Worldwide Facilities Group
Environmental Services
Remediation Team

James F. Hartnett
Program Manager

May 4, 2005

Ms. Susan Benjamin, P.E.
Bureau of Central Remedial Action
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233

Re: General Motors - Former IFG Facility and Ley Creek Deferred Media
Administrative Order on Consent Index # D-7-0001-97-06
SPDES IRM OM&M Plan Revisions

Dear Ms. Benjamin:

We are in receipt of the Department's letter dated June 3, 2004, which provides approval of the SPDES IRM Operation, Maintenance, and Monitoring (OM&M) Plan, contingent upon the following two items:

- revision of Section 7 of the OM&M Plan to specify a record retention period of five years instead of three years
- revision of Table 2-1 to specify a minimum flowmeter calibration frequency of at least annually.

The OM&M plan has been revised to reflect these items. In addition, the flow meter manufacturer calibration report will be included in Exhibit K of the OM&M Plan.

The original design of the overflow spillway comprised a weir, rip-rap, and a vegetated overflow spillway. The spillway was modified as described in the NYSDEC-approved SPDES IRM Modification to Retention Basin Overflow letter dated October 20, 2004. A new Section 4.1.3 has been added to the O&M Plan and Table 2-1 has been revised to describe inspection and maintenance of the overflow spillway structure.

As described in my letter of November 20, 2003, GM has added a polymer feed to the backwash cycle. This will be used as needed if settling of solids in the backwash tank is found to require enhancement. The Department provided verbal approval for the use of the polymer on April 23, 2004. Section 4.1.11 of the OM&M Plan has been revised to reflect the addition of the polymer feed system. Manufacturer's manuals associated with the polymer feed system will be included in Exhibit L of the OM&M Plan.

As described in my letter of March 15, 2005 to Mr. Brian Baker, P.E. and Ms. Sandra Lizlovs, P.E., modifications to the SPDES permit have been proposed based on the rerouting of

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stormwater tributary to Outfall 004 and an evaluation of analytical data obtained from monitoring required by the SPDES permit. Based on this letter, the Department has drafted a modified SPDES permit, which is currently in the public comment period. Section 3 of the OM&M Plan has been revised to reflect the requirements of the draft SPDES permit and the modifications proposed in the March 15, 2005 letter.

The revised final OM&M Plan text and revised Table 2-1 are included as Attachment 1 of this letter. The format of the weekly operations log sheet included as Appendix B of the OM&M Plan has also been revised for operator convenience. A log sheet for inspection of the thinner area ground water collection trenches has also been developed for inclusion in Appendix B of the OM&M Plan. These log sheets are included in Attachment 2 of this letter. The flow meter manufacturer's calibration report is included as Attachment 3 of this letter. The manufacturer's manuals associated with the polymer feed system are included as Attachment 4 of this letter. The draft modified SPDES permit and the associated letter regarding proposed modifications is included as Attachment 5 of this letter for inclusion in Exhibit A of the OM&M Plan. Please replace the corresponding portions of the February 2004 OM&M Plan with the attached updated and revised pages.

If you have any questions, please contact Clare Leary at (315) 437-6100 or me at (315) 463 - 2391.

Sincerely,

James F. Hartnett /smr

James F. Hartnett
Remedial Program Manager

Enclosure

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1. Introduction

1.1. General

This Operation, Maintenance and Monitoring (OM&M) Plan has been prepared as a means of providing guidelines, procedures, and objectives for operating and maintaining the SPDES Treatment System (System) at the General Motors Corporation (GM) Former Inland Fisher Guide (IFG) Facility.

This section of the OM&M Plan presents information regarding background information on the design and construction of the System. Subsequent sections provide information regarding discharge requirements, system components, emergency operations, and safety information.

This document is intended to supplement information contained in the various manufacturers' operation and maintenance publications, shop drawings, and record drawings. This OM&M Plan, the record drawings, and the manufacturers' literature shall be used together to provide guidelines and procedures for operating and maintaining the System.

1.2. Background

GM and the New York State Department of Environmental Conservation (NYSDEC) entered into an Administrative Order on Consent (Index # D-7-0001-97-06; Order) on September 25, 1997. The Order calls for the development and implementation of a Remedial Investigation/Feasibility Study (RI/FS) at the Former IFG Facility and the Ley Creek Deferred Media (collectively designated the site) located at 1 General Motors Drive in the Town of Salina, Onondaga County, New York (Figure 1). A small portion of the site (entrance gate and a portion of the parking area) is located in the Town of DeWitt. In addition to requiring an RI/FS, the Order specified interim effluent limitations for the site's SPDES Permit for Outfalls 003 and 004, and final effluent limitations for the site's SPDES Permit for Outfalls 003, 03B, 004 and 04I (see Exhibits F and G to the Order). In addition, the Order required that GM undertake interim remedial measures (IRMs) necessary to comply with the final effluent limitations no later than three years after the effective date of the Order, that is, by September 25, 2000. The SPDES Permit issued to GM for the Former IFG Facility incorporated the interim effluent limitations by

reference. (See paragraph 5 of the Special Conditions and Footnotes to the SPDES Permit)

NYSDEC and GM agreed on an extension of the effective date of the final effluent limitations for PCBs and the effective date of the action level for TCE in Outfall 003 (Hartnett 2000a, Conyers 2000, Benjamin 2001a). This extension of the interim period under the Order meant that the interim effluent limit for PCBs of 2 ug/L for each Aroclor, and the interim limit for TCE of 0.16 mg/L for Outfall 003 applied until December 31, 2002. Certain IRMs were undertaken by GM to address SPDES effluent limitations, as described below.

An IRM Work Plan for sewer cleaning and televising was submitted to NYSDEC on February 22, 2000. NYSDEC provided comments on the Sewer Televising IRM Work Plan in a letter dated March 16, 2000 (Benjamin 2000a). GM responded to NYSDEC's comments in a letter dated April 6, 2000 (Hartnett 2000b). The Sewer Televising IRM Work Plan was finalized in April 2000 (O'Brien & Gere 2000a). NYSDEC approved the Sewer Televising IRM Work Plan in its letter of May 5, 2000 (Benjanim 2000b). The activities described in the approved Sewer Televising IRM Work Plan were implemented from June through November 2000, and also in February through May 2001. The Sewer Televising IRM Engineering Report was submitted to NYSDEC on March 21, 2001 (O'Brien & Gere 2001b). NYSDEC provided comments on the Sewer Televising IRM Engineering Report on May 18, 2001 (Cruden 2001). A Revised Sewer Televising IRM Engineering Report was submitted to NYSDEC on June 6, 2001 (O'Brien & Gere 2001c).

Based on the findings of the Sewer Televising IRM, a Storm Sewer Rehabilitation IRM Work Plan was submitted to NYSDEC on December 21, 2000 (O'Brien & Gere 2000b). NYSDEC issued comments in a letter dated January 12, 2001 (Benjamin 2001b). A Revised Storm Sewer Rehabilitation IRM Work Plan presenting the rehabilitation plan for the main storm sewer system leading to Outfall 003 was submitted to NYSDEC on March 28, 2001 (O'Brien & Gere 2001d). Subsequently, NYSDEC issued additional comments on the work plan in its draft letter of May 16, 2001 (Benjamin 2001c). The Revised Final Storm Sewer Rehabilitation IRM Work Plan incorporated NYSDEC's draft comments as documented in the draft May 16, 2001 letter, and was submitted to NYSDEC on June 1, 2001 (O'Brien & Gere 2001a).

Implementation of the Storm Sewer Rehabilitation IRM began in early June 2001. Storm sewers identified for rehabilitation in the Revised Final Storm Sewer Rehabilitation IRM Work Plan were rehabilitated using cured-in-place pipe. In addition, work associated with sewer lines in need of abandonment and manholes requiring abandonment or rehabilitation was conducted. The Storm Sewer Rehabilitation IRM Engineering Report was submitted to NYSDEC on October 31, 2002 (O'Brien & Gere 2002). NYSDEC issued comments on the Storm Sewer Rehabilitation IRM Engineering Report in its letter of January 15, 2003. (Benjamin 2003a) A response letter was submitted to NYSDEC on January 31, 2003 (Hartnett 2003a). NYSDEC approved the Storm Sewer

Rehabilitation IRM Engineering Report in its letter of March 12, 2003 (Benjamin 2003b).

Prior to and following rehabilitation of the storm sewer lines leading to Outfall 003, SPDES sampling showed that concentrations at Outfall 003 were generally in compliance with final effluent limitations and action levels with the exception of the effluent limitations for PCBs and the action levels for TCE, 1,2-cis-DCE, and xylene. In accordance with the extension of the interim effluent limitations for PCBs and the action level for TCE, temporary storm water treatment systems were constructed to bring storm water into compliance starting January 1, 2003.

GM provided a Conceptual Design Work Plan for the SPDES Treatment System dated August 2, 2001 (CDWP; O'Brien & Gere 2001e) as a condition of the NYSDEC's extension of the SPDES Permit requirements. In accordance with the CDWP, GM submitted the SPDES Conceptual Design – Sampling results, flow evaluation results and preliminary treatability study results on October 31, 2001 (Hartnett 2001a) and the Basis of Design for the SPDES Treatment System on November 15, 2001 (Hartnett 2001b). The SPDES Treatment System IRM design documents were submitted to NYSDEC on January 31, 2002 (Hartnett 2002a). NYSDEC provided comments on the design documents in its letter of February 21, 2002 (Benjamin 2002a). The revised SPDES Treatment System IRM design documents dated April 30, 2002 and a comment response letter dated May 1, 2002 were submitted to NYSDEC (Hartnett 2002b, 2002c). NYSDEC provided conditional approval of the SPDES Treatment System IRM design in its letter of June 21, 2002 (Benjamin 2002b). GM responded to the conditions in its letter of July 23, 2002 (Hartnett 2002d). Final approval of the SPDES Treatment System IRM design was provided on July 26, 2002 (Benjamin 2002c). The major components of the approved SPDES Treatment System are described in Section 4 of this Plan.

On January 8, 2003, GM proposed to direct water collected in the thinner area ground water collection trenches and the former Industrial Wastewater Treatment Plant (IWTP) basement sump to the System wet well and eliminate Outfall 03B (Hartnett 2003b). NYSDEC approved this proposal in its letter dated January 22, 2003 (Baker 2003). NYSDEC provided a modified SPDES permit to reflect the elimination of Outfall 03B on March 21, 2003 (March 2003). The thinner area ground water collection trenches were rerouted to the System wet well in March 2003. The IWTP basement sump was rerouted to the System wet well in April 2003.

Construction of the System commenced in June 2002 and was substantially complete in March 2003.

1.3. Operation precautions

The components of the System must be installed, operated, and maintained in accordance with the manufacturers' guidelines. This document is not intended to be used instead of manufacturer literature, but rather as a supplement to it. Improper use of any component may result in injury to individuals or damage to the equipment. Those involved in implementing this OM&M Plan should not work on any component or device that he/she is not technically qualified to work on, and until he/she has first referred to and is familiar with this OM&M Plan and the manufacturers' guidelines.

2. Operational responsibilities

2.1. General

The purpose of this section is to provide a description of operator responsibilities and duties.

The operator of the SPDES Treatment System is responsible for monitoring and keeping records of the System performance and retention pond conditions and for performing preventative maintenance and repair of equipment. Each of these items is discussed herein. Also, a summary of the operator responsibilities and a description of where these responsibilities are discussed in this report is presented in Table 2-1.

2.2. Operator responsibilities

2.1.1. System performance monitoring and recordkeeping

It is the responsibility of the operator to monitor the operation of the SPDES Treatment System and to record data associated with the System performance at the respective frequencies described in Section 4. For convenience, an inspection/maintenance report form is provided in Appendix A. This form is to be filled out when maintenance is performed to establish a record of this activity. A Treatment System Operations Log is provided in Appendix B. The operator is responsible for reviewing these records for any short or long term changes in the System performance (*e.g.*, flow rate, volume treated or recovered, pressure gauge readings), since these may be indicators of a need for repair or maintenance.

2.2.2. Preventative maintenance and repair

It is the responsibility of the operator to maintain equipment according to the schedule and requirements of the component manufacturer, or more frequently when inspection indicates the need exists, or as specified in Section 4. The manufacturers' installation, operation, and maintenance manuals are provided as Exhibits B – M and the as-built drawing is provided as Exhibit N.

2.3. Operator training requirements

In accordance with 6 NYCRR 5 Part 650, operators of the SPDES Treatment System must be under the responsible supervision of an appropriately certified operator. Certification requirements are based on intended quantities of treatment and treatment components. The level of certification required is that of a Grade 2 chief operator. This requirement assumes 350 gpm maximum treatment capacity, flow equalization, filtration, polymer addition, and activated carbon.

3. Discharge requirements

The SPDES Permit provides the following effluent limitations, action levels, and goals:

Table 3-1 *SPDES Permit final effluent limitations, action levels, and goals.*

Constituent	*Monthly Ave Limit*	*Daily Max Limit*	*Action Level*	*Goal+*
Outfall 003				
Flow	monitor	monitor	-	-
pH (Range)	-	6.0 – 9.0 SU	-	-
TSS	30 mg/L	50 mg/L	-	-
PCBs*	-	0.30 µg/L	-	0.065 µg/L
Aluminum	monitor	0.8 mg/L	-	-
Iron	monitor	2.0 mg/L	-	-
TCE	monitor	0.01 mg/L	-	-
Benzene	monitor	0.01 mg/L	-	-
Ethylbenzene	monitor	0.01 mg/L		
Toluene	monitor	0.01 mg/L	-	-
1,2 – (cis) – DCE	monitor	0.01 mg/L	-	-
Xylenes, Total	monitor	0.01 mg/L	-	-
Zinc, Total	-	-	0.16 mg/L	-
Outfall 005				
Flow	monitor	monitor	-	-
pH (Range)	-	6.0 – 9.0 SU	-	-
TSS	30 mg/L	50 mg/L	-	-
PCBs*	-	0.30 µg/L	-	0.065 µg/L
Aluminum	monitor	0.8 mg/L	-	-
Iron	monitor	2.0 mg/L	-	-
TCE	monitor	0.01 mg/L	-	-
Benzene	monitor	0.01 mg/L	-	-
Ethylbenzene	monitor	0.01 mg/L		
Toluene	monitor	0.01 mg/L	-	-

Constituent	*Monthly Ave Limit*	*Daily Max Limit*	*Action Level*	*Goal+*
1,2 – (cis) – DCE	monitor	0.01 mg/L	-	-
Xylenes, Total	monitor	0.01 mg/L	-	-
Zinc, Total	-	-	0.16 mg/L	-

* PCB effluent limitations and goals are for individual Aroclors 1242, 1248, 1254 and 1260.
\+ Goal for PCBs is non-detect at the higher of 0.065 ug/L or the site-specific MDL.

Source: September 1997 SPDES Permit NY 0000566 as modified in July 2000, April 2001, March 2003, and May 2005.

Stormwater treated by the System is discharged via Outfall 003. Outfall 003 will be monitored at the frequencies specified in the SPDES Permit. Outfall 005 is the stormwater spillway overflow from the retention pond. The SPDES Permit requires that Outfall 005 be monitored only upon discharge during an overflow event.

The SPDES Permit requires that GM comply with the effluent limitations. An exceedance of an action level results in the need to perform a short-term, high-intensity monitoring program for the parameter(s). A copy of the SPDES Permit (as modified in May 2005) is included as Exhibit A of this OM&M Plan.

Pending NYSDEC-review and approval of influent and effluent monitoring data, operation of the System may be discontinued if the following two conditions have been met:

1. Influent sampling data for all parameters indicate that all constituents are below the effluent limitations required by the SPDES permit for a period of no less than 18 months; and
2. No effluent limits or action levels have been exceeded at Outfall 003 for a period of 3 years.

4. Treatment system operation and maintenance

4.1. General

The System has the following major components:

- Control panel
- Retention pond and wet well
- Influent pumps
- Multimedia filters
- pH control
- Granular activated carbon (GAC) vessels
- Treated effluent retention tank
- Backwash waste settling and storage tank
- Polymer addition

A site plan that depicts the location of the retention pond and the treatment system building is presented as Figure 2. A process schematic showing the flow pattern and the major system components is included as Figure 3.

4.1.1. Control panel

The System is designed to operate normally in an automated mode. A main "power on" on-off switch with a white "power on" indicating light is located in the upper left corner of the main control panel. This part of the control panel also includes a power switch for the acid metering pump with hand-off-auto selections. Normally, the metering pump switch should be set to either the "off" or "auto" setting. The "on" setting for the chemical metering pump should be used only to test the acid feed pump.

The variable speed control pads for the influent pumps (P-1 and P-2) are located at the top-center of the control panel. Below each pump variable speed controller control pad there is a pump operation enable-status light. Instructions for programming the variable speed controllers and operating the influent pumps are presented in Exhibits B and C, respectively. Electrical elementaries and a diagram depicting the face of the control panel are included in Exhibit D.

The wet well water level indicator is located to the right of the influent pump control pads. The wet well elevation will be recorded daily on the Treatment System Operations Log (Appendix B). Below the water level indicator is a "high wet well" indicating light. When this light

illuminates, an autodialer message is provided to alert of a potential storm water retention pond overfill condition.

The control panel also includes indicator lights in the lower left corner alerting of high differential pressure across the multimedia filters, high differential pressure across each of the GAC adsorbers, and high influent pressure to the multimedia filters. When these lights illuminate, an autodialer message is provided to alert of the condition requiring assessment.

The right side of the control panel includes a "pH out of range" indicator light. When this light illuminates, the chemical metering pump is turned off to prevent additional acid from being added to the influent flow. An autodialer message is provided as well to alert of the condition.

Lastly, the control panel includes an intrusion alarm indicator light, horn and disarm switch. The control panel will be monitored daily to record totalizer readings, calculate daily flow, record flow rate, and test the autodialer telephone connection.

4.1.2. Retention pond and wet well

Flow equalization is achieved using a retention pond designed to hold the runoff produced by a 25-year, 24-hour storm. The retention pond holds approximately 5.12 million gallons. The retention pond is depicted on Figure 2.

Storm water is conveyed to the deepest part of the retention pond via a stone channel in the bottom of the retention pond to an inlet structure, and then to a 12.5 ft by 8 ft wet well via a buried 8-inch diameter storm sewer. The deepest portion of the retention pond is covered with stone. The remainder of the retention pond is grassed. The grassed portion of the retention pond shall be mowed as needed, depending on the duration of the growing season. Grass clippings shall be bagged and managed as described in Section 4.1.4.

The retention pond shall be inspected a minimum of twice a year to identify settlement, erosion of the berms and bottom of the retention pond, and general siltation. In addition, the inspections shall include checking for evidence of the presence of vermin or vectors. In the event that vermin or vector presence is noted, a mitigation plan shall be developed and followed.

The grassed portion of the retention pond shall also be maintained by applying additional topsoil, seed, and fertilizer, as needed to maintain uniform vegetation. To the extent possible, fertilizer applications shall be minimized and efforts should be made to limit fertilizer application to periods when there is no standing water in the retention pond.

To minimize the potential for solids and debris entering the wet well, the inlet structure of the wet well is equipped with a rack system. Solids and debris shall be removed from the rack system as needed, depending on

observations made during inspections of the retention pond. Solids and debris removed from the rack system shall be disposed as described in Section 4.1.4.

Sediment shall be removed from the wet well concurrent with cleaning of the backwash waste tank (described in Section 4.1.10) using a vacuum truck unless excessive backwashing of the multimedia filter is observed. If excessive backwashing is necessary, sediment may be removed more frequently. The sediment that is removed from the wet well shall be disposed as described in Section 4.1.4.

4.1.3. Overflow spillway

The overflow spillway comprises a concrete outfall structure and an 18-inch diameter pipe that conveys flow from the overflow structure to the existing concrete channel at Outfall 003. The roof drains from the SPDES treatment system building are also tied into the concrete overflow structure.

The overflow spillway shall be inspected a minimum of twice a year, concurrent with inspection of the retention pond, to identify obstructions or siltation. The grate on the overflow structure will be cleared of debris and/or brush as needed, depending on observations made during inspections. If needed, sediment will be removed from the overflow structure concurrent with cleaning of the backwash waste tank or wet well. The sediment removed from the overflow structure will be disposed as described in Section 4.1.4. In the event of overflow conditions, the stormwater in the vicinity of the outfall structure (Outfall 005) will be monitored in accordance with the SPDES Permit.

4.1.4. Waste material disposal

Materials removed from the rack system, the wet well, the backwash waste tank, and grass clippings collected after mowing the retention pond shall be sampled for PCBs prior to initial disposal. Based on the analytical results, each material shall be characterized as either hazardous or non-hazardous, and a waste profile shall be prepared and submitted for approval by an appropriate disposal facility. Following the disposal facility's approval of the waste profiles, the materials shall be shipped off-site for disposal. Once a waste profile has been approved for each material, no further sampling will be required prior to off-site disposal.

4.1.5. Influent pumps

Pumping from the wet well to the treatment system is achieved by one of two self-priming centrifugal pumps; one (P-1) that pumps at a rate of approximately 180 gpm, and the other (P-2) that pumps at a rate of approximately 350 gpm. Pump P-1 is set to operate when the water level inside the wet well is between an elevation of 373 ft and 374 ft. Pump P-2 is set to operate when the water level inside the wet well is above an elevation of 374 ft. Pump P-1 is set to turn off when the water in the wet

well reaches an elevation of 374 ft. and pump P-2 turns on. Both pumps are set to turn off when the water level in the wet well reaches an elevation of 373 ft. This shall prevent sediment that may have accumulated on the bottom of the wet well from being pumped through the System. An autodialer alarm shall trigger when the water level in the wet well reaches an elevation of 381 ft to alert of the development of a potential spill over condition in the retention pond.

Variable speed controllers receiving a signal from a flow meter located within the treatment building, downstream of the pumps, control each pump. Each variable speed controller shall operate to maintain a pre-set target flow rate for each influent pump. Although both pumps can accommodate a pumping rate of 350 gpm, the target flow rate for pump P-1 is 180 gpm, and the target flow rate for pump P-2 is 350 gpm. When the system is "clean" and operating with minimal head losses, the variable speed controllers shall reduce power to the respective pumps to prevent each pump from operating off its curve. As the system pressure losses increase with the buildup of solids within the filters, the variable speed controllers shall increase power to the respective pumps to overcome the increased losses and maintain the targeted flow rates.

Both influent pumps shall be operated and maintained in accordance with the manufacturer's recommendations. Pump manuals are included as Exhibit C. Turbin oil levels will be monitored weekly and additional oil will be added as needed. Fastners on influent pump piping will also be inspected weekly and tightened as needed.

4.1.6. Multimedia filters

Two multimedia filters are located downstream of the wet well and influent pumps. Each multimedia tank is provided with approximately 7 cu. ft. of ½" x ¾" crushed rock, 6.5 cu. ft. of 1.45 mm Garnet, 19 cu. ft. of 0.35 mm Garnet, and 19 cu. ft. of 0.75 mil Anthracite. The tanks are 5 ft in diameter and the overall height of the filter unit is approximately 9.5 ft. The filters have a maximum allowable operating pressure rating of 80 psig, with a minimum suggested operating pressure of 30 psig. The filters perform most efficiently between a suggested maximum flow rate of 378 gpm and a suggested minimum flow rate of 126 gpm.

The purpose of the multimedia filters is to remove suspended solids larger than 10 microns in diameter from the storm water prior to GAC adsorption. The multimedia filter effluent can be visually inspected via the influent sample port on the lead GAC vessel. The filters are designed to normally operate in parallel. However, when a backwash occurs, the flow from the influent pump P-1 shall down-flow through one multimedia filter tank, then be directed to up-flow through the other multimedia filter tank being backwashed. The backwash waste is discharged to the conical tank described in Section 4.1.10.

Backwash of the multimedia filters shall be triggered automatically, but may be triggered manually at the control panel. Automated backwash occurs when the differential pressure across the filters reaches the pre-

selected differential pressure setting or elapsed time setting, whichever occurs first. If the differential pressure is not sufficiently reduced by the automated backwash, additional manual backwashes will be performed. When multiple sequential backwashes are required, the clarity of the water above the decant valve in the backwash waste tank will be checked between manual backwash events.

The multimedia filter control panel is equipped with an adjustable three digit timer that may be set to initiate a backwash cycle after a period since the last backwash event ranging between 000 seconds and 999 hours. Typically the timer is set for 8 hours.

The multimedia system also includes a differential pressure switch across the system that initiates a backwash cycle upon reaching a set differential pressure. The differential pressure switch setting may be adjusted, although the typical differential pressure is set for 10 psig.

When operating in automatic mode, the multimedia control panel initiates a backwash cycle when the differential pressure across the filters reaches the designated set point, regardless of the time since the last cycle.

In addition to the vendor-supplied differential pressure switch, the entire system is monitored separately by another pressure switch (PSH-109 on Drawing I-1). This pressure switch was set at startup to trigger an alarm and shutdown the system at a pressure of 70 psig. The purpose of this pressure switch is to prevent damage to multimedia filters potentially caused by high pressure, and to prevent damage to the rupture disks on the GAC absorbers.

The duration of the backwash cycle can be adjusted, however the typical duration shall be set at 4 minutes per vessel. At a backwash flow rate of 180 gpm, a total of 1440 gallons of backwash wastewater shall be generated to backwash both vessels during each backwash cycle.

Further details regarding the operation and maintenance of the multimedia filters is presented in the manufacturer's manual included in Exhibit E.

4.1.7. pH control

A pH monitoring probe (PH-1) and controller are located downstream of the multimedia filters. The purpose of the pH controller is to maintain the pH of the influent to the GAC at or below a value of 7.0 standard units to minimize the potential for precipitation of calcium and magnesium in the carbon adsorbers. pH control is achieved by adding sulfuric acid at a point upstream of the multimedia filters to lower the pH of the storm water, if necessary. The acid feed system comprises an EHE Series electronic metering pump that operates based on a 4 to 20 mA signal from the influent pH controller. If PH-1 detects a pH above 7.0 standard units, the controller will signal the metering pump to feed acid

to the system. When PH-1 detects a pH of 7.0 standard units or less, the controller will discontinue feeding acid to the system.

In addition to monitoring the pH upstream of the GAC adsorbers, a pH monitoring probe (PH-2) is located downstream of the GAC absorbers. The purpose of this pH probe is to monitor the effluent pH. If PH-2 detects a pH below 6.5 standard units, the treatment system control panel will disable the acid feed pump and signal an alarm.

Approximately 55 gallons or less sulfuric acid shall be stored on-site. The sulfuric acid drum shall be overpacked to provide spill protection. The pH probes shall be inspected and cleaned monthly. pH meter readings (influent and effluent) will be recorded weekly. Calibration of the pH meters shall also be conducted during these inspections/cleanings. Additional information regarding operation and maintenance of equipment associated with pH control is included in Exhibit F.

4.1.8. Granular activated carbon (GAC) vessels

The storm water treatment system consists of two 10,000-lb GAC vessels that are designed to remove PCBs and VOCs. Each GAC vessel is 8 ft in diameter and the overall height of the unit is approximately 15 ft. The vessels have a maximum allowable service pressure rating of 125 psig. The maximum design flowrate to the GAC vessels is 350 gpm. Treatment is accomplished by adsorption of the PCBs and VOCs to the carbon. Under normal operation, the storm water shall flow through both the GAC vessels in series. The valves and piping outside the GAC units are configured so that flow can be routed through both units with either GAC unit providing primary (lead) or backup (lag) treatment.

Pressure gauges are installed upstream of each GAC vessel. The pressure gauge readings shall be monitored weekly to assess when a vessel may require servicing.

The vessels are each equipped with a differential pressure switch that is set to trigger an alarm at a differential pressure of 10 psig. The alarm notifies that the GAC vessels are either in need of backwashing or carbon replacement.

For carbon replacement, an air compressor shall be obtained (rented) with the capacity to provide 100 scfm at 30 psig pressure. It should be noted that the instrument air compressor provided for multimedia valve operation is not adequate for use during carbon replacement. Carbon replacement also requires the use of water from the effluent holding tank and the backwash/carbon regeneration pump (Pump P-3 shown on Drawing I-2). Pump P-3 has the capacity to pump 425 gpm at a pressure of 70 ft water. While exchanging carbon, the flow rate must be throttled to a maximum flow rate of 100 gpm in accordance with Section 3.3 of the Operation and Maintenance Manual provided by Calgon. Pump P-3 can also be used to backwash the carbon after exchange or when otherwise necessary. When backwashing carbon the flow rate should be approximately 500 gpm. Pump P-3 should be maintained in accordance

with the manufacturer's recommendations included in Exhibit G. Additional information regarding operation and maintenance of the GAC vessels is included in Exhibit H.

Each GAC vessel is also equipped with an effluent sample port. Performance monitoring samples shall be collected from these ports as described in Section 6.2.

4.1.9. Treated effluent discharge

Following treatment by the GAC vessels, the storm water is discharged to a 10,000-gallon effluent retention tank. The treated water is discharged from the tank to Ley Creek via SPDES Outfall 003. The treated storm water shall be sampled and monitored for compliance with the SPDES permit. A copy of the SPDES permit is included in Exhibit A.

The effluent tank was sized to provide a reservoir of treated water for use in exchanging carbon from the GAC vessels, then backwashing the GAC vessels. A pump P-3 is provided, as described in the previous section, for use during GAC exchange and backwashing.

4.1.10. Backwash waste tank

The backwash waste tank is a conical-bottomed, 7,200-gallon (approximate volume) vertical tank. Water that is decanted from the backwash waste tank is discharged to the wet well when the multimedia control panel indicates a need for a backwash cycle. The amount of sludge in the backwash tank shall be monitored and periodically removed.

Three decant nozzles are located on the side of the backwash waste holding tank. Each nozzle is equipped with a manual ball valve that allows the level to which the tank shall be decanted prior to initiating a multimedia filter backwash to be selected.

The clarity of the water above the upper decant nozzle shall be monitored daily to evaluate if the polymer feed rate requires adjustment. The sludge shall be removed once the depth of the thickened sludge accumulates to the lower decant nozzle. This shall be evaluated by monthly examination of effluent from the lower decant nozzle. The backwash waste tank sludge will be pumped out of the tank using the air operated diaphragm pump discussed in the next section, or a vac truck, and shipped off-site for disposal as described in Section 4.1.4.

The backwash waste tank is equipped with an automatic decant valve. The decant valve is controlled by the main control panel based on a programmable logic controller (PLC) signal from the multimedia control panel that indicates that a multimedia filter backwash cycle is required. When the multimedia filter control panel PLC indicates that a backwash event is required, the decant valve on the backwash tank is opened and shall remain open for a period of 20 minutes to provide sufficient time to

allow the water level in the backwash waste tank to lower, providing capacity to receive the backwash wastewater. After that period, the main control panel shall return a signal to the multimedia filter PLC enabling the backwash event to start.

4.1.11. Polymer addition

In-line polymer addition will be used, as necessary, to enhance settling of solids in the backwash waste tank. The polymer feed rate may be adjusted based on the turbidity of the water in the backwash waste tank. The polymer dosage rate will not exceed 150 mg/L (0.6 gallons/day for a 500 gpm flow rate).

The polymer addition system includes a polymer feed pump and associated equipment. Polymer addition is controlled such that addition occurs only during backwash flow. No more than 185 gallons of Praestol K2001 polymer will be stored onsite. Secondary containment will be provided. The polymer feed pump shall be periodically maintained in accordance with the manufacturer's recommendations, included in Exhibit L.

4.1.12. Air-operated diaphragm pump (optional equipment)

An air-operated diaphragm pump may be connected to a bottom drain on the conical tank. The diaphragm pump would be provided to allow the periodic removal of sludge from the bottom of the tank for disposal off-site. The diaphragm pump is sized to operate using a permanently installed air compressor, which is also used for pneumatic valve operation in connection with the backwash waste tank decant valve and the multimedia filter system backwash valves.

To operate the diaphragm pump, the ball valve on the air line to the pump shall be opened. Prior to opening the air line shutoff valve, the filter/regulator/gauge (FRG) on the air supply line to the pump should be set at a pressure setting of not more than 125 psig, and the backwash waste drain shall be open.

In the event that the air-operated diaphragm pump is installed, it shall be periodically maintained in accordance with the manufacturer's recommendations, included in Exhibit I.

4.1.13. Instrument air and diaphragm pump

The air compressor and receiver tank installed to provide air for pneumatic valves and air-operated diaphragm pump must be periodically maintained as recommended by the manufacturer (Exhibit J). An air dryer was not provided as part of the installation. Condensation must be periodically blown out of the compressed air lines and valves.

4.1.14. Flow meter

A flow meter is located downstream of the influent pump and upstream of the multimedia filters. The flow meter shall be operated in accordance with the manufacturer's recommendations included in Exhibit K. The initial flow meter calibration was performed by the manufacturer. The calibration report is included in Exhibit K. The flow meter calibration will be verified by a factory representative annually.

4.1.15. Variable speed controllers

The variable speed controllers shall be operated in accordance with the manufacturer's instructions included in Exhibit B. The target flow rate for pump P-1 is 180 gpm, and the target flow rate for pump P-2 is 350 gpm. These flow rates should be adjusted as appropriate based on startup optimization. When the system is "clean" and operating with minimal head losses, the variable speed controllers shall reduce power to the respective pumps to prevent each pump from operating off its curve. As the system pressure losses increase with the buildup of solids within the filters, the variable speed controllers shall increase power to the respective pumps to overcome the increased losses and maintain the targeted flow rates.

4.2. IWTP basement sump

The former IWTP is located south of the Manufacturing Building. The IWTP basement sump collects ground water that infiltrates into the IWTP basement. This water was formerly treated and discharged at Outfall 03B. Water collected in the IWTP basement sump is currently pumped to the wet well. Figure 4 shows the piping and flow direction from the IWTP basement sump to the wet well.

The IWTP basement sump shall be inspected monthly to verify that the pump is operating and is adequately draining the sump. During freezing conditions, the sump shall be inspected weekly, or as needed, to evaluate if piping leading to the wet well is frozen.

4.3. Thinner area ground water collection trenches

The thinner area ground water collection trenches are located on the western side of the Manufacturing Building. The trenches collect ground water that contains residual concentrations of toluene, ethylbenzene, and xylene. The ground water collected in these trenches was formerly treated and discharged at Outfall 03B. Currently, the ground water collected in the trenches is piped directly to the wet well. Figure 4 shows flow directions and piping from the collection trenches to the wet well.

The control panel associated with the collection trenches is located as shown on Figure 4. A high level indicator light is activated when the water level in the collection sumps reaches a set high level. The control panel shall be inspected weekly and observations will be recorded on the Weekly Trench Inspection Log included in Appendix B. If one or both of the trenches are in high level alarm, pumps shall be turned on manually at the control panel and the condition creating the high level alarm will be investigated. The pumps associated with the collection trenches are shown on Figure 4.

4.4. Treatment system building and access road maintenance

The integrity of the treatment system building shall be monitored to assess the condition of roofing, gutters, walls, doors, utility penetrations, foundations, and floors. In addition, the inspection shall include checking for the presence of vermin and vectors. In the event that vermin or vectors are observed, a mitigation plan shall be developed and implemented.

The access road shall be monitored to assess the need for pothole or subsidence repairs.

4.5. Inspection of manholes

Manholes located along the storm sewer line leading to Outfall 003 shall be visually inspected for structural integrity on an annual basis. Repairs shall be performed on an as needed basis to repair structural deterioration. Since storm water is treated prior to discharge at Outfall 003, infiltration observed during annual inspections shall not be repaired unless the structural integrity of the manhole is compromised.

5. Startup and shutdown procedures

Before initial startup or before exchanging carbon, the effluent holding tank should be filled with clean water (from the potable water within the treatment building, or from a fire hydrant, or previously treated storm water).

Using the GAC backwash/regeneration pump (P-3), the GAC vessel(s) containing fresh carbon should first be wetted and backwashed. The valves on the GAC unit should be closed or opened such that the units are being backwashed from the bottom up. Doing so shall help remove air entrained in the carbon, cause the carbon bed to stratify, and cause fines that may otherwise wash through to be removed. The backwash waste should be directed to the backwash waste tank for settling and subsequent removal and disposal off-site. After backwash of the GAC is complete, the valves must be reconfigured for normal operation.

Once the carbon is wetted and sufficiently backwashed in accordance with the manufacturer's recommendations and the GAC valves are repositioned for normal operation, the influent pumps P-1 and P-2 can be energized. These pumps are designed to operate automatically based on the level of storm water inside the wet well, and are each regulated by a separate variable speed controller that receives a signal from the flow meter located downstream of the pumps and upstream of the multimedia filters. The variable speed controllers are designed to increase power to the respective pump, ramping up the flow rate until the desired flow setting is reached. As discussed in Section 4.1.14, as operation continues and head losses increase due to accumulating solids, the variable speed controllers shall increase power to maintain the desired flow rate. The variable speed controller manufacturer instructions should be referenced for specific direction regarding starting up the influent pumps.

At this point, the system shall be operating normally. Next, the air compressor should be checked to ensure that it is energized. Compressed air is required for operating the backwash control valves on the multimedia filter and the decant valve on the backwash waste tank. The filter regulator gauge (FRG) on the air supply line to each device must be set to the appropriate pressure setting recommended by the manufacturer of the device. With the air compressor in operation, air shall be available to cause multimedia backwash to occur when necessary.

The settings for automatic multimedia filter backflow operation must be checked next. As discussed in Section 4.1.6, the differential pressure and elapsed time settings can be adjusted at the multimedia filter control panel. These would have been set previously and should not require adjustment unless there has been a change in storm water characteristics or plant operation requiring an adjustment.

Finally, the chemical feed pump should be energized by setting the switch to the "auto" mode. As noted in Section 4.1.7, the chemical feed pump control switch should not be set to the "on" mode unless testing the pump. With the switch set to the "auto" mode, the pump shall regulate the feed rate based on a 4 to 20 mA signal from the influent pH probe and controller. Note: Before energizing the acid feed pump, the pH controllers, particularly the controller on the treatment system effluent, must be checked to confirm they are set to the appropriate pH levels for proper process operations. Valve positions are shown on the as-built drawing included as Exhibit N and on Record Drawings I-1 and I-2.

To shutdown the SPDES discharge system, the main switch in the upper left hand corner of the main control panel must be set to the "off" position. The chemical feed pump should also be set to the "off" position as a precaution. Valve positions are shown on the as-built drawing included as Exhibit N and on Record Drawings I-1 and I-2. Provided that the system is not being shutdown for an extended period (which is unlikely), no other action is required. However, if the system is being shutdown for an extended period of time, the multimedia filters and GAC vessels should be isolated and drained. Doing so shall minimize the growth of algae and desorption of contaminants in the filters. After an extended shutdown period, the system should be restarted as described above.

6. Performance monitoring

6.1. Startup

During startup, weekly effluent sampling was conducted consistent with the SPDES permit requirements. Weekly effluent samples were analyzed for PCBs (Method 608) and VOCs (Method 624).

6.2. Routine operation

In addition to discharge monitoring in accordance with the SPDES permit, performance monitoring will also be performed. Concurrent with a weekly SPDES effluent sampling event, a quarterly system influent sample shall be collected to enable an evaluation of the PCB and VOC loading of the GAC. At this time an intermediate sample shall also be collected to enable an evaluation of breakthrough through the lead GAC vessel. These samples shall be analyzed for PCBs (Method 608) and VOCs (Method 624). After one year of monitoring, the quarterly performance monitoring frequency shall be re-evaluated.

Records of performance monitoring shall be maintained on-site and shall be summarized annually in the annual report described in Section 7.

6.3. Sample analyses

Analyses will be performed by O'Brien & Gere Laboratories, Inc. (NYSDOH ELAP #10155). Methodologies, as required by the permit, are described in 40CFR Part 136 unless alternate procedures are directed for use by the permit. Quality control procedures, frequencies, and corrective actions are described within the methodologies and the laboratory Standard Operating Procedures (SOPs). QA/QC samples are compared to control limits generated according to the methods and SOPs. Analytical results are reported at or below the limits specified in the permit and ultimately on forms provided by the NYSDEC (DMR). Hard copy report forms and electronic files are provided by the lab, as required, in order to meet DMR criteria. Analytical data, including raw chromatographic output for calibration, SPDES, batch QC, and SPDES QC samples as well as maintenance records, final reports and electronic files are maintained at the laboratory for a period of five years.

7. Record keeping and reporting requirements

As part of the routine discharge monitoring in accordance with the SPDES permit, a monthly discharge monitoring report (DMR) shall be submitted to NYSDEC. The DMR shall summarize analytical results from the treated effluent that is discharged from Outfall 003.

An annual report, certified by a New York State licensed Professional Engineer, will also be prepared. The annual report shall include a summary of sampling activities (including both routine discharge monitoring and performance monitoring) as well as maintenance activities and repairs performed during the year. The report shall also provide an assessment of the effectiveness of the System and present recommendations for continued operation.

At least five years of DMR, laboratory records, operational logs, calibration records, and other operating data shall be maintained on-site.

8. Emergency operation

In the event of an emergency condition, power to the system shall be shut off by opening the main disconnect switch. The main disconnect switch is located in the upper left corner of the main control panel as described in Section 4.1.1 and as shown in the electrical drawings.

Emergency spill response.
In the event of an audible alarm or a potential or actual overflow/spill condition at the storm water treatment facility, overflowed/spilled storm water shall be drained back to the wet well. The following procedures shall be followed:

- Audible alarm: the alarm shall be silenced and the situation shall be assessed or corrected before the system is restarted
- Overflow/spill condition: the influent pumps shall be shut off
- The emergency coordinators shall be contacted

The person reporting the emergency shall contact the following emergency coordinators in the order shown until one is reached:

Table 8-1 *Emergency coordinators.*

Name	*Title*	*Work phone*	*Cell phone*	*Pager*
Dave Woodruff	O&M Contractor	(315)463-2310		(315) 249-3573
Lyle Grant	Emergency Coordinator	(315)463-2310	(315)447-4555	
Jim Hartnett	GM Project Manager	(315)463-2391	315-764-2312	
Ed Rahn	Engineering Oversight	(315)463-2452 (315)437-6100		
Clare Leary, P.E.	Engineering Project Manager	(315)437-6100		

The emergency coordinator shall obtain the following information from the person reporting the emergency:

- The exact location and nature of the emergency
- The extent of the release, if any
- The nature and extent of the damage caused
- The corrective actions taken
- The persons and agencies that were contacted

Once the emergency is discovered and reported to the emergency coordinator, the coordinator shall assess the urgency of the situation and determine if the System should be shut down and if the NYSDEC should be contacted.

Personal injury.
If a personal injury occurs, it should be reported to the emergency coordinator.

Toxic exposures.
If a potentially toxic exposure occurs, it should be reported to the emergency coordinator as well as outside agencies, which may include the fire department, hospital, or ambulance as necessary.

Fire.
In the event of a fire, a fire extinguisher is located in the SPDES Treatment System building. The fire is to be reported to the emergency coordinator as well as the fire department.

Severe weather/power outage
The treatment system equipment is sheltered in a heated treatment system building. In the event of a power outage, the treatment system shall be shut down and storm water shall accumulate in the retention pond. As described in Section 4.1.2, the retention pond is designed to hold the 25-year, 24-hour storm. Since the System does not include gravity fed components, there is no risk of spill or overflow within the treatment facility as a result of a power outage. If power to the treatment system building has not been restored after 72 hours, the emergency coordinator shall be notified and an electrical generator shall be obtained to provide power until power has been restored.

In the event that severe weather results in retention pond water elevation rising above the spill way, the emergency coordinator shall be notified. To the extent possible, the treatment system shall be maintained operational. The NYSDEC must be notified of storm water overflow over the spillway.

Public notification.
Public notifications shall be provided to the appropriate agencies (*e.g.*, NYSDEC, fire department, police department) when necessary to make the general public aware of conditions off-site.

9. Safety equipment and protocols

A Health and Safety Plan is provided as Appendix D.

The following equipment for safety and emergency response shall be maintained in the System building:

- fire extinguisher
- first aid kit
- eye wash bottles
- a copy of this OM&M Plan that describes emergency operations and contacts
- a telephone

Safety protocols shall be described upon installation of the System.

References

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O'Brien & Gere Engineers, Inc. 2000a. Sewer Cleaning and Televising IRM Work Plan. April 2000.

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O'Brien & Gere Engineers, Inc. 2001d. Revised Storm Sewer Rehabilitation IRM Work Plan. March 2001.

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Table 2-1. *Routine operator responsibilities.*

Task	*Frequency*	*Documentation*	*O&M References*
Obtain totalizer reading	Daily	Treatment System Operations Log (Appendix B)	Section 4.1.1
Calculate daily flow	Daily	Treatment System Operations Log (Appendix B)	Section 4.1.1
Obtain wet well elevation reading	Daily	Treatment System Operations Log (Appendix B)	Section 4.1.1
Obtain flow rate reading	Daily	Treatment System Operations Log (Appendix B)	Section 4.1.1
Test autodialer telephone connection	Daily	Treatment System Operations Log (Appendix B)	Section 4.1.1
Schedule mowing of grassed portion of retention pond	As needed	Inspection/maintenance report form (Appendix A)	Section 4.1.2
Inspect and maintain retention pond	2 times per year (minimum)	Inspection/maintenance report form (Appendix A)	Section 4.1.2
Clean wet well inlet rack	As needed (based on inspection)	Inspection/maintenance report form (Appendix A)	Section 4.1.2
Remove sediment from wet well	Concurrent with cleaning of backwash waste tank	Inspection/maintenance report form (Appendix A)	Section 4.1.2
Inspect and maintain overflow spillway structure	2 times per year (minimum) concurrent with retention pond inspection	Inspection/maintenance report form (Appendix A)	Section 4.1.3
Maintain Influent pumps	As needed	Inspection/maintenance report form (Appendix A)	Section 4.1.5 Exhibit C
Monitor turbine oil levels in influent pumps and add oil as necessary	Weekly	Inspection/maintenance report form (Appendix A)	Section 4.1.5
Inspect fasteners on influent pump piping and tighten as needed	Weekly	Inspection/maintenance report form (Appendix A)	Section 4.1.5
Backwash multimedia filter	Automated	None required	Section 4.1.6 Exhibit E

Task	*Frequency*	*Documentation*	*O&M References*
Perform manual backwash of multimedia filters	As needed based on differential pressure	Inspection/maintenance report form (Appendix A)	Section 4.1.6
Obtain pH meter readings (influent & effluent)	Weekly	Treatment System Operations Log (Appendix B)	Section 4.1.7
Clean and calibrate pH probe	Monthly (or as needed based on usage)	Inspection/maintenance report form (Appendix A)	Section 4.1.7 Exhibit F
Calibrate pH meter	As needed (based on usage)	Inspection/maintenance report form (Appendix A)	Section 4.1.7 Exhibit F
Obtain GAC pressure gauge readings	Weekly	Treatment System Operations Log (Appendix B)	Section 4.1.8 Exhibit H
Carbon replacement	As needed based on pressure gauge readings and performance monitoring	Inspection/maintenance report form (Appendix A)	Section 4.1.8 Exhibit H
Monitor clarity of water above the upper decant nozzle in backwash waste tank	Daily	Treatment System Operations Log (Appendix B)	Section 4.1.10
Monitor/remove sludge in backwash waste tank	Monitor weekly, remove sludge as needed	Record monitoring on Weekly Operations Log Sheet (Appendix B). Document sludge removal on Inspection/ maintenance report form (Appendix A).	Section4.1.10
Monitor polymer feed rate and adjust as per turbidity of water in backwash waste tank	Daily	Treatment System Operations Log (Appendix B)	Section 4.1.11
Air-operated diaphragm pump	As needed	Inspection/maintenance report form (Appendix A)	Section 4.1.12
Maintain instrument air and diaphragm pump (clean condensation out of compressed air lines and valves)	As needed	Inspection/maintenance report form (Appendix A)	Section 4.1.13 Exhibit J
Verify flow meter calibration	Annually	Inspection/maintenance report form (Appendix A)	Section 4.1.14 Exhibit L
Inspect IWTP basement sump	Monthly	Inspection/maintenance report form (Appendix A)	Section 4.2
Inspect thinner area ground water collection trench control panel	Weekly	Weekly Trench Inspection Log (Appendix B)	Section 4.3

Task	*Frequency*	*Documentation*	*O&M References*
Monitor/maintain treatment system building (*i.e.*, roofing, gutters, walls, doors, utility penetrations, foundation, and floors)	As needed	Inspection/maintenance report form (Appendix A)	Section 4.4
Monitor/maintain access road (*i.e.*, potholes, subsidence repairs)	As needed	Inspection/maintenance report form (Appendix A)	Section 4.4
Inspect manholes	Annually	Inspection/maintenance report form (Appendix A)	Section 4.5 and Storm Sewer Rehabilitation IRM Report
Collect performance monitoring influent and intermediate samples concurrent with SPDES monitoring	Quarterly for first year of monitoring; then re-evaluate.	Include analytical results in annual report.	Section 7.2