REPORT

INTERIM REMEDIAL MEASURE WORK PLAN GRIFFIN TECHNOLOGY, INC. SITE

(Index No. B8-315-90-01)

Prepared for:
Griffin Technology, Inc.
Victor, New York
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1.0
INTRODUCTION

This Work Plan describes the proposed Interim Remedial Measure (IRM) Program for the Griffin Technology Incorporated (GTI) facility located in Victor, New York. This Work Plan presents a strategy to control the migration of contaminants at the site through installation of a network of groundwater recovery wells. This Work Plan also addresses identification and remediation, if necessary, of soils and groundwater in the vicinity of the source area.

1.1 IRM WORK PLAN APPROACH AND ORGANIZATION

This IRM Work Plan provides both summary and detailed information on the elements necessary to complete the IRM Program. In addition to this Work Plan, the following documents were prepared to support the IRM Work Plan:

- IRM Field Sampling Plan (IRM FSP, Appendix A of this Work Plan);
- Quality Assurance Project Plan (IRM QAPP, Appendix B of this Work Plan);
- Health and Safety Plan (IRM HSP, Appendix C of this Work Plan)

This Work Plan provides summary information on the content of the documents listed above. Additionally, the Work Plan presents a detailed discussion of the following related topics:

- Data Quality Objectives;
- Project Schedule; and,
- Key Project Personnel and their Qualifications.

The IRM Work Plan consists of ten sections.

- Section 1.0 presents general background information and a summary of the environmental studies conducted to date.
- Section 2.0 describes the specific objectives of the IRM Work Plan.
- Section 3.0 discusses the proposed IRM and associated activities including IRM monitoring and waste handling.
- Section 4.0 describes the IRM Sampling and Analysis Plan, which consists of the FSP, QAPP, and HSP.
- Section 5.0 references the HSP to safeguard site workers during IRM activities.
- Section 6.0 discusses contingency measures to be implemented if the IRM does not fully achieve its objectives.
- Section 7.0 discusses project communication, including progress reporting and the IRM report format and content.
- Section 8.0 present the project schedule.
- Section 9.0 contains a listing of key project personnel, their responsibilities, an organizational chart, and a summary of WCC personnel qualifications.
- Section 10.0 cites the references for the IRM Work Plan documents.

1.2 SITE DESCRIPTION AND BACKGROUND

The GTI site is located at 6132 Victor-Manchester Road in Victor, Ontario County, New York. A site vicinity map is included as Figure 1-1.

During past facility operations, waste photocoating material containing small quantities of trichloroethene (TCE) was released to the ground surface adjacent to the west side of the GTI manufacturing building. In response to the voluntary disclosure of this past disposal practice, GTI entered into an Order on Consent (#B8-315-90-01, March 28,1991), with the NYSDEC to perform a Phase II Investigation of the potential impacts to soil and ground water. Blasland, Bouck & Lee (BB&L) completed the Phase II investigation in July 1991. In order to collect additional site characterization data, a supplemental groundwater investigation was completed in March 1996.

As a result of this investigation and subsequent investigations, GTI and NYSDEC have agreed that an Interim Remedial Measure Program should be implemented at the GTI site.

1.3 PREVIOUS INVESTIGATIONS PERFORMED AT THE SITE

1.3.1 1991 Phase II Investigation

During 1991, BB&L performed a Phase II investigation which included the installation of 12 soil borings and six groundwater monitoring wells (designated as "MW-1" through "MW-5 S/D"). The borings and monitoring wells were installed to evaluate soil conditions at the former release area, and groundwater quality and flow direction in the vicinity of the GTI facility. Compounds of concern (COCs) that were identified included trichloroethylene (TCE), 1,1,1-trichloroethane (TCA) and 1,2-dichloroethene (1,2-DCE). The results of the Phase II Investigation were submitted to the NYSDEC in a report entitled, "Phase II Investigation," (BB&L, July 1991).

Based on these results, BB&L concluded that a south to southwesterly groundwater flow pattern exists in the unconsolidated overburden as a local condition within the regional, northerly flowing groundwater system. Shallow groundwater from the GTI site eventually discharges to Beaver Creek on the south side of Wade's SureFine Market, which is located approximately 100 feet (ft) south of the site. Figure 1-2 shows the location of the wells installed during the Phase II Investigation and subsequent phases of investigation.

1.3.2 1993 Supplemental Subsurface Investigation

GTI proposed supplemental investigation activities to further assess potential COC migration and to obtain confirmatory soil samples near the warehouse on the north side of the GTI property. On May 11, 1993, BB&L submitted a Supplemental Subsurface Investigation (SSI) Work Plan to the NYSDEC which specified the following additional investigation activities:

- A soil gas survey on the south side of Route 96 to evaluate possible locations for future monitoring wells;
- Collection of two soil samples on the north side of the GTI site;
- Collection of one round of groundwater samples and water levels; and
- Collection of one basement sump water sample from the residence located south of the GTI site at 6135 Victor-Manchester Road.

GTI submitted the results of the soil gas survey, groundwater sampling results, and residential sump water sampling to the NYSDEC in a letter report dated July 6,1993.

1.3.3 1994 Off-Site Groundwater Evaluation

In November 1994, GTI initiated an off-site groundwater evaluation, which included the installation of off-site monitoring wells, on-site and off-site groundwater sampling, residential basement air and sump sampling, and surface water and sediment sampling. These wells were installed in order to expand to the existing monitoring network and to further define the extent of TCE and 1,2-DCE in groundwater. Comments received from the NYSDEC related to the SSI Work Plan were also incorporated into this evaluation.

Five nested pairs of monitoring wells (MW-6S/D through MW-10S/D) were installed at downgradient locations south and southwest of the GTI site to evaluate overburden and bedrock groundwater quality south of Route 96. The MW-10S/D nested pair was installed in the vicinity of Beaver Creek to evaluate the discharge or recharge relationship between the creek and area groundwater. The locations and zones of completion for the overburden and bedrock monitoring well nested pairs were selected based on the results of the soil vapor survey and groundwater sampling conducted during the SSI in May 1993. Since the time of the December 1994 investigation, wells MW-8S and MW-8D have been decommissioned due to expansion of the supermarket parking lot.

The results of this evaluation were presented in the "Off-site Groundwater Evaluation Report" (BB&L; February 1995). The SSI soil sampling results obtained during the 1993 investigation activities were also presented in this report.

1.3.4 1996 Additional Off-Site Investigation

In March 1996, WCC installed two off-site bedrock monitoring wells, MW-11D and MW-13D. The locations of these wells are illustrated in Figure 1-2. These wells were installed to further evaluate the lateral extent of the COCs in the bedrock. Groundwater samples were collected from each of these wells following installation and submitted to CASI for analysis of VOCs by NYSDEC method ASP 91-1.

During May 1996, groundwater samples were collected from all monitoring wells on-site and submitted to CASI for analysis of VOCs by NYSDEC method ASP 91-1. The analytical data from these two sample events, as well as, all previous analytical data for these wells are summarized in Table 1-1.

1.4 SITE GEOLOGY AND HYDROGEOLOGY

Information regarding geologic and hydrogeologic conditions at the site was obtained, in part, from the 1995 BB&L report. These data have been supplemented with the results of monitoring well installations and analytical testing conducted by WCC in 1996.

1.4.1 Geology

The investigation area is located in the Central Lowland physiographic province (Bloom, 1978). In Central New York, this province is generally characterized by low surface relief, unconsolidated overburden derived from glacial deposition, and bedrock consisting of east-west striking, gently southerly dipping Ordovician to Upper Devonian sedimentary rocks.

The soil is classified as Ovid silt loam, which is believed to have been derived from a layer of lacustrine silt and clay. The soil is typically silty at the surface with a silty-clay substratum, and generally exhibits low permeability (United States Department of Agriculture [USDA], 1958).

The bedrock beneath the site consists of Upper Silurian dolomites, including the Akron Dolostone and the Bertie Formation (Rickard & Fisher, 1970). These rocks are generally light gray, massive, crystalline, vuggy, mottled, and locally gypsiferous. Structurally, the units are relatively undeformed and dip consistently and gently to the south, but also exhibit open folds, minor faults, steeply dipping joints, and other minor fractures of varying orientation (Engelder & Geiser, 1980). The joints and fractures provide secondary porosity and are probably the principal pathways for groundwater flow through the rock.

Surface drainage is to the south and south-west towards Beaver Creek, which passes approximately 100 ft south of Wade's SureFine Market (Figure 1-2). Beaver Creek is a tributary of Mud Creek, which flows west into Ganargua Creek, which drains northward into the Erie Canal. Mud Creek passes under Route 96 approximately one mile west of the site.

The thickness of the overburden deposits increases from the GTI site to the area south of Route 96. Overburden thickness ranged from 19.7 ft at MW-6D to 30.2 ft at MW-7D and 25.6 ft at MW-10D. In general, the overburden thickness increases to the south and west before decreasing slightly near Beaver Creek.

The overburden materials encountered at the ground surface are generally heterogeneous, consisting of varying amounts of brown silt, sand, and clay, except at the MW-10 cluster, in which fill was encountered to a depth of approximately 12.3 ft. Silt was typically the main soil component and the clay and sand contents varied from high to low. Sand was typically present as moderately well-sorted seams of varying thickness. The gravel content generally remained low and typically exhibited a rounded to sub-rounded character.

The bedrock surface was encountered at depths ranging from approximately 20 ft at MW-6D to 30 ft at MW-7D. The bedrock surface was generally found to be soft and weathered, based on auger penetration. The top of bedrock appears to dip towards the south and southwest from the GTI site across Route 96. Beneath the weathered zone, competent, light gray to green, massive dolomite bedrock was encountered. Core samples exhibited crystallized to non-crystallized vugs, trace fossils, local iron staining of joint faces, fractures with a variety of orientations, and broken rock zones, some containing fractures or joints. Fractures were observed in core samples from all bedrock coreholes drilled during this investigation. Some fracture surfaces exhibited iron staining; other fractures were filled with black mineralization. Most of the fractures, however, appeared to be free from infilling or secondary mineral deposition, and probably act as conduits for groundwater flow.

1.4.2 Hydrogeology

Information regarding hydrogeologic conditions has been obtained by regular water level measurements and hydraulic conductivity testing of five overburden and five bedrock monitoring wells. A staff gauge was installed in Beaver Creek to correlate surface water elevation with the groundwater surface elevation. Groundwater and surface water elevation data are summarized in Table 1-2.

Water level data from wells MW-5S through MW-10S were used, along with water level data for Beaver Creek, to determine the groundwater flow pattern in the overburden. Shallow groundwater flow based on the December 19, 1994 and the May 29, 1996 water level measurements are illustrated on Figures 1-3 and 1-4, respectively. The overburden monitoring wells are fully screened in the till overburden. The general direction of groundwater flow in the shallow water-bearing zone appears to be from the GTI site to the south-southwest, across Route 96 and the Wade property. The steepest gradient is to the south in the vicinity of MW-6S and MW-8S. Based on the December 19, 1994 surface water and groundwater elevation data, Beaver Creek is locally gaining overburden ground water from the north.

Water level data from wells MW-1, MW-3, MW-4, and MW-5D and from off-site wells MW-6D through MW-10D were used to evaluate the bedrock groundwater flow pattern. Figures 1-5 and 1-6 illustrate the bedrock groundwater flow for the December 19, 1994 and the May 29, 1996 measurement events. The direction of groundwater flow appears to be in two general directions, based on the low groundwater elevation observed at MW-7D. Groundwater flow in the bedrock may flow to the south-southwest from the GTI site towards MW-8D or to the west-southwest towards MW-7D. BB&L theorized that the significantly lower groundwater elevation observed at MW-7D might be due to the higher rock quality density (RQD) observed in the rock coring that is present in the sandpack interval and the presence of a broken rock zone near the base of the corehole that may act as a drain to a deeper bedrock water-bearing zone. The anomalously low water level measurements from MW-7D suggest that this well may be completed in a deeper water-bearing zone than the other bedrock wells. This groundwater condition will be monitored in the future.

In 1994, the bedrock water level at well MW-10D was slightly below the surface water level for Beaver Creek, and BB&L concluded that bedrock groundwater did not have the potential to discharge to Beaver Creek at this location. The May 1996 measurements for MW-10D were higher than the elevation of Beaver Creek, suggesting that discharge from the bedrock water-bearing zone to Beaver Creek may occur.

As illustrated on Table 1-2, groundwater elevation data from several sampling events indicate that the vertical hydraulic gradient is downward, from the overburden to the bedrock zone, at the MW-5, MW-7, MW-8 (decommissioned) and MW-9 nested pairs. The same data indicate a slight upward vertical gradient at the MW-6 monitoring well cluster. The maximum downward potential head difference was 26.8 ft, observed at the MW-7 monitoring well cluster. The water level in MW-7D is anomalously low, suggesting that this well may be completed in a deeper water-bearing zone than the other bedrock wells.

BB&L performed slug testing of all the wells that they installed to evaluate the hydraulic conductivity. Values reported for the overburden wells were on the order of 1×10^{-4} cm/sec. The hydraulic conductivity of the bedrock water-bearing zone was reported to be on the order of 1×10^{-3} cm/sec. The value reported for the bedrock likely reflects the permeability of the fracture zones within the bedrock; the matrix of the dolomite bedrock may be several orders of magnitude less than the fracture zones. The yield from bedrock wells might decrease significantly once the fracture zones are dewatered.

2.0
DESCRIPTION OF IRM OBJECTIVES

The Work Plan has been designed to:

- Present a discussion of the data quality objectives for the IRM Program. Additional data needed to identify these objectives will also be identified during this process.

- Describe the IRM activities, including site preparation, equipment installation, field sample collection methods, laboratory analysis, waste characterization and handling procedures, decontamination procedures, and site restoration procedures.

- Summarize the elements of the IRM Field Sampling Plan (FSP), the IRM Quality Assurance Project Plan (QAPP), and the Health and Safety Plan (HSP), which are included as appendices to this Work Plan. These summaries will focus on the general objectives of each document.

- Provide an overview of the IRM report and its content.

- Present an overall schedule of task implementation and deliverable submittals.

- Present a listing of key project personnel, their responsibilities, and a summary of key WCC personnel qualifications.

- Describe contingency planning measures to be implemented in the event that any element of the IRM Program fails to operate in accordance with the NYSDEC-approved IRM Work Plan.

The overall objective of the IRM is protection of human health and the environment. This objective will be achieved by:

- Reducing the off-site migration of groundwater until groundwater quality data from on-site wells indicate steady state or asymptotic levels are achieved;

- Evaluating whether the source area continues to contribute to degradation of groundwater quality and, if so, whether source control measures should be implemented; and,

- Monitoring the IRM systems and existing wells to verify that the performance objectives are being achieved.

Review of existing data, collection of additional site characterization data, and use of best engineering judgment will be used to develop and implement the IRM. Monitoring data will then be used to evaluate and optimize system performance.

3.0 DESCRIPTION OF INTERIM REMEDIAL MEASURE ACTIVITIES

3.1 PROPOSED IRM FOR GROUNDWATER

The selected groundwater IRM technology consists of a network of extraction wells at the southwestern border of the property downgradient of the source area. The proposed well locations are illustrated on Figure 4-1. These extraction wells will remove groundwater, forming a hydraulic barrier to control the migration of the groundwater plume and prevent further off-site migration. Groundwater will be discharged into the local sanitary sewer for ultimate treatment at the POTW in accordance with a discharge agreement between the Town of Farmington and GTI. A copy of this agreement is included as Appendix D.

Each recovery well will be located in the undeveloped parcel of land in the western portion of the site. The well configuration was determined using the results of the hydraulic conductivity tests performed by BB&L as part of their 1994 investigation activities, and modeling of the unconsolidated water-bearing zone using a two dimensional model. For modeling purposes, the arithmetic mean of the BB&L hydraulic conductivity data (2.9×10^{-3} cm/sec) was used, along with an anticipated yield of 5 gallons per minute (gpm) per well for the duration of the IRM activities. These results indicated that three wells should be sufficient to capture groundwater downgradient of the source area and form an effective hydraulic barrier in both the shallow, unconsolidated materials and the upper bedrock. The modeled radius-of-influence of each well was approximately 25 to 30 feet per well.

Groundwater will be recovered from the wells using submersible electric pumps. A control panel will be installed inside the GTI building and electric power will be run from the building to the various wellheads. The pumps will discharge through pitless adapters to a below-grade, common header. This header will be designed such that additional wells, if monitoring indicates the capture zone needs to be expanded, can be readily plumbed into the line. Also the line can be easily cleaned to remove scale and other deposits. The header will discharge all recovered groundwater to the sanitary sewer under a discharge agreement with the Town of Farmington.

Sampling ports and totalizing flowmeters will be installed on each of the recovery wells. A sampling port and totalizing flowmeter will also be installed on the common header. The frequency and type of monitoring will be specified in the discharge permit. Sampling and monitoring activities are further discussed in Section 3.3 of this Work Plan.

All recovery wells will be constructed of 4-inch diameter PVC well materials in minimum 12-inch diameter boreholes in the unconsolidated materials and minimum 8-inch diameter boreholes in the dolomite bedrock. The casing diameter allows for installation of various models of recovery pumps and the relatively large borehole diameter will maximize groundwater recovery and the associated radius of influence. Well screens will be approximately 20 feet and will straddle the soil-bedrock interface. The slot size of the well screens will be selected based on grain size analysis of soil samples collected during the source area investigation (Section 3.2). The solid riser pipe will consist of Schedule 40 flush threaded blank PVC casing. Recovery well drilling, construction and installation are further discussed in the FSP.

In addition to the proposed recovery wells, two pairs of nested piezometers will also be installed as part of the IRM. These nested pairs, coupled with the existing MW-5S/5D nested pairs, will be located approximately midway between adjacent recovery wells to monitor the depression in the piezometric surface in both the shallow and the bedrock water-bearing zones. The piezometers will be constructed of 1-inch diameter PVC, with 2-foot-long screened sections to monitor discrete subsurface intervals. Piezometer completion is more fully discussed in the FSP.

Pumping test data from a single well can be useful to estimate radius-of-influence and yield of an extraction well network, but operation of the extraction system will produce better data, due to the extended period of operation and the actual, rather than theoretical, interaction of a network of recovery wells. The IRM program for the GTI facility has been designed to facilitate a results-oriented monitoring program that has been designed to include contingencies for expansion of the extraction system.

The groundwater IRM will be operated for a 6-month performance evaluation period. During this period, water levels will be monitored on a monthly basis (weekly for the first month), and one groundwater sampling event will be conducted at the end of the 6-month performance period. If water level monitoring indicates that insufficient groundwater control is being achieved, then the design will be optimized by increasing pumping rates, and/or by installation of additional recovery wells with the lateral spacing and well depths modified.

3.2 PROPOSED IRM FOR SOURCE AREA EVALUATION

Based on recent analytical data obtained from MW-2 in May 1996, which contained relatively low concentrations of VOCs, much of the original source material may no longer be present in the soil. The VOC source material appears to have been lost primarily to volatilization to the atmosphere, with some degradation and/or dissolution into the shallow water-bearing zone. In order to further evaluate this hypothesis, a soil boring will be drilled within the source area. An analytical soil sample will be collected from above the water table and analyzed for VOCs.

The source area soil boring will be located adjacent to MW-2 and will be drilled with minimum 8.25-inch hollow-stem augers. This boring will be advanced to bedrock, and then a rollerbit will be used to further advance the boring approximately 15 feet into the bedrock. A 4-inch well will be installed in this borehole, with the screened section installed fully within the bedrock interval. This well will be used to evaluate the bedrock groundwater quality beneath the source area.

In the event that either the soil sample or the groundwater sample contain significant levels of VOCs, remedial measures may be implemented in the source area. If significant VOCs are encountered in the unsaturated zone, additional delineation of the lateral extent will be performed

MW-2D can readily be converted to a groundwater recovery well, if warranted. A submersible electric pump would be installed in this well and it would be plumbed into the discharge header. This well will be used for recovery purposes, if characterization data indicates it will reduce the expected period of operation of the IRM and control the source area groundwater plume.

3.3 PROPOSED IRM FOR SITE MONITORING

Groundwater samples will be collected from all on-site and off-site wells on a semi-annual basis for the first two years of the IRM and on an annual basis thereafter to monitor the progress of the IRM program. In addition, samples of soil and groundwater will be collected during the IRM installation activities in order to characterize the waste materials for disposal.

The primary means for gauging the effectiveness of the hydraulic barrier is by measurement of water levels in existing wells and piezometers to be installed as part of this Work Plan. Water levels will be measured on a weekly basis during the first month of system operation and on a monthly basis thereafter to confirm that a continuous zone of groundwater depression exists along the length of the hydraulic barrier, and that this zone of influence extends vertically to influence the impacted groundwater that has been detected within the bedrock water-bearing zone. The system will be operated for a 6-month performance period to evaluate its effectiveness. It is anticipated that groundwater quality monitoring data will eventually indicate that steady state conditions (asymptotic levels) have developed, such that additional groundwater recovery will not improve groundwater quality. The IRM will be discontinued when asymptotic levels are observed in on-site monitoring wells.

Effluent samples and flow measurements will be collected for analysis in accordance with the frequency negotiated with the POTW and the conditions of the discharge permit. If GTI elects to discharge treated effluent to surface water, sampling and monitoring will be conducted in accordance with the terms and conditions of the SPDES permit.

3.4 SITE PREPARATION

Prior to beginning any of the IRM activities, the necessary construction and operating permits will be obtained from the appropriate agency. These permits may include, but are not limited to, the following:

• Building permits;	Required for the installation of treatment trenches, electrical power lines, and treatment system building
• Well installation permits;	Required for the installation of recovery wells
• Discharge Permit	Required for discharge to the sanitary sewer

In addition to obtaining the necessary permits, the following areas will be designated for use prior to implementing any field activities:

- Field equipment decontamination area;
- Personnel decontamination area; and,
- Field office area.

Available space within the GTI facility should be sufficient for a field office for site and NYSDEC personnel.

3.5 DECONTAMINATION OF PERSONNEL AND EQUIPMENT

All equipment used during the field investigations at the site will be cleaned between uses. Cleaning of equipment is performed to prevent cross-contamination between samples and to maintain a clean working environment for all personnel. Cleaning of sampling equipment will be performed according to procedures described in the QAPP.

3.6 WASTE HANDLING AND CHARACTERIZATION PROCEDURES

Investigation Derived Waste (IDW; e.g., drill cuttings and trench spoils from excavation of the discharge header) will be containerized in rolloffs or drums and stored at a designated on-site area pending analysis for disposal characterization. Samples of these materials will be collected for disposal characterization. Samples will be analyzed for VOCs via NYSDEC Method 91-1. Analytical samples will consist of one grab sample of material from each of the containers.

All project wastes will be managed, transported, and disposed in accordance with State and Federal Regulations. The final disposition of the containerized, potentially hazardous IDW will be determined following receipt of the disposal characterization analysis. These materials will be considered F001 waste materials unless confirmatory analysis indicates otherwise. It is anticipated that materials that do not contain any detectable VOCs will not require disposal as hazardous waste. Since the source area was relatively localized, much of the excavated soil can likely be reused as trench backfill or otherwise be managed as non-hazardous. During trench excavation, soil removed will be screened for presence of VOCs. If observations indicate the soil does not contain significant concentrations of VOCs, it will be replaced in the trenches or stockpiled in undeveloped portions of the property. Materials that contain elevated concentrations of VOCs will be managed as F001 hazardous waste, unless waste classification testing indicates otherwise. Characterization data for these wastes will be compared with the Universal Treatment Standards to determine whether the material is restricted from land disposal.

All nonhazardous IDW (e.g., boxes, drinking cups, PVC wrappers etc.) will be bagged and kept separate from the drummed IDW. The nonhazardous IDW will be transported off-site for disposal as solid waste.

All monitoring well development and purge water will be discharged to the POTW through the sanitary sewer in accordance with the discharge permit. Recovered groundwater will also be discharged to the POTW in accordance with the discharge permit. As noted in Section 6.0, if the POTW surcharge for the groundwater discharge becomes significant, GTI may elect to discharge treated groundwater to surface water under an SPDES permit.

4.0 SAMPLING AND ANALYSIS PLAN

The Sampling and Analysis Plan is comprised of a Field Sampling Plan (FSP), a Quality Assurance Project Plan (QAPP), and a Health and Safety Plan (HSP). Copies of these documents are provided in Appendices A, B and C, respectively. The HSP is discussed in Section 5.0 of this Work Plan.

4.1 FIELD SAMPLING PLAN

The FSP details the protocol for collection of IRM field data. In addition to the procedures for sampling of monitoring wells and groundwater IRM effluent, the FSP discusses the construction and installation of piezometers and recovery wells and the collection of soil samples during drilling activities.

4.2 QUALITY ASSURANCE PROJECT PLAN

The purpose of the QAPP is to achieve the specific data goals of the project by describing the minimum procedures to assure that the precision, accuracy, sensitivity, completeness, comparability and representativeness of the collected data are known and documented and that the results are accurate and representative of field conditions. This document presents the policies, organization, objectives, functional activities, and specific quality control (QC) and quality assurance (QA) procedures designed to achieve the specific data quality goals associated with the IRM program.

4.3 IDENTIFICATION OF LABORATORY

The laboratory selected to perform the analytical testing for this project is Columbia Analytical Services, Inc. (CASI). CASI (formerly known as General Testing Corporation) has performed the majority of the analytical testing for the GTI Site and has an office located in Rochester, New York. Additional information pertaining to the qualifications of CASI is presented in the QAPP.

4.4 LABORATORY DATA VALIDATION

All analytical data will be validated according to the procedures presented in the QAPP. CASI and WCC will independently validate all laboratory data prior to its use in evaluating site conditions.

5.0
HEALTH AND SAFETY PLAN

The Health and Safety Plan (HSP) is included in Appendix C. This document presents the guidelines and requirements for health and safety of field personnel during performance of field activities. The HSP will apply to all field personnel, subcontractors and other contractor personnel who are involved with on-site activities. Mr. Greg Horton, the WCC Great Lakes Health and Safety Officer, will approve all site work. All work will be conducted in compliance with applicable OSHA regulations, including 29 CFR 1910 (General Industry Standards) and 29 CFR 1926 (Construction Industry Standards). The HSP will be administered by a WCC Corporate Health and Safety Officer, the Health and Safety Officer, the Project Manager, and a Site Safety Officer.

6.0 CONTINGENCY PLANNING MEASURES

Water levels will be measured monthly (weekly during the first month) in the various monitoring wells and piezometers to evaluate the zone of influence of the groundwater IRM. In addition, analytical samples will be collected on a semi-annual basis from all monitoring wells during the first two years of system operation. The groundwater IRM will be operated on a 6-month performance basis to evaluate whether the objectives of the IRM are being achieved. If the results of the evaluation indicate that these objectives are not being met, then additional contingency measures will be implemented in order to meet these objectives. If the groundwater recovery system does not form an adequate hydraulic barrier, as evidenced by groundwater monitoring and water level data, the following options may be implemented, as appropriate:

- Increasing the yield from individual extraction wells, if possible, to increase the radius of influence;

- Conversion of proposed 4-inch monitoring well MW-2D to a groundwater recovery well to more aggressively address source area conditions; or

- Installing additional recovery wells to expand the lateral or vertical capture zone of the barrier.

At this time, the anticipated recovery system yield from the three proposed IRM recovery wells is 15 gpm. At this flow rate, direct discharge to the POTW may be the most readily implemented, cost-effective treatment and disposal option. However, at higher flow rates, the surcharge levied on this discharge may render this option unfavorable. In that event, GTI will evaluate on-site measures, to either reduce the surcharge or route the discharge to surface water. Surface water discharge would be performed under a State Pollutant Discharge Elimination System (SPDES) permit.

Based on the shallow depth to groundwater and the relatively low levels of VOCs detected in MW-2 during the May 1996 groundwater sampling event, active remediation in the source area is not anticipated.

7.0
PROJECT SCHEDULE

The proposed schedule for completion of the IRM Program is presented below. Key project milestones included:

Milestone	Time After Approval of Order
• NYSDEC approval of the IRM Work Plan	-----
• Approval and signature of a consent order for the IRM by NYSDEC and Griffin Technology, Inc.	-----
• Mobilization for field work, and applications for required permits	30 days
• Installation of groundwater recovery system	60 days
• Performance evaluation period	240 days
• Sampling and analysis for performance evaluation period	270 days
• IRM performance report to NYSDEC	300 days

The schedule presented above assumes that:

- All required permits, including the discharge to POTW permit, can be promptly obtained.
- Comments and issues raised by NYSDEC can be promptly resolved.

It should be recognized that substantial delays in obtaining permits, or in obtaining NYSDEC approvals, may delay the project schedule, possibly resulting in loss of the 1996 construction season. Griffin will make all reasonable efforts to meet schedule commitments within its control.

As discussed in Section 8.0, NYSDEC will be informed of any delays in the project schedule through both formal progress reports, and informal discussions with NYSDEC's project manager.

8.0
PROJECT COMMUNICATION

8.1 PROGRESS REPORTS

The IRM installation will likely be completed in less than two months, but operation and maintenance of the groundwater recovery system may be performed for several years. In accordance with the terms of the Order on Consent, periodic progress reports will be prepared for submittal to NYSDEC. The progress reports will include discussion of:

- Actions which have been taken pursuant to the Order during the reporting period;
- Results of sampling and tests and all other data received or generated, including the results of effluent sampling and groundwater monitoring;
- All actions, including data collection and implementation of work plans, that are scheduled for the next reporting period;
- Information related to progress at the site, including percentage of completion, unresolved delays encountered or anticipated that may affect the future project schedule, and the efforts made to mitigate these delays; and,
- Modifications to any work plan that GTI has proposed to the Department or that the Department has approved.

The information summarized in the progress reports, as well as other technical issues, will also be discussed verbally with the NYSDEC Project Manager on a more frequent basis to encourage communication during all phases of the project.

8.2 SCHEDULED PROJECT MEETINGS

GTI will provide the Department with advance notice of scheduled project meetings in accordance with the Order of Consent. NYSDEC representatives will be allowed to attend any of these meetings. Progress meetings will also be held with the NYSDEC periodically throughout the duration of the project.

8.3 IRM REPORTS

Upon completion of the installation of the IRM program components, a report will be submitted to the NYSDEC. This report will document activities performed under this Work Plan, including design drawings, analytical data, well logs and pertinent correspondence and documentation used in support of the Work Plan activities. Upon completion of the 6-month performance period, a supplemental IRM Report will be submitted to NYSDEC. This report will be sealed by a Professional Engineer registered in the State of New York.

8.4 REVISION OF SUBMITTALS

GTI will revise submittals to the Department in accordance with the provisions of the Order of Consent.

9.0 PROJECT ORGANIZATION

A project organization chart for the GTI site IRM activities is shown in Figure 9-1. A detailed description of the project's key personnel and their responsibilities is included in Section 3.0 of the QAPP (Appendix B of this Work Plan). The following is a list of key WCC personnel assigned to the GTI IRM effort:

GTI Project Manager	Robert Urland
Project Director and Peer Review:	James F. Roetzer
Project Manager:	Martin L. Schmidt
Corporate Health and Safety Officer:	Gregory M. Horton
QA/QC Officer:	Anthony J. Misercola
Site Health and Safety Officer:	William E. Clayton
Field Team Supervisor	William E. Clayton

Resumes of each of the above key personnel are also presented in the QAPP.

10.0
REFERENCES

1. USEPA, 1987, "A Compendium of Superfund Field Operations Methods". EPA/540/P-87/001, December 1987.

2. USEPA, 1989, "Region II CERCLA Quality Assurance Manual - Revision 1". October 1989.

3. USEPA, 1986, "RCRA Groundwater Monitoring Technical Enforcement Guidance Document". OSWER Directive-9950.1, September 1986.

4. Blasland Bouck & Lee, 1995, Off-Site Ground Water Investigation Report Prepared by BB&L for NYSDEC, February 1995.