date specified in the notice. The exclusion applies only so long as the plant meets all of the conditions. If the plant goes out of compliance with any condition, it may apply to the Commissioner for reinstatement. The Commissioner may reinstate the exclusion upon finding that the plant has returned to compliance with all conditions and that violations are not likely to recur.

(x) EPA Hazardous Waste Nos. K060, K087, K141, K142, K143, K144, K145, K147, and K148, and any wastes from the coke by-products processes that are hazardous only because they exhibit the Toxicity Characteristic (TC) specified in subdivision 371.3(e) of this Part when, subsequent to generation, these materials are recycled to coke ovens, to the tar recovery process as a feedstock

to produce coal tar, or mixed with coal tar prior to the tar's sale or refining. This exclusion is conditioned on there being no land disposal of the wastes from the point they are generated to the point they are recycled to coke ovens or tar recovery or refining processes, or mixed with coal tar.

(xi) Nonwastewater splash condenser dross residue from the treatment of K061 in high temperature metals recovery units, provided it is shipped in drums (if shipped) and not land disposed before recovery.

(xii) ('a') Oil-bearing hazardous secondary materials (i.e., sludges, byproducts, or spent materials) that are generated at a petroleum refinery (SIC code 2911) and are inserted into the petroleum refining process (SIC code 2911 - including, but not limited to, distillation, catalytic cracking, fractionation, or thermal cracking units (i.e., cokers)) unless the material is placed on the land, or speculatively accumulated before being so recycled. Materials inserted into thermal cracking units are excluded under this paragraph, provided that the coke product also does not exhibit a characteristic of hazardous waste. Oil-bearing hazardous secondary materials may be inserted into the same petroleum refinery where they are generated, or sent directly to another petroleum refinery, and still be excluded under this provision. Except as provided in clause ('b') of this subparagraph, oil-bearing hazardous secondary materials generated elsewhere in the petroleum industry (i.e., from sources other than petroleum refineries) are not excluded under this section. Residuals generated from processing or recycling materials excluded under this paragraph, where such materials as generated would have otherwise met a listing under section 371.4 of this Part, are designated as F037 listed wastes when disposed of or intended for disposal.

('b') Recovered oil that is recycled in the same manner and with the same conditions as described in clause ('a') of this subparagraph. Recovered oil is oil that has been reclaimed from secondary materials (including wastewater) generated from normal petroleum industry practices, including refining, exploration and production, bulk storage, and transportation incident thereto (SIC codes 1311, 1321, 1381, 1382, 1389, 2911, 4612, 4613, 4922, 4923, 4789, 5171, and 5172.) Recovered oil does not include oil-bearing hazardous wastes listed in section 371.4 of this Part; however, oil recovered from such wastes may be considered recovered oil. Recovered oil does not include used oil as defined in section 374-2.1 of this Title.

(xiii) Excluded scrap metal (processed scrap metal, unprocessed

home scrap metal, and unprocessed prompt scrap metal) being recycled.

(xiv) Shredded circuit boards being recycled provided that they are:

('a') Stored in containers sufficient to prevent a release to the environment prior to recovery; and,

('b') Free of mercury switches, mercury relays and nickel-cadmium batteries and lithium batteries.

(xv) condensates derived from the overhead gases from kraft mill steam strippers that are used to comply with 40 CFR 63.446(e). The exemption applies only to combustion at the mill generating the condensates. (xvi) Comparable fuels or comparable syngas fuels (i.e., comparable/syngas fuels) that meet the requirements of subdivision 371.4(i) of this Part.

(xvii) Petrochemical recovered oil from an associated organic chemical manufacturing facility, where the oil is to be inserted into the petroleum refining process (SIC code 2911) along with normal petroleum refinery process streams, provided:

('a') the oil is hazardous only because it exhibits the characteristic of ignitability (as defined in subdivision 371.3(b) of this Part) and/or toxicity for benzene (subdivision 371.3(e) of this Part, waste code D018), and

('b') the oil generated by the organic chemical manufacturing facility is not placed on the land, or speculatively accumulated before being recycled into the petroleum refining process. An "associated organic chemical manufacturing facility" is a facility where the primary SIC code is 2869, but where operations may also include SIC codes 2821, 2822, and 2865; and is physically co-located with a petroleum refinery; and where the petroleum refinery to which the oil being recycled is returned also provides hydrocarbon feedstocks to the organic chemical manufacturing facility. "Petrochemical recovered oil" is oil that has been reclaimed from secondary materials (i.e., sludges, byproducts, or spent materials, including wastewater) from normal organic chemical manufacturing operations, as well as oil recovered from organic chemical manufacturing processes.

(xviii) Spent caustic solutions from petroleum refining liquid treating processes used as a feedstock to produce cresylic or naphthenic acid unless the material is placed on the land, or accumulated speculatively as defined in subdivision 371.1(a) of

this Part.

(2) Solid wastes which are not hazardous wastes. The following solid wastes are not hazardous wastes:

(i) household waste, including household waste that has been collected, transported, stored, treated, disposed, recovered (e.g., refuse derived fuel) or reused. "Household waste" means any waste material (including garbage, trash and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas). A resource recovery facility managing municipal waste shall not be deemed to be treating, storing, disposing of, or otherwise managing hazardous waste for the purpose of regulation, if such facility:

('a') Receives and burns only:

('1') Household waste (from single and multiple dwellings, hotels, motels, and other residential sources); and

('2') Solid waste from commercial or industrial sources that does not contain hazardous waste; and

('b') Does not accept hazardous waste and the owner or operator of such facility has established contractual requirements or other appropriate notification or inspection procedures to assure that hazardous wastes are not received at or burned in the facility;

(ii) solid wastes generated by any of the following and which are returned to the soils as fertilizers:

('a') the growing and harvesting of agricultural crops; and

('b') the raising of animals, including animal manures;

(iii) mining overburden returned to the mine site;

(iv) fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels, except as provided by 374-1.8(m) of this Title for facilities that burn or process hazardous waste.

(v) drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy;

(vi) solid waste from the extraction, beneficiation and processing of ores and minerals (including coal, phosphate rock and overburden from the mining of uranium ore), except as provided by 374-1.8(m) of this Title for facilities that burn or process hazardous waste.

('a') For purposes of subparagraph 371.1(e)(2)(vi) beneficiation of ores and minerals is restricted to the following activities: crushing; grinding; washing; dissolution; crystallization; filtration; sorting; sizing; drying; sintering; pelletizing; briquetting; calcining to remove water and/or carbon dioxide; roasting, autoclaving, and/or chlorination in preparation for leaching (except where the roasting (and/or autoclaving and/or chlorination)/leaching sequence produces a final or intermediate product that does not undergo further beneficiation or processing); gravity concentration; magnetic separation; electrostatic separation; flotation; ion exchange; solvent extraction; electrowinning; precipitation; amalgamation; and heap, dump, vat, tank, and in situ leaching.

('b') For the purposes of subparagraph 371.1(e)(2)(vi), solid waste from the processing of ores and minerals includes only the following wastes as generated:

('1') Slag from primary copper processing;

('2') Slag from primary lead processing;

('3') Red and brown muds from bauxite refining;

('4') Phosphogypsum from phosphoric acid production;

('5') Slag from elemental phosphorus production;

('6') Gasifier ash from coal gasification;

('7') Process wastewater from coal gasification;

('8') Calcium sulfate wastewater treatment plant sludge from primary copper processing;

('9') Slag tailings from primary copper processing;

('10') Fluorogypsum from hydrofluoric acid production;

('11') Process wastewater from hydrofluoric acid production;

('12') Air pollution control dust/sludge from iron blast furnaces;

('13') Iron blast furnace slag;

('14') Treated residue from roasting/leaching of chrome ore;

('15') Process wastewater from primary magnesium processing by the anhydrous process;

('16') Process wastewater from phosphoric acid production;

('17') Basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production;

('18') Basic oxygen furnace and open hearth furnace slag from carbon steel production;

('19') Chloride process waste solids from titanium tetrachloride production;

('20') Slag from primary zinc processing;

('21') Air pollution control dust/sludge from lightweight aggregate production.

('c') A residue derived from co-processing mineral processing secondary materials with normal beneficiation raw materials or with normal mineral processing raw materials remains excluded under paragraph (2) of this subdivision if the owner or operator:

('1') Processes at least 50 percent by weight normal beneficiation raw materials or normal mineral processing raw materials; and,

('2') Legitimately reclaims the secondary mineral processing materials.

(vii) cement kiln dust waste, except as provided by 374-1.8(m) of this Title for facilities that burn or process hazardous waste.

(viii) solid waste which consists of discarded arsenical-treated wood or wood products which fails the test for the Toxicity Characteristic for Hazardous Waste Codes D004 through D017 and which is not a hazardous waste for any other reason if the waste is

generated by persons who utilize the arsenical-treated wood and wood products for these materials' intended end use.

(Note: This exclusion does not apply to manufacturers of arsenical-treated wood or wood products.)

('a') wastes which fail the test for the Toxicity Characteristic because chromium is present or are listed in section 371.4 due to the presence of chromium, which do not fail the test for the Toxicity Characteristic for any other constituent or are not listed due to the presence of any other constituent, and which do not fail the test for any other characteristic, if it is shown by a waste generator or by waste generators that:

('1') the chromium in the waste is exclusively (or nearly exclusively) trivalent chromium;

('2') the waste is generated from an industrial process which uses trivalent chromium exclusively (or nearly exclusively) and the process does not generate hexavalent chromium; and

('3') the waste is typically and frequently managed in non-oxidizing environments.

('b') specific wastes which meet the standard in clause ('a') of this subparagraph (so long as they do not fail the test for the toxicity characteristic for any other constituent, and do not exhibit any other hazardous waste characteristic) are:

('1') the following wastes generated by the following subcategories of the leather tanning and finishing industry: chrome (blue) trimmings, chrome (blue) shavings, sewer screenings and wastewater treatment sludges, generated by the subcategories known as hair pulp/chrome tan/retan/wet finish, hair save/chrome tan/retan/wet finish, retan/wet finish, no beamhouse, through-the-blue, and shearling;

('2') buffing dust generated by the subcategories listed in subclause ('1') of this clause except for shearling;

('3') waste scrap leather from the leather tanning industry, the shoe manufacturing industry, and other leather product manufacturing industries; and

('4') wastewater treatment sludges from the production of titanium dioxide pigment using chromium-bearing ores by the chloride process.

(x) Petroleum-contaminated media and debris that fail the test for the Toxicity Characteristic of subdivision 371.3(e) (Hazardous Waste Codes D018 through D043 only) and are subject to the corrective action regulations under 40 CFR Part 280.

(xi) Non-terne plated used oil filters that are not mixed with wastes listed in section 371.4 of this Title if these oil filters have been gravity hot-drained using one of the following methods:

('a') Puncturing the filter anti-drain back valve or the filter dome end and hot-draining;

('b') Hot-draining and crushing;

('c') Dismantling and hot-draining; or

('d') Any other equivalent hot-draining method that will remove used oil.

(xii) Used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration, and commercial and industrial air conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided the refrigerant is reclaimed for further use.

(xiii) Leachate or gas condensate collected from landfills where certain solid wastes have been disposed, provided that:

('a') The solid wastes disposed would meet one or more of the listing descriptions for Hazardous Waste Codes K169, K170, K171, K172, K174, K175, K176, K177, and K178, if these wastes had been generated after the effective date of the listing;

('b') The solid wastes described in clause (2)(xiii)('a') of this subdivision were disposed prior to the effective date of the listing;

('c') The leachate or gas condensate do not exhibit any characteristic of hazardous waste nor are derived from any other listed hazardous waste;

('d') Discharge of the leachate or gas condensate, including leachate or gas condensate transferred from the landfill to a POTW by truck, rail, or dedicated pipe, is subject to regulation under sections 307(b) or 402 of the federal Clean Water Act and the State Pollution Discharge Elimination System (SPDES), Parts 750 through 757 of this Title.

('e') As of February 13, 2001, leachate or gas condensate derived from K169-K172 is no longer exempt if it is stored or managed in a surface impoundment prior to discharge. After November 21, 2003, leachate or gas condensate derived from K176, K177, and K178 will no longer be exempt if it is stored or managed in a surface impoundment prior to discharge. There is one exception: if the surface impoundment is used to temporarily store leachate or gas condensate in response to an emergency situation (e.g., shutdown of wastewater treatment system), provided the impoundment has a double liner, and provided the leachate or gas condensate is removed from the impoundment and continues to be managed in compliance with the conditions of this clause (2)(xiii)('e') after the emergency ends.

(3) Hazardous wastes which are exempted from certain regulations.

(i) A hazardous waste which is generated in a product or raw material storage tank, in a product or raw material transport vehicle or vessel, in a product or raw material pipeline, or in a manufacturing process unit or an associated non-wastetreatment-manufacturing unit, is not subject to regulation under Parts 372, 373, and 376 of this Title until it leaves the unit in which it was generated. However, this exemption does not apply if the unit is a surface impoundment, or if the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of product or raw materials.

(4) Samples.

(i) Except as provided in subparagraph (ii) of this paragraph, a sample of solid waste or a sample of water, soil or air, which is collected for the sole purpose of testing to determine its characteristics, or composition, is not subject to any requirements of this Part or of Parts 372, 373, and 376 of this Title, when:

('a') the sample is being transported to a laboratory for the purpose of testing;

('b') the sample is being transported back to the sample collector after testing;

('c') the sample is being stored by the sample collector before transport to a laboratory for testing;

('d') the sample is being stored in a laboratory before testing;

('e') the sample is being stored in a laboratory after testing

but before it is returned to the sample collector; or

('f') the sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

(ii) In order to qualify for the exemption in clause (i)('a') and ('b') of this paragraph, a sample collector shipping samples to a laboratory or a laboratory returning samples to a sample collector, must:

('a') comply with N.Y.S. Department of Transportation (NYSDOT), U.S. Department of Transportation (USDOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

('b') comply with the following requirements if the sample collector determines that NYSDOT, USDOT, USPS, or other shipping requirements do not apply to the shipment of the sample;

('1') assure that the following information accompanies the sample.

('i') the sample collector's name, mailing address, and telephone number;

('ii') the laboratory's name, mailing address, and telephone number;

('iii') the quantity of the sample;

('iv') the date of shipment; and

('v') a description of the sample; and

('2') package the sample so that it does not leak, spill, or vaporize from its packaging.

(iii) This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in subparagraph (i) of this paragraph.

(iv) Treatability Study Samples.

('a') Except as provided in clause ('b') of this subparagraph, persons who generate or collect samples for the purpose of

conducting treatability studies, as defined in subdivision 370.2 (b) of this Title, are not subject to any requirement of this Part or Part 372 nor are such samples included in the quantity determinations of subdivision 371.1(f) and paragraph 372.2(a) (8) when:

('1') the sample is being collected and prepared for transportation by the generator or sample collector; or

('2') the sample is being accumulated or stored by the generator or sample collector prior to transportation to a laboratory or testing facility; or

('3') the sample is being transported to the laboratory or testing facility for the purpose of conducting a treatability study.

('b') The exemption in clause (iv)('a') of this paragraph is applicable to samples of hazardous waste being collected and shipped for the purpose of conducting treatability studies provided that:

('1') the generator or sample collector uses (in "treatability studies") no more than 10,000 kilograms of media contaminated with non-acute hazardous waste, 1,000 kilograms of any non-acute hazardous waste other than contaminated media, 1 kilogram of acute hazardous waste, 2,500 kilograms of media contaminated with acute hazardous waste for each process being evaluated for each generated waste stream; and

('2') the mass of each sample shipment does not exceed 10,000 kilograms; the 10,000 kilogram quantity may be all media contaminated with non-acute hazardous waste, or may include 2,500 kilograms of media contaminated with acute hazardous waste, 1,000 kilograms of hazardous waste, and 1 kilogram of acute hazardous waste; and

('3') the sample must be packaged so that it will not leak, spill, or vaporize from its packaging during shipment and the requirements of item ('i') or ('ii') of this subclause are met;

('i') the transportation of each sample shipment complies with U.S. Department of Transportation (DOT), U.S. Postal Service USPS), or any other applicable shipping requirements; or

('ii') if the DOT, USPS, or other shipping requirements do not apply to the shipment of the sample, the following information must accompany the sample;

('A') the name, mailing address, and telephone number of the originator of the sample;

('B') the name, address, and telephone number of the facility that will perform the treatability study;

('C') the quantity of the sample;

('D') the date of shipment; and

('E') a description of the sample, including its EPA Hazardous Waste Number;

('4') the sample is shipped to a laboratory or testing facility which is exempt under 371.1(e)(4)(v) or has an appropriate RCRA permit or interim status;

('5') the generator or sample collector maintains the following records for a period ending 3 years after completion of the treatability study:

('i') copies of the shipping documents;

('ii') a copy of the contract with the facility conducting the treatability study;

('iii') documentation showing:

('A') the amount of waste shipped under this exemption;

('B') the name, address, and EPA identification number of the laboratory or testing facility that received the waste;

('C') the date the shipment was made; and

('D') whether or not unused samples and residues were returned to the generator;

('6') the generator reports the information required under item (iv)('b')('5')('iii') of this paragraph in its annual report.

('c') The commissioner may grant requests, on a case-by-case basis, for up to an additional two years for treatability studies involving bioremediation. The commissioner may grant

requests, on a case-by-case basis, for quantity limits in excess of those specified in subclauses (iv)('b')('1') and (iv)('b')('2') and clause (v)('d') of this paragraph, for up to an additional 5,000 kilograms of media contaminated with non-acute hazardous waste, 500 kilograms of non-acute hazardous waste, 2,500 kilograms of media contaminated with acute hazardous waste and 1 kilogram of acute hazardous waste:

('1') In response to requests for authorization to ship, store and conduct treatability studies on additional quantities in advance of commencing treatability studies. Factors to be considered in reviewing such requests include the nature of the technology, the type of process (e.g., batch versus continuous), size of the unit undergoing testing (particularly in relation to scale-up considerations), the time/quantity of material required to reach steady state operating conditions, or test design considerations such as mass balance calculations.

('2') In response to requests for authorization to ship, store and conduct treatability studies on additional quantities after initiation or completion of initial treatability studies, when: There has been an equipment or mechanical failure during the conduct of a treatability study; there is a need to verify the results of a previously conducted treatability study; there is a need to study and analyze alternative techniques within a previously evaluated treatment process; or there is a need to do further evaluation of an ongoing treatability study to determine final specifications for treatment.

('3') The additional quantities and time frames allowed in subclauses (iv)('c')('1') and ('2') of this paragraph are subject to all the provisions in clause (iv)('a') and subclauses (iv)('b')('2')-('6') of this paragraph. The generator or sample collector must apply to the commissioner and provide in writing the following information:

('i') the reason why the generator or sample collector requires additional time or quantity of sample for the treatability study evaluation and the additional time or quantity needed;

(ii') documentation accounting for all samples of hazardous waste from the waste stream which have been sent for or undergone treatability studies including the date each previous sample from the waste stream was shipped, the quantity of each previous shipment, the

laboratory or testing facility to which it was shipped, what treatability study processes were conducted on each sample shipped, and the available results of each treatability study;

('iii') a description of the technical modifications or change in specifications which will be evaluated and the expected results;

('iv') if such further study is being required due to equipment or mechanical failure, the applicant must include information regarding the reason for the failure or breakdown and also include what procedures or equipment improvements have been made to protect against further breakdowns; and

('v') such other information that the commissioner considers necessary.

(v) Samples Undergoing Treatability Studies at Laboratories and Testing Facilities. Samples undergoing treatability studies and the laboratory or testing facility conducting such treatability studies (to the extent such facilities are not otherwise subject to RCRA requirements) are not subject to any requirement of this Part or Parts 370-374 and Part 376, provided that the conditions of clauses (v)('a') through ('k') of this paragraph are met. A mobile treatment unit (MTU) may qualify as a testing facility subject to clauses (v)('a') through ('k') of this paragraph. Where a group of MTUs are located at the same site, the limitations specified in (v) ('a') through ('k') of this paragraph apply to the entire group of MTUs collectively as if the group were one MTU.

('a') No less than 45 days before conducting treatability studies, the facility notifies the commissioner in writing that it intends to conduct treatability studies under this paragraph.

('b') The laboratory or testing facility conducting the treatability study has an EPA identification number.

('c') No more than a total of 10,000 kilograms of "as received" media contaminated with non-acute hazardous waste, 2,500 kilograms of media contaminated with acute hazardous waste or 250 kilograms of other "as received" hazardous waste is subject to initiation of treatment in all treatability studies in any single day. "As received" waste refers to the waste as received in the shipment from the generator or sample collector.

('d') The quantity of "as received" hazardous waste stored at

the facility for the purpose of evaluation in treatability studies does not exceed 10,000 kilograms, the total of which can include 10,000 kilograms of media contaminated with non-acute hazardous waste, 2,500 kilograms of media contaminated with acute hazardous waste, 1,000 kilograms of non-acute hazardous wastes other than contaminated media, and 1 kilogram of acute hazardous waste. This quantity limitation does not include treatment materials (including non-hazardous solid waste) added to "as received" hazardous waste.

('e') No more than 90 days have elapsed since the treatability study for the sample was completed, or no more than one year (two years for treatability studies involving bioremediation) have elapsed since the generator or sample collector shipped the sample to the laboratory or testing facility, whichever date first occurs. Up to 500 kilograms of treated material from a particular waste stream from treatability studies may be archived for future evaluation up to five years from the date of initial receipt. Quantities of materials archived are counted against the total storage limit for the facility.

('f') The treatability study does not involve the placement of hazardous waste on the land or open burning of hazardous waste.

('g') The facility maintains records for 3 years following completion of each study that show compliance with the treatment rate limits and the storage time and quantity limits. The following specific information must be included for each treatability study conducted:

('1') the name, address, and EPA identification number of the generator or sample collector of each waste sample;

('2') the date the shipment was received;

('3') the quantity of waste accepted;

('4') the quantity of "as received" waste in storage each day;

('5') the date the treatment study was initiated and the amount of "as received" waste introduced to treatment each day;

('6') the date the treatability study was concluded;

('7') the date any unused sample or residues generated from the treatability study were returned to the generator or sample collector, or, if sent to a designated facility, the name of the facility, and the EPA identification number.

('h') The facility keeps, on-site, a copy of the treatability study contract and all shipping papers associated with the transport of treatability study samples to and from the facility for a period ending 3 years from the completion date of each treatability study.

('i') The facility prepares and submits a report to the commissioner by March 15 of each year that estimates the number of studies and the amount of waste expected to be used in treatability studies during the current year, and includes the following information for the previous calendar year:

('1') the name, address, and EPA identification number of the facility conducting the treatability studies;

('2') the types (by process) of treatability studies conducted;

('3') the names and addresses of persons for whom studies have been conducted (including their EPA identification numbers);

('4') the total quantity of waste in storage each day;

('5') the quantity and types of waste subjected to treatability studies;

('6') when each treatability study was conducted;

('7') the final disposition of residues and unused sample from each treatability study.

('j') The facility determines whether any unused sample or residues generated by the treatability study are hazardous waste under 371.1(d) and, if so, are subject to Parts 371 - 374 and Part 376, unless the residues and unused samples are returned to the sample originator under the 371.1(e)(4)(iv) exemption.

('k') The facility notifies the commissioner by letter when the facility is no longer planning to conduct any treatability studies at the site.

(f) Special requirements for hazardous waste generated by conditionally exempt small quantity generators.

(1) A generator is a conditionally exempt small quantity generator in a calendar month if no more than 100 kilograms of hazardous waste are generated in that month.

(2) Except as provided in paragraphs (5), (6), (7), and (10) of this subdivision, a conditionally exempt small quantity generator's hazardous wastes are not subject to regulation under Part 372 through Subpart 374-3, and Part 376 of this Title.

(3) When making the quantity determinations of Parts 371 and 372 of this Title, the generator must include all hazardous waste that it generates, except hazardous waste that:

(i) is exempt from regulation under 371.1(e)(3) and (4), 371.1(g)(1)(iii), 371.1(h)(1)(i) or 371.4(e); or

(ii) is managed immediately upon generation only in on-site elementary neutralization units, wastewater treatment units, or totally enclosed treatment facilities as defined in 370.2: or

(iii) is recycled, without prior storage or accumulation, only in an on-site process subject to regulation under 371.1(g)(3)(ii): or

(iv) is used oil managed under the requirements of 371.1(g)(1)(iv) and Subpart 374-2: or

(v) is spent lead-acid batteries managed under the requirements of section 374-1.7: or

(vi) is universal waste managed under 371.1(j) and 374-3.

(4) In determining the quantity of hazardous waste generated, a generator need not include:

(i) hazardous waste when it is removed from on-site storage;

(ii) hazardous waste produced by on-site treatment (including reclamation) of the generator's hazardous waste, so long as the hazardous waste that is treated was counted once; or

(iii) spent materials that are generated, reclaimed, and subsequently reused on-site, so long as such spent materials have been counted once.

(5) If a conditionally exempt small quantity generator generates acute hazardous waste in quantities greater than that set forth below in a

calendar month, all quantities of that waste are subject to regulation under Parts 372, 373, 374, and 376 of this Title:

(i) a total of one kilogram of acute hazardous waste listed in sections 371.4(b), (c) and (d)(5) of this Title;

(ii) a total of 100 kilograms of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of any acute hazardous waste listed in section 371.4(b), (c) and (d)(5) of this Title;

(6) A conditionally exempt small quantity generator who generates acute hazardous wastes in quantities equal to or less than those set forth in subparagraphs (5)(i) or (5)(ii) of this subdivision may be excluded from full regulation under this subdivision, if the following requirements are complied with:

(i) paragraph 372.2(a)(2) of this Title;

(ii) the conditionally exempt small quantity generator may accumulate acute hazardous waste on-site. If acutely hazardous wastes are accumulated in quantities greater than those set forth in subparagraphs (5)(i) or (5)(ii) of this subdivision, all of those accumulated wastes are subject to regulation under Parts 372 through 374, and 376 of this Title. The time period for accumulation of wastes on-site given in subparagraph 372.2(a)(8) (ii) of this Title begins when the accumulated wastes exceed the applicable exclusion limit;

(iii) a conditionally exempt small-quantity generator may either treat or dispose of the acute hazardous wastes in an on-site facility, or ensure delivery to an off-site treatment, storage or disposal facility either of which, if located in the U.S., is:

('a') permitted under Part 373 of this Title;

('b') in interim status under Part 373 of this Title;

('c') authorized to manage hazardous waste by a state with a hazardous waste management program approved under RCRA, if located outside New York;

('d') authorized to receive hazardous waste under RCRA;

('e') permitted by New York State pursuant to Part 360 of this Title to manage municipal or industrial solid waste, and authorized to receive such wastes, or permitted, licensed, or registered by a state other than New York to manage municipal solid waste if managed in a solid waste landfill

subject to 40 CFR Part 258, as incorporated by reference in subdivision 370.1(e) of this Title, or registered by a state to manage industrial solid waste if managed in an industrial waste disposal unit subject to 40 CFR sections 257.5 through 257.30, as incorporated by reference in subdivision 370.1(e) of this Title; or

('f') a facility which beneficially uses or reuses, or legitimately recycles or reclaims its waste; or treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation;

('g') a facility authorized by the Department to receive such wastes, pursuant to Subpart 373-4 of this Title.

('h') For universal waste managed under Subpart 374-3 of this Title, a universal waste handler or destination facility subject to the requirements of Subpart 374-3 of this Title.

(iv) in ensuring delivery of this waste to an off-site treatment, storage, or disposal facility, generators must:

('a') transport the waste themselves (see 6 NYCRR Part 364, subparagraph 364.1(e)(3)(i)); or

('b') use a transporter authorized under Part 364 of this Title to transport the particular waste(s) offered for shipment to the designated facility.

(7) In order for non-acute hazardous waste generated by a conditionally exempt small-quantity generator in quantities of less than 100 kilograms of hazardous waste during a calendar month to be excluded from full regulation under this subdivision, the generator must comply with the following requirements:

(i) comply with paragraph 372.2(a)(2) of this Title;

(ii) The conditionally exempt small quantity generator may accumulate hazardous waste on-site. If he or she accumulates at any time more than a total of 1000 kilograms of their own hazardous wastes, all of those accumulated wastes are subject to regulation under the special provisions of Part 372 of this Title applicable to generators of between 100 and 1000 kg of hazardous waste in a calendar month as well as the requirements of Parts 373 and 376 of this Title, and the applicable notification requirements of section 3010 of RCRA. The time period of 372.2(a)(8)(iii) for accumulation of wastes on-site begins for conditionally exempt small quantity generators when the accumulated wastes exceed 1000 kilograms;

(iii) Conditionally exempt small quantity generator may either treat or dispose of their hazardous waste in an on-site facility, or ensure delivery to an off-site treatment, storage or disposal facility, either of which, if located in the U.S., is:

('a') permitted under Part 373 of this Title;

('b') in interim status under Part 373 of this Title;

('c') authorized to manage hazardous waste by a state with a hazardous waste management program approved under RCRA, if located outside New York;

('d') authorized to receive hazardous waste under RCRA;

('e') Permitted by New York State pursuant to Part 360 of this Title to manage municipal or industrial solid waste, and authorized to receive such wastes, or permitted, licensed, or registered by a state other than New York to manage municipal solid waste if managed in a solid waste landfill subject to 40 CFR Part 258, as incorporated by reference in subdivision 370.1(e) of this Title, or registered by a state to manage industrial solid waste if managed in an industrial waste disposal unit subject to 40 CFR sections 257.5 through 257.30, as incorporated by reference in subdivision 370.1(e) of this Title; or

('f') a facility which beneficially uses or reuses, or legitimately recycles or reclaims its waste; or treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation;

('g') a facility authorized by the Department to receive such wastes, pursuant to Subpart 373-4 of this Title.

('h') For universal waste managed under Subpart 374-3 of this Title, a universal waste handler or destination facility subject to the requirements of Subpart 374-3 of this Title.

(iv) in ensuring delivery of this waste to an off-site treatment, storage, or disposal facility, generators must:

('a') transport the waste themselves (see 6 NYCRR Part 364, subparagraph 364.1(e)(3)(i)); or

('b') use a transporter authorized under Part 364 of this Title to transport the particular waste(s) offered for shipment to the designated facility.

(8) Hazardous waste subject to the reduced requirements of this

subdivision may be mixed with non-hazardous waste and remain subject to these reduced requirements even though the resultant mixture exceeds the quantity limitation identified in this subdivision, as long as the mixture meets none of the characteristics of hazardous wastes identified in section 371.3 of this Title, or such mixing occurs at a facility regulated under Subpart 373-4 or permitted under Part 373 of this Title.

(9) If a conditionally exempt small-quantity generator mixes a solid waste with a hazardous waste that exceeds a quantity exclusion level of this subdivision, the mixture is subject to full regulation under this Title.

(10) If a conditionally exempt small quantity generator's wastes are mixed with used oil, the mixture is subject to Part 360 and Subpart 374-2 of this Title if it is destined to be burned for energy recovery. Any material produced from such a mixture by processing, blending, or other treatment is also so regulated if it is destined to be burned for energy recovery.

(g) Requirements for recyclable materials.

(1) (i) Hazardous wastes that are recycled are subject to the requirements for generators, transporters, and storage facilities of paragraphs (2) and (3) of this subdivision, except for the materials listed in subparagraphs (ii) and (iii) of this subdivision. Hazardous wastes that are recycled will be known as "recyclable materials".

(ii) The following recyclable materials are not subject to the requirements of this subdivision but are regulated under sections 374-1.3 through 374-1.8, Subpart 374-2 and all applicable provisions in Subpart 373-1 and Parts 621 and 624 of this Title.

('a') Recyclable materials used in a manner constituting disposal (see section 374-1.3);

('b') Hazardous wastes burned for energy recovery in boilers and industrial furnaces that are not regulated under sections 373-2.15 and 373-3.15 of this Title (see section 374-1.8);

('c') reserved;

('d') Recyclable materials from which precious metals are reclaimed (see section 374-1.6); and

('e') Spent lead-acid batteries that are being reclaimed (see section 374-1.7).

(iii) The following recyclable materials are not subject to regulation

under Part 372 through Subpart 374-3, and Part 376 of this Title provided that the waste is transported by a hauler complying with any applicable waste hauler permit requirements in Part 364 of this Title:

('a') industrial ethyl alcohol that is reclaimed except that, unless provided otherwise in an international agreement as specified in section 372.5 of this Title:

('1') a person initiating a shipment for reclamation in a foreign country, and any intermediary arranging for the shipment, must comply with the requirements applicable to a primary exporter in sections 372.5(c), 372.5(f)(1)(i) - (iv), (vi), and (f)(2), and 372.5(g), export such materials only upon consent of the receiving country and in conformance with the EPA Acknowledgment of Consent as defined in section 372.5 of this Title, and provide a copy of the EPA acknowledgment of consent to the shipment to the transporter transporting the shipment for export; and

('2') transporters transporting a shipment for export may not accept a shipment if he or she knows the shipment does not conform to the EPA Acknowledgement of Consent, must ensure that a copy of the EPA Acknowledgement of Consent accompanies the shipment and must ensure that it is delivered to the facility designated by the person initiating the shipment;

('b') scrap metal that is not excluded under subparagraph 371.1(e)(1)(xiii) of this Part;

('c') fuels produced from the refining of oil-bearing hazardous waste along with normal process streams at a petroleum refining facility if such wastes result from normal petroleum refining, production, and transportation practices (this exemption does not apply to fuels produced from oil recovered from oil-bearing hazardous waste, where such recovered oil is already excluded under subparagraph 371.1(e)(1)(xii) of this Part);

('d') ('1') hazardous waste fuel produced from oil-bearing hazardous wastes from petroleum refining, production, or transportation practices, or produced from oil reclaimed from such hazardous wastes, where such hazardous wastes are reintroduced into a process that does not use distillation or does not produce products from crude oil so long as the resulting fuel meets the used oil specification under subdivision 374-2.2 (b) of this Title and so long as no other hazardous wastes are used to produce the hazardous waste

fuel;

('2') hazardous waste fuel produced from oil-bearing hazardous waste from petroleum refining production, and transportation practices, where such hazardous wastes are reintroduced into a refining process after a point at which contaminants are removed, so long as the fuel meets the used oil fuel specification under subdivision 374-2.2(b) of this Title; and

('3') oil reclaimed from oil-bearing hazardous wastes from petroleum refining, production, and transportation practices, which reclaimed oil is burned as a fuel without reintroduction to a refining process, so long as the reclaimed oil meets the used oil fuel specification under subdivision 374-2.2(b) of this Title.

(iv) Used oil that is recycled and is also a hazardous waste solely because it exhibits a hazardous waste characteristic is not subject to the requirements of Parts 370 through 373, Subpart 374-1 and Part 376 of this Title, but is regulated under Part 364 and Subparts 360-14 and 374-2 of this Title. Used oil that is recycled includes any used oil which is reused, following its original use, for any purpose (including the purpose for which the oil was originally used). Such term includes, but is not limited to, oil which is re-refined, reclaimed, burned for energy recovery, or reprocessed.

(v) Hazardous waste, that is exported to or imported from designated member countries of the Organization for Economic Cooperation and Development (OECD) (as defined in paragraph 372.5(h)(1) of this Title) for purpose of recovery is subject to the requirements of section 372.5 of this Title, if it is subject to either the manifesting requirements of Part 372 of this Title, or to the universal waste management standards of Subpart 374-3 of this Title.

(2) Generators and transporters of recyclable materials are subject to the applicable requirements of Part 372 of this Title and the notification requirements under section 3010 of RCRA (see section 370.1(e) of this Title), except as provided in paragraph (1) of this subdivision.

(3) (i) Owners and operators of facilities that store recyclable materials before they are recycled are regulated under all applicable provisions of sections 373-2.1 through 373-2.12, Subpart 373-1, sections 373-3.1 through 373-3.12, Subpart 374-1, Parts 376, 621 and 624 of this Title, sections 373-2.27, 373-2.28, 373-2.29, 373-3.27, 373-3.28, and 373-3.29 of this Title, and the notification requirements under section 3010 of RCRA (see section 370.1(e) of this Title), except as provided in paragraph (1) of this subdivision. (The recycling process itself is

exempt from regulation except as provided in paragraph (4) of this subdivision).

(ii) Owners or operators of facilities that recycle recyclable materials without storing them before they are recycled are subject to the following requirements, except as provided in paragraph (1) of this subdivision:

('a') notification requirements under section 3010 of RCRA (see section 370.1(e) of this Title).

('b') Sections 373-2.5 and 373-3.5, and subdivision 373-3.5 (b) (dealing with the use of the manifest and manifest discrepancies) of this Title.

('c') paragraph 371.1(g)(4) of this Title.

(4) Owners or operators of facilities subject to RCRA permitting requirements with hazardous waste management units that recycle hazardous wastes are subject to the requirements of sections 373-2.27, 373-2.28, 373-3.27 and 373-3.28 of this Title.

(h) Residues of hazardous waste in empty containers.

(1) (i) Any hazardous waste remaining in either an empty container or an inner liner removed from an empty container, as defined in paragraph (2) of this subdivision, is not subject to regulation under Parts 371 through 373, and 376 of this Title. (Note: The discarding of the empty drum or inner liner itself may be subject to the disposal requirements of Part 360 and the transportation requirements of Part 364 of this Title).

(ii) Any hazardous waste in either a container that is not empty or an inner liner removed from a container that is not empty, as defined in paragraph (2) of this subdivision, is subject to regulation under Parts 371 through 373, and 376 of this Title.

(2) (i) A container or inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste listed in sections 371.4 (b) through (d) of this Part, is empty if:

('a') All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g. pouring, pumping, and aspirating; and

('b') no more than 2.54 centimeters (one inch) of residue remain on the bottom of the container or inner liner; or

('c') ('1') no more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 119 gallons in size; or

('2') no more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 119 gallons in size.

(ii) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

(iii) A container or an inner liner removed from a container that has held an acute hazardous waste listed in sections 371.4(b), (c) or 371.4(d)(5) of this Part is empty if:

('a') the container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate; or

('b') the container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

('c') in the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

(Note: approaching atmospheric pressure means that the pressure is essentially equal to atmosphere pressure).

(i) Severability. If any provision of this Part or its application to any person or circumstances is held invalid, the remainder of this Part, and the application of those provisions to persons or circumstances, other than those to which it is held invalid, shall not be affected thereby.

(j) Requirements for Universal Wastes.

(1) The wastes listed in this section are exempt from regulation under Parts 372 through 374-1 and 376 of this Title except as specified in Subpart 374-3 of this Title and, therefore are not fully regulated as hazardous waste. The wastes listed in this subdivision are subject to regulation under Subpart 374-3:

(i) Batteries as described in subdivision 374-3.1(b) of this Title;

(ii) Pesticides as described in subdivision 374-3.1(c) of this Title;

(iii) Thermostats as described in subdivision 374-3.1(d) of this Title; and

(iv) Lamps as described in subdivision 374-3.1(e) of this Title.

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Section 371.2 Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste.

(a) Criteria for identifying the characteristics of Hazardous Waste. The commissioner will identify and define a characteristic of hazardous waste in addition to those characteristics already identified in section 371.3 of this Part, upon determining that:

(1) a solid waste that exhibits the characteristic may:

(i) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(ii) pose a substantial present or potential hazard to human health or the environment when it is improperly treated, stored, transported, disposed of or otherwise managed; and

(2) the characteristic can be:

(i) measured by an available standardized test method which is reasonably within the capability of generators of solid waste or private sector laboratories that are available to serve generators of solid waste; or

(ii) reasonably detected by generators of solid waste through their knowledge of their waste.

(3) Whenever a proposed characteristic of a hazardous waste has been identified by the commissioner, the adoption of the proposed characteristic is subject to the approval of the State Environmental Board.

(b) Criteria for listing hazardous waste.

(1) The commissioner shall list a solid waste as a hazardous waste only upon determining that the solid waste meets one of the following criteria:

(i) The solid waste exhibits any of the characteristics of hazardous waste identified in section 371.3 of this Part.

(ii) The solid waste has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown in studies to have an oral LD 50 toxicity (rat) of less than 50 milligrams per kilogram, an inhalation LD 50 toxicity (rat) of less than 2 milligrams per liter, or a dermal LD 50 toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible, illness. (Waste listed in accordance with these criteria will be designated Acute Hazardous Waste.)

(iii) The solid waste contains any of the toxic constituents listed in Appendix 23, infra, and, after considering the following factors, the commissioner concludes that the waste is capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed:

('a') the nature of the toxicity presented by the constituent.

('b') the concentration of the constituent in the waste.

('c') the potential of the constituent or any toxic degradation product of the constituent to migrate from the waste into the environment under the types of improper management considered in clause ('g') of this subparagraph.

('d') the persistence of the constituent or any toxic degradation product of the constituent;

('e') the potential for the constituent or any toxic degradation product of the constituent to degrade into non-harmful constituents and the rate of degradation;

('f') the degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems;

('g') the plausible types of improper management to which the waste could be subjected;

('h') the quantities of the waste generated at individual generation sites or on a regional or national basis;

('i') the nature and severity of the human health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent;

('j') action taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed

by the waste or other constituent; and

('k') such other factors as may be appropriate. Constituents will be listed in Appendix 23, infra, only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms.

(2) The commissioner may list classes or types of solid wastes as hazardous wastes if the commissioner has reason to believe that individual wastes, within the class or type of waste, typically or frequently are hazardous under the definition of hazardous waste found in Article 27, Title 9 of the Environmental Conservation Law.

(3) The commissioner will use the criteria for listing specified in this subdivision to establish the exclusion limits referred to in paragraph 371.1(f)(3) of this Title.

(4) Whenever the commissioner proposes to list a solid waste as a hazardous waste where such solid waste has not been so listed by the Administrator, the listing of the solid waste shall be subject to the approval of the State Environmental Board.

(Wastes listed in accordance with these criteria will be designated Toxic Wastes.)

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Section 371.3 Characteristics of Hazardous Waste.

(a) General.

(1) A solid waste, as defined in section 371.1(c) of this Part, which is not excluded from regulation as a hazardous waste under section 371.1 (e), is a hazardous waste if it exhibits any of the characteristics identified in this section.

(Note: Section 372.2(a) of this Title sets forth the generator's responsibility to determine whether the waste exhibits one or more of the characteristics identified in this section.)

(2) A hazardous waste which is identified by a characteristic in this section is assigned every EPA Hazardous Waste Number that is applicable as set forth in this section. This number(s) must be used in complying with the notification requirements of section 3010 of RCRA and all applicable recordkeeping and reporting requirements under Part 372 through Subpart 373-3, and Part 376 of this Title.

(3) For purposes of this section, the commissioner will consider a

sample obtained using any of the applicable sampling methods specified in Appendix 19, infra, to be a representative sample. A person may employ a sampling method alternative to those listed in Appendix 19 and is not required to demonstrate the equivalency of that method under the procedures set forth in subdivisions 370.3(a) and (b) of this Title.

(b) Characteristic of ignitability.

(1) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(i) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60 degrees (140 degrees F). Flash point must be determined by a Pensky-Martens Closed Cup Tester Materials Standard D-93-79 or D-93-80; or a Setaflash Closed Cup Tester, using the method specified in the American Society for Testing Materials (ASTM) and the test method specified in ASTM Standard D-3278-78; or a determined by an equivalent test method approved by the commissioner as set forth in 6NYCRR 370.3(b) (see section 370.1 (e) of this Title).

(ii) It is not a liquid and is capable under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(iii) It is an ignitable compressed gas, as defined in 49 CFR 172 (see section 370.1(e) of this Title), and as determined by the test methods described in that regulation or equivalent test methods approved by the commissioner as set forth in section 370.3(b) of this Title.

(iv) It is an oxidizer as defined in 49 CFR 173.127 (see section 370.1(e) of this Title).

(2) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

(c) Characteristic of corrosivity.

(1) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(i) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using Method 9040 in "Test Methods for Evaluating Solid Waste,

Physical/Chemical Methods", EPA publication number SW-846, as incorporated by reference in subdivision 370.1(e) of this Title.

(ii) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55 degrees C (130 degrees F) as determined by the test method specified in the National Association of Corrosion Engineers (NACE) Standard TM-01-69 as standardized in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, as incorporated by reference in subdivision 370.1(e) of this Title.

(2) A solid waste that exhibits the characteristics of corrosivity has the EPA Hazardous Waste Number of D002.

(d) Characteristic of reactivity.

(1) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(i) It is normally unstable and readily undergoes violent change without detonating;

(ii) It reacts violently with water;

(iii) It forms potentially explosive mixtures with water;

(iv) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment;

(v) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment;

(vi) It is a capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement;

(vii) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure; and

(viii) It is a forbidden explosive, a Class A explosive or a Class B explosive as defined in 49 CFR 173.51 and 173.53 (see section 370.1(e) of this Title).

(2) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

(e) Toxicity characteristic.

(1) A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in subdivision 370.1 (e) of this Title, the extract from a representative sample of the waste contains any of the contaminants listed in Table 1 at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in Method 1311, is considered to be the extract for the purpose of this subdivision.

Table 1. -- Maximum Concentration of Contaminants for the Toxicity Characteristic

Contaminant Concentration for Toxicity

EPA HW No.[1]	Contaminant	CAS No.[2]	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	[4]200.0
D024	m-Cresol	108-39-4	[4]200.0
D025	p-Cresol	106-44-5	[4]200.0
D026	Cresol		[4]200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5

D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	[3]0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	[3]0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentrachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	[3]5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

FOOTNOTE 1: Hazardous waste number. FOOTNOTE 2: Chemical abstracts service number. FOOTNOTE 3: Quantitation limit is greater than the

calculated regulatory level. The quantitation limit therefore becomes the regulatory level. FOOTNOTE 4: If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

(2) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table 1 which corresponds to the toxic contaminant causing it to be hazardous.

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NYSDEC

TAGM 4046 Guidance Document

TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM #4046

DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS

TO: Regional Haz. Waste Remediation Engineers, Bureau Directors, and Section Chiefs

FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation

SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM: DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS

DATE: JAN 24, 1994

Michael J. O'Toole, Jr. (signed)

The cleanup goal of the Department is to restore inactive hazardous waste sites to predisposal conditions, to the extent feasible and authorized by law. However, it is recognized that restoration to predisposal conditions will not always be feasible.

1. INTRODUCTION:

This TAGM provides a basis and procedure to determine soil cleanup levels at individual Federal Superfund, State Superfund, 1986 EQBA Title 3 and Responsible Party (RP) sites, when the Director of the DHWR determines that cleanup of a site to predisposal conditions is not possible or feasible.

The process starts with development of soil cleanup objectives by the Technology Section for the contaminants identified by the Project Managers. The Technology Section uses the procedure described in this TAGM to develop soil cleanup objectives. Attainment ofthese generic soil cleanup objectives will, at a minimum, eliminate all significant threats to human health and/or the environment posed by the inactive hazardous waste site. Project Managers should use these cleanup objectives in selecting alternatives in the Feasibility Study (FS). Based on the proposed selected remedial technology (outcome of FS), final site specific soil cleanup levels are established in the Record of Decision (ROD) for these sites.

It should be noted that even after soil cleanup levels are established in the ROD, these levels may prove to be unattainable when remedial construction begins. In that event,

alternative remedial actions or institutional controls may be necessary to protect the environment.

2. BASIS FOR SOIL CLEANUP OBJECTIVES:

The following alternative bases are used to determine soil cleanup objectives:

a. Human health based levels that correspond to excess lifetime cancer risks of one in a million for Class A[1] and B[2] carcinogens, or one in 100,000 for Class C[3] carcinogens. These levels are contained in USEPA's Health Effects Assessment Summary Tables (HEASTs) which are compiled and updated quarterly by the NYSDEC's Division of Hazardous Substances Regulation;

b. Human health based levels for systemic toxicants, calculated from Reference Doses (RfDs). RfDs are an estimate of the daily exposure an individual (including sensitive individuals) can experience without appreciable risk of health effects during a lifetime. An average scenario of exposure in which children ages one to six (who exhibit the greatest tendency to ingest soil) is assumed. An intake rate of 0.2 gram/day for a five-year exposure period for a 16-kg child is assumed. These levels are contained in USEPA's Health Effects Assessment Summary Tables (HEASTs) which are compiled and updated quarterly by the NYSDEC's Division of Hazardous Substances Regulation;

c. Environmental concentrations which are protective of groundwater/drinking water quality; based on promulgated or proposed New York State Standards;

d. Background values for contaminants; and

e. Detection limits.

A recommendation on the appropriate cleanup objective is based on the criterion that produces the most stringent cleanup level using criteria a, b, and c for organic chemicals, and criteria a, b, and d for heavy metals. If criteria a and/or b are below criterion d for a contaminant, its background value should be used as the cleanup objective. However, cleanup objectives developed using this approach must be, at a minimum, above the method detection limit (MDL) and it is preferable to have the soil cleanup objectives above the Contract Required Quantitation Limit (CRQL) as defined by NYSDEC. If the cleanup objective of a compound is "non-detectable", it should mean that it is not detected at the MDL. Efforts should be made to obtain the best MDL detection possible when selecting a laboratory and analytical protocol.

3. DETERMINATION OF SOIL CLEANUP GOALS FOR ORGANICS IN SOIL FOR PROTECTION OF WATER QUALITY

The water/soil partitioning theory is used to determine soil cleanup objectives which would be protective of groundwater/drinking water quality for its best use. This theory is conservative in nature and assumes that contaminated soil and groundwater are in direct contact. This theory is based upon the ability of organic matter in soil to adsorb organic chemicals. The approach predicts the maximum amount of contamination that may remain in soil so that leachate from the contaminated soil will not violate

groundwater and/or drinking water standards.

This approach is not used for heavy metals, which do not partition appreciably into soil organic matter. For heavy metals, eastern USA or New York State soil background values may be used as soil cleanup objectives. A list of values that have been tabulated is attached. Soil background data near the site, if available, is preferable and should be used as the cleanup objective for such metals. Background samples should be free from the influences of this site and any other source of contaminants. Ideal background samples may be obtained from uncontaminated upgradient and upwind locations.

Protection of water quality from contaminated soil is a two-part problem. The first is predicting the amount of contamination that will leave the contaminated media as leachate. The second part of the problem is to determine how much of that contamination will actually contribute to a violation of groundwater standards upon reaching and dispersing into groundwater. Some of the contamination which initially leaches out of soil will be absorbed by other soil before it reaches groundwater. Some portion will be reduced through natural attenuation or other mechanism.

PART A: PARTITION THEORY MODEL

There are many test and theoretical models which are used to predict leachate quality given a known value of soil contamination. The Water-Soil Equilibrium Partition Theory is used as a basis to determine soil standard or contamination limit for protection of water quality by most of the models currently in use. It is based on the ability of organic carbon in soil to adsorb contamination. Using a water quality value which may not be exceeded in leachate and the partition coefficient method, the equilibrium concentration (Cs) will be expressed in the same units as the water standards. The following expression is used:

Allowable Soil Concentration $Cs = f \times Koc \times Cw$ . . . . (1)

Where: f = fraction of organic carbon of the natural soil medium.

Koc = partition coefficient between water and soil media. Koc can be estimated by the following equation:

$\log Koc = 3.64 - 0.55 \log S$

S = water solubility in ppm
Cw = appropriate water quality value from TOGS 1.1.1

Most Koc and S values are listed in the Exhibit A-1 of the USEPA Superfund Public Health Evaluation Manual (EPA/540/1-86/060). The Koc values listed in this manual should be used for the purpose. If the Koc value for a contaminant is not listed, it should be estimated using the above mentioned equation.

PART B: PROCEDURE FOR DETERMINATION OF SOIL CLEANUP OBJECTIVES

When the contaminated soil is in the unsaturated zone above the water table, many mechanisms are at work that prevent all of the contamination that would leave the contaminated soil from impacting groundwater. These mechanisms occur during transport and may work simultaneously. They include the following: (1) volatility, (2) sorption and desorption, (3) leaching and diffusion, (4) transformation and degradation, and (5) change in concentration of contaminants after reaching and/or mixing with the groundwater surface. To account for these mechanisms, a correction factor of 100 is used to establish soil cleanup objectives. This value of 100 for the correction is consistent with the logic used by EPA in its Dilution Attenuation Factor (DAF) approach for EP Toxicity and TCLP. (Federal Register/Vol. 55, No. 61, March 29, 1990/Pages 11826-27). Soil cleanup objectives are calculated by multiplying the allowable soil concentration by the correction factor. If the contaminated soil is very close (<3' - 5') to the groundwater table or in the groundwater, extreme caution should be exercised when using the correction factor of 100 (one hundred) as this may not give conservative cleanup objectives. For such situations the Technology Section should be consulted for site-specific cleanup objectives.

Soil cleanup objectives are limited to the following maximum values. These values are consistent with the approach promulgated by the States of Washington and Michigan.

1. Total VOCs $\leq$ 10 ppm.
2. Total Semi VOCs $\leq$ 500 ppm.
3. Individual Semi VOCs $\leq$ 50 ppm.
4. Total Pesticides $\leq$ 10 ppm.

One concern regarding the semi-volatile compounds is that some of these compounds are so insoluble that their Cs values are fairly large. Experience (Draft TOGS on Petroleum Contaminated Soil Guidance) has shown that soil containing some of these insoluble substances at high concentrations can exhibit a distinct odor even though the substance will not leach from the soil. Hence any time a soil exhibits a discernible odor nuisance, it shall not be considered clean even if it has met the numerical criteria.

4. DETERMINATION OF FINAL CLEANUP LEVELS:

Recommended soil cleanup objectives should be utilized in the development of final cleanup levels through the Feasibility Study (FS) process. During the FS, various alternative remedial actions developed during the Remedial Investigation (RI) are initially screened and narrowed down to the list of potential alternative remedial actions that will be evaluated in detail. These alternative remedial actions are evaluated using the criteria discussed in TAGM 4030, Selection of Remedial Actions at Inactive Hazardous Waste Sites, revised May 15, 1990, and the preferred remedial action will be selected. After the detailed evaluation of the preferred remedial action, the final cleanup levels which can be actually achieved using the preferred remedial action must be established. Remedy selection, which will include final cleanup levels, is the subject of TAGM 4030.

Recommended soil cleanup objectives that have been calculated by the Technology Section are presented in Appendix A. These objectives are based on a soil organic carbon content of 1% (0.01) and should be adjusted for the actual organic carbon content if it is known. For determining soil organic carbon content, use attached USEPA method (Appendix B). Please contact the Technology Section, Bureau of Program Management for soil cleanup objectives not included in Appendix A.

TAGM 4046 Footnotes:

1. Class A are proved human carcinogens
2. Class B are probable human carcinogens
3. Class C are possible human carcinogens

APPENDIX A

TABLE 1
Recommended soil cleanup objectives (mg/kg or ppm)
Volatile Organic Contaminants

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm)		CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
					Carcin-ogens	Systemic Toxicants		
Acetone	2.2	50	0.0011	0.11	N/A	8,000	10	0.2
Benzene	83	0.7	0.0006	0.06	24	N/A	5	0.06
Benzoic Acid	54 *	50	0.027	2.7	N/A	300,000	5	2.7
2-Butanone	4.5 *	50	0.003	0.3	N/A	4,000	10	0.3
Carbon Disulfide	54 *	50	0.027	2.7	N/A	8,000	5	2.7
Carbon Tetrachloride	110 *	5	0.006	0.6	5.4	60	5	0.6
Chlorobenzene	330	5	0.017	1.7	N/A	2,000	5	1.7
Chloroethane	37 *	50	0.019	1.9	N/A	N/A	10	1.9
Chloroform	31	7	0.003	0.30	114	800	5	0.3
Dibromochloromethane	N/A	50	N/A	N/A	N/A	N/A	5	N/A
1,2-Dichlorobenzene	1,700	4.7	0.079	7.9	N/A	N/A	330	7.9
1,3-Dichlorobenzene	310 *	5	0.0155	1.55	N/A	N/A	330	1.6
1,4-Dichlorobenzene	1,700	5	0.085	8.5	N/A	N/A	330	8.5
1,1-Dichloroethane	30	5	0.002	0.2	N/A	N/A	5	0.2
1,2-Dichloroethane	14	5	0.001	0.1	7.7	N/A	5	0.1
1,1-Dichloroethene	65	5	0.004	0.4	12	700	5	0.4
1,2-Dichloroethene (trans)	59	5	0.003	0.3	N/A	2,000	5	0.3
1-3 dichloropropane	51	5	0.003	0.3	N/A	N/A	5	0.3
Ethylbenzene	1,100	5	0.055	5.5	N/A	8,000	5	5.5
113 Freon (1,1,2 Trichloro-1,2,2 Trifluoroethane)	1,230 *	5	0.060	6.0	N/A	200,000	5	6.0
Methylene chloride	21	5	0.001	0.1	93	5,000	5	0.1
4-Methyl-2-Pentanone	19 *	50	0.01	1.0	N/A	N/A	10	1.0

TABLE 1 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Tetrachloroethene	277	5	0.014	1.4	14	800	5	1.4
1,1,1-Trichloroethane	152	5	0.0076	0.76	N/A	7,000	5	0.8
1,1,2,2-Tetrachloroethane	118	5	0.006	0.6	35	N/A	5	0.6
1,2,3-trichloropropane	68	5	0.0034	0.34	N/A	80	5	0.4
1,2,4-trichlorobenzene	670 *	5	0.034	3.4	N/A	N/A	330	3.4
Toluene	300	5	0.015	1.5	N/A	20,000	5	1.5
Trichloroethene	126	5	0.007	0.70	64	N/A	5	0.7
Vinyl chloride	57	2	0.0012	0.12	N/A	N/A	10	0.2
Xylenes	240	5	0.012	1.2	N/A	200,000	--	1.2

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 2
Recommended soil cleanup objectives (mg/kg or ppm)
Semi-Volatile Organic Contaminants

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Acenaphthene	4,600	20	0.9	90.0	N/A	5,000	330	50.0 ***
Acenaphthylene	2,056 *	20	0.41	41.0	N/A	N/A	330	41.0
Aniline	13.8	5	0.001	0.1	123	N/A	330	0.1
Anthracene	14,000	50	7.00	700.0	N/A	20,000	330	50.0 ***
Benzo(a)anthracene	1,380,000	0.002	0.03	3.0	0.224	N/A	330	0.224 or MDL
Benzo (a) pyrene	5,500,000	0.002 (ND)	0.110	11.0	0.0609	N/A	330	0.061 or MDL
Benzo (b) fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
Benzo (g,h,i) perylene	1,600,000	5	8.0	800	N/A	N/A	330	50.0 ***
Benzo (k) fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
bis(2-ethylhexyl)phthalate	8,706 *	50	4.35	435.0	50	2,000	330	50.0 ***
Butylbenzylphthlate	2,430	50	1.215	122.0	N/A	20,000	330	50.0 ***
Chrysene	200,000	0.002	0.004	0.4	N/A	N/A	330	0.4
4- Chloroaniline	43 ****	5	0.0022	0.22	200	300	330	0.220 or MDL
4-Chloro-3-methylphenol	47	5	0.0024	0.24	N/A	N/A	330	0.240 or MDL
2-Chlorophenol	15 *	50	0.008	0.8	N/A	400	330	0.8

TABLE 2 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm)		CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
					Carcin-ogens	Systemic Toxicants		
Dibenzofuran	1,230 *	5	0.062	6.2	N/A	N/A	330	6.2
Dibenzo(a,h)anthracene	33,000,000	50	1,650	165,000	0.0143	N/A	330	0.014 or MDL
3,3'-Dichlorobenzidine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	380	1	0.004	0.4	N/A	200	330	0.4
2,4-Dinitrophenol	38	5	0.002	0.2	N/A	200	1,600	0.200 or MDL
2,6 Dinitrotoluene	198*	5	0.01	1.0	1.03	N/A	330	1.0
Diethylphthlate	142	50	0.071	7.1	N/A	60,000	330	7.1
Dimethylphthlate	40	50	0.020	2.0	N/A	80,000	330	2.0
Di-n-butyl phthalate	162*	50	0.081	8.1	N/A	8,000	330	8.1
Di-n-octyl phthlate	2,346 *	50	1.2	120.0	N/A	2,000	330	50.0 ***
Fluoranthene	38,000	50	19	1900.0	N/A	3,000	330	50.0 ***
Fluorene	7,300	50	3.5	350.0	N/A	3,000	330	50.0 ***
Hexachlorobenzene	3,900	0.35	0.014	1.4	0.41	60	330	0.41
Indeno (1,2,3-cd)pyrene	1,600,000	0.002	0.032	3.2	N/A	N/A	330	3.2
Isophorone	88.31 *	50	0.044	4.40	1,707	20,000	330	4.40
2-methylnaphthalene	727 *	50	0.364	36.4	N/A	N/A	330	36.4
2-Methylphenol	15	5	0.001	0.1	N/A	N/A	330	0.100 or MDL
4-Methylphenol	17	50	0.009	0.9	N/A	4,000	330	0.9
Naphthalene	1,300	10	0.130	13.0	N/A	300	330	13.0
Nitrobenzene	36	5	0.002	0.2	N/A	40	330	0.200 or MDL

TABLE 2 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
2-Nitroaniline	86	5	0.0043	0.43	N/A	N/A	1,600	0.430 or MDL
2-Nitrophenol	65	5	0.0033	0.33	N/A	N/A	330	0.330 or MDL
4-Nitrophenol	21	5	0.001	0.1	N/A	N/A	1,600	0.100 or MDL
3-Nitroaniline	93	5	0.005	0.5	N/A	N/A	1,600	0.500 or MDL
Pentachlorophenol	1,022	1	0.01	1.0	N/A	2,000	1,600	1.0 or MDL
Phenanthrene	4,365 *	50	2.20	220.0	N/A	N/A	330	50.0 ***
Phenol	27	1	0.0003	0.03	N/A	50,000	330	0.03 or MDL
Pyrene	13,295 *	50	6.65	665.0	N/A	2,000	330	50.0 ***
2,4,5-Trichlorophenol	89 *	1	0.001	0.1	N/A	8,000	330	0.1

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available
MDL is Method Detection Limit

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
Other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm., Total Semi- VOCs < 500ppm. and Individual Semi-VOCs < 50 ppm.

**** Koc is derived from the correlation Koc = 0.63 Kow (Determining Soil Response Action Levels..... EPA/540/2-89/057). Kow is obtained from the USEPA computer database 'MAIN'.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 3
Recommended soil cleanup objectives (mg/kg or ppm)
Organic Pesticides / Herbicides and PCBs

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm)		CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
					Carcin-ogens	Systemic Toxicants		
Aldrin	96,000	ND (<0.01)	0.005	0.5	0.041	2	8	0.041
alpha- BHC	3,800	ND (<0.05)	0.002	0.2	0.111	N/A	8	0.11
beta - BHC	3,800	ND (<0.05)	0.002	0.2	3.89	N/A	8	0.2
delta - BHC	6,600	ND (<0.05)	0.003	0.3	N/A	N/A	8	0.3
Chlordane	21,305 *	0.1	0.02	2.0	0.54	50	80	0.54
2,4-D	104 *	4.4	0.005	0.5	N/A	800	800	0.5
4,4'- DDD	770,000 *	ND (<0.01)	0.077	7.7	2.9	N/A	16	2.9
4,4'-DDE	440,000 *	ND (<0.01)	0.0440	4.4	2.1	N/A	16	2.1
4,4'-DDT	243,000 *	ND (<0.01)	0.025	2.5	2.1	40	16	2.1
Dibenzo-P-dioxins (PCDD) 2,3,7,8 TCDD	1709800	0.000035	0.0006	0.06	N/A	N/A	N/A	N/A
Dieldrin	10,700 *	ND (< 0.01)	0.0010	0.1	0.044	4	16	0.044
Endosulfan I	8,168 *	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan II	8,031 *	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan Sulfate	10,038 *	0.1	0.01	1.0	N/A	N/A	16	1.0
Endrin	9,157 *	ND (<0.01)	0.001	0.1	N/A	20	8	0.10

TABLE 3 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm)		CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
					Carcin-ogens	Systemic Toxicants		
Endrin keytone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
gamma - BHC (Lindane)	1,080	ND (<0.05)	0.0006	0.06	5.4	20	8	0.06
gamma - chlordane	140,000	0.1	0.14	14.0	0.54	5	80	0.54
Heptachlor	12,000	ND (<0.01)	0.0010	0.1	0.16	40	8	0.10
Heptachlor epoxide	220	ND (<0.01)	0.0002	0.02	0.077	0.8	8	0.02
Methoxychlor	25,637	35.0	9.0	900	N/A	400	80	***
Mitotane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parathion	760	1.5	0.012	1.2	N/A	500	8	1.2
PCBs	17,510 *	0.1	0.1	10.0	1.0	N/A	160	1.0 (Surface) 10 (sub-surf)
Polychlorinated dibenzo-furans (PCDF)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silvex	2,600	0.26	0.007	0.7	N/A	600	330	0.7
2,4,5-T	53	35	0.019	1.9	N/A	200	330	1.9

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1% (5% for PCBs as per PCB Guidance Document), and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 4
Recommended soil cleanup objectives (mg/kg or ppm)
Heavy Metals

Contaminants	Protect Water Quality (ppm)	Eastern USA Background (ppm)	* CRDL (mg/kg or ppm)	***** Rec. Soil Cleanup Objective (ppm)
Aluminum	N/A	33,000	2.0	SB
Antimony	N/A	N/A	0.6	SB
Arsenic	N/A	3-12 **	0.1	7.5 or SB
Barium	N/A	15-600	2.0	300 or SB
Beryllium	N/A	0-1.75	0.05	0.16 (HEAST) or SB
Cadmium	N/A	0.1-1	0.05	1 or SB
Calcium	N/A	130 - 35,000 ***	50.0	SB
Chromium	N/A	1.5 - 40 **	0.1	10 or SB
Cobalt	N/A	2.5 - 60 **	0.5	30 or SB
Copper	N/A	1 - 50	0.25	25 or SB
Cyanide	N/A	N/A	0.1	***
Iron	N/A	2,000 - 550,000	1.0	2,000 or SB
Lead	N/A	****	0.03	SB ****
Magnesium	N/A	100 - 5,000	50.0	SB
Manganese	N/A	50 - 5,000	0.15	SB
Mercury	N/A	0.001 - 0.2	0.002	0.1
Nickel	N/A	0.5 -25	0.4	13 or SB
Potassium	N/A	8,500 - 43,000 **	50.0	SB
Selenium	N/A	0.1 - 3.9	0.05	2 or SB
Silver	N/A	N/A	0.1	SB
Sodium	N/A	6,000 - 8,000	50.0	SB
Thallium	N/A	N/A	0.1	SB
Vanadium	N/A	1-300	0.5	150 or SB
Zinc	N/A	9-50	0.2	20 or SB

Note: Some forms of metal salts such as Aluminum Phosphide, Calcium Cyanide, Potassium Cyanide, Copper cyanide, Silver cyanide, Sodium cyanide, Zinc phosphide, Thallium salts, Vanadium pentoxide and Chromium (VI) compounds are more toxic in nature. Please refer to the USEPA HEASTs database to find cleanup objectives if such metals are present in soil.

SB is site background
N/A is not available

* CRDL is contract required detection limit which is approx. 10 times the CRDL for water.

** New York State background

*** Some forms of Cyanide are complex and very stable while other forms are pH dependent and hence are very unstable. Site-specific form(s) of Cyanide should be taken into consideration when establishing soil cleanup objective.

**** Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

***** Recommended soil cleanup objectives are average background concentrations as reported in a 1984 survey of reference material by E. Carol McGovern, NYSDEC.

APPENDIX B

Conventional Sediment Variables
Total Organic Carbon (TOC)
March 1986

TOTAL ORGANIC CARBON (TOC)

USE AND LIMITATIONS

Total organic carbon is a measure of the total amount of nonvolatile, volatile, partially volatile, and particulate organic compounds in a sample. Total organic carbon is independent of the oxidation state of the organic compounds and is not a measure of the organically bound and inorganic elements that can contribute to the biochemical and chemical oxygen demand tests.

Because inorganic carbon (e.g., carbonates, bicarbonates, free CO_2) will interfere with total organic carbon determinations, samples should be treated to remove inorganic carbon before being analyzed.

FIELD PROCEDURES

Collection

Samples can be collected in glass or plastic containers. A minimum sample size of 25 g is recommended. If unrepresentative material is to be removed from the sample, it should be removed in the field under the supervision of the chief scientist and noted on the field log sheet.

Processing

Samples should be stored frozen and can be held for up to 6 months under that condition. Excessive temperatures should not be used to thaw samples.

LABORATORY PROCEDURES

Analytical Procedures

- Equipment
  - Induction furnace
    e.g., Leco WR-12, Dohrmann DC-50, Coleman CH analyzer, Perkin Elmer 240 elemental analyzer, Carlo-Erba 1106
  - Analytical balance
    0.1 mg accuracy
  - Desiccator
  - Combustion boats
  - 10 percent hydrochloric acid (HCL)
  - Cupric oxide fines (or equivalent material)
  - Benzoic acid or other carbon source as a standard.

- Equipment preparation

- Clean combustion boats by placing them in the induction furnace at 950° C. After being cleaned, combustion boats should not be touched with bare hands.
- Cool boats to room temperature in a desiccator.
- Weigh each boat to the nearest 0.1 mg.

◦ Sample preparation
- Allow frozen samples to warm to room temperature.
- Homogenize each sample mechanically, incorporating any overlying water.
- Transfer a representative aliquot (5-10 g) to a clean container.

◦ Analytical procedures
- Dry samples to constant weight at 70 ± 2°C. The drying temperature is relatively low to minimize loss of volatile organic compounds.
- Cool dried samples to room temperature in a desiccator.
- Grind sample using a mortar and pestle to break up aggregates.
- Transfer a representative aliquot (0.2-0.5 g) to a clean, preweighed combustion boat.
- Determine sample weight to the nearest 0.1 mg.
- Add several drops of HCL to the dried sample to remove carbonates. Wait until the effervescing is completed and add more acid. Continue this process until the incremental addition of acid causes no further effervescence. Do not add too much acid at one time as this may cause loss of sample due to frothing. Exposure of small samples (i.e., 1-10 mg) having less than 50 percent carbonate to an HCL atmosphere for 24-48 h has been shown to be an effective means of removing carbonates (Hedges and Stern 1984). If this method is used for sample sizes greater than 10 mg, its effectiveness should be demonstrated by the user.
- Dry the HCL-treated sample to constant weight at 70 ± 2° C.
- Cool to room temperature in a desiccator.
- Add previously ashed cupric oxide fines or equivalent material (e.g., alumina oxide) to the sample in the combustion boat.
- Combust the sample in an induction furnace at a minimum temperature of 950 ± 10° C.

◦ Calculations
- If an ascarite-filled tube is used to capture CO_2, the carbon content of the sample can be calculated as follows:

$$\text{Percent carbon} = \frac{A\ (0.2729)\ (100)}{B}$$

Where:

A = the weight (g) of CO_2 determined by weighing the ascarite tube before and after combustion

B = dry weight (g) of the unacidified sample in the combustion boat

0.2729 = the ratio of the molecular weight of carbon to the molecular weight of carbon dioxide

A silica gel trap should be placed before the ascarite tube to catch any moisture driven off during sample combustion. Additional silica gel should be placed at the exit end of the ascarite tube to trap any water that might be formed by reaction of the trapped CO_2 with the NaOH in the ascarite.

- If an elemental analyzer is used, the amount of CO_2 will be measured by a thermal conductivity detector. The instrument should be calibrated daily using an empty boat blank as the zero point and at least two standards. Standards should bracket the expected range of carbon concentrations in the samples.

QA/QC Procedures

It is critical that each sample be thoroughly homogenized in the laboratory before a subsample is taken for analysis. Laboratory homogenization should be conducted even if samples were homogenized in the field.

Dried samples should be cooled in a desiccator and held there until they are weighed. If a desiccator is not used, the sediment will accumulate ambient moisture and the sample weight will be overestimated. A color-indicating desiccant is recommended so that spent desiccant can be detected easily. Also, the seal on the desiccator should be checked periodically and, if necessary, the ground glass rims should be greased or the "O" rings should be replaced.

It is recommended that triplicate analyses be conducted on one of every 20 samples, or on one sample per batch if less than 20 samples are analyzed. A method blank should be analyzed at the same frequency as the triplicate analyses. The analytical balance should be inspected daily and calibrated at least once per week. The carbon analyzer should be calibrated daily with freshly prepared standards. A standard reference material should be analyzed at least once for each major survey.

DATA REPORTING REQUIREMENTS

Total organic carbon should be reported as a percentage of the dry weight of the unacidified sample to the nearest 0.1 unit. The laboratory should report the results of all samples (including QA replicates, method blanks, and standard reference measurements) and should note any problems that may have influenced sample quality. The laboratory should also provide a summary of the calibration procedure and results (e.g., range covered, regression equation, coefficient of determination).

Recommended Soil Cleanup Objectives for Gasoline Contaminated Soils

Contaminant	CAS Registry Number	Partition coefficient Koc	Recommeded EPA Method	Groundwater Standards/ Criteria C_w ug/l or ppb	Allowable Soil Concentration Cs^1 (ppm)	Soil Cleanup objectives to Protect GW Quality (ppm)*	USEPA Health Based (HEAST)		Detection Limit Solid (ppb)	Rec.soil Cleanup Objective (ppm)
							Carcinogens (ppm)	Systemic Toxicants (ppm)		
Benzene	71-43-2	83	8021/8260	0.7	0.0006	0.06	24	N/A	2	0.06 or MDL
Ethylbenzene	100-41-4	1,100	8021/8260	5	0.055	5.5	N/A	8,000	2	5.5
Toluene	108-88-3	300	8021/8260	5	0.015	1.5	N/A	20,000	2	1.5
Mixed Xylenes	N/A	240	8021/8260	5	0.012	1.2	N/A	200,000	2	1.2
Isopropylbenzene	98-82-8	454	8021/8260	5	0.023	2.3	N/A	3,100	1	2.3
n-Propylbenzene	103-65-1	741	8021/8260	5	0.037	3.7	N/A	N/A	1	3.7
p-Isopropyltoluene	99-87-6	2,114	8021/8260	5	0.11	11.0	N/A	N/A	1	10.0*
1,2,4 - Trimethylbenzene	95-63-6	2,590	8021/8260	5	0.13	13.0	N/A	N/A	1	10.0*
1,3,5 - Trimethylbenzene	108-67-8	661	8021/8260	5	0.033	3.3	N/A	N/A	1	3.3
n-Butyl-Benzene	104-51-8	2,455	8021/8260	5	0.12	12.0	N/A	N/A	1	10.0*
sec-Butyl-Benzene	135-98-8	2,200	8021/8260	5	0.11	11.0	N/A	N/A	1	10.0*
Tert-Butyl-Benzene	98-06-6	2,200	8021/8260	5	0.11	11.0	N/A	N/A	1	10.0*
Naphthalene	91-20-3	1,300	8021/8260	10	0.13	13.0	N/A	300	1	13.0
Methyl-Tert-Butyl-Ether (MTBE)**	1634-04-4	12	8021/8260**	10	0.0012	0.12	N/A	N/A	1	0.12

N/A - Not applicable

MDL - Method Detection Limit

1 - Allowable concentration with no Dilution Attenuation Factor - see TAGM 4046

*As per TAGM 4046 individual and the sum of VOCs not listed (Tentatively Identified Compounds(TICs))≤ 10 ppm

** Methyl t-butyl ether (MTBE) is not a target compound of Methods 8021 and 8260, but MTBE may be determined using these methods with appropriate quality assurance and quality control measures.

Note: Soil cleanup objectives are developed for soil organic content (*f*) of 1 %, and should be adjusted for the actual soil organic content if it is known.

Recommended Soil Cleanup Objectives for Fuel Oil Contaminated Soil

Contaminant	CAS Registry Number	Partition coefficient Koc	Recommended EPA Method	Groundwater Standards/ Criteria Cw ug/l or ppb.	Allowable Soil Concentration Cs[1] (ppm)	Soil Cleanup objectives to Protect GW Quality (ppm)	USEPA Health Based (HEAST) (ppm)		Detection Limit Solid (ppb)	Rec.soil Cleanup Objective (ppm)
							Carcinogens	Systemic Toxicants		
Benzene	71-43-2	83	8021/8260	0.7	0.0006	0.06	24	N/A	2	0.06 or MDL
Ethylbenzene	100-41-4	1,100	8021/8260	5	0.055	5.5	N/A	8,000	2	5.5
Toluene	108-88-3	300	8021/8260	5	0.015	1.5	N/A	20,000	2	1.5
Mixed Xylenes	N/A	240	8021/8260	5	0.012	1.2	N/A	200,000	2	1.2
Isopropylbenzene	98-82-8	454	8021/8260	5	0.023	2.3	N/A	3,100	1	2.3
n-Propylbenzene	103-65-1	741	8021/8260	5	0.037	3.7	N/A	N/A	1	3.7
p-Isopropyltoluene	99-87-6	2,114	8021/8260	5	0.11	11.0	N/A	N/A	1	10.0*
1,2,4 - Trimethylbenzene	95-63-6	2,590	8021/8260	5	0.13	13.0	N/A	N/A	1	10.0*
1,3,5 - Trimethylbenzene	108-67-8	661	8021/8260	5	0.033	3.3	N/A	N/A	1	3.3
n-Butyl-Benzene	104-51-8	2,455	8021/8260	5	0.12	12.0	N/A	N/A	1	10.0*
sec-Butyl-Benzene	135-98-8	2,200	8021/8260	5	0.11	11.0	N/A	N/A	1	10.0*
Tert-Butyl-Benzene	98-06-6	2,200	8021/8260	5	0.11	11.0	N/A	N/A	1	10.0*
Naphthalene	91-20-3	1,300	8021/8260/8270	10	0.13	13.0	N/A	300	1(330)	13.0
Anthracene	120-12-7	14,000	8270	50	7.00	700.0	N/A	20,000	330	50.0**
Acenaphthene	83-32-9	4,600	8270	20	0.92	92.0	N/A	5,000	330	50.0**
Acenaphthylene	208-96-8	2,056	8270	50	1.03	103.0	N/A	N/A	330	50.0**
Benz(a)anthracene	56-55-3	1,380,000	8270	0.002	0.028	2.8	0.224	N/A	330	0.224 or MDL
Benzo(b)fluoranthene	205-99-2	550,000	8270	0.002	0.011	1.1	0.220	N/A	330	0.220 or MDL
Benzo(k)fluoranthene	207-8-9	550,000	8270	0.002	0.011	1.1	0.220	N/A	330	0.220 or MDL
Benzo(g,h,i)perylene	191-24-2	1,600,000	8270	5	80.00	8,000.0	N/A	N/A	330	50.0**
Benzo(a)pyrene	50-32-8	5,500,000	8270	0.002	0.11	11.0	0.061	N/A	330	0.061 or MDL
Chrysene	218-01-9	200,000	8270	0.002	0.004	0.40	N/A	N/A	330	0.4
Dibenzo(a,h)anthracene	53-70-3	3,300,000	8270	50	1,650.00	165,000.0	0.0143	N/A	330	0.0143 or MDL
Fluoranthene	206-44-0	38,000	8270	50	19.00	1,900.0	N/A	3,000	330	50.0**
Fluorene	86-73-7	7,300	8270	50	3.65	365.0	N/A	3,000	330	50.0**
Indeno(1,2,3-cd)pyrene	193-39-5	1,600,000	8270	0.002	0.032	3.2	N/A	N/A	330	3.2
Phenanthrene	85-01-5	4,365	8270	50	2.18	218.0	N/A	N/A	330	50.0**
Pyrene	129-00-0	13,295	8270	50	6.65	665.0	N/A	2,000	330	50.0**

N/A- Not Applicable
MDL - Method Detection Limit

1 - Allowable concentration with no Dilution Attenuation Factor - see TAGM 4046

*As per TAGM 4046 individual and the sum of VOCs not listed (Tentatively Identified Compounds(TICs))≤ 10 ppm

**As per TAGM 4046 individual non-carcinogenic semivolatiles ≤ 50 ppm and total semivolatiles not listed (Tentatively Identified Compounds(TICs))≤ 500ppm

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon if it is known.

NYSDEC

TOGS 1.1.1 Guidance Document

M E M O R A N D U M

***** N O T I C E *****

This document has been developed to provide Department staff with guidance on how to ensure compliance with statutory and regulatory requirements, including case law interpretations, and to provide consistent treatment of similar situations. This document may also be used by the public to gain technical guidance and insight regarding how the department staff may analyze an issue and factors in their consideration of particular facts and circumstances. This guidance document is not a fixed rule under the State Administrative Procedure Act section 102(2)(a)(i). Furthermore, nothing set forth herein prevents staff from varying from this guidance as the specific facts and circumstances may dictate, provided staff's actions comply with applicable statutory and regulatory requirements. This document does not create any enforceable rights for the benefit of any party.

Previous Date: October 22, 1993

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TO: Bureau Directors, Regional Water Engineers, Section Chiefs

SUBJECT: Division of Water Technical and Operational Guidance Series (1.1.1)

AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES AND GROUNDWATER EFFLUENT LIMITATIONS

(Originator - John Zambrano/Scott Stoner)

PURPOSE

The primary purpose of this document is to provide a compilation of ambient water quality guidance values and groundwater effluent limitations for use where there are no standards (in 6 NYCRR 703.5) or regulatory effluent limitations (in 703.6). For the convenience of the reader, the standards in 703.5 and groundwater effluent limitations in 703.6 are included in this document. The values in this document (guidance and regulatory) are used in Department programs, including the SPDES permit program.

DISCUSSION

This document combines and revises the previous editions of TOGS 1.1.1 (ambient values) and 1.1.2 (groundwater effluent limitations). The main reason for the revision is to include revised and added ambient standards and effluent limitations resulting from the amendments to 6 NYCRR Parts 700 - 706, effective March 12, 1998. Ambient guidance values are also added for over 100 substances, largely based on the application of the Principal Organic Contaminant (POC) value to surface waters classified as sources of water supply.

GUIDANCE

This TOGS presents Division of Water ambient water quality standards and guidance values and groundwater effluent limitations. The authority for these values is derived from Article 17 of the Environmental Conservation Law and 6 NYCRR Parts 700-706, Water Quality Regulations.

This TOGS is divided into two Parts. Part I describes and lists ambient standards and guidance values. Part II describes and lists groundwater effluent limitations.

Although the reader may be tempted to turn immediately to the tables containing the ambient or effluent values, the following cautionary note is important: Many substances for which there are standards, guidance values and effluent limitations are not individually listed or identified in the tables, but are included as part of "group" entries such as "Principal Organic Contaminant." A careful reading of the text of Parts I and II is needed to ensure proper use of this document.

TABLE OF CONTENTS

PART I AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

Ambient water quality standards and guidance values for toxic and non-conventional pollutants are presented in Table 1. This Table includes all of the Division's numerical standards and guidance values established as of the date of this document except standards for coliforms and dissolved oxygen. The reader is referred to Part 703 for the excepted numerical standards and for the Department's narrative water quality standards.

Section A of this Part provides an explanation of ambient water quality standards and guidance values in the format of the column headings in Table 1. Section B, relying on the background of Section A, provides a procedure to help determine whether or not there is a standard or guidance value for a particular substance. Included in this section are instructions on determining the applicability of the POC general groundwater standard to specific substances. Section C provides guidance on certain aspects of development, interpretation and use of standards and guidance values.

A. EXPLANATION OF AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

Ambient water quality standards and guidance values are presented in Table 1. Table 1 includes columns for "Substance (CAS No.)," "Water Classes," "Standard," "Guidance Value," "Type" and "Basis Code." This section describes these terms. Standards and guidance values are described first to facilitate understanding.

1. Standard and Guidance Value

Standards and guidance values are ambient water quality values that are set to protect the state's waters. They both are derived according to scientific procedures that are in regulation (6 NYCRR Part 702).

A standard is a value that has been promulgated and placed into regulation. The standards for the surface water and groundwater classes are extracted from Part 703 of Title 6. Surface water and groundwater standards were last revised effective March 12, 1998.

A guidance value may be used where a standard for a substance or group of substances has not been established for a particular water class and type of value (section 702.15). All guidance values as of the date of this document are listed in Table 1 of this TOGS.

Standards and guidance values are the maximum allowable concentration in units of ug/L, unless otherwise indicated. Where standards or guidance values are expressed as a function of hardness, hardness is in units of parts per million (ppm), expressed as calcium carbonate, and the resulting value is in ug/L. Also, in such hardness functions, the term "exp" represents the base e exponential function.

"ND" means a non-detectable concentration by the approved analytical methods referenced in section 700.3.

The "general organic guidance value," described in 702.15, is misunderstood by some. This value does not automatically apply in the absence of a standard or specific guidance value. For this value to be applied to an individual substance, the Department must determine that certain toxicological data requirements have been met. As of the date of this TOGS, the only substances for which the Division has made this determination are listed in Table 1.

2. Substance (CAS No.)

The substance or group of substances (entry) for which a standard or guidance value has been derived is presented in this column in alphabetical order. The Chemical Abstract Service Registry (CAS) Number(s) are given, where applicable, to provide positive identification. Because a substance may be known by names other than the one used in this document, identification of the CAS number can be useful for locating the substance. An index of CAS numbers is provided at the end of the document.

Group entries fit into one of three categories, as described below. For each such entry, a Remark will indicate whether the standard(s) or guidance value(s) apply to the sum of the substances or to each substance individually.

Interpretation of Group Entries

a. Where the entry consists of two or more specific substances, with or without CAS Numbers (e.g.: Aldrin and Dieldrin), the entry includes only the specific substances listed.

b. Where the entry is the name of a group of substances, with CAS numbers listed (e.g.: Dichlorotoluenes), the entry includes only those substances for which the CAS Numbers are listed.

c. Where the entry is the name of a group of substances, without CAS Numbers (e.g.: Principal organic contaminant), the entry includes all substances that belong to the group, unless otherwise noted. The specific substances in the group may not be listed in the entry or the index. A determination of the specific substances encompassed by the standard(s) or guidance value(s), therefore, may be necessary.

   The principal organic contaminant (POC) standard for groundwater is the largest and most complex of this third type of group entry. It is a general standard that applies individually to a virtually unlimited number of substances in six chemical classes. Because of the importance of this general groundwater standard, instructions for determining its applicability to specific substances are included in Section C, below.

3. Water Classes and Type

Standards and guidance values are developed for specific classes of fresh and saline surface waters and fresh groundwaters for protection of the best uses assigned to each class. Best uses are described in Part 701. Standards and guidance values are further designated as to "Type." Values for protection of sources of drinking water are designated Health (Water Source) and noted by H(WS). Similarly, values for protection of human consumers of fish are designated as Health (Fish Consumption) and noted by H(FC). Values for protection of aquatic life from chronic effects are designated Aquatic (Chronic) and noted as A(C). Values for protection of aquatic life from acute effects are designated Aquatic (Acute) and noted as A(A). Values for protection of wildlife are designated as Wildlife and noted as W. Values for protection from aesthetic considerations are designated as Aesthetic and noted as E. Designation of the Type of value determines the applicability of section 702.15, which concerns derivation of guidance values.

A summary description of best usage protections, water classes and type of values related to toxic pollutants is presented below. The groupings of Water Classes and Type presented for the summary description are those that frequently appear in Table 1. A complete description of the water classifications is provided in Part 701.

Water Classes	Type	Protection For
A, A-S, AA, AA-S	H(WS)	Source of Drinking Water (surface water)
GA	H(WS)	Source of Drinking Water (groundwater)
A, A-S, AA, AA-S, B, C, D	H(FC)	Human Consumption of Fish (fresh waters)
SA, SB, SC, I, SD	H(FC)	Human Consumption of Fish (saline waters)
A, A-S, AA, AA-S, B, C	A(C)	Fish Propagation (fresh waters)
A, A-S, AA, AA-S, B, C, D	A(A)	Fish Survival (fresh waters)
SA, SB, SC, I	A(C)	Fish Propagation (saline waters)
SA, SB, SC, I, SD	A(A)	Fish Survival (saline waters)
A, A-S, AA, AA-S, B, C, D	W	Wildlife Protection (fresh waters)
SA, SB, SC, I, SD	W	Wildlife Protection (saline waters)
A, A-S, AA, AA-S, B, C, D, GA	E	Aesthetic (fresh waters)
SA, SB, SC, I, SD	E	Aesthetic (saline waters)

For many substances, more than one Type of value will be listed for a specific water class. In these situations, all values apply and may be used to derive the most stringent limitations.

4. Basis Code

The letters in this column designate the specific procedure used to derive the standard or guidance value. The key to the letter designations is provided in Table 2.

B. HOW TO LOCATE AMBIENT STANDARD OR GUIDANCE VALUE

This section contains instructions on how to determine whether the Division has an ambient standard or guidance value for a substance. As described above, many substances with standards or guidance values are included in "group" entries but not individually identified, or are listed by a different name. Therefore, the absence of a specific entry for a substance name does not necessarily mean that there is no standard or guidance value. The procedures below should assist the user, but are not guaranteed. The user may want to contact the Division's Standards and Special Studies Section before assuming that there is no standard or guidance value for a particular substance.

1. Recommended Procedure for Determining if Standard or Guidance Value Exists

Step 1. Look up substance by name(s) in Table 1. If found, confirm identity by CAS number, if listed. If substance is not found, go to Step 2.

Step 2. Using CAS number and the CAS number index, determine the entry name and location of the substance. If CAS number is not in index, go to Step 3.

Step 3. Entries for metals and some other substances, e.g., nitrate, do not contain CAS numbers. The entry for a metal includes all forms of the metal, metallic and in compounds, unless otherwise specified. The nitrate entry includes all compounds containing nitrate. There is no entry for "sodium nitrate" for instance, but there are entries for sodium and for nitrate. Therefore, look in Table 1 for the components of a metallic or ionic compound. If not found, go to Step 4.

Step 4. Determine whether the substance is included in any of the groups listed below that has a standard or guidance value listed for the water class(es) of interest. Detailed instructions for determining the applicability of the principal organic contaminant (POC) groundwater standard are provided below.

Alkyl diphenyl oxide sulfonates
Aminomethylene phosphonic acid salts
Aryltriazoles
Boric acid, Borates and Metaborates
Chlorinated dibenzo-p-dioxins and Chlorinated dibenzofurans
Foaming agents

Gross alpha radiation
Gross beta radiation
Isothiazolones, total
Linear alkyl benzene sulfonates (LAS)
Methylbenz(a)anthracenes
Phenolic compounds (total phenols)
Phenols, total chlorinated
Phenols, total unchlorinated
Polybrominated biphenyls
Polychlorinated biphenyls
Principal organic contaminant
Quaternary ammonium compounds
Sulfides, total

2. Determination of Applicability of POC Groundwater Standard to Individual Substances

The POC standard for groundwater (Table 1) is a general standard that applies individually to an unlimited number of substances in six chemical classes. Some, but by no means all of the individual POCs are listed in Table 1. Consequently, the applicability of this standard to specific substances must be determined.

The POC standard was originally developed by the New York State Department of Health (DOH) for drinking water. The definitions of the six POC classes (6 NYCRR section 700.1 and Table 4 of this TOGS), obtained from the DOH regulations, are definitive for the first two classes, but require interpretation for the others. Furthermore, some substances that meet the definition of a particular POC class may not be regulated by the POC standard because they have a more stringent specific standard. It is, therefore, important to follow sequentially the steps below for determining the applicability of the POC groundwater standard.

It should be noted that the POC applies as a general standard only to groundwater.

The recommended procedure consists of five steps. These steps must be followed in sequential order to avoid making an incorrect determination. They include reference to three tables within this TOGS, the use of definitions for two POC classes, and how to obtain assistance.

Step 1. Check Table 1 of this TOGS. If the substance is listed in Table 1 as having either a specific groundwater standard (POC or other) or groundwater guidance value, that listed value applies and the reader should not go further. If not, go on to Step 2.

Step 2. Check Table 3 of this TOGS, which is a partial list of substances to which the POC groundwater standard does not apply. If the substance is listed in Table 3, the standard does not apply and the reader should not go further. If the substance is not in Table 3, go

on to Step 3.

Step 3. Compare the substance with the definitions of POC classes 1 and 2, below. If it meets either of these definitions, the POC groundwater standard applies and the reader should not go further. If it does not meet either definition, or if the reader is uncertain whether it does, go on to Step 4.

Definitions of POC Classes 1 and 2:

Class 1 - Halogenated alkane*: Compound containing carbon (C), hydrogen (H) and halogen (X) where X = fluorine (F), chlorine (Cl), bromide (Br) and/or iodine (I), having the general formula $C_nH_yX_z$, where $y + z = 2n + 2$; n, y and z are integer variables; n and z are equal to or greater than one and y is equal to or greater than zero.

Class 2 - Halogenated ether: Compound containing carbon (C), hydrogen (H), oxygen (O) and halogen (X) (where X = F, Cl, Br and/or I) having the general formula $C_nH_yX_zO$, where $y + z = 2n + 2$; the oxygen is bonded to two carbons; n, y and z are integer variables; n is equal to or greater than two, y is equal to or greater than zero and z is equal to or greater than one.

Step 4. Although the definitions of the remaining classes are in regulation and reproduced in Table 4, determinations beyond this point involve interpretations, including chemical comparisons with previously determined substances. The user, therefore, should contact the Standards and Special Studies Section (Scott Stoner (518-485-5824) or John Zambrano (518-457-6997)) for assistance. They will make the determination, consulting with the DOH as needed. Provision of the CAS number and structure of the substance will facilitate the determination.

*Note: This definition does not mention the specific exclusions listed in the definition in regulation (6 NYCRR 700.1 and Table 4) because those excluded substances are listed in Table 1 of this TOGS and thus covered by Step 1 of this procedure

C. DEVELOPMENT, INTERPRETATION AND USE OF AMBIENT STANDARDS AND GUIDANCE VALUES

1. Development of Standards and Guidance Values

Guidance values are developed as needed with priorities primarily reflecting greater expected or observed occurrence in the environment and greater toxicity. Most requests for development of guidance values originate through the use and

discharge information that is generated through the State Pollutant Discharge Elimination System (SPDES) permit program. Standards are proposed for rule making with similar priority considerations.

As stated previously, a guidance value may be utilized where a standard has not been adopted for a substance. Guidance values that have been developed for surface waters and groundwaters are presented in Table 1. If a substance is judged to pose a threat to the environment and if no standard or guidance value is presented in Table 1 for that substance and water class, a request for development of a guidance value should be made to the Standards and Special Studies Section.

2. Analytical Methods

Section 700.3 provides the analytical requirements to determine compliance with water quality standards and guidance values. These regulations include specific analytical references and also refer to "...other methods approved by the department..." The Division of Water maintains a compilation of methods approved by the department in a separate Technical and Operational Guidance Series (TOGS) document.

There are a number of water quality standards and guidance values for which there is no approved analytical procedure. Use of these values should be accompanied by the identification of an acceptable analytical method.

3. SPDES Effluent Limits

Ambient water quality standards and guidance values are used to derive water quality-based effluent limitations for SPDES permits. Instruction for the derivation of these limitations is provided in separate TOGS documents. There are, however, a number of topics that warrant discussion here.

a. Hydrologic Flow Base and Averaging Period

The derivation of water quality based effluent limitations from ambient water quality standards or guidance values requires selection of a receiving water flow and the specification of an averaging period for the effluent limitation. Their selection will be a function of the variability of the receiving water flow and effluent load and the time period associated with the critical adverse effect. In general, standards and guidance values that are based on adverse effects that develop over time periods greater than a month will receive effluent limitations based on the minimum average 30 consecutive day receiving water flow with a one-in-ten year occurrence (MA30CD/10) and calculated as a monthly average. Values based on shorter-term adverse effects will generally receive effluent limitations based on MA7CD/10 flow and calculated as a daily maximum. Specific determinations, however, are made at the time of permit issuance.

b. Chemical Forms

Standards and guidance values apply to all forms of the substances unless otherwise specified.

Certain ambient standards and guidance values apply to a specific toxic form rather than all forms of the substance. Changes in the form of a substance can occur in the receiving water. As a result, the form of the substance that is specified as an effluent limitation may differ from the form of the ambient standard or guidance value.

c. Groundwater Effluent Limitations

Groundwater effluent limitations are discussed in Part II of this document.

d. Total of Organic Chemicals

Subparagraph 702.16(b)(3) of the water quality regulations specifies, for the purpose of deriving effluent limitations for surface water, an ambient value of 100 ug/L for the total of organic substances having a standard or guidance value established pursuant to the human-health methodologies. The substances included in this total are all of the organic substances listed in Table 1 of this TOGS that have a H(WS) standard or guidance value less than 100 ug/L for surface water.

Table 1

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Acenaphthene (83-32-9)	A, A-S, AA, AA-S, B, C		5.3	A(C)	
	A, A-S, AA, AA-S, B, C, D		48	A(A)	
	SA, SB, SC, I		6.6	A(C)	
	SA, SB, SC, I, SD		60	A(A)	
	A, A-S, AA, AA-S	20		E	U
	GA		20	E	U
Acetone (67-64-1)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Acrolein (107-02-8)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Acrylamide (79-06-1)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Acrylic acid (79-10-7)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Acrylonitrile (107-13-1)	A, A-S, AA, AA-S		0.07	H(WS)	A
	GA	*		H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Alachlor (15972-60-8)	A, A-S, AA, AA-S	0.5		H(WS)	A
	GA	0.5		H(WS)	A
Aldicarb (116-06-3)	A, A-S, AA, AA-S	7		H(WS)	B
	GA	*		H(WS)	

Remark: * Refer to entry for "Aldicarb and Methomyl."

Aldicarb and Methomyl (116-06-3;16752-77-5)	GA	0.35*		H(WS)	F

Remark: * Applies to the sum of these substances.

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Aldicarb sulfone	A, A-S, AA, AA-S		2*	H(WS)	G
(1646-88-4)	GA		2*	H(WS)	G
Remark: * This substance did not receive a review beyond determining the existence of a Specific MCL. A more in-depth review, currently underway, could lead to a more (but not less) stringent guidance value.					
Aldicarb sulfoxide	A, A-S, AA, AA-S		4*	H(WS)	G
(1646-87-3)	GA		4*	H(WS)	G
Remark: * This substance did not receive a review beyond determining the existence of a Specific MCL. A more in-depth review, currently underway, could lead to a more (but not less) stringent guidance value.					
Aldrin	A, A-S, AA, AA-S		0.002	H(WS)	A
(309-00-2)	GA	ND		H(WS)	F
	A, A-S, AA, AA-S, B, C, D	*		H(FC)	
	SA, SB, SC, SD	*		H(FC)	
	I		*	H(FC)	
Remark: * Refer to entry for "Aldrin and Dieldrin."					
Aldrin and Dieldrin	A, A-S, AA, AA-S, B, C, D	0.001*		H(FC)	
(309-00-2; 60-57-1)	SA, SB, SC, SD	0.001*		H(FC)	
	I		0.001*	H(FC)	
Remark: * Applies to the sum of these substances.					
Alkyl dimethyl benzyl	A, A-S, AA, AA-S		50	H(WS)	Z
ammonium chloride	GA		50	H(WS)	Z
(68391-01-5)	A, A-S, AA, AA-S, B, C	*		A(C)	
Remark: * Refer to entry for "Quaternary ammonium compounds."					
Alkyl diphenyl oxide sulfonates	A, A-S, AA, AA-S		50*	H(WS)	Z
(CAS No. Not Applicable)	GA		50*	H(WS)	Z
Remark: * Applies to each alkyl diphenyl oxide sulfonate individually.					
Allyl chloride	A, A-S, AA, AA-S		5*	H(WS)	I
(107-05-1)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Aluminum, ionic	A, A-S, AA, AA-S, B, C	100*		A(C)	
(CAS No. Not Applicable)					
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
Ametryn	A, A-S, AA, AA-S		50	H(WS)	Z
(834-12-8)	GA	50		H(WS)	J

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
4-Aminobiphenyl (92-67-1)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Aminocresols (95-84-1; 2835-95-2; 2835-99-6)	A, A-S, AA, AA-S	*		E	
	GA	*		E	
	A, A-S, AA, AA-S, B, C	**		E	
	D	**		E	
Remarks: * Refer to entry for "Phenolic compounds (total phenols)." ** Refer to entry for "Phenols, total unchlorinated."					
Aminomethylene phosphonic acid salts (CAS No. Not Applicable)	A, A-S, AA, AA-S		50*	H(WS)	Z
	GA		50*	H(WS)	Z
Remark: * Applies to each aminomethylene phosphonic acid salt individually.					
Aminopyridines (462-08-8; 504-24-5; 504-29-0; 26445-05-6)	A, A-S, AA, AA-S		1*	H(WS)	B
	GA		1*	H(WS)	B
Remark: * Values listed apply to sum of these substances.					
3-Aminotoluene (108-44-1)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Aminotoluene (106-49-0)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Ammonia and Ammonium	A, A-S, AA, AA-S	2,000*		H(WS)	H
(7664-41-7;	GA	2,000*		H(WS)	H
CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	**		A(C)	
	D	**		A(A)	

Remarks: * $NH_3 + NH_4^+$ as N.

** Un-ionized ammonia as NH_3; tables below provide the standard in ug/L at varying pH and temperature for different classes and specifications. Linear interpolation between the listed pH values and temperatures is applicable.

Classes A,A-S, AA, AA-S, B, C with the (T) or (TS) Specification

pH	0°C	5°C	10°C	15°-30°C
6.50	0.7	0.9	1.3	1.9
6.75	1.2	1.7	2.3	3.3
7.00	2.1	2.9	4.2	5.9
7.25	3.7	5.2	7.4	11
7.50	6.6	9.3	13	19
7.75	11	15	22	31
8.0-9.0	13	18	25	35

Classes A, A-S, AA, AA-S, B, C without the (T) or (TS) Specification

pH	0°C	5°C	10°C	15°C	20°-30°C
6.50	0.7	0.9	1.3	1.9	2.6
6.75	1.2	1.7	2.3	3.3	4.7
7.00	2.1	2.9	4.2	5.9	8.3
7.25	3.7	5.2	7.4	11	15
7.50	6.6	9.3	13	19	26
7.75	11	15	22	31	43
8.0-9.0	13	18	25	35	50

Class D

pH	0°C	5°C	10°C	15°C	20°C	25°-30°C
6.50	9.1	13	18	26	36	51
6.75	15	21	30	42	59	84
7.00	23	33	46	66	93	131
7.25	34	48	68	95	140	190
7.50	45	64	91	130	180	260
7.75	56	80	110	160	220	320
8.0-9.0	65	92	130	180	260	370

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

Total Ammonia (mg/L NH_3)

Classes A, A-S, AA, AA-S, B, C with the (T) or (TS) Specification

pH	0°C	5°C	10°C	15°C	20°C	25°C	30°C
6.50	2.5	2.4	2.2	2.2	1.5	1.0	.73
6.75	2.5	2.4	2.2	2.2	1.5	1.0	.73
7.00	2.5	2.4	2.2	2.2	1.5	1.0	.74
7.25	2.5	2.4	2.2	2.2	1.5	1.0	.74
7.50	2.5	2.4	2.2	2.2	1.5	1.1	.74
7.75	2.3	2.2	2.1	2.0	1.4	.99	.71
8.00	1.5	1.4	1.4	1.3	.93	.66	.47
8.25	.87	.82	.78	.76	.54	.39	.28
8.50	.49	.47	.45	.44	.32	.23	.17
8.75	.28	.27	.26	.27	.19	.15	.11
9.00	.16	.16	.16	.16	.13	.10	.08

Classes A, A-S, AA, AA-S, B, C without the (T) or (TS) Specification

pH	0°C	5°C	10°C	15°C	20°C	25°C	30°C
6.50	2.5	2.4	2.2	2.2	2.1	1.5	1.0
6.75	2.5	2.4	2.2	2.2	2.1	1.5	1.0
7.00	2.5	2.4	2.2	2.2	2.1	1.5	1.0
7.25	2.5	2.4	2.2	2.2	2.1	1.5	1.1
7.50	2.5	2.4	2.2	2.2	2.1	1.5	1.1
7.75	2.3	2.2	2.1	2.0	1.9	1.4	1.0
8.00	1.5	1.4	1.3	1.3	1.3	.93	.67
8.25	.87	.82	.78	.76	.76	.54	.40
8.50	.49	.47	.45	.44	.45	.33	.25
8.75	.28	.27	.26	.27	.27	.21	.16
9.00	.16	.16	.16	.16	.17	.14	.11

Class D

pH	0°C	5°C	10°C	15°C	20°C	25°C	30°C
6.50	35	33	31	30	29	29	20
6.75	32	30	28	27	27	26	19
7.00	28	26	25	24	23	23	16
7.25	23	22	20	20	19	19	14
7.50	17	16	16	15	15	15	10
7.75	12	11	11	11	10	10	7.3
8.00	8.0	7.5	7.1	6.9	6.8	6.8	4.9
8.25	4.5	4.2	4.1	4.0	3.9	4.0	2.9
8.50	2.6	2.4	2.3	2.3	2.3	2.4	1.8
8.75	1.4	1.4	1.3	1.4	1.4	1.5	1.1
9.00	.86	.83	.83	.86	.91	1.0	.82

This table provides total ammonia concentrations that will contain the un-ionized ammonia concentration at the level of the standard at the respective pH and temperatures based on relationships established in USEPA 1985, Ambient Water Quality Criteria for Ammonia - 1984. Office of Water, Criteria & Standards Division, Washington, D.C. 20460. EPA 440/5-85-001. January 1985. (Cited, Thurston, R.V., R.C. Russo, and K. Emerson. 1979. Aqueous ammonia equilibrium - tabulation of percent un-ionized ammonia. EPA Ecol. Res. Ser. EPA-600/3-79-091. Environmental Research Laboratory, U.S. Environmental Protection Agency, Duluth, MN: 427 p.)

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Aniline	A, A-S, AA, AA-S	5		H(WS)	I
(62-53-3)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Anthracene	A, A-S, AA, AA-S		50	H(WS)	Z
(120-12-7)	GA		50	H(WS)	Z
	A, A-S, AA, AA-S, B, C		3.8	A(C)	
	A, A-S, AA, AA-S, B, C, D		35	A(A)	
Antimony	A, A-S, AA, AA-S	3		H(WS)	B
(CAS No. Not Applicable)	GA	3		H(WS)	B
Arsenic	A, A-S, AA, AA-S	50		H(WS)	G
(CAS No. Not Applicable)	GA	25		H(WS)	F
	A, A-S, AA, AA-S, B, C	150*		A(C)	
	A, A-S, AA, AA-S, B, C, D	340*		A(A)	
	SA, SB, SC	63*		A(C)	
	I		36*	A(C)	
	SD	120*		A(A)	
Remark: * Dissolved arsenic form.					
Aryltriazoles	A, A-S, AA, AA-S		50*	H(WS)	Z
(CAS No. Not Applicable)	GA		50*	H(WS)	Z
Remark: * Applies to each aryltriazole individually.					
Asbestos	A, A-S, AA, AA-S	*		H(WS)	G
(CAS No. Not Applicable)	GA	*		H(WS)	G
Remark: * 7,000,000 fibers (longer than 10 um)/L.					
Atrazine	A, A-S, AA, AA-S		3*	H(WS)	G
(1912-24-9)	GA	7.5		H(WS)	F
Azinphosmethyl	A, A-S, AA, AA-S		0.07	H(WS)	A
(86-50-0)	GA	4.4		H(WS)	F
	A, A-S, AA, AA-S, B, C	0.005*		A(C)	
	SA, SB, SC	0.01		A(C)	
	I		0.01	A(C)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
Azobenzene	A, A-S, AA, AA-S		0.5	H(WS)	A
(103-33-3)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Barium	A, A-S, AA, AA-S	1,000		H(WS)	G
(CAS No. Not Applicable)	GA	1,000		H(WS)	F

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Benefin (1861-40-1)	GA	35		H(WS)	F
Benz(a)anthracene (56-55-3)	A, A-S, AA, AA-S		0.002	H(WS)	A
	GA		0.002	H(WS)	A
	A, A-S, AA, AA-S, B, C		0.03	A(C)	
	A, A-S, AA, AA-S, B, C, D		0.23	A(A)	
Benzene (71-43-2)	A, A-S, AA, AA-S	1		H(WS)	A
	GA	1		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	10		H(FC)	A
	SA, SB, SC, I, SD	10		H(FC)	A
	A, A-S, AA, AA-S, B, C		210	A(C)	
	A, A-S, AA, AA-S, B, C, D		760	A(A)	
	SA, SB, SC, I		190	A(C)	
	SA, SB, SC, I,SD		670	A(A)	
Benzidine (92-87-5)	A, A-S, AA, AA-S		0.02	H(WS)	A
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C	0.1**		A(C)	
	D	0.1**		A(A)	

Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

** For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).

Benzisothiazole (271-61-4)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Benzo(b)fluoranthene (205-99-2)	A, A-S, AA, AA-S		0.002	H(WS)	A
	GA		0.002	H(WS)	A
Benzo(k)fluoranthene (207-08-9)	A, A-S, AA, AA-S		0.002	H(WS)	A
	GA		0.002	H(WS)	A
Benzo(a)pyrene (50-32-8)	A, A-S, AA, AA-S		0.002	H(WS)	A
	GA	ND		H(WS)	F
	A, A-S, AA, AA-S, B, C, D		0.0012	H(FC)	
	SA, SB, SC, I, SD		6×10^{-4}	H(FC)	
Beryllium (CAS No. Not Applicable)	A, A-S, AA, AA-S		3	H(WS)	B
	GA		3	H(WS)	B
	A, A-S, AA, AA-S, B, C	*		A(C)	

Remarks: * 11 ug/L, when hardness is less than or equal to 75 ppm; 1,100 ug/L when hardness is greater than 75 ppm.

* For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).

Aquatic Type standards apply to acid-soluble form.

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
1,1'-Biphenyl	A, A-S, AA, AA-S		5*	H(WS)	I
(92-52-4)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Bis(2-chloroethoxy)methane	A, A-S, AA, AA-S		5*	H(WS)	I
(111-91-1)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Bis(2-chloroethyl)ether	A, A-S, AA, AA-S		0.03	H(WS)	A
(111-44-4)	GA	1.0		H(WS)	F
Bis(chloromethyl)ether	A, A-S, AA, AA-S		5*	H(WS)	I
(542-88-1)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Bis(2-chloro-1-methylethyl)ether	A, A-S, AA, AA-S		5*	H(WS)	I
(108-60-1)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Bis(2-ethylhexyl)phthalate	A, A-S, AA, AA-S	5		H(WS)	A
(117-81-7)	GA	5		H(WS)	A
	A, A-S, AA, AA-S, B, C	0.6		A(C)	
Boric acid, Borates & Metaborates	A, A-S, AA, AA-S		125*	H(WS)	B
(CAS No. Not Applicable)	GA		125*	H(WS)	B
Remarks: * Applies as boron equivalents. Values listed apply to the sum of these substances.					
Boron	GA	1,000		H(WS)	H
(CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	10,000*		A(C)	
	SA, SB, SC	1,000		A(C)	
	I		1,000	A(C)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic standard if so determined under 702.15 (c). Aquatic Type standards and guidance value apply to acid-soluble form.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Bromacil (314-40-9)	GA	4.4		H(WS)	F
Bromide (CAS No. Not Applicable)	A, A-S, AA, AA-S GA		2,000 2,000	H(WS) H(WS)	B B
Bromobenzene (108-86-1)	A, A-S, AA, AA-S GA	 **	5*	H(WS) H(WS)	I J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Bromochloromethane (74-97-5)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Bromodichloromethane (75-27-4)	A, A-S, AA, AA-S GA		50 50	H(WS) H(WS)	Z Z
Bromoform (75-25-2)	A, A-S, AA, AA-S GA		50 50	H(WS) H(WS)	Z Z
Bromomethane (74-83-9)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Butachlor (23184-66-9)	GA	3.5		H(WS)	F
cis-2-Butenal (15798-64-8)	A, A-S, AA, AA-S GA	 **	5*	H(WS) H(WS)	I J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
trans-2-Butenal (123-73-9)	A, A-S, AA, AA-S GA	 **	5*	H(WS) H(WS)	I J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
cis-2-Butenenitrile	A, A-S, AA, AA-S		5*	H(WS)	I
(1190-76-7)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
trans-2-Butenenitrile	A, A-S, AA, AA-S		5*	H(WS)	I
(627-26-9)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Butoxyethoxyethanol	A, A-S, AA, AA-S		50	H(WS)	Z
(112-34-5)	GA		50	H(WS)	Z
Butoxypropanol	A, A-S, AA, AA-S		50	H(WS)	Z
(5131-66-8)	GA		50	H(WS)	Z
Butylate	A, A-S, AA, AA-S		50	H(WS)	Z
(2008-41-5)	GA	50		H(WS)	J
n-Butylbenzene	A, A-S, AA, AA-S	5		H(WS)	I
(104-51-8)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
sec-Butylbenzene	A, A-S, AA, AA-S	5		H(WS)	I
(135-98-8)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
tert-Butylbenzene	A, A-S, AA, AA-S	5		H(WS)	I
(98-06-6)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Butyl benzyl phthalate	A, A-S, AA, AA-S		50	H(WS)	Z
(85-68-7)	GA		50	H(WS)	Z
Butyl isopropyl phthalate	A, A-S, AA, AA-S		50	H(WS)	Z
(CAS No. Not Applicable)	GA		50	H(WS)	Z

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Cadmium (CAS No. Not Applicable)	A, A-S, AA, AA-S	5		H(WS)	B,G
	GA	5		H(WS)	B,G
	SA, SB, SC, I, SD		2.7	H(FC)	
	A, A-S, AA, AA-S, B, C	*		A(C)	
	A, A-S, AA, AA-S, B, C, D	**		A(A)	
	SA, SB, SC, I	7.7		A(C)	
	SD	21		A(A)	
Remarks: * (0.85) exp(0.7852 [ln (ppm hardness)] - 2.715) ** (0.85) exp(1.128 [ln (ppm hardness)] - 3.6867) Aquatic Type standards apply to dissolved form.					
Captan (133-06-2)	GA	18		H(WS)	F
Carbaryl (63-25-2)	GA	29		H(WS)	F
Carbofuran (1563-66-2)	A, A-S, AA, AA-S	15		H(WS)	B
	GA		15	H(WS)	B
	A, A-S, AA, AA-S, B, C	1.0*		A(C)	
	D	10*		A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).					
Carbon tetrachloride (56-23-5)	A, A-S, AA, AA-S		0.4	H(WS)	A
	GA	5		H(WS)	F
Carboxin (5234-68-4)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA	50		H(WS)	J
Chloramben (CAS No. Not Applicable)	A, A-S, AA, AA-S		50*	H(WS)	Z
	GA	50*		H(WS)	J
Remark: * Includes: related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.					
Chloranil (118-75-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Chlordane (57-74-9)	A, A-S, AA, AA-S	0.05		H(WS)	A
	GA	0.05		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	2×10^{-5}		H(FC)	A
	SA, SB, SC, I, SD	2×10^{-5}		H(FC)	A
Chloride (CAS No. Not Applicable)	A, A-S, AA, AA-S	250,000		H(WS)	H
	GA	250,000		H(WS)	H

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Chlorinated dibenzo-p-dioxins and Chlorinated dibenzofurans (CAS No. Not Applicable)	A, A-S, AA, AA-S	7×10^{-7}*		H(WS)	A
	GA	7×10^{-7}*		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	6×10^{-10}*		H(FC)	A
	SA, SB, SC, I, SD	6×10^{-10}*		H(FC)	A
	A, A-S, AA, AA-S, B, C, D	3.1×10^{-9}**		W	
	SA, SB, SC, I, SD	3.1×10^{-9}**		W	

Remarks: * Value is for the total of the chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans that are listed in the table below as equivalents of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD).

The 2,3,7,8-TCDD equivalent for a congener for the H(WS) standards is obtained by multiplying the concentration of that congener by its Toxicity Equivalency Factor (TEF) from the table below. The 2,3,7,8-TCDD equivalent for a congener for the H(FC) standards is obtained by multiplying the concentration of that congener by its TEF and its Bioaccumulation Equivalency Factor (BEF) from the table below.

** Applies only to 2,3,7,8-TCDD

CONGENER	TEF	BEF
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.5	0.9
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.3
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1	0.1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1	0.1
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01	0.05
Octachlorodibenzo-p-dioxin	0.001	0.01
2,3,7,8-Tetrachlorodibenzofuran	0.1	0.8
1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.2
2,3,4,7,8-Pentachlorodibenzofuran	0.5	1.6
1,2,3,4,7,8-Hexachlorodibenzofuran	0.1	0.08
1,2,3,6,7,8-Hexachlorodibenzofuran	0.1	0.2
2,3,4,6,7,8-Hexachlorodibenzofuran	0.1	0.7
1,2,3,7,8,9-Hexachlorodibenzofuran	0.1	0.6
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01	0.01
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01	0.4
Octachlorodibenzofuran	0.001	0.02

Chlorine, Total Residual (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	5		A(C)	
	D	19		A(A)	
	SA, SB, SC, I	7.5		A(C)	
	SD	13		A(A)	
2-Chloroaniline (95-51-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.

** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
3-Chloroaniline (108-42-9)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Chloroaniline (106-47-8)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Chlorobenzene (108-90-7)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C, D	400		H(FC)	B
	SA,SB, SC, I, SD	400		H(FC)	B
	A, A-S, AA, AA-S, B, C	5		A(C)	
	SA, SB, SC, I		5	A(C)	
	A, A-S, AA, AA-S	20		E	U
	D	50		E	V
	SD		50	E	V
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Chlorobenzotrifluoride (98-56-6)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1-Chlorobutane (109-69-3)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Chloroethane (75-00-3)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Chloroform (67-66-3)	A, A-S, AA, AA-S	7		H(WS)	A
	GA	7		H(WS)	A

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Chloromethyl methyl ether (107-30-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2-Chloronaphthalene (91-58-7)	A, A-S, AA, AA-S	10		E	U
	GA		10	E	U
2-Chloronitrobenzene (88-73-3)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3-Chloronitrobenzene (121-73-3)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Chloronitrobenzene (100-00-5)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Chloroprene (126-99-8)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Chlorothalonil (1897-45-6)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
2-Chlorotoluene (95-49-8)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3-Chlorotoluene (108-41-8)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Chlorotoluene (106-43-4)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Chloro-o-toluidine (95-69-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
5-Chloro-o-toluidine (95-79-4)	A, A-S, AA, AA-S		0.7	H(WS)	A
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3-Chloro-1,1,1-trifluoropropane (460-35-5)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Chromium (CAS No. Not Applicable)	A, A-S, AA, AA-S	50		H(WS)	G
	GA	50		H(WS)	G
	A, A-S, AA, AA-S, B, C	*		A(C)	
	A, A-S, AA, AA-S, B, C, D	**		A(A)	
Remarks: * (0.86) exp(0.819 [ln (ppm hardness)] + 0.6848) ** (0.316) exp(0.819 [ln (ppm hardness)] + 3.7256) Aquatic Type standards apply to dissolved form and do not include hexavalent chromium.					
Chromium (hexavalent) (CAS No. Not Applicable)	GA	50		H(WS)	F
	A, A-S, AA, AA-S, B, C	11*		A(C)	
	A, A-S, AA, AA-S, B, C, D	16*		A(A)	
	SA, SB, SC	54**		A(C)	
	I		50**	A(C)	
	SD	1,200**		A(A)	
Remarks: * Applies to dissolved form. ** Applies to acid-soluble form.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Chrysene	A, A-S, AA, AA-S		0.002	H(WS)	A
(218-01-9)	GA		0.002	H(WS)	A
Cobalt	A, A-S, AA, AA-S, B, C	5*		A(C)	
(CAS No. Not Applicable)	D		110	A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c). Aquatic Type standards and guidance value apply to acid-soluble form.					
Copper	A, A-S, AA, AA-S	200		H(WS)	H
(CAS No. Not Applicable)	GA	200		H(WS)	H
	A, A-S, AA, AA-S, B, C	*		A(C)	
	A, A-S, AA, AA-S, B, C, D	**		A(A)	
	SA, SB, SC, I	***		A(C)	
	SA, SB, SC, I, SD	****		A(A)	
Remarks: * (0.96) exp(0.8545 [ln (ppm hardness)] - 1.702) ** (0.96) exp(0.9422 [ln (ppm hardness)] - 1.7) *** Standard is 3.4 ug/L except in New York/New Jersey Harbor where it is 5.6 ug/L. **** Standard is 4.8 ug/L except in New York/New Jersey Harbor where it is 7.9 ug/L. Aquatic Type standards apply to dissolved form.					
Cyanide	A, A-S, AA, AA-S	200		H(WS)	H
(CAS No. Not Applicable)	GA	200		H(WS)	H
	A, A-S, AA-S, B, C, D	9,000		H(FC)	B
	SA, SB, SC, I, SD	9,000		H(FC)	B
	A, A-S, AA, AA-S, B, C	5.2*		A(C)	
	A, A-S, AA, AA-S, B, C, D	22*		A(A)	
	SA, SB, SC	1.0*		A(C)	
	I		1.0*	A(C)	
	SD	1.0*		A(A)	
Remark: * As free cyanide: the sum of HCN and CN^- expressed as CN.					
Cyanogen bromide	A, A-S, AA, AA-S		5*	H(WS)	I
(506-68-3)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Cyanogen chloride	A, A-S, AA, AA-S		5*	H(WS)	I
(506-77-4)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Dalapon	A, A-S, AA, AA-S		50*	H(WS)	Z
(CAS No. Not Applicable)	GA	50*		H(WS)	J
Remark: * Includes: related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.					
p,p'-DDD	A, A-S, AA, AA-S	0.3		H(WS)	A
(72-54-8)	GA	0.3		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	8×10^{-5}		H(FC)	A
	SA, SB, SC, I, SD	8×10^{-5}		H(FC)	A
	A, A-S, AA, AA-S, B, C, D	*		W	
	SA, SB, SC, I, SD	*		W	
Remark: * Refer to entry for "p,p'-DDT."					
p,p'-DDE	A, A-S, AA, AA-S	0.2		H(WS)	A
(72-55-9)	GA	0.2		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	7×10^{-6}		H(FC)	A
	SA, SB, SC, I, SD	7×10^{-6}		H(FC)	A
	A, A-S, AA, AA-S, B, C, D	*		W	
	SA, SB, SC, I, SD	*		W	
Remark: * Refer to entry for "p,p'-DDT."					
p,p'-DDT	A, A-S, AA, AA-S	0.2		H(WS)	A
(50-29-3)	GA	0.2		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	1×10^{-5}		H(FC)	A
	SA, SB, SC, I, SD	1×10^{-5}		H(FC)	A
	A, A-S, AA, AA-S, B, C, D	1.1×10^{-5}*		W	
	SA, SB, SC, I, SD	1.1×10^{-5}*		W	
Remark: * Applies to the sum of p,p'-DDD, p,p'-DDE and p,p'-DDT					
Dechlorane Plus	A, A-S, AA, AA-S	5		H(WS)	I
(13560-89-9)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Demeton	A, A-S, AA, AA-S, B, C	0.1*		A(C)	
(8065-48-3; 298-03-3; 126-75-0)	SA, SB, SC	0.1		A(C)	
	I		0.1	A(C)	
Remark: * Standards and guidance value apply to the sum of these substances. For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
Diazinon	GA	0.7		H(WS)	F
(333-41-5)	A, A-S, AA, AA-S, B, C	0.08*		A(C)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
1,2-Dibromobenzene	A, A-S, AA, AA-S	5		H(WS)	I
(583-53-9)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,3-Dibromobenzene	A, A-S, AA, AA-S	5		H(WS)	I
(108-36-1)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,4-Dibromobenzene	A, A-S, AA, AA-S	5		H(WS)	I
(106-37-6)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Dibromochloromethane	A, A-S, AA, AA-S		50	H(WS)	Z
(124-48-1)	GA		50	H(WS)	Z
1,2-Dibromo-3-chloropropane	A, A-S, AA, AA-S	0.04		H(WS)	A
(96-12-8)	GA	0.04		H(WS)	A
Dibromodichloromethane	A, A-S, AA, AA-S	5		H(WS)	I
(594-18-3)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Dibromomethane	A, A-S, AA, AA-S		5*	H(WS)	I
(74-95-3)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,2-Dibromo-3-nitrilopropionamide	A, A-S, AA, AA-S		50*	H(WS)	Z
and Dibromoacetonitrile	GA		50*	H(WS)	Z
(10222-01-2; 3252-43-5)	A, A-S, AA, AA-S, B, C		20	A(C)	
	D		50	A(A)	
Remarks: Values listed apply to the sum of these substances, except as noted below. * Applies to 2,2-dibromo-3-nitrilopropionamide only.					
Di-n-butyl phthalate	A, A-S, AA, AA-S		50	H(WS)	Z
(84-74-2)	GA	50		H(WS)	J
Dicamba	GA	0.44		H(WS)	F
(1918-00-9)					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Dichlorobenzenes	A, A-S, AA, AA-S	3*		H(WS)	A
(95-50-1;541-73-1;106-46-7)	GA	3*		H(WS)	A
	A, A-S, AA, AA-S, B, C	5**		A(C)	
	SA, SB, SC, I		5**	A(C)	
	A, A-S, AA, AA-S	20***/30****		E	U
	D	50**		E	V
	SD		50**	E	V

Remarks: * Applies to each isomer (1,2-,1,3- and 1,4-dichlorobenzene) individually.
** Applies to the sum of 1,2-, 1,3- and 1,4-dichlorobenzene
*** Applies to 1,3-dichlorobenzene only.
**** Applies to 1,4-dichlorobenzene only.
For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).

3,3'-Dichlorobenzidine	A, A-S, AA, AA-S		5*	H(WS)	I
(91-94-1)	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

3,4-Dichlorobenzotrifluoride	A, A-S, AA, AA-S	5		H(WS)	I
(328-84-7)	GA	*		H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

cis-1,4-Dichloro-2-butene	A, A-S, AA, AA-S		5*	H(WS)	I
(1476-11-5)	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

trans-1,4-Dichloro-2-butene	A, A-S, AA, AA-S		5*	H(WS)	I
(110-57-6)	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Dichlorodifluoromethane	A, A-S, AA, AA-S		5*	H(WS)	I
(75-71-8)	GA	**		H(WS)	J

Remark: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
1,1-Dichloroethane	A, A-S, AA, AA-S	5		H(WS)	I
(75-34-3)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,2-Dichloroethane	A, A-S, AA, AA-S	0.6		H(WS)	A
(107-06-2)	GA	0.6		H(WS)	A
1,1-Dichloroethene	A, A-S, AA, AA-S		0.7	H(WS)	A
(75-35-4)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
cis-1,2-Dichloroethene	A, A-S, AA, AA-S	5		H(WS)	I
(156-59-2)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
trans-1,2-Dichloroethene	A, A-S, AA, AA-S	5		H(WS)	I
(156-60-5)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Dichlorofluoromethane	A, A-S, AA, AA-S	5		H(WS)	I
(75-43-4)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4-Dichlorophenol	A, A-S, AA, AA-S		5*****	H(WS)	I
(120-83-2)	GA	****		H(WS)	J
	A, A-S, AA, AA-S	0.3*		E	U
	GA	**		E	
	A, A-S, AA, AA-S, B, C, D	***		E	
Remarks: * Also see entry for "Phenolic compounds (total phenols)." ** Refer to entry for "Phenolic compounds (total phenols)." *** Refer to entry for "Phenols, total chlorinated." **** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance. ***** This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.					
2,4-Dichlorophenoxyacetic acid	A, A-S, AA, AA-S	50		H(WS)	G
(94-75-7)	GA	50		H(WS)	G
1,1-Dichloropropane	A, A-S, AA, AA-S	5		H(WS)	I
(78-99-9)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
1,2-Dichloropropane (78-87-5)	A, A-S, AA, AA-S GA	1 1		H(WS) H(WS)	A A
1,3-Dichloropropane (142-28-9)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,2-Dichloropropane (594-20-7)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,1-Dichloropropene (563-58-6)	A, A-S, AA, AA-S GA	 **	5*	H(WS) H(WS)	I J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,3-Dichloropropene (542-75-6)	A, A-S, AA, AA-S GA	0.4* 0.4*		H(WS) H(WS)	A A
Remark: * Applies to the sum of cis- and trans-1,3-dichloropropene, CAS Nos. 10061-01-5 and 10061-02-6, respectively.					
2,3-Dichlorotoluene (32768-54-0)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4-Dichlorotoluene (95-73-8)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,5-Dichlorotoluene (19398-61-9)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,6-Dichlorotoluene (118-69-4)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
3,4-Dichlorotoluene	A, A-S, AA, AA-S	5		H(WS)	I
(95-75-0)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3,5-Dichlorotoluene	A, A-S, AA, AA-S	5		H(WS)	I
(25186-47-4)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Dieldrin	A, A-S, AA, AA-S	0.004		H(WS)	A
(60-57-1)	GA	0.004		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	6×10^{-7}		H(FC)	A
	SA, SB, SC, I, SD	6×10^{-7}		H(FC)	A
	A, A-S, AA, AA-S, B, C	0.056		A(C)	
	A, A-S, AA, AA-S, B, C, D	0.24		A(A)	
Di(2-ethylhexyl)adipate	A, A-S, AA, AA-S	20		H(WS)	A
(103-23-1)	GA	20		H(WS)	A
Diethyl phthalate	A, A-S, AA, AA-S		50	H(WS)	Z
(84-66-2)	GA		50	H(WS)	Z
1,2-Difluoro-1,1,2,2-	A, A-S, AA, AA-S		5*	H(WS)	I
tetrachloroethane	GA	**		H(WS)	J
(76-12-0)					
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,2-Diisopropylbenzene	A, A-S, AA, AA-S		5*	H(WS)	I
(577-55-9)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,3-Diisopropylbenzene	A, A-S, AA, AA-S		5*	H(WS)	I
(99-62-7)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
1,4-Diisopropylbenzene (100-18-5)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
N,N-Dimethylaniline (121-69-7)	A, A-S, AA, AA-S	1		H(WS)	A
	GA	1		H(WS)	A
2,3-Dimethylaniline (87-59-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4-Dimethylaniline (95-68-1)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,5-Dimethylaniline (95-78-3)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,6-Dimethylaniline (87-62-7)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3,4-Dimethylaniline (95-64-7)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
3,5-Dimethylaniline	A, A-S, AA, AA-S		5*	H(WS)	I
(108-69-0)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3,3'-Dimethylbenzidine	A, A-S, AA, AA-S		5*	H(WS)	I
(119-93-7)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4,4'-Dimethylbibenzyl	A, A-S, AA, AA-S		5*	H(WS)	I
(538-39-6)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4,4'-Dimethyldiphenylmethane	A, A-S, AA, AA-S		5*	H(WS)	I
(4957-14-6)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Dimethylformamide	A, A-S, AA, AA-S		50	H(WS)	Z
(68-12-2)	GA		50	H(WS)	Z
alpha, alpha-Dimethyl	A, A-S, AA, AA-S		5*	H(WS)	I
phenethylamine	GA	**		H(WS)	J
(122-09-8)					
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4-Dimethylphenol	A, A-S, AA, AA-S		50	H(WS)	Z
(105-67-9)	GA		50	H(WS)	Z
	A, A-S, AA, AA-S, B, C, D	1,000		H(FC)	B
	SA, SB, SC, I, SD	1,000		H(FC)	B
	A, A-S, AA, AA-S	*		E	
	GA	*		E	
	B, C, D	**		E	
Remarks: * Refer to entry for "Phenolic compounds (total phenols)." ** Refer to entry for "Phenols, total unchlorinated."					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Dimethyl phthalate (131-11-3)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Dimethyl tetrachloroterephthalate (1861-32-1)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA	50		H(WS)	J
1,3-Dinitrobenzene (99-65-0)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

2,4-Dinitrophenol (51-28-5)	A, A-S, AA, AA-S		10	H(WS)	B
	GA		10	H(WS)	B
	A, A-S, AA, AA-S, B, C, D	400		H(FC)	B
	SA, SB, SC, I, SD	400		H(FC)	B
	A, A-S, AA, AA-S	*		E	
	GA	*		E	
	B, C, D	**		E	

Remarks: * Refer to entry for "Phenolic compounds (total phenols)."
** Refer to entry for "Phenols, total unchlorinated."

2,3-Dinitrotoluene (602-01-7)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

2,4-Dinitrotoluene (121-14-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

2,5-Dinitrotoluene (619-15-8)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J

Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

2,6-Dinitrotoluene (606-20-2)	A, A-S, AA, AA-S		0.07	H(WS)	A
	GA	*		H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
3,4-Dinitrotoluene	A, A-S, AA, AA-S		5*	H(WS)	I
(610-39-9)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3,5-Dinitrotoluene	A, A-S, AA, AA-S		5*	H(WS)	I
(618-85-9)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Di-n-octyl phthalate	A, A-S, AA, AA-S		50	H(WS)	Z
(117-84-0)	GA		50	H(WS)	Z
Dinoseb	A, A-S, AA, AA-S	*		E	
(88-85-7)	GA	*		E	
	B, C, D	**		E	
Remarks: * Refer to entry for "Phenolic compounds (total phenols)." ** Refer to entry for "Phenols, total unchlorinated."					
Diphenamid	A, A-S, AA, AA-S		50	H(WS)	Z
(957-51-7)	GA	50		H(WS)	J
Diphenylamine	A, A-S, AA, AA-S		5*	H(WS)	I
(122-39-4)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Diphenylhydrazines	A, A-S, AA, AA-S		0.05*	H(WS)	A
(122-66-7; 530-50-7)	GA	ND**		H(WS)	F
Remarks: * Applies to 1,2-diphenylhydrazine (CAS No. 122-66-7) only. ** Applies to the sum of 1,1- and 1,2-diphenylhydrazine (CAS Nos. 530-50-7 and 122-66-7, respectively).					
Diquat	A, A-S, AA, AA-S	20*		H(WS)	B
(2764-72-9)	GA	20*		H(WS)	B
Remark: * Applies to the concentration of diquat ion whether free or as an undissociated salt.					
Disulfoton	GA	*		H(WS)	
(298-04-4)					
Remark: * Refer to entry for "Phorate and Disulfoton."					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Dodecylguanidine acetate and Dodecylguanidine hydrochloride (2439-10-3; 13590-97-1)	A, A-S, AA, AA-S		50*	H(WS)	B
	GA		50*	H(WS)	B
Remark: * Applies to sum of these substances.					
Dyphylline (479-18-5)	A, A-S, AA, AA-S	50		H(WS)	B
	GA		50	H(WS)	B
Endosulfan (115-29-7)	A, A-S, AA, AA-S, B, C	0.009		A(C)	
	D	0.22*		A(A)	
	SA, SB, SC	0.001		A(C)	
	I		0.001	A(C)	
	SD	0.034		A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (d).					
Endothall (145-73-3)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Endrin (72-20-8)	A, A-S, AA, AA-S	0.2		H(WS)	G
	GA	ND		H(WS)	F
	A, A-S, AA, AA-S, B, C, D	0.002		H(FC)	
	SA, SB, SC, SD	0.002		H(FC)	
	I		0.002	H(FC)	
	A, A-S, AA, AA-S, B, C	0.036		A(C)	
	A, A-S, AA, AA-S, B, C, D	0.086		A(A)	
Endrin aldehyde (7421-93-4)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Endrin ketone (53494-70-5)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Ethylbenzene (100-41-4)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C		17	A(C)	
	A, A-S, AA, AA-S, B, C, D		150	A(A)	
	SA, SB, SC, I		4.5	A(C)	
	SA, SB, SC, I, SD		41	A(A)	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Ethylene chlorohydrin (107-07-3)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Ethylene dibromide (106-93-4)	A, A-S, AA, AA-S	6×10^{-4}		H(WS)	A
	GA	6×10^{-4}		H(WS)	A
Ethylene glycol (107-21-1)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
	A, A-S, AA, AA-S, B, C		500,000	A(C)	
	D		1,000,000	A(A)	
Ethylene oxide (75-21-8)	A, A-S, AA, AA-S		0.05	H(WS)	A
	GA		0.05	H(WS)	A
Ethylenethiourea (96-45-7)	GA	ND		H(WS)	F
Ferbam (14484-64-1)	GA	4.2		H(WS)	F
Fluometuron (2164-17-2)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA	50		H(WS)	J
Fluoranthene (206-44-0)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Fluorene (86-73-7)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
	A, A-S, AA, AA-S, B, C		0.54	A(C)	
	A, A-S, AA, AA-S, B, C, D		4.8	A(A)	
	SA, SB, SC, I		2.5	A(C)	
	SA, SB, SC, I, SD		23	A(A)	
Fluoride (CAS No. Not Applicable)	A, A-S, AA, AA-S	1,500		H(WS)	H
	GA	1,500		H(WS)	F
	A, A-S, AA, AA-S, B, C	*		A(C)	
	D	**		A(A)	

Remarks: * (0.02) exp(0.907 [ln (ppm hardness)] + 7.394)
** (0.1) exp(0.907 [ln (ppm hardness)] + 7.394)
For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).

Foaming agents (CAS No. Not Applicable)	GA	500*		E	U

Remark: * Determined as methylene blue active substances (MBAS) or by other tests as specified by the Commissioner.

Folpet (133-07-3)	GA	50		H(WS)	J
Glyphosate (1071-83-6)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Gross alpha radiation (CAS No. Not Applicable)	A, A-S, AA, AA-S	*		H(WS)	G
	GA	*		H(WS)	G
Remark: * 15 picocuries per liter, excluding radon and uranium.					
Gross beta radiation (CAS No. Not Applicable)	A, AA	*		H(WS)	H
	A-S, AA-S		*	H(WS)	H
	GA	*		H(WS)	H
Remark: * 1,000 picocuries per liter, excluding strontium-90 and alpha emitters.					
Guaifenesin (93-14-1)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Heptachlor (76-44-8)	A, A-S, AA, AA-S	0.04		H(WS)	A
	GA	0.04		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	2×10^{-4}		H(FC)	A
	SA, SB, SC, I, SD	2×10^{-4}		H(FC)	A
Heptachlor epoxide (1024-57-3)	A, A-S, AA, AA-S	0.03		H(WS)	A
	GA	0.03		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	3×10^{-4}		H(FC)	A
	SA, SB, SC, I, SD	3×10^{-4}		H(FC)	A
Hexachlorobenzene (118-74-1)	A, A-S, AA, AA-S	0.04		H(WS)	A
	GA	0.04		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	3×10^{-5}		H(FC)	A
	SA, SB, SC, I, SD	3×10^{-5}		H(FC)	A
Hexachlorobutadiene (87-68-3)	A, A-S, AA, AA-S	0.5		H(WS)	B
	GA	0.5		H(WS)	B
	A, A-S, AA, AA-S, B, C, D	0.01		H(FC)	B
	SA, SB, SC, I, SD	0.01		H(FC)	B
	A, A-S, AA, AA-S, B, C	1.0*		A(C)	
	D	10*		A(A)	
	SA, SB, SC	0.3		A(C)	
	I		0.3	A(C)	
	SD	3.0		A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).					
alpha-Hexachlorocyclohexane (319-84-6)	A, A-S, AA, AA-S	0.01		H(WS)	A
	GA	0.01		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	0.002		H(FC)	A
	SA, SB, SC, I, SD	0.002		H(FC)	A
beta-Hexachlorocyclohexane (319-85-7)	A, A-S, AA, AA-S	0.04		H(WS)	A
	GA	0.04		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	0.007		H(FC)	A
	SA, SB, SC, I, SD	0.007		H(FC)	A

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
delta-Hexachlorocyclohexane (319-86-8)	A, A-S, AA, AA-S	0.04		H(WS)	A
	GA	0.04		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	0.008		H(FC)	A
	SA, SB, SC, I, SD	0.008		H(FC)	A
epsilon-Hexachlorocyclohexane (6108-10-7)	A, A-S, AA, AA-S	0.04		H(WS)	A
	GA	0.04		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	0.008		H(FC)	A
	SA, SB, SC, I, SD	0.008		H(FC)	A
gamma-Hexachlorocyclohexane (58-89-9)	A, A-S, AA, AA-S	0.05		H(WS)	A
	GA	0.05		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	0.008		H(FC)	A
	SA, SB, SC, I, SD	0.008		H(FC)	A
	A, A-S, AA, AA-S, B, C, D	0.95		A(A)	
Hexachlorocyclopentadiene (77-47-4)	A, A-S, AA, AA-S		5***	H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C	0.45**		A(C)	
	D	4.5**		A(A)	
	SA, SB, SC	0.07		A(C)	
	I		0.07	A(C)	
	SD	0.7		A(A)	
	A, A-S, AA, AA-S	1.0		E	U

Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.
** For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).
*** This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.

Hexachloroethane (67-72-1)	A, A-S, AA, AA-S	5		H(WS)	A, I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C, D	0.6		H(FC)	A
	SA, SB, SC, I, SD	0.6		H(FC)	A

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Hexachlorophene (70-30-4)	A, A-S, AA, AA-S		5****	H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S	**		E	
	GA	**		E	
	B,C,D	***		E	

Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.
** Refer to entry for "Phenolic compounds (total phenols)."
*** Refer to entry for "Phenols, total chlorinated."
**** This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Hexachloropropene (1888-71-7)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance..					
2-Hexanone (591-78-6)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Hexazinone (51235-04-2)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA	50		H(WS)	J
Hydrazine (302-01-2)	A, A-S, AA, AA-S, B, C	*		A(C)	
	D	**		A(A)	
Remarks: * 5 ug/L at less than 50 ppm hardness and 10 ug/L at greater than or equal to 50 ppm hardness. ** 50 ug/L at less than 50 ppm hardness and 100 ug/L at greater than or equal to 50 ppm hardness. For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).					
Hydrogen sulfide (7783-06-4)	A, A-S, AA, AA-S, B, C	2.0*		A(C)	
	SA, SB, SC	2.0		A(C)	
	I		2.0	A(C)	
	A, A-S, AA, AA-S		**	E	
	GA		**	E	
Remarks: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c). ** Refer to entry for "Sulfides, total." Aquatic Type standards and guidance value apply to undissociated form.					
Hydroquinone (123-31-9)	A, A-S, AA, AA-S, B, C	2.2**		A(C)	
	D	4.4**		A(A)	
	A, A-S, AA, AA-S	*		E	
	GA	*		E	
	B, C, D	***		E	
Remarks: * Refer to entry for "Phenolic compounds (total phenols)." ** For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d). *** Refer to entry for "Phenols, total unchlorinated."					
1-Hydroxyethylidene-1,1-diphosphonic acid (2809-21-4)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
2-(2-Hydroxy-	A, A-S, AA, AA-S		50	H(WS)	Z
3,5-di-tert-pentylphenyl)-	GA		50	H(WS)	Z
benzotriazole	A, A-S, AA, AA-S	*		E	
(25973-55-1)	GA	*		E	
	B, C, D	**		E	
Remarks: * Refer to entry for "Phenolic compounds (total phenols)." ** Refer to entry for "Phenols, total unchlorinated."					
Indeno (1,2,3-cd) pyrene	A, A-S, AA, AA-S		0.002	H(WS)	A
(193-39-5)	GA		0.002	H(WS)	A
Iron	A, A-S, AA, AA-S, B, C	300**		A(C)	
(CAS No. Not Applicable)	D	300**		A(A)	
	A, A-S, AA, AA-S	300		E	G
	GA	300*		E	F
Remarks: * Also see standard for "Iron and Manganese." ** For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).					
Iron and Manganese	GA	500*		E	F
(CAS No. Not Applicable)					
Remark: * Applies to the sum of these substances; also see individual standards for "Iron" and "Manganese."					
Isodecyl diphenyl phosphate	A, A-S, AA, AA-S, B, C	1.7*		A(C)	
(29761-21-5)	D	22*		A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).					
Isodrin	A, A-S, AA, AA-S		5*	H(WS)	I
(465-73-6)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Isophorone	A, A-S, AA, AA-S		50	H(WS)	Z
(78-59-1)	GA		50	H(WS)	Z
Isopropalin	A, A-S, AA, AA-S		5*	H(WS)	I
(33820-53-0)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Isopropylbenzene (98-82-8)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
	A, A-S, AA, AA-S, B, C		2.6	A(C)	
	A, A-S, AA, AA-S, B, C, D		23	A(A)	
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2-Isopropyltoluene (527-84-4)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3-Isopropyltoluene (535-77-3)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Isopropyltoluene (99-87-6)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Isothiazolones, total (isothiazolinones) (includes 5-chloro-2-methyl-4-isothiazolin-3-one & 2-methyl-4-isothiazolin-3-one) (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	1*		A(C)	
	D	10*		A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d). Standards apply to the sum of these substances.					
Kepone (143-50-0)	GA	ND		H(WS)	F
Lead (CAS No. Not Applicable)	A, A-S, AA, AA-S	50		H(WS)	G
	GA	25		H(WS)	F
	A, A-S, AA, AA-S, B, C	*		A(C)	
	A, A-S, AA, AA-S, B, C, D	**		A(A)	
	SA, SB, SC, I	8		A(C)	
	SA, SB, SC, I, SD	204		A(A)	
Remarks: * {1.46203 - [ln (hardness) (0.145712)]} exp (1.273 [ln (hardness)] - 4.297) ** {1.46203 - [ln (hardness) (0.145712)]} exp (1.273 [ln (hardness)] - 1.052) Aquatic Type standards apply to dissolved form.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Linear alkyl benzene sulfonates (LAS) (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	40*		A(C)	
Remarks: * LAS with side chains greater than 13 carbons only; applies to the sum of these substances. * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
Magnesium (CAS No. Not Applicable)	A, A-S, AA, AA-S	35,000		H(WS)	B
	GA		35,000	H(WS)	B
Malathion (121-75-5)	GA	7.0		H(WS)	F
	A, A-S, AA, AA-S, B, C	0.1*		A(C)	
	SA, SB, SC	0.1		A(C)	
	I		0.1	A(C)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
Mancozeb (8018-01-7)	GA	1.8		H(WS)	F
Maneb (12427-38-2)	GA	1.8		H(WS)	F
Manganese (CAS No. Not Applicable)	A, A-S, AA, AA-S	300		E	G
	GA	300*		E	F
Remark: * Also see entry for "Iron and Manganese."					
Mercaptobenzothiazole (149-30-4)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Mercury (CAS No. Not Applicable)	A, A-S, AA, AA-S	0.7		H(WS)	B
	GA	0.7		H(WS)	B
	A, A-S, AA, AA-S, B, C, D	7×10^{-4}*		H(FC)	B
	SA, SB, SC, I, SD	7×10^{-4}*		H(FC)	B
	A, A-S, AA, AA-S, B, C	0.77*		A(C)	
	A, A-S, AA, AA-S, B, C, D	1.4*		A(A)	
	A, A-S, AA, AA-S, B, C, D	0.0026*		W	
	SA, SB, SC, I, SD	0.0026*		W	
Remark * Applies to dissolved form.					
Methacrylic acid (79-41-4)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Methacrylonitrile (126-98-7)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Methomyl (16752-77-5)	GA	*		H(WS)	
Remark: * Refer to entry for "Aldicarb and Methomyl."					
Methoxychlor (72-43-5)	A, A-S, AA, AA-S	35		H(WS)	H
	GA	35		H(WS)	F
	A, A-S, AA, AA-S, B, C	0.03*		A(C)	
	SA, SB, SC	0.03		A(C)	
	I		0.03	A(C)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
(1-Methoxyethyl) benzene (4013-34-7)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
(2-Methoxyethyl) benzene (3558-60-9)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
N-Methylaniline (100-61-8)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Methylbenz(a)anthracenes (CAS No. Not Applicable)	A, A-S, AA, AA-S		0.002*	H(WS)	A
	GA		0.002*	H(WS)	A
Remark: * Applies to the sum of these substances.					
Methyl chloride (74-87-3)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2-Methyl-4-chlorophenoxyacetic acid (94-74-6)	GA	0.44		H(WS)	F
4,4'-Methylene-bis-(2-chloroaniline) (101-14-4)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
4,4'-Methylene-bis-(N-methyl)-aniline (1807-55-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4,4'-Methylene-bis-(N,N'-dimethyl) aniline (101-61-1)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Methylene bisthiocyanate (6317-18-6)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
	A, A-S, AA, AA-S, B, C	1.0*		A(C)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
Methylene chloride (75-09-2)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C, D	200		H(FC)	A
	SA,SB, SC, I, SD	200		H(FC)	A
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-(1-Methylethoxy)-1-butanol (31600-69-8)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
2-Methylethyl-1,3-dioxolane (126-39-6)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Methyl ethyl ketone (78-93-3)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
Methyl iodide (74-88-4)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Methyl methacrylate (80-62-6)	GA	50		H(WS)	J

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
2-Methylnaphthalene (91-57-6)	A, A-S, AA, AA-S, B, C		4.7	A(C)	
	A, A-S, AA, AA-S, B, C, D		42	A(A)	
	SA, SB, SC, I		4.2	A(C)	
	SA, SB, SC, I, SD		38	A(A)	
Methyl parathion (298-00-0)	GA	*		H(WS)	
	A, A-S, AA, AA-S, B, C	*		A(C)	
Remark: * Refer to entry for "Parathion and Methyl parathion."					
alpha-Methylstyrene (98-83-9)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2-Methylstyrene (611-15-4)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3-Methylstyrene (100-80-1)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Methylstyrene (622-97-9)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Metribuzin (21087-64-9)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA	50		H(WS)	J
Mirex (2385-85-5)	A, A-S, AA, AA-S	0.03		H(WS)	A
	GA	0.03		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	1×10^{-6}		H(FC)	A
	SA, SB, SC, I, SD	1×10^{-6}		H(FC)	A
	A, A-S, AA, AA-S, B, C	0.001*		A(C)	
	D	0.001*		A(A)	
	SA, SB, SC	0.001		A(C)	
	I		0.001	A(C)	
	SD		0.001	A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).					
Nabam (142-59-6)	GA	1.8		H(WS)	F

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Naphthalene (91-20-3)	A, A-S, AA, AA-S, B, C		13	A(C)	
	A, A-S, AA, AA-S, B, C, D		110	A(A)	
	SA, SB, SC, I		16	A(C)	
	SA, SB, SC, I, SD		140	A(A)	
	A, A-S, AA, AA-S	10		E	U
	GA		10	E	U
Niacinamide (98-92-0)	A, A-S, AA, AA-S	500		H(WS)	B
	GA		500	H(WS)	B
Nickel (CAS No. Not Applicable)	A, A-S, AA, AA-S	100		H(WS)	B
	GA	100		H(WS)	B
	A, A-S, AA, AA-S, B, C	*		A(C)	
	A, A-S, AA, AA-S, B, C, D	**		A(A)	
	SA, SB, SC, I	8.2		A(C)	
	SA, SB, SC, I, SD	74		A(A)	
Remarks: * (0.997) exp (0.846 [ln (hardness)] + 0.0584) ** (0.998) exp (0.846 [ln (hardness)] + 2.255) Aquatic Type standards apply to dissolved form.					
Nitralin (4726-14-1)	GA	35		H(WS)	F
Nitrate (expressed as N) (CAS No. Not Applicable)	A, A-S, AA, AA-S	10,000*		H(WS)	G
	GA	10,000*		H(WS)	G
Remark: * Also see entry for "Nitrate and Nitrite."					
Nitrate and Nitrite (expressed as N) (CAS No. Not Applicable)	A, A-S, AA, AA-S	10,000*		H(WS)	G
	GA	10,000*		H(WS)	G
Remark: * Applies to the sum of these substances; also see individual standards for "Nitrate" and "Nitrite."					
Nitrilotriacetic acid (CAS No. Not Applicable)	A, A-S, AA, AA-S	3*		H(WS)	A
	GA	3*		H(WS)	A
	A, A-S, AA, AA-S, B, C	5,000**		A(C)	
Remarks: * Includes related forms that convert to nitrilotriacetic acid upon acidification to a pH of 2.3 or less. ** Applies to nitrilotriacetate. ** For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
Nitrite (expressed as N) (CAS No. Not Applicable)	A, A-S, AA, AA-S	1,000*		H(WS)	G
	GA	1,000*		H(WS)	G
	A, A-S, AA, AA-S, B, C	**		A(C)	
Remarks: * Also see entry for "Nitrate and Nitrite." ** Standard is 100 ug/L for warm water fishery waters and 20 ug/L for cold water fishery waters. ** For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
2-Nitroaniline (88-74-4)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3-Nitroaniline (99-09-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Nitroaniline (100-01-6)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Nitrobenzene (98-95-3)	A, A-S, AA, AA-S	0.4		H(WS)	A
	GA	0.4		H(WS)	A
	A, A-S, AA, AA-S	30		E	U
N-Nitrosodiphenylamine (86-30-6)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
2-Nitrotoluene (88-72-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3-Nitrotoluene (99-08-1)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
4-Nitrotoluene (99-99-0)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
5-Nitro-o-toluidine (99-55-8)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Octachlorostyrene (29082-74-4)	A, A-S, AA, AA-S	0.2		H(WS)	B
	GA	0.2		H(WS)	B
	A, A-S, AA, AA-S, B, C, D	6×10^{-6}		H(FC)	B
	SA, SB, SC, I, SD	6×10^{-6}		H(FC)	B
Oxamyl (23135-22-0)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA	50		H(WS)	J
Paraquat (4685-14-7)	GA	3.0		H(WS)	F
Parathion (56-38-2)	GA	*		H(WS)	
	A, A-S, AA, AA-S, B, C	*		A(C)	
	A, A-S, AA, AA-S, B, C, D	0.065		A(A)	
Remark: * Refer to entry for "Parathion and Methyl parathion."					
Parathion and Methyl parathion (56-38-2; 298-00-0)	GA	1.5*		H(WS)	F
	A, A-S, AA, AA-S, B, C	0.008**		A(C)	
Remarks: * Applies to the sum of these substances. ** Applies to the sum of these substances. For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).					
Pendimethalin (40487-42-1)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Pentachlorobenzene (608-93-5)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Pentachloroethane (76-01-7)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Pentachloronitrobenzene (82-68-8)	GA	ND		H(WS)	F
Pentachlorophenol (87-86-5)	A, A-S, AA, AA-S, B, C	*		A(C)	
	A, A-S, AA, AA-S, B, C, D	**		A(A)	
	A, A-S, AA, AA-S	***		E	
	GA	***		E	
	B, C, D	****		E	
Remarks: * exp [1.005 (pH) - 5.134] ** exp [1.005 (pH) - 4.869] *** Refer to entry for "Phenolic compounds (total phenols)." **** Refer to entry for "Phenols, total chlorinated."					
Phenanthrene (85-01-8)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
	A, A-S, AA, AA-S, B, C		5.0	A(C)	
	A, A-S, AA, AA-S, B, C, D		45	A(A)	
	SA, SB, SC, I		1.5	A(C)	
	SA, SB, SC, I, SD		14	A(A)	
Phenol (108-95-2)	A, A-S, AA, AA-S	*		E	
	GA	*		E	
	B, C, D	**		E	
Remarks: * Refer to entry for "Phenolic compounds (total phenols)." ** Refer to entry for "Phenols, total unchlorinated."					
Phenolic compounds (total phenols) (CAS No. Not Applicable)	A, A-S, AA, AA-S	1*		E	U
	GA	1*		E	U
Remark: * Applies to the sum of these substances.					
Phenols, total chlorinated (CAS No. Not Applicable)	A, A-S, AA, AA-S	*		E	
	GA	*		E	
	A, A-S, AA, AA-S, B, C, D	1.0**		E	V
Remarks: * Refer to entry for "Phenolic compounds (total phenols)." ** Applies to the sum of these substances.					
Phenols, total unchlorinated (CAS No. Not Applicable)	A, A-S, AA, AA-S	*		E	
	GA	*		E	
	A, A-S, AA, AA-S, B, C, D	5.0**		E	V
Remarks: * Refer to entry for "Phenolic compounds (total phenols)." ** Applies to the sum of these substances.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
1,2-Phenylenediamine (95-54-5)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,3-Phenylenediamine (108-45-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,4-Phenylenediamine (106-50-3)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Phenyl ether (101-84-8)	A, A-S, AA, AA-S	10		E	U
	GA		10	E	U
Phenylhydrazine (100-63-0)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Phenylpropanolamine (14838-15-4)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
3-Phenyl-1-propene (637-50-3)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
cis-1-Phenyl-1-propene (766-90-5)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
trans-1-Phenyl-1-propene (873-66-5)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Phorate (298-02-2)	GA	*		H(WS)	
Remark: * Refer to entry for "Phorate and Disulfoton."					
Phorate and Disulfoton (298-02-2; 298-04-4)	GA	ND*		H(WS)	F
Remark: * Applies to sum of these substances.					
Phosphorus (CAS No. Not Applicable)	A, A-S, AA, AA-S, B		20*	**	**
Remarks: * Applies only where the letter "P" (ponds, lakes and reservoirs) appears in the Water Index Number, excluding Lake Champlain. The department is considering site-specific values for Lake Champlain and for Lake Ontario and Lake Erie, both of which do not have the letter "P" designation. ** Based on aesthetic effects for primary and secondary contact recreation.					
Picloram (CAS No. Not Applicable)	A, A-S, AA, AA-S		50*	H(WS)	Z
	GA	50*		H(WS)	J
Remark: * Includes: related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.					
Polybrominated biphenyls (CAS No. Not Applicable)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. Value applies to each congener individually. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to each congener individually.					
Polychlorinated biphenyls (CAS No. Not Applicable)	A, A-S, AA, AA-S	0.09*		H(WS)	A
	GA	0.09*		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	1×10^{-6}*		H(FC)	A
	SA, SB, SC, I, SD	1×10^{-6}*		H(FC)	A
	A, A-S, AA, AA-S, B, C, D	1.2×10^{-4}*		W	
	SA, SB, SC, I, SD	1.2×10^{-4}*		W	
Remark: * Applies to the sum of these substances.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Principal organic contaminant (CAS No. Not Applicable)	GA	5		H(WS)	J

Remarks: This standard applies to any and every individual substance, whether listed in this Table or not, that is in one of the principal organic contaminant classes as defined in 6 NYCRR 700.1 except any substance that has a H(WS) Type standard for class GA waters (other than 5 ug/L with Basis Code J) listed elsewhere in this Table.

For the convenience of the reader, the principal organic contaminant standard of 5 ug/L (Basis Code J), is listed in this Table for some (but not all) substances regulated by this standard.

A less stringent guidance value for an individual substance may be substituted for this standard if so determined by the Commissioner of the New York State Department of Health.

Prometon (1610-18-0)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA	50		H(WS)	J
Propachlor (1918-16-7)	GA	35		H(WS)	F
Propanil (709-98-8)	GA	7.0		H(WS)	F
Propazine (139-40-2)	GA	16		H(WS)	F
Propham (122-42-9)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA	50		H(WS)	J
n-Propylbenzene (103-65-1)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Pyrene (129-00-0)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
	A, A-S, AA, AA-S, B, C		4.6	A(C)	
	A, A-S, AA, AA-S, B, C, D		42	A(A)	
Pyridine (110-86-1)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS	Z
Quaternary ammonium compounds (including dimethyl benzyl ammonium chloride & dimethyl ethyl benzyl ammonium chloride) (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	10*		A(C)	

Remarks: * Applies to the sum of these substances.
* For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Radium 226	A, AA	*		H(WS)	H
(CAS No. Not Applicable)	A-S, AA-S		*	H(WS)	H
	GA	*		H(WS)	H
Remark: * 3 picocuries per liter; also see entry for "Radium 226 and Radium 228."					
Radium 226 and Radium 228	A, A-S, AA, AA-S	*		H(WS)	G
(CAS No. Not Applicable)	GA	*		H(WS)	G
Remark: * 5 picocuries per liter; Applies to the sum of these substances.					
Radium 228	A, A-S, AA, AA-S	*		H(WS)	
(CAS No. Not Applicable)	GA	*		H(WS)	
Remark: * Refer to entry for "Radium 226 and Radium 228."					
Selenium	A, A-S, AA, AA-S	10		H(WS)	G
(CAS No. Not Applicable)	GA	10		H(WS)	G
	A, A-S, AA, AA-S, B, C	4.6*		A(C)	
Remark: * Aquatic Type standard applies to dissolved form.					
Silver	A, A-S, AA, AA-S	50		H(WS)	G
(CAS No. Not Applicable)	GA	50		H(WS)	F
	A, A-S, AA, AA-S, B, C	0.1*		A(C)	
	D	**		A(A)	
	SD	2.3		A(A)	
Remarks: * Applies to ionic silver. ** exp (1.72 [ln (ppm hardness)] - 6.52) Standards for D and SD Classes apply to acid-soluble form. For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).					
Simazine	A, A-S, AA, AA-S	0.5		H(WS)	A
(122-34-9)	GA	0.5		H(WS)	A
Sodium	GA	20,000		H(WS)	H
(CAS No. Not Applicable)					
Strontium 90	A, A-S, AA, AA-S	*		H(WS)	G
(CAS No. Not Applicable)					
Remarks: * 8 picocuries per liter. If two or more radionuclides are present, the sum of their doses shall not exceed an annual potential dose of 4 millirems per year.					
Styrene	A, A-S, AA, AA-S		5*	H(WS)	I
(100-42-5)	GA	**		H(WS)	J
	A, A-S, AA, AA-S	50		E	U
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Sulfate	A, A-S, AA, AA-S	250,000		H(WS)	G
(CAS No. Not Applicable)	GA	250,000		H(WS)	F
Sulfides, total	A, A-S, AA, AA-S, B, C	**		A(C)	
(CAS No. Not Applicable)	SA, SB, SC	**		A(C)	
	I		**	A(C)	
	A, A-S, AA, AA-S		50*	E	U
	GA		50*	E	U

Remarks: Values listed apply to sum of these substances.
* Expressed as hydrogen sulfide.
** Refer to entry for "Hydrogen Sulfide."

Sulfite	A, A-S, AA, AA-S, B, C	200*		A(C)	
(CAS No. Not Applicable)					

Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c).

Tebuthiuron	A, A-S, AA, AA-S		50	H(WS)	Z
(34014-18-1)	GA	50		H(WS)	J
Terbacil	GA	50		H(WS)	J
(5902-51-2)					
Terbufos	A, A-S, AA, AA-S		0.09	H(WS)	B
(13071-79-9)	GA		0.09	H(WS)	B
Tetrachlorobenzenes	A, A-S, AA, AA-S		5***	H(WS)	I
(634-66-2; 634-90-2; 95-94-3;	GA	*		H(WS)	J
12408-10-5)	A, A-S, AA, AA-S	10**		E	U
	GA		10**	E	U

Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to each isomer (1,2,3,4-, 1,2,3,5-, and 1,2,4,5-tetrachlorobenzene) individually.
** Applies to the sum of 1,2,3,4-, 1,2,3,5- and 1,2,4,5-tetrachlorobenzene.
*** This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent specific MCL. Value applies to each isomer individually.

1,1,1,2-Tetrachloroethane	A, A-S, AA, AA-S	5		H(WS)	I
(630-20-6)	GA	*		H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

1,1,2,2-Tetrachloroethane	A, A-S, AA, AA-S		0.2	H(WS)	A
(79-34-5)	GA	*		H(WS)	J

Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Tetrachloroethene (127-18-4)	A, A-S, AA, AA-S		0.7	H(WS)	A
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C, D		1	H(FC)	
	SA, SB, SC, I, SD		1	H(FC)	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Tetrachloroterephthalic acid (2136-79-0)	GA	50		H(WS)	J
alpha, alpha, alpha, 4-Tetrachloro-toluene (5216-25-1)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Tetrahydrofuran (109-99-9)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
1,2,3,4-Tetramethylbenzene (488-23-3)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,2,3,5-Tetramethylbenzene (527-53-7)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,2,4,5-Tetramethylbenzene (95-93-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance..					
Thallium (CAS No. Not Applicable)	A, A-S, AA, AA-S		0.5	H(WS)	B
	GA		0.5	H(WS)	B
	A, A-S, AA, AA-S, B, C	8*		A(C)	
	D	20		A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c). Aquatic Type standards apply to acid-soluble form.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Theophylline	A, A-S, AA, AA-S	40		H(WS)	B
(58-55-9)	GA		40	H(WS)	B
Thiram	GA	1.8		H(WS)	F
(137-26-8)					
Toluene	A, A-S, AA, AA-S	5		H(WS)	I
(108-88-3)	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C, D	6,000		H(FC)	B
	SA, SB, SC, I, SD	6,000		H(FC)	B
	A, A-S, AA, AA-S, B, C		100	A(C)	
	A, A-S, AA, AA-S, B, C, D		480	A(A)	
	SA, SB, SC, I		92	A(C)	
	SA, SB, SC, I, SD		430	A(A)	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Toluene-2,4-diamine	A, A-S, AA, AA-S		5*	H(WS)	I
(95-80-7)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.					
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Toluene-2,5-diamine	A, A-S, AA, AA-S		5*	H(WS)	I
(95-70-5)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.					
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Toluene-2,6-diamine	A, A-S, AA, AA-S		5*	H(WS)	I
(823-40-5)	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL.					
** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
o-Toluidine	A, A-S, AA, AA-S		0.6	H(WS)	A
(95-53-4)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Tolyltriazole	A, A-S, AA, AA-S		50	H(WS)	Z
(29385-43-1)	GA		50	H(WS)	Z

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Toxaphene (8001-35-2)	A, A-S, AA, AA-S	0.06		H(WS)	A
	GA	0.06		H(WS)	A
	A, A-S, AA, AA-S, B, C, D	6×10^{-6}		H(FC)	A
	SA, SB, SC, I, SD	6×10^{-6}		H(FC)	A
	A, A-S, AA, AA-S, B, C	0.005		A(C)	
	D	1.6*		A(A)	
	SA, SB, SC	0.005		A(C)	
	I		0.005	A(C)	
	SD		0.07	A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic standard if so determined under 702.15 (d).					
1,2,4-Tribromobenzene (615-54-3)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Tributyltin oxide (56-35-9)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
2,4,6-Trichloroaniline (634-93-5)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Trichlorobenzenes (87-61-6; 120-82-1; 108-70-3; 12002-48-1)	A, A-S, AA, AA-S		5***	H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C	5**		A(C)	
	SA, SB, SC	5**		A(C)	
	I		5**	A(C)	
	A, A-S, AA, AA-S	10**		E	U
	GA		10**	E	U
	D	50**		E	V
	SD	50**		E	V
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to each isomer (1,2,3-, 1,2,4- and 1,3,5-trichlorobenzene) individually. ** Applies to the sum of 1,2,3-, 1,2,4- and 1,3,5-trichlorobenzene. For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c). *** This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. Value applies to each isomer individually.					
1,1,1-Trichloroethane (71-55-6)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
1,1,2-Trichloroethane	A, A-S, AA, AA-S	1		H(WS)	A
(79-00-5)	GA	1		H(WS)	A
Trichloroethene	A, A-S, AA, AA-S	5		H(WS)	I
(79-01-6)	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C, D	40		H(FC)	A
	SA, SB, SC, I, SD	40		H(FC)	A
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Trichlorofluoromethane	A, A-S, AA, AA-S	5		H(WS)	I
(75-69-4)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4,5-Trichlorophenoxyacetic acid (93-76-5)	GA	35		H(WS)	F
2,4,5-Trichlorophenoxypropionic acid	A, A-S, AA, AA-S	10		H(WS)	G
(93-72-1)	GA	0.26		H(WS)	F
1,1,2-Trichloropropane	A, A-S, AA, AA-S	5		H(WS)	I
(598-77-6)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,2,3-Trichloropropane	A, A-S, AA, AA-S	0.04		H(WS)	A
(96-18-4)	GA	0.04		H(WS)	A
cis-1,2,3-Trichloropropene	A, A-S, AA, AA-S	5		H(WS)	I
(13116-57-9)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
trans-1,2,3-Trichloropropene	A, A-S, AA, AA-S	5		H(WS)	I
(13116-58-0)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
alpha,2,4-Trichlorotoluene	A, A-S, AA, AA-S	5		H(WS)	I
(94-99-5)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
alpha,2,6-Trichlorotoluene	A, A-S, AA, AA-S	5		H(WS)	I
(2014-83-7)	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
alpha,3,4-Trichlorotoluene (102-47-6)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
alpha,alpha,2-Trichlorotoluene (88-66-4)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
alpha,alpha,4-Trichlorotoluene (13940-94-8)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,3,4-Trichlorotoluene (7359-72-0)	A, A-S, AA, AA-S GA	*	0.34	H(WS) H(WS)	B J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,3,5-Trichlorotoluene (56961-86-5)	A, A-S, AA, AA-S GA	*	0.34	H(WS) H(WS)	B J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,3,6-Trichlorotoluene (2077-46-5)	A, A-S, AA, AA-S GA	*	0.34	H(WS) H(WS)	B J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4,5-Trichlorotoluene (6639-30-1)	A, A-S, AA, AA-S GA	*	0.34	H(WS) H(WS)	B J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4,6-Trichlorotoluene (23749-65-7)	A, A-S, AA, AA-S GA	*	0.34	H(WS) H(WS)	B J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,1,1-Trichloro-2,2,2-trifluoroethane (354-58-5)	A, A-S, AA, AA-S GA	5 *		H(WS) H(WS)	I J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
1,1,2-Trichloro-1,2,2-trifluoroethane (76-13-1)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Trifluralin (1582-09-8)	GA	35		H(WS)	F
1,2,3-Trimethylbenzene (526-73-8)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,2,4-Trimethylbenzene (95-63-6)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C		33	A(C)	
	A, A-S, AA, AA-S, B, C, D		290	A(A)	
	SA, SB, SC, I		19	A(C)	
	SA, SB, SC, I, SD		170	A(A)	
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
1,3,5-Trimethylbenzene (108-67-8)	A, A-S, AA- AA-S	5		H(WS)	I
	GA	*		H(WS)	J
Remark: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,3,6-Trimethylpyridine (1462-84-6)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
2,4,6-Trimethylpyridine (108-75-8)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
sym-Trinitrobenzene (99-35-4)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,3,4-Trinitrotoluene (602-29-9)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
2,3,6-Trinitrotoluene (18292-97-2)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4,5-Trinitrotoluene (610-25-3)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
2,4,6-Trinitrotoluene (118-96-7)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
3,4,5-Trinitrotoluene (603-15-6)	A, A-S, AA, AA-S		5*	H(WS)	I
	GA	**		H(WS)	J
Remarks: * This substance did not receive a review beyond determining that it is in a principal organic contaminant class and that it does not have a more stringent Specific MCL. ** The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance.					
Triphenyl phosphate (115-86-6)	A, A-S, AA, AA-S		50	H(WS)	Z
	GA		50	H(WS)	Z
	A, A-S, AA, AA-S, B, C	4*		A(C)	
	D	40*		A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d).					
Tritium (CAS No. Not Applicable)	A, A-S, AA, AA-S	*		H(WS)	G
Remark: * 20,000 picocuries per liter; if two or more radionuclides are present, the sum of their annual dose equivalent to the total body or any organ shall not exceed 4 millirems per year.					
Uranyl ion (CAS No. Not Applicable)	GA	5,000		H(WS)	H
Vanadium (CAS No. Not Applicable)	A, A-S, AA, AA-S, B, C	14*		A(C)	
	D	190*		A(A)	
Remark: * For the waters of the Great Lakes System, the Department will substitute a guidance value for the aquatic Type standard if so determined under 702.15 (c) and (d). Aquatic Type standards apply to acid-soluble form.					

Table 1 (Continued)

NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

JUNE 1998

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Vinyl chloride (75-01-4)	A, A-S, AA, AA-S		0.3	H(WS)	A
	GA	2		H(WS)	G
1,2-Xylene (95-47-6)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C		**	A(C)	
	A, A-S, AA, AA-S, B, C, D		**	A(A)	
	SA, SB, SC, I		**	A(C)	
	SA, SB, SC, I, SD		**	A(A)	
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance. ** Refer to entry for "1,4-Xylene."					
1,3-Xylene (108-38-3)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C		**	A(C)	
	A, A-S, AA, AA-S, B, C, D		**	A(A)	
	SA, SB, SC, I		**	A(C)	
	SA, SB, SC, I, SD		**	A(A)	
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance. ** Refer to entry for "1,4-Xylene."					
1,4-Xylene (106-42-3)	A, A-S, AA, AA-S	5		H(WS)	I
	GA	*		H(WS)	J
	A, A-S, AA, AA-S, B, C		65**	A(C)	
	A, A-S, AA, AA-S, B, C, D		590**	A(A)	
	SA, SB, SC, I		19**	A(C)	
	SA, SB, SC, I, SD		170**	A(A)	
Remarks: * The principal organic contaminant standard for groundwater of 5 ug/L (described elsewhere in this Table) applies to this substance. ** Applies to the sum of 1,2-, 1,3- and 1,4-xylene.					
Zinc (CAS No. Not Applicable)	A, A-S, AA, AA-S		2,000	H(WS)	B
	GA		2,000	H(WS)	B
	A, A-S, AA, AA-S, B, C	*		A(C)	
	A, A-S, AA, AA-S, B, C, D	**		A(A)	
	SA, SB, SC, I	66		A(C)	
	SD	95		A(A)	
	A, A-S, AA, AA-S		5,000	E	U
	GA		5,000	E	U
Remarks: Aquatic Type standards apply to dissolved form. * exp(0.85 [ln(ppm hardness)] + 0.50) ** 0.978 exp(0.8473 [ln(ppm hardness)] + 0.884)					
Zineb (12122-67-7)	GA	1.8		H(WS)	F
Ziram (137-30-4)	GA	4.2		H(WS)	F

TABLE 2

EXPLANATION OF BASIS CODES IN TABLE 1

JUNE 1998

BASIS CODE	BASIS
A	Oncogenic, Human Health
B	Non-oncogenic, Human Health
F	Former Groundwater Regulations, 6 NYCRR 703.5(a)(3), Human Health or Aesthetics
G	Specific MCL, Human Health or Aesthetics
H	Former Use of or Reference to 10 NYCRR Part 170, Human Health or Aesthetics
I	Principal Organic Contaminant Classes, Human Health
J	Former Groundwater Reference to 10 NYCRR Subpart 5-1 General Standards, Human Health
U	Potable Water, Aesthetics
V	Aquatic Life, Aesthetics
Z	General Organic Guidance Value, Human Health

TABLE 3

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Acenaphthylene	208-96-8
Acephate	30560-19-1
Acetone cyanohydrin	75-86-5
Acetonitrile	75-05-8
Acetophenone	98-86-2
2-Acetylaminofluorene	53-96-3
Allyl alcohol	107-18-6
Anisole	100-66-3
Aramite	140-57-8
Benzaldehyde	100-52-7
Benzeneacetic acid	103-82-2
1,2-Benzenedicarboxaldehyde	643-79-8
Benzenepropanoic acid	501-52-0
Benzoic acid	65-85-0
Benzoic acid, ammonium salt	1863-63-4
Benzo(g,h,i)perylene	191-24-2
Benzo(e)pyrene	192-97-2
Benzyl alcohol	100-51-6
Benzyl chloride	100-44-7
Bis(pentabromophenyl)ether	1163-19-5
4-Bromophenylphenylether	101-55-3
Bromophos	2104-96-3

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Bronopol	52-51-7
1-Butanol	71-36-3
tert-Butyl alcohol	75-65-0
Cacodylic acid	75-60-5
Caprolactam	105-60-1
Captafol	2425-06-1
Carbazole	86-74-8
Carbon disulfide	75-15-0
Chloral	75-87-6
Chloroacetic acid	79-11-8
Chlorobenzilate	510-15-6
4-Chlorobenzoic acid	74-11-3
2-Chloroethyl vinyl ether	110-75-8
4-(4-Chloro-2-methylphenoxy) butyric acid	94-81-5
2-(4-Chloro-2-methylphenoxy) propionic acid	93-65-2
4-Chlorophenyl phenyl ether	7005-72-3
Chlorpyrifos	2921-88-2
Cimectacarb	95266-40-3
Clopyralid	1702-17-6
Cyanazine	21725-46-2
Cyclohexane	110-82-7
Cyclohexanol	108-93-0

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Cyclohexanone	108-94-1
Cyclohexanone oxime	100-64-1
Cyclohexene	110-83-8
Cyclohexylamine	108-91-8
Cyclopentanone	120-92-3
Cyclotrimethylenetrinitramine	121-82-4
2,4-DB	94-82-6
Decanal	112-31-2
Demeton	8065-48-3
Diallate	2303-16-4
Dibenz(a,h)anthracene	55-70-3
Dibenzofuran	132-64-9
Dibromoacetonitrile	3252-43-5
Dibutyltin chloride	683-18-1
Dibutyltin dilaurate	77-58-7
Dichloroacetic acid	79-43-6
2,3-Dichloro-1,4-napthoquinone	117-80-6
alpha, alpha -Dichlorotoluene	98-87-3
Dicyclopentadiene	77-73-6
Diethylamine	109-89-7
2-(Diethylamino)ethanol	100-37-8
Diethylene glycol	111-46-6

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Diethylene glycol monoethyl ether	111-90-0
Diethyl formamide	617-84-4
Diethyl maleate	141-05-9
o,o-Diethyl-o-2-pyrazinyl phosphorothioate	297-97-2
Diethyltin dycaprylate	2641-56-7
2,3-Dihydro-1,6-dimethyl-1H-indene	17059-48-2
2,3-Dihydro-1-methyl-1H-indene	767-58-8
Diisopropylamine	108-18-9
Diisopropyl ether	108-20-3
Dimethoate	60-51-5
3,3'-Dimethoxybenzidine	119-90-4
Dimethylamine	124-40-3
4-(Dimethylamino)azobenzene	60-11-7
7,12-Dimethylbenz(a)anthracene	57-97-6
Dimethylbenzylammonium chloride	1875-92-9
trans-1,4-Dimethylcyclohexane	2207-04-7
Dimethyldioxane	25136-55-4
Dimethyldithiocarbamate	79-45-8
Dimethylethylbenzylammonium chloride	5197-80-8
2,5-Dimethylfuran	625-86-5
1,1-Dimethylhydrazine	57-14-7
1,2-Dimethylhydrazine	540-73-8

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Dimethylphenylcarbinol	617-94-7
Dimethylterephthalate	120-61-6
1,4-Dioxane	123-91-1
Dodecanoic acid	143-07-7
Endosulfan I	959-98-8
Endosulfan II	33213-65-9
Endosulfan sulfate	1031-07-8
Epichlorohydrin	106-89-8
Ethion	563-12-2
2-Ethoxyethanol	110-80-5
2-Ethoxyethanol acetate	111-15-9
Ethyl acetate	141-78-6
Ethyl acrylate	140-88-5
Ethyl di-n-propylthiocarbamate (EPTC)	759-96-4
Ethylene cyanohydrin	109-78-4
Ethyl ether	60-29-7
Ethyl methacrylate	97-63-2
Ethyl methane sulfonate	62-50-0
Famphur	52-85-7
Formaldehyde	50-00-0
Formic acid	64-18-6
Furan	110-00-9

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Furazolidone	67-45-8
Furfural	98-01-1
Furium	531-82-8
Glycidaldehyde	765-34-4
n-Heptane	142-82-5
1-Heptanol	111-70-6
2-Heptanol	543-49-7
3-Heptanol	589-82-2
4-Heptanol	589-55-9
Hexamethylene diamine	124-09-4
Hexanate	25056-70-6
n-Hexane	110-54-3
3-Hexanone	589-38-8
Hydrazine	302-01-2
3-Hydroxycarbofuran	16655-82-6
alpha-Hydroxy-alpha-methylbenzeneacetic acid	515-30-0
1,3-Isobenzofurandione	85-44-9
1(3H)-Isobenzofuranone	87-41-2
Isobutyl alcohol	78-83-1
Isodecyl diphenylphosphate	29761-21-5
Isopropyl alcohol	67-63-0
Isopropylamine	75-31-0

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Isopropylbenzene hydroperoxide	80-15-9
Isosafrole	120-58-1
Isothiazolones	NA
Linear alkylbenzenesulfonates	NA
Linuron	330-55-2
2,5-Lutidine	589-93-5
Maleic anhydride	108-31-6
Maleic hydrazide	123-33-1
Malononitrile	109-77-3
Methacrylamide	79-39-0
Methanol	67-56-1
Methapyrilene	91-80-5
2-Methoxyethanol	109-86-4
2-Methoxyethanol acetate	110-49-6
2-Methoxy-5-nitroaniline	99-59-2
Methyl acetate	79-20-9
Methylacrylate	96-33-3
Methylamine	74-89-5
2-Methylanthracene	613-12-7
9-Methylanthracene	779-02-2
2-Methylbenzaldehyde	529-20-4
3-Methylbenzaldehyde	620-23-5

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
4-Methylbenzaldehyde	104-87-0
4-Methylbenzenemethanol	589-18-4
2-Methyl benzene sulfonamide	88-19-7
4-Methyl benzene sulfonamide	70-55-3
2-Methylbenzoic acid	118-90-1
3-Methylbenzoic acid	99-04-7
Methyl tert-butyl ether	1634-04-4
3-Methylcholanthrene	56-49-5
Methylcyclopentane	96-37-7
Methylmethanesulfonate	66-27-3
1-Methyl-4-(1-methylethenyl)cyclohexene	138-86-3
2-Methylnaphthalene	91-57-6
Methylolmethacrylamide	923-02-4
4-Methyl-2-pentanone	108-10-1
Methylphthalate	4376-18-5
Metolachlor	51218-45-2
Molinate	2212-67-1
1,4-Naphthoquinone	130-15-4
1-Napthylamine	134-32-7
2-Napthylamine	91-59-8
Nitrocyclohexane	1122-60-7
Nitrofurantoin	67-20-9

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Nitrofurazone	59-87-0
2-Nitropropane	79-46-9
4-Nitroquinoline-1-oxide	56-57-5
N-Nitrosodi-N-butylamine	924-16-3
N-Nitrosodiethylamine	55-18-5
N-Nitrosodimethylamine	62-75-9
N-Nitrosodipropylamine	621-64-7
N-Nitrosomethylethylamine	10595-95-6
N-Nitroso-N-methyl urea	684-93-5
N-Nitrosomorpholine	59-89-2
N-Nitrosopiperidine	100-75-4
N-Nitrosopyrrolidine	930-55-2
Nonanal	124-19-6
1-Nonanol	143-08-8
Octamethylpyrophosphoramine	152-16-9
Oxalic acid, benzyl ester	35448-14-7
Pebulate	1114-71-2
Pentanate	136-25-4
Phenacetin	62-44-2
alpha-Picoline	109-06-8
Polybutene(1-propene,2-methyl homopolymer)	9003-27-4
Prodiamine	29091-21-2

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
Profluralin	26399-36-0
Pronamide	23950-58-5
1-Propanol	71-23-8
1-Propene	115-07-1
Propionitrile	107-12-0
Propylene glycol	58-55-6
Propylene glycol monoethyl ether	19089-47-5
Propylene glycol monomethyl ether	1589-49-7
Propylene oxide	75-56-9
Quaternary ammonium compounds	NA
Quinoline	91-22-5
1,4-Quinone dioxide	105-11-3
Reserpine	50-55-5
Rhodamine WT	37299-86-8
Ronnel	299-84-3
Rotenone	83-79-4
Safrole	94-59-7
Sodium adipate, disodium salt	7486-38-6
Sodium diethyldithiocarbamate	148-18-5
Strychnine	57-24-9
Tetraethyl dithiopyrophosphate	3689-24-5
Tetraethyl lead	78-00-2
Tetraethyl tin	597-64-8

TABLE 3 (Continued)

PARTIAL LIST OF SUBSTANCES NOT REGULATED BY THE PRINCIPAL ORGANIC CONTAMINANT (POC) GROUNDWATER STANDARD

JUNE 1998

Note: Refer to Text of Part I for Explanation

(No standard or guidance value for groundwater is available for these substances as of the date of this document)

SUBSTANCE	CAS NO.
2-(Thiocyanomethylthio) benzothiazole	21564-17-0
Thiofanox	39196-18-4
Thiourea	62-56-6
Toluene diisocyanate	584-84-9
Triallate	2303-17-5
Trichloroacetic acid	76-03-9
alpha, alpha, alpha-Trichlorotoluene	98-07-7
Triethylamine	121-44-8
o,o,o-Triethylphosphorothioate	126-68-1
3,3,5-Trimethylcyclohexanone	873-94-9
Trimethyl phosphate	512-56-1
Vernolate	1929-77-7
Vinyl acetate	108-05-4
Warfarin	81-81-2
NA = Not Applicable	

TABLE 4

DEFINITION FOR PRINCIPAL ORGANIC CONTAMINANT CLASSES*

(excerpted from 6 NYCRR Section 700.1)

JUNE 1998

Principal organic contaminant classes means the following classes of organic chemicals.

(1) Halogenated alkane: Compound containing carbon (C), hydrogen (H) and halogen (X) where X = fluorine (F), chlorine (Cl), bromine (Br) and/or iodine (I), having the general formula $C_nH_yX_z$, where $y + z = 2n + 2$; n, y and z are integer variables; n and z are equal to or greater than one and y is equal to or greater than zero. Specifically excluded from this class are chloroform, bromoform, bromodichloromethane and dibromochloromethane.

(2) Halogenated ether: Compound containing carbon (C), hydrogen (H), oxygen (O) and halogen (X) (where X = F, Cl, Br and/or I) having the general formula $C_nH_yX_zO$, where $y + z = 2n + 2$; the oxygen is bonded to two carbons; n, y and z are integer variables; n is equal to or greater than two, y is equal to or greater than zero and z is equal to or greater than one.

(3) Halobenzenes and substituted halobenzenes: Derivatives of benzene which have at least one halogen atom attached to the ring and which may or may not have straight or branched chain hydrocarbon, nitrogen or oxygen substituents.

(4) Benzene and alkyl- or nitrogen-substituted benzenes: Benzene or a derivative of benzene which has either an alkyl- and/or a nitrogen-substituent.

(5) Substituted, unsaturated hydrocarbons: A straight or branched chain unsaturated hydrocarbon compound containing one of the following: halogen, aldehyde, nitrile, amide.

(6) Halogenated non-aromatic cyclic hydrocarbons: A non-aromatic cyclic compound containing a halogen.

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*Note: Determining the applicability of the POC groundwater standard to a specific substance can be a complex process that should not be undertaken using these definitions alone. Refer to Section III of the Introduction of this TOGS (page 7) for instructions.

PART II GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

The Division of Water (DOW) regulates point source discharges to class GA groundwater primarily through the use of effluent limitations that have been established statewide. These effluent limitations are set at concentrations that should prevent contaminants from exceeding ambient groundwater standards and guidance values, which are applicable in the saturated zone. Class GA groundwaters are all fresh groundwaters. Groundwater effluent limitations are provided in Table 5 and discussed in this Part. (Ambient standards and guidance values that relate to these effluent limitations were provided in Table 1 of this TOGS and described in Part I).

A. DEFINITIONS

This section presents definitions for key terms that are used in the text and tables. The definitions are similar to the ones that appear in regulation, Part 700. Additional explanation is provided where appropriate.

1. "Groundwaters" mean those waters in saturated zones.

2. "Saturated zones" mean any extensive portion of the earth's crust that contains sufficient water to fill all interconnected voids or pore space.

3. "Fresh groundwaters" mean those groundwaters having a chloride concentration equal to or less than 250 mg/L or a total dissolved solids concentration equal to or less than 1,000 mg/L.

4. "Saline groundwaters" mean groundwaters having a chloride concentration of more than 250 mg/L or a total dissolved solids concentration of more than 1,000 mg/L.

5. "Groundwater standards" and "groundwater guidance values" both mean such measures of purity or quality for any groundwaters in relation to their reasonable and necessary use. "Groundwater standards" are established by the Department pursuant to section 17-0301 of the Environmental Conservation Law, which means the values are included in regulation. "Groundwater guidance values" are established by the Department pursuant to section 702.1 of Title 6, which means the specific values are not in regulation.

   Such standards and guidance values are often referred to as <u>ambient</u> values in this document to emphasize that they apply to samples of groundwater and are distinct from <u>effluent</u> limitations, which apply to samples of wastewater at the point of discharge.

6. "Groundwater effluent limitations" mean any restriction on quantities, qualities, rates and concentrations of chemical, physical, biological, and other constituents of effluents that are discharged into or allowed to run from an outlet or point source or any other discharge within the meaning of section 17-0501 of the Environmental Conservation Law into groundwater or unsaturated zones. Some groundwater effluent limitations are in regulation (703.6); the remainder are guidance.

B. GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

A groundwater effluent limitation is derived to prevent a contaminant from exceeding the ambient standard or guidance value in the saturated zone. An effluent limitation generally is set at or near the ambient value, partly on the assumption that for many toxic substances, sustained high percent removal in the unsaturated zone cannot be relied upon. The approach used provides a high degree of certainty that the ambient value will not be exceeded and also avoids the need for site-specific evaluations, which would be technically difficult, costly and time consuming.

Groundwater effluent limitations are presented in Table 5, alphabetically by substance. The same substance names as in Table 1 are used. The reader is cautioned that, as for ambient values, groundwater effluent limitations may apply to substances that may be identified only by a group entry, including "Principal organic contaminant." Guidance in Part I, Sections A and B should be useful to determining whether an effluent limitation exists for a particular substance.

The second column lists the groundwater effluent limitation in ug/L, unless otherwise noted. The third column, entitled "Category," provides information about the basis for the effluent limitation. (The Category is not the same as the Basis Code in Table 1.) The five Categories are as follows:

Category A Effluent limitations that are in regulation (6 NYCRR 703.6)

Category B Effluent limitations that are numerically equal to ambient guidance values, as provided in 702.16(c)(1).

Category C Effluent limitations that are derived in this document for substances that have an ambient standard, but no corresponding effluent limitation in 703.6. (For organic substances, the effluent limitations have been set equal to the ambient standards. For metals, the effluent limitations have been set at twice the ambient standard.)

Category D Effluent limitations for sodium and ammonia require case-by-case determinations. Significant removal of these substances can occur in the unsaturated zone and will be a function of site-specific factors.

Also, as indicated in Table 5, effluent limitations for radiological parameters will be established through Radiation Control Permits, Part 380.

As listed under "Organic substances, total" in Table 5, an effluent limitation of 100 ug/L for the total of certain organic substances is applicable, as provided in 702.16(c)(4). The substances that can be specified for this limitation are those organic substances that have an ambient groundwater standard or guidance value less than 100 ug/L. This includes all substances covered by the principal organic contaminant (POC) groundwater standard (Table 1) and other applicable "group" entries, whether they are listed individually in this TOGS or not.

C. IMPLEMENTATION OF GROUNDWATER EFFLUENT LIMITATIONS

1. Gross or Net Limitations.

Effluent limitations as listed in Table 5 are defined as gross limitations (i.e., without mathematical subtraction of the amounts present in intake water). These gross effluent limitations, however, may not be appropriate where the concentration of a substance in the receiving aquifer exceeds the effluent limitation. General guidance for these situations is provided in other TOGS documents relating to the preparation of SPDES permits.

2. Modifications of Effluent Limitations

Section 702.19 allows, under certain conditions, modification of a groundwater effluent limitation. This includes those effluent limitations in 703.6 and those derived as numerically equivalent to a H(WS) Type guidance value. The included limitations are thus those designated as Categories A and B in Table 5. Such modifications may be allowed where the applicant demonstrates that a less restrictive effluent limitation will be sufficient to prevent groundwater concentrations from exceeding the ambient value. SPDES applications for such modifications are governed by the Uniform Procedures Act and require public notice of the proposed modification.

3. Exceptions to Effluent Limitations

The water quality regulations, section 702.21, provide exceptions for three activities to the requirement to impose the numerical effluent limitations in Table 5. Effluent limitations for the two point source activities, i.e., certain sewage and land application systems, should be determined on a case-by-case basis to achieve or maintain ambient standards and guidance values.

Table 5

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Acenaphthene (83-32-9)	20	B
Acetone (67-64-1)	50	B
Acrolein (107-02-8)	5	C
Acrylamide (79-06-1)	5	C
Acrylic acid (79-10-7)	50	B
Acrylonitrile (107-13-1)	5	C
Alachlor (15972-60-8)	0.5	A
Aldicarb (116-06-3)	*	
Remark: * See "Aldicarb and Methomyl."		
Aldicarb and Methomyl (116-06-3;16752-77-5)	0.35	A
Aldicarb sulfone (1646-88-4)	2	B
Aldicarb sulfoxide (1646-87-3)	4	B
Aldrin (309-00-2)	ND	A
Alkyl dimethyl benzyl ammonium chloride (68391-01-5)	50	B
Alkyl diphenyl oxide sulfonates (CAS No. Not Applicable)	50*	B
Remark: * Applies to each alkyl diphenyl oxide sulfonate individually.		
Allyl chloride (107-05-1)	5	C
Aluminum (CAS No. Not Applicable)	2,000	A
Ametryn (834-12-8)	50	C
4-Aminobiphenyl (92-67-1)	5	C
Aminocresols (95-84-1; 2835-95-2; 2835-99-6)	*	
Remark: * See "Phenolic compounds (total phenols)."		
Aminomethylene phosphonic acid salts (CAS No. Not Applicable)	50*	B
Remark: * Applies to each aminomethylene phosphonic acid salt individually.		
Aminopyridines (462-08-8; 504-24-5; 504-29-0; 26445-05-6)	1*	B
Remark: * Applies to the sum of these substances.		
3-Aminotoluene (108-44-1)	5	C
4-Aminotoluene (106-49-0)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Ammonia and Ammonium (7664-41-7; CAS No. Not Applicable)	*	D
Remark: * $NH_3 + NH_4^+$ as N. Case-by-case determination of need and quantity.		
Aniline (62-53-3)	5	C
Anthracene (120-12-7)	50	B
Antimony (CAS No. Not Applicable)	6	A
Arsenic (CAS No. Not Applicable)	50	A
Aryltriazoles (CAS No. Not Applicable)	50*	B
Remark: * Applies to each aryltriazole individually.		
Asbestos (fibers > 10 um) (CAS No. Not Applicable)	14,000,000 fibers/L	A
Atrazine (1912-24-9)	7.5	A
Azinphosmethyl (86-50-0)	4.4	A
Azobenzene (103-33-3)	5	C
Barium (CAS No. Not Applicable)	2,000	A
Benefin (1861-40-1)	35	A
Benz(a)anthracene (56-55-3)	0.002	B
Benzene (71-43-2)	1	A
Benzidine (92-87-5)	5	C
Benzisothiazole (271-61-4)	50	B
Benzo(b)fluoranthene (205-99-2)	0.002	B
Benzo(k)fluoranthene (207-08-9)	0.002	B
Benzo(a)pyrene (50-32-8)	ND	A
Beryllium (CAS No. Not Applicable)	3	B
1,1'-Biphenyl (92-52-4)	5	C
Bis(2-chloroethoxy)methane (111-91-1)	5	C
Bis(2-chloroethyl)ether (111-44-4)	1.0	A
Bis(chloromethyl)ether (542-88-1)	5	C
Bis(2-chloro-1-methylethyl)ether (108-60-1)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Bis(2-ethylhexyl)phthalate (117-81-7)	5	A
Boric acid, Borates & Metaborates (CAS No. Not Applicable)	125*	B
Remark: * Applies as boron equivalents to the sum of these substances.		
Boron (CAS No. Not Applicable)	2,000	C
Bromacil (314-40-9)	4.4	A
Bromide (CAS No. Not Applicable)	2,000	B
Bromobenzene (108-86-1)	5	C
Bromochloromethane (74-97-5)	5	C
Bromodichloromethane (75-27-4)	50	B
Bromoform (75-25-2)	50	B
Bromomethane (74-83-9)	5	C
Butachlor (23184-66-9)	3.5	A
cis-2-Butenal (15798-64-8)	5	C
trans-2-Butenal (123-73-9)	5	C
cis-2-Butenenitrile (1190-76-7)	5	C
trans-2-Butenenitrile (627-26-9)	5	C
Butoxyethoxyethanol (112-34-5)	50	B
Butoxypropanol (5131-66-8)	50	B
Butylate (2008-41-5)	50	C
n-Butylbenzene (104-51-8)	5	C
sec-Butylbenzene (135-98-8)	5	C
tert-Butylbenzene (98-06-6)	5	C
Butyl benzyl phthalate (85-68-7)	50	B
Butyl isopropyl phthalate (CAS No. Not Applicable)	50	B
Cadmium (CAS No. Not Applicable)	10	A
Captan (133-06-2)	18	A
Carbaryl (63-25-2)	29	A

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Carbofuran (1563-66-2)	15	B
Carbon tetrachloride (56-23-5)	5	A
Carboxin (5234-68-4)	50	C
Chloramben (CAS No. Not Applicable)	50*	A
Remark: * Includes related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.		
Chloranil (118-75-2)	5	C
Chlordane (57-74-9)	0.05	A
Chloride (CAS No. Not Applicable)	500,000	A
Chlorinated dibenzo-p-dioxins and Chlorinated dibenzofurans (CAS No. Not Applicable)	7×10^{-7} equivalents of 2,3,7,8-TCDD*	A
Remark: * Value is for the total of the chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans as equivalents of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) as specified by the ambient Class GA H(WS) standard in Table 1 of this document.		
2-Chloroaniline (95-51-2)	5	C
3-Chloroaniline (108-42-9)	5	C
4-Chloroaniline (106-47-8)	5	C
Chlorobenzene (108-90-7)	5	C
4-Chlorobenzotrifluoride (98-56-6)	5	C
1-Chlorobutane (109-69-3)	5	C
Chloroethane (75-00-3)	5	C
Chloroform (67-66-3)	7	A
Chloromethyl methyl ether (107-30-2)	5	C
2-Chloronaphthalene (91-58-7)	10	B
2-Chloronitrobenzene (88-73-3)	5	C
3-Chloronitrobenzene (121-73-3)	5	C
4-Chloronitrobenzene (100-00-5)	5	C
Chloroprene (126-99-8)	5	C
Chlorothalonil (1897-45-6)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
2-Chlorotoluene (95-49-8)	5	C
3-Chlorotoluene (108-41-8)	5	C
4-Chlorotoluene (106-43-4)	5	C
4-Chloro-o-toluidine (95-69-2)	5	C
5-Chloro-o-toluidine (95-79-4)	5	C
3-Chloro-1,1,1-trifluoropropane (460-35-5)	5	C
Chromium (CAS No. Not Applicable)	100	C
Chromium (hexavalent) (CAS No. Not Applicable)	100	A
Chrysene (218-01-9)	0.002	B
Copper (CAS No. Not Applicable)	1,000	A
Cyanide (CAS No. Not Applicable)	400	A
Cyanogen bromide (506-68-3)	5	C
Cyanogen chloride (506-77-4)	5	C
Dalapon (CAS No. Not Applicable)	50*	C
Remark: * Includes related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.		
p,p'-DDD (72-54-8)	0.3	A
p,p'-DDE (72-55-9)	0.2	A
p,p'-DDT (50-29-3)	0.2	A
Dechlorane Plus (13560-89-9)	5	C
Diazinon (333-41-5)	0.7	A
1,2-Dibromobenzene (583-53-9)	5	C
1,3-Dibromobenzene (108-36-1)	5	C
1,4-Dibromobenzene (106-37-6)	5	C
Dibromochloromethane (124-48-1)	50	B
1,2-Dibromo-3-chloropropane (96-12-8)	0.04	A
Dibromodichloromethane (594-18-3)	5	C
Dibromomethane (74-95-3)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
2,2-Dibromo-3-nitrilopropionamide (10222-01-2)	50	B
Di-n-butyl phthalate (84-74-2)	50	A
Dicamba (1918-00-9)	0.44	A
Dichlorobenzenes (95-50-1;541-73-1;106-47-6)	3*	A
Remark: * Applies to each dichlorobenzene individually.		
3,3'-Dichlorobenzidine (91-94-1)	5	C
3,4-Dichlorobenzotrifluoride (328-84-7)	5	C
cis-1,4-Dichloro-2-butene (1476-11-5)	5	C
trans-1,4-Dichloro-2-butene (110-57-6)	5	C
Dichlorodifluoromethane (75-71-8)	5	C
1,1-Dichloroethane (75-34-3)	5	C
1,2-Dichloroethane (107-06-2)	0.6	A
1,1-Dichloroethene (75-35-4)	5	C
cis-1,2-Dichloroethene (156-59-2)	5	C
trans-1,2-Dichloroethene (156-60-5)	5	C
Dichlorofluoromethane (75-43-4)	5	C
2,4-Dichlorophenol (120-83-2)	*	
Remark: * See "Phenolic compounds (total phenols)."		
2,4-Dichlorophenoxyacetic acid (94-75-7)	50	A
1,1-Dichloropropane (78-99-9)	5	C
1,2-Dichloropropane (78-87-5)	1	A
1,3-Dichloropropane (142-28-9)	5	C
2,2-Dichloropropane (594-20-7)	5	C
1,1-Dichloropropene (563-58-6)	5	C
1,3-Dichloropropene (sum of cis- and trans- isomers) (542-75-6)	0.4	A
2,3-Dichlorotoluene (32768-54-0)	5	C
2,4-Dichlorotoluene (95-73-8)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
2,5-Dichlorotoluene (19398-61-9)	5	C
2,6-Dichlorotoluene (118-69-4)	5	C
3,4-Dichlorotoluene (95-75-0)	5	C
3,5-Dichlorotoluene (25186-47-4)	5	C
Dieldrin (60-57-1)	0.004	A
Di(2-ethylhexyl)adipate (103-23-1)	20	A
Diethyl phthalate (84-66-2)	50	B
1,2-Difluoro-1,1,2,2-tetrachloroethane (76-12-0)	5	C
1,2-Diisopropylbenzene (577-55-9)	5	C
1,3-Diisopropylbenzene (99-62-7)	5	C
1,4-Diisopropylbenzene (100-18-5)	5	C
N,N-Dimethylaniline (121-69-7)	1	A
2,3-Dimethylaniline (87-59-2)	5	C
2,4-Dimethylaniline (95-68-1)	5	C
2,5-Dimethylaniline (95-78-3)	5	C
2,6-Dimethylaniline (87-62-7)	5	C
3,4-Dimethylaniline (95-64-7)	5	C
3,5-Dimethylaniline (108-69-0)	5	C
3,3'-Dimethylbenzidine (119-93-7)	5	C
4,4'-Dimethylbibenzyl (538-39-6)	5	C
4,4'-Dimethyldiphenylmethane (4957-14-6)	5	C
Dimethylformamide (68-12-2)	50	B
alpha, alpha-Dimethyl phenethylamine (122-09-8)	5	C
2,4-Dimethylphenol (105-67-9)	*	
Remark: * See "Phenolic compounds (total phenols)."		
Dimethyl phthalate (131-11-3)	50	B

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
2,4-Dinitrophenol (51-28-5) Remark: * See "Phenolic compounds (total phenols)."	*	
Dimethyl tetrachloroterephthalate (1861-32-1)	50	C
1,3-Dinitrobenzene (99-65-0)	5	C
2,3-Dinitrotoluene (602-01-7)	5	C
2,4-Dinitrotoluene (121-14-2)	5	C
2,5-Dinitrotoluene (619-15-8)	5	C
2,6-Dinitrotoluene (606-20-2)	5	C
3,4-Dinitrotoluene (610-39-9)	5	C
3,5-Dinitrotoluene (618-85-9)	5	C
Di-n-octyl phthalate (117-84-0)	50	B
Dinoseb (88-85-7) Remark: * See "Phenolic compounds (total phenols)."	*	
Diphenamid (957-51-7)	50	C
Diphenylamine (122-39-4)	5	C
1,1-Diphenylhydrazine (530-50-7)	ND	C
1,2-Diphenylhydrazine (122-66-7)	ND	A
Diquat (2764-72-9)	20	A
Dissolved solids, total (CAS No. Not Applicable) Remark: * 1,000 mg/L; applies only in the counties of Nassau and Suffolk.	*	A
Disulfoton (298-04-4) Remark: * See "Phorate and Disulfoton."	*	
Dodecylguanidine acetate and Dodecylguanidine hydrochloride (2439-10-3; 13590-97-1) Remark: * Applies to the sum of these substances.	50*	B
Dyphylline (479-18-5)	50	B
Endothall (145-73-3)	50	B

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Endrin (72-20-8)	ND	A
Endrin aldehyde (7421-93-4)	5	C
Endrin ketone (53494-70-5)	5	C
Ethylbenzene (100-41-4)	5	C
Ethylene chlorohydrin (107-07-3)	50	B
Ethylene dibromide (106-93-4)	6×10^{-4}	A
Ethylene glycol (107-21-1)	50	B
Ethylene oxide (75-21-8)	0.05	B
Ethylenethiourea (96-45-7)	ND	A
Ferbam (14484-64-1)	4.2	A
Fluometuron (2164-17-2)	50	C
Fluoranthene (206-44-0)	50	B
Fluorene (86-73-7)	50	B
Fluoride (CAS No.Not Applicable)	3,000	A
Foaming agents (CAS No. Not Applicable)	1,000*	A
Remark: * Determined as methylene blue active substances (MBAS) or by other tests as specified by the commissioner.		
Folpet (133-07-3)	50	A
Glyphosate (1071-83-6)	50	B
Gross alpha radiation (CAS No. Not Applicable)	*	
Remark: * Established through Radiation Control Permits (Part 380).		
Gross beta radiation (CAS No. Not Applicable)	*	
Remark: * Established through Radiation Control Permits (Part 380).		
Guaifenesin (93-14-1)	50	B
Heptachlor (76-44-8)	0.04	A
Heptachlor epoxide (1024-57-3)	0.03	A
Hexachlorobenzene (118-74-1)	0.04	A
Hexachlorobutadiene (87-68-3)	0.5	A

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
alpha-Hexachlorocyclohexane (319-84-6)	0.01	A
beta-Hexachlorocyclohexane (319-85-7)	0.04	A
delta-Hexachlorocyclohexane (319-86-8)	0.04	A
epsilon-Hexachlorocyclohexane (6108-10-7)	0.04	A
gamma-Hexachlorocyclohexane (58-89-9)	0.05	A
Hexachlorocyclopentadiene (77-47-4)	5	C
Hexachloroethane (67-72-1)	5	C
Hexachlorophene (70-30-4) Remark: * See "Phenolic compounds (total phenols)."	*	
Hexachloropropene (1888-71-7)	5	C
2-Hexanone (591-78-6)	50	B
Hexazinone (51235-04-2)	50	C
Hydrogen sulfide (7783-06-4) Remark: * See "Sulfides, total."	*	
Hydroquinone (123-31-9) Remark: * See "Phenolic compounds (total phenols)."	*	
1-Hydroxyethylidene-1,1-diphosphonic acid (2809-21-4)	50	B
2-(2-Hydroxy-3,5-di-tert-pentylphenyl)-benzotriazole (25973-55-1) Remark: * See "Phenolic compounds (total phenols)."	*	
Indeno (1,2,3-cd) pyrene (193-39-5)	0.002	B
Iron (CAS No. Not Applicable) Remark: * Also see "Iron and Manganese."	600*	A
Iron and Manganese (CAS No. Not Applicable) Remark: * Applies to the sum of these substances.	1,000*	A
Isodrin (465-73-6)	5	C
Isophorone (78-59-1)	50	B
Isopropalin (33820-53-0)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Isopropylbenzene (98-82-8)	5	C
2-Isopropyltoluene (527-84-4)	5	C
3-Isopropyltoluene (535-77-3)	5	C
4-Isopropyltoluene (99-87-6)	5	C
Kepone (143-50-0)	ND	A
Lead (CAS No. Not Applicable)	50	A
Magnesium (CAS No. Not Applicable)	35,000	B
Malathion (121-75-5)	7.0	A
Mancozeb (8018-01-7)	1.8	A
Maneb (12427-38-2)	1.8	A
Manganese (CAS No. Not Applicable) Remark: * Also see "Iron and Manganese."	600*	A
Mercaptobenzothiazole (149-30-4)	50	B
Mercury (CAS No. Not Applicable)	1.4	A
Methacrylic acid (79-41-4)	50	B
Methacrylonitrile (126-98-7)	5	C
Methomyl (16752-77-5) Remark: * See "Aldicarb and Methomyl."	*	
Methoxychlor (72-43-5)	35	A
(1-Methoxyethyl) benzene (4013-34-7)	50	B
(2-Methoxyethyl) benzene (3558-60-9)	50	B
N-Methylaniline (100-61-8)	5	C
Methylbenz(a)anthracenes (CAS No. Not Applicable) Remark: * Applies to the sum of these substances.	0.002*	B
Methyl chloride (74-87-3)	5	C
2-Methyl-4-chlorophenoxyacetic acid (94-74-6)	0.44	A
4,4'-Methylene-bis-(2-chloroaniline) (101-14-4)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
4,4'-Methylene-bis-(N-methyl)aniline (1807-55-2)	5	C
4,4'-Methylene-bis-(N,N'-dimethyl) aniline (101-61-1)	5	C
Methylene bisthiocyanate (6317-18-6)	50	B
Methylene chloride (dichloromethane) (75-09-2)	5	A
4-(1-Methylethoxy)-1-butanol (31600-69-8)	50	B
2-Methylethyl-1,3-dioxolane (126-39-6)	50	B
Methyl ethyl ketone (78-93-3)	50	B
Methyl iodide (74-88-4)	5	C
Methyl methacrylate (80-62-6)	50	A
Methyl parathion (298-00-0)	*	
Remark: * See "Parathion and Methyl parathion."		
alpha-Methylstyrene (98-83-9)	5	C
2-Methylstyrene (611-15-4)	5	C
3-Methylstyrene (100-80-1)	5	C
4-Methylstyrene (622-97-9)	5	C
Metribuzin (21087-64-9)	50	C
Mirex (2385-85-5)	0.03	A
Nabam (142-59-6)	1.8	A
Naphthalene (91-20-3)	10	B
Niacinamide (98-92-0)	500	B
Nickel (CAS No. Not Applicable)	200	A
Nitralin (4726-14-1)	35	A
Nitrate (expressed as N) (CAS No. Not Applicable)	20,000	A
Nitrate and Nitrite (expressed as N) (CAS No. Not Applicable)	20,000	A
Nitrilotriacetic acid (CAS No. Not Applicable)	3*	A
Remark: * Includes related forms that convert to nitrilotriacetic acid upon acidification to a pH of 2.3 or less."		
Nitrite (expressed as N) (CAS No. Not Applicable)	2,000	A

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
2-Nitroaniline (88-74-4)	5	C
3-Nitroaniline (99-09-2)	5	C
4-Nitroaniline (100-01-6)	5	C
Nitrobenzene (98-95-3)	0.4	A
Nitrogen, total (expressed as N) (CAS No. Not Applicable)	10,000*	A
Remark: * Applies only in the counties of Nassau and Suffolk.		
N-Nitrosodiphenylamine (86-30-6)	50	B
2-Nitrotoluene (88-72-2)	5	C
3-Nitrotoluene (99-08-1)	5	C
4-Nitrotoluene (99-99-0)	5	C
5-Nitro-o-toluidine (99-55-8)	5	C
Octachlorostyrene (29082-74-4)	0.2	A
Oil and Grease (CAS No. Not Applicable)	15,000*	A
Remark: * Applies to the sum of oil and grease.		
Organic substances, total (CAS No. Not Applicable)	100*	
Remark: * This value applies to the total of all organic substances listed in this Table with a groundwater effluent limitation less than 100 ug/L. Included in the total are all organic substances covered by the principal organic contaminant value and those in other "group" entries, whether or not the substances are individually listed in this Table.		
Oxamyl (23135-22-0)	50	C
Paraquat (4685-14-7)	3.0	A
Parathion (56-38-2)	*	
Remark: * See "Parathion and Methyl parathion."		
Parathion and Methyl parathion (56-38-2; 298-00-0)	1.5*	A
Remark: * Applies to the sum of these substances.		
Pendimethalin (40487-42-1)	5	C
Pentachlorobenzene (608-93-5)	5	C
Pentachloroethane (76-01-7)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Pentachloronitrobenzene (82-68-8)	ND	A
Pentachlorophenol (87-86-5) Remark: * See "Phenolic compounds (total phenols)."	*	
pH (CAS No. Not Applicable) Remark: * pH shall not be lower than 6.5 or the pH of the natural groundwater, whichever is lower, nor shall be greater than 8.5 or the pH of the natural groundwater, whichever is greater.	*	A
Phenanthrene (85-01-8)	50	B
Phenol (108-95-2) Remark: * See "Phenolic compounds (total phenols)."	*	
Phenolic compounds (total phenols) (CAS No. Not Applicable) Remark: * Applies to the sum of these substances.	2*	A
Phenols, total chlorinated (CAS No. Not Applicable) Remark: * See "Phenolic compounds (total phenols)."	*	
Phenols, total unchlorinated (CAS No. Not Applicable) Remark: * See "Phenolic compounds (total phenols)."	*	
1,2-Phenylenediamine (95-54-5)	5	C
1,3-Phenylenediamine (108-45-2)	5	C
1,4-Phenylenediamine (106-50-3)	5	C
Phenyl ether (101-84-8)	10	B
Phenylhydrazine (100-63-0)	5	C
Phenylpropanolamine (14838-15-4)	50	B
3-Phenyl-1-propene (637-50-3)	5	C
cis-1-Phenyl-1-propene (766-90-5)	5	C
trans-1-Phenyl-1-propene (873-66-5)	5	C
Phorate (298-02-2) Remark: * See "Phorate and Disulfoton."	*	

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Phorate and Disulfoton (298-02-2; 298-04-4)	ND*	A
Remark: * Applies to the sum of these substances.		
Picloram (CAS No. Not Applicable)	50*	C
Remark: * Includes: related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid.		
Polybrominated biphenyls (CAS No. Not Applicable)	5*	C
Remark: * Applies to each congener individually.		
Polychlorinated biphenyls (CAS No. Not Applicable)	0.09*	A
Remark: * Applies to the sum of these substances.		
Principal organic contaminant (CAS No. Not Applicable)	5*	C
Remark: * Applies to each individual substance to which the principal organic contaminant (POC) class GA ambient groundwater standard applies (whether listed in this TOGS or not) except for those substances with a groundwater effluent limitation other than 5 ug/L listed in this Table. For the convenience of the reader, the groundwater effluent limitations of 5 ug/L for some (but not all) individual POCs are listed in this Table.		
Prometon (1610-18-0)	50	C
Propachlor (1918-16-7)	35	A
Propanil (709-98-8)	7.0	A
Propazine (139-40-2)	16	A
Propham (122-42-9)	50	C
n-Propylbenzene (103-65-1)	5	C
Pyrene (129-00-0)	50	B
Pyridine (110-86-1)	50	B
Radium 226 (CAS No. Not Applicable)	*	
Remark: * Established through Radiation Control Permits, Part 380.		
Radium 226 and Radium 228 (CAS No. Not Applicable)	*	
Remark: * Established through Radiation Control Permits, Part 380.		
Radium 228 (CAS No. Not Applicable)	*	
Remark: * Established through Radiation Control Permits, Part 380.		

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Selenium (CAS No. Not Applicable)	20	A
Silver (CAS No. Not Applicable)	100	A
Simazine (122-34-9)	0.5	A
Sodium (CAS No. Not Applicable)	*	D
Remark: * Case-by-case evaluation.		
Styrene (100-42-5)	930	A
Sulfate (CAS No. Not Applicable)	500,000	A
Sulfide (CAS No. Not Applicable)	1,000	A
Tebuthiuron (34014-18-1)	50	C
Terbacil (5902-51-2)	50	C
Terbufos (13071-79-9)	0.09	B
Tetrachlorobenzenes (634-66-2; 634-90-2; 95-94-3; 12408-10-5)	*	*
Remark: * Value of 5 ug/L, Category C applies to each tetrachlorobenzene individually. Value of 10 ug/L, Category B applies to the sum of these substances.		
1,1,1,2-Tetrachloroethane (630-20-6)	5	C
1,1,2,2-Tetrachloroethane (79-34-5)	5	C
Tetrachloroethene (127-18-4)	5	C
Tetrachloroterephthalic acid (2136-79-0)	50	C
alpha, alpha, alpha, 4-Tetrachlorotoluene (5216-25-1)	5	C
Tetrahydrofuran (109-99-9)	50	B
1,2,3,4-Tetramethylbenzene (488-23-3)	5	C
1,2,3,5-Tetramethylbenzene (527-53-7)	5	C
1,2,4,5-Tetramethylbenzene (95-93-2)	5	C
Thallium (CAS No. Not Applicable)	0.5	B
Theophylline (58-55-9)	40	B
Thiram (137-26-8)	1.8	A
Toluene (108-88-3)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Toluene-2,4-diamine (95-80-7)	5	C
Toluene-2,5-diamine (95-70-5)	5	C
Toluene-2,6-diamine (823-40-5)	5	C
o-Toluidine (95-53-4)	5	C
Tolyltriazole (29385-43-1)	50	B
Toxaphene (8001-35-2)	0.06	A
1,2,4-Tribromobenzene (615-54-3)	5	C
Tributyltin oxide (56-35-9)	50	B
2,4,6-Trichloroaniline (634-93-5)	5	C
Trichlorobenzenes (87-61-6; 120-82-1; 108-70-3; 12002-48-1)	*	*
Remark: * Value of 5 ug/L, Category C applies to each trichlorobenzene individually. Value of 10 ug/L, Category B applies to the sum of these substances.		
1,1,1-Trichloroethane (71-55-6)	5	C
1,1,2-Trichloroethane (79-00-5)	1	A
Trichloroethene (79-01-6)	5	A
Trichlorofluoromethane (75-69-4)	5	C
2,4,5-Trichlorophenoxyacetic acid (93-76-5)	35	A
2,4,5-Trichlorophenoxypropionic acid (93-72-1)	0.26	A
1,1,2-Trichloropropane (598-77-6)	5	C
1,2,3-Trichloropropane (96-18-4)	0.04	A
cis-1,2,3-Trichloropropene (13116-57-9)	5	C
trans-1,2,3-Trichloropropene (13116-58-0)	5	C
alpha,2,4-Trichlorotoluene (94-99-5)	5	C
alpha,2,6-Trichlorotoluene (2014-83-7)	5	C
alpha,3,4-Trichlorotoluene (102-47-6)	5	C
alpha,alpha,2-Trichlorotoluene (88-66-4)	5	C
alpha,alpha,4-Trichlorotoluene (13940-94-8)	5	C

Table 5 (Continued)

NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

JUNE 1998

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
2,3,4-Trichlorotoluene (7359-72-0)	5	C
2,3,5-Trichlorotoluene (56961-86-5)	5	C
2,3,6-Trichlorotoluene (2077-46-5)	5	C
2,4,5-Trichlorotoluene (6639-30-1)	5	C
2,4,6-Trichlorotoluene (23749-65-7)	5	C
1,1,1-Trichloro-2,2,2-trifluoroethane (354-58-5)	5	C
1,1,2-Trichloro-1,2,2-trifluoroethane (76-13-1)	5	C
Trifluralin (1582-09-8)	35	A
1,2,3-Trimethylbenzene (526-73-8)	5	C
1,2,4-Trimethylbenzene (95-63-6)	5	C
1,3,5-Trimethylbenzene (108-67-8)	5	C
2,3,6-Trimethylpyridine (1462-84-6)	50	B
2,4,6-Trimethylpyridine (108-75-8)	50	B
sym-Trinitrobenzene (99-35-4)	5	C
2,3,4-Trinitrotoluene (602-29-9)	5	C
2,3,6-Trinitrotoluene (18292-97-2)	5	C
2,4,5-Trinitrotoluene (610-25-3)	5	C
2,4,6-Trinitrotoluene (118-96-7)	5	C
3,4,5-Trinitrotoluene (603-15-6)	5	C
Triphenyl phosphate (115-86-6)	50	B
Uranyl ion (CAS No. Not Applicable)	10,000	C
Vinyl chloride (75-01-4)	2	A
1,2-Xylene (95-47-6)	5	C
1,3-Xylene (108-38-3)	5	C
1,4-Xylene (106-42-3)	5	C
Zinc (CAS No. Not Applicable)	5,000	A
Zineb (12122-67-7)	1.8	A
Ziram (137-30-4)	4.2	A

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER

JUNE 1998

Notes: 1. This index refers to the user to Table 1, 3 or 5 of this TOGS. Entries within each Table are listed alphabetically. As this index indicates, a few entries are listed in both Tables 1 and 3. Substances in Table 1 with an ambient groundwater value also have a groundwater effluent limitation and are thus also listed in Table 5. The user is cautioned that not all substances included in "group" entries are individually listed in this index, and should read the text of Parts I and II of this TOGS.

2. Where an entry includes multiple substances, underlining identifies the specific substances that corresponds to the CAS number listed. Entries having no CAS number are indicated by "NA" (not applicable).

3. CAS numbers that represent groups of substances, including pairs of cis- and trans- isomers, may not be included in this index. The user may need to determine individual substances and CAS numbers.

4. Where entries in this index are separated by a semicolon, the table listings are also so separated and apply to the entry before and after the semicolon, respectively.

CAS Number	Entry	Table
NA	Alkyl diphenyl oxide sulfonates	1,5
NA	Aluminum, ionic; Aluminum	1;5
NA	Aminomethylene phosphonic acid salts	1,5
NA	Ammonia and Ammonium	1,5
NA	Antimony	1,5
NA	Arsenic	1,5
NA	Aryltriazoles	1,5
NA	Asbestos	1,5
NA	Barium	1,5
NA	Beryllium	1,5
NA	Boric acid, Borates and Metaborates	1,5
NA	Boron	1,5
NA	Bromide	1,5
NA	Butyl isopropyl phthalate	1,5
NA	Cadmium	1,5
NA	Chloramben	1,5
NA	Chloride	1,5
NA	Chlorinated dibenzo-p-dioxins and Chlorinated dibenzofurans	1,5

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
NA	Chlorine, Total Residual	1
NA	Chromium	1,5
NA	Chromium (hexavalent)	1,5
NA	Cobalt	1
NA	Copper	1,5
NA	Cyanide	1,5
NA	Dalapon	1,5
NA	Dissolved solids, total	5
NA	Fluoride	1,5
NA	Foaming agents	1,5
NA	Gross alpha radiation	1,5
NA	Gross beta radiation	1,5
NA	Iron; Iron and Manganese	1,5;1,5
NA	Isothiazolones, total; Isothiazolones	1;3
NA	Lead	1,5
NA	Linear alkylbenzene sulfonates (LAS)	1,3
NA	Magnesium	1,5
NA	Manganese; Iron and Manganese	1,5;1,5
NA	Mercury	1,5
NA	Methylbenz(a)anthracenes	1,5
NA	Nickel	1,5
NA	Nitrate (expressed as N); Nitrate and Nitrite (expressed as N)	1,5;1,5
NA	Nitrilotriacetic acid	1,5
NA	Nitrite (expressed as N); Nitrate and Nitrite (expressed as N)	1,5;1,5
NA	Nitrogen, total (expressed as N)	5
NA	Oil and Grease	5
NA	Organic substances, total	5
NA	pH	5
NA	Phenolic compounds (total phenols)	1,5

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
NA	Phenols, total chlorinated	1,5
NA	Phenols, total unchlorinated	1,5
NA	Phosphorus	1
NA	Picloram	1,5
NA	Polybrominated biphenyls	1,5
NA	Polychlorinated biphenyls	1,5
NA	Principal organic contaminant	1,5
NA	Quaternary ammonium compounds	1,3
NA	Radium 226; Radium 226 and Radium 228	1,5;1,5
NA	Radium 228; Radium 226 and Radium 228	1,5;1,5
NA	Selenium	1,5
NA	Silver	1,5
NA	Sodium	1,5
NA	Strontium 90	1
NA	Sulfate	1,5
NA	Sulfides, total; Sulfide	1;5
NA	Sulfite	1
NA	Thallium	1,5
NA	Tritium	1
NA	Uranyl ion	1,5
NA	Vanadium	1
NA	Zinc	1,5
50-00-0	Formaldehyde	3
50-29-3	p,p'-DDT	1,5
50-32-8	Benzo(a)pyrene	1,5
50-55-5	Reserpine	3
51-28-5	2,4-Dinitrophenol	1,5
52-51-7	Bronopol	3
52-85-7	Famphur	3

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
53-96-3	2-Acetylaminofluorene	3
55-18-5	N-Nitrosodiethylamine	3
55-70-3	Dibenz(a,h)anthracene	3
56-23-5	Carbon tetrachloride	1,5
56-35-9	Tributyltin oxide	1,5
56-38-2	Parathion; Parathion & Methyl parathion	1;1,5
56-49-5	3-Methylcholanthrene	3
56-55-3	Benz(a)anthracene	1,5
56-57-5	4-Nitroquinoline-1-oxide	3
57-14-7	1,1-Dimethylhydrazine	3
57-24-9	Strychnine	3
57-74-9	Chlordane	1,5
57-97-6	7, 12-Dimethylbenz(a)anthracene	3
58-55-6	Propylene glycol	3
58-55-9	Theophylline	1,5
58-89-9	gamma-Hexachlorocyclohexane	1,5
59-87-0	Nitrofurazone	3
59-89-2	N-Nitrosomorpholine	3
60-11-7	4-(Dimethylamino)azobenzene	3
60-29-7	Ethyl ether	3
60-51-5	Dimethoate	3
60-57-1	Aldrin and Dieldrin; Dieldrin	1;1,5
62-44-2	Phenacetin	3
62-50-0	Ethyl methane sulfonate	3
62-53-3	Aniline	1,5
62-56-6	Thiourea	3
62-75-9	N-Nitrosodimethylamine	3
63-25-2	Carbaryl	1,5
64-18-6	Formic acid	3

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
65-85-0	Benzoic acid	3
66-27-3	Methylmethanesulfonate	3
67-20-9	Nitrofurantoin	3
67-45-8	Furazolidone	3
67-56-1	Methanol	3
67-63-0	Isopropyl alcohol	3
67-64-1	Acetone	1,5
67-66-3	Chloroform	1,5
67-72-1	Hexachloroethane	1,5
68-12-2	Dimethylformamide	1,5
70-30-4	Hexachlorophene	1,5
70-55-3	4-Methyl benzene sulfonamide	3
71-23-8	1-Propanol	3
71-36-3	1-Butanol	3
71-43-2	Benzene	1,5
71-55-6	1,1,1-Trichloroethane	1,5
72-20-8	Endrin	1,5
72-43-5	Methoxychlor	1,5
72-54-8	p,p'-DDD	1,5
72-55-9	p,p'-DDE	1,5
74-11-3	4-Chlorobenzoic acid	3
74-83-9	Bromomethane	1,5
74-87-3	Methyl chloride	1,5
74-88-4	Methyl iodide	1,5
74-89-5	Methylamine	3
74-95-3	Dibromomethane	1,5
74-97-5	Bromochloromethane	1,5
75-00-3	Chloroethane	1,5
75-01-4	Vinyl chloride	1,5

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
75-05-8	Acetonitrile	3
75-09-2	Methylene chloride	1,5
75-15-0	Carbon disulfide	3
75-21-8	Ethylene oxide	1,5
75-25-2	Bromoform	1,5
75-27-4	Bromodichloromethane	1,5
75-31-0	Isopropylamine	3
75-34-3	1,1-Dichloroethane	1,5
75-35-4	1,1-Dichloroethene	1,5
75-43-4	Dichlorofluoromethane	1,5
75-56-9	Propylene oxide	3
75-60-5	Cacodylic acid	3
75-65-0	tert-Butyl alcohol	3
75-69-4	Trichlorofluoromethane	1,5
75-71-8	Dichlorodifluoromethane	1,5
75-86-5	Acetone cyanohydrin	3
75-87-6	Chloral	3
76-01-7	Pentachloroethane	1,5
76-03-9	Trichloroacetic acid	3
76-12-0	1,2-Difluoro-1,1,2,2-tetrachloroethane	1,5
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1,5
76-44-8	Heptachlor	1,5
77-47-4	Hexachlorocyclopentadiene	1,5
77-58-7	Dibutyltin dilaurate	3
77-73-6	Dicyclopentadiene	3
78-00-2	Tetraethyl lead	3
78-59-1	Isophorone	1,5
78-83-1	Isobutyl alcohol	3
78-87-5	1,2-Dichloropropane	1,5

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
78-93-3	Methyl ethyl ketone	1,5
78-99-9	1,1-Dichloropropane	1,5
79-00-5	1,1,2-Trichloroethane	1,5
79-01-6	Trichloroethene	1,5
79-06-1	Acrylamide	1,5
79-10-7	Acrylic acid	1,5
79-11-8	Chloroacetic acid	3
79-20-9	Methyl acetate	3
79-34-5	1,1,2,2-Tetrachloroethane	1,5
79-39-0	Methacrylamide	3
79-41-4	Methacrylic acid	1,5
79-43-6	Dichloroacetic acid	3
79-45-8	Dimethyldithiocarbamate	3
79-46-9	2-Nitropropane	3
80-15-9	Isopropylbenzene hydroperoxide	3
80-62-6	Methyl methacrylate	1,5
81-81-2	Warfarin	3
82-68-8	Pentachloronitrobenzene	1,5
83-32-9	Acenaphthene	1,5
83-79-4	Rotenone	3
84-66-2	Diethyl phthalate	1,5
84-74-2	Di-n-butylphthalate	1,5
85-00-7	See 2764-72-9	
85-01-8	Phenanthrene	1,5
85-44-9	1,3-Isobenzofurandione	3
85-68-7	Butyl benzyl phthalate	1,5
86-30-6	N-Nitrosodiphenylamine	1,5
86-50-0	Azinphosmethyl	1,5
86-73-7	Fluorene	1,5

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
86-74-8	Carbazole	3
87-41-2	1(3H)-Isobenzofuranone	3
87-59-2	2,3-Dimethylaniline	1,5
87-61-6	Trichlorobenzenes (1,2,3-)	1,5
87-62-7	2,6-Dimethylaniline	1,5
87-68-3	Hexachlorobutadiene	1,5
87-86-5	Pentachlorophenol	1,5
88-19-7	2-Methyl benzene sulfonamide	3
88-66-4	alpha, alpha,2-Trichlorotoluene	1,5
88-72-2	2-Nitrotoluene	1,5
88-73-3	2-Chloronitrobenzene	1,5
88-74-4	2-Nitroaniline	1,5
88-85-7	Dinoseb	1,5
91-20-3	Naphthalene	1,5
91-22-5	Quinoline	3
91-57-6	2-Methylnaphthalene	1,3
91-58-7	2-Chloronaphthalene	1,5
91-59-8	2-Napthylamine	3
91-80-5	Methapyrilene	3
91-94-1	3,3'-Dichlorobenzidine	1,5
92-52-4	1,1'-Biphenyl	1,5
92-67-1	4-Aminobiphenyl	1,5
92-87-5	Benzidine	1,5
93-14-1	Guaifenesin	1,5
93-65-2	2-(4-Chloro-2-methylphenoxy)propionic acid	3
93-72-1	2,4,5-Trichlorophenoxypropionic acid	1,5
93-76-5	2,4,5-Trichlorophenoxyacetic acid	1,5
94-59-7	Safrole	3
94-74-6	2-Methyl-4-chlorophenoxyacetic acid	1,5

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CAS Number	Entry	Table
94-75-7	2,4-Dichlorophenoxyacetic acid	1,5
94-81-5	4-(4-Chloro-2-methylphenoxy)butyric acid	3
94-82-6	2,4-DB	3
94-99-5	alpha,2,4-Trichlorotoluene	1,5
95-47-6	1,2-Xylene	1,5
95-49-8	2-Chlorotoluene	1,5
95-50-1	Dichlorobenzenes (1,2-)	1,5
95-51-2	2-Chloroaniline	1,5
95-53-4	o-Toluidine	1,5
95-54-5	1,2-Phenylenediamine	1,5
95-63-6	1,2,4-Trimethylbenzene	1,5
95-64-7	3,4-Dimethylaniline	1,5
95-68-1	2,4-Dimethylaniline	1,5
95-69-2	4-Chloro-o-toluidine	1,5
95-70-5	Toluene-2,5-diamine	1,5
95-73-8	2,4-Dichlorotoluene	1,5
95-75-0	3,4-Dichlorotoluene	1,5
95-78-3	2,5-Dimethylaniline	1,5
95-79-4	5-Chloro-o-toluidine	1,5
95-80-7	Toluene-2,4-diamine	1,5
95-84-1	Aminocresols (2-Amino-para-cresol)	1,5
95-93-2	1,2,4,5-Tetramethylbenzene	1,5
95-94-3	Tetrachlorobenzenes (1,2,4,5-)	1,5
96-12-8	1,2-Dibromo-3-chloropropane	1,5
96-18-4	1,2,3-Trichloropropane	1,5
96-19-5	See 13116-57-9 and 13116-58-0	
96-33-3	Methylacrylate	3
96-37-7	Methylcyclopentane	3
96-45-7	Ethylenethiourea	1,5

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CAS Number	Entry	Table
97-63-2	Ethyl methacrylate	3
98-01-1	Furfural	3
98-06-6	tert-Butylbenzene	1,5
98-07-7	alpha, alpha, alpha-Trichlorotoluene	3
98-56-6	4-Chlorobenzotrifluoride	1,5
98-82-8	Isopropylbenzene	1,5
98-83-9	alpha-Methylstyrene	1,5
98-86-2	Acetophenone	3
98-87-3	alpha, alpha-Dichlorotoluene	3
98-92-0	Niacinamide	1,5
98-95-3	Nitrobenzene	1,5
99-04-7	3-Methylbenzoic acid	3
99-08-1	3-Nitrotoluene	1,5
99-09-2	3-Nitroaniline	1,5
99-35-4	sym-Trinitrobenzene	1,5
99-55-8	5-Nitro-o-toluidine	1,5
99-59-2	2-Methoxy-5-nitroaniline	3
99-62-7	1,3-Diisopropylbenzene	1,5
99-65-0	1,3-Dinitrobenzene	1,5
99-87-6	4-Isopropyltoluene	1,5
99-99-0	4-Nitrotoluene	1,5
100-00-5	4-Chloronitrobenzene	1,5
100-01-6	4-Nitroaniline	1,5
100-18-5	1,4-Diisopropylbenzene	1,5
100-37-8	2-(Diethylamino)ethanol	3
100-41-4	Ethylbenzene	1,5
100-42-5	Styrene	1,5
100-44-7	Benzyl chloride	3
100-51-6	Benzyl alcohol	3

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CAS Number	Entry	Table
100-52-7	Benzaldehyde	3
100-61-8	N-Methylaniline	1,5
100-63-0	Phenylhydrazine	1,5
100-64-1	Cyclohexanone oxime	3
100-66-3	Anisole	3
100-75-4	N-Nitrosopiperidine	3
100-80-1	3-Methylstyrene	1,5
101-14-4	4,4'-Methylene-bis-(2-chloroaniline)	1,5
101-55-3	4-Bromophenylphenylether	3
101-61-1	4,4'-Methylene-bis-(N,N'-dimethyl)aniline	1,5
101-84-8	Phenyl ether	1,5
102-47-6	alpha, 3,4-Trichlorotoluene	1,5
103-23-1	Di(2-ethylhexyl)adipate	1,5
103-33-3	Azobenzene	1,5
103-65-1	n-Propylbenzene	1,5
103-82-2	Benzeneacetic acid	3
104-51-8	n-Butylbenzene	1,5
104-87-0	4-Methylbenzaldehyde	3
105-11-3	1,4-Quinone dioxide	3
105-60-1	Caprolactam	3
105-67-9	2,4-Dimethylphenol	1,5
106-37-6	1,4-Dibromobenzene	1,5
106-42-3	1,4-Xylene	1,5
106-43-4	4-Chlorotoluene	1,5
106-46-7	Dichlorobenzenes (1,4-)	1,5
106-47-8	4-Chloroaniline	1,5
106-49-0	4-Aminotoluene	1,5
106-50-3	1,4-Phenylenediamine	1,5
106-89-8	Epichlorohydrin	3

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CAS Number	Entry	Table
106-93-4	Ethylene dibromide	1,5
107-02-8	Acrolein	1,5
107-05-1	Allyl chloride	1,5
107-06-2	1,2-Dichloroethane	1,5
107-07-3	Ethylene chlorohydrin	1,5
107-12-0	Propionitrile	3
107-13-1	Acrylonitrile	1,5
107-18-6	Allyl alcohol	3
107-21-1	Ethylene glycol	1,5
107-30-2	Chloromethyl methyl ether	1,5
108-05-4	Vinyl acetate	3
108-10-1	4-Methyl-2-pentanone	3
108-18-9	Diisopropylamine	3
108-20-3	Diisopropyl ether	3
108-31-6	Maleic anhydride	3
108-36-1	1,3-Dibromobenzene	1,5
108-38-3	1,3-Xylene	1,5
108-41-8	3-Chlorotoluene	1,5
108-42-9	3-Chloroaniline	1,5
108-44-1	3-Aminotoluene	1,5
108-45-2	1,3-Phenylenediamine	1,5
108-60-1	Bis(2-chloro-1-methylethyl)ether	1,5
108-67-8	1,3,5-Trimethylbenzene	1,5
108-69-0	3,5-Dimethylaniline	1,5
108-70-3	Trichlorobenzenes (1,3,5-)	1,5
108-75-8	2,4,6-Trimethylpyridine	1,5
108-86-1	Bromobenzene	1,5
108-88-3	Toluene	1,5
108-90-7	Chlorobenzene	1,5

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CAS Number	Entry	Table
108-91-8	Cyclohexylamine	3
108-93-0	Cyclohexanol	3
108-94-1	Cyclohexanone	3
108-95-2	Phenol	1,5
109-06-8	alpha-Picoline	3
109-69-3	1-Chlorobutane	1,5
109-77-3	Malononitrile	3
109-78-4	Ethylene cyanohydrin	3
109-86-4	2-Methoxyethanol	3
109-89-7	Diethylamine	3
109-99-9	Tetrahydrofuran	1,5
110-00-9	Furan	3
110-49-6	2-Methoxyethanol acetate	3
110-54-3	n-Hexane	3
110-57-6	trans-1,4-Dichloro-2-butene	1,5
110-75-8	2-Chloroethyl vinyl ether	3
110-80-5	2-Ethoxyethanol	3
110-82-7	Cyclohexane	3
110-83-8	Cyclohexene	3
110-86-1	Pyridine	1,5
111-15-9	2-Ethoxyethanol acetate	3
111-44-4	Bis(2-chloroethyl)ether	1,5
111-46-6	Diethylene glycol	3
111-70-6	1-Heptanol	3
111-90-0	Diethylene glycol monoethyl ether	3
111-91-1	Bis(2-chloroethoxy)methane	1,5
112-31-2	Decanal	3
112-34-5	Butoxyethoxyethanol	1,5
115-07-1	1-Propene	3

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CAS Number	Entry	Table
115-29-7	Endosulfan	1,3
115-86-6	Triphenyl phosphate	1,5
116-06-3	Aldicarb; Aldicarb and Methomyl	1,5
117-80-6	2,3-Dichloro-1,4-napthoquinone	3
117-81-7	Bis(2-ethylhexyl)phthalate	1,5
117-84-0	Di-n-octyl phthalate	1,5
118-69-4	2,6-Dichlorotoluene	1,5
118-74-1	Hexachlorobenzene	1,5
118-75-2	Chloranil	1,5
118-90-1	2-Methylbenzoic acid	3
118-96-7	2,4,6-Trinitrotoluene	1,5
119-90-4	3,3'-Dimethoxybenzidine	3
119-93-7	3,3'-Dimethylbenzidine	1,5
120-12-7	Anthracene	1,5
120-58-1	Isosafrole	3
120-61-6	Dimethylterephthalate	3
120-82-1	Trichlorobenzenes (1,2,4-)	1,5
120-83-2	2,4-Dichlorophenol	1,5
120-92-3	Cyclopentanone	3
121-14-2	2,4-Dinitrotoluene	1,5
121-44-8	Triethylamine	3
121-69-7	N,N-Dimethylaniline	1,5
121-73-3	3-Chloronitrobenzene	1,5
121-75-5	Malathion	1,5
121-82-4	Cyclotrimethylenetrinitramine	3
122-09-8	alpha, alpha-Dimethyl phenethylamine	1,5
122-34-9	Simazine	1,5
122-39-4	Diphenylamine	1,5
122-42-9	Propham	1,5

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CAS Number	Entry	Table
122-66-7	Diphenylhydrazines (1,2-); 1,2-Diphenylhydrazine	1;5
123-31-9	Hydroquinone	1,5
123-33-1	Maleic hydrazide	3
123-73-9	trans-2-Butenal	1,5
123-91-1	1,4-Dioxane	3
124-09-4	Hexamethylene diamine	3
124-19-6	Nonanal	3
124-40-3	Dimethylamine	3
124-48-1	Dibromochloromethane	1,5
126-39-6	2-Methylethyl-1,3-dioxolane	1,5
126-68-1	o,o,o-Triethylphosphorothioate	3
126-75-0	Demeton (-S)	1
126-98-7	Methacrylonitrile	1,5
126-99-8	Chloroprene	1,5
127-18-4	Tetrachloroethene	1,5
129-00-0	Pyrene	1,5
130-15-4	1,4-Naphthoquinone	3
131-11-3	Dimethyl phthalate	1,5
132-64-9	Dibenzofuran	3
133-06-2	Captan	1,5
133-07-3	Folpet	1,5
134-32-7	1-Napthylamine	3
135-98-8	sec-Butylbenzene	1,5
136-25-4	Pentanate	3
137-26-8	Thiram	1,5
137-30-4	Ziram	1,5
138-86-3	1-Methyl-4-(1-methylethenyl)cyclohexene	3
139-40-2	Propazine	1,5
140-57-8	Aramite	3

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CAS Number	Entry	Table
140-88-5	Ethyl acrylate	3
141-05-9	Diethyl maleate	3
141-78-6	Ethyl acetate	3
142-28-9	1,3-Dichloropropane	1,5
142-59-6	Nabam	1,5
142-82-5	n-Heptane	3
143-07-7	Dodecanoic acid	3
143-08-8	1-Nonanol	3
143-50-0	Kepone	1,5
145-73-3	Endothall	1,5
148-18-5	Sodium diethyldithiocarbamate	3
149-30-4	Mercaptobenzothiazole	1,5
152-16-9	Octamethylpyrophosphoramine	3
156-59-2	cis-1,2-Dichloroethene	1,5
156-60-5	trans-1,2-Dichloroethene	1,5
191-24-2	Benzo(g,h,i)perylene	3
192-97-2	Benzo(e)pyrene	3
193-39-5	Indeno (1,2,3-cd)pyrene	1,5
205-99-2	Benzo(b)fluoranthene	1,5
206-44-0	Fluoranthene	1,5
207-08-9	Benzo(k)fluoranthene	1,5
208-96-8	Acenaphthylene	3
218-01-9	Chrysene	1,5
271-61-4	Benzisothiazole	1,5
297-97-2	o,o-Diethyl-o-2-pyrazinyl phosphorothioate	3
298-00-0	Parathion & Methyl parathion	1,5
298-02-2	Phorate & Disulfoton	1,5
298-03-3	Demeton (-o)	1
298-04-4	Phorate & Disulfoton	1,5

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CAS Number	Entry	Table
299-84-3	Ronnel	3
302-01-2	Hydrazine	1,3
309-00-2	Aldrin; Aldrin & Dieldrin	1,5;1
314-40-9	Bromacil	1,5
319-84-6	alpha-Hexachlorocyclohexane	1,5
319-85-7	beta-Hexachlorocyclohexane	1,5
319-86-8	delta-Hexachlorocyclohexane	1,5
328-84-7	3,4-Dichlorobenzotrifluoride	1,5
330-55-2	Linuron	3
333-41-5	Diazinon	1,5
354-58-5	1,1,1-Trichloro-2,2,2-trifluoroethane	1,5
460-35-5	3-Chloro-1,1,1-trifluoropropane	1,5
462-08-8	Aminopyridines (3-)	1,5
465-73-6	Isodrin	1,5
479-18-5	Dyphylline	1,5
488-23-3	1,2,3,4-Tetramethylbenzene	1,5
501-52-0	Benzenepropanoic acid	3
504-24-5	Aminopyridines (4-)	1,5
504-29-0	Aminopyridines (2-)	1,5
506-68-3	Cyanogen bromide	1,5
506-77-4	Cyanogen chloride	1,5
510-15-6	Chlorobenzilate	3
512-56-1	Trimethyl phosphate	3
515-30-0	alpha-Hydroxy-alpha-methylbenzeneacetic acid	3
526-73-8	1,2,3-Trimethylbenzene	1,5
527-53-7	1,2,3,5-Tetramethylbenzene	1,5
527-84-4	2-Isopropyltoluene	1,5
529-20-4	2-Methylbenzaldehyde	3

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CAS Number	Entry	Table
530-50-7	Diphenylhydrazines (1,1-); 1,1-Diphenylhydrazine	1;5
531-82-8	Furium	3
535-77-3	3-Isopropyltoluene	1,5
538-39-6	4,4'-Dimethylbibenzyl	1,5
540-73-8	1,2-Dimethylhydrazine	3
541-73-1	Dichlorobenzenes (1,3-)	1,5
542-75-6	1,3-Dichloropropene (sum of cis- and trans-)	1,5
542-88-1	Bis(chloromethyl)ether	1,5
543-49-7	2-Heptanol	3
563-12-2	Ethion	3
563-58-6	1,1-Dichloropropene	1,5
577-55-9	1,2-Diisopropylbenzene	1,5
583-53-9	1,2-Dibromobenzene	1,5
584-84-9	Toluene diisocyanate	3
589-18-4	4-Methylbenzenemethanol	3
589-38-8	3-Hexanone	3
589-55-9	4-Heptanol	3
589-82-2	3-Heptanol	3
589-93-5	2,5-Lutidine	3
591-78-6	2-Hexanone	1,5
594-18-3	Dibromodichloromethane	1,5
594-20-7	2,2-Dichloropropane	1,5
597-64-8	Tetraethyl tin	3
598-77-6	1,1,2-Trichloropropane	1,5
602-01-7	2,3-Dinitrotoluene	1,5
602-29-9	2,3,4-Trinitrotoluene	1,5
603-15-6	3,4,5-Trinitrotoluene	1,5
606-20-2	2,6-Dinitrotoluene	1,5
608-73-1	See 58-89-9; 319-84-6; 319-85-7; 319-86-8; and 6108-10-7	

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CAS Number	Entry	Table
608-93-5	Pentachlorobenzene	1,5
610-25-3	2,4,5-Trinitrotoluene	1,5
610-39-9	3,4-Dinitrotoluene	1,5
611-15-4	2-Methylstyrene	1,5
613-12-7	2-Methylanthracene	3
615-54-3	1,2,4-Tribromobenzene	1,5
617-84-4	Diethyl formamide	3
617-94-7	Dimethylphenylcarbinol	3
618-85-9	3,5-Dinitrotoluene	1,5
619-15-8	2,5-Dinitrotoluene	1,5
620-23-5	3-Methylbenzaldehyde	3
621-64-7	N-Nitrosodipropylamine	3
622-97-9	4-Methylstyrene	1,5
625-86-5	2,5-Dimethylfuran	3
627-26-9	trans-2-Butenenitrile	1,5
630-20-6	1,1,1,2-Tetrachloroethane	1,5
634-66-2	Tetrachlorobenzenes (1,2,3,4-)	1,5
634-90-2	Tetrachlorobenzenes (1,2,3,5-)	1,5
634-93-5	2,4,6-Trichloroaniline	1,5
637-50-3	3-Phenyl-1-propene	1,5
643-79-8	1,2-Benzenedicarboxaldehyde	3
683-18-1	Dibutyltin chloride	3
684-93-5	N-Nitroso-N-methyl urea	3
709-98-8	Propanil	1,5
759-96-4	Ethyl di-n-propylthiocarbamate (EPTC)	3
764-41-0	See 1476-11-5 and 110-57-6	
765-34-4	Glycidaldehyde	3
766-90-5	cis-1-Phenyl-1-propene	1,5
767-58-8	2,3-Dihydro-1-methyl-1H-indene	3

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CAS Number	Entry	Table
823-40-5	Toluene-2,6-diamine	1,5
834-12-8	Ametryn	1,5
873-66-5	trans-1-Phenyl-1-propene	1,5
873-94-9	3,3,5-Trimethylcyclohexanone	3
923-02-4	Methylolmethacrylamide	3
924-16-3	N-Nitrosodi-N-butylamine	3
930-55-2	N-Nitrosopyrrolidine	3
957-51-7	Diphenamid	1,5
959-98-8	Endosulfan I	3
1024-57-3	Heptachlor epoxide	1,5
1031-07-8	Endosulfan sulfate	3
1071-83-6	Glyphosate	1,5
1114-71-2	Pebulate	3
1122-60-7	Nitrocyclohexane	3
1163-19-5	Bis(pentabromophenyl)ether	3
1190-76-7	cis-2-Butenenitrile	1,5
1321-12-6	See 88-72-2; 99-08-1 and 99-99-0	
1330-20-7	See 95-47-6; 106-42-3 and 108-38-3	
1462-84-6	2,3,6-Trimethylpyridine	1,5
1476-11-5	cis-1,4-Dichloro-2-butene	1,5
1563-66-2	Carbofuran	1,5
1582-09-8	Trifluralin	1,5
1589-49-7	Propylene glycol monomethyl ether	3
1610-18-0	Prometon	1,5
1634-04-4	Methyl tert-butyl ether	3
1646-87-3	Aldicarb sulfoxide	1,5
1646-88-4	Aldicarb sulfone	1,5
1702-17-6	Clopyralid	3
1807-55-2	4,4'-Methylene-bis-(N-methyl)aniline	1,5

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CAS Number	Entry	Table
1861-32-1	Dimethyl tetrachloroterephthalate	1,5
1861-40-1	Benefin	1,5
1863-63-4	Benzoic acid, ammonium salt	3
1875-92-9	Dimethylbenzylammonium chloride	3
1888-71-7	Hexachloropropene	1,5
1897-45-6	Chlorothalonil	1,5
1912-24-9	Atrazine	1,5
1918-00-9	Dicamba	1,5
1918-16-7	Propachlor	1,5
1929-77-7	Vernolate	3
2008-41-5	Butylate	1,5
2014-83-7	alpha, 2,6-Trichlorotoluene	1,5
2077-46-5	2,3,6-Trichlorotoluene	1,5
2104-96-3	Bromophos	3
2136-79-0	Tetrachloroterephthalic acid	1,5
2164-17-2	Fluometuron	1,5
2207-04-7	trans-1,4-Dimethyl cyclohexane	3
2212-67-1	Molinate	3
2303-16-4	Diallate	3
2303-17-5	Triallate	3
2385-85-5	Mirex	1,5
2425-06-1	Captafol	3
2439-10-3	Dodecylguanidine acetate and Dodecyguanidine hydrochloride	1,5
2641-56-7	Diethyltin dycaprylate	3
2764-72-9	Diquat	1,5
2809-21-4	1-Hydroxyethylidene-1,1-diphosphonic acid	1,5
2835-95-2	Aminocresols (5-Amino-ortho-cresol)	1,5
2835-99-6	Aminocresols (4-Amino-meta-cresol)	1,5
2921-88-2	Chlorpyrifos	3

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CAS Number	Entry	Table
3252-43-5	2,2-Dibromo-3-nitrilopropionamide & Dibromoacetonitrile; Dibromoacetonitrile	1;3
3558-60-9	(2-Methoxyethyl)benzene	1,5
3689-24-5	Tetraethyl dithiopyrophosphate	3
4013-34-7	(1-Methoxyethyl)benzene	1,5
4170-30-3	See 123-73-9 and 15798-64-8	
4376-18-5	Methylphthalate	3
4685-14-7	Paraquat	1,5
4726-14-1	Nitralin	1,5
4786-20-3	See 1190-76-7 and 627-26-9	
4957-14-6	4,4'-Dimethyldiphenylmethane	1,5
5131-66-8	Butoxypropanol	1,5
5197-80-8	Dimethylethylbenzylammonium chloride	3
5216-25-1	alpha, alpha, alpha, 4-Tetrachlorotoluene	1,5
5234-68-4	Carboxin	1,5
5902-51-2	Terbacil	1,5
6108-10-7	epsilon-Hexachlorocyclohexane	1,5
6317-18-6	Methylene bisthiocyanate	1,5
6639-30-1	2,4,5-Trichlorotoluene	1,5
7005-72-3	4-Chlorophenyl phenyl ether	3
7359-72-0	2,3,4-Trichlorotoluene	1,5
7421-93-4	Endrin aldehyde	1,5
7486-38-6	Sodium adipate, disodium salt	3
7664-41-7	Ammonia and Ammonium	1,5
7783-06-4	Hydrogen sulfide	1,5
8001-35-2	Toxaphene	1,5
8018-01-7	Mancozeb	1,5
8065-48-3	Demeton	1,3
9003-27-4	Polybutene(1-propene, 2-methyl homopolymer)	3
10061-01-5	see 542-75-6	

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
10061-02-6	see 542-75-6	
10222-01-2	2,2-Dibromo-3-nitrilopropionamide & Dibromoacetonitrile	1,5
10595-95-6	N-Nitrosomethylethylamine	3
12002-48-1	Trichlorobenzenes	1,5
12122-67-7	Zineb	1,5
12408-10-5	Tetrachlorobenzenes	1,5
12427-38-2	Maneb	1,5
13071-79-9	Terbufos	1,5
13116-57-9	cis-1,2,3-Trichloropropene	1,5
13116-58-0	trans-1,2,3-Trichloropropene	1,5
13560-89-9	Dechlorane Plus	1,5
13590-97-1	Dodecylguanidine acetate and Dodecylguanidine hydrochloride	1,5
13940-94-8	alpha, alpha, 4-Trichlorotoluene	1,5
14484-64-1	Ferbam	1,5
14838-15-4	Phenylpropanolamine	1,5
15798-64-8	cis-2-Butenal	1,5
15972-60-8	Alachlor	1,5
16655-82-6	3-Hydroxycarbofuran	3
16752-77-5	Aldicarb & Methomyl	1,5
17059-48-2	2,3-Dihydro-1,6-dimethyl-1H-indene	3
18292-97-2	2,3,6-Trinitrotoluene	1,5
19089-47-5	Propylene glycol monoethyl ether	3
19398-61-9	2,5-Dichlorotoluene	1,5
21087-64-9	Metribuzin	1,5
21564-17-0	2-(Thiocyanomethylthio)benzothiazole	3
21725-46-2	Cyanazine	3
23135-22-0	Oxamyl	1,5
23184-66-9	Butachlor	1,5
23749-65-7	2,4,6-Trichlorotoluene	1,5

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
23950-58-5	Pronamide	3
25056-70-6	Hexanate	3
25136-55-4	Dimethyldioxane	3
25154-54-5*	See 99-65-0	
25167-93-5	See 88-73-3; 100-00-5 and 121-73-3	
25168-05-2	See 95-49-8; 106-43-4 and 108-41-8	
25186-47-4	3,5-Dichlorotoluene	1,5
25265-76-3	See 95-54-5; 106-50-3 and 108-45-2	
25321-09-9	See 99-62-7; 100-18-5 and 577-55-9	
25321-14-6	See 121-14-2; 602-01-7; 606-20-2; 610-39-9; 618-85-9 and 619-15-8	
25321-22-6	See 95-50-1; 106-46-7 and 541-73-1	
25551-13-7	See 95-63-6; 108-67-8 and 526-73-8	
25973-55-1	2-(2-Hydroxy-3,5-di-tert-pentylphenyl)benzotriazole	1,5
26399-36-0	Profluralin	3
26445-05-6	Aminopyridines	1,5
26523-64-8	See 76-13-1 and 354-58-5	
27134-26-5	See 95-51-2; 106-47-8 and 108-42-9	
29082-74-4	Octachlorostyrene	1,5
29091-21-2	Prodiamine	3
29385-43-1	Tolyltriazole	1,5
29611-84-5*	See 108-75-8 and 1462-84-6	
29761-21-5	Isodecyl diphenyl phosphate	1,3
29797-40-8	See 95-73-8; 95-75-0; 118-69-4; 19398-61-9; 25186-47-4 and 32768-54-0	
30560-19-1	Acephate	3
31600-69-8	4-(1-Methylethoxy)-1-butanol	1,5
32768-54-0	2,3-Dichlorotoluene	1,5
33213-65-9	Endosulfan II	3
33820-53-0	Isopropalin	1,5
34014-18-1	Tebuthiuron	1,5

INDEX OF TOGS 1.1.1 TABLE 1, 3 AND 5 ENTRIES BY CHEMICAL ABSTRACTS SERVICE REGISTRY (CAS) NUMBER JUNE 1998 (Continued)

CAS Number	Entry	Table
35448-14-7	Oxalic acid, benzyl ester	3
37299-86-8	Rhodamine WT	3
39196-18-4	Thiofanox	3
40487-42-1	Pendimethalin	1,5
51218-45-2	Metolachlor	3
51235-04-2	Hexazinone	1,5
53494-70-5	Endrin ketone	1,5
56961-86-5	2,3,5-Trichlorotoluene	1,5
68391-01-5	Alkyl dimethyl benzyl ammonium chloride	1,5
95266-40-3	Cimectacarb	3

* This non-individual CAS number also refers to one or more individual substances that are not specifically listed in the table. These individual substances, however, may be encompassed by a group entry in Table 1 (for example, Principal Organic Comtaminant or Phenolic Compounds). Refer to the text of Part I of this document for an explanation of group entries.

s/s (6/17/98)
N.G. Kaul, P.E.
Director
Division of Water

ERRATA SHEET FOR JUNE 1998 EDITION OF THE DIVISION OF WATER TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) NUMBER 1.1.1

January 1999

The H(WS) Type guidance value for Class A, A-S, AA and AA-S waters for the substance 1,1-dichloroethene (CAS No. 75-35-4) in Table 1 of the June 1998 edition of TOGS 1.1.1 is incorrectly listed as 0.7 ug/L. The CORRECT H(WS) Type guidance value for these surface water classes is 0.07 ug/L.

APRIL 2000 ADDENDUM TO JUNE 1998 DIVISION OF WATER TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) NO. 1.1.1. (Originator - Scott Stoner)

TABLE 1
NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES
April 2000

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Acetaldehyde (75-07-0)	A, A-S, AA, AA-S GA		8 8	H(WS) H(WS)	A A
n-Butanol (71-36-3)	A, A-S, AA, AA-S GA		50 50	H(WS) H(WS)	Z Z
Carbon disulfide (75-15-0)	A, A-S, AA, AA-S GA		60 60	H(WS) H(WS)	B B
Formaldehyde (50-00-0)	A, A-S, AA, AA-S GA		8 8	H(WS) H(WS)	A A
Methyl tert-butyl ether (MTBE) (1634-04-4)	A, A-S, AA, AA-S GA		10 10	H(WS) H(WS)	A A

TABLE 5
NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)
April 2000

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Acetaldehyde (75-07-0)	8	B
n-Butanol (71-36-3)	50	B
Carbon disulfide (75-15-0)	60	B
Formaldehyde (50-00-0)	8	B
Methyl tert-butyl ether (MTBE) (1634-04-4)	10	B

In addition, n-butanol (listed synonymously as 1-butanol), carbon disulfide, formaldehyde and methyl tert-butyl ether are deleted from Table 3 of TOGS 1.1.1.

Philip DeTantillo for

N.G. Kaul, P.E.
Director
Division of Water

JUNE 2004 ADDENDUM TO JUNE 1998 DIVISION OF WATER TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) NO. 1.1.1.

(Originator- Scott Stoner)

TABLE 1
NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES

SUBSTANCE (CAS No.)	WATER CLASSES	STANDARD (ug/L)	GUIDANCE VALUE (ug/L)	TYPE	BASIS CODE
Metolachlor ESA (171118-09-5)	A, A-S, AA, AA-S GA		50 50	H(WS) H(WS)	Z Z
Metolachlor OA (152019-73-3)	A, A-S, AA, AA-S GA		50 50	H(WS) H(WS)	Z Z
Propylene glycol (57-55-6)	A, A-S, AA, AA-S GA		* *	H(WS) H(WS)	G G

Remark *Guidance value is 1,000 ug/L except that a guidance value of 300 ug/L applies at the point of intake of a public or private water supply that uses ozonation in its treatment process.

TABLE 5
NEW YORK STATE GROUNDWATER EFFLUENT LIMITATIONS (CLASS GA)

SUBSTANCE (CAS No.)	MAXIMUM ALLOWABLE CONCENTRATION (ug/L)	CATEGORY
Metolachlor ESA (171118-09-5)	50	B
Metolachlor OA (152019-73-3)	50	B
Propylene glycol (57-55-6)	1,000	B

In addition, metolachlor and propylene glycol are deleted from Table 3 of the June 1998 edition of TOGS 1.1.1.

Sandra L. Allen, Director
Division of Water

NYSDEC

STARS Memo #1

Spill Technology and Remediation Series (STARS) #1

PETROLEUM-CONTAMINATED SOIL GUIDANCE Policy
(Last Revised, August 1992)

Table of Contents

SECTION I
PURPOSE AND APPLICABILITY

The goal at each petroleum spill site is to remove the spilled petroleum product from the soil in the most efficient and safe manner in order that the soil may be returned to a reusable product. When complete removal is not possible, practical, or cost effective, the objective is to remediate the contaminated media to concentration levels which will protect groundwater, human health and the environment.

The Petroleum-Contaminated Soil Guidance Policy is intended to provide direction on the handling, disposal and/or reuse of non-hazardous petroleum-contaminated soils. The reuse or disposal options for excavated soils vary depending on the level of treatment provided consistent with protecting the public health and the environment. While this document does not establish standards, it is intended as guidance in determining whether soils have been contaminated to levels which require investigation and remediation.

This document also constitutes a determination of beneficial use by the Department, as defined in Solid Waste Regulation NYCRR Part 360. Petroleum-contaminated soil, if determined to satisfy the criteria herein, can be reused or disposed of as directed in this guidance. Therefore, soils which meet beneficial use conditions are no longer a solid waste in accordance with NYCRR Part 360-1.2(a)(4).

This guidance is intended for Regional Spill Investigators, Regional Solid Waste staff and responsible parties to assist them in determining the acceptability of remedial activities at a petroleum spill site or in determining the acceptability of a site assessment. It may be applied to both excavated and non-excavated material. The evaluation method and guidance values included in this guidance may be used to determine the limits of contamination, such as defining the extent of contamination in an excavation which contains contaminated material. Situations may exist where results of sampling analysis will require interpretations or subjective judgement, as with certain nuisance characteristics such as odors. These interpretations and judgements will be made solely by the DEC representative on site. There may be instances where the DEC will opt to digress from this guidance to establish cleanup goals reflecting site-specific circumstances at a particular petroleum spill site.

The guidance may also be used by responsible parties to develop corrective action plans which will achieve the criteria set forth in this document.

Robert G. Hampston	Norman H. Nosenchuck
Director	Director
Division of Construction Management	Division of Solid Waste

SECTION II

HAZARDOUS WASTE DETERMINATION

An initial determination[1] must be made on all excavated petroleum-contaminated soil as to whether or not it is a hazardous waste. The hazardous waste determination typically involves laboratory analysis to quantify contaminant concentrations in the waste material. The DEC and EPA regulations, however, allow the generator of the waste to use knowledge of the waste and/or laboratory analysis to make a hazardous waste determination. Petroleum-contaminated soils are generally stored on site while laboratory analysis results are obtained and evaluated. As long as the material is segregated from the environment by impervious material, such as polyethylene sheeting, the petroleum-contaminated soil may remain on site until appropriate laboratory results are available and interpreted.

A petroleum-contaminated soil is considered a characteristic hazardous waste when it exhibits any of the following characteristics: ignitability, corrosivity, reactivity, or toxicity, as defined in 6NYCRR Part 371, Section 371.3, or 40 CFR Section 261. Knowledge of soils contaminated with virgin petroleum products indicates that those waste materials do not demonstrate ignitability, corrosivity, or reactivity characteristics. Therefore, the only characteristic of concern for virgin petroleum-contaminated soil is toxicity. The Toxicity Characteristic (TC) Rule identifies benzene and lead as compounds which may cause petroleum-contaminated waste to be hazardous. Analysis of additional parameters may be necessary for petroleum-contaminated soil located at sites where other contaminants may be present. Refer to Appendix A for more specific information regarding the procedures for hazardous waste determination, and the TC Rule regulatory levels.

If the contaminated soil has been excavated and if the hazardous waste criteria apply, then the contaminated soil is classified as a hazardous waste. Excavated soil which is hazardous due to any non-petroleum component will be referred to the Division of Hazardous Waste Remediation, and the Division of Hazardous Substances Regulation to determine appropriate remedial actions.

If in-situ soil is contaminated by a petroleum product, and if the above hazardous waste criteria are met, the site will be remediated under the direction of the Bureau of Spill Prevention and Response to provide for protection of human health and environmental quality. In-situ soil, which violates any of the hazardous waste criteria due to any non-petroleum component, will be referred to the Division of Hazardous Waste Remediation, and the Division of Hazardous Substances Regulation to determine appropriate remedial actions.

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[1] In-situ or excavated soils which could contain contaminants other than petroleum products, by virtue of laboratory analysis, site history, visual observations, etc., will be sampled and analyzed by either the responsible party or by the Bureau of Spill Prevention and Response (BSPR). The Division of Hazardous Substances Regulation (DHSR) will provide assistance to BSPR staff (for state-funded projects) and responsible parties in making hazardous waste determinations for their generated waste.

SECTION III

SOIL CLEANUP GUIDELINES

There are four essential guidelines which must be satisfied in order for soil to be considered acceptably remediated or not sufficiently contaminated. These are: A) protection of the groundwater; B) protection of human health; C) protection of fish and wildlife and the environment in which they live; and D) protection against objectionable nuisance characteristics. Compliance with these guidelines is satisfied by analysis of soil samples for contaminant concentrations and leachability, and subsequent comparison of the sampling results to guidance values, values which have been determined to be acceptable by DEC.

Contaminant concentrations are determined using EPA standard Methods 8021 or 8270. Leachability is determined using a procedure known as the Toxicity Characteristic Leaching Procedure (TCLP). Satisfactory protection of groundwater is indicated by TCLP Extraction Guidance Values or by TCLP Alternative Guidance Values. Satisfactory protection of human health is indicated by Human Health Guidance Values. Satisfactory protection of water body sediment is indicated by Sediment Guidance Values. Finally, satisfactory protection against objectionable nuisance characteristics is indicated by the lack of odor and by each contaminant concentration being less than 10,000 ppb. Tables 1 and 2 in Section VIII list the contaminants of concern and their corresponding guidance values for acceptable soil concentrations for components of gasoline and fuel oil, respectively. Analysis of additional parameters may be necessary for petroleum-contaminated soil located at sites where other contaminants may be present.

The procedures used when evaluating soil samples to satisfy these guidelines are discussed further in this section.

A. Protection of Groundwater

The presence of a contaminant in the soil does not determine its potential for groundwater contamination. Soil particles can adsorb contaminants which will not be released through infiltration and groundwater recharge mechanisms. Therefore, it is the leachability of the soil which must be measured. To be protective of groundwater quality, the soil must not leach contaminants to the groundwater at concentrations which violate groundwater standards. The **Toxicity Characteristic Leaching Procedure (TCLP)** has been accepted by the Department[2] as a method of determining leachability of petroleum-contaminated soil.

The Toxicity Characteristic Leaching Procedure (TCLP) is an extraction process designed to address the leaching potential of organic and inorganic contaminants. It is used to simulate the actual site-specific leaching potential of individual contaminants present in the soil. In the extraction process, the soil sample is mixed with an acid solution and shaken for approximately eighteen hours. For non-volatile organic and inorganic

[2]Accepted by NYSDEC Cleanup Standards Task Force.

compounds, the soil/acid solution is filtered to produce an extract liquid. For volatile organic compounds, the soil/acid solution is held in a Zero Headspace Extractor (ZHE), preventing the escape of volatile organics, and a liquid extract is squeezed out of the soil/acid solution. The extracted liquid is then analyzed to determine the concentration of the petroleum compounds in question. If the concentrations in the extract are less than or equal to the groundwater standards, then the soil may be considered environmentally acceptable for groundwater protection. Tables 1 and 2 in Appendix B identify the TCLP Extraction Guidance Values for the primary components of gasoline and fuel oil. The tabulated TCLP Extraction Guidance Values are equal to the NYSDEC groundwater standards or the NYSDOH drinking water standards, whichever is more stringent.

An alternative approach to the actual extraction process of the TCLP laboratory procedure which may be a cost-saving shortcut is to evaluate the concentration of the contaminant in the soil and mathematically determine if it will satisfy the leachate criteria. The TCLP laboratory procedure requires the soil sample to be diluted by a ratio of 20:1 when preparing the sample for the acidic extraction, and subsequent leachate analysis. Assuming that the entire mass of the contaminants present in the soil will leach out during the extraction process, the dilution factor of 20 can be applied to the actual soil contaminant concentration to give a maximum possible contaminant concentration obtainable in the leachate.

If a contaminant concentration in the soil is known, then the maximum possible contaminant concentration in the TCLP extract can be determined by the following equation:

Contaminant Concentration in Soil (ug/kg or ppb)	÷ 20 =	Maximum Possible Contaminant Concentration in Extract Liquid (ug/l or ppb)

If the maximum possible contaminant concentration in the extract liquid, as determined by the above equation, is less than or equal to the contaminant's TCLP Extraction Guidance Value, then the contaminant satisfies the groundwater quality protection criterion. If the calculated maximum possible contaminant concentration in the extract liquid is greater than the TCLP Extraction Guidance Value, then no conclusion can be drawn and groundwater quality protection must be confirmed by actually performing the TCLP extraction for that contaminant.

Example:

If the total concentration of Toluene in the soil as determined by Method 8021 is 100 ug/kg or 100 ppb for Sample A and 140 ug/kg or 140 ppb for

Sample B, and the groundwater standard is 5 ppb then:

Sample A is: 100 ug/kg ÷ 20 = 5 ug/l = 5 ppb
Sample B is: 140 ug/kg ÷ 20 = 7 ug/l > 5 ppb

Sample A is considered to have satisfied groundwater protection by the TCLP extraction test for Toluene at 5 ppb. In Sample B, the calculated extract value is greater than 5 ug/l, therefore, no conclusion can be drawn from the calculation, and an actual TCLP extraction test must be performed.

To simplify this alternative approach, TCLP Alternative Guidance Values, which are equal to 20 times the TCLP Extraction Guidance Values, have been included in Tables 1 and 2. Therefore, if a contaminant's soil concentration is known, it can simply be compared to the TCLP Alternative Guidance Values.

The above methodology can also be used to make the hazardous waste determination, with the soil or sediment concentration compared to the respective hazardous waste limit for the leachate. A considerable decrease in analytical costs may be realized if the above equation is used to evaluate contaminant concentration acceptability.

In summary, if the contaminant concentrations in the soil are less than or equal to the TCLP Alternative Guidance Values, or if the contaminant concentrations in the soil extract are less than or equal to the TCLP Extraction Guidance Values, then the soil is considered environmentally acceptable for groundwater quality protection.

B. Protection of Human Health

Protection of human health is an essential requirement of both treatment and reuse of petroleum-contaminated soil. EPA has published health-based standards for many contaminants in soil. The standards are contained in the Health Effects Assessment Summary Table (HEAST REPORT). These standards were derived from methodologies based on soil ingestion values for carcinogens and systemic toxicants.

The appropriate health-based soil Guidance Values are listed in Tables 1 and 2 for the primary components of gasoline and fuel oil.

If the contaminant concentrations in the soil are less than or equal to the Human Health Guidance Values, then the soil is considered safe for human health concerns.

C. Protection of Fish and Wildlife

Protection of fish and wildlife must be satisfied when dealing with contaminated sediment. Some Sediment Guidance Values for protection of aquatic life and animals which consume aquatic life, have been developed and are noted in Tables 1 and 2. Where sediments are contaminated, these Guidance Values should be used. The appropriate natural resource division (eg. Marine, Fish & Wildlife, etc.) should be contacted for situations involving sediment contaminants which do not have tabulated Sediment Guidance Values. If a spill has occurred at a location that may be sensitive to wildlife (eg. wetlands), the Division of Fish and Wildlife should be consulted to determine whether the soil cleanup levels are adequate for natural resource protection.

If the contaminant concentrations in the sediment are less than or equal to the tabulated Sediment Guidance Values, then the sediment is considered environmentally acceptable for fish and wildlife concerns.

D. Protection Against Objectionable Nuisance Characteristics

Petroleum-contaminated soil must not exhibit objectionable nuisance characteristics to be eligible for some reuse options described later in this guidance and listed in Table 3.

1) Petroleum-Type Odors

The soil must not exhibit any discernible petroleum-type odors in order to be considered for the reuse options identified later in this guidance. Odor determinations for state-funded spill projects will be made by the Regional Spill Investigator. Odor determinations for responsible party (RP) sites are the responsibility of the RP. The Regional Spill Investigator may or may not be available to assess the odor criteria at all sites. When the Regional Spill Investigator is on-site, he/she may override the decision of the RP if, in the investigator's opinion, sufficient odors still persist. Determinations by DEC Spill Investigators do not relinquish a responsible party's responsibilities or liabilities under the law.

2) Contaminant Concentrations

The soil shall not contain any contaminant at a concentration above **10,000 ug/kg (10,000 ppb).** This maximum individual contaminant concentration should support the above odor determination, since some petroleum constituents will not leach at high concentrations but may exhibit odors.

If the soil does not exhibit petroleum-type odors and does not contain any individual contaminant at greater than 10,000 ppb, then the soil is considered acceptable for nuisance characteristics.

SECTION IV

GUIDANCE VALUES

A. Gasoline-Contaminated Soils

Table 1 lists the primary gasoline components of concern. The table identifies the compound names, the preferred EPA laboratory methods for determining contaminant concentration, the detection limits for a liquid matrix (water), the detection limits for a solid matrix (soil), the TCLP Extraction Guidance Values (C_w), the TCLP Alternative Guidance Values (C_a), the Human Health Guidance Values (C_h), and the Sediment Guidance Values (C_s).

Although EPA Method 8021 is preferred, other laboratory methods may be used with prior approval from the DEC Regional Spill Investigator. Other proposed methods should be evaluated on their ability to quantify the compounds of concern at acceptable detection levels.

The tabulated detection limits are the practical quantitation limits (PQLs). The PQL is the lowest level that can be measured within specified limits of precision during routine laboratory operations on most matrices. Efforts should be made to obtain the best detection possible when selecting a laboratory.

To demonstrate groundwater quality protection via the TCLP Extraction Method, the concentration of the hydrocarbon compound in the TCLP extract, as determined by EPA Method 8021 for a liquid matrix, must be less than or equal to the TCLP Extraction Guidance Value, C_w.

-or-

To demonstrate groundwater quality protection via the TCLP Alternative Method, the concentration of the hydrocarbon compound in the soil, as determined by EPA Method 8021 for a solid matrix, must be less than or equal to the TCLP Alternative Guidance Value, C_a.

To demonstrate human health protection, the concentration of the hydrocarbon compound in the soil, as determined by EPA Method 8021 for a solid matrix, must be less than or equal to the Human Health Guidance Value, C_h.

To demonstrate fish and wildlife protection, the concentration of the hydrocarbon compound in the soil, as determined by EPA Method 8021 for a solid matrix, must be less than or equal to the Sediment Guidance Value C_s. Meeting this requirement is only necessary when dealing with contaminated sediment.

To demonstrate nuisance protection, the soil must not exhibit petroleum-type odors, and must not contain any contaminant at greater than 10,000 ppb, as determined by EPA Method 8021 for a solid matrix.

When the Guidance Value or standard is below the detection limit, achieving the detection limit will be considered acceptable for meeting the Guidance Value or standard, as long as the reported laboratory detection limits are reasonably close to the listed PQLs.

B. Fuel Oil-Contaminated Soil

Table 2 lists the primary fuel oil components of concern. As with Table 1, Table 2 identifies compound names, preferred EPA laboratory methods, detection limits, and Guidance Values.

Although EPA Methods 8021 and 8270 are preferred for identifying compounds of concern for gasoline and fuel oil, other laboratory methods may be used with prior approval from the DEC Regional Spill Investigator. Other proposed methods should be evaluated on their ability to quantify the compounds of interest at acceptable detection levels.

Since there is no single laboratory method which will analyze for all of the volatile and semi-volatile compounds of concern, it is generally necessary to use more than one laboratory method for fuel oil analysis. Both volatile and semi-volatile compounds must be addressed initially, but a reduced list of analytes may be acceptable for subsequent sampling depending upon the initial results.

As with Table 1, the detection limits in Table 2 are PQLs. Efforts should be made to obtain the best detection possible when selecting a laboratory.

Experience has shown that soil containing some of the insoluble semi-volatile compounds at high concentrations can exhibit a distinct odor even though the substances will not leach from the soil. Therefore, the maximum individual contaminant concentration of 10,000 ppb is instituted to help address this problem. In addition, anytime a soil exhibits discernible petroleum odors, even if it has met the numerical criteria, it shall not be considered clean enough for some reuse options under 6NYCRR Part 360, as described later in this document.

Odor determination is subjective. Since there is no recognized odor measuring device, some discrepancies may arise between responsible parties and the DEC on this subject. In order to document odor determinations and to address the need for remediation due to odors, the following approaches may be considered: (1) direct the laboratory to identify and quantify all pollutants present in the soil and/or leachate samples instead of just the method's target compounds; and (2) establish site-specific conditions

based on an evaluation of the characteristics of the site. The determination and evaluation of odors remains a subject requiring further research and policy development.

Some of the semi-volatiles are carcinogens, and subsequently have groundwater quality Guidance Values of 0.002 ppb. The TCLP Extraction Guidance Values are 0.002 ppb, and the TCLP Alternative Guidance Values are 0.04 ppb. The solid matrix detection limit does not approach this low value. Therefore, when these compounds are determined to be present, the TCLP Extraction Method and the Alternative Guidance Values must be satisfied to demonstrate groundwater quality protection for these particular contaminants. The following compounds listed in Table 2 are affected by this limitation: benzo(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; benzo(a)pyrene; chrysene; benzo(ghi)perylene; and indeno(1,2,3-cd)pyrene.

Particular attention should be paid to the Human Health Guidance Values for fuel oil-contaminated soil. While the majority of the semi-volatiles have health Guidance Values considerably higher than the contaminant concentration generally encountered at spill sites, there are seven compounds listed in Table 2 which have Human Health Guidance Values lower than the detection limits. When any of these compounds (benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene and dibenz(a,h)anthracene) are present, the Human Health Guidance Value most likely will be the limiting factor for achieving acceptable cleanup levels.

To demonstrate groundwater quality protection via the TCLP Extraction Method, the concentrations of the hydrocarbon compounds in the TCLP extract, as determined by EPA Methods 8021 and 8270 Base/Neutral for a liquid matrix, must be less than or equal to the TCLP Extraction Guidance Value, C_w;

-or-

To demonstrate groundwater quality protection via the TCLP Alternative Method, the concentrations of the hydrocarbon compounds in the soil, as determined by EPA Methods 8021 and 8270 Base/Neutral for a solid matrix, must be less than or equal to the TCLP Alternative Guidance Value, C_a. As described above, the TCLP Alternative Method is not a sufficient demonstration of groundwater protection for some contaminants.

To demonstrate human health protection, the concentrations of the hydrocarbon compounds in the soil, as determined by EPA Methods 8021 and 8270 Base/Neutral for a solid matrix, must be less than or equal to the Human Health Guidance Value, C_h.

To demonstrate fish and wildlife protection, the concentrations of the hydrocarbon compounds in the soil, as determined by EPA Methods 8021 and 8270 Base/Neutral for a solid matrix, must be less than or equal to the Sediment Guidance

Value, C_s. Meeting this requirement is only necessary when dealing with contaminated sediment.

To demonstrate nuisance protection, the soil must not exhibit petroleum-type odors, and must not contain any contaminant at greater than 10,000 ppb, as determined by EPA Methods 8021 and 8270 Base/Neutral for a solid matrix.

When the Guidance Value or standard is below the detection limit, achieving the detection limit will be considered acceptable for meeting the Guidance Value or standard, as long as the reported laboratory detection limits are reasonably close to the listed PQLs.

SECTION V

LABORATORY ANALYSIS

There are a variety of laboratory methods, established by the USEPA and the NYS Department of Health (DOH), which can be used to analyze petroleum-contaminated soils. The selection of appropriate laboratory methods depends on the compounds of concern, the detection limits for each compound, the nature of the samples to be analyzed, the capabilities of the laboratory, and the regulatory limits or Guidance Values to be achieved. The methods recommended and most often used for petroleum-contaminated soils are EPA Standard Methods 8021, 8270 (Base/Neutrals) and the TCLP extraction process. In every case, the NYSDEC will evaluate laboratory results from NYSDOH-approved laboratories only.

Each laboratory method identifies compounds which can be quantified with an acceptable degree of precision and accuracy. Many laboratory methods have petroleum compounds as target compounds, along with non-petroleum compounds. Method 8270, for example, identifies acid extractable hydrocarbons and base/neutral extractable hydrocarbons. The semi-volatile constituents of petroleum products are a sub-set of the base/neutral extractable compounds under Method 8270. Therefore, when requesting this analysis, base/neutrals only should be specified.

Some laboratories may be able to quantify non-target compounds of concern with particular methods. For example, there is no laboratory method which lists MTBE (methyl t-butyl ether) as a target compound; however, laboratories can include MTBE in their analysis using Method 8021. Therefore, when requesting this analysis, Method 8021 plus MTBE should be specified.

Each laboratory method establishes minimum concentrations of the target compounds which can be detected under ideal conditions using that particular procedure. These Method Detection Limits (MDLs) are rarely achievable under actual conditions in an analytical laboratory. Laboratories report their actual detection limits as Practical Quantitation Limits (PQLs). The PQLs for analysis on a liquid matrix are generally four times the MDLs. With a solid matrix, the PQLs will be affected by the quantity of contamination present, categorized as low, medium or high concentrations. Lower PQLs are generally possible with low level soil contamination. Laboratories must identify their PQLs when reporting analytical results.

Laboratories and methods to be utilized should be selected according to the best detection possible for the compounds of interest, and the regulatory or guidance levels needed to be achieved. For example, Table 2 indicates that naphthalene is a target compound for Method 8021 and Method 8270. Both of these methods can provide detection levels in a liquid matrix below the TCLP Extraction Guidance Value of 10 ppb. Therefore, either method could be used for analysis of a liquid matrix of naphthalene. However, for a solid matrix, Method 8021 is capable of providing much better detection of naphthalene than Method 8270. If the soil concentrations for naphthalene will be compared to the TCLP Alternative Guidance Value of 200 ppb, then Method 8021 should be used instead of Method 8270. If the soil concentrations for naphthalene will be compared only with the nuisance protection level of 10,000 ppb,

or the Human Health Guidance Value of 300,000 ppb, then both Method 8021 and Method 8270 are capable of providing satisfactory detection levels for naphthalene.

Initial laboratory analysis should address the full range of compounds which may be present, considering the petroleum products involved. In consideration of prior laboratory results, potential contaminants may be eliminated from subsequent sampling analysis lists. As the contaminants are identified or eliminated, it may be appropriate to change laboratory methods during a project, to avoid unnecessary laboratory expenses. In addition, it may be appropriate to discuss analytical work with the laboratory in terms of the actual compounds of interest rather than method numbers and their defined target compounds. The final laboratory results for a project, however, should address the same full range of compounds as the initial sampling results, to confirm that the interim results did not overlook the appearance of other compounds. For example, gasoline-contaminated soil which is undergoing on-site bioremediation should be analyzed initially using Method 8021 plus MTBE. If only benzene, toluene, ethyl benzene and xylenes are detected, then Method 8020 could be used for interim sampling events. Upon completion of the bioremediation project, the soil should be analyzed using Method 8021 plus MTBE, to demonstrate the satisfaction of the Guidance Values applicable to the selected reuse option.

A detailed description of analytical protocols and procedures is available in the DEC Sampling Guidelines and Protocols manual.

SECTION VI

SAMPLING

Samples should be collected in such a manner so as to best characterize the extent of contamination of the soil in question. There is no specific number or type of samples which will apply to all situations and best engineering judgement will have to be used. The type of sample, grab or composite, will vary depending upon the constituent being identified. While grab samples come from one location, composites come from several locations and are joined to form one sample. When volatiles are in question, care must be taken when collecting composite samples to minimize the loss of volatiles during handling. In order to minimize handling of volatiles, several grab samples are preferred, with confirmatory composite samples. When sampling for semi-volatiles, several composite samples are preferred, with confirmatory grab samples.

The treatment process (if any) will also have a bearing as to how well a soil may be characterized. Low temperature thermal treatment units (e.g. rotary kiln dryers) process soil resulting in a more homogeneous mixture than would be obtained from a stationary pile. The following guidance is offered to assist the Regional Spill Investigator in determining the number and types of samples which should be requested for various treatment scenarios. More comprehensive samples may be required depending on the reuse or disposal alternative to be used.

The responsible party and the Regional Spill Investigator should agree on a sampling plan and review procedure before the samples are collected. All sample results submitted for regulatory compliance must be analyzed by New York State Department of Health approved laboratories.

A detailed description of soil sampling protocols and procedures is available in the DEC Sampling Guidelines and Protocols manual.

A. Tank Pit

If there is a question as to the extent of residual contamination, or if comprehensive documentation is necessary, a tank pit may be sampled for laboratory analysis.

A total of five samples should be taken from the excavation. One composite sample from each of the side walls at a distance approximately one third up from the bottom of the pit. Several samples should also be collected to form one composite sample from the bottom of the pit. Any remaining samples should be grab samples from areas with greater potential for contamination such as stained soils, adjacent to a corrosion hole, opposite a manway, or opposite a tank opening. All samples shall be taken no less than six inches below the exposed surface being sampled. Samples for compositing should be taken from random locations on the floor and walls of the tank pit.

B. Soil Pile

The number of samples required for an excavated pile will be related to the quantity of soil stockpiled. The table below can be used as a guide in determining the appropriate number of samples. If, in the opinion of the Regional Spill Investigator, additional samples are warranted, they should be requested.

Recommended Number of Soil Pile Samples

CONTAMINANT	SEMI-VOLATILES		VOLATILES	
SAMPLE TYPE	Grab	Composite	Grab	Composite
SOIL QUANTITY (yd^3)				
0-50	1	1	1	1
50-100	1	2	2	1
100-200	1	3	3	1
200-300	1	4	4	1
300-400	2	4	4	2
400-500	2	5	5	2
500-800	2	6	6	2
800-1000	2	7	7	2
>1000 - Proposed Sampling plan shall be submitted for approval on site specific basis				

Best engineering judgement is needed to determine the most appropriate sampling locations. The objective of the sampling is to characterize the extent of contamination of the pile. Consideration should be given to how the soil was stockpiled. Is the most contaminated soil toward the top? Are areas visibly contaminated? How high and how long is the pile? It may be preferable to divide the pile into manageable segments. Samples should be taken from within the pile. Surface soil should not be used as sampling material. Samples shall be collected in accordance with proper sample collection techniques. All samples must be collected in glass containers with air-tight sealable tops.

Using the above sampling table, considering the factors mentioned above, and applying best engineering judgement, an acceptable evaluation of the contaminant concentrations in the soil can be made.

C. Processed Soil

Processed soil is soil which undergoes physical handling during a treatment process. Examples of treatment processes are rotary kiln dryers (low temperature thermal treatment units) or soil washing units. Soil under these conditions are more homogeneously mixed; therefore, individual samples are more likely to characterize the entire lot. Since these processes are continuous in nature, the samples should be collected over a period of time similar to that described below:

1) A sample may be collected every twenty minutes for a period of two hours. The samples are then mixed to form one composite sample. This frequency will continue until all soils are processed. The twenty minute composite interval is a guideline which can be adjusted based on the amount of soil processed and the processing period. Testing protocols are specifically defined in the treatment unit's operating permit.

2) At least one grab sample should be taken for every two sets of composites.

3) A minimum of two samples (1 grab, 1 composite) should be taken for any treated soil batch.

D. Aboveground (Ex-Situ) Treatment

Typical aboveground treatment technologies are bioremediation and soil vapor extraction. Soil remediated under these conditions will be mixed (tilled) and spread evenly over a wide area. The soil will be spread to a uniform thickness, usually no higher than two feet, although depths may be higher for soil vapor extraction treatment. The shallow depth makes sample collection an easy process. The number of required samples can be based on the quantity of soil being treated (see above table). Depth of the sample can be anywhere from six inches to the bottom of the treatment layer. Care must be taken not to penetrate the liner material. The sampling locations and depths must be randomized.

E. Non-Excavated (In-Situ) Treatment

Treatment of non-excavated soil is similar to aboveground treatment in that the contamination is spread over a wide area. It differs, however, in that the depths of the contaminated zone are varied and usually extend much deeper. Once the volume of contaminated material is determined, the above table can be used to determine the number of required samples. The sampling locations and depths must be randomized.

SECTION VII

MANAGEMENT OF EXCAVATED (EX-SITU) CONTAMINATED SOILS

Once non-hazardous petroleum-contaminated soil is moved from its original state, it is by definition a solid industrial waste and must be managed in accordance with Part 360 and transported in accordance with Part 364 regulations. There are several alternatives available to properly handle this contaminated soil.

A. Soils Which Do Not Meet Guidance Values

Soils which do not meet the guidance values can be processed under a specific DEC Beneficial Use Determination (BUD), such as at an approved hot-mix asphalt batching plant or at a cold-mix asphalt plant, disposed of at a DEC authorized landfill, or treated on site.

1) Reuse Under Specific Beneficial Use Determinations

The DEC Division of Solid Waste has made Beneficial Use Determinations (BUD's) under 6 NYCRR Part 360, identifying recycling or re-use activities which are not subject to Part 360 regulations. The use of petroleum-contaminated soil in a manufacturing process to produce a marketable product may be eligible for BUD issuance. Each manufacturing process operator must maintain compliance with the specific requirements of the issued BUD. Hot-mix and cold-mix asphalt manufacturing are two examples of processes which have received BUD's, and other processes may be approved by the Division of Solid Waste in the future.

a. Reuse at an Approved Asphalt Batching Plant

Several asphalt plants have been authorized to accept non-hazardous contaminated soil, for use as aggregate, provided the plant is in compliance with any other DEC regulations which may apply to the facility. For example, the use of petroleum-contaminated soil may require a modification of the facility's air emission permit.

b. Production of Cold-Mix Asphalt

A Beneficial Use Determination (BUD) has been issued to the process which combines liquid asphalt emulsion with the contaminated soil to produce a cold-mix asphalt. Approval to process petroleum-contaminated soil to produce a cold-mix asphalt is issued by the Spill Response Program. The applicant must satisfy specific testing requirements prior to receiving approval to process. Each BUD

identifies allowable uses for the manufactured cold-mix asphalt and any qualifying conditions and post-treatment testing protocols.

These asphalt products, if being stockpiled or transported for disposal rather than reuse, no longer meet the requirements for these BUDs and are subject to all applicable regulatory provisions of 6NYCRR Parts 360 and 364.

PCS containing asphalt products, which are left in a stockpile and are not being beneficially used, remain a solid waste until such use is accomplished. These materials shall be removed from the stockpile for beneficial use in accordance with their beneficial use approval requirements, or disposal if necessary, as rapidly as possible.

2) Disposal at an Authorized Landfill

A DEC-authorized landfill is one which either has an operating permit or is under a consent order. While this is not the preferred method of dealing with contaminated soil, it may be the most economical or, due to site constraints, the only alternative. Additional restrictions may be required by the landfill operators prior to accepting materials at their facilities.

3) Treatment On Site

Non-hazardous petroleum-contaminated soil may be treated on the site of generation without a DEC Part 360 Permit. Depending on the treatment technologies being utilized, other DEC permits may be required for air emissions and water discharges.The soil treatment processes may involve excavation of soils, securely stockpiling the soils until treatment is initiated, aboveground treatment of the soils, and/or placement of soils back into an excavation for treatment. The Regional Spill Investigator should require a remedial plan, signed by the responsible party, prior to the placement of contaminated soils into an excavation for treatment.

If the soil is to be placed back in an excavation for treatment, and if the excavation is determined to be uncontaminated, the excavation must be prepared and lined in such a manner to protect it against contamination from the soil which will be treated. However, if the excavation is contaminated it shall be the decision of the Regional Spill Investigator as to whether a liner is necessary.

All excavated soil shall be placed on an impervious material (eg: polyethylene sheeting) with the sides banked so as to control and contain run-off. During periods when no treatment is on-going, the surface of the pile(s) must also be covered with an impervious material.

The site may have to be evaluated for its impact to the ambient air. Cross media contamination shall be minimized and aesthetic or nuisance issues shall be addressed. If space on the site is limited, or if the protection of the public health is in jeopardy, then on-site treatment will not be allowed and soil must be removed to a permitted location for treatment or disposal.

There are several methods of on-site soil treatment. Typical among these are soil venting, bioremediation, soil washing and low temperature thermal treatment. All treatment should be evaluated based on its ability to achieve the desired result in the most economical and efficient manner.

B. Soils Which Meet Guidance Values

The reuse options available for de-contaminated soil depends upon which particular Guidance Values are satisfied by the soil. Table 3 identifies the reuse options and the Guidance Values which must be met to use each reuse option.

As described earlier, the DEC Division of Solid Waste (DSW) has issued a Generic Beneficial Use Determination (BUD) which exempts petroleum-contaminated soils, which have been successfully incorporated into an asphalt product by a Bureau of Spill Prevention and Response (BSPR) approved producer and which will be utilized in a bonified paving project.

In addition, the DSW has determined that soils which satisfy the appropriate Guidance Values and which will be reused as highway sub-base material, fill for the original excavation, fill elsewhere on the site of generation, or fill off-site at pre-approved locations, are being beneficially used and are exempt from the provisions of 6NYCRR Part 360. These soils are also exempt from 6NYCRR Part 364 since they no longer meet the Part 364 definition of "solid waste".

The reuse options are not listed as a hierarchy; however, off-site reuse is generally less desirable. The Regional Spill Supervisor or his/her designee will review all appropriate soil sampling data to determine if the criteria has been met for the requested reuse option. Upon request from the responsible party, the evaluation of the submitted data shall be documented with a statement from the Regional Spill Supervisor that the soil does or does not meet the criteria for the desired reuse option. **The DEC and its designee assume no liability when evaluating data for a responsible party with regard to the reuse or disposal of the soil in question.** The generator of the soil has the ultimate responsibility for the accurate and precise characterization, and the safe and proper reuse or disposal of the material. In addition, soil which is being reused off site shall not be allowed to be transported prior to the receipt of the laboratory reports confirming that the soil has satisfied the appropriate Guidance Values of this guidance document. **The responsible party shall maintain all field data, laboratory results, and final disposition records for three years.**

The possible reuse options are presented below. Additional uses of decontaminated petroleum-contaminated soil may be identified in a Part 360 Permit or BUD for a specific facility.

1) Reuse as a Construction Material

Soil which satisfies the Guidance Values for groundwater protection, human health protection and nuisance characteristics can be reused as construction material. Construction material can include hot asphalt, cold-mix asphalt, concrete, roadway sub-base, etc. Final destination of the soil shall be identified prior to removal from the site.

2) Returned to the Original Excavation

Soil which satisfies the Guidance Values for groundwater protection, human health protection, and nuisance characteristics, can be placed back in the hole from which it was excavated.

3) Placed Elsewhere on Site

Soil which satisfies the Guidance Values for groundwater protection, human health protection, and nuisance characteristics, can be placed anywhere within the confines of the contiguously-owned property from which it originated.

4) Reuse Off-Site at a Pre-Approved Location

The Regional Spill Engineer and Regional Solid Waste Engineer may approve a request for an off-site reuse location for remediated soil which satisfies the Guidance Values for groundwater protection, human health protection, and nuisance characteristics. Sites which may be considered for this option are industrial sites, authorized construction and demolition debris landfills, petroleum storage facilities, authorized landfills, or other locations where public access is limited. Written approval must be received from the property owner(s) prior to exercising this reuse option. The responsible party may submit such a request to the Regional Spill Engineer who will coordinate with the Regional Solid Waste Engineer to approve or disapprove the request.

C. Rock Debris

Rock debris, for purposes of this policy, is defined as those rocks which are four (4) inches or greater in diameter. They shall be cleaned of any packed-on petroleum-contaminated soil. These rocks are not treated as a solid waste and can be disposed of as construction and demolition debris.

If rock debris cannot be separated from the petroleum-contaminated soil, it shall be handled as a solid waste in accordance with NYCRR Part 360 and/or Part 364 requirements.

SECTION VIII

MANAGEMENT OF NON-EXCAVATED (IN-SITU) CONTAMINATED SOIL

In-situ contaminated soil may pose a threat to the groundwater, human health and the environment. These sites must be evaluated to determine the extent of contamination and the appropriate investigative or remedial actions necessary. The soil may be treated in-situ and evaluated by the same guidelines as excavated soil, while taking into account site-specific considerations and conditions.

Additional guidance will be developed to establish procedures for evaluating the potential impacts of non-excavated (in-situ) contaminated soils. Issues which should be considered when evaluating in-situ contaminated soil are environmental sensitivity of the site, level of residual contamination, soil characteristics, depth to groundwater, present and potential land use. A proper sampling plan will be necessary to determine the number, quantity and depth of samples to properly characterize the site.

SECTION IX

REFERENCES

NYS Department of Environmental Conservation, Cleanup Standards Task Force, DRAFT Cleanup Policy and Guidelines, October 1991.

NYS Department of Environmental Conservation, Division of Hazardous Substances Regulation, 6NYCRR Part 364, Waste Transporter Permits, January 12, 1990.

NYS Department of Environmental Conservation, Division of Hazardous Substances Regulation, 6NYCRR Part 371 Identification and Listing of Hazardous Wastes, December 25, 1988.

NYS Department of Environmental Conservation, Division of Solid Waste, 6NYCRR Part 360 Solid Waste Management Facilities, May 28, 1991.

NYS Department of Environmental Conservation, Division of Water, Sampling Guidelines and Protocols, March 1991.

NYS Department of Environmental Conservation, Division of Water, Spill Response Guidance Manual, January 1990.

NYS Department of Environmental Conservation, Division of Water, Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, November 15, 1991.

US Environmental Protection Agency, 40 CFR Part 261 Identification and Listing of Hazardous Wastes, June 29, 1990.

US Environmental Protection Agency, Health Effects Assessment Summary Table, April 4, 1991.

APPENDIX A

HAZARDOUS WASTE DETERMINATION AND REGULATORY LEVELS

In accordance with DEC and EPA regulations, the generator of a waste material must determine if the material is a hazardous waste or a non-hazardous waste. The generator can make this determination using knowledge of the waste and/or laboratory analyses.

A waste material can be a hazardous waste due to its origin, its listed waste content, or its characteristics.

Soil contaminated with virgin petroleum products is a hazardous waste if it exhibits a characteristic of a hazardous waste, namely, ignitability, corrosivity, reactivity, and toxicity. The hazardous waste characteristics, defined in 6NYCRR Part 371, Section 371.3, and 40 CFR Section 261, are described below.

A. **Ignitability**:

A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

1) Is not a liquid and is capable under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

2) It is a liquid, other than an aqueous solution containing less than 24 percent ethyl alcohol by volume, and has a flash point less than 60°C (140°F).

3) It is an ignitable compressed gas.

4) It is an oxidizer.

In accordance with guidance from the DEC Division of Hazardous Substances Regulation and based on knowledge of the waste, soils contaminated with virgin petroleum products do not exhibit the above properties and do not have to be tested for the ignitability characteristic.

B. **Corrosivity**:

A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

1) It is aqueous and has pH less than or equal to 2 or greater than or equal to 12.5.

2) It is a liquid and corrodes steel at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F).

Based on knowledge of the waste, soils contaminated with virgin petroleum products do not exhibit the above properties, and do not have to be tested for the corrosivity characteristic.

C. **Reactivity**:

A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

1) It is normally unstable and readily undergoes violent change without detonating.

2) It reacts violently with water.

3) It forms potentially explosive mixtures with water.

4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in quantity sufficient to present a danger to human health or the environment.

6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

8) It is a forbidden explosive, a Class A explosive or a Class B explosive.

Based on knowledge of the waste, soils contaminated with virgin petroleum products do not exhibit the above properties, and do not have to be tested for the reactivity characteristic.

D. **Toxicity**:

If the Toxicity Characteristic Leaching Procedure (TCLP) extract from a representative sample of the waste contain any of the contaminants identified in the attached listing of Hazardous Waste Regulatory levels at concentrations equal to or greater than the values listed, it is a hazardous waste.

With respect to petroleum-contaminated soil, the primary compound of concern is benzene. If the benzene concentration in a TCLP extract is equal to or greater than 500

ppb, the contaminated material is a characteristic hazardous waste. For gasoline contaminated soil, toxicity for lead must also be evaluated.

The regulatory level of benzene in the soil is determined by analyzing the soil using the TCLP extraction method and determining the concentration in the extract.

A second method of determination is to identify the total concentration of the contaminant in the soil. If the total concentration is less than the regulatory level, then the leachate level could not possibly exceed the standard. This approach would save laboratory costs because the TCLP would not have to be run. If the total concentration in the soil exceeds the regulatory level required in the extract, no conclusion can be drawn from these results and a complete TCLP must be run.

Additional Information on Toxicity Characteristics

On March 29, 1990, the U.S. Environmental Protection Agency established the Toxicity Characteristic (TC) Rule. The TC Rule expands the list of contaminants by which a waste can be classified as hazardous due to toxicity, and it replaces the Extraction Procedure Toxicity (EP Tox) with the Toxicity Characteristic Leaching Procedure (TCLP). The TC Rule's specified contaminant list includes the same 14 metals and pesticides as the original toxicity list, plus 25 additional organic chemicals. Each of the 39 listed contaminants has the potential for rendering a particular material a characteristic hazardous waste due to toxicity. Since benzene is one of the 25 organic compounds added to the toxicity list, and since benzene is commonly found in petroleum products, it is possible that petroleum-contaminated soil may classify as a hazardous waste. Limited relief from these hazardous waste regulations is currently available because the TC Rule has specifically deferred petroleum-contaminated soil, groundwater, and debris generated from underground storage tank (UST) releases, until the impact of the regulation is further evaluated.

UST sites are essentially those sites which have underground storage tanks containing transportation fuels, such as gasoline, jet fuel, aviation gas, and diesel fuel. (See 40 CFR Section 280.12 for a more complete definition). The TC Rule does not apply to petroleum-contaminated media produced by a leak from an UST, including associated underground piping. However, DEC regulations state that the materials contaminated by transportation fuels can be hazardous wastes if they exhibit other hazardous waste characteristics, such as toxicity due to lead.

The TC Rule, as published on March 29, 1990, became effective on September 25, 1990, for large-quantity generators, and March 29, 1991, for small quantity generators. Large quantity generators are defined as those parties who generate 2,200 pounds or more of hazardous waste in any month. Small quantity generators are those parties who generate between 220 and 2,200 pounds of hazardous waste in any month. Until the DEC adopts the TC Rule, waste generators must comply with both the EPA and DEC waste regulations. Refer to the specific regulations of interest for more information.

HAZARDOUS WASTE REGULATORY LEVELS FOR TOXICITY CHARACTERISTIC

CONSTITUENT	REGULATORY LEVEL (mg/L)
Arsenic	5.0
Barium	100.0
Benzene	0.5*
Cadmium	1.0
Carbon tetrachloride	0.5*
Chlordane	0.03*
Chlorobenzene	100.0*
Chloroform	6.0*
Chromium	5.0
o-Cresol	200.0*
m-Cresol	200.0*
Cresol (TOTAL)	200.0*
2,4-D	10.0
1,4-Dichlorobenzene	7.5*
1,2-Dichloroethane	0.5*
1,1-Dichloroethylene	0.7*
2,4-Dinitrotoluene	0.13*
Endrin	0.02
Heptachlor (and its epoxide)	0.008*
Hexachlorobenzene	0.13*
Hexachloro-1,3butadiene	0.5*
Hexachloroethane	3.0*
Lead	5.0
Lindane	0.4

HAZARDOUS WASTE REGULATORY LEVELS FOR TOXICITY CHARACTERISTIC (Cont'd)

CONSTITUENT	REGULATORY LEVEL (mg/L)
Mercury	0.2
Methoxychlor	10.0
Methyl ethyl ketone	200.0*
Nitrobenzene	2.0*
Pentachlorophenol	100.0*
Pyridine	5.0*
Selenium	1.0
Silver	5.0
Tetrachloroethylene	0.7*
Toxaphene	0.5
Trichloroethylene	0.5*
2,4,5-Trichlorophenol	400.0*
2,4,6-Trichlorophenol	2.0*
2,4,5-TP (Silvex)	1.0
Vinyl chloride	0.2*

* New Toxicity Characteristics Effective 9/25/90

APPENDIX B

GUIDANCE VALUES AND REUSE OPTIONS

TABLE 1
Guidance Values For Gasoline Contaminated Soil*

Compound	EPA Method	Detection Limit[1] (ppb)		TCLP Extraction Guidance Value[2] C_w (ppb)	TCLP Alternative Guidance Value C_a (ppb)	Human Health Guidance Value C_h (ppb)	Sediment Guidance Value C_s (ppb)
		Liquid	Solid				
Benzene	8021 (8020)	1	2	0.7	14	2.4×10^4	
Ethylbenzene	8021 (8020)	1	2	5	100	8.0×10^6	
Toluene	8021 (8020)	1	2	5	100	2.0×10^7	
o-Xylene	8021 (8020)	2	2	5	100	2.0×10^8	
m-Xylene	8021 (8020)	2	2	5	100	2.0×10^8	
p-Xylene	8021 (8020)	2	2	5	100	***	
Mixed Xylenes	8021 (8020)	2	2	5	100	2.0×10^8	
Isopropylbenzene	8021	1	1	5	100	***	
n-Propylbenzene	8021	1	1	5	100	***	
p-Isopropyltoluene	8021	1	1	5	100	***	
1,2,4-Trimethylbenzene	8021	1	1	5	100	***	
1,3,5-Trimethylbenzene	8021	1	1	5	100	***	
n-Butylbenzene	8021	1	1	5	100	***	
sec-Butylbenzene	8021	1	1	5	100	***	
Naphthalene	8021	1	1	10	200	3.0×10^5	
Methyl t-butyl ether (MTBE)[3]	8021 (8020)	1	1	50	1,000	***	

***Nuisance Characteristics Guidance:**

No petroleum-type odors.

No individual contaminant in soil at greater than 10,000 ppb.

(1) The listed Detection Limits are Practical Quantitation Limits (PQLs). The Method Detection Limit (MDL) is the best possible detection. Laboratories report the Practical Quantitation Limit (PQL), which is generally 4 times the MDL. Efforts should be made to obtain the best detection possible when selecting a laboratory. When the Guidance Value or standard is below the detection limit, achieving the detection limit will be considered acceptable for meeting the Guidance Value or standard.

(2) The TCLP Extraction Guidance Values are equal to the NYSDEC groundwater quality standards or Guidance Values, or the NYSDOH drinking water quality standards or Guidance Values, whichever is more stringent.

(3) Methyl t-butyl ether (MTBE) is not a target compound of Methods 8021 and 8020, but MTBE may be determined using these methods with appropriate quality assurance and quality control measures.

*** No Guidance Value identified in EPA HEAST Report.

TABLE 2
Guidance Values for Fuel Oil Contaminated Soil*

Compound	EPA Method	Detection Limit[1] (ppb)		TCLP Extraction Guidance Value[2] C_w (ppb)	TCLP Alternative Guidance Value C_a (ppb)	Human Health Guidance Value C_h (ppb)	Sediment Guidance Value C_s (ppb)	
		Liquid	Solid				Fresh	Marine
Benzene	8021 (8020)	1	2	0.7	14	2.4×10^4		
Ethylbenzene	8021 (8020)	1	2	5	100	8.0×10^6		
Toluene	8021 (8020)	1	2	5	100	2.0×10^7		
o-Xylene	8021 (8020)	2	2	5	100	2.0×10^8		
m-Xylene	8021 (8020)	2	2	5	100	2.0×10^8		
p-Xylene	8021 (8020)	2	2	5	100	***		
Mixed Xylenes	8021 (8020)	2	2	5	100	2.0×10^8		
Isopropylbenzene	8021	1	1	5	100	***		
n-Propylbenzene	8021	1	1	5	100	***		
p-Isopropyltoluene	8021	1	1	5	100	***		
1,2,4-Trimethylbenzene	8021	1	1	5	100	***		
1,3,5-Trimethylbenzene	8021	1	1	5	100	***		
n-Butylbenzene	8021	1	1	5	100	***		
sec-Butylbenzene	8021	1	1	5	100	***		
t-Butyl benzene	8021	1	1	5	100	***		
Naphthalene[3]	8021 (8270)	1 (6)	1 (330)	10	200	3.0×10^5		
Anthracene	8270	8	330	50	1,000	2.0×10^7		
Fluorene	8270	8	330	50	1,000	3.0×10^6		
Phenanthrene	8270	22	330	50	1,000	***		
Pyrene	8270	8	330	50	1,000	2.0×10^6		
Acenaphthene	8270	8	330	20	400	5.0×10^6		
Benzo(a)anthracene	8270	31	330	.002	.04[4]	220	33	18
Fluoranthene	8270	9	330	50	1,000	3.0×10^6		

(CONTINUED ON THE NEXT PAGE)

TABLE 2 (Cont'd)
Guidance Values for Fuel Oil Contaminated Soil*

Compound	EPA Method	Detection Limit (ppb)		TCLP Extraction Guidance Value[3] C_w (ppb)	TCLP Alternative Guidance Value C_a (ppb)	Human Health Guidance Value C_h (ppb)	Sediment Guidance Value C_s (ppb)	
		Liquid	Solid				Fresh	Marine
Benzo(b)fluoranthene	8270	19	330	.002	.04[4]	220	33	18
Benzo(k)fluoranthene	8270	10	330	.002	.04[4]	220	33	18
Chrysene	8270	10	330	.002	.04[4]	***	33	18
Benzo(a)pyrene	8270	10	330	.002	.04[4]	61	33	18
Benzo(g,h,i)perylene	8270	10	330	.002	.04[4]	***		
Indeno(1,2,3-cd)pyrene	8270	10	330	.002	.04[4]	***		
Dibenz(a,h)anthracene	8270	10	330	50	1,000	14		

*** Nuisance Characteristics Guidance:**
No Petroleum-type odors.
No individual contaminant in soil at greater than 10,000 ppb.

(1) The listed Detection Limits are Practical Quantitation Limits (PQL's). The Method Detection Limit (MDL) is the best possible detection. Laboratories report the Practical Quantitation Limit (PQL), which is generally 4 times the MDL. Efforts should be made to obtain the best detection possible when selecting a laboratory. When the Guidance Value or standard is below the detection limit, achieving the detection limit will be considered acceptable for meeting the Guidance Value or standard.

(2) The TCLP Extraction Guidance Values are equal to the NYSDEC groundwater quality standards or Guidance Values, or the NYSDOH drinking water quality standards or Guidance Values, whichever is more stringent.

(3) For naphthalene analysis in a liquid matrix, both Method 8021 and Method 8270 can provide satisfactory levels for comparison to the C_w of 10 ppb.

For naphthalene analysis in a solid matrix, Method 8021 is preferred over Method 8270 for comparison to the C_a of 200 ppb. If the C_a Guidance Value is not being used in the soil evaluation, then both Method 8021 and 8270 can provide satisfactory detection levels for comparison to the C_h of 3.0×10^5, and nuisance characteristic of 10,000 ppb.

(4) Due to the high detection limit for a solid matrix, the TCLP Extraction Method must be used to demonstrate groundwater quality protection for these compounds.

*** No Guidance Value identified in EPA HEAST Report.

TABLE 3
Soil Reuse Options

Reuse Option	Minimum Criteria To Be Met[1]		
	Protection of Groundwater	Protection of Human Health	Protection Against Nuisance Characteristics
Asphalt[2] or Concrete Manufacturing			
Cold-Mix Asphalt[2]			
Construction Material	X	X	X
Fill for Original Excavation	X	X	X
Fill Elsewhere On-Site	X	X	X
Off-Site at Pre-Approved Location	X	X	X

(1) In addition, the criteria for protection of fish and wildlife must be met when sediments are the waste materials being handled, and when these soils or sediments are being disposed in surface waters, marine waters, or wetland areas.

(2) The soils must satisfy the criteria established under the particular BUD issuance.

MONROE COUNTY PURE WATERS

Rules and Regulations and Sewer Use Law

PETROLEUM IMPACTED WATER
RULES AND REGULATIONS

1) An Initial Sewer Use Permit or Initial Industrial User Permit is required for discharges to the Monroe County Sewer System or Wastewater Treatment Plant respectively. The permit fee is $40.00 (payable to the Director of Finance, County of Monroe).

2) The following conditions shall apply to this permit:

a) Required analytical testing of wastewater (Exhibit "C") shall be submitted to this office for review prior to discharge.

b) The Monroe County limit for the summation of all purgeable halocarbons, aromatics, and polynuclear aromatic hydrocarbons (with a detection level greater than 10 ug/l) is 2.13 mg/l.

c) Required testing includes, but is not limited to:

(1) Gasoline impacted water - method 602 or equivalent 40 CFR 136 method; and

Methyl Tertiary Butyl Ether (MTBE) - monitoring only. Limit not applicable at this time.

(2) Diesel or Fuel Oil impacted water - method 610 or equivalent 40 CFR 136 method.

d) The applicant must identify a suitable sanitary sewer discharge point. Monroe County will confirm the discharge point in the City of Rochester and the Towns of Gates, Chili and Ogden. Should the applicant be working in a location NOT described above, it will be the applicant's responsibility to contact the applicable Town and/or Village for similar service. The Towns/Villages of Webster, Scottsville, Churchville, Honeoye Falls, and Spencerport are NOT part of the Monroe County Sewer System.

e) A maximum of 10 gpm discharge rate is permitted. Approval must be received from the appropriate agency (noted above) to exceed this rate.

f) Monroe County will conduct a field inspection of the site and issue a permit pending the completion and/or submission of all required information.

APPLICATION PROCEDURE

1) The applicant must submit a letter requesting permission to discharge and a completed permit application. The letter must contain the information listed in item #2 below.

2) The following information is required before considering a request for discharge:

a) Contractor or environmental representative name
b) Contact person name, phone #, pager #, fax #
c) Site name, address
d) Description of site work
e) Former/current contents of underground storage tanks and/or material spilled
f) Quantity of wastewater to be discharged
g) Method of treatment (if applicable)
h) Method to control solids discharge (if applicable)
i) Expected date of discharge
j) Project duration

3) Pure Waters, under Section 57 of the Worker's Compensation Law and Section 220 - Subdivision 8 of the Disability Benefits Law, is required to have on file proof that your company has worker's compensation and disability benefits for your employees. A form from your insurance carrier stating such coverage will thus be required before your permit can be processed.

4) A check, for the initial permit fee of $40.00, should be made payable to the Director of Finance, County of Monroe. The request to discharge letter, the application, the insurance form and the check should be mailed to:

County of Monroe - Division of Pure Waters
Industrial Waste Section
444 E. Henrietta Road, Bldg. 15
Rochester, New York 14620

As an alternative - the request to discharge letter, the completed application and the insurance form may be faxed to (716) 324-1213. The check may be given to the inspector at time of field inspection.

5) Monroe County will schedule an inspection of the site upon receipt of the above listed material.

6) Please call the Industrial Waste Control Section at 760-7600, Option #4, for additional information.

MONROE COUNTY
PURE WATERS DISTRICTS

Rules and Regulations

MONROE COUNTY PURE WATER DISTRICTS
RULES AND REGULATIONS

Pursuant to Section 264 of the County Law of the State of New York, the Monroe County Legislature hereby adopts Article I and II of these rules and regulations which shall be applicable to all county pure waters districts:

ARTICLE I – ORGANIZATION

Section 1. **Administrative Boards**. The Monroe County Legislature shall be the administrative board for each of the county pure waters districts. The County Legislature, acting as the administrative board, shall be responsible for all policy matters relating to the pure waters programs of the respective county pure waters districts. The County Legislature, acting as the administrative board, shall be responsible for all policy matters relating to the pure waters programs of the respective county pure waters districts. The County Legislature, acting as the administrative board shall have all of the powers conferred and duties imposed upon administrative bodies of county sewer districts by sections 262, 263, 265 and 266 of the County Law of the State of New York and by any other applicable law of the State of New York, except to the extent that such powers or duties are delegated by the Monroe County Sewer Use Law or by these rules and regulations. The County Legislature, when acting as the administrative boards, shall operate under the rules of procedure then in effect for the County Legislature. The President of the County Legislature shall be the chairperson of the administrative boards.

Section 2. **County Executive**. Pursuant to the provisions of the Monroe County Charter, the County Executive shall appoint the County Director of Pure Waters and the County Director of Engineering and shall be responsible for the direction and supervision of the County Director of Pure Waters and County Director of Engineering in connection with the performance of their duties as specifically described in Sections 3 and 4 hereof. The County Executive shall also have the specific powers and duties delegated by Section 5 hereof.

Section 3. **Director of Pure Waters**. In addition to the powers conferred and duties imposed by the Monroe County Charter, the County Director of Pure Waters, under the direction of the County Executive, shall be responsible for the administration, operation and maintenance of the districts' sewer systems and treatment and disposal facilities. The Director of Pure Waters shall also be responsible for the implementation of the County's Sewer Use Law and for the

implementation of the districts' rules and regulations with respect to permits, use charges, applications and hearings.

Section 4. **Director of Engineering.** In addition to the powers conferred and duties imposed by the Monroe County Charter, the County Director of Engineering, under the direction of the County Executive, shall be responsible for the planning, design and construction of capital projects within the county sewer districts. The County Director of Engineering, under the direction of the County Executive, shall also be responsible for the selection of engineers and professional consultants who shall perform services for the County sewer districts pursuant to contracts authorized in accordance with these rules and regulations.

Section 5. **Delegation of Powers and Duties.** The County Legislature, acting as the Administrative Board of each of the county's sewer districts, hereby delegates to the County Executive the following power and duties:

(a) the collection, accounting and custody of all district revenues;

(b) the supervision, direction and day-to-day management of the county pure waters department, including the hiring, dismissal, removal, suspension or lay off of all department personnel;

(c) the establishment and revision of the internal organization of the Department of Pure Waters;

(d) the advertisement of bids and specifications and the issuance of requests for proposal in connection with purchases and public works projects of the districts;

(e) the approval and payment of all vouchers and invoices submitted to the districts;

(f) the approval and execution of contract change orders: (1) up to the contingency limit provided for in the original funding authorization, or (2) for contracts without a contingency limit, up to an amount of $70,000 or one percent (1%) of the original contract valued, whichever is greater for each change order, provided, however, that when the total cumulative change orders for a contract exceeds $150,000 or ten percent (10%) of the original contract value, whichever is greater, all subsequent change orders must be approved by the Administrative Board;

(g) the approval and execution of routine real property assessments which do not require payment for contingent damages;

(h) the approval and execution of engineering design contracts or capital construction contracts in initial amounts up to $10,000;

(i) the approval and execution of professional or engineering services agreements or contracts, where such services are estimated to cost up to $10,000;

(j) the execution of permits, reviews, licenses, permit or license applications, aid applications, grant agreements, grant applications, payment reimbursement applications and any and all related documents in connection with federal or state funding or regulation of district projects;

(k) the promulgation or amendment of procedural rules and regulations for the operation of the County sewer system in accordance with the provisions of the Monroe County Sewer Use Law;

(l) the execution of contracts with municipalities, industries and businesses for sludge or wastewater disposal services;

(m) such other administrative duties and powers as may be prescribed for the County Executive by law, county charter, county administrative code, ordinance resolution or as may be prescribed by the County Legislature or the Administrative Boards.

The County Executive shall file with the Clerk of the Legislature monthly reports listing the contracts and contract change orders approved and executed by the County Executive in accordance with the provisions of this Section. The reports shall include an itemized listing of all contract change orders, the reason for each change order, the amount of each change order, the cumulative total of all change orders to each single contract, the percentage of the initial contract which the change orders represent and the capital fund from which contract payments will be made.

Section 6. **Pure Waters Advisory Board**. Pursuant to the provisions of the Monroe County Charter, the Pure Waters Advisory Board may make recommendations to the County Legislature in connection with any and all policy matters relating to the Pure Waters programs of the county sewer districts. The Pure Waters Advisory Board may also make recommendations to the County Executive with respect to the administration and operation of the county sewer districts.

ARTICLE II – LICENSES AND PERMITS

Section 1. **Licenses/Permits**. Instructions and forms for application for licenses or permits required by the Monroe County Sewer Use Law shall be obtained at the office of the Director of Pure Waters. Supply of such application forms and instructions shall be the responsibility of the Industrial Waste Section of the Pure Waters Department.

Section 2. **Application**. Application shall be made for each sewer connection contributing sewage to the Pure Waters Sewer System or any public tributary sewer if such sewage contains Industrial wastes, scavenger wastes, or other wastes whose pollutant characteristics are such that the discharge is subject to control under Article III, IV, V, VI, or VII of the Sewer Use Law.

Section 3. **Applications for Scavenger Waste Permits**. Applications will be made using the same form and supplying the applicable information in Exhibits C and D.

Section 4. **Application Fees for Licenses or Permits**. An application fee will accompany an application for a license or permit to be issued under the Monroe County Sewer Use Law. The fee is to defray part of the administrative costs of processing applications including the inspection of the applicant's facilities and waste sampling programs. The fees will be included in the annual budget of the Pure Waters Districts as approved by the County Legislature.

Section 5. **Application Form for Initial License or Permit.**

APPLICATION FOR LICENSE OR PERMIT FOR DISCHARGE INTO PURE WATERS SEWER SYSTEM OR TRIBUTARY

1. Name of Applicant _____ (company or individual)

2. Address of Applicant: _____

_____

_____

3. Location of Property: _____

4. Ownership of Property: _____

(Name/Address if different than above) _____

5. Number of sewer connections requiring license/permit _____

6. Type of activity producing wastes requiring license or permit pursuant to Sewer Use Law of Monroe County _____

7. Department of Health or of New York State Permit Number (if any) _____

8. Number of Attachments: _____

Exhibit A _____

Exhibit B _____

Exhibit C _____

Exhibit D _____

Note: Fill in all applicable spaces. If not applicable, mark N/A in appropriate space.

ATTACHMENTS TO ACCOMPANY APPLICATION

1. A plot or tape location map of the property showing accurately the size and location of all sewer and drainage connections to the sewerage system, all pretreatment devices, and all manholes or other accessible sampling points. Each sewer or drain connection shown on drawing shall be designated by an identification number. The plot or tape location map shall be attached as Exhibit A.

2. A complete schedule of all process waters and industrial wastes produced or expected to be produced at said property, including a description of the character of each waste, the daily volume and whether the flow is continuous or intermittent. Each listed process waste stream shall carry the sewer or drain connection identification number listed in Exhibit A and corresponding to the sewer or drain which carries the waste stream. The schedule shall be attached as Exhibit B.

3. A summary of the total waste water characteristics to be received or received from the applicant of each sewer or drain connection shall be submitted in proper form as Exhibit C.

4. Additional information requested by the Director of Pure Waters shall be prepared as Exhibit D and be attached to the application as required. Copy of application and issued permit of the New York State Department of Health are required for haulers of scavenger wastes and will be attached as Exhibit D.

_____

_____

(Title)

Persons to be contacted for inspection or emergency purposes and phone/extension number

_____

_____

Section 6. **Form for Exhibit "C".**

SUMMARY OF INDUSTRIAL WASTE CHARACTERISTICS

EXHIBIT "C"

Firm: _____

Address: _____

Industrial Waste Characteristics and Quantity

Characteristics	(Unit)	Average Minimum Maximum
Volume	(Gal. Or Cu. Ft./month)	
Temperature	(F° or C°)	
PH		
Biochemical Oxygen Demand	(mg/L or lbs./mil. gal.)	
Chlorine Demand	(mg/L or lbs./mil. gal.)	
Suspended Solids	(mg/L or lbs./mil. gal.)	
Phosphate or Phosphorus	(mg/L or lbs./mil. gal.)	

SUBSTANCES UNDER ARTICLES IV, V, VI, VII OF SEWER USE LAW

(List item and concentration (or volume) under appropriate heading: if none, so state)

1. Unpolluted Waters (Sect. 4.1) _____
2. Prohibited Materials (Sect. 4.2) _____
3. Certain Materials and/or characteristics (Sect. 4.3) _____
4. Toxic Substances (Sect. 5.1, 5.2) _____
5. Pathogenic Bacteria (Sect. 5.1) _____
6. Radioactive Wastes (Sect. 6.2) _____
7. Scavenger Wastes (Sect. 7.1, 7.2) _____

Section 7. **Initial Sewer Licenses or Permits Form**

INITIAL INDUSTRIAL SEWER USE PERMIT

County of Monroe

Pure Waters District No. _____

Permit No. _____

Expires: _____

Fee: _____

Firm Name: _____

Address: _____

_____

Type of Business or Service: _____

I. The above named applicant is permitted to discharge wastes into the Pure Waters Sewer System or Tributary thereto as applied for by an application dated and verified by the applicant except the Director of Pure Waters requires the following terms and conditions to govern the permitted discharge:

A. _____

B. _____

C. _____

II. The applicant further agrees to:

1. Accept and abide by all provisions of the Sewer Use Law of Monroe County and of all pertinent rules or regulations now in force or shall be adopted in the future.

2. Notify the Director of Pure Waters in writing of any revision to the plant sewer system or any change in industrial wastes discharge to the public sewers listed in Exhibit "B". The latter encompasses either (1) an increase or decrease in average daily volume or strength of wastes listed in Exhibit "B" or (2) new wastes that were not listed in Exhibit "B".

3. Furnish the Director of Pure Waters upon request any additional information relating to the installation or use of sewer or drain for which this permit is sought.

4. Operate and maintain any waste pretreatment facilities, as may be required as a condition of the acceptance into the public sewer of the industrial wastes involved, in an efficient manner at all times, and at no expense to the County.

5. Cooperate with the Director of Pure Waters or his representatives in their inspecting, sampling, and study of wastes, or the facilities provided for pretreatment.

6. Notify the Director of Pure waters immediately of any accident, negligence, breakdown of pretreating equipment, or other occurrence that occasions discharge to the public sewers of any wastes or process waters not covered by this permit.

Applicant's Signature: _____ Date:_____

Title: _____

Name of person to be contacted for
inspection or emergency purposes:

_____

Permit approved by: _____ Date: _____
Director of Pure Waters

Section 8. **Renewal Sewer License or Permit Form**. The renewal sewer license or permit shall be attached to and become a part of the initial permit and is as follows:

SEWER USE PERMIT – RENEWAL

County of Monroe

Pure Waters District No. _____

Permit No. _____

Expires: _____

Fee: _____

Firm Name: _____

Address: _____

_____

Type of Business or Service: _____

Has there been any revision to the plant sewer system or any change in industrial wastes discharged to the public sewer in the pas twelve months: YES_____ NO _____

If YES, please explain in separate LETTER.

Average monthly consumption for the past twelve (12) months

_____ gallons or _____ cubic feet.

In consideration of the granting of this renewal permit the undersigned agrees to comply with all the requirements in the Initial Permit as listed under II.

Applicant's Signature: _____ Date: _____

Title: _____

Name of Person to be contacted for inspection purposes:

Type or print: _____

Renewal Approved: _____ Date: _____

Director of Pure Waters

Section 9. **Inspection**. With regard to Article VIII, Section 8.1, and Article IX, Section 9.1 of the County Sewer Use Law, the power to enter upon private lands given to the Director and his duly authorized representative is modified to exclude entry into single family houses or owner occupied double houses unless notice is furnished to the occupants in advance. In those cases where notice cannot be practically provided, the basic powers and authority of inspectors as covered in Section 9.1 of the Sewer Use Law will apply.

Section 10. **Billing Procedures**. Under certain conditions, a variation of billing for Pure Waters Charges which are based on volume of water metered into the premises may occur. These variations shall include one or more of the following:

a) Water which is used in product; since this water is metered when it enters but does not go into the sewer system, a Pure Waters charge based on income metered water would be greater than the value of the actual service provided. To obtain relief for this inequity, it is required that the owner install, at his expense, proper metering equipment which will uniquely measure that volume of water which enters into produce. Such equipment and plans for installation must be approved by the Director of Pure Waters or his designated representatives, and must be maintained in working condition at all times by the owner.

   Alternately, volume of water going into produce may be established by evaluation of water content in product and total volume of product. This data must be submitted to the Director of Pure Waters in substantiated form for his consideration to establish a volume credit allowance against income metered water.

b) The volume of unpolluted waters which are not discharged into sanitary or combined sewers may be credited against the metered volume of income water if a metering system is installed at the point of discharge of this water. The plot plan, piping design, and specifications for the meter must be submitted to the Director of Pure Waters for approval before installation. The cost of installation and the maintenance of equipment is the responsibility of the owner.

c) Volume of make-up water to circulating cooling systems, boilers, etc., where water is lost due to evaporation may be measured with meters on the make-up line. Such installations must be approved by the Director of Pure Waters in order to deduct the meter reading from income water meters.

d) A documented plant water balance may be submitted to show water usage for various process operations. Based on this information, the Director may deduct from the total volume intake those measured volumes of water which do not enter the sewerage system for treatment.

e) Plants which have various types of water usage which result in a difference between intake measurements and actual flow into sewerage systems may install metering devices at the lateral connection to the public sewer. Such installations shall be made by the owner and maintained by him. The readings of the meter will be used to calculate the Pure Waters charges, provided these readings represent the total discharge of the plant into the public sewerage system. This method is the most precise and equitable way to calculate Pure Waters charges.

Concentration and/or characteristics of normal sewage:

"Normal Sewage" shall mean sewage, industrial wastes or other wastes, which when analyzed, show concentration values with the following characteristics based on daily maximum limits:

a. B.O.D.	300 mg/l
b. Chlorine Demand	25 mg/l
c. C.O.D.	600 mg/l
d. Total Suspended Solids	300 mg/l
e. Total Phosphorus, as P	10 mg/l

Permissible concentrations of toxic substances and/or substances the Department wishes to control:

The concentration in sewage of any of the following toxic substances and/or substances the Department wishes to control shall not exceed the concentration limits specified when discharged into the County Sewer System; metal pollutants are expressed as <u>total</u> metals in mg/l (ppm): the following pollutant limits are based on daily maximum values:

a. Antimony (Sb)	1.0 mg/l
b. Arsenic (As)	0.5 mg/l
c. Barium (Ba)	2.0 mg/l
d. Beryllium (Be)	5.0 mg/l
e. Cadmium (Cd)	1.0 mg/l
f. Chromium (Cr)	3.0 mg/l
g. Copper (Cu)	3.0 mg/l
h. Cyanide (CN)	1.0 mg/l
i. Iron (FE)	5.0 mg/l
j. Lead (Pb)	1.0 mg/l

k. Manganese (Mn)	5.0 mg/l
l. Mercury (Hg)	0.05 mg/l
m. Nickel (Ni)	3.0 mg/l
n. Selenium (Se)	2.0 mg/l
o. Silver (Ag)	2.0 mg/l
p. Thallium (Tl)	1.0 mg/l
q. Zinc (Zn)	5.0 mg/l

RULES AND REGULATIONS OF THE ROCHESTER PURE WATERS DISTRICT

Pursuant to Sections 264 and 266 of the County Law of the State of New York, the Monroe County Legislature adopts Articles III and IV of these rules and regulations which shall apply to the Rochester Pure Waters District:

ARTICLE III – PRIVATE SEWER MAINTENANCE IN ROCHESTER PURE WATERS DISTRICT

Section 1. **Private Sewer Maintenance Service**. The Director of Pure Waters is authorized to provide sewer flushing services to private sewer laterals and conductors or pumping service providing that owner(s) requesting private services agree(s) that the County of Monroe and the County Pure Waters District are without liability for damage done or injury suffered from the performance of the requested services.

Section 2. **Agreement for Services**. The following agreement will be executed by both parties prior to rendering private services:

M# _____

ROCHESTER PURE WATERS DISTRICT
AGREEMENT AND RECEIPT FOR PRIVATE SEWER MAINTENANCE SERVICES

The County of Monroe has agreed to provide all services to be performed in regard to

_____

the owners' ('s) sewer lateral or laterals in consideration for

_____ DOLLARS

Received of Mr.-Mrs.-Ms.-Miss _____

Owner(s) of _____

(property address)

_____

Further, the above owner(s) agree(s), in consideration of the above service(s), that all services are rendered at his or their request and risk; that the County of Monroe or the County Sewer District shall not be liable for and shall be held harmless from any injury or damage resulting from the performance of said service(s) requested.

ROCHESTER PURE WATERS DISTRICT

By: _____
Director of Pure Waters

WITNESSED BY:

_____ _____ Owner(s)

Section 3. **Charges for Private Sewer Maintenance**. The charges will be included in the annual budget of the Rochester Pure Waters District as approved by the County Legislature subject to public hearing.

ARTICLE IV – BILLING PROCEDURES FOR ROCHESTER PURE WATERS DISTRICT

Section 1. **Billing**. All real property tax accounts within the geographic limits of the Rochester Pure Waters District, including tax exempt and franchise properties, are subject to Water Pollution charges. For those accounts without water service, billing is done on the Monroe County and Town Tax Bill each. This billing is for the Capital Charge only and is based on the assessed valuation, without regard to exemptions, from the latest annual City of Rochester final assessment roll. For those accounts with water service, billing will consist of two elements as described below.

The Water Pollution Control charge for those accounts having water service will be comprised of two elements. One, the Capital Charge, as described above, is based on the assessed valuation without regard to exemptions, from the latest annual City of Rochester final assessment roll. This charge appears on the Monroe County Tax Bill each year. The other, the

Operation and Maintenance Charge, is based on the water consumption registered on each meter for the account and is to be based upon the most recent actual consumption figures as supplied by the city of Rochester Water Bureau (from the last full year of recorded data for a period most closely approximating July 1 through June 30 of the previous year.) Where actual meter reads may not correspond to a full calendar year, estimates and appropriate adjustments will be made to establish a full year rate.

Both of these charges (Capital and Operation and Maintenance) shall be applied and indicated separately on the Monroe County and Town Tax Bill and shall be subject to all payment policies and procedures therein. However, an account will not be billed until its accumulated Water Pollution Control Charge is One ($1) dollar or more.

Section 2. **Special Considerations.**

1. Accounts having septic tanks and other accounts not connected to the District Sanitary Sewer System will not be billed an Operation and Maintenance Charge.
2. Metered Water consumption which does not reach a sewer system or, conversely, reaches a sewer system containing higher than normal concentration of pollutants may be modified to decrease or increase the Operation and Maintenance charge respectively.
3. Adjustments may be made to correct errors and cover unusual circumstances.

ARTICLE V – ADOPTION AND EFFECTIVE DATE OF RULES AND REGULATIONS

Section 1. Article 1 of these Rules and Regulations shall become effective concurrently with the effective date of Local Law No. 1 of 1988.

Section 2. Articles II, II and IV of these Rules and Regulations were previously adopted by the Pure Waters Administrative Board in accordance with the requirements of the County Law of the State of New York. The rules and regulations set forth in Articles II, III and IV shall continue in effect.

Operations and Use Rules and Regulations Regarding Inflow and Infiltration to the Pure Waters System

Monroe County Pure Waters Districts
Operations and Use Rules and Regulations
Issued by Monroe County Executive John D. Doyle
Inflow and Infiltration to the Pure Waters System

WHEREAS, the Monroe County Executive has the power to adopt, amend and repeal, from time to time, the rules and regulations of the Districts relating to the operation and the use of the County sewer system pursuant to the Sewer Use Law as set forth in Section 343-51B of the Monroe County Code; and

WHEREAS, the Pure Waters Districts have been created under Article 5A of County Law to provide sanitary sewage collection, conveyance, treatment and disposal; and

WHEREAS, the Pure Waters staff reviews the design of all sanitary sewers, pumping stations, and treatment works tributary to Pure Waters system; and

WHEREAS, the County Executive desires to adopt rules and regulations that ensures the optimal operation, maintenance, and performance of all sanitary sewers, pumping stations, and treatment works in Monroe County; and

WHEREAS, the County Executive recognizes that the inflow and infiltration of extraneous water into the sanitary sewer system causes:

A. The surcharging (overloading) of sewer lines (private and public);
B. The back-up of sanitary wastewater into basements;
C. Overflow of contaminated water to surface streams; and
D. The risk of public health and the destruction of private property; and

NOW, THEREFORE, the following rules and regulations shall apply to the implementation of a program designed to identify and eliminate sources of inflow and infiltration, both public and private, to sewers tributary to the Pure Waters system.

1. The following definitions shall apply:

   Groundwater – Clean water accumulating below ground level, usually in crevices, rock ledges and around basement foundations

   Inflow – The direct discharge or entrance of any flow of extraneous ground or surface water to the sanitary sewer system from: roofs/gutter drains; submerged manhole covers; outside area drains; basement floor drains; and basement ground water sump pump.

   Infiltration – The entrance of ground or surface water to the sanitary sewer system by means of: submerged manhole covers; leaking joints in pipes, fittings, and manhole stacks; and broken or crushed pipes and fittings (these conditions apply to both public and private facilities).

Pure Waters – A division of the Monroe County Department of Environmental Services responsible for the operation and maintenance of sewers owned or operated by a Pure Waters District.

Pure Waters District – County sewer districts formed in accordance with Article 5A of County Law to collect, convey, treat and dispose of sanitary sewage.

Surface Water – Clean water collected during or after rainfall from roof gutters, downspouts, etc. in confined low areas such as basements.

Sanitary Water – Water discharged to the sewer system containing the by-products of human, animal, commercial and industrial processes and functions requiring treatment at a wastewater treatment plant.

2. The Division of Pure Waters will identify neighborhoods and locations that have suffered these conditions (see items A, B, C, & D above) in the past or are likely to suffer them in the future.

3. Follow-up investigations and facility evaluations will focus first on neighborhoods and areas that have experienced severe or chronic problems associated with sewer overloading. Other neighborhoods served by sanitary sewers will be inspected on a schedule to be determined by age and the potential for future problems.

4. The various Pure Waters Districts will implement ongoing public awareness programs that will inform ratepayers of the problems associated with inflow and infiltration and the conditions that contribute to those problems.

5. Once identification of inflow and/or infiltration sources is made on public property, the Division of Pure Waters will take appropriate corrective action necessary to minimize those sources.

6. If, during the inspection process, clear groundwater or surface water is observed discharging from a private property connection to the public sewer line, the Pure Waters Division will notify the property owner (by mail) that conditions are likely to exist that must be corrected to comply with the Monroe County Sewer Use Law (see Monroe County Code, Section 343-14) concerning discharge of ground or surface water to the sanitary sewer system. The notification procedure will include a time schedule for compliance.

7. Pure Waters will re-inspect problem neighborhoods within a six month to one year period to determine the level of corrective compliance by property owners and the decrease or increase in sewer line flow.

8. Upon re-inspection, any property that was previously identified as a probable source of inflow or infiltration, that continues to discharge inflow or infiltration, will be subject to a surcharge in accordance with the Monroe County Sewer Use Law (see Monroe County Code, Section 343-44 through 343-49).

9. Once the initial round of investigations for inflow and infiltration within the problem neighborhoods is completed, the Division of Pure Waters will continue a regularly scheduled inspection program. Public and private commitment to this program should minimize the effects of inflow and infiltration on annual user charges assessed to residents within the Pure Waters Districts.

A public hearing having been held on March 16, 2000. I hereby promulgate these rules and regulations on this 24th day of March, 2000.

John D. Doyle
Monroe County Executive

Certified copy filed with the Clerk of the Monroe County Legislature on March 29, 2000.

The effective date of these rules and regulations is ten days after the filing with the Clerk of the Monroe County Legislature.

Selected Policies
As Adopted by the Pure
Waters Administrative Board

POLICY MEMORANDUM NO. 4

March 1, 1979

Policy Statement

Situations will arise in which an individual user, area or District may need to contract for treatment and interceptor service. Such contracts shall be based on charges by the seller equal to the audited cost-of-service, with the seller and buyer sharing economies of scale on pro rata basis.

Comments

Individual situations will differ and result in varied application of the policy principle. Among the applications of the principle would be:

1) In the case of an individual user, the buyer shall pay a unit charge for debt service equal to the average unit cost of debt service and a separate charge for operation and maintenance based on actual water usage or actual measured flow.

2) In the case of an area or District:

   a) The buyer shall pay a percentage of the cost of debt service of an interceptor equal to the percentage of total peak flow which the buyer contributes to an interceptor.

   b) The buyer shall pay a percentage of the cost of debt service for the treatment facilities equal to the percentage reserved for the buyer of the average design flow of the facility.

   c) The buyer shall pay for operation and maintenance costs based on a pro rata share of average flow. These applications would provide for sharing on a pro rata basis of any economics resulting from joint use of facilities.

3) Consideration should be given to assessing additional operation and maintenance charges to a buyer and/or municipality using the County system for excessive infiltration/inflow in accordance with provisions of the Monroe County Sewer Use Law.

POLICY MEMORANDUM NO. 5

March 1, 1979

Policy Statement

The Pure Waters Agency recommends that local costs of Pure Waters Districts continue to be financed by User Charges (sewer rents) and that the same rate be applied to all customers within a Pure Waters District based on actual water consumption for operation and maintenance and on assessed valuation or units for debt service.

Comments

This method of financing appears to be the most feasible method presently. Since all customers pay on the basis of services received; all customers pay their fair share of District costs.

Application of the same rate to commercial and industrial users as applied to residential users encourages water conservation by industry and commerce. Industry will tend to balance user charge reductions against the cost of implementation of water conservation systems and to develop systems that are economically efficient.

Continuation of the User Charge (sewer rent) system is important because it allows all customers, including those with tax exempt status, to be charged.

POLICY MEMORANDUM NO. 8

May 9, 1985

Policy Statement

Pure Waters will accept responsibility for the part of a sewer lateral in the right-of-way when there is a cleanout at the right-of-way line which permits access for maintenance purposes. No fees or other charges will be assessed for maintenance and/or replacement of the lateral from the cleanout to the main. A fee will be charged whenever entry to the property is necessary to service the lateral when that service has been requested by the property owner.

Comments

There has been a long-standing policy in the Rochester Pure Waters District consistent with the above. For many years before the County became involved with the City system, by policy the lateral belonged to the property owner all the way to the main. The City would flush the lateral on request for a $10 fee.

When the Rochester Pure Waters District was formed, this policy continued. A policy change was adopted in the middle seventies providing that the District would assume responsibility for the part of the lateral in the right-of-way, if and when the property owner installed a cleanout at the right-of-way line. In 1985, the flushing charge was raised from $10 to $25.

In the Gates-Chili-Ogden Sewer District, similar services have been provided at no cost until 1985. Then the District initiated a service charge of $25. Historically, the District has been responsible for the part of the lateral in the right-of-way. In many cases, cleanouts do not exist or, for some reason, cannot be located. This has resulted in questions from some property owners about when they must pay the service charge. To clarify this situation, this Policy Statement is promulgated.

The policy on the service charge is that it must be paid whenever Pure Waters personnel must enter the property in order to service the lateral. The provision of and/or maintenance of the cleanouts is the responsibility of the property owner.

The above follows from District requirements that a cleanout at the right-of-way line must be provided by the Developer. This means that the cost of the cleanout is normally included in the overall development cost, in reality in the cost of each house. Once constructed, Pure Waters has little ability to assure proper maintenance and availability of the cleanout. For whatever reason, cleanouts often are covered over, removed or damaged by the property owner. in such cases or where no cleanout exists, it is reasonable for the property owner to be responsible. Certainly, it would be unfair to expect the District, in effect other property owners, to bear any expense, since those who have cleanouts have already paid for theirs in the price of their house.

Summary

1. This Policy applies to Rochester Pure Waters District and Gates-Chili-Ogden Sewer District only.

2. The Rochester Pure Waters District and Gates-Chili-Ogden Sewer District will operate and maintain lateral sewers located within a public right-of-way provided that functional cleanout is located at the right-of-way line, in accordance with District standards.

3. Installation, operation and maintenance of the cleanout is the responsibility of the property owner.

4. The District will flush a sewer lateral from inside a structure where suitable access exists and the property owner requests the service for a fee in accordance with the District's Fee Schedule.

MONROE COUNTY PURE WATERS SEWER USE LAW

Article I

Short Title and Statement of Purpose

Section 1 Short Title: This Law shall be known as the Sewer Use Law of the County of Monroe.

Section 2 Purposes: The purposes of this Law are as follows:

1.21 To control and provide for the regulation of discharges into the sanitary, storm, and/or combined sewers of the County Sewer System and collection sewer systems tributary thereto.

1.22 To prohibit discharges of:

a) excessive volumes and/or inordinate rates of flow into the County Sewer System;

b) sewage or other wastes (including industrial) which in any way may create a poisonous, hazardous explosive, flammable or toxic condition injurious to sewer maintenance or operational personnel, or create operating or maintenance difficulties in the County Sewer System as it now exists or may be constructed, modified or improved in the future.

c) unpolluted water not requiring treatment

1.23 To prohibit and/or to regulate by permit discharges of sewage, industrial wastes or other wastes which require greater expenditures for treatment than those required for equal volumes of normal sewage; to surcharge users for permitted discharges requiring higher treatment levels costing more than "normal sewage".

1.24 To require pretreatment of sewage, industrial waste or other waste before discharge into the County Sewer System and collection system's tributary thereto, if such wastes may impair the strength and/or durability of the structures appurtenant to the system by direct or indirect chemical, biological, or physical action, or interfere with the normal treatment processes, or pass through the sewage treatment plant into the receiving waters untreated, or only partially treated, or of such concentration as may exceed established discharge limits or interfere with the proper disposal of sludge at the sewage treatment plants.

1.25 To provide the authority and procedure for the Pure Waters Districts to promulgate rules and regulations, to investigate and prepare findings of facts, to issue permits, to hold hearings, to issue decisions, orders and opinions, and to give notice and make public all rules and decisions affecting substantial rights of persons or property.

1.26 To provide cooperation with the Monroe County Department of Health, City of Rochester, New York State Department of Environmental Conservation, New York State Department of Health, United States Environmental Protection Agency and any other agencies which have requirements or jurisdiction for the protection of the physical, chemical and bacteriological quality of water courses within or bounding the County.

1.27 To protect the public health and to prevent nuisances.

1.28 To enforce applicable promulgated final standards and/or procedures set by the New York State Department of Environmental Conservation (DEC) or United States Environmental Protection Agency (EPA).

Article II

Definitions

Section 2.1 Definitions: Unless the context specifically indicates otherwise, the meaning of the terms used in this Law and in any rules and regulations adopted pursuant to this Law shall be as follows:

2.11 "Act" shall mean the Federal Water Pollution Control Act, also known as the Clean Water Act, 33 USC 1251 et seq as may be amended.

2.12 "Administrative Board" shall mean the governing body of each County Sewer District established by the Monroe County Legislature.

2.13 "Approved Laboratory Procedure" shall mean the procedures contained in the book "Standard Methods for the Examination of Water and Waste Water" published by the American Public Health Association or other procedures approved by the Director for the determination of flow measurement or pollution concentration of discharges to the public sewers.

2.14 "B.O.D." (Biochemical Oxygen Demand) shall mean the results obtained using an approved laboratory procedure to measure the quantity of oxygen utilized in the biochemical oxidation of organic matter or in satisfying the oxygen demand of other materials present expressed in milligrams per liter.

2.15 "C.B.O.D." (Carbonaceous Biochemical Oxygen Demand) shall mean the results obtained using an approved laboratory procedure to measure CBOD by adding a nitrification inhibitor in the analytical procedure described above for "B.O.D." expressed in milligrams per liter.

2.16 "C.O.D." (Chemical Oxygen Demand) shall mean the results obtained using an approved laboratory procedure to measure the oxygen requirement of that portion of the organic matter in a sample that is susceptible to oxidation by a' specific chemical oxidant expressed in milligrams per liter.

2.17 "Contested Case" means a proceeding in which the legal rights, duties or privileges of a party are determined by the Monroe County Pure Waters Districts after the party has an opportunity for a hearing.

2.18 "Chlorine Demand" shall mean the results obtained using an approved laboratory procedure to measure the difference between the amount of chlorine added to water, sewage or industrial wastes and the amount of residual chlorine remaining at the end of a specified time expressed in milligrams per liter.

2.19 "Combined Sewer" shall mean a sewer receiving a mixture of storm water and sanitary sewage with or without industrial wastes.

2.20 "Control Manhole" shall mean an accessible manhole in the connection between a private sewer and the public sewer.

2.21 "Cooling Water" shall mean the water discharged from any system of heat transfer, condensation, air conditioning, non-contact cooling, refrigeration, or other sources.

2.22 "County" shall mean the County of Monroe.

2.23 "County Sewer" shall mean any sewer owned by the designated County Sewer Districts or County Pure Waters Districts and/or operated by the Pure Waters Districts of the County of Monroe.

2.24 "County Sewer Districts" shall mean all County Sewer Districts created, altered, or modified by action of the Monroe County Legislature including, but not limited to, the following:

A. Northwest Quadrant Pure Waters District No. 1,
B. Irondequoit Bay South Central Pure Waters District,
C. Gates-Chili-Ogden Sewer District,
D. Rochester Pure Waters District,

2.25 "County Sewer System" shall mean the trunk sewers, collection sewers, force mains, pumping stations, sewage regulators, water pollution control plants (sewage treatment plants) and other appurtenant structures either owned or leased by the County Pure Waters or Sewer Districts and/or operated by the Pure Waters Districts of the County of Monroe.

2.26 "D.E.C." shall mean the New York State Department of Environmental Conservation.

2.27 "Department of Health" shall mean the Monroe County Department of Health.

2.28 "Director" shall mean the Director of Pure Waters of the County of Monroe, employees acting under his supervision, or his duly authorized agent or representative.

2.29 "E.P.A." shall mean the United States Environmental Protection Agency.

2.30 "Ex parte consultation" shall mean any consultation, conference or communication for the benefit of one party in a contested case without notice to, and in the absence of, the other party.

2.31 "Garbage" shall mean solid wastes from the domestic and commercial preparation, cooking and dispensing of food, the handling, storage and sale of produce, and from the packaging and canning of food.

2.32 "Grease, Oil, or Fats" shall mean any material which is extractable from an acidified sample of a waste by Hexane or other specified solvent in an approved laboratory procedure.

2.33. "Industrial Wastes" shall mean any liquid, gaseous or solid substance or a combination thereof which is an undesired by-product waste resulting from any process of industry, manufacturing, trade or business or from the development or recovery of any natural resources, except garbage.

2.34 "Normal Sewage" shall mean sewage, industrial wastes or other wastes, which, when analyzed, show pollutant concentrations which do not exceed limits established by the Rules and Regulations of the Pure Waters Administrative Boards.

The number and values of pollutant concentrations and/or characteristics are subject to revision by the Pure Waters Administrative Boards in accordance with Article XI.

2.35 "Nuisance" shall mean the use or lack of use of the County Sewer System in such manner so as to endanger life or health or give offense to the senses or obstruct or otherwise interfere with the reasonable use or maintenance of the County Sewer System.

2.36 "Other Wastes" shall mean discarded matter not normally present in sewage or industrial waste.

2.37 "p" - Phosphate shall mean the concentration of Phosphate as total Phosphorus expressed in milligrams per liter.

2.38 "Parcel Charge" shall mean the charge applied to all assessed properties in the County Pure Waters Districts which may be subject to a normal parcel charge on a benefits derived basis, except where a direct charge based on assessed valuation is in part or wholly the basis of sewer use charges.

2.39 A "Party" means each person properly seeking and entitled as of right to be admitted to any administrative or enforcement procedure.

2.40 "Petroleum Hydrocarbons" shall mean that portion of the total extractable grease, oils or fats as defined in Section 2.31 which is not retained on an activated alumina adsorption column after elutriating with Hexane.

2.41 "Permit" means a temporary, revokable written document allowing the use of the County Sewer System for specific wastes over a limited period of time.

2.42 "Person" shall mean any individual, firm, company, agency, association, society, corporation, institution or group.

2.43 "pH" shall mean the logarithm of the reciprocal of the concentration of Hydrogen ions in solution.

2.44 "Properly Shredded Garbage" shall mean the wastes from the preparation, cooking and dispensation of food that has been shredded to such a degree that all particles will be carried freely under flow conditions normally prevailing in public sewers, with no particle having a dimension greater than one quarter inch (1/4") in any direction.

2.45 "Public Sewer" shall mean the sewers, manholes, intercepting sewers, sewage pumping, treatment and disposal works, and any other plant, works or equipment and accessories operated by any municipality that discharges its sewage and liquid into the County Sewer System.

2.46 "Pure Waters Districts" shall mean any County Sewer District created by the Monroe County Legislature, and any Department or Division of County government duly authorized or designated to administer or operate the County's Sewer Districts.

2.47 "Receiving Waters" shall mean a natural water course or body of water into which treated sewage is discharged.

2.48 "Rule or Regulation" means each statement of general or specific applicability that implements, interprets or describes the organization, procedures, or requirements of Pure Waters Districts. The term includes the amendment or repeal of a prior Rule or Regulation but does not include: (A) statements concerning only the internal management of the Pure Waters Districts which do not affect private rights or procedures available to the public, or (B) Declaratory Rulings issued by the Pure Waters Administrative Board pursuant to Article XI, Section 11.6, or (C) intra-agency memoranda.

2.49 "Sanitary Sewage" shall mean sewage discharging from the sanitary conveniences of dwellings (including apartment houses and hotels, industrial buildings, institutions, and filter backwash from swimming pools).

2.50 "Sanitary Sewer" shall mean a sewer which transports sewage and to which storm, surface and ground waters are not intentionally admitted.

2.51 "Scavenger Wastes" shall mean the matter collected from privies, septic tanks, cesspools, chemical toilets, camper and marine holding tanks, sludge from treatment of industrial wastes, and other domestic, commercial and industrial waste.

2.52 "Sewage" shall mean a combination of the water-carried wastes from residences, business buildings, institutions, and industrial establishments, together with such ground, surface and storm water as may be inadvertently present. The admixture of sewage, as defined above, with industrial wastes or other wastes also shall be considered "Sewage" within the meaning of this definition.

2.53 "Sewage Treatment Plant" (Water Pollution Control Plant) shall mean an installation of devices and structures used for treating sewage and industrial wastes; the handling of sludge resulting from such treatment, and the discharge of treated liquid effluent into designated receiving waters.

2.54 "Sewerage System" shall mean all facilities for collecting, regulating, pumping and transporting sewage to the sewage treatment plant.

2.55 "Sewerage Surcharge" shall mean the demand payment for the use of a public sewer and/or sewage treatment plant for handling any sewage, industrial wastes or other wastes accepted for admission thereto in which the characteristics thereof exceed the maximum values of such characteristics in normal sewage as specified in the Rules and Regulations.

2.56 "Slug" shall mean any discharge of water, sewage or industrial waste which in concentration of any given constituent or in volume of flow exceeds for any period of duration longer than five (5) minutes more than five (5) times the average twenty-four (24) hour concentration of flow during normal operation.

2.57 "Standard" shall mean a criterion established by a regulatory authority.

2.58 "State Pollutant Discharge Elimination System (SPDES) permit" is the permit issued by D.E.C. to Pure Waters Districts operating treatment facilities discharging effluent into receiving waters.

2.59 "Storm Sewer" (Storm Drain) shall mean a sewer which carries storm waters and drainage, but excludes sewage and industrial wastes other than cooling waters and unpolluted waters.

2.60 "Storm Water" shall mean any flow occurring during or following any form of natural precipitation and resulting therefrom.

2.61 "Suspended Solids" shall mean the results obtained using an approved laboratory procedure to determine the dry weight expressed in milligrams per liter of solids that either float on the surface, are in suspension in sewage, or are settleable and can be removed from sewage by filtration.

2.62 "Toxic Substances" shall mean any substance whether gaseous, liquid or solid which, when discharged to public sewer in sufficient quantities, may be detrimental to the sewer system, interfere with any biological sewage treatment process, or constitute a hazard to human beings or animals, or inhibit aquatic life, or create a hazard in the receiving waters. This includes but is not limited to the EPA list of designated Priority Pollutants promulgated pursuant to the Act.

2.63 "Unit Charge" - In Pure Waters Districts, the sewer use charge may be based on a standard volume of sewage flow from an average household; this volume, as determined by methods described herein, may vary for different Pure Waters Districts and is subject to revision by the Administrative Board and the County Legislature if data accumulated under actual conditions indicate a need for such a revision.

2.64 "Unpolluted Waters" shall include storm water, surface water, ground water, roof runoff, subsurface drainage and uncontaminated cooling water.

2.65 "Volume Charge" - In Pure Waters Districts, the sewer use charge may be based in part or wholly on the volume of discharge into the sewer system. A volume charge shall be based on a specific cost per 100 cubic feet or per 1,000 gallons; the specific cost is determined separately for each Pure Waters District based on the overall cost of treating sewage and is subject to the approval of the Administrative Board and the County Legislature.

NOTE: "Shall" is mandatory.
"May" is permissive.

Article III

Use of Public Sewers

Section 3.1 Limitation of Use:

A. Use of County Sewer System: The use of the County Sewer System and public sewers tributary thereto shall be strictly limited and restricted, except as provided in Subdivision 3.1B hereof, to receive and accept the discharge of sewage and other wastes, including industrial wastes, generated on, or discharged from, real property lying within the bounds of the Monroe County Pure Waters Sewer Districts as established, altered, changed, modified, reduced, enlarged, combined and/or consolidated by action of the Legislature of the County of Monroe.

B. Exception to Limitations: The discharge of sewage, including industrial wastes and other wastes generated on or discharged from real property lying outside the bounds of Monroe County Pure Waters Sewer Districts, into the County Sewer System and public sewers tributary thereto shall be made only with express consent of the Director, the respective District Administrative Boards and/or the Monroe County Legislature and upon the issuance of a permit setting forth the terms and conditions for such discharge.

Section 3.2 Health Regulations: All requirements, directives and orders calling for the mandatory use of the County Sewer System or public sewers tributary thereto for the proper discharge of sewage, including industrial wastes and other wastes, shall be established and given by the local municipality, the Monroe County Department of Health, DEC, EPA or such other State or Federal Agencies which have enforcement powers.

Article IV

Materials and Substances Excluded from Public Sewers

Section 4.1 Exclusion of Unpolluted Waters: No person shall discharge or provide a connection for discharging or draining into any County Sewer System or public sanitary sewer tributary thereto any storm water, surface water, ground water, roof runoff, subsurface drainage, uncontaminated cooling water or unpolluted industrial process water, nor drain any catch basin, lake, swamp, pond or swimming pool, except with the permission of the Director pursuant to a properly issued permit or if such connection or drainage is into a designated "combined sewer" or storm sewer.

Section 4.2 Prohibited Materials, Substances and Wastes: Except hereinafter provided, no person shall discharge or cause to be discharged, or allow to run, leak, or escape into any public sewer, or into any private sewer connected with a public sewer any of the following described materials, substances or wastes, except such small quantities as may be present in normal household wastes or specifically permitted by the Director.

A. Any gasoline, benzene, naptha, fuel oil, alcohols, or other flammable or explosive liquid, solids or gases.

B. Any water or wastes having a pH lower than (5.5) or having a pH higher than (10.0) or having any other corrosive properties capable of causing damage or hazard to the County Sewer System, or personnel employed in its operation and maintenance.

C. Any solids or viscous substances capable of causing obstruction to the flow in sewers or other interference with the proper operation of the sewer system. Examples of prohibited substances are, but not limited to, the following: construction materials, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastic, wood, paunch manure, coffee grounds, fur, wax, cement, hops, spent grain, whole blood, or filter media.

D. Any waters or wastes containing toxic, poisonous, or hazardous solids, liquids or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any sewage treatment process, or to constitute a hazard to humans or animals, or to create a public nuisance, or to create hazardous conditions in the receiving waters. Examples of hazardous substances shall include, but not be limited to: metal plating tank wastes, petroleum tank bottoms, redistilled solvent bottoms, metal sludges or cyanide plating wastes.

Section 4.3 Regulation of Certain Materials, Substances, and Water or Waste Discharges: No materials, substances, waters or wastes including any wastes listed within the Rules and Regulations of the Pure Waters Districts shall be discharged which shall be found to harm the County Sewer System, the sewage treatment process, have an adverse effect on the receiving waters or would endanger life, limb, public property or shall constitute a nuisance.

The criteria used in promulgating Rules and Regulations of the Pure Waters Districts regulating such discharges include such factors as: quantities of said wastes in relation to flows and velocities in the sewers, materials of construction of the sewers, nature of the sewage treatment process, the capacity of the sewage treatment facilities and the likelihood of harm, injury or nuisance. The characteristics of the effluent subject to review will be determined from the sampled wastewater collected at a control manhole prior to entering the County Sewers System. Substances, materials or wastes prohibited in the first instance, but subject to review are:

A. Any liquid or vapor having heat in amounts which will inhibit biological activity in the treatment plant resulting in interference or causing damage, but in no case, heat in such quantities that the temperature exceeds 65 degrees C (150 degrees F) at the discharge point or 40 degrees C (140 degrees F) at the treatment plant, unless alternate temperature limits have been approved.

B. Any water or waste containing fats, wax, grease or oils, whether emulsified or not, in excess of one hundred (100) milligrams per liter, or containing substances which may solidify or become viscous at temperatures between thirty-two (32) degrees and one hundred fifty (150) degrees Fahrenheit (0 and 65 degrees Celsius).

C. Any garbage that has not been properly shredded or triturated.

D. Any waters or wastes containing substances in amounts determined to be potentially objectionable or toxic.

E. Any water or wastes containing phenolic compounds or other objectionable tasting and/or odorous substances, in concentrations exceeding limits which are established in the Rules and Regulations necessary to meet the requirements of the State, Federal or other public agencies having jurisdiction for such discharge to the receiving waters.

F. Any radioactive wastes or isotopes of such half-life or concentration which exceed limits established by the applicable State or Federal Regulations or the Director. See Section 6.2.

G. Materials which contain or cause:

1. Adverse concentrations of inert suspended solids (such as, but not limited to Fuller's earth, lime slurries and lime residues) or dissolved solids (such as, but not limited to, sodium chloride and sodium sulfate).

2. Aesthetically unacceptable discoloration at the treatment plant or in the receiving waters such as, but not limited to, dye wastes and vegetable tanning solutions.

3. Except as provided for under Article X, Biochemical Oxygen Demand (BOD), total suspended solids, total phosphorous or chlorine requirements in such quantities as constitute an unacceptable additional load on the sewage treatment works.

4. Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein.

H. Waters or wastes containing substances in concentrations not amenable, or only partially amenable, to treatment or reduction by the sewage treatment plant processes resulting in treated sewage effluent not meeting requirements of Federal and State agencies having regulatory authority over the discharge of effluent into the receiving waters.

Section 4.4 Action by the Pure Waters Districts: Pure Waters Districts, after a Hearing, shall either prevent the discharge of unacceptable water and wastes or issue a permit which is properly conditioned upon findings and the standards of safety prescribed by this law or the Rules and Regulations of the Pure Waters Districts. The Rules and Regulations of the Pure Waters Districts shall include surcharges, pretreatment requirements, control over quantities or rates of discharge, time of discharge and holding facilities, and any measure or combination of measures which are necessary to preserve the County Sewer System, and the health, safety and well being of the employees, the community and the receiving waters.

Section 4.5 Emergency Action by the Director: The Director shall take any action necessary to protect the public health, safety or welfare without a prior Hearing or order of the Administrative Board in the event any discharge which, in the opinion of the Director, will cause serious, imminent harm, injury or adversely effect the County Sewer System, any person, or the receiving waters. A timely review of any emergency action by Administrative Board Hearing shall be accomplished to determine what, if any, permanent action shall be deemed necessary. The Director, or employees under his supervision, acting upon the belief that an emergency exists, shall be indemnified and held harmless against any personal liability which may arise in the performance of his duties to protect the public health, safety, welfare, or property of the County.

Article V

Substances Which May be Conditionally Permitted

Section 5.1 Substances Generally Prohibited: Waters bearing miscellaneous substances in concentrations above the standards set for normal sewage shall not be discharged into the County Sewer System or public sewers tributary thereto, unless the Rules and Regulations of the Pure Waters Districts or upon a finding by the Director and/or the Administrative Board that such concentration will not adversely affect any of the biochemical, chemical or other sewage treatment processes, sewage system or receiving waters. The Director must be contacted immediately to make a determination if any questionable wastes or waste waters are being considered for discharge to the sewer systems. Examples of prohibited substances include, but are not limited to, the following:

A. Antibiotics
B Elemental or ionic Bromine, Iodine, Chlorine, Flourine
C. Creosols or Creosotes
D. Phenol and Phenolic compounds that convert to Phenol in the sewerage system
E. Sulfonamides, toxic dyes (organic or mineral)
F. Metal finishing chemicals, electroplating process chemicals or metal sludges
G. Petroleum tank bottoms or redistilled solvent bottoms
H All strong oxidizing agents such as Chromates, Dichromates, Permanganates, etc.
I. Any reducing agents causing hazardous conditions in the sewerage system
J. Chemical compounds producing toxic, flammable or explosive gases, either upon acidification
K. Wastes from industrial processes or hospital procedures containing viable pathogenic organisms

Section 5.2 Permissible Concentrations of Toxic Substances:
The concentration in sewage of any pollutant substances shall not exceed the concentration limits specified by Federal and State Regulatory Agencies or the Rules and Regulations promulgated under this Law when discharged into the sewer. The Pure Waters Districts may revise the established limits in the Rules and Regulations, or insert additional limits on items after a Hearing held by the Administrative Board.

Section 5.3 Special Concentration Limits: When an Administrative Board finds that the volume of a single toxic industrial waste discharge or the combined toxic industrial waste discharge of a group of industries within a single contributory area acts in a manner as to cause an ultimate concentration of toxic substances entering a sewage treatment plant; or in cases where it is known that the toxic substances in the concentrations involved will be effectively removed by the sewage treatment plant without causing deleterious effects of any kind to the treatment process, or the receiving waters, the Administrative Board may rule that separate or special concentration limits shall be used by said contributors.

Section 5.4 Federal Pretreatment Standards: Upon the promulgation of final Federal pretreatment standards for a particular industrial subcategory, the Federal standard, if more restrictive than limitations imposed under this Law or the Rules and Regulations for industries in that subcategory, shall supersede local regulation for the class of industrial user on the date the Federal standard becomes effective until such time a removal credit is given. The Director shall notify all affected users of the applicable reporting requirements, such as submission of baseline monitoring reports, reports on compliance and sampling and laboratory testing results. No industrial user shall be permitted to dilute process discharges with sanitary wastewater or other wastewaters as a partial or total substitute for adequate treatment to achieve compliance with Federal standards.

Section 5.5 Emergency Action: The Director shall take any action necessary to protect the public health, safety or welfare without a prior Hearing or order of the Administrative Board in the event any discharge which, in the opinion of the Director, will cause serious, imminent harm, injury or adversely affect the County Sewer System, any person, or the receiving waters. A timely review of any emergency action by Administrative Board Hearing shall be accomplished to determine what, if any, permanent action shall be deemed necessary. The Director, or employees under his supervision, acting upon the belief that an emergency exists, shall be indemnified and held harmless against any personal liability which may arise in the performance of his duties to protect the public health, safety, welfare, or property of the County.

Article VI

Disposition of Industrial Wastes

Section 6.1 Industrial Wastes Requiring a permit
Section 6.2 Radioactive Wastes
Section 6.3 When a Permit Shall be Required

Section 6.1 Industrial Wastes Requiring a Permit: The following are industries whose wastes shall require pretreatment and/or approval before discharge into public sewers; bleaching and dying, bottling, brewing, cotton textile manufacture or processing, dairies, dairy products, distilling, fat rendering, film processing, food processing, galvanizing, glue manufacturing, laundromats, lens grinding operations, manufacture of syrups, jams or jellies, meat packing, metal pickling or plating, munition manufacturing, organic or inorganic chemical manufacturing, oil refining, optical goods manufacturing, photographic processing, public laundering, pulp and paper making, rubber production, salt works, slaughterhouses, soap making, sugar refining, tanning, wool scouring or washing, or any industry producing wastes with strong acid or alkaline properties or which may form deposits in or cause damage to the County Sewer System. In addition to the industries listed here, any industry category for which pretreatment requirements have been

promulgated in final form by EPA in accordance with the Act are included. The process or processes employed in the pretreatment of such wastes shall, in each case, conform to the Rules and Regulations of the Pure Waters Districts and shall be inspected and regulated by permit issued by the Director as set forth under Article VIII.

Section 6.2 Radioactive Wastes: Any institution or industry discharging radioactive material or fission products into the County Sewer System must be registered with the Pure Waters Districts as well as with other regulatory agencies as the Law requires. The registration shall include all copies of State and Federal Permits governing radioactive waste discharge The active elements and concentrations permitted to be discharged into the public sewers shall be in conformance with the regulation of the Department of Environmental Conservation promulgated pursuant to the Environmental Conservation Law of the State of New York and be at all times within the limits set by this and other County, State or Federal Agencies.

Section 6. 3 When a Permit Shall be Required: Whenever any industrial waste is produced in such quantities and discharged into the sewer system so that it may injure the public sewers into which it is discharged, adversely affect the treatment of sewage, not yield readily to treatment processes, or adversely affect the receiving waters, said industrial waste shall not be discharged into the County Sewer System or public sewers tributary thereto without a permit.

Article VII

Disposition of Scavenger Wastes

Section 7.1 Permit Required: The discharge of scavenger wastes will be permitted at authorized water pollution control plants only with the approval of the Director.

Section 7.2 Conditions for Discharge of Scavenger Wastes: The discharge of scavenger wastes shall be made only at a location as shall be stated on the permit. The time and conditions for permissible discharge shall be as set forth on the permit or as may be ordered by the Director.

Section 7.3 Application for Permit; Revocation of Permit: The applicant for a permit shall be the owner or lessee of the vehicle or vehicles hauling scavenger wastes. All scavenger permits issued by the Director shall be for a maximum of one (1) year.

All acts performed under the terms and conditions of the permit shall be subject to supervision or inspection by the Director. False or deliberately misleading information on an application for a permit invalidates any permit issued subsequent and exposes the applicant to possible enforcement action under Article XII. Failure to adhere to the terms or conditions of the permit, failure to pay District billing for scavenger waste disposal services on a timely basis or violation of the Rules and Regulations or other Laws regulating scavenger waste disposal shall be grounds for suspension or revocation of the permit by the Director. Hearings to reinstate a permit shall be initiated by petition of the party desiring reinstatement. No permit shall be issued unless the scavenger waste hauler is properly licensed and/or permitted by DEC and has a valid waste hauler's permit in accordance with all applicable DEC requirements.

Section 7.4 Charges for Discharge of Scavenger Waste: Discharge of scavenger wastes shall be made under individual tickets for each load to be discharged under the terms of the permit. Rates charged for scavenger waste treatment shall be those rates confirmed by the Monroe County Legislature. The scavenger waste haulers will be billed by the District for disposal services.

Article VIII

Terms and Conditions for the Issuance of Permits

Section 8.1 Power to Inspect: All users of the County Sewer System or any public tributary sewer are deemed to have consented to inspection necessary for the orderly administration of this Sewer Use Law and the Rules and Regulations of the Pure Waters Districts. Inspections will be accomplished during hours of operation or at periods of sewer use with or without notice to the users. Inspection shall be performed in such a manner as to reasonably observe and quantify, if necessary, the characteristics of the waters and wastes discharged into the sewer system. The power to inspect will be exercised in accordance with Article IX of this Law.

Section 8.2 Permits when Required: It shall be unlawful for any person to discharge directly or indirectly into the County Sewer System or public sewers tributary thereto industrial wastes or other wastes the characteristics of which do not conform to the concentration limits prescribed for "normal sewage" in the Rules and Regulations or to discharge any toxic substances in potentially toxic amounts or any other objectionable material or substances as specified within Articles III, IV, V, and VI herein, except upon such terms and conditions as set forth in a permit issued under the established Rules and Regulations of the Pure Waters Districts. All discharge permits into the County Sewer System shall be for a minimum of one (1) year.

Section 8.3 Applications for Permits: All applicants for a permit to discharge sewage combined with industrial wastes or other wastes into the County Sewer System shall file with the Director an application for issuance of a permit. All information required by the application form shall be furnished by the applicant.

Section 8.4 Terms and Conditions: The Director may impose certain terms and conditions as part of the permit. The terms and conditions may include, but are not limited to, the following:

D. A limitation upon the volume of sewage, industrial wastes or other wastes; the rate of flow permitted and/or the time of discharge from the premises.

E. The installation and maintenance by the permittee, at his own expense, of facilities or equipment for intermittent or continuous flow and/or quality measurements of sewage, industrial wastes or other wastes discharged from the premises into a public sewer.

C. The installation and maintenance by the permittee, at his own expense, of detention tanks or other facilities or equipment for reducing the maximum rates of discharge to a specified percentage of the twenty-four rate as shall be required by the Rules and Regulations of the Pure Waters District.

D. The installation and maintenance by the permittee, at his own expense, of such pretreatment facilities as required by the Rules and Regulations.

E. The installation and maintenance by the permittee, at his own expense, of a suitable control sampling manhole or manholes at any private sewer discharging to a public sewer.

F. The installation and maintenance by the permittee, at his own expense, of grease, oil and solid material interceptors, separators or traps that are necessary for the proper handling of liquid wastes containing substances in excessive quantities or any other harmful ingredients.

G. Submit plans, amendments or changes to plans of the facilities or equipment required to be installed and maintained by the permittee for approval by the Director.

H. Subsequent to the commencement of operation of any pretreatment facilities, periodic reports shall be submitted by the permittee to the Director setting forth adequate data in order to determine acceptability of the sewage or other wastes (including industrial wastes). The frequency of these reports will be determined by the Director.

I. Where pretreatment or flow-equalizing facilities are provided, they shall be continuously maintained in satisfactory and effective operation by the permittee at his expense.

J. Such other terms and conditions as may be necessary to protect the County Sewer System and to carry out the intent and provisions of this Law and to implement the Rules and Regulations.

K. Require the permittee to immediately notify the District when a discharge known to be in violation of any permit requirement has occurred.

L. Require the permittee to immediately contact the Director when considering the discharge of questionable or unknown wastes or wastewaters.

Section 8.5 Sampling and Testing Wastes: Whenever sewage or other wastes (including industrial wastes) are believed to have characteristics other than those prescribed for "normal sewage" as defined in the Rules and Regulations, or are believed to contain toxic substances or other material or substances which are excluded from County Sewer System, the Director shall have the power to take samples and make tests necessary to determine the nature and concentration of such wastes at any time or by periodic rechecks without notice to the person discharging such wastes. An aliquot portion of the sample(s) taken will be made available to the person whose premises are being sampled, if he so requests, at or prior to the time the sample is collected.

Section 8.6 Control Manholes: When required by Rules and Regulations, the owner of any property serviced by a private sewer carrying industrial wastes shall install a suitable control manhole together with such necessary meters and other appurtenances in the building sewer to facilitate observation, sampling, and measurement of the wastes. Such manhole shall be accessibly and safely located and shall be constructed in accordance with plans approved by the Director. The manhole shall be installed by the owner at his expense and shall be maintained by him so as to be safe and accessible at all times.

Section 8.7 Measurement and Analysis of Wastes: All measurements, tests and analyses of the characteristics of waters and wastes to which reference is made in this Law or in the Rules and Regulations shall be determined in accordance with the latest edition of "Standard Methods for Examination of Water and Waste Water" published by the American Public Health Association or any other method certified as accurate by the Director and shall be determined upon samples from said control manhole or other approved access points. Sampling shall be carried out by technically accepted methods. If a permit is to be issued, sampling should be performed in accordance with applicable State and Federal requirements.

Section 8.8 Determination of Pollutant Concentrations:

A. The pollutant concentration of any sewage, industrial waste or other wastes shall be determined from representative samples of the effluent discharged to public sewers, taken by the Pure Waters Districts at sampling stations as described under Section 8.4, 8.5 or 8.6 of this Law, at any period or time, and of such duration and in such manner as the Director may elect, or at any place or manner mutually agreed upon between the person and the Director.

   The analysis of samples taken shall be performed in a laboratory approved by the Director and the surcharge and/or the acceptability of the wastes shall be determined from said analyses.

B. All charges shall be based on the analysis of the wastes from any plant or premises, as determined above and related to the total volume of wastes discharged. The concentration of pollutants in sewage, industrial waste or other waste once determined as prescribed under Section 8.7 of this Law or the Rules and Regulations shall be used in calculating the sewer surcharge in accordance with the billing procedure of the District for the collection of charges and shall remain in effect until the person shall prove or the District shall determine that a change in the manufacturing process, production waste treatment or some other factor involving said company warrants a reanalysis for the determination of a new pollutant concentration of its wastes discharged from such premises into the County Sewer System. The new pollutant concentration shall then be used in calculating new charges and shall become effective as of the date of the subsequent billing period.

C. Whenever the discharges from a premise to the public sewer might be expected to show appreciable periodic variations during the year due to manufacturing process or production variation due to seasonal changes, the Director may prorate these variations and thereby determine an average pollutant concentration.

Section 8.9 Determination of Volumes: The Director may use, as the figure representing the number of cubic feet and/or gallons of discharge into the sewer system, (1) the amount of water supplied to the premises by the City of Rochester, the Monroe County Water Authority, or other water suppliers as shown upon the water meter if the premises are metered, or (2) if the premises are supplied wholly or in part by other water sources shall have metering devices installed, at the owner's expense, for measuring the volume of water used for the purposes, or (3) if such premises are used for an industrial or commercial purpose of such nature that the water supplied to the premises is not entirely discharged into the sewer system, the

estimate of the amount of sewage discharged into the sewer system may be made by the Director, or (4) the volume of sewage discharged into the sewer system as determined by measurements and samples taken at a manhole installed by the owner of the property served by the public sewer system, at his own expense, in accordance with the terms and conditions of the permit issued by the Director pursuant to Article VIII of this Law or the Rules and Regulations, or (5) a figure determined by the Director by any combination of the foregoing or by any other equitable method.

Section 8.10 Pollutant Concentration Disputed by a Person: In the event that the pollutant concentration of the waste discharged from a premise to a public sewer as determined above is disputed by a person, a program of resampling and gauging with subsequent analytical determination may be instituted as follows:

A. The person shall petition the Director to resample and gauge the wastes and shall pay an administration fee to cover all of the expenses incurred by the District in the resampling, gauging and analysis of the wastes; the fee shall be waived if the resampling shows that an error has been made by the County or its agents.

B. A consultant or agency of recognized professional standing in the employment of the person shall confer with representatives of the Director in order that an agreement may be reached as to the various factors which must be considered in a new sampling program.

C. The consultant or agency of recognized professional standing employed by the person shall be present or represented during the resampling operation.

D. Resampling shall be performed when all waste producing processes are contributing wastes of usual concentrations at their usual rate.

E. The results of the resampling and the reanalysis in a laboratory approved by the Director shall be considered to be the current analysis of the wastes discharged to the County Sewer System and shall be used for determining any surcharge and/or acceptability of the wastes.

Section 8.11 Revocation of Permit: A violation by the permittee of the permit conditions shall be cause for revocation or suspension of the permit after a Hearing by the Administrative Board, or if the violation is found to be within the emergency powers of the Director under Sections 4.5 or 5.5, the revocation is immediate upon receipt of notice; however a Hearing shall be held as soon as possible.

Article IX

General Provisions

Section 9.1 Powers and Authority of Inspectors
Section 9.2 Protection from Damage

Section 9.1 Powers and Authority of Inspectors: As provided under Article VIII, Section 8.1, the Director and his duly authorized representatives shall gain entry on to private lands by permission or duly issued warrant for the purpose of inspection, observation, measurement, sampling and testing in accordance with the provisions of this Law and its implementing Rules and Regulations. The Director or his representatives shall not have authority to inquire into any processes used in any industrial operation beyond that information having a direct bearing on the kind and source of discharge to the sewers or the on-site facilities for waste treatment. While performing the necessary work on private lands, referred to above, the Director or his duly authorized representatives shall observe all safety rules applicable to the premises as established by the owner and/or occupant.

Section 9.2 Protection from Damage: Any person who, for the purpose of evading requirements under this law by maliciously, willfully or recklessly breaking, damaging, destroying, uncovering, defacing or tampering with any equipment, monitoring device or other facility shall be subject to civil penalties provided herein.

Article X

Imposition and Computation of Sewer Surcharge

Section 10.1 Imposition of Sewer Surcharges: In addition to any other tax, fee, charge or sewer rent imposed or levied for the construction, maintenance, operation, repair, improvement and management of the County Sewer System or any public sewer tributary, thereto, the owner or lessee of any parcel or real property connected with such system or sewer, including, but not limited to, real property connected to such system by means of a private sewer or drain discharging into the County Sewer System or any public sewer tributary thereto, shall pay a sewer surcharge for discharging the following:

A. Any sewage, industrial wastes or other wastes in which the characteristics resulting from the pollutants contained therein exceed the maximum values as stated in the definition of "normal sewage" in the Rules and Regulations, or

B. Any waters discharged from storm water connections from any building or yard, any drain from catch basins, lakes, swamps, ponds or swimming pool drains, or any other source of cooling waters as defined in Sections 2.21 or 4.1, except with permission of the Director as evidenced by a properly issued permit or where discharge is to an identified "combined" sewer system, or

C. Any ground waters which enter the County Sewer System by infiltration of local sewage collection systems.

Section 10.2 Formulation of the Sewer Surcharge: The formula for the sewer surcharge shall be computed by the Director. The amount of the surcharge shall be the product of the surcharge factor and the established District charge for operation and maintenance. The general form for the determination shall be as follows:

$$S.F. = \frac{A(BOD-300}{300} + \frac{B(SS-300)}{300} + \frac{C(CLD-25)}{25} + \frac{D(P-10)}{10}$$

Where:

S.F. = Surcharge Factor
BOD = Milligrams per Liter of Biochemical Oxygen Demand, as defined in Section 2.14
SS = Milligrams per Liter of Suspended Solids, as defined in Section 2.61

CLD	=	Milligrams per Liter of Chlorine Demand, as defined in Section 2.18
P	=	Milligrams per Liter of Phosphorus, as defined in Section 2.37
A	=	Proportion of operation and maintenance cost to treat a lb. of Biochemical Oxygen Demand (BOD)
B	=	Proportion of operation and maintenance cost to treat a lb. of Suspended Solids (SS)
C	=	Proportion of operation and maintenance cost to treat a lb. of Chlorine Demand (CLD)
D	=	Proportion of operation and maintenance cost to treat a lb. of Phosphorus (P)

Notes:

1. A, B, C, D are decimal portions of the total operation and maintenance costs for each District. The values shall be determined by the Director on a yearly basis from data accumulated during each preceding year from the actual operation and maintenance costs.
2. If any of the values for BOD, SS, CLD, or P as determined by laboratory analysis are less than the respective normal values stated in the Rules and Regulations, the factor for that pollutant shall be eliminated from the formula.

Example - Treatment Charge Based on Volume

Any industry discharges into the public sewer system wastes which have been found to contain the following:

BOD5	-630	mg/l	- normal value	300	mg/l
SS	-280	mg/l	- normal value	300	mg/l
CLD	-50	mg/l	- normal value	25	mg/l
P	-45	mg/l	- normal value	10	mg/l

Monthly volume of discharge = 100,000 gallons
Normal O&M sewer charge = $.70/1,000 gallons
Values for A, B, C, D are, respective - .53, .35, .08, .04

$$SF = \frac{.53(630-300)}{300} + \frac{.08(50-25)}{25} + \frac{.04(45-10)}{10}$$

$$SF = .53(1.1) + .08(1.0) + .04(.14)$$

$$SF = .67$$

Note: 1. Factor for SS is dropped because SS is less than 300 mg/l.
2. Surcharge factors are rounded off to two decimal places.

Normal sanitary sewer operation and maintenance charge = $\frac{100{,}000 \times .70}{1{,}000}$

= $70.00 per month

Surcharge = (.67)($70.00)

= $46.90

Total Sewer O&M Charge = $70.00 + $46.90 = $116.90

This example illustrates sewer use by large commercial or industrial establishments and not average residential users with normal sewage.

Note: When excessive volumes of water (storm water, surface water, ground water, etc.) enter a County Sewer System directly or by inflow or infiltration of the local sewage collection systems, the Pure Waters District shall take the following actions:

1. Notice shall be given to the property owner or local governmental unit responsible for the sewage collection system contributing excessive volumes of water into the County Sewer System.

2. Six (6) months after notification to the property owner or local governmental unit, an informal timetable for the elimination and/or control of the excessive water infiltration shall be filed with the Pure Waters District.

3. A property owner or local governmental unit failing to provide said timetable or not substantially complying with the scheduled abatement of excessive inflow or infiltration pursuant to the timetable filed with the Pure Waters District shall be surcharged for the excessive water.

4. The surcharge shall be based in proportion to the determined excess volume of water entering the County Sewer System.

Section 10.3 Collection of Sewer Surcharges: Surcharges shall be included in the Pure Waters bill along with the Pure Waters charges. Permittees hauling scavenger wastes to discharge point shall be charged and surcharged through the fees charged for scavenger waste treatment. Other users under special contract as provided for in Section 10.6 shall be surcharged in accordance with the contract conditions.

Section 10.4 Computation of the Surcharge: The Director shall compute all surcharges using the formula in Section 10.1 and factors adopted by the Monroe County Legislature. The data used to compute the surcharge will be supplied by inspections, by the application for permit and/or any method determined by the Director which gives, as nearly as possible, an accurate volume determination and/or the average pollutant concentration. All surcharges shall be based on the analysis of wastes from any plant or premises in relation to the total volume of wastes and waters except in the case of special contracts in accordance with Section 10.6. The industrial user shall have the option to sample and test their discharges for the purpose of calculating the surcharge. The testing values shall be averaged with those testing values determined by the District for the purposes of calculating the surcharge. The data, once established as the average pollutant concentration, shall be used until inspection or other reliable proof justifies a change in the surcharge.

Section 10.5 Credits: If a payment has been received that results in an overpayment, said overpayment shall be a credit to the account.

Section 10.6 Special Contract: The Director has the authority to negotiate special contracts for handling sewage, industrial wastes or other wastes. One of the following conditions must exist before a special contract can be negotiated:

A. An industry or establishment has D.E.C. permit to discharge directly into receiving waters using some portion of the County Sewer System, or

B. The total volume or contribution of waste to the County Sewer System is greater than one million gallons per day or five percent of the average design capacity of the water pollution control facility receiving the waste, or

C. The contributor is a local, State or Federal Governmental Agency, or

D. Scavenger waste or other waste is so unusual that it is not covered by scavenger waste or surcharge provisions of this Law.

Article XI

Administrative Procedures of the Pure Waters District

Section 11.1 Public Information: The County Executive shall for each Pure Waters District:

A. Adopt a procedure to make available for public inspection all Rules and Regulations, orders, statements of policy or interpretations used by the District in the discharge of its functions. No rule, regulation, order or decision is valid against any person or party until it has been made available for public inspection. This provision is not applicable in favor of any person or party who has actual knowledge thereof.

B. Publish annually, in the largest daily newspaper of the County, a list of industrial users who, during the previous twelve (12) months, were significantly in violation of applicable pretreatment standards or other pretreatment requirements. Significant violation is defined as a violation or violations which remain uncorrected 45 days after notification of noncompliance; which are part of a pattern of noncompliance; or which involve a failure to accurately report noncompliance.

C. Make available to the public for inspection and/or copying information and data on users of the County Sewer System obtained from reports, questionnaires, permit applications, permit and monitoring programs and from inspections unless the user specifically requests and is able to demonstrate to the satisfaction of the Director that such information, if made public, would divulge processes or methods of production entitled to protection as trade secrets of the user. Wastewater constituents and characteristics will not be recognized as confidential.

Confidential information shall not be made available for inspection and/or copying by the public but shall be disclosed upon written request to governmental agencies for uses related to this Law, the National Pollutant Discharge Elimination System (NPDES) permit providing that the governmental agency making the request agrees to hold the information confidential in accordance with State or Federal Laws and Regulations. The Director shall give written notice to the user of any disclosure of confidential information to another governmental agency.

Where a request is made to the Director to treat information as confidential, the Director shall treat it as such unless and until he notifies the user, in writing, of his denial of the request. The decision of the Director shall be effective ten days after the date of the notice. If review of the Director's decision is commenced under the "contested cases" provisions of Article XI before the expiration of the ten days, the Director shall continue to treat the information as confidential unless the County Executive upholds the Director's initial decision denying the request for confidentiality. Any materials considered in a confidentiality proceeding may not be disclosed by the County Executive if the request for confidentiality is upheld. The decision of the County Executive shall be effective five days after service upon the user of the final decision.

Section 11.2 Procedure for Adoption of Rules and Regulations:

A. The Monroe County Legislature shall adopt rules and regulations relating to the organization of the Pure Waters Districts. Such rules and regulations may be amended or repealed only by subsequent action of the County Legislature.

B. The Monroe County Legislature hereby delegates to the County Executive the power to adopt, amend and repeal, from time to time, the rules and regulations of the Districts relating to the operation and use of the County Sewer System, including, without limitation: the designation of the place where applications, requests and submissions shall be made; the nature and requirements of all formal and informal procedures for applying for permits and

licenses; any general or special billing procedures to be utilized by the County Sewer Districts; the manner of making connections to the system; the manner of construction and operation of all private facilities and appurtenances connected to the system; the procedure for requesting a hearing pursuant to this Article XI; the procedure for petitioning for the promulgation, amendment or repeal of a rule or regulation. Except as provided for in Subsection C hereof, the County Executive shall take the following steps prior to the adoption, amendment or repeal of any rule or regulation:

1. File a copy of the proposed rule, regulation or amendment thereto with the Pure Waters Administrative Board along with the reasons there for;

2. Conduct a public hearing with respect to the intended action. A notice of such hearing shall be published at least ten (10) days prior to the date of the hearing. Such notice shall include: a statement of either the terms or substance of the intended action or a description of subjects and issues involved; the time and place of the hearing; the manner in which interested persons may present their views and submit data prior to the County Executive's adoption of the rule, regulation or amendment thereto.

C. In the event that the Director shall take or recommend emergency action pursuant to section 4.5 or Section 5.5 of this Sewer Use Law, the County Executive shall have the right to adopt an emergency rule or regulation without prior notice or public hearing. Any such emergency rule or regulation shall be effective for a period of no longer than 120 days unless such rule or regulation is subsequently promulgated pursuant to Subsection A or B of this Section.

Section 11.3 Filing and Taking Effect of Rules and Regulations:

A. The County Executive shall file a certified copy of each Rule and Regulation with the Clerk of the Monroe County Legislature. The Clerk shall keep a permanent file which may be inspected upon request.

B. The Rule and/or Regulation shall be effective ten (10) days after the filing except that an emergency rule adopted pursuant to Subsection C of Section 11.2 shall be effective upon filing.

Section 11.4 Publication of Rules: The County Executive shall compile, index and publish all effective Rules and Regulations. The compilation shall be supplemented as often as necessary.

Section 11.5 petition for Adoption of Rules: An interested party may petition the County Executive or the Pure Waters Administrative Board requesting the promulgation, amendment, or repeal of a Rule or Regulation. Within thirty (30) days after submission of a petition, the County Executive shall initiate rule making proceedings in accordance with Subsection B of Section 11.2 hereof.

Section 11.6 Declaratory Opinions of the Director; Declaratory Rulings of the County Executive:

A. The Director will give a declaratory opinion when either of two conditions exists:

1. A formal request for a declaratory opinion of a petitioner's position in relation to the policy contained in the Monroe County Sewer Use Law or the Rules and Regulations of the Districts. This request must be acknowledged within ten (10) working days.

2. The Director formally informs a party of an existing violation or violations of the Monroe County Sewer Use Law or the Rules and Regulations which, in his opinion, will make the party subject to enforcement and penalties as contained in Article XII.

B. The County Executive shall be informed of all opinions of the Director, and such opinions are not binding on the County Executive but shall be reviewed, with notice, upon a formal request of any party or the County Executive. After review, the County Executive will issue a Declaratory Ruling to be filed with the Clerk of the Monroe County Legislature.

Section 11.7 Contested Cases; Notice; Hearing; Records:

A. In a contested case, all parties shall be afforded an opportunity for Hearing after reasonable notice. The Hearing shall be conducted by the County Executive or a Hearing officer appointed by the County Executive. The Notice shall include:

1. A statement of the time, place, and nature of the Hearing;

2. A statement of the legal authority and jurisdiction under which the Hearing is to be held;

3. A reference to the particular Sections of the Law and/or Rules and Regulations involved;

4. A short and plain statement of the matters asserted. If the Notice does not state he matters in detail at the time the Notice is served, the initial Notice may be limited to a statement of the issues involved. Upon application by the party or parties involved, a more definite and detailed statement shall be furnished.

B. Opportunity shall be afforded all parties to respond and present evidence and argument on all issues involved.

C. Unless precluded by Law, informal disposition may be made of any contested case by stipulation, agreed settlement, consent order, or default.

D. The record in a contested case shall include:

1. All pleadings, motions, intermediate rulings;

2. Evidence received or considered;

3. A statement of matters officially noticed;

4. Questions and offers of proof, objections, and rulings thereon;

5. Proposed findings and exceptions;

6. Any decision, opinion, or report by the officer presiding at the Hearing;

7. All staff memoranda or data submitted to the Hearing Officer or County Executive in connection with their consideration of the case.

8. Oral proceedings or any part thereof shall be transcribed on request of any party and made part of the records.

9. Findings of fact shall be based exclusively on the record and on matters officially noticed.

10. The costs associated with the Hearing.

Section 11.8 Rules of Evidence; Official Notice: In Contested Cases:

A. Irrelevant, immaterial, or unduly repetitious evidence shall be excluded. When necessary to ascertain facts not reasonably susceptible of proof, evidence may be admitted if it is of a type commonly relied upon by reasonable, prudent men in the conduct of their affairs. The County Executive or Hearing Office shall be cognizant of the rules of privilege recognized by Law. Objections to evidentiary offers may be made and shall be noted in the record. Subject to these requirements, when a Hearing will be expedited and the interests of the parties will not be prejudiced substantially, any part of the evidence may be received in written form;

B. Documentary evidence may be received in the form of copies or excerpts, if the original is not readily available. Upon request, parties shall be given an opportunity to compare the copy with the original;

C. A party may conduct cross-examinations required for a full and true disclosure of the facts;

D. Notice may be taken of judicially cognizable facts. In addition, notice may be taken of generally recognized technical or scientific facts available to and within the County Executive's or Hearing Officer's specialized knowledge. Parties shall be notified either before or during the Hearing, or by reference in preliminary reports or otherwise, of the material noticed, including any staff memoranda or data, and they shall be afforded an opportunity to contest the material so noticed. The County Executive's or Hearing Officer's experience, technical competence, and specialized knowledge may be utilized in the evaluation of the evidence.

Section 11.9 Examination of Evidence by County Executive: When, in a contested case, the County Executive has not heard the case or read the record, the decision, if adverse to a party to the proceeding other than the District itself, shall not be made until a proposal for decision is served upon the parties, and an opportunity is afforded to each party adversely affected to file exceptions and present briefs and oral argument to the members who are to render the decision. The proposal for decision shall contain a statement of the reasons therefore and of each issue of fact or law necessary to the proposed decision, prepared by the person who conducted the Hearing or one who has read the record. The parties, by written stipulation, may waive compliance with this action.

Section 11.10 Decisions and Orders: A final decision or order adverse to a party in a contested case shall be in writing or stated in the record. A final decision shall include findings of fact and conclusions of law, separately stated. Findings of fact, if set forth in statutory language, shall be accompanied by a concise and explicit statement of the underlying facts supporting the findings. If a party has submitted proposed findings of fact, the decision shall include a ruling upon each proposed finding. Parties shall be notified either personally or by mail of any decision or order.

Upon request, a copy of the decision or order shall be delivered or mailed forthwith to each party and to his attorney of record. A copy of any final decision or order shall be filed with the Pure Waters Administrative Board.

Section 11.11 Ex Parte Consultations: Unless required for the disposition of ex parte matters authorized by Law, the County Executive or Hearing Officer assigned to render a decision or to make findings of fact and conclusions of Law in a contested case shall not communicate until a final decision has been reached, directly or indirectly, in connection with any issue of fact, with any person or party, nor, in connection with any issue of Law, with any party or its representative, except upon notice and opportunity for all parties to participate. The County Executive:

A. may communicate with members of the Administrative Board;

B. may have the aid and advice of one or more personal assistants.

Section 11.12 Permits:

A. When the denial of a permit is required to be preceded by notice and opportunity for Hearing, the provisions of this Law concerning contested cases shall apply.

B. When a permittee has made timely and sufficient application for the renewal of a permit or a new permit with reference to any activity of a continuing nature, the existing permit does not expire until the application has been finally determined by the County Executive and, in case the application is denied or the terms of the new permit are limited, until the last day for seeking review of the order of the County Executive or a later date fixed by order of the reviewing Court.

C. The County Executive shall not revoke, suspend, annul, or withdraw any permit prior to the institution of proceedings by notice given to the permittee of facts or conduct which warrant the intended action, and in which the permittee has had an opportunity to show compliance with all lawful requirements for the retention of the permit. If the Director finds that public health, safety, or welfare imperatively requires emergency action, summary suspension of a permit may be ordered pending proceedings for permanent revocation or other action. These proceedings shall be promptly instituted and determined.

Section 11.13 Review of contested Cases:

A. A party who has exhausted all administrative remedies available within this article and who is aggrieved by a final decision in a contested case, is entitled to review.

B. Appeal and review of a rate-making determination shall be accomplished by petition to the Pure Waters Administrative Board.

C. Review of other decisions shall be instituted by filing a petition under Article 78 of the Civil Practice Law and Rules in the Monroe County Supreme Court, within thirty (30) days after the final decision of the County Executive, or if a Rehearing is requested, within thirty (30) days after the decision thereon. Copies of petition shall be served upon all affected parties.

D. The filing of the Article 78 petition does not in itself stay enforcement of the County Executive's decision. A stay may be granted with appropriate terms by the County Executive.

E. Within thirty (30) days after the service of the petition or within further time allowed by the Court, the County Executive shall transmit to the reviewing Court the original (or certified) copy, of the entire record of the proceeding under review.

Article XII

Enforcement Procedures of the Pure Waters Districts

Section 12.1 Enforcement and penalties:

A. A violation of the provisions of Articles III to IX of this Law or the Rules and Regulations authorized by Article XI shall be subject to a penalty not to exceed $10,000 for any one case, and an additional penalty not to exceed $10,000 for each day of a continuing violation after a final decision and order has been entered with notice to the party adversely affected by the decision to impose the penalty. The exact amount of penalty in each case shall be determined by the County Executive.

B. The penalty shall become part of the Pure Waters charges and shall be collected as a charge in accordance with the County Law of New York.

C. The County Executive shall report industrial waste discharges consistently failing to achieve County, State or Federal Pollution standards to appropriate State and Federal Agencies. The Director shall assist appropriate State and Federal Agencies, as necessary, in their review or action upon such reports.

D. Proceedings under this Law do not preclude enforcement of any Ordinances, Criminal Statutes, or Laws of the State of New York by either the County of Monroe or the State of New York.

Section 12.2 Power of Injunction: Notwithstanding any other provision of this Law, the County Executive or the Administrative Boards may authorize the County Attorney to institute the appropriate legal proceedings including seeking injunctive relief. The power of injunction shall be invoked in the following cases:

A. To stop an illegal discharge after all administrative procedures have been used and failed.

B. Administrative procedures do not have to be exhausted if an illegal discharge is causing the County to violate its discharge standards, and the length of time necessary to institute any existing legal remedies would result in a fine or penalty to the County.

File No AMK

ADOPTION: Date: _____ Vote: _____

ACTION BY COUNTY EXECUTIVE

APPROVED: _____ VETOED: _____

SIGNATURE: _____ Date: _____

EFFECTIVE DATE OF RESOLUTION: _____

Article XIII

Validity

Section 13.1 Repeal of Prior Legislation
Section 13.2 Separability
Section 13.3 Effective Date of Law

Section 13.1 Repeal of Prior Legislation: All Codes, Laws or parts of same in conflict herewith are repealed.

Section 13.2 Separability: The invalidity of any Section, clause, sentence or provision of this Law shall not affect the validity of any other part of this Law which can be given effect without such invalid part or parts.

Section 13.3 Effective Date of Law:
This law shall be effective thirty (30) days after enactment.

Section 2. Local Law No. 7 of 1972 adopted by the County Legislature on September 19, 1972 and filed in the County Clerk's Office September 22, 1972 known as the Pure Waters Sewer Use Law is hereby repealed on the effective date of this Local Law

NYSDOH

Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York
(Cover and Section 4 Only)

FINAL

Guidance for Evaluating Soil Vapor Intrusion in the State of New York

October 2006

Prepared by:

NEW YORK STATE DEPARTMENT OF HEALTH
Center for Environmental Health
Bureau of Environmental Exposure Investigation

to notify the appropriate party when new construction or tenants are proposed for the parcel (e.g., permit applications and grants) or ownership of the parcel changes.

Section 4: Soil Vapor Intrusion Mitigation

As discussed in Section 1.1, soil vapor can enter a building through cracks or perforations in slabs or basement floors and walls, and through openings around sump pumps or where pipes and electrical wires go through the foundation primarily because of a difference between interior and exterior pressures. This intrusion is similar to how radon gas enters buildings from the subsurface. Fortunately, given this similarity, well-established techniques for mitigating exposures to radon may also be used to mitigate exposures related to soil vapor intrusion.

Once it is determined that steps should to be taken to address exposures associated with soil vapor intrusion, they should be implemented with all due expediency. This section provides an overview of:

a. methods of mitigation,
b. installation and design of mitigation systems,
c. post-mitigation testing,
d. operation, maintenance and monitoring of mitigation systems,
e. termination of mitigation system operations, and
f. annual certification.

Mitigation is considered to be an interim measure to address exposures until contaminated environmental media are remediated, or until mitigation is no longer needed to address exposures related to soil vapor intrusion.

4.1 Methods of mitigation

The most effective mitigation methods involve sealing infiltration points and actively manipulating the pressure differential between the building's interior and exterior (on a continuous basis). As discussed in the following subsections, the appropriate method to use will largely depend upon the building's foundation design. Furthermore, buildings having more than one foundation design feature (e.g., a basement under one portion of the house and a crawl space beneath the remainder) may require a combination of mitigation methods. This section describes methods of mitigation that are expected to be the most reliable options under a wide range of circumstances. Occasionally, there are site-specific or building-specific conditions under which alternative methods (such as HVAC modification, sealing, room pressurization, passive ventilation systems, or vapor barriers) may be more appropriate. Such mitigation proposals may be considered on a case-by-case basis.

4.1.1 Buildings with a basement slab or slab-on-grade foundation

In conjunction with *sealing* potential subsurface vapor entry points, an active *sub-slab depressurization system* (SSD system) is the preferred mitigation method for buildings with a basement slab or slab-on-grade foundation. A SSD system uses a fan-powered vent and piping to draw vapors from the soil beneath the building's slab (i.e., essentially creating a vacuum beneath the slab) and discharge them to the atmosphere. This results in lower sub-slab air pressure relative to indoor air pressure, which prevents the infiltration of sub-slab vapors into the building.

The most common approach to achieving depressurization beneath the slab is to insert the piping through the floor slab into the crushed rock or soil underneath. However, the EPA, in their "Consumer's Guide to Radon Reduction" (EPA 402-K-03-002; revised February 2003), lists the following approaches as ways to reduce radon levels in a building, either in place of the more common sub-slab suction point method or in conjunction with that method:

a. *Drain tile suction* — Some houses have drain tiles or perforated pipe to direct water away from the foundation of the house. Suction on these tiles or pipes is often effective;

b. *Sump hole suction* — If the building has a sump pump to remove unwanted water, the sump can be capped so that it can continue to drain water and serve as the location for piping. If the sump is not used as the suction or extraction point, the associated wiring and piping should be sealed and an air-tight cover should be installed to enhance the performance of the SSD system; and

c. *Block wall suction* — If the building has hollow block foundation walls, the void network within the wall may be depressurized by drawing air from inside the wall and venting it to the outside. This method is often used in combination with sub-slab depressurization.

The depressurization approach, or combination of approaches, selected for a building should be determined on a building-specific basis due to building-specific features that may be conducive to a specific depressurization approach. For example, if the contaminants are entering the building through a block wall, block wall suction in conjunction with traditional sub-slab depressurization may be more effective at minimizing exposures related to soil vapor intrusion rather than sub-slab depressurization alone.

Although sealing is not a reliable mitigation technique on its own, it can significantly improve the effectiveness of a SSD system since it limits the flow of subsurface vapors into the building. All joints, cracks and other penetrations of slabs, floor assemblies and foundation walls below or in contact with the ground surface should be sealed with materials that prevent air leakage.

If the State concurs that a SSD system is not a practicable alternative or that exposures will be mitigated concurrently by a method selected to remediate subsurface contamination, alternative mitigation methods may be considered, such as the following:

a. *HVAC modification* — a technique where the building's HVAC system is modified to avoid depressurization of the building relative to underlying and surrounding soil (i.e., to maintain a positive pressure within the building); and

b. *Soil vapor extraction (SVE) system* — a technique used to remediate contaminated subsurface soil vapor. SVE systems use high flow rates, induced vacuum or both to collect and remove contamination, while SSD systems use a minimal flow rate to effect the minimum pressure gradient (see the EPA's technical guidance documents for recommended gradients; Section 4.2.3) needed to reverse air flow across a building's foundation. Depending upon the SVE system's design, the system may also serve to mitigate exposures. For example, the SVE system's radius of influence includes the subsurface beneath affected buildings or horizontal legs of the system will be installed beneath affected buildings. However, complications can arise if the SVE system is no longer effective at remediating contaminated vapors, exposures should still be mitigated due to residual vapor contamination.

4.1.2 Buildings with a crawl space foundation

A *soil vapor retarder* with *sub-membrane depressurization (SMD) system* is the preferred mitigation method for buildings with a crawl space foundation. A soil vapor retarder is a synthetic membrane or other comparable material that is placed on the ground in the crawl space to retard the flow of soil vapors into the building. A SMD system is similar to a SSD system. It uses a fan-powered vent and piping to draw vapors from beneath the soil vapor retarder and discharge them to the atmosphere. This results in lower air pressure beneath the membrane relative to air pressure in the crawl space, which prevents the infiltration of subsurface vapors into the building.

If the State concurs that a soil vapor retarder with a SMD system is not a practicable alternative or that exposures will be mitigated concurrently by a method selected to remediate subsurface contamination, alternative mitigation methods may be considered, such as the following:

a. *HVAC modification* — a technique where the building's HVAC system is modified to avoid depressurization of the building relative to the crawl space;

b. *Crawl space ventilation with sealing* — a technique that uses a fan to draw air out of the crawl space; and

c. *SVE system* [Section 4.1.1].

4.1.3 Buildings with dirt floor basements

Either a SSD system with a newly poured slab or a SMD system with a soil vapor retarder may be used. However, the former method is preferred.

4.1.4 Buildings with multiple foundation types

Mitigation in a building with a combination of foundations should be achieved by applying the specific methods described previously [Sections 4.1.1 through 4.1.3] to the corresponding foundation segments of the building. Special consideration should be given to the points at which different foundation types join, since additional soil vapor entry routes exist in such locations. Often, the various systems can be installed and connected to a common depressurization system and fan.

4.1.5 Undeveloped parcels

If sampling results indicate a mitigation system is recommended to address exposures in buildings that may be constructed, then a SSD system with sealing, or a SMD system with a soil vapor retarder, or a combination of these methods is recommended, as appropriate to the design of the proposed buildings.

4.1.6 Additional references

The following documents provide additional information on selecting an appropriate mitigation method:

a. *A Consumer's Guide to Radon Reduction*
EPA [EPA 402-K-03-002, revised February 2003]

This document provides assistance in selecting a qualified radon mitigation contractor to reduce the radon levels in a home, determining an appropriate radon reduction method, and maintaining a radon reduction system. It is available at the EPA's web site: http://www.epa.gov/iaq/radon/pubs/index.html; and

b. *Reducing Radon in Schools: A Team Approach*
EPA [EPA 402-R-94-008, April 1994]

This document will provide assistance in determining the best way to reduce elevated radon levels found in a school. It provides guidance on the process of confirming a radon problem, selecting the best mitigation strategy, and directing the efforts of a multidisciplinary team assembled to address elevated radon levels in a way that will contribute to the improvement of the overall indoor air quality of the school. Copies can be ordered from the EPA's Indoor Air Quality Information Clearinghouse at 1-800-438-4318.

4.2 Design and installation of mitigation systems

Once a mitigation method is selected, it should be designed and installed. The components of the design and installation of mitigation systems, the procedures for specific mitigation techniques, and references for technical guidance are provided in the following subsections.

4.2.1 General recommendations

Systems should be designed and installed by a professional engineer or environmental professional. In most areas of the state, there are contractors who have met certain requirements and are trained to identify and fix radon problems in buildings. To obtain the names of local contractors, contact the NYSDOH's Radon Program at 1-800-458-1158, extension 27556, or visit the National Radon Safety Board's web site (www.nrsb.org) or National Environmental Health Association's web site (www.neha.org).

Typically, the party responsible for remediating the site is responsible for arranging design and installation activities. If no responsible party is available, the State will arrange for the design and installation of the system. All design and installation activities should be documented and reported to the agencies. Furthermore, once a mitigation system is installed, an information package should be given to the building's owner and tenants, if applicable, to facilitate their understanding of the system's operation, maintenance and monitoring [Section 5.6].

With the exception of SVE systems, the mitigation methods introduced in Section 4.1 are not intended to remediate the source of subsurface vapors (e.g., contaminated groundwater, soil, etc.). Rather, they are designed to minimize the infiltration of subsurface vapors into a building. For consistency in implementing the techniques in residential buildings, mitigation systems should be designed and installed in accordance with the following:

a. *Standard Practice for Installing Radon Mitigation Systems in Existing Low-rise Residential Buildings* (ASTM E-2121)

American Society for Testing and Materials (ASTM) International [ASTM E-2121-03, February 10, 2003]

This document applies to existing buildings. The purpose of this document is to provide radon mitigation contractors with uniform standards that will ensure quality and effectiveness in the design, installation, and evaluation of radon mitigation systems in detached and attached residential buildings three stories or less in height. Information on how to obtain a copy of this standard is available in Appendix E; and

b. *Model Standards and Techniques for Control of Radon in New Residential Buildings* EPA [EPA 402-R-94-009, March 1994]

This document applies to new construction and contains information on how to incorporate radon reduction techniques and materials in residential construction. A copy of this document is provided in Appendix F.

4.2.2 System-specific recommendations

Basic design and installation recommendations for mitigation systems follow. These are based upon recommendations and requirements given by the EPA for mitigating exposures related to radon intrusion (for additional information see EPA's web site on radon at http://www.epa.gov/iaq/radon/pubs/index.html).

a. *Sealing* — To improve the effectiveness of depressurization and ventilation systems and to limit the flow of subsurface vapors into the building, materials that prevent air leakage should be used, such as elastomeric joint sealant (as defined in ASTM C920-87), compatible caulks, non-shrink mortar, grouts, expanding foam, "Dranjer" drain seals, or airtight gaskets. Some effective sealants may contain volatile organic compounds; in some situations, this may be a consideration in choosing an appropriate sealing material.

b. *Soil vapor retarder (membrane)* —

1. To retard the infiltration of subsurface vapors into the building and enhance the performance of a SMD system, a minimum 6 mil (or 3 mil cross-laminated) polyethylene or equivalent flexible sheeting material should be used.

2. The sheet should cover the entire floor area and be sealed at seams (with at least a 12 inch overlap) and penetrations, around the perimeter of interior piers and to the foundation walls.

3. Enough of the sheeting should be used so it will not be pulled away from the walls when the depressurization system is turned on and the sheet is drawn down.

4. If a membrane is installed in areas that may have future foot traffic (e.g., a dirt floor in a basement), consideration should be given to also installing a wearing surface such as sand or stone to protect the integrity of the membrane. Additionally, a layer of fine sand may be prudent beneath the membrane to protect it from penetrations by sharp objects in the dirt floor.

c. *Depressurization systems* —

1. The systems should be designed to avoid the creation of other health, safety, or environmental hazards to building occupants (e.g., backdrafting of natural draft combustion appliances).

2. The systems should be designed to minimize soil vapor intrusion effectively while minimizing excess energy usage, to avoid compromising moisture and temperature controls and other comfort features, and to minimize noise.

3. To evaluate the potential effectiveness of a SSD before it is installed, a diagnostic test (commonly referred to as a "communication" test) should be performed to measure the ability of a suction field and air flow to extend through the material beneath the slab. This test is commonly conducted by applying suction on a centrally located hole drilled through the concrete slab and simultaneously observing the movement of smoke downward into small holes drilled in the slab at locations separated from the central suction hole. A similar quantitative evaluation may also be performed by using a digital micromanometer or comparable instrument. Depending on test results, multiple suction points may be needed to achieve the desired effectiveness of the system.

4. Passive systems (i.e., a SSD system without a vent fan) are not as effective as active systems and their performance varies depending upon ambient temperatures and wind conditions. Therefore, active systems should be used to ensure exposures are being addressed.

5. The vent fan and discharge piping should not be located in or below a livable or occupied area of the building to avoid entry of extracted subsurface vapors into the building in the event of a fan or pipe leak.

6. To avoid entry of extracted subsurface vapors into the building, the vent pipe's exhaust should be

   i. above the eave of the roof (preferably, above the highest eave of the building at least 12 inches above the surface of the roof),

   ii. at least 10 feet above ground level,

   iii. at least 10 feet away from any opening that is less than 2 feet below the exhaust point, and

   iv. 10 feet from any adjoining or adjacent buildings, or HVAC intakes or supply registers.

7. Rain caps, if used, should be installed so as not to increase the potential for extracted subsurface vapors to enter the building.

8. To avoid accidental changes to the system that could disrupt its function, the depressurization system should be labeled clearly. An example of such labeling is shown in Figure 5.1.

9. A warning device or indicator should be installed to alert building occupants if the active system stops working properly. Examples of system failure warning devices and indicators include the following: a liquid gauge (e.g., a

manometer), a sound alarm, a light indicator, and a dial (needle display) gauge. The warning device or indicator should be placed where it can be easily heard or seen. The party installing the system should verify the warning device or indicator is working properly. Building occupants should be made aware of the warning device or indicator (what it is, where it is located, how it works, how to read/understand it, and what to do if it indicates the system is not working properly).

d. *HVAC systems* — HVAC systems should be carefully designed, installed and operated to avoid depressurization of basements and other areas in contact with the soil.

e. *Crawl space ventilation* —

1. Ventilation systems should be designed to avoid the creation of other health, safety, or environmental hazards to building occupants (e.g., backdrafting of natural draft combustion appliances).

2. Openings and cracks in floors above the crawl space that would permit conditioned air to pass into or out of the occupied spaces of the building, should be identified, closed and sealed.

f. *SVE systems designed to also mitigate exposures* —

1. The systems should be designed to avoid the creation of other health, safety, or environmental hazards to building occupants (e.g., backdrafting of natural draft combustion appliances).

2. To avoid reentry of soil vapor into the building(s), the exhaust point should be located away from the openings of buildings and HVAC air intakes. Depending upon the concentrations of volatile chemicals in subsurface vapors and the expected mass removal rate, treatment (e.g., via carbon filters) of the SVE system effluent may be appropriate to minimize outdoor air effects.

3. The SVE system's radius of influence should adequately address buildings requiring mitigation, as well as subsurface sources requiring remediation. If it does not, additional actions may be appropriate. For example, if the radius of influence does not completely extend beneath a building, a complementary air monitoring program may be appropriate to confirm that exposures are being addressed adequately while the SVE system is operating.

4.2.3 Technical guidance

To address exposures effectively in larger buildings, some of the same techniques used in residential buildings can be scaled up in size, number, or performance (e.g., adjustments in the size and air movement capacity of the vent pipe fan, or installation of multiple suction points through the slab instead of a single point). The design of the techniques may also be modified (e.g., installation of horizontal pipes beneath the building instead of a single suction point).

Detailed technical guidance on designing and installing mitigation systems in residential and non-residential buildings is provided in various documents, such as the following, released by the EPA and others:

a. References provided in ASTM's E-2121 (see Appendix E for information on how to obtain a copy) and the EPA's *Model Standards and Techniques for Control of Radon in New Residential Buildings* (Appendix F);

b. *Radon Reduction Techniques for Existing Detached Houses: Technical Guidance (Third Edition) for Active Soil Depressurization Systems*
EPA [EPA 625/R-93-011, October 1993]

This technical guidance document has been prepared to serve as a comprehensive aid in the detailed selection, design, installation, and operation of indoor radon reduction measures for existing houses based on active soil depressurization techniques. It is intended for use by radon mitigation contractors, building contractors, concerned homeowners, state and local officials and other interested persons. Copies can be ordered from the EPA's Indoor Air Quality Information Clearinghouse at 1-800-438-4318;

c. *Protecting Your Home From Radon: A Step-by-Step Manual for Radon Reduction*
Kladder *et al.*, 1993

This manual is designed to provide sufficient information to a homeowner to make many of the basic repairs that can significantly reduce radon levels in the home;

d. *Building Radon Out: A Step-by-Step Guide on How to Build Radon-Resistant Homes*
EPA [EPA 402-K-01-002, April 2001]

This fully illustrated guide contains all the information needed in one place to educate home builders about radon-resistant new construction (RRNC), including the following: basic questions and detailed answers about radon and RRNC, specific planning steps before installing a system, detailed installation instructions with helpful illustrations, tips and tricks when installing a system, marketing know-how when dealing with homebuyers, and architectural drawings. This document is available at the EPA's web site: http://www.epa.gov/iaq/radon/pubs/index.html; and

e. *Radon Prevention in the Design and Construction of Schools and Other Large Buildings*
EPA [EPA 625-R-92-016, June 1994]

It is typically easier and much less expensive to design and construct a new building with radon-resistant and/or easy-to-mitigate features, than to add these features after the building is completed and occupied. Specific guidelines on how to incorporate radon prevention features in the design and construction of schools and other large buildings are detailed in this manual. Copies can be ordered from the EPA's Indoor Air Quality Information Clearinghouse at 1-800-438-4318. This document is also available on the EPA Office of Research and Development's web site: http://www.epa.gov/ORD/NRMRL/pubs/625r92016/625r92016.htm.

4.3 Post-mitigation or confirmation testing

Once a mitigation system is installed, its effectiveness and proper installation should be confirmed. The party that installed the system should conduct post-mitigation testing and for developing a post-mitigation testing plan. Minimum objectives for post-mitigation testing associated with specific mitigation methods are provided in the following

subsections. All post-mitigation testing activities should be documented and reported to the agencies.

4.3.1 SSD systems with sealing

a. Reasonable and practical actions should be taken to identify and fix leaks. With the depressurization system operating, smoke tubes are used to check for leaks through concrete cracks, floor joints, and at the suction point. Any leaks identified should be resealed until smoke is no longer observed flowing through the opening.

b. Once a depressurization system is installed, its operation may compete with the proper venting of fireplaces, wood stoves and other combustion or vented appliances (e.g., furnaces, clothes dryers, and water heaters), resulting in the accumulation of exhaust gases in the building and the potential for carbon monoxide poisoning. Therefore, in buildings with natural draft combustion appliances, the building should be tested for backdrafting of the appliances. Backdrafting conditions should be corrected before the depressurization system is placed in operation.

c. The distance that a pressure change is induced in the sub-slab area (i.e., a pressure field extension test) should be conducted. Analogous to a communication test, this test is commonly conducted by operating the depressurization system and simultaneously observing the movement of smoke downward into small holes (e.g., 3/8 inch) drilled through the slab at sufficient locations to demonstrate that a vacuum is being created beneath the entire slab. A similar quantitative evaluation may also be performed by using a digital micromanometer or comparable instrument. If adequate depressurization is not occurring, the reason (e.g., improper fan operation) should be identified and corrected.

d. Adequate operation of the warning device or indicator should be confirmed.

e. Except as indicated below, post-mitigation indoor and outdoor air sampling should be conducted in all buildings where pre-mitigation samples were collected and in all buildings where physical data suggest possible impediments to comprehensive sub-slab communication of the depressurization system (i.e., locations with wet or dense sub-slab soils, multiple foundations and footings, minimal pressure differentials between the interior and sub-slab). Generally, indoor and outdoor air sampling locations, protocols and analytical methods should be consistent between pre-mitigation and post-mitigation sampling, where applicable. In buildings with basements, post-mitigation indoor air sampling from the basement alone (i.e., without a concurrent indoor air sample from the first floor) is recommended in most circumstances.

Typically, post-mitigation sampling should be conducted no sooner than 30 days after installing a depressurization system. If the system is installed outside of the heating season or at the end of a season, post-mitigation air sampling may be postponed until the heating season.

In cases of widespread mitigation due to vapor contamination and depending upon the basis of making decisions (e.g., a "blanket mitigation" approach within a specified area of documented vapor contamination [Section 3.3.1]), a representative number of buildings from an identified study area, rather than each building, may be

sampled. Prior to implementation, this type of post-mitigation sampling approach should be approved by State agency personnel.

In newly constructed buildings, a site-specific and building-specific indoor air sampling plan is recommended due to potential interferences caused by the off-gassing of volatile chemicals in new building materials (e.g., paints, carpets, furniture, etc. [Section 1.4]). In these situations, if indoor air sampling is appropriate samples should be

i. collected while the system is operational but before potentially interfering factors are brought into the building,

ii. analyzed for a targeted list of volatile chemicals based on previous environmental sampling (e.g., groundwater, soil, soil vapor, etc.), and/or

iii. collected while the system is operational but after potentially interfering factors have had an opportunity to off-gas.

If post-mitigation sampling results do not indicate a significant decrease in the concentrations of volatile chemicals previously believed to be present in the indoor air due to soil vapor intrusion, the reason (e.g., indoor or outdoor sources, improper operation of the mitigation system, etc.) should be identified and corrected as appropriate.

4.3.2 SMD systems with soil vapor retarder

a. Reasonable and practical actions should be taken to identify and fix leaks. With the depressurization system operating, smoke tubes are used to check for leaks in the membrane at seams, edge seals and at locations where the sheet was sealed around obstructions. Any leaks identified should be resealed until smoke is no longer observed flowing through the opening.

b. Backdrafting conditions should be evaluated and corrected [Section 4.3.1].

c. Adequate operation of the warning device or indicator should be confirmed.

d. Post-mitigation indoor and outdoor air testing should be conducted in buildings where pre-mitigation samples were collected [as discussed in Section 4.3.1].

4.3.3 HVAC modifications

a. Check the building for positive pressure conditions (e.g., verify a pressure controller is maintaining the desired pressure differential and/or measure the pressure differential between the sub-slab and indoor air by using field instruments).

b. Backdrafting conditions should be evaluated and corrected [Section 4.3.1].

c. Adequate operation of the warning device or indicator, if applicable, should be confirmed.

d. Post-mitigation indoor and outdoor air testing should be conducted in buildings where pre-mitigation samples were collected [Section 4.3.1].

4.3.4 Crawl space ventilation and sealing

a. Reasonable and practical actions should be taken to identify and fix leaks. With the ventilation system operating, smoke tubes are used to check for leaks in openings and cracks in floors above the crawl space that were sealed during installation of the system. Any leaks identified should be resealed until smoke is no longer observed flowing through the opening.

b. Backdrafting conditions should be evaluated and corrected [Section 4.3.1].

c. Adequate operation of the warning device or indicator, if applicable, should be confirmed.

d. Post-mitigation indoor and outdoor air testing should be conducted in buildings where pre-mitigation samples were collected [as discussed in Section 4.3.1].

4.3.5 SVE systems designed to also mitigate exposures

a. Backdrafting conditions should be evaluated and corrected [Section 4.3.1].

b. The distance that a pressure change is induced in the sub-slab area should be conducted. This may be done by operating the SVE system and simultaneously observing the movement of smoke downward into small holes (e.g., 3/8 inch) drilled through the building's slab at sufficient locations to demonstrate that a vacuum is being created beneath the entire slab.

c. Adequate operation of the warning device or indicator, if applicable, should be confirmed.

d. Post-mitigation indoor and outdoor air testing should be conducted in buildings where pre-mitigation samples were collected [Section 4.3.1].

4.4 Operation, maintenance and monitoring of mitigation systems

When mitigation systems are implemented at a site, the operation, maintenance and monitoring (OM&M) protocols for the systems should be included in a site-specific site management plan (formerly referred to as operation, maintenance and monitoring plan). The party that installed the system should conduct OM&M activities and should develop the site management plan. Recommendations for minimum OM&M activities associated with specific mitigation methods are provided in the following subsections. Also included is a discussion of non-routine maintenance. All routine and non-routine OM&M activities should be documented and reported to the agencies.

4.4.1 SSD and SMD systems

Routine maintenance should commence within 18 months after the system becomes operational, and should occur every 12 to 18 months thereafter. Based upon a demonstration of the system's reliability, the State recommends that, if a different frequency is desired, a petition describing the alternative frequency and the reasons that frequency is preferred be submitted to the State. Any comments the State may have on the petition should be considered before the frequency is altered.

During routine maintenance, the following activities (at a minimum) should be conducted:

a. a visual inspection of the complete system (e.g., vent fan, piping, warning device or indicator, labeling on systems, soil vapor retarder integrity, etc.),

b. identification and repair of leaks [Sections 4.3.1 and 4.3.2], and

c. inspection of the exhaust or discharge point to verify no air intakes have been located nearby.

As appropriate preventative maintenance (e.g., replacing vent fans), repairs and/or adjustments should be made to the system to ensure its continued effectiveness at mitigating exposures related to soil vapor intrusion. The need for preventative maintenance will depend upon the life expectancy and warranty for the specific part, as well as visual observations over time. The need for repairs and/or adjustments will depend upon the results of a specific activity compared to that obtained when system operations were initiated.

If significant changes are made to the system or when the system's performance is unacceptable, the system may need to be redesigned and restarted. Many, if not all, of the post-mitigation testing activities, as described in Sections 4.3.1 and/or 4.3, may be appropriate. The extent of such activities will primarily depend upon the reason for the changes and the documentation of sub-slab depressurization.

Generally, air monitoring is not recommended if the system has been installed properly and is maintaining a vacuum beneath the entire slab.

In addition to the routine OM&M activities described here, the building's owner and tenants are given information packages that explains the system's operation, maintenance and monitoring [Section 5.6]. Therefore, at any time during the system's operation, the building's owner or tenants may check that the system is operating properly.

4.4.2 Other mitigation systems

For other mitigation systems (e.g., HVAC modifications, crawl space ventilation, etc.), routine maintenance activities are generally comparable to post-mitigation testing activities [Section 4.3]. Activities typically include a visual inspection of the complete system, and identification and repair of leaks. System performance checks, such as air stream velocity measurements of ventilation systems, also should be performed.

As appropriate, preventative maintenance (e.g., replacing filters, cleaning lines, etc.), repairs and/or adjustments should be made to the system to ensure its continued effectiveness at mitigating exposures related to soil vapor intrusion. If significant changes are made to the system or when the system's performance is unacceptable, redesigning and restarting the system may be appropriate[Section 4.4.1].

Air monitoring, such as periodic sub-slab vapor, indoor air and outdoor air sampling, may be appropriate to determine whether existing building conditions are maintaining the desired mitigation endpoint and to determine whether changes are appropriate. The type and frequency of monitoring is determined based upon site-specific and building-specific conditions, taking into account applicable environmental data, building operating conditions, and the mitigation method employed.

4.4.3 Non-routine maintenance

Non-routine maintenance may also be appropriate during the operation of a mitigation system. Examples of such situations include the following:

a. the building's owners or occupants report that the warning device or indicator indicates the mitigation system is not operating properly;

b. the mitigation system becomes damaged; or

c. the building has undergone renovations that may reduce the effectiveness of the mitigation system.

Activities conducted during non-routine maintenance visits will vary depending upon the reason for the visit. In general, building-related activities may include examining the building for structural or HVAC system changes, or other changes that may affect the performance of the depressurization system (e.g., new combustion appliances, deterioration of the concrete slab, or significant changes to any of the building factors listed in Table 1.2). Depressurization system-related activities may include examining the operation of the warning device or indicator and the vent fan, or the extent of sub-slab depressurization. Repairs or adjustments should be made to the system as appropriate. If appropriate, the system should be redesigned and restarted [Section 4.4.1].

4.5 Termination of mitigation system operations

Mitigation systems should not be turned off, until the State receives, and has had the opportunity to comment on, a proposal to turn off mitigation systems. The party seeking to turn off the mitigation systems should consider any comments the State may have on the proposal, except in emergency situations. Systems should remain in place and operational until they are no longer needed to address current or potential exposures related to soil vapor intrusion. This determination should be based upon several factors, including the following:

a. subsurface sources (e.g., groundwater, soil, etc.) of volatile chemical contamination in subsurface vapors have been remediated based upon an evaluation of appropriate post-remedial sampling results;

b. residual contamination, if any, in subsurface vapors is not expected to affect indoor air quality significantly based upon soil vapor and/or sub-slab vapor sampling results;

c. residual contamination, if any, in subsurface vapors is not affecting indoor air quality when active mitigation systems are turned off based upon indoor air, outdoor air and sub-slab vapor sampling results at a representative number of buildings; and

d. there is no "rebound" effect for which additional mitigation efforts would be appropriate observed when the mitigation system is turned off for prolonged periods of time. This determination should be based upon indoor air, outdoor air and/or sub-slab vapor sampling from the building over a time period, determined by site-specific conditions.

Given the prevalence of radon throughout the State of New York, consideration should be given to leaving the system in place and operating to address exposures related to radon intrusion after concurrence is reached that the system is no longer needed to mitigate exposures related to soil vapor intrusion. This action should be done only with permission of the property owner and after the property owner is aware of their responsibilities in

operating, monitoring and maintaining the system for this specific purpose. If the property owner declines the offer, the system should be shut down and, if requested, removed in a timely manner.

4.6 Annual certification and notification recommendations

Mitigation systems are considered engineering controls, defined as any physical barrier or method employed to

1. actively or passively contain, stabilize, or monitor hazardous waste or petroleum,
2. restrict the movement of hazardous waste or petroleum to ensure the long-term effectiveness of remedial actions, or
3. eliminate potential exposure pathways to hazardous waste or petroleum.

Therefore, depending upon the remedial program, submission of an annual certification to the State may be required. This certification must be prepared and submitted by a professional engineer or environmental professional and affirm that the engineering controls are in place, are performing properly and remain effective. This requirement of certification remains in effect until the State provides notification, in writing, that this certification is no longer needed.

If a property owner declines a mitigation system, the party responsible for arranging the design and installation of the system should renew the offer on an annual basis, unless they demonstrate environmental conditions have changed such that a system is no longer needed.

APPENDIX C

Health and Safety Plan

HEALTH AND SAFETY PLAN

BROWNFIELD SITE CLEANUP
80 – 100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Prepared by: Day Environmental, Inc.
40 Commercial Street
Rochester, New York 14614-1008

Approved by: Davis E. Frederiksen, CIH
Certification #3388

Project No.: 3638R-05

Date: August 2005

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ATTACHMENTS

1.0 INTRODUCTION

This Health and Safety Plan (HASP) outlines the policies and procedures necessary to protect workers and the public from potential environmental hazards during remedial activities conducted at 80-100 Charlotte Street, Rochester, New York (Site). The Site is a Brownfield property owned by the City of Rochester in Monroe County, New York. Figure 1 included as Attachment 1 depicts the general location of the Site. As outlined in this HASP, the above activities shall be conducted in a manner to minimize the probability of injury, accident, or incident occurrence.

Although the HASP focuses on the specific work activities planned for this Site, it must remain flexible due to the nature of this work. Conditions may change and unforeseen situations can arise that require deviations from the original HASP.

1.1 Site History/Overview

The Site is currently a vacant undeveloped parcel that is approximately 0.78 acres in size. Prior to September 2003, the site was developed with a commercial building consisting of approximately 18,988 square feet. The building was used for electric motor repair and electrical contractor facilities with a repair shop, truck bay, offices, and a warehouse. The commercial building consisted of a one and two-story steel and masonry building constructed in 1962. A petroleum underground storage tank (UST) was reportedly removed from the property in 1988. Prior to the commercial development, the Site's use was residential. The Site is located in the City of Rochester near the Inner Loop and bound by commercial properties. In September 2003, the City of Rochester demolished the building and removed the associated debris.

Day Environmental, Inc. (DAY) previously completed a Phase I Environmental Site Assessment (Phase I ESA) and Phase II Environmental Site Assessment (Phase II ESA) for the Site. The Phase II ESA identified petroleum impacts on surface soil, subsurface soil and groundwater at concentrations above New York State Department of Environmental Conservation (NYSDEC) guidance values on the northwest and/or southwest portions of the Site. Evidence of petroleum contamination was detected in unsaturated soils, saturated soils, and groundwater in the area of the former gasoline UST system. The petroleum impacts appear attributable to the historic on-site gasoline UST and adjoining off-site properties located west of the Site. Fill material was also identified on the Site that contains various metals at concentrations exceeding NYSDEC recommended soil cleanup objectives.

1.2 Planned Activities Covered by HASP

This HASP is intended to be used during this project for remedial activities. Currently, identified activities include:

- Waste Characterization Study
- Site Preparation and Control
- Soil Removal and Disposal,
- Monitoring Well Installations and Survey
- Groundwater Sampling and Slug Testing
- Soil Gas Sampling
- Confirmatory Soil Sampling

- Implementing an Environmental Management Plan (EMP) and environmental Engineering Controls (ECs)
- Miscellaneous on-site tasks as may arise during this project.

This HASP can be modified to cover other Site activities as deemed appropriate. The owner of the property, its contractors, and other site workers will be responsible for the development and/or implementation of health and safety provisions associated with normal construction activities or site activities.

2.0 KEY PERSONNEL AND MANAGEMENT

The Certified Industrial Hygienist (CIH), Project Manager (PM) and Site Safety Officer (SSO) are responsible for formulating and enforcing health and safety requirements, and implementing the HASP.

2.1 Certified Industrial Hygienist

The CIH is responsible for the contents of the HASP and ensures that the HASP complies with federal, state and local health and safety requirements. If necessary, the CIH can modify the HASP to adjust for on-site changes that affect safety. The CIH will coordinate with the SSO on modifications to the HASP and will be available for consultation when required. The CIH will not necessarily be on-site during the field activities.

2.2 Project Manager

The PM has the overall responsibility for the project and will coordinate with the SSO to ensure that the goals of the project are attained in a manner consistent with the HASP requirements.

2.3 Site Safety Officer

The SSO has responsibility for administering the HASP relative to Site activities, and will be in the field full-time while Site activities are in progress. The SSO's operational responsibilities will be monitoring, including personal and environmental monitoring, ensuring personal protective equipment maintenance, and assignment of protection levels. The SSO will be the main contact in any on-site emergency situation. The SSO will direct field activities involved with safety and be responsible for stopping work when unacceptable health or safety risks exist. The SSO is responsible for ensuring that on-site personnel understand and comply with safety requirements.

2.4 Employee Safety Responsibility

Each employee is responsible for personal safety as well as the safety of others in the area. The employee will use the equipment provided in a safe and responsible manner as directed by the SSO.

2.5 Key Safety Personnel

The following individuals are anticipated to share responsibility for health and safety at the site.

Certified Industrial Hygienist	Davis Frederiksen, CIH
Project Manager	Jeffrey A. Danzinger
Site Safety Officer	Tony DiNardo, Chris C. Davidson or Nate Simon

3.0 SAFETY RESPONSIBILITY

Contractors, consultants, state or local agencies, or other parties, and their employees, involved with this project will be responsible for their own safety while on-site. Their employees will be required to understand the information contained in this HASP, and must follow the recommendations that are made in this document.

4.0 JOB HAZARD ANALYSIS

There are many hazards associated with remedial work on a site, and this HASP discusses some of the anticipated hazards for this Site. The hazards listed below deal specifically with those hazards associated with the management of potentially contaminated media (e.g., soil, groundwater, fill, etc.).

4.1 Chemical Hazards

Chemical substances can enter the unprotected body by inhalation, skin absorption, ingestion, or through a puncture wound (injection). A contaminant can cause damage to the point of contact or can act systemically, causing a toxic effect at a part of the body distant from the point of initial contact.

A list of selected volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals that have been previously detected in soil, fill and/or groundwater at the Site are presented below. This list also presents the permissible exposure limits (PELs) and levels that are considered immediately dangerous to life or health (IDLH). In addition, light-weight, medium-weight and heavy-weight total petroleum hydrocarbons (TPH), designated as gasoline, kerosene and lube oil respectively, were previously detected in soil and/or groundwater.

CONSTITUENT	OSHA PEL	IDLH
Benzene	1 ppm	500 ppm
Ethylbenzene	100 ppm	800 ppm
tert-Butylbenzene	NA	NA
sec-Butylbenzene	NA	NA
Isopropylbenzene	NA	NA
p-Isopropyltoluene	NA	NA
Naphthalene	10 ppm	250 ppm
n-Propylbenzene	NA	NA
Mixed xylenes	100 ppm	900 ppm
1,2,4-Trimethylbenzene	25 ppm	NA
1,3,5-Trimethylbenzene	25 ppm	NA
Benzo(b)fluoranthene	NA	NA
Fluoranthene	NA	NA
Phenanthrene	0.2 mg/m^3	NA
Pyrene	0.2 mg/m^3	NA
Arsenic	0.01 mg/m^3	5 mg/m^3
Barium	0.5 mg/m^3	50 mg/m^3
Cadmium	0.005 mg/m^3	9 mg/m^3
Lead	0.05 mg/m^3	100 mg/m^3
Mercury	0.1 mg/m^3	10 mg/m^3

Notes:
PEL = OSHA Permissible Exposure Limits (TWA for 8-hour day) NA = Not Available
IDLH = Immediately Dangerous to Life or Health Concentration

The potential routes of exposure for these analytes and chemicals include inhalation, ingestion, skin absorption and skin/eye contact. The potential for exposure through any one of these routes will depend on the activity conducted. The most likely routes of exposure for the activities that are performed during remediation of the Site include inhalation and skin contact.

4.2 Physical Hazards

There are physical hazards associated with this project, which might compound the chemical hazards. Hazard identification, training, adherence to the planned remedial measures, and careful housekeeping can prevent many problems or accidents arising from physical hazards. Potential physical hazards associated with this project and suggested preventative measures include:

- Slip/Trip/Fall Hazards - Some areas may have wet surfaces that will greatly increase the possibility of inadvertent slips. Caution must be exercised when using steps and stairs due to slippery surfaces in conjunction with the fall hazard. Good housekeeping practices are essential to minimize the trip hazards.

- Small Quantity Flammable Liquids - Small quantities of flammable liquids will be stored in "safety" cans and labeled according to contents.

- Electrical Hazards - Electrical devices and equipment shall be de-energized prior to working near them. All extension cords will be kept out of water, protected from crushing, and inspected regularly to ensure structural integrity. Temporary electrical circuits will be protected with ground fault circuit interrupters. Only qualified electricians are authorized to work on electrical circuits. Heavy equipment (e.g., backhoe, excavator, drill rig) shall not be operated within 10 feet of high voltage lines, unless proper protection from the high voltage lines is provided by the appropriate utility company.

- Noise - Work around large equipment often creates excessive noise. The effects of noise can include:

    - Workers being startled, annoyed, or distracted.

    - Physical damage to the ear resulting in pain, or temporary and/or permanent hearing loss.

    - Communication interference that may increase potential hazards due to the inability to warn of danger and proper safety precautions to be taken.

      Proper hearing protection will be worn as deemed necessary. In general, feasible administrative or engineering controls shall be utilized when on-site personnel are subjected to noise exceeding an 8-hour time weighted average (TWA) sound level of 90 dBA (decibels on the A-weighted scale). In addition, whenever employee noise exposures equal or exceed an 8-hour TWA sound level of 85 dBA, employers shall administer a continuing, effective hearing conservation program as described in the Occupational Safety and Health Administration (OSHA) Regulation 29 CFR Part

1910.95.

- Heavy Equipment - Each morning before start-up, heavy equipment will be inspected to ensure safety equipment and devices are operational and ready for immediate use.

- Subsurface and Overhead Hazards - Before any excavation activity, efforts will be made to determine whether underground utilities and potential overhead hazards will be encountered. Underground utility clearance must be obtained prior to subsurface work.

4.3 Environmental Hazards

Environmental factors such as weather, wild animals, insects, and irritant plants can pose a hazard when performing outdoor tasks. The SSO shall make every reasonable effort to alleviate these hazards should they arise.

4.3.1 Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. In particular:

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

Site workers will be encouraged to increase consumption of water or electrolyte-containing beverages such as Gatorade® when the potential for heat stress exists. In addition, workers are encouraged to take rests whenever they feel any adverse effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SSO.

4.3.2 Exposure to Cold

With outdoor work in the winter months, the potential exists for hypothermia and frostbite. Protective clothing greatly reduces the possibility of hypothermia in workers. However, personnel will be instructed to wear warm clothing and to stop work to obtain more clothing if they become too cold. Employees will also be advised to change into dry clothes if their clothing becomes wet from perspiration or from exposure to precipitation.

5.0 SITE CONTROLS

To prevent migration of contamination caused through tracking by personnel or equipment, work areas, and personal protective equipment staging/decontamination areas will be specified prior to beginning operations.

5.1 Site Zones

In the area where contaminated materials present the potential for worker exposure (work zone), personnel entering the area must wear the mandated level of protection for the area. A "transition zone" shall be established where personnel can begin and complete personal and equipment decontamination procedures. This can reduce potential off-site migration of contaminated media. Contaminated equipment or clothing will not be allowed outside the transition zone (e.g., on clean portions of the Site) unless properly containerized for disposal. Operational support facilities will be located outside the transition zone (i.e., in a "support zone"), and normal work clothing and support equipment are appropriate in this area. If possible, the support zone should be located upwind of the work zone and transition zone.

5.2 General

The following items will be requirements to protect the health and safety of workers during implementation of activities that disturb contaminated material.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of contamination shall not occur in the work zone and/or transition zone during disturbance of contaminated material.

- Personnel admitted in the work zone shall be properly trained in health and safety techniques and equipment usage.

- No personnel shall be admitted in the work zone without the proper safety equipment.

- Proper decontamination procedures shall be followed before leaving the Site.

6.0 PROTECTIVE EQUIPMENT

This section addresses the various levels of personal protective equipment (PPE) which are or may be required at this job site. Personnel entering the work zone and transition zone shall be trained in the use of the anticipated PPE to be utilized.

6.1 Anticipated Protection Levels

TASK	PROTECTION LEVEL	COMMENTS/MODIFICATIONS
Site mobilization	D	
Site prep/construction of engineering controls	D	
Extrusive work (e.g., surveying, etc.)	D	
Intrusive work (e.g., soil removal, advancement of test borings and wells)	C/Modified D/D	Based on air monitoring, and SSO discretion
Support zone	D	
Site breakdown and demobilization	D	

If visible dust is observed during project activities that have the potential to disturb contaminated soil or fill, then dust suppression will be implemented.

It is anticipated that work conducted as part of this project will be performed in Level D or modified Level D PPE. If conditions are encountered that require higher levels of PPE (e.g., Level C, B, or A), the work will immediately be stopped, and the proper health and safety measures will be implemented (e.g., develop and implement engineering controls, upgrade in PPE, etc.).

6.2 Protection Level Descriptions

This section lists the minimum requirements for each protection level. Modifications to these requirements can be made upon approval of the SSO. If Level A, Level B, and/or Level C PPE is required, Site personnel that enter the work zone and/or transition zone must be properly trained and certified in the use of those levels of PPE.

6.2.1 Level D

Level D consists of the following:

- Safety glasses
- Hard hat when working with heavy equipment
- Steel-toed or composite-toed work boots
- Protective gloves during sampling or handling of potentially contaminated media

- Work clothing as prescribed by weather

6.2.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed or composite-toed work boots
- Work gloves
- Outer protective wear, such as Tyvek coverall [Tyveks (Sarans) and polyvinyl chloride (PVC) acid gear will be required when workers have a potential to be exposed to impacted liquids or impacted particulates].

6.2.3 Level C

Level C consists of the following:

- Air-purifying respirator with appropriate cartridges
- Outer protective wear, such as Tyvek coverall [Tyveks (Sarans) and PVC acid gear will be required when workers have a potential to be exposed to impacted liquids or particulates].
- Hard hat
- Steel-toed or composite-toed work boots
- Nitrile, neoprene, or PVC overboots, if appropriate
- Nitrile, neoprene, or PVC gloves, if appropriate
- Face shield (when projectiles or splashes pose a hazard)

6.2.4 Level B

Level B protection consists of the items required for Level C protection with the exception that an air-supplied respirator is used in place of the air-purifying respirator. Level B PPE is not anticipated to be required during this project. If the need for level B PPE becomes evident, the Site activities will be ceased until Site conditions are further evaluated, and any necessary modifications to the HASP have been approved by the PM, CIH or SSO. Subsequently, the appropriate safety measures (including Level B PPE) must be implemented prior to commencing Site activities.

6.2.5 Level A

Level A protection consists of the items required for Level B protection with the addition of a fully-encapsulating, vapor-proof suit capable of maintaining positive pressure. Level A PPE is not anticipated to be required during this project. If the need for level A PPE becomes evident, the Site activities will be ceased until Site conditions are further evaluated, and any necessary modifications to the HASP have been approved by the PM, CIH or SSO. Subsequently, the appropriate safety measures (including Level A PPE) must be

implemented prior to commencing Site activities.

6.3 Respiratory Protection

Any respirator used will meet the requirements of the OSHA 29 CFR 1910.134. Both the respirator and cartridges specified shall be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910). Air purifying respirators shall not be worn if contaminant levels exceed designated use concentrations. The workers will wear respirators with approval for: organic vapors <1,000 parts per million (ppm); and dusts, fumes and mists with a TWA < 0.05 mg/m^3.

No personnel who have facial hair, which interferes with respirator sealing surface, will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.

Only workers who have been certified by a physician as being physically capable of respirator usage shall be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas that require respirator protection.

7.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 Personnel Decontamination

Personnel involved with activities that involve disturbing contaminated media will follow the decontamination procedures described herein to ensure that material which workers may have contacted in the work zone and/or transition zone does not result in personal exposure and is not spread to clean areas of the Site. This sequence describes the general decontamination procedure. The specific stages can vary depending on the Site, the task, the protection level, etc.

1. Leave work zone and go to transition zone
2. Remove soil/debris from boots and gloves
3. Remove boots
4. Remove gloves
5. Remove Tyvek suit and discard, if applicable
6. Remove and wash respirator, if applicable
7. Go to support zone

7.2 Equipment Decontamination

Contaminated equipment shall be decontaminated in the transition zone before leaving the Site. Decontamination procedures can vary depending upon the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steam cleaning the exterior of the equipment. Personnel performing this task will wear the proper PPE.

7.3 Disposal

Disposable clothing will be treated as contaminated waste and be disposed of properly. Liquids (e.g., decontamination water, etc.) generated by project activities will be disposed of in accordance with applicable regulations.

8.0 AIR MONITORING

Air monitoring will be conducted in order to determine airborne particulate and contamination levels. This ensures that respiratory protection is adequate to protect personnel against the chemicals that are encountered and that chemical contaminants are not migrating off-site. Additional air monitoring may be conducted at the discretion of the SSO.

The following chart describes the direct reading instrumentation that will be utilized and appropriate action levels.

Monitoring Device	Action level	Response/Level of PPE
PID Volatile Organic Compound Meter	< 1 ppm in breathing zone, sustained 5 minutes	~~Level D~~
	1-5 ppm in breathing zone, sustained 5 minutes; and benzene detector tube reading below 1 ppm	~~Level D~~
	1-5 ppm in breathing zone, sustained 5 minutes; and benzene detector tube reading between 1 and 5 ppm	~~Level C~~
	6-25 ppm in breathing zone, sustained 5 minutes; and benzene detector tube reading between 1 and 5 ppm	~~Level C~~
	26-250 ppm in breathing zone, sustained 5 minutes; and benzene detector tube reading above 5 ppm	~~Level B~~, Stop work, evaluate the use of engineering controls
	>250 ppm in breathing zone	~~Level A.~~ Stop work, evaluate the use of engineering controls
RTAM Particulate Meter	< 150 ug/m^3 over an integrated period not to exceed 15 minutes.	Continue working
	> 150 ug/m^3	Cease work, implement dust suppression, change in way work performed, etc. If levels can not be brought below 150 ug/m^3, then upgrade PPE to ~~Level C~~.

8.1 Particulate Monitoring

During implementation of remedial activities where contaminated materials may be disturbed, air monitoring will include real-time monitoring for particulates using a real-time aerosol monitor (RTAM) particulate meter at the perimeter of the work zone in accordance with the 1989 NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4031 entitled, "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites." The TAGM uses an action level of 150 ug/m^3 (0.15 mg/m^3) over an integrated period not to exceed 15 minutes. If the action level is exceeded, or if visible dust is encountered, then work shall be discontinued until corrective actions are implemented. Corrective actions may include dust suppression, change in the

way work is performed, and/or upgrade of personal protective equipment, etc. Readings will be recorded and be available for review.

8.2 Volatile Organic Compound Monitoring

During implementation of remedial activities where contaminated materials may be disturbed, a photoionization detector (PID) will be used to monitor total VOCs in the ambient air. The PID will prove useful as a direct reading instrument to aid in determining if current respiratory protection is adequate or needs to be upgraded. The SSO will take measurements before operations begin in an area to determine the amount of VOCs naturally occurring in the air. This is referred to as a background level. Levels of VOCs will periodically be measured in the air at active work sites, and at the transition zone when levels are detected above background in the work zone.

8.3 Community Air Monitoring Plan

This Community Air Monitoring Plan (CAMP) includes real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when activities with the potential to release VOCs or dust are in progress at the Site. This CAMP is based on the New York State Department of Health (NYSDOH) Generic CAMP included as Appendix 1A of the NYSDEC document titled *"Draft DER-10, Technical Guidance for Site Investigation and Remediation"* dated December 2002. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of project work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air. Reliance on the CAMP should not preclude simple, common sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Continuous monitoring will be conducted during ground intrusive activities. Ground intrusive activities include, but are not limited to, soil excavation and handling, advancement/installation of test borings or monitoring wells, etc.

Periodic monitoring for VOCs will be conducted during non-intrusive activities such as the collection of groundwater samples from monitoring wells. Periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities.

8.3.1 VOC Monitoring, Response Levels, and Actions

VOCs must be monitored at the downwind perimeter of the immediate work area (i.e., the work zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish

background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring must be continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source or vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

The 15-minute readings must be recorded and made available for review by regulatory agencies. Instantaneous readings, if any, used for decision purposes should also be recorded.

8.3.2 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the work zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-l0) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during work activities that have the potential to disturb contaminated media.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ug/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

Readings must be recorded and made available for review by regulatory agencies.

9.0 EMERGENCY RESPONSE

To provide first-line assistance to field personnel in the case of illness or injury, the following items will be made immediately available on the Site:

- First-aid kit;
- Portable emergency eye wash; and
- Supply of clean water.

9.1 Emergency Telephone Numbers

The following telephone numbers are listed in case there is an emergency at the Site:

Fire/Police Department:	911
Poison Control Center:	(800) 222-1222
NYSDEC Spills	(585) 226-2466
NYSDEC	
Tim Walsh	(585) 226-5437
NYSDOH	
Debbie McNaughton	(585) 423-8069
City of Rochester	
Joseph Biondolillo	(585) 428-6649
MCDOH	
Joe Albert	(585) 753-5904
After Hours	(585) 529-0756
Day Environmental, Inc.	
Jeff Danzinger	(585) 454-0210 x114
Ray Kampff	(585) 454-0210 x108
Nearest Hospital	Highland Hospital 1000 South Avenue, Rochester, NY 14620 (585) 473-2200 (Main) (585) 341-6880 (Emergency Department)
Directions to the Hospital (refer Figure 1):	Turn west onto Charlotte St. and travel approx. 0.1 mile or less; turn left (south) onto Scio St. and travel approx. 0.7 miles [Note: Scio St. turns into Broadway, which turns into Manhattan Square Drive, which turns into Woodbury Drive]; turn left (south) onto South Ave. and travel approx. 1.3 miles; turn left (east) onto Belleview Dr. and travel less than 0.1 mile; turn left (north) into the Hospital Emergency Dept.

9.2 Evacuation

A log of each individual entering and leaving the Site will be kept for emergency accounting practices. Although unlikely, it is possible that a site emergency could require evacuating all personnel from the site. If required, the SSO will give the appropriate signal for site evacuation (i.e., hand signals, alarms, etc.).

All personnel shall exit the site and shall congregate in an area designated by the SSO. The SSO shall ensure that all personnel are accounted for. If someone is missing, the SSO will alert emergency personnel. The appropriate government agencies will be notified as soon as possible regarding the evacuation, and any necessary measures that may be required to mitigate the reason for the evacuation.

9.3 Medical Emergency

In the event of a medical emergency involving illness or injury to one of the on-site personnel, the site should be shut-down and immediately secured. Emergency Medical Service (EMS) and the appropriate government agencies should be notified immediately. The area in which the injury or illness occurred shall not be entered until the cause of the illness or injury is known. The nature of injury or illness shall be assessed. If the victim appears to be critically injured, administer first aid and/or cardio-pulmonary resuscitation (CPR) as needed. Instantaneous real-time air monitoring shall be done in accordance with air monitoring outlined in Section 8.0 of this HASP.

9.4 Contamination Emergency

It is unlikely that a contamination emergency will occur; however, if such a emergency does occur, the Site shall be shut-down and immediately secured. If an emergency rescue is needed, notify Police, Fire Department and EMS units immediately. Advise them of the situation and request an expedient response. The appropriate government agencies shall be notified immediately. The area in which the contamination occurred shall not be entered until the arrival of trained personnel who are properly equipped with the appropriate PPE and monitoring instrumentation as outlined in Section 8.0 of this HASP.

9.5 Fire Emergency

In the event of a fire on-site, the Site shall be shut-down and immediately secured. The area in which the fire occurred shall not be entered until the cause can be determined. All non-essential site personnel shall be evacuated from the site to a safe, secure area. Notify the Fire Department immediately. Advise the Fire Department of the situation and the identification of any hazardous materials involved. The appropriate government agencies shall be notified as soon as possible.

The four classes of fire along with their constituents are as follows:

Class A:	Wood, cloth, paper, rubber, many plastics, and ordinary combustible materials.
Class B:	Flammable liquids, gases and greases.
Class C:	Energized electrical equipment.
Class D:	Combustible metals such as magnesium, titanium, sodium, potassium.

Small fires on-site may be actively extinguished; however, extreme care shall be taken while in this operation. All approaches to the fire shall be done from the upwind side if possible. Distance from on-site personnel to the fire shall be close enough to ensure proper application of the extinguishing material, but far enough away to ensure that the personnel are safe. The proper extinguisher shall be utilized for the Class(s) of fire present on the site. If possible, the fuel source shall be cut off or separated from the fire. Care must be taken when performing operations involving the shut-off values and manifolds, if present.

Examples of proper extinguishing agent as follows:

Class A:	Water Water with 1% AFFF Foam (Wet Water) Water with 6% AFFF or Fluorprotein Foam ABC Dry Chemical
Class B:	ABC Dry Chemical Purple K Carbon Dioxide Water with 6% AFFF Foam
Class C:	ABC Dry Chemical Carbon Dioxide
Class D:	Metal-X Dry Powder

No attempt shall be made against large fires. These shall be handled by the Fire Department.

9.6 Spill or Air Release

In the event of spills or air releases of hazardous materials on-site, the Site shall be shut-down and immediately secured. The area in which the spills or releases occurred shall not be entered until the cause can be determined and site safety can be evaluated. All non-essential site personnel shall be evacuated from the Site to a safe and secure area. The appropriate government agencies shall be notified as soon as possible. The spilled or released materials shall be immediately identified and appropriate containment measures shall be implemented, if possible. Real-time air monitoring shall be implemented as outlined in Section 8.0 of this HASP. If the materials are unknown, Level B protection is mandatory. Samples of the materials shall be acquired to facilitate identification.

9.7 Locating Containerized Waste and/or Underground Storage Tanks

In the event that unanticipated containerized waste (e.g., drums) and/or USTs are located during the project, the Site shall be shutdown and immediately secured. The area where unanticipated containerized wastes and/or tanks are discovered shall not be entered until site safety can be evaluated. All non-essential Site personnel shall be evacuated from the Site to a safe and secure area. The appropriate government agencies shall be notified as soon as possible. The SSO shall

monitor the area as outlined in Section 8.0 of this HASP.

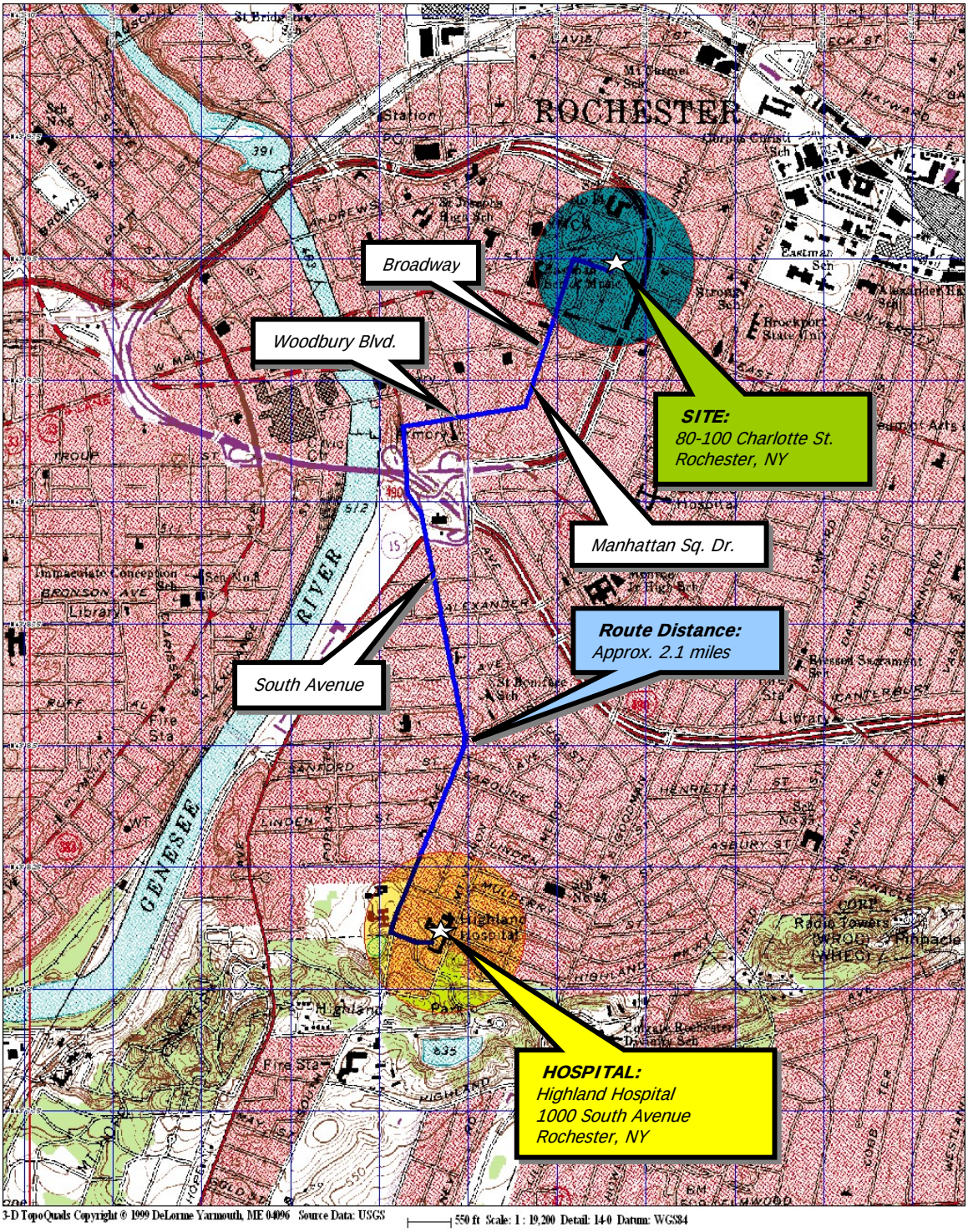
Prior to any handling, unanticipated containers will be visually assessed by the SSO to gain as much information as possible about their contents. As a precautionary measure, personnel shall assume that unlabelled containers and/or tanks contain hazardous materials until their contents are characterized. To the extent possible based upon the nature of the containers encountered, actions may be taken to stabilize the area and prevent migration (e.g., placement of berms, etc.). Subsequent to initial visual assessment and any required stabilization, properly trained personnel will sample, test, remove, and dispose of any containers and/or tanks, and their contents. After visual assessment and air monitoring, if the material remains unknown, Level B protection is mandatory.

10.0 ABBREVIATIONS

CAMP	Community Air Monitoring Program
CIH	Certified Industrial Hygienist
CPR	Cardio-Pulmonary Resuscitation
DAY	Day Environmental, Inc.
dBA	Decibels on the A-Weighted Scale
EMS	Emergency Medical Service
HASP	Health and Safety Plan
IDLH	Immediately Dangerous to Life or Heath
MCDOH	Monroe County Department of Health
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager
PM-10	Particulate Matter less than 10 micrometers in diameter
PPE	Personal Protection Equipment
ppm	Parts Per Million
PVC	Polyvinyl Chloride
RTAM	Real-Time Aerosol Monitor
SSO	Site Safety Officer
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TPH	Total Petroleum Hydrocarbons
TWA	Time-Weighted Average
ug/m^3	Micrograms Per Meter Cubed
UST	Underground Storage Tank
VOC	Volatile Organic Compound

ATTACHMENT 1

Figure 1- Hospital Route



Drawing Produced From: 3-D TopoQuads, DeLorme Map Co., referencing USGS quad maps Rochester East (NY) 1995.

DATE **06-24-2005** DRAWN BY **RJM** SCALE **As Noted**	day DAY ENVIRONMENTAL, INC. ENVIRONMENTAL CONSULTANTS ROCHESTER, NEW YORK 14614-1008 NEW YORK, NEW YORK 10165-1617	PROJECT TITLE **80-100 CHARLOTTE STREET** **ROCHESTER, NEW YORK** **HEALTH AND SAFETY PLAN** DRAWING TITLE **DIRECTIONS TO HOSPITAL**	PROJECT NO. **3638R-05** **FIGURE 1**