Interim Remedial Action Report

Colesville Landfill, Broome County,
New York Site ID No. 704010

ARCADIS

Infrastructure, buildings, environment, communications

CERTIFICATION STATEMENT

On behalf of Broome County, I hereby certify that the remedial actions documented in the Interim Remedial Action Report were completed in conformance with the March 1991 Record of Decision, as modified by the Explanation of Significant Differences of September 2000 and July 2004, and the remedial design plans and specifications, as modified by the as-built documentation.

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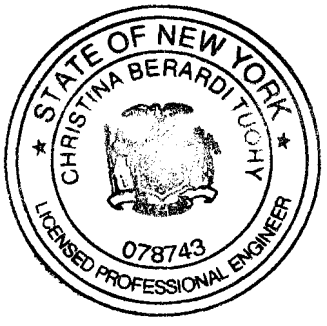

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Disclosure Statement

The laws of New York State require that the corporations which render engineering services in New York be owned by individuals licensed to practice engineering in the State. ARCADIS cannot meet that requirement. Therefore, all engineering services rendered to Broome County in New York are being performed by ARCADIS Engineers and Architects of New York, P.C., a New York Professional corporation qualified to render professional engineering in New York. There is no surcharge or extra expense associated with the rendering of professional services by ARCADIS Engineers and Architects of New York, P.C.

ARCADIS is performing all those services that do not constitute professional engineering, and is providing administrative and personnel support to ARCADIS Engineers and Architects of New York, P.C. All matters relating to the administration of the contract with Broome County are being performed by ARCADIS pursuant to its Amended and Restated Services Agreement with ARCADIS Engineers and Architects of New York, P.C.

1. Introduction

The Colesville Landfill (Site) is located in the Town of Colesville, Broome County, New York. The property on which the landfill is situated is generally bounded by East Windsor Road to the south and by unnamed tributaries of the Susquehanna River to the west-northwest (North Stream) and to the east (South Stream) (Figure 1). The property consists of approximately 113 acres, 35 of which, located in the northern and western areas, were utilized for landfill operations.

Waste disposal operations were conducted at the Site from 1969 to 1984. The Town of Colesville owned and operated the Site from 1969 to 1971. In 1971, Broome County became the owner of the Site. Broome County operated the landfill from 1971 until it was closed in 1984 (Wehran 1988).

The landfill was primarily used for the disposal of municipal solid waste. However, between 1973 and 1975, industrial waste consisting primarily of drummed aqueous dye wastes, as well as organic and chemical solvent mixtures, were also disposed at the landfill (Wehran 1988). The primary disposal practice utilized during the operational life of the landfill was the trench method. Approximately 93 percent of the material disposed at the Site was disposed in this way. The remaining seven percent was disposed by utilizing the area method (Wehran 1988).

In 1983, samples collected by the Broome County Health Department from residential wells in the vicinity of the site indicated that the landfill was impacting groundwater. The sample results prompted the Broome County Department of Public Works to install carbon filters at the affected residences, to initiate a residential well monitoring program, and to perform further investigation of the landfill in 1983 and 1984. These investigations showed elevated levels of a number of volatile organic compounds (VOCs) in the groundwater.

The Site was proposed for inclusion on the Superfund National Priorities List (NPL) in October 1984 and was listed on the NPL in June 1986. The New York State Department of Environmental Conservation (NYSDEC) was designated the lead agency for the site.

In 1990, a Remedial Investigation/Feasibility Study (RI/FS) was completed by Broome County and GAF Corporation, potentially responsible parties (PRPs) identified for the Site, pursuant to an Order on Consent (Index No. T010687) issued by the NYSDEC. Several classes of VOCs were found to be present in the site groundwater, including

aromatics such as benzene, toluene, and chlorobenzene; chlorinated aliphatics, such as trichloroethene (TCE) and its degradation products, including cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC); and 1,1,1-trichloroethane (TCA) and its degradation products, including 1,1 dichloroethane (1,1-DCA), chloroethane (CA) and the transformation product 1,1-dichloroethene (1,1-DCE). In addition, VOCs were found to be present in spring water located adjacent to the North Stream and at a location approximately 375 feet downgradient of the southern landfill boundary.

In 1991, based on the results of the RI/FS, the Environmental Protection Agency (EPA) issued a Record of Decision (ROD) that called for, among other things, capping the landfill, treating contaminated groundwater, and providing for a new water supply system for the affected residences. Construction of the landfill cap was completed in November 1995.

This Interim Remedial Action Report (IRAR) addresses the following Operable Unit (OU) activities:

- Remediation of groundwater;
- Eliminating the potential for direct exposure with contaminated spring water;
- Providing a new water source for the affected residents;
- Emplacing deed restrictions to ensure that no disturbance of the landfill cap is allowed that could create an unacceptable risk to human health; and,
- Emplacing deed restrictions to ensure that the installation and/or use of groundwater supply wells in the glacial aquifer is prohibited on affected properties.

This report has been prepared in accordance with the guidelines set forth in the EPA's Office of Solid Waste and Emergency Response (OSWER) Directive titled "Close Out Procedures for National Priorities List Sites" dated January 2000.

This IRAR will be updated upon issuance of a no further action (NFA) designation for the Site, and will be resubmitted as the final Remedial Action Report.

2. Operable Unit Background

In addition to the multimedia cap on the landfill, the ROD remedy for the site included the collection and treatment of contaminated groundwater, the provision of new deep wells for six affected residences (located on five parcels), and imposition of deed restrictions to prevent the installation of drinking water wells and restrict activities that could affect the integrity of the cap.

The PRPs began the design of the selected remedy in 1991 and completed the construction of the cap in 1995. The alternate water supply well design was approved by the NYSDEC in 1995, but implementation of the design was delayed while Broome County attempted to purchase the five affected properties. The County purchased three of the five affected properties. Two of the purchased properties are vacant and their wells have been abandoned. One of the purchased properties is currently occupied by the former property owner, who has a life tenancy on the property. Of the two remaining properties that the County has not purchased, one is vacant and the other has two occupied structures. On the occupied property, the County abandoned an old well and installed two new bedrock wells, one for each structure. Deed restrictions to prevent the installation of drinking water wells in the impacted glacial aquifer are in the process of being recorded for the parcels purchased by Broome County (Parcel I – former Lee residence; Parcel II – former Smith residence; Parcels III and IV – comprising the footprint of the landfill cap; and Parcel V – former DeFreitas residence). Deed restriction agreements have been presented to the owners (Charles Scott and Harry Ray Scott) of the two remaining properties that the County has been unable to purchase. At this time the owners of these two parcels have not signed the deed restriction. The unexecuted deed restriction agreements for County owned and privately held parcels are provided in Appendix A.

In December 1995, the NYSDEC and EPA put the final groundwater design on hold pending consideration of an alternative remedy. The PRPs conducted design-related aquifer tests at the site which demonstrated that extracting contaminated groundwater at the site would not likely be an effective means of remediating groundwater in a reasonable timeframe. Specifically, the aquifer tests determined that the aquifer has a low permeability that would severely limit the yield and area of influence of the extraction wells. In addition, the PRPs evaluated alternative groundwater technologies and performed a pilot study to evaluate the effectiveness of enhanced reductive dechlorination (ERD). ERD involves the injection of a carbohydrate solution into groundwater to establish an anaerobic in-situ reactive zone (IRZ) which accelerates the microbial degradation of VOCs. Based on the results of the pilot study, it was

concluded that this technology, in combination with the installation of downgradient extraction wells, as called for in the ROD, offered the most technically feasible approach to restoring groundwater quality in a reasonable timeframe. The EPA issued an Explanation of Significant Differences (ESD) in September 2000 to modify the remedy for restoring groundwater quality.

The groundwater remedy has been designed to restore groundwater quality through the use of ERD processes within the core of the VOC plume, and to rely on monitored natural attenuation toward the south of the landfill, where groundwater quality meets the maximum contaminant levels (MCLs) prior to reaching the Susquehanna River. The groundwater remedy, consisting of a pump-and-treat (PT) system and automated reagent injection (ARI) system, was constructed during the summer of 2002. System startup occurred in September 2002.

The EPA conducted a five-year review in April 2000 to ensure that the remedial action remains protective of public health and the environment and is functioning as designed. One conclusion of the five-year review of the remedial action was that there was insufficient post-capping data to determine whether contaminant concentrations in the spring water were an ongoing problem. Water levels in the vicinity of the landfill have been relatively stable since completion of the cap. Since the springs are a surface expression of the water table intersecting land surface, the stable water levels have had the effect of maintaining a relatively consistent flow from the identified springs. The consistent flow from the springs, despite the fact that the landfill cap prevents the infiltration of precipitation, indicates that the springs are probably a natural occurrence at the Site. Although the spring flow has been relatively stable, the quality of the spring water has shown a general improvement since completion of the landfill cap.

Because the landfill cap and groundwater remedy were not presently eliminating the potential for direct exposure to impacted spring water, the EPA requested an evaluation of spring water corrective actions. Based on historic spring water quality, spring data collected since the five-year review, and post-capping water level data, potential remedial actions were evaluated that would be protective of human health and the environment.

In July 2004 the EPA issued a second ESD to modify the remedy such that water from two identified springs would be prevented from presenting a direct exposure threat or discharging to nearby streams. One spring (SP-4), located along the bank of the North Stream, was addressed with the installation of a subsurface stone collection trench and drainage layer to prevent spring water from exfiltrating above the land surface. A

second spring (SP-5), located approximately 375 feet to the south of landfill, is being addressed by having the spring water pass through an existing concrete structure that was modified to contain a sand pre-filter and liquid-phase granular activated carbon (LPGAC).

Long-term monitoring at the site includes periodic inspection of the cap and maintenance, as necessary, and a monitoring program to provide data to evaluate the effectiveness of the groundwater remedial effort. The monitoring program also includes the collection and analysis of surface water and spring water samples. Figure 2 provides the locations of monitoring well, surface water, and spring water sampling locations.

3. Construction Activities

This section describes the activities associated with construction of the Groundwater Remediation System, the SP-4 and SP-5 spring remedies, and the residential supply wells.

3.1 Groundwater Remediation System

3.1.1 Construction Activities

The following section describes the construction activities associated with the Groundwater Remediation System. As discussed previously, the Groundwater Remediation System consists of two major components: 1) PT system; and, 2) an ARI system. Construction activities associated with the Groundwater Remediation System included: well installation and development, site preparation, treatment building erection and foundation installation, trenching, below grade pipe installation and backfilling, process equipment installation, system electrical and controls, and site work and restoration. Parratt Wolff, Inc. performed the majority of the drilling and development services related to the Groundwater Remediation System between September 11, 2000 and November 3, 2000. Integrated Technical Services, Inc. (ITS) performed the remainder of the construction activities between May 13, 2002 and October 4, 2002. The Groundwater Remediation System was brought permanently on-line on September 8, 2002. The final system inspection was conducted on October 4, 2002. All construction activities associated with the Groundwater Remediation System were conducted in accordance with the NYSDEC approved Groundwater Remediation System Design Drawings, and Technical Specifications and Bid Documents for Drilling Services, unless otherwise specified.

3.1.1.1 Well Installation and Development

The Groundwater Remediation System includes seventeen injection wells (ARI system) and three extraction wells (PT system). As discussed previously, the majority of the wells (injection wells IW-3, IW-4, IW-5, IW-6, IW-7, IW-8, IW-9, IW-10, IW-11, IW-12, IW-13, IW-14, and IW-15 and extraction wells GMPW-4 and GMPW-5) were installed and developed between September 11, 2000 and November 3, 2000. Five existing wells (injection wells GMMW-1, IW-1, IW-2, and PW-6 and extraction well GMPW-3) were redeveloped during the September through November drilling effort for use in the Groundwater Remediation System. Well construction details for all wells used in the Groundwater Remediation System are provided in Table 1.

Well drilling and development was conducted in accordance with Groundwater Remediation System Design Drawings, and Bid Documents for Drilling Services unless otherwise noted below.

There were two field changes made to the injection wells during Groundwater Remediation System construction. First, the originally specified two-inch diameter pitless adapters were replaced with four-inch diameter pitless adapters due to the lack of availability of the originally specified units. In order to accommodate installation of the four-inch pitless adapters, each injection well head was furnished with approximately five feet of four-inch diameter Schedule 40 polyvinyl chloride (PVC). Second, each of the one-inch diameter Schedule 80 PVC drop tubes was removed from the injection wells. Following the construction, it was determined that the drop tubes did not provide a significant benefit to operation of the ARI system. Furthermore, removal of the drop tubes decreased the maintenance requirements for the system.

3.1.1.2 Site Preparation

Site preparation included clearing and grubbing, installation of temporary erosion and sediment controls, and initial surveys. Clearing and grubbing was conducted in all areas to be affected by the construction activities. These areas included pipe trenching areas, the treatment building area, and overhead/below-grade utility areas. Temporary erosion and sediment controls (silt fence) were installed along the swale leading to the North Stream and along areas disturbed by the construction activities where overland runoff could have adversely affected public roadways or environmentally sensitive areas. Initial surveys were conducted in the treatment building and parking lot area to identify the treatment building and parking lot footprints, and to establish final grade elevations.

3.1.1.3 Trenching, Backfilling, and Below Grade Pipe Installation

Trenching and backfilling was conducted for the installation of below grade process piping associated with the Groundwater Remediation System. All pipe trenches were excavated and backfilled as specified in the Groundwater Remediation System Design Drawings and Technical Specifications, unless otherwise noted below. Trenches were installed to a minimum depth of five feet below grade (fbg) in all areas. Widths of the trenches varied between the two feet called for in the Groundwater Remediation System Design Drawings and Technical Specifications, and four feet due to unexpected field conditions (i.e., large cobbles/small boulders within trenching areas). Approximately 588 cubic yards (cy) of the soil excavated during trenching contained cobbles and boulders and consequently was determined unusable as backfill material. Subsequently, approximately 320 cy of clean borrow and 184 cy of additional pea gravel was brought on-site as a result of the unexpected subsurface conditions and unusable native backfill material. Backfill compaction testing and results are described in Section 5.1.1.1.

Below grade piping consisted of the PT system groundwater recovery lines, recovery pump pneumatic lines, ARI system reagent injection lines, and PT system treated water discharge line. Below grade piping was installed as specified in the Groundwater Remediation System Design Drawings and Technical Specifications, unless otherwise noted below. Specifically, the ½-inch diameter Schedule 40 carbon steel pneumatic lines originally specified were replaced with ½-inch diameter KiTEC composite pipe. KiTEC is an aluminum and polyethylene composite that is strong, flexible, frost and corrosion resistant, and avoids thermal expansion and deformation. KiTEC is more cost effective, and easier to install than the originally specified pneumatic piping. The four-inch Schedule 40 PVC PT system treated-water discharge line was relocated slightly from the originally specified location to maintain a positive downward slope and allow for gravity drainage of the treated effluent. Pressure testing procedures and results are described in Section 5.1.1.3. The locations of all below grade pipelines are shown on Figure 3.

3.1.1.4 Treatment Building Erection and Foundation Installation

The Groundwater Remediation System treatment building and foundation installation were constructed in strict conformance with the New York State building code requirements and, unless noted otherwise below, with the Groundwater Remediation System Design Drawings and Technical Specifications. Prior to, and during each concrete pour, a Broome County construction inspector was present to inspect the

foundation work. Immediately prior to the installation of the floor slab, two-inch rigid insulation (R-value= 10) was installed along the interior of the frost walls and extended an additional two feet within the perimeter of the floor slab. This modification was required to bring the treatment building into conformance with the New York State Energy Conservation code.

The treatment building skylights were removed from the original design because the electrical cost savings in lighting would not offset the electrical cost of additional heating required due to heat loss through the skylights. In addition, a concrete landing was poured four-inches below the man-door of the treatment building. This modification was required to bring the treatment building into compliance with the New York State building code.

Concrete construction quality control procedures and testing results are described in Section 5.1.1.2.

3.1.1.5 Process Equipment Installation

Process equipment associated with the PT system includes a low-profile air stripper (AS-100), a 2-hp blower (B-300), two cartridge filter houses (BF-400, BF-401), three pneumatic recovery pumps in wells GMPW-3, GMPW-4, and GMPW-5, treated water transfer pump (TP-400), an air compressor (AC-200), a 880-gallon treated water holding tank (HT-500), and associated piping and appurtenances. Process equipment associated with the ARI system include a 730-gallon cone-bottom mixing tank (MT-800), mixer motor and impellor (MM-800), a mix water transfer pump (TP-600), a raw molasses transfer pump (MP-700), a molasses mixture transfer pump (TP-900), two 615-gallon raw molasses storage tanks (ST-700, ST-701), and associated piping and appurtenances. All equipment was installed and tested in accordance with the Groundwater Remediation System Design Drawings and Technical Specifications, and the manufacturer's instructions. The originally specified raw molasses totes were replaced with two 615-gallon raw molasses storage tanks, which allowed for easier deliveries of raw molasses. The locations of equipment varied slightly from the Groundwater Remediation System Design Drawings to allow for easier access to equipment during maintenance activities. Figure 4 provides an as-built process and instrumentation diagram of process equipment, piping and appurtenances for the PT and ARI systems.

3.1.1.6 Electrical and Controls

Groundwater Remediation System electrical and controls include all electrical components, equipment, and wiring associated with operation of the treatment system and for building heating, ventilation and air conditioning (HVAC) and lighting. All electrical components and controls were installed in accordance with all applicable building and electrical codes, and unless noted otherwise below, with the Groundwater Remediation System Design Drawings and Technical Specifications. Following construction, a certified New York State Board of Fire Underwriters inspector inspected and approved all electrical wiring and control equipment.

During the construction, it was decided that a Supervisory Control and Data Acquisition (SCADA) system would provide more benefit than the originally specified autodialer. The SCADA system displays system alarms, allows for remote operation of the Groundwater Remediation System, and records system operational data.

During startup of the ARI system, it was realized that there was no mechanical means to control the flow of raw molasses from the raw molasses totes into the molasses mixing tank (MT-800). Therefore, a motorized ball valve was incorporated into the ARI system piping and corresponding controls were incorporated into the Main Control Panel (MCP).

3.1.1.7 General Site Work and Site Restoration

General site work and site restoration activities included the installation of the treatment building parking area, the installation of a six-foot high chain link fence, and restoration of all areas affected by the construction activities.

Following construction of the treatment building, a six-inch thick asphalt parking area was installed adjacent to the treatment building. The primary purpose of the parking area was to allow for the delivery of raw molasses. Compaction testing procedures and results for the parking area subbase are described in Section 5.1.1.1. Following installation of the parking area, a six-foot high chain link security fence was installed around the treatment building and parking lot with one 12-foot wide vehicle gate.

All areas disturbed by construction activities were restored to original or better condition. Site restoration included removing all construction wastes from the site, restoring vegetation in all affected areas, and installing erosion control matting over all revegetated areas. Non-biodegradable erosion control matting was installed over areas

not normally mowed prior to system construction. Biodegradable erosion control matting was installed over areas that were previously, or could potentially be mowed.

3.1.2 System Operation

This section briefly describes the operation of the Groundwater Remediation System. This section has been separated into the two main components of the Groundwater Remediation System which include: 1) the PT system, and; 2) the ARI system. A detailed description of the design criteria and system operation is provided in the "Groundwater Remediation System Engineering Report" (ARCADIS 2000).

3.1.2.1 Pump-and-Treat System

The PT system consists of three recovery wells (GMPW-3, GMPW-4, and GMPW-5) and associated pneumatic pumps that extract groundwater at approximately 1 gallon per minute (total). The pneumatic pumps deliver the extracted groundwater through one-inch diameter high-density polyethylene (HDPE) pipes to the treatment building, and into the top of the low-profile air stripper (AS-100). The low-profile air stripper off-gas is discharged through a six-inch diameter Schedule 40 PVC stack to the atmosphere. The treated groundwater collects in the low-profile air stripper sump, and is then pumped through two cartridge filter housings (BF-400, BF-401). Each of the two cartridge filter housings contains seven, five-micron filters that remove iron and silicate particulates. The treated groundwater is then either stored in the 880-gallon vertical holding tank (HT-500) or is discharged to the swale that conveys water to the North Stream.

3.1.2.2 Automated Reagent Injection System

The ARI system consists of two raw molasses storage tanks (ST-700, ST-701), a PT system effluent water holding tank (HT-500), and a mixing tank (MT-800) where the raw molasses and PT system effluent water are mixed prior to being pumped into 17 injection wells. The PT system effluent water, raw molasses and molasses/water solution are pumped with three separate pumps (TP-600, MP-700, and TP-900, respectively) and monitored with three separate flow meters (FT-601, FT-701, FT-901). The holding tank and mixing tank each have level switch controls that are integrated into the MCP and are monitored via the SCADA system.

The ARI system is initiated upon expiration of the injection system timer, which is set by the system operator. Upon initiation, a specified quantity of molasses solution is

pumped into each of the 17 injection wells by transfer pump TP-900. The MCP initiates a molasses solution mixing sequence when the level of molasses mixture in the mixing tank (MT-800) falls below level switch low (LSL-800). A mixing sequence begins by pumping treated water from the 880-gallon vertical holding tank (HT-500) into the mixing tank by transfer pump TP-600. This treated water is then mechanically mixed with raw molasses from the two 615-gallon raw molasses storage tanks (ST-700, ST-701) for 60 minutes via the mixer motor and impellor (MM-800). Raw molasses is transferred to the mixing tank (MT-800) by the raw molasses pump (MP-700). The quantity of raw molasses in the mixture is calculated based on a predefined molasses solution percentage set by the system operator. When the mixing sequence is completed, the injection sequence automatically resumes where it left off. Following completion of the injection sequence of the molasses solution, a rinse of treated groundwater is pumped from the 880-gallon vertical holding tank into each of the injection wells. The amount of rinse water specified for each injection well was determined by calculating one pipe volume for each of the injection pipelines.

3.2 SP-4 and SP-5 Spring Remedies

3.2.1 Construction Activities

The following section describes the construction activities associated with the SP-4 and SP-5 spring remedies. Boland's Excavating and Topsoil, Inc. (Boland's) performed the construction for the SP-4 spring remedy between July 1, 2004 and July 14, 2004. SP-5 spring remedy construction activities were performed by ARCADIS between September 24, 2003 and October 10, 2003 and by Boland's between July 1, 2004 and July 14, 2004. The final system inspections were conducted on September 1, 2004. All construction activities associated with the SP-4 spring remedy were conducted in accordance with the NYSDEC-approved Spring Area Maintenance Project Construction Drawings and Technical Specifications, unless otherwise specified. All construction activities for the SP-5 spring remedy were conducted in accordance with Spring Water Remediation Systems Design Drawings and Technical Specifications.

3.2.1.1 SP-4 Spring Remedy

Construction activities associated with the SP-4 spring remedy included: site preparation, excavation of native material, installation of four-inch diameter riprap, installation of a 12-inch diameter riprap stream bank protection area, backfilling of the SP-4 area, and site work and restoration. All work associated with the SP-4 spring remedy was conducted in accordance with the NYSDEC approved Spring Area

Maintenance Project Construction Drawings and Technical Specifications, unless otherwise specified.

During the initial site walkover for construction of the SP-4 spring remedy, additional spring water was observed in the vicinity of the originally defined SP-4 spring area. The additional affected area was approximately 50 feet long and 12 feet wide. This additional area was addressed in a similar manner to the original SP-4 spring remedy design. Specifically, the affected area was excavated to a depth of one foot below land surface (bls), backfilled with four-inch diameter riprap, covered with a native material/Broome County compost mix, and revegetated. The additional area was tied in to the originally specified riprap infiltration zone to ensure that the spring water would no longer exfiltrate above the land surface. An as-built site plan of the SP-4 spring remedy is provided as Figure 5.

3.2.1.2 SP-5 Spring Remedy

Construction activities associated with the SP-5 spring remedy included: site preparation, excavation of native material, installation of a sand pre-filter, installation of 350-pounds of LPGAC, installation of a well to collect a treatment system influent sample, below grade pipe installation and backfilling, installation of an aluminum cover, site work and restoration. Construction of the SP-5 Spring Water Remediation System was conducted in accordance with the NYSDEC-approved Spring Water Remediation Systems Design Drawings and Technical Specifications, unless otherwise specified below. ARCADIS performed the construction activities between September 24, 2003 and October 10, 2003.

There were two minor modifications made to the SP-5 spring remedy during its construction. First, the quantity of LPGAC installed within the existing concrete structure was decreased from 450-pounds to 350-pounds. This modification was required because the actual available space for LPGAC within the existing concrete structure was lower than initially anticipated. Second, the effluent discharge pipe was modified from the four-inch diameter HDPE pipe originally specified to a two-inch diameter Schedule 40 PVC pipe. This modification was required to protect the structural integrity of the existing concrete unit. Neither of the field modifications resulted in reduced performance.

Following the construction, it was noted during several site visits that treated effluent spring water was backing up in the riprap-lined outlet channel. It was also noted that an additional spring was emanating from the vicinity of a nearby fencepost. Therefore,

Boland's was contracted and performed additional maintenance activities between July 1, 2004 and July 14, 2004. The additional maintenance activities included expansion and regrading of the riprap-lined outlet channel, removal of the adjacent fencepost, the installation of a spring water collection trench to transfer spring water from the fencepost area to the existing LPGAC unit, installation of a topsoil cover over all riprap drainage areas, and revegetation of all disturbed areas. In addition, the existing land surface elevation was regraded in the vicinity of and just downgradient of the existing LPGAC unit to promote drainage of surface runoff (i.e., stormwater) away from the LPGAC unit. An as-built survey of the SP-5 spring remedy is provided as Figure 6.

3.2.2 System Operation

This section briefly describes the operation of the SP-4 and SP-5 spring remedies. A description of the design criteria and system operation for the SP-4 spring remedy was provided to the NYSDEC in the letter dated April 26, 2004. A detailed description of the design criteria and system operation for the SP-5 spring remedy was provided in the "Spring Water Remediation Systems Engineering Report" (ARCADIS 2003).

3.2.2.1 SP-4 Spring Remedy Operation

The SP-4 spring remedy consists of a riprap-lined infiltration bed, and engineering controls for erosion and sediment control and stream bank protection. The remedy prevents spring water from the SP-4 area from exfiltrating above land surface through the use of a high permeability riprap-lined infiltration bed. The spring water remains suppressed and is subsequently redistributed into the groundwater system. Twelve-inch diameter riprap was installed at the boundary of the North Stream to provide stream bank protection. Additional engineering controls included regrading and the establishment of vegetation to direct surface runoff away from the spring area. The spring water that is redistributed into the groundwater system is within the limiting flowlines of the Groundwater Remediation System, which will eventually treat groundwater in this area.

3.2.2.2 SP-5 Spring Remedy Operation

The SP-5 spring remedy consists of a spring water collection trench, a 350-pound LPGAC unit, a sand pre-filter, a lockable aluminum cover, a two-inch diameter Schedule 40 PVC discharge pipe, a riprap-lined infiltration bed, and engineering controls for erosion and sediment control. Spring water from the SP-5 spring area is first collected within the collection trench and/or the sand pre-filter prior to exfiltrating

land surface. Spring water collected within the trench is conveyed to the bottom of the concrete structure by gravity. The collected spring water then travels up through the LPGAC unit. Treated effluent is conveyed through 20 feet of two-inch diameter Schedule 40 PVC pipe into a below grade infiltration bed consisting of a four-inch diameter riprap layer approximately one and one-half feet thick, 14 feet wide and 14 feet long.

SP-5 Spring Water Remediation System operating parameters from system startup are provided in Table 2. As shown in Table 2, the operating flowrate at startup was 0.625 gpm compared to the design flowrate of 2 gpm. The SP-5 spring water influent design concentrations were well above the startup influent sample concentrations. All effluent COCs were below their respective Model Technology Best Professional Judgment (BPJ) daily maximum limits recommended for carbon adsorption (NYSDEC TOGS 1.2.1).

3.3 Residential Supply Wells

3.3.1 Construction Activities

This section describes the construction of two double-cased bedrock residential water supply wells and the abandonment of one existing supply well. As described previously, the wells (NYSDEC well numbers BM1038 and BM1039) were installed to replace the existing domestic water supply systems for the residential structures at 1495 East Windsor Road (BM1038) and 19 Center Village Loop Road (BM1039) (Figure 2). Construction activities associated with the residential supply wells included a pre-construction site walk over, well drilling, well installation, well development, well yield and drawdown testing (i.e., constant rate pumping tests), water quality sampling, pump system installation (including all pump appurtenances), trenching and backfilling, below grade pipe installation, abandonment of an existing residential supply well, and site restoration. Barney Moravec, Inc. (BMI) performed all construction services (except as noted below) between September 18, 2002 and October 1, 2002. ITS performed the trenching and backfilling, related to installation of the below grade pipe, between September 30, 2002 and October 3, 2002. The final system inspection was conducted and the residential supply wells were brought permanently on-line on October 2, 2002. All construction activities associated with the residential water supply wells were conducted in accordance with the New York State Department of Health (NYSDOH) regulations for development of a drinking water source. The report entitled "Installation of Domestic Water Supply Wells in the Vicinity of Colesville Landfill", summarizes the work that was performed by

ARCADIS and BMI during the residential water supply wells construction activities. The NYSDEC Well Completion Reports are included in the report, which is provided in Appendix B.

At the request of the USEPA, an attempt was made to locate a former residential water supply well (the "Riley well") in order to abandon the well, if located. The initial inspection effort was conducted by ARCADIS and BMI on September 19, 2002 and consisted of a site walk through the basement of the house that is located on the property. Based on the site inspection and discussions with the property owners, it is believed that this was the location of the Riley well, which apparently had been abandoned. A second inspection of the suspected former well location was conducted by ARCADIS with Mr. George Jacob and Mr. Dean Meraldo of the USEPA on September 24, 2002.

3.3.2 System Operation

This section briefly describes the operation of the residential water supply wells. Each residential water supply well is equipped with a four-inch submersible to supply groundwater to the respective residence. The submersible pumps in wells BM1038 and BM1039 were installed at depths of 175 and 203 feet bls, respectively. Well construction logs are included in Appendix B. Each submersible pump delivers the groundwater through a one-inch diameter pure resin PVC pipe to the pressure tank located at the residence.

4. Chronology of Events

A chronology of events for the site from issuance of the ROD to the completion of construction activities for OU1 is provided in Table 3.

5. Performance Standards and Construction Quality Control

The following section describes the performance standards and construction quality control procedures utilized during the construction of the Groundwater Remediation System, SP-4 and SP-5 spring remedies, and residential supply well installations.

5.1 Groundwater Remediation System

This section describes the performance standards and construction quality controls utilized during the construction of the Groundwater Remediation System.

5.1.1 Groundwater Remediation System Construction Quality Control

System construction performance standards and quality control utilized during the construction of the Groundwater Remediation System are described in detail in the Groundwater Remediation System Design Drawings and Technical Specifications. Specific control measures included compaction testing of all backfilled areas; concrete testing of all poured concrete, pipe flushing, pressure testing, engineering oversight, and system startup/shakedown procedures. A brief summary of each is described below.

5.1.1.1 Compaction Testing

Compaction testing was conducted in all areas requiring backfilling of excavations (i.e., trenches) and for soils where structural improvements (i.e., treatment building and parking area) were installed. All areas requiring compaction testing were tested in accordance with ASTM D2922, "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)," utilizing a standard nuclear density meter. During the construction, compaction testing requirements were modified from their original specifications to expedite the completion of the project, which was delayed due to unexpected subsurface conditions and inclement weather. Compaction testing modifications included: 1) Reducing the frequency of compaction testing to testing of the first backfill lift and testing of the final backfill lift. If the first lift passed the compaction testing, the general contractor utilized the same level of effort to compact each successive lift. Compaction testing of the final lift ensured that the overall compaction effort met the compaction requirements; 2) Reduction of the required compaction effort in unpaved and nonstructural areas from 85 to 82 percent modified proctor; and, 3) Reduction of the required compaction effort in paved and structural areas from 95 to 92 percent modified proctor.

A table summarizing the compaction test results is provided as Table 4. As shown in Table 4, the majority of the compaction testing results were above the modified testing requirements. In instances where the testing result was below the modified testing criteria, the deficient result was accepted if it was determined that it would not adversely affect the structural integrity of the affected area. If the deficient result could affect the structural integrity of its affected area, the area was re-compacted and tested until it met the modified testing requirements.

5.1.1.2 Concrete Testing Requirements

All cast-in-place concrete poured during the construction effort was tested in accordance with the requirements set forth in the Groundwater Remediation System Design Drawings and Technical Specifications, unless noted otherwise below. Cast-in-place concrete was compression tested in accordance with ASTM Designation: C 31-84, "Standard Method of Making and Curing Concrete Test Specimens in the Field" and ASTM Serial Designation: C 39-83b, "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens". Strength tests were performed at a minimum once per day and once per pour. The concrete for all formwork was required to have an ultimate strength of 4,000 psi.

Slump tests were performed in accordance with ASTM C-172, "Standard Practice for Sampling Freshly Mixed Concrete." The slump for all tests was required to be within plus or minus one inch of the design mix determination and never less than four inches. One slump test was performed for each pour.

A table summarizing the concrete testing results is provided in Table 5. As shown in Table 5, the majority of the concrete compression test results were near or above the design criteria with the exception of the concrete frost walls. Although below their design criteria, the concrete frost wall compression results were accepted because the actual compression strength would not adversely affect the structural integrity of the building foundation.

5.1.1.3 Pressure Testing

Pressure testing was conducted on each below grade pipeline in accordance with the Groundwater Remediation System Design Drawings and Technical Specifications. During the construction, modifications to the pressure testing procedures outlined in the Technical Specifications were implemented to expedite system construction and to ensure the integrity of certain system components. These modifications included: 1) utilizing compressed air to conduct the pressure tests on all pipelines (hydrostatic and pneumatic); and, 2) reducing the required sustained pressure of hydrostatic pipelines to a pressure of 50 psi. The reduction in sustained pressure for hydrostatic pipelines was required to ensure the integrity of the pitless adapters. During the construction, it was determined that the pitless adapters installed on each of the recovery and injection wells are rated for a maximum of 60 psi.

All below-grade pipelines installed at the site successfully passed their respective pressure testing.

5.1.1.4 Engineering Oversight

During construction of the Groundwater Remediation System a field engineer was present at all times to ensure that the work was performed in accordance with the Groundwater Remediation System Design Drawings and Technical Specifications.

5.1.2 Groundwater Remediation System Operational Performance Standards

Following system construction, the Groundwater Remediation System underwent a rigorous startup/shakedown program to ensure that the system operated in accordance with the Design Drawings and Technical Specifications. Appendix C "Groundwater Remediation System Startup Summary Report" summarizes the system startup procedures and operational results.

As indicated in Appendix C, all system components operated per their respective design criteria during system startup following minor modifications to the system controls program.

5.2 SP-4 and SP-5 Spring Remedies

Spring remedy construction performance standards and quality control utilized during the construction of the respective systems are described in detail in the Spring Area Maintenance Project Construction Drawings and Technical Specifications and the Spring Water Remediation Systems Design Drawings and Technical Specifications. Specific control measures included engineering oversight of the construction, the collection of a PT system effluent sample during treatment of spring water collected from the SP-4 dewatering program, stream water turbidity monitoring, system startup/shakedown procedures for the SP-5 spring remedy, and a detailed post-construction visual inspection (SP-4). A brief summary of each is described below.

5.2.1 SP-4 Spring Remedy System Construction Quality Control

During construction of the SP-4 spring remedy, a field engineer was present at all times to ensure that the work was performed in accordance with the Spring Area Maintenance Project Construction Drawings and Technical Specifications. Turbidity samples were collected from the North Stream at a location 60 feet down gradient of

the SP-4 construction area for the duration of the construction to ensure that the work was not adversely affecting surface water quality. The results of North Stream turbidity monitoring during the SP-4 remedial construction are presented in Table 6. As shown in Table 6, the construction effort had minimal impact to surface water quality within the North Stream.

During the SP-4 remedial construction, 871 gallons of spring water was collected during dewatering. The collected spring water was filtered and subsequently treated within the on-site PT system. A PT system effluent water sample was collected during treatment of the SP-4 area spring water to confirm compliance with the Model Technology BPJ limits recommended for Air Stripping (NYSDEC TOGS 1.2.1). Results of the PT system effluent water sample are presented in Table 7. As shown in Table 7, the PT system treated all COCs below the BPJ limits.

5.2.2 SP-4 Operational Performance Standards

Following system construction, a visual inspection of the spring area was conducted to ensure that the remedy operated per the design criteria. No visual signs of spring water were observed indicating that the system was operating as designed.

5.2.3 SP-5 Spring Remedy System Construction Quality Control

During construction of the SP-5 spring remedy, a field engineer was present at all times to ensure that the work was performed in accordance with the Spring Water Remediation Systems Design Drawings and Technical Specifications.

5.2.4 SP-5 Operational Performance Standards

Following system construction, the SP-5 spring remedy underwent a brief startup/shakedown program to ensure that the system operated in accordance with the Spring Water Remediation Systems Design Drawings and Technical Specifications. System startup and operational results were previously documented in the Operational Year 2, Quarter Number 1 Monitoring Report (ARCADIS 2004). A summary of the startup operational data versus its respective design criteria is provided in Table 2. As indicated in Table 2, the system operated as designed. All compounds of concern (COCs) were treated to below their respective BPJ limits.

5.3 Residential Supply Wells

This section describes the performance standards and construction quality controls utilized during the construction of the residential water supply wells.

5.3.1 Residential Construction Quality Control

System construction performance standards and quality control utilized during the construction of the residential water supply wells included a pre-construction site walkover to ensure proper positioning of the wells, constant rate pump testing of the wells to ensure adequate yield, water quality sampling, and ensuring that all specifications were followed. A brief summary of each is described below.

5.3.1.1 Well Location Siting and Sanitary Construction Measures

ARCADIS and BMI performed a pre-construction site walkover to position the residential water supply wells at each residential structure. The wells were positioned to ensure that they would be set back the required distance from any septic system in accordance with the NYSDOH regulations for development of a drinking water source. NYSDOH regulations also require that the top of the well casing be at least 12 inches above the ground surface. The top of the well casing for BM1038 extends 18 inches above ground surface. Due to the close proximity of well BM1039 to the Susquehanna River, the top of the well casing extends 36 inches above land surface.

5.3.1.2 Well Yield Testing

After the wells were installed and developed, constant rate pump testing of the wells was performed to ensure that the wells would provide adequate yields for the water supply needs of the residential properties. A four-hour constant rate pump test was performed at each residential water supply well. Each well was pumped at a rate greater than the anticipated pumping rate at the residence during normal operation. Wells BM1038 and BM1039 were pumped at rates of 14 and 10 gallons per minute (gpm), respectively, during the yield testing. Periodic water level measurements were collected during the yield tests using an electronic water level indicator and the maximum drawdown in each well was recorded. The maximum drawdown in wells BM1038 and BM1039 were measured to be 10 and 30 feet below the static water level, respectively, during the yield testing. The NYSDOH recommends that a new well be tested for yield and drawdown for at least a four hour duration before being put into

use and that a minimum sustained well yield of 5 gpm be obtained. As indicated, both wells met or exceeded the NYSDOH recommended yield.

5.3.1.3 Water Quality Sampling

After the wells were disinfected (using a chlorine solution) and yield tested, water quality samples were collected from each well and submitted to a NYSDOH approved laboratory for analysis. The analytical list was taken from the 6 NYCRR Part 360 Baseline Parameters list. The analytical results of the water quality samples were submitted to the Broome County Health Department. Analytical results for the two residential water supply wells "Scott Main" (BM1038) and "Scott River" (BM1039) are presented in Appendix D.

Analytical results from the two residential water supply wells were in compliance with NYSDOH drinking water requirements. Chloromethane, which was detected in the "Scott Main" supply well at 1.2 micrograms per liter (ug/L), was the only VOC detected in either of the wells. This trace level of chloromethane is commonly found as the result of the oxidation of calcium hypochlorite, which was used during the chlorine shock treatment for the wells.

5.3.2 Residential Supply Wells Operational Performance Standards

Following installation of each residential potable water supply, each supply system underwent a brief startup/shakedown period to ensure that the respective system operated properly. Each potable water supply system operated properly and provided sufficient water to meet the demands of the respective residence.

6. Final Inspection and Certification

The following section describes the final inspection and certification of each of the remedial components at the site.

6.1 Groundwater Remediation System

The pre-final site inspection for the Groundwater Remediation System was conducted on August 27, 2002 in the presence of the engineering consultant (ARCADIS) and the general contractor (ITS). During the inspection, minor deficiencies were noted including minor electrical connection errors, minor process piping leaks within the treatment building, and inconsistent operation of the recovery pumps. All deficiencies

were corrected by the general contractor within one-week of the pre-final site inspection.

The final inspection of the Groundwater Remediation System was conducted on October 4, 2002, in the presence of the PRP representative (Broome County), the engineering consultant (ARCADIS) and the general contractor (ITS). During the final site inspection, minor site restoration deficiencies were noted. The general contractor corrected the deficiencies within one-week of the final inspection.

6.2 SP-4 and SP-5 Spring Remedies

The pre-final inspection of the SP-4 and SP-5 spring remedies was conducted on August 11, 2004 by ARCADIS. Final inspection of the SP-4 and SP-5 spring remedies was conducted on September 1, 2004 in the presence of ARCADIS, USEPA and NYSDEC. No deficiencies were noted during either inspection.

6.3 Residential Supply Wells

The final inspection was conducted by ARCADIS on October 2, 2002. Minor site restoration deficiencies were noted during the inspection. The deficiencies were corrected within one week after the final inspection.

7. Certification that Remedy is Operational and Functional

The following section provides certification that each of the ROD components is operational and functional.

7.1 Groundwater Remediation System

Based on the final inspection and operational data collected during the Groundwater Remediation System startup, the Groundwater Remediation System has been constructed and operates in accordance with the NYSDEC approved Groundwater Remediation System Design Drawings and Technical Specifications.

7.2 SP-4 and SP-5 Spring Remedies

Based on the final inspection, operational data collected during the SP-5 Spring Water Remediation System startup, and visual inspection of the SP-4 spring area, the systems have been constructed and operate in accordance with the NYSDEC approved Spring

Area Maintenance Project Construction Drawings and Technical Specifications and the Spring Water Remediation Systems Design Drawings and Technical Specifications.

7.3 Residential Supply Well Remedy

Based on the final inspection and operational data collected during the construction and testing of the residential water supply wells, the wells have been constructed and operate in accordance with the NYSDOH regulations for development of a drinking water source.

8. Operation and Maintenance

The following subsections of this plan briefly describe the components of the long-term effectiveness and performance monitoring programs. A detailed description of the long-term monitoring programs is provided in the "Long-Term Monitoring Plan" (ARCADIS 2002) and the "Long-Term Monitoring Plan Addendum for Spring Water Remediation Systems" (ARCADIS 2003).

8.1 Effectiveness Monitoring

The long-term effectiveness monitoring program at the site includes hydraulic monitoring (depth to groundwater measurements), groundwater quality monitoring (groundwater sampling), sampling at spring water locations along the North Stream that were identified during the remedial investigation, and sampling of downstream surface water in the North Stream. A total of 18 existing monitoring wells, four spring water samples locations, and one surface water sample location are included in the long-term monitoring program. The components of the effectiveness monitoring are described below:

- Monitor groundwater flow patterns on-site during the baseline round and during remedial system operation.

- Monitor VOC concentrations in groundwater, spring water (if present) located along the North Stream (SP-2 and SP-3), and surface water in the North Stream downstream of the existing springs (F-6) during the baseline round and during remedial system operation.

- Monitor key biogeochemical indicator parameters in the area immediately downgradient of the ERD injection wells during the baseline round and during remedial system operation.

A description of the Groundwater Remediation System performance monitoring program is provided below.

8.2 Groundwater Remediation System Operational Performance Monitoring

The monitoring performed following remedial system startup includes recording system field parameters for both the PT and ARI systems and collecting groundwater and air samples from the PT system. Operational performance monitoring will be conducted during routine quarterly site visits and will include: routine visual inspection, recording system field parameters, maintenance on system equipment (as necessary) and collection of water and air compliance samples. PT system effluent water and air samples will be compared to effluent and emissions criteria in order to ensure compliance and monitor system performance. System operational parameters will be compared to design criteria to ensure that the system continues to operate in accordance with the Groundwater Remediation System Design Drawings and Technical Specifications.

ARI groundwater monitoring will be conducted during routine quarterly site visits and will include: sampling select injection wells for total organic carbon (TOC) and field parameters (i.e., oxidation-reduction potential, pH, specific conductance, temperature, dissolved oxygen, and sulfide). Results from the injection well sampling will be used to adjust carbon loading and/or frequency of reagent injections if necessary. In addition to the groundwater monitoring conducted explicitly for ARI system monitoring, field parameter and analytical results for select monitoring wells associated with the long-term environmental effectiveness monitoring program will be used as needed, to evaluate performance of the ARI system. The need for conducting testing of critical system components will be evaluated during each site visit.

8.3 SP-4 and SP-5 Spring Water Remediation System Performance Monitoring

Operational performance monitoring of the SP-4 spring remedy is conducted on a quarterly basis and includes visual inspection of the SP-4 area to ensure that spring water remains suppressed within the groundwater system and the collection of a mid-stream surface water sample immediately downgradient of the former SP-4 spring area. Operational performance monitoring of the SP-5 spring remedy is conducted on a

quarterly basis and includes routine visual inspection, recording system field parameters, maintenance on system equipment (as necessary) and collection of influent and effluent spring water samples. System effluent spring water samples will be compared to effluent criteria in order to ensure compliance with the BPJ limits and monitor system performance.

8.4 Residential Supply Well Operational Performance Monitoring

Groundwater quality samples are collected from the residential water supply wells on a quarterly basis and analyzed at a NYSDOH approved laboratory. The analytical list was taken from the 6 NYCRR Part 360 Baseline Parameters list.

9. Summary of Project Costs

Broome County is not obligated to provide project costs under the requirements of the Order on Consent with the NYSDEC.

10. Observations and Lessons Learned

The following section discusses key observations and lessons learned during the construction of the Groundwater Remediation System, SP-4 and SP-5 spring water remedies, and residential supply wells.

10.1 Groundwater Remediation System

Key observations and lessons learned during the construction of the Groundwater Remediation System include:

- The installation of drop tubes for the distribution of reagent within injection wells does not provide a substantial benefit; particularly if the reagent is injected under pressure.

- Awareness of the geologic conditions at remediation sites is not only critical for understanding hydrogeology and contaminant transport, but also for determining construction methodologies (i.e., installation of subsurface utilities).

- Alternate materials of construction may provide significant cost savings while providing the same level of service as traditional materials. The installation of

KiTEC composite piping for pneumatic air lines provided a better product at a lower cost when compared to traditional carbon steel.

- The use of a SCADA system provides a significant benefit for remediation systems containing a complex controls program; especially when the remediation system is operated at a remote location. Benefits include continuous data acquisition, continuous alarms monitoring, and the ability to operate system equipment remotely.

10.2 SP-4 and SP-5 Spring Remedies

Key observations and lessons learned during the construction of the SP-4 and SP-5 Spring Remedies include:

- Groundwater springs are a dynamic expression of the groundwater surface elevation. The location and specific characteristics (i.e., size and flow) can vary over time. Therefore, visual inspection of spring locations is an essential part of routine OM&M.

10.3 Residential Supply Wells

Key observations and lessons learned during the construction of the Residential Supply Wells include:

- It is not unreasonable to expect residents in close proximity of the site to view investigation and remediation activities with skepticism. Establishing and maintaining good lines of communication with residents is a critical component of remedy implementation.

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Table 1. Injection and Extraction Well Drilling and Installation Specifications, Colesville Landfill, Broome County, New York.

Well Identification	Borehole Depth (ft bls)	Well Casing/Screen Diameter (inches)	Well Casing/Screen Composition	Well Total Depth (ft bls)	Screened Interval (ft bls)	Pump Intake Depth (ft bls)
Injection Wells						
PW-6	82	4/4	Sch. 40 CS/unknown	73.7	33.7 - 73.7	NA
IW-1	70	2/2	Sch. 40 PVC/0.006 slot	70	50 - 65	NA
IW-2	70	2/2	Sch. 40 PVC/0.006 slot	70	50 - 65	NA
GMMW-1	68	2/2	Sch. 40 PVC/0.010 slot	63	53 - 63	NA
IW-3	70	2/2	Sch. 40 PVC/0.010 slot	70	50 – 70	NA
IW-4	70	2/2	Sch. 40 PVC/0.010 slot	70	50 – 70	NA
IW-5	75	2/2	Sch. 40 PVC/0.010 slot	75	55 – 75	NA
IW-6	75	2/2	Sch. 40 PVC/0.010 slot	75	55 – 75	NA
IW-7	75	2/2	Sch. 40 PVC/0.010 slot	75	55 – 75	NA
IW-8	75	2/2	Sch. 40 PVC/0.010 slot	75	55 – 75	NA
IW-9	80	2/2	Sch. 40 PVC/0.010 slot	80	55 – 80	NA
IW-10	80	2/2	Sch. 40 PVC/0.010 slot	80	55 – 80	NA
IW-11	80	2/2	Sch. 40 PVC/0.010 slot	80	55 – 80	NA
IW-12	80	2/2	Sch. 40 PVC/0.010 slot	80	55 – 80	NA
IW-13	80	2/2	Sch. 40 PVC/0.010 slot	80	55 – 80	NA
IW-14	80	2/2	Sch. 40 PVC/0.010 slot	80	60 – 80	NA
IW-15	80	2/2	Sch. 40 PVC/0.010 slot	80	60 – 80	NA
Pumping Wells						
GM-PW-3	35	4/4	Sch. 40 CS/0.012 slot	35	15-30	25
GM-PW-4	37	6/6	Sch. 80 PVC/0.004 slot	37	22-32	27
GM-PW-5	37	6/6	Sch. 80 PVC/0.004 slot	37	22-32	27

Notes:

ft bls: Feet below land surface.
Sch. 40 CS: Schedule 40 carbon steel.
Sch. 40 PVC: Schedule 40 poly vinyl chloride.
Sch. 80 PVC: Schedule 80 poly vinyl chloride.

PW-6 screen slot size unknown.

Table 2. SP-5 Spring Water Remediation System Startup Operating Parameters and Design Concentrations vs. Startup Concentrations, Colesville Landfill, Broome County, New York.

Constituent (ug/L)	Model Technology BPJ Limits[2,3] (ug/L)	Design Influent Concentration[1] (ug/L)	Startup Influent Concentration (ug/L)	Startup Effluent Concentration (ug/L)
1,1,1-Trichloroethane	10	< 1.0	< 10	< 1.0
1,1-Dichloroethane	10	67.5	< 10	< 1.0
1,2-Dichloroethane	10-100	< 1.0	< 10	< 1.0
Benzene	5	8.25	< 10	< 1.0
Chlorobenzene	10-25	121.5	66	< 1.0
Chloroethane	10	34.5	< 10	< 1.0
cis-1,2-Dichloroethene	10	2.1	< 10	< 1.0
Ethylbenzene	5	4.2	< 10	< 1.0
Toluene	5	5.4	< 10	< 1.0
trans-1,2-Dichloroethene	10-100	< 1.0	< 10	< 1.0
Trichloroethene	10	2.1	< 10	< 1.0
Vinyl chloride	10	< 1.0	< 10	< 1.0

ug/L Micrograms per liter.
-- Not analyzed.
btc Below top of casing.

1. Represents maximum historical concentration times 1.5 F.O.S. prior to construction.
2. Model technology Best Professional Judgment daily maximum limits recommended for carbon adsorption with appropriate pretreatment from Attachment C of TOGS 1.2.1.
3. When a range is listed for the Best Professional Judgment limit, a variation in available references was found. Recommended daily maximum limits should be in this range.
4. Startup effluent flowrate was 0.625 gallons per minute.
5. Depth to water measured in the influent sample collection well during startup was 0.19 feet btc.

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Table 3. Chronology of Events, Colesville Landfill, Broome County, New York.

Date	Event
March 1991	Record of Decision issued.
June 1992	Conceptual Design Report submitted.
March 1993	Pre-final Cap Design submitted.
August-October 1994	PRPs approach EPA and NYSDEC with concerns about effectiveness of pump and treat remedy for groundwater.
August-October 1994	EPA and NYSDEC agree that groundwater pump and treat may be reconsidered through an FFS evaluation.
August 1995	Approval of 90% Design for groundwater pump and treat.
October 1995	Submittal of Focused Feasibility Study report
November 1995	Completion of landfill cap construction.
December 1995	Final groundwater design on hold pending consideration of alternative remedy, EPA suggests a comparative groundwater model of natural attenuation versus pump and treat.
June 1996	Initiation of biogeochemical sampling and evaluation of biodegradation processes.
April 1998	Aquifer testing to evaluate aquifer permeability.
June 1998	EPA concurrence that the pump-and-treat component of the ROD remedy would not likely be an effective means of remediating groundwater in a reasonable timeframe; EPA requests evaluation of alternate groundwater remedial alternatives.
December 1998-July 1999	Implementation of ERD Pilot Study.
August 1999	EPA requests submission of a conceptual layout for groundwater remedy and a schedule for completing the groundwater remedial system design.
December 1999	Submission of minor revisions to conceptual layout of groundwater remedial system design.
July 2000	Submittal of Groundwater Remediation System Design Drawings and Technical Specifications.
April 2000	EPA issuance of Five-Year Review Report.

Table 3. Chronology of Events, Colesville Landfill, Broome County, New York.

Date	Event
August 2000	USEPA approval of Groundwater Remediation System Design Drawings and Technical Specifications
September 2000	EPA issuance of an Explanation of Significant Differences to modify groundwater component of ROD remedy.
June 2002	Submittal of Long-Term Monitoring Plan.
September 2002	Completion of construction and startup of Groundwater Remediation System.
June 2003	Submittal of Spring Water Remediation Systems Design Drawings and Technical Specifications.
August 2003	USEPA approval of Spring Water Remediation Systems design.
October 2003	Completion of construction and startup of SP-5 Spring Water Remediation System.
November 2003	Submittal of Long-Term Monitoring Plan addendum for the Spring Water Remediation Systems.
March 2004	SP-4 site walk over attended by ARCADIS, Broome County, USEPA and NYSDEC.
April 2004	Submittal of SP-4 Spring Area Maintenance Project Construction Drawings.
July 2004	EPA issuance of an Explanation of Significant Differences to address impacted spring water.
July 2004	Completion of construction of SP-4 spring water remedy.
September 2004	Final construction site walkover attended by ARCADIS, USEPA, and NYSDEC.

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Table 4. Summary of Soil Compaction Test Results, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Location of Test	Test Date	Elevation BFG (inches)	Maximum Lab Density (pcf)	Moisture Content (%)	Dry Density (pcf)	Compaction Required (%)	Actual Compaction (%)
65' N. of Radius	6/3/2002	30	143.3	9.0	122.2	82	85
South Side Control Building	7/2/2002	SG	130.38	10.7	114.9	82	88
West Side Control Building 60' Downhill	7/2/2002	SG	130.38	13.3	96.0	82	73
S.W. Radius	7/2/2002	SG	130.38	12.0	99.9	82	77
Base of Hill Centerline	7/2/2002	SG	143.3	6.8	118.2	82	82
Control Building	7/2/2002	SG	130.3	12.9	119.9	92	92
Control Building Centerline	7/2/2002	SG	130.3	10.4	120.2	92	92
Trench Crossing W. of Control Building	7/2/2002	SG	130.3	7.3	134.5	92	100+
Trench Crossing 12' N	7/2/2002	SG	130.3	7.3	125.3	92	96
Well #6 Left Side	7/25/2002	48	130.4	7.7	101.1	82	78
Well #6 Right Side	7/25/2002	48	130.4	6.0	113.4	82	87
Well #9	7/25/2002	48	130.4	5.5	113.2	82	87
Well #12	7/25/2002	48	130.4	6.0	119.4	82	92
Well #15	7/25/2002	24	130.4	5.9	116.9	82	90
Well #3	7/25/2002	24	130.4	5.1	105.4	82	81
Trench to Pumping Well	7/25/2002	TSG	130.4	8.6	107.3	82	82
Trench to Pumping Well	7/25/2002	TSG	130.4	12.7	104.3	82	80
Trench to Pumping Well	7/25/2002	TSG	130.4	11.5	115.5	82	89
Trench to Pumping Well	7/25/2002	TSG	130.4	8.2	122.0	82	94
Parking Area East	9/5/2002	TSG	130.3	8.0	121.1	92	93
Parking Area South	9/5/2002	TSG	130.3	8.0	118.9	92	91.2
Parking Area Centerline	9/5/2002	TSG	130.3	6.7	119.1	92	91.8
Parking Area North	9/5/2002	TSG	130.3	6.6	117.5	92	90.2
Driveway South End	9/5/2002	TSG	130.3	8.6	119.9	92	92
Driveway Centerline	9/5/2002	TSG	130.3	7.6	120.8	92	93
Parking Area Southwest End	9/5/2002	TSG	130.3	6.5	115.9	92	89
Injection Return #1	9/5/2002	TSG	130.3	6.9	116.5	82	89.4
Injection Return #2	9/5/2002	TSG	130.3	7.2	111.7	82	86
Injection Return #3	9/5/2002	TSG	130.3	11.0	105.5	82	81
Injection Return #4	9/5/2002	TSG	130.3	6.2	104.9	82	81
Road Access	9/5/2002	TSG	130.3	5.0	130.9	92	100+

Table 4. Summary of Soil Compaction Test Results, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Notes:

pcf	Pounds per cubic foot.
SG	Subgrade.
TSG	Top of subgrade.
BFG	Below final grade.

Table 5. Summary of Concrete Test Results, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Location of Placement	Date of Placement/ Casting	Age (days)	Ultimate Strength Required (psi)	Compressive Strength (psi)	Slump (inches)	Air (%)	Concrete Temperature (^{o}F)	Load Size (yd^3)
Footing	6/25/2002	NA	NA	NA	3.5	4.5	88	5.5
Footing	6/25/2002	7	NA	3264	NA	4.5	88	5.5
Footing	6/25/2002	28	4,000	3933	NA	4.5	88	5.5
Footing	6/25/2002	28	4,000	3916	NA	4.5	88	5.5
Frost Walls	6/26/2002	NA	NA	NA	3.25	4.8	88	8
Frost Walls	6/26/2002	7	NA	2688	NA	4.8	88	8
Frost Walls	6/26/2002	28	4,000	3288	NA	4.8	88	8
Frost Walls	6/26/2002	28	4,000	3341	NA	4.8	88	8
Frost Walls	6/27/2002	NA	NA	NA	4	--	--	0.43
Slab on Grade	7/3/2002	NA	NA	NA	3.25	6	89	10.5
Slab on Grade	7/3/2002	7	NA	3703	NA	6	89	10.5
Slab on Grade	7/3/2002	28	4,000	4858	NA	6	89	10.5
Slab on Grade	7/3/2002	28	4,000	4821	NA	6	89	10.5

psi: Pounds per square inch.
^{o}F Degrees Fahrenheit
yd^3 Cubic yards.
NA Not applicable.
-- Parameter not analyzed.

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Table 6. North Stream Turbidity Monitoring Test Results During SP-4 Construction, Colesville Landfill, Broome County, New York.

Date of Testing	Time of Testing	Turbidity Measurement (NTU)	Construction Activity at Time of Testing
7/1/2004	13:20	2.5	Baseline turbidity measurement
7/6/2004	6:45	1.15	Follow-up baseline turbidity measurement
7/6/2004	11:30	2.0	20 minutes after excavator crosses North Stream mobilizing to SP-4 area
7/7/2004	13:30	1.92	Contractor is installing 4" rip rap in excavated area
7/8/2004	10:15	2.09	Contractor is installing 4" rip rap in excavated area
7/9/2004	13:30	0.71	Contractor is installing 4" rip rap in excavated area
7/12/2004	10:35	20.2	5 minutes after excavator crosses North Stream demobilizing from SP-4 area
7/12/2004	10:50	5.00	20 minutes after excavator crosses North Stream demobilizing from SP-4 area

Notes:

NTU: Nephelometric turbidity units.

1. Turbidity measurement recorded with a LaMotte 2020 meter sixty feet downstream from the SP-4 area.

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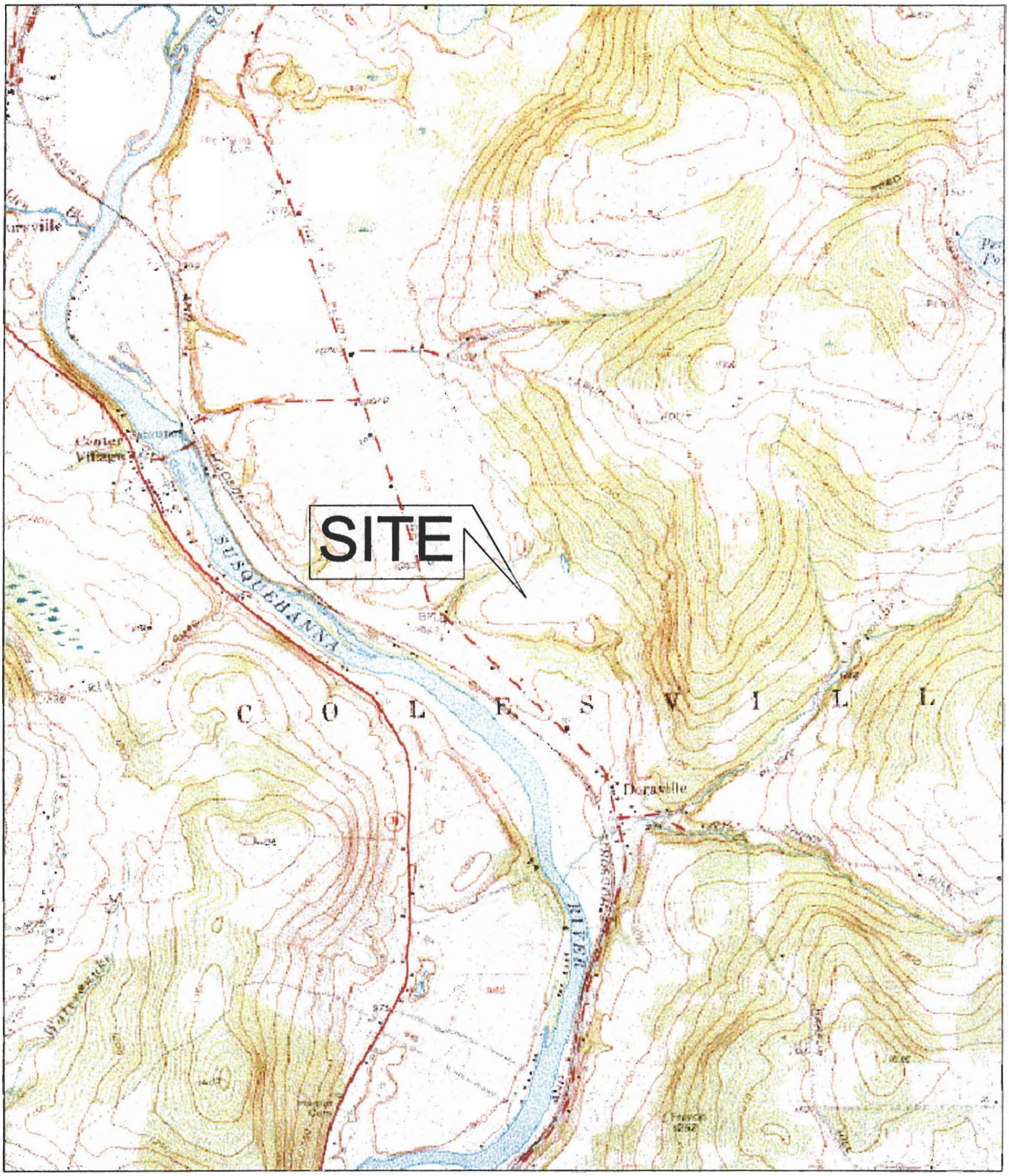
Table 7. PT System Effluent Sample Collected During SP-4 Dewatering Treatment Analytical Results, Colesville Landfill, Broome County, New York.

Constituents	Model Technology BPJ Limits[1,2] (ug/L)	Sample ID: Date:	Total Effluent with Dewatering[3] 7/8/04 (ug/L)
1,1,1-Trichloroethane	10-20		<1.0 J
1,1,2-Trichloroethane	10		<1.0 J
1,1-Dichloroethane	10		<1.0 J
1,1-Dichloroethene	10		<1.0 J
1,2-Dichloroethane	10-30		<1.0 J
1,2-Dichloropropane	NA		<1.0 J
Benzene	5		<1.0 J
Chlorobenzene	NA		<1.0 J
Chloroethane	NA		<1.0 J
Chloroform	NA		<1.0 J
cis-1,2-Dichloroethene	10		<1.0 J
Dichlorodifluoromethane	NA		<1.0 J
Methylene Chloride	10-50		<1.0 J
Naphthalene	10		<1.0 J
o-Xylene	5		<1.0 J
Tetrachloroethene	10		<1.0 J
Toluene	5		<1.0 J
trans-1,2-Dichloroethene	10-50		<1.0 J
Trichloroethene	10		<1.0 J
Vinyl Chloride	10-50		<1.0 J
Total VOCs			**0.0**

Notes:

1. Model Technology Best Professional Judgment (BPJ) Limits recommended for Air Stripping with appropriate pretreatment from Attachment C of TOGS 1.2.1.
2. When a range is listed for the BPJ limit, a variation in available references was found. Recommended daily maximum limits should be in this range.
3. Sample collected after cartridge filters from pump-and-treat system while dewatered SP-4 spring water was pumped into the Groundwater Remediation System.

NA	No BPJ limit listed.
J	Estimated Value.
ug/L	Micrograms Per Liter.
VOCs	Volatile Organic Compounds.
<	Analyte Below Detection Limit.



SOURCE: U.S.G.S. QUADRANGLES, 7.5 MINUTE SERIES,AFTON, N.Y. , REVISED 1957.

0 1000 2000

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PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
SF	NV	CT	KZ
SHEET TITLE: SITE LOCATION MAP		TASK/PHASE NUMBER: 00004	DRAWN BY: TP
COLESVILLE LANDFILL BROOME COUNTY, NEW YORK		PROJECT NUMBER: NY00949.0017	DRAWING NUMBER: 1

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User Name : pinnocle

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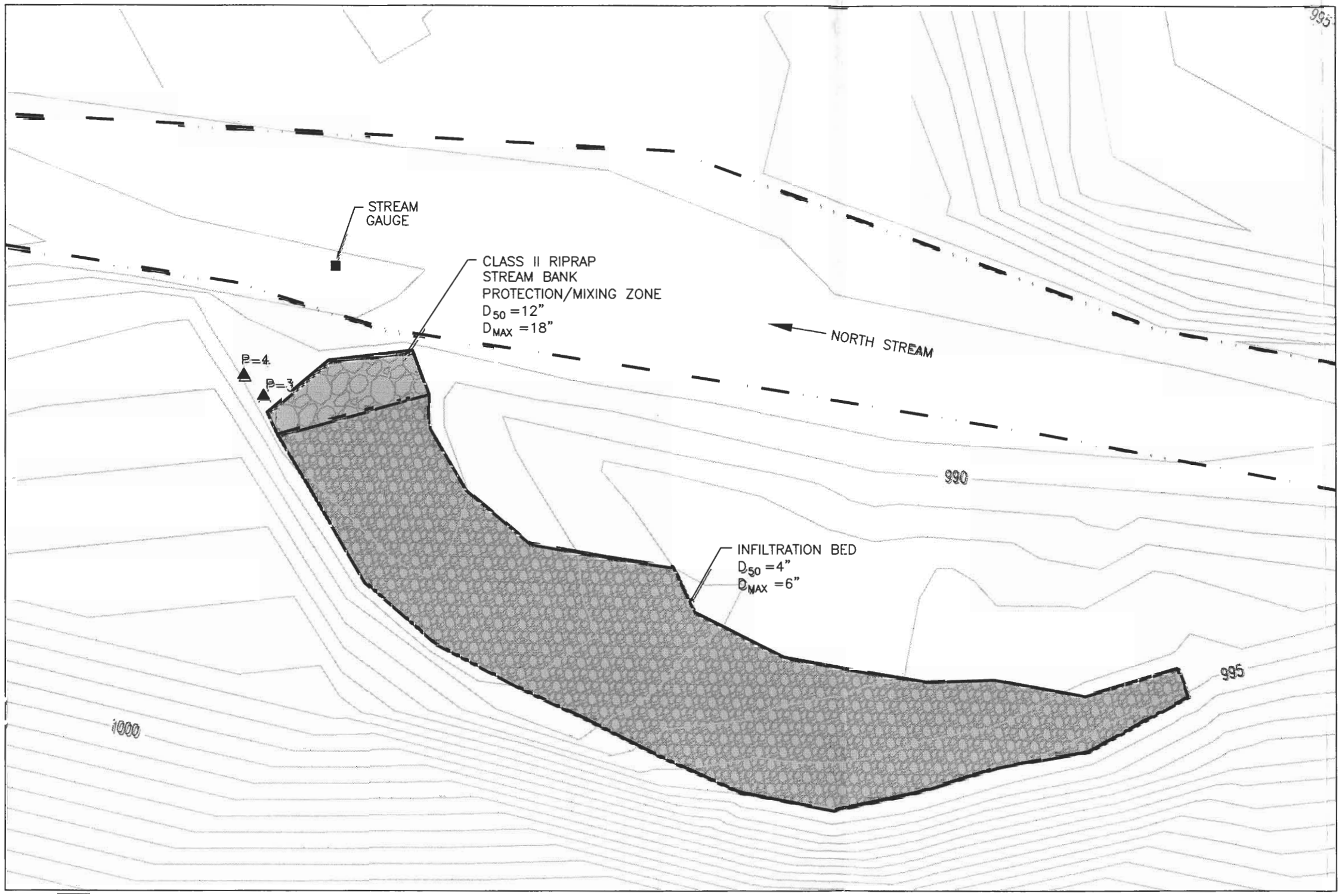
Layout Tab: Layout1



SP-4 SPRING AREA SITE PLAN

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SCALE IN FEET

N

LEGEND:

1000 EXISTING GRADE LINE

LIMITS OF NORTH STREAM CHANNEL

12" RIPRAP ZONE

4" RIPRAP ZONE

P-3 EXISTING PIEZOMETER

STREAM GAUGE

NOTE:

1. BASE MAP TAKEN FROM "TOPOGRAPHIC SITE SURVEY, COLESVILLE LANDFILL." BY RONALD SCHIESS, PLS, NY LIC NO. 049554, SOURTHERN TIER SURVEYING, LLP, DATED DECEMBER 14, 1999, REVISED AUGUST 2004.

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Acad Version : R16.1s (LMS Tech)
User Name : tperret

ENGINEERING DESIGN:
ALL PROFESSIONAL ENGINEERING SERVICES DEPICTED ON THIS DRAWING HAVE BEEN PERFORMED FOR ARCADIS BY ARCADIS ENGINEERS & ARCHITECTS OF NEW YORK, P.C. A PROFESSIONAL CORPORATION QUALIFIED TO PERFORM SUCH SERVICES IN THE STATE OF NEW YORK.

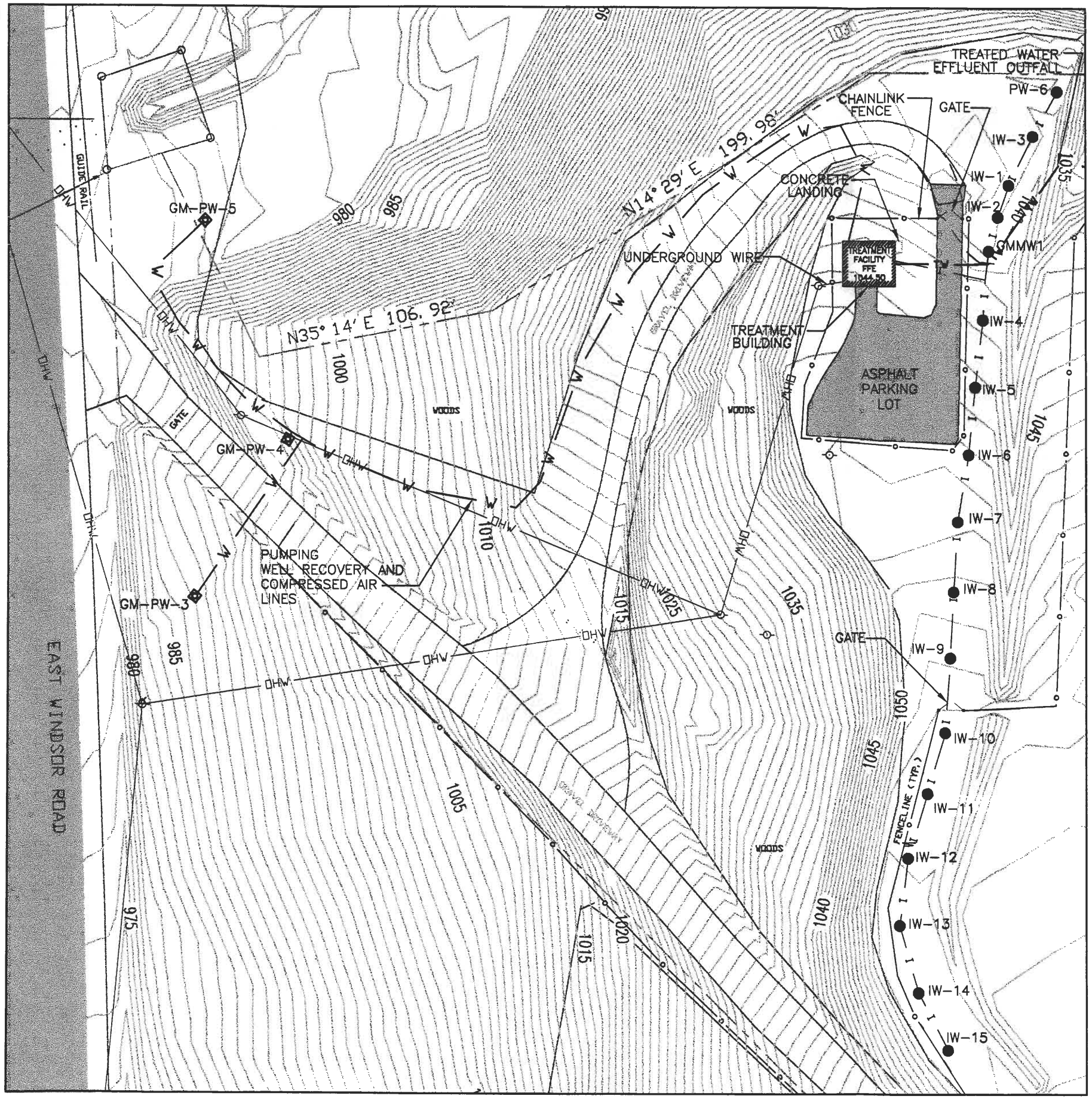
REV.	ISSUED	DATE	DESCRIPTION	
1		8/19/04	AS BUILT	JH / KZ

KEYPLAN

ARCADIS
88 Duryea Road
Melville, NY 11747
Tel: 631-249-7800 Fax: 631-249-7610
www.arcadis-us.com

PROJECT TITLE
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED
S. FELDMAN	N. VALKENBURG	C. TUOHY	K. ZEGEL
SHEET TITLE: SP-4 SPRNG AREA AS-BUILT SITE PLAN		TASK/PHASE NUMBER: 00007	DRAWN BY: T. PERRET
		PROJECT NUMBER: NY000949.0017	DRAWING NUMBER: 5



SITE PLAN

SCALE: 1"=50'-0"

LEGEND

- ASPHALT
- DHW — OVERHEAD WIRE
- IW-15 ● — INJECTION WELL
- GM-PW-2 ◎ — PUMPING WELL
- W — RECOVERY/PNEUMATIC LINES
- I — INJECTION LINES
- FENCELINE
- TW — TREATED WATER DISCHARGE LINE
- 1000 — EXISTING GRADE LINE
- UTILITY POLE

NOTE:

1. BASE MAP TAKEN FROM "TOPOGRAPHIC SITE SURVEY, COLESVILLE LANDFILL." BY RONALD SCHIESS, PLS, NY LIC NO. 049554, SOURTHERN TIER SURVEYING, LLP, DATED DECEMBER 14, 1999, REVISED MAY 2, 2002 AND FEBRUARY, 2003.

ENGINEERING DESIGN:
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NO.	DATE	REVISION DESCRIPTION	BY / CKD
1	8/19/04	AS BUILT	JH / KZ

COLESVILLE LANDFILL

BROOME COUNTY, NEW YORK

GROUNDWATER REMEDIATION SYSTEM AS-BUILT SITE PLAN

ARCADIS
88 Duryea Road
Melville, NY 11747
Tel: 631-249-7800 Fax: 631-249-7810
www.arcadis-us.com

PROJECT MANAGER S. FELDMAN	DEPARTMENT MANAGER N. VALKENBURG
LEAD DESIGN PROF. C. TUOHY	CHECKED K. ZEGEL
DRAWN LMC	DATE 08/05/04
PROJECT NUMBER NY0949.017	DRAWING NUMBER 3

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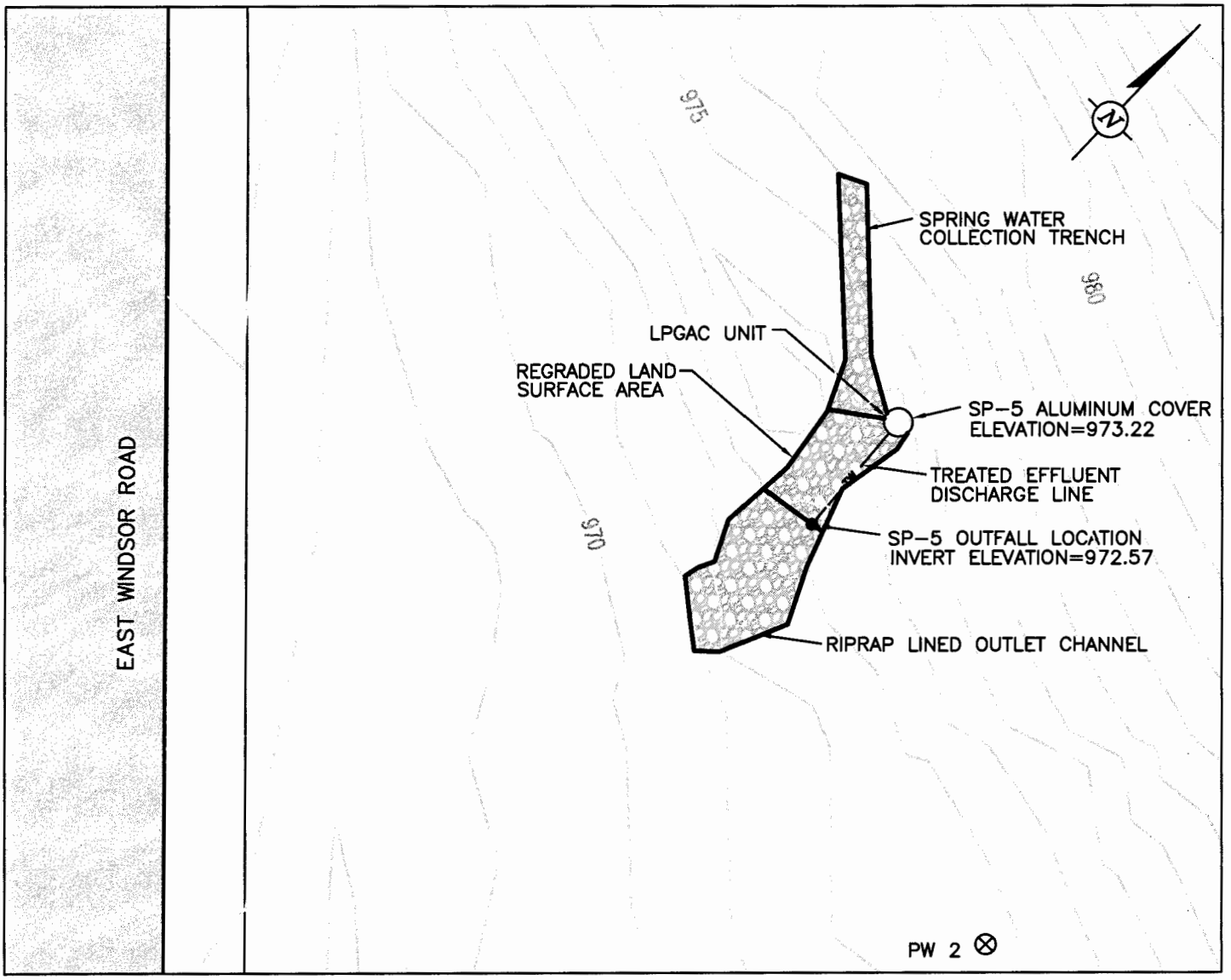

SP-5 SPRING AREA SITE PLAN

LEGEND

TW —— TW ——	TREATED WATER DISCHARGE LINE
980	EXISTING GRADE LINE
	4" RIPRAP AREA
	ASPHALT
PW 2 ⊗	EXISTING MONITORING WELL

NOTE:

1. BASE MAP TAKEN FROM "TOPOGRAPHIC SITE SURVEY, COLESVILLE LANDFILL." BY RONALD SCHIESS, PLS, NY LIC NO. 049554, SOURTHERN TIER SURVEYING, LLP, DATED DECEMBER 14, 1999, REVISED AUGUST 2004.

ENGINEERING DESIGN:
ALL PROFESSIONAL ENGINEERING SERVICES DEPICTED ON THIS DRAWING HAVE BEEN PERFORMED FOR ARCADIS BY ARCADIS ENGINEERS & ARCHITECTS OF NEW YORK, P.C. A PROFESSIONAL CORPORATION QUALIFIED TO PERFORM SUCH SERVICES IN THE STATE OF NEW YORK.

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PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
S. FELDMAN	N. VALKENBURG	C. TUOHY	K. ZEGEL
SHEET TITLE: SP-5 SPRING AREA AS-BUILT SITE PLAN COLESVILLE LANDFILL BROOME COUNTY, NEW YORK		TASK/PHASE NUMBER 00007	DRAWN BY T. PERRET
		PROJECT NUMBER NY000949.0017	DRAWING NUMBER 6

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Appendix A

Deed Restriction Agreements

Broome County
Attorney's Office
Edwin L. Crawford County Office Building / P.O. Box 1766 / Binghamton, New York 13902 / (607) 778-2117 / Fax (607) 778-6122
e-mail: bclaw@co.broome.ny.us

JEFFREY P. KRAHAM, Broome County Executive

WILLIAM L. GIBSON, JR., County Attorney

August 4, 2004

Steven Feldman
Arcadis, Geraghty & Miller
88 Duryea Road
Melville, NY 11747

Re: Colesville Landfill

Dear Steve:

Enclosed please find a copy of the Environmental Easement regarding the County owned properties. This language was approved by the EPA. I am waiting for word from the DEC whether they should be the grantee on the easement. If you have any questions, please feel free to contact me.

Very truly yours,

ROBERT G. BEHNKE
Chief Assistant County Attorney

RGB/ma
Enclosure

ENVIRONMENTAL PROTECTION EASEMENT
AND
DECLARATION OF RESTRICTIVE COVENANTS

This Environmental Protection Easement and Declaration of Restrictive Covenants is made this _____ day of _____, 2004 by and between the County of Broome, a municipal corporation organized and existing under the laws of the State of New York with offices at the Edwin L. Crawford County Office Building, PO Box 1766, Binghamton, New York 13902 ("Grantor"), and the State of New York acting through the New York State Department of Environmental Conservation with offices at 625 Broadway, Albany, NY 12233 (Grantee)

WITNESSETH:

WHEREAS, Grantor is the owner of parcels of land in the County of Broome, State of New York, more particularly described in Exhibit A attached hereto and made a part hereof together with any buildings and improvements therein and appurtenances thereto (the "property"); and

WHEREAS, the property is part of the Colesville Landfill Superfund Site ("Site") which the US Department of Environmental Protection Agency ("EPA"), pursuant to Section 105 of the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA") 42 USC § 9605, placed on the National Priorities list as set forth in Appendix B of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 CFR Part 300 by Publication in the Federal Register on June, 1986; and

WHEREAS, in a Record of Decision dated March, 1991 (the "ROD"), the Regional Administrator of EPA Region II selected, and the New York State Department of Environmental Conservation ("NYSDEC") concurred with, a "response action" for the site, which provides in part, for the following actions: Installation of a multimedia cap over the landfill material, periodic inspection of the cap and maintenance as necessary, initiation of a monitoring program upon completion of the closure activities, and impositions of property deed restrictions if necessary to prevent the installation of drinking water wells at the Site and restrict activities which could effect the integrity of the landfill cap, and

WHEREAS, Site response activities have been implemented except for the imposition of deed restrictions; and

WHEREAS, the parties hereto have agreed that Grantor shall grant a permanent easement and covenant a) to provide a right of access over the property to the Grantee for purposes of implementing, facilitating and maintaining the response action, and b) to impose on the property use restrictions that will run with the land for the purpose of protecting human health and the environment; and

other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

d) Entire agreement: This instrument sets forth the entire agreement of the parties with respect to rights and restrictions created hereby, and supersedes all prior discussions, negotiations, understandings, or agreements relating thereto, all of which are merged herein; provided that nothing in this instrument shall be deemed to alter or modify the Consent Decree.

e) No forfeiture: Nothing contained herein will result in a forfeiture or reversion of the Grantor's title in any respect.

f) Successors: The covenants, easements, terms, conditions, and restrictions of this instrument shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, successors, and assigns and shall continue as a servitude running in perpetuity with the Property. The term "Grantor", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantor" and their personal representatives, successors, and assigns. The term "Grantee" wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantee" and their personal representatives, successors and assigns.

g) Captions: The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

h) Third-Party Beneficiary: The Grantor hereby agrees that EPA shall be, on behalf of the public, a third-party beneficiary of the benefits, rights and obligations conveyed in this instrument; provided that nothing in this instrument shall be construed to create any obligations on the part of EPA.

TO HAVE AND TO HOLD unto the Grantee and its assigns forever.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Executed this _____ day of _____, 2004.

COUNTY OF BROOME

By: _____
JEFFREY P. KRAHAM
Broome County Executive

STATE OF NEW YORK):

COUNTY OF BROOME):

On this day of in the year 2004, before me, the undersigned, a notary public in and for said state, personally appeared **Jeffrey P. Kraham**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____

Notary Public

This instrument is accepted this _____ day of _____, 2004.

STATE OF NEW YORK ACTING THROUGH THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

By :_____

Title: _____

STATE OF NEW YORK):

COUNTY OF):

On this day of in the year 2004, before me, the undersigned, a notary public in and for said state, personally appeared ,

personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____

Notary Public

EXHIBIT A

PARCEL I

ALL THAT TRACT OR PARCEL OF LAND, situate in the Town of Colesville, Broome County, New York, in the Robert Harper Patent, and bounded and described as follows:

BEGINNING at a 16 inch Beech tree on the east bank of the Susquehanna River just north of a small brook, being the southwest corner of Lester Skellett's farm; Thence along Skellett's south line South 79 degrees 50 minutes East (as the compass points in 1948) 559 feet to the west right-of way line of the D. & H. R.R.; Thence along said right-of-way North 27 degrees 22 minutes West 395 feet; Thence North 61 degrees 20 minutes East 100 feet to an iron in the east right-of-way line of said railroad; Thence North 66 degrees 26 minutes East 302.6 feet to the center of a culvert headwall on the east side of the public highway; Thence North 79 degrees 24 minutes East 2224 feet to a point 4 feet south of a 3 inch hickory sapling on the east side of a wood road; Thence North 4 degrees 22 minutes East 404 feet to a stake and stones in Skellett's north line, said stake marking the boundary between lands of Marcus Searles on the east and Harry Wightman on the west; Thence along Skellett's north line North 80 degrees 23 minutes West 3180 feet, more or less, to the center of the public highway aforesaid; Thence along the center of the highway North 31 degrees 08 minutes West 289.7 feet; Thence South 58 degrees 52 minutes West 600 feet, more or less, to the east bank of the Susquehanna River; Thence southeasterly along the river bank about 1900 feet to the point of beginning; EXCEPTING the right-of-way of the D. & H. R.R. being a strip of land 100 feet wide and about 1870 feet long, crossing the parcel herein conveyed approximately parallel with the public highway. Containing 80 acres of land, more or less, excluding the railroad right-of-way, but including the public highway.

SUBJECT to easements and rights of way, if any, either of record or which an inspection of the premises might disclose, heretofore given for highway, electric, telephone or other utility purposes.

EXCEPTING AND RESERVING, however, the following two parcels:

(1) "ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Colesville, Broome County, New York, in the Robert Harper Patent and bounded and described as follows: Beginning at an iron in the east line of the County Road from Center Village to Doraville at its intersection with the boundary line between lands of the grantors (formerly) on the south and lands formerly of Ada Scott on the north; thence along said boundary South 80 degrees 23 minutes East (as the compass points in 1949) 339.3 feet to an iron; thence South 29 degrees 48 minutes East 183.2 feet to an iron about one foot southeast of a poplar tree; thence South 77 degrees 58 minutes West 255.5 feet to an iron in the east side of the aforesaid road opposite a culvert pipe; thence along the east line of the road North 33 degrees 09 minutes West 321.2 feet to the point or place of beginning containing 1.43 acres of land, more or less. ALSO all right, title and interest of the grantors to that part of the highway lying between the center of the road and the sides

of the lot extended thereto." BEING the same premises conveyed by Howard Prentice and Marjorie Prentice, husband and wife, to Alvah Cower by deed dated January 17, 1950 and recorded in the Broome County Clerk's office on April 20, 1950 in Book 737 of Deeds at page 38.

(2) "ALL THAT TRACT OR PARCEL OF LAND, situate in the Town of Colesville, Broome County, New York, in the Robert Harper Patent and bounded and described as follows: beginning at the center of a concrete head wall on the east side of the road from Doraville to Center Village, in the south line of lands conveyed to the parties of the first part by the parties of the second part by Warranty deed dated June 1, 1948 and recorded in the Broome County Clerk's Office on June 12, 1948 in Liber 679 of deeds at page 340; thence along said south line, north seventy-nine degrees twenty-four minutes (79 degrees 24 minutes) east (as the compass pointed in 1948) twenty two hundred twenty four (2224) feet to a point four (4) feet south of a hickory sapling on the south side of a wood road; thence north four degrees twenty two minutes (4 degrees 22 minutes) east four hundred four (404) feet to a stake and stones at the northeast corner of lands of the parties of the first part; thence along the north line of the lands of the parties of the first part, north eighty degrees twenty three minutes (80 degrees 23 minutes) west sixteen hundred feet, more or less, to an iron; thence south thirty one degrees west (s. 31 degrees 00 minutes w.) Twelve hundred fifty nine (1259) feet to the point of beginning, containing thirty one and forty two one hundredths (31.42) acres of land, more or less, including easements and restrictions of record. BEING the same premises conveyed by Howard Prentice and Marjorie Prentice, husband and wife, to Lester J. Skellett and Alice L. Skellett, husband and wife by deed dated July 16, 1953 and recorded in the Broome County Clerk's office on July 21, 1953 in Book 836 of Deeds at page 594.

EXCEPTING AND RESERVING ALL THAT TRACT OR PARCEL OF LAND on the southwest side of West Windsor Road (County Road No. 64) containing 23.2 acres, more or less, which is subject to a right of way for the railroad and is bounded on the northeast by West Windsor Road (County Road No. 64) and on the southwest by the Susquehanna River.

It is the intend of this Deed to convey all lands owned by the Grantors to the County of Broome which are on the northeast side of West Windsor Road (County Road No. 64) and to reserve to the Grantors all lands on the southwest side of West Windsor Road (County Road No. 64).

Being the same premises conveyed to the County of Broome by Elwood Lee and C. Lorraine Lee by deed dated August 6, 1987 and recorded in the Broome County Clerk's Office in Book of Deeds 1633 at page 187.

PARCEL II

ALL THAT TRACT OR PARCEL OF LAND situated in the Town of Colesville, County of Broome, State of New York, in the Robert Harper Patent hereinafter described as follows:

Beginning at an iron in the east line of the County Road from Center Village to Doraville at its intersection with the boundary line between lands of the grantors (formerly) on the south and lands formerly of Ada Scott on the north; thence along said boundary S. 80 deg. 23 min. E. (as the compass points in 1949) 339.3 feet to an iron; thence S. 29 deg. 48 min. E 183.2 feet to an iron about one foot southeast of a poplar tree; thence S. 77 deg. 58 min. W. 255.5 feet to an iron in the east side of the aforesaid road opposite to culvert pipe; thence along the east line of the road N. 33 deg. 09 min. W. 321.2 feet to the point or place of beginning; containing 1.43 acres of land, more or less. Also all right, title and interest of the grantor to that part of the highway lying between the center of the road and the sides of the lot extended thereto.

Being the same premises conveyed to the County of Broome by Janet Smith by deed dated March 10, 2001 and recorded in the Broome County Clerk's Office in Book of Deeds 1957 at page 124.

PARCEL III

All that piece or parcel of land situated in the Town of Colesville, Broome County, New York State, hereinafter described as follows:

MAP NO. CL – 230 PARCEL NO. 1

Beginning at a point on the easterly boundary of the existing East Windsor Road, County Highway No. 64 at the intersection of the said boundary with the division line between the property of Rudolph C. & Ella De Freitas, reputed owner on the north and the property of the grantor herein on the south. Said point being 21± feet distant northeasterly measured at right angles from station 10+98 of the hereinafter described survey baseline for the proposed reconstruction of the East Windsor Road, County Highway No. 64;

Thence northeasterly along said division line a distance of 24.2 feet to a point 44.3 feet distant northeasterly measured at right angles from station 10+91 of said baseline;

Thence southeasterly continuing along said division line a distance of 8.2 feet to a point 46.8 feet distant northeasterly measured at right angles from station 10+83 of said baseline;

Thence through the property of the grantor herein the following 1 course and distance;

Thence S 41-49-13 W a distance of 27.6 feet to its intersection with the easterly boundary of said existing County Highway the last mentioned point being 19± feet distant northeasterly measured at right angles from station 10+79 of the said baseline;

Thence northwesterly along the last mentioned boundary of said existing County Highway a distance of 19± feet to the point of beginning.

Said parcel containing 0.01 acres of land to be the same, more or less.

The aforementioned survey baseline as shown on a map on file in the office of the Broome County Department of Public Works is described as follows:

Beginning at Pl station 10+00 thence N 39-43-37 W a distance of 381.33 feet to Pl station 13+81.33.

The locations for the above presecibed baseline are on file in the Broome County Department of Public Works.

All bearing referred to magnetic north as of March 1988 A.D.

Said parcel being a portion of the parcel designated on the Broome County Tax Map as 10-48-S1 and recorded in the Broome County Clerk's Office in Liber 1156, Page 693.

PARCEL IV

THAT TRACT, PIECE OR PARCEL OF LAND, situate in the Town of Colesville, County of Broome and State of New York described as follows: Being all that parcel of land bounded on the North by lands now or formerly owned by Frank H. Huggins and wife; on the East and South by lands now or formerly owned by Howard A. Prentice and wife; on the West by lands now or formerly owned by Frank H. Huggins and wife. Located on the end of a right-of-way or an abandoned road. Comprising 10 acres of land be the same more or less. Being the same premises described on the Broome County Tax Map of Colesville as parcel No. 10-50.

Being the same premises conveyed to the Town of Colesville by the County of Broome by a deed dated December 18th 1964 and recorded in the Broome County Clerk's Office January 6th 1965 in Liber of Deeds 1087 at page 39.

ALSO, ALL THAT TRACT OR PARCEL OF LAND, situate in the Town of Colesville, County of Broome and State of New York, bounded and described as follows: Commencing at a point in the center of the County Road leading from Windsor to Afton, which point is the southwesterly corner of the parcel hereby conveyed and is in the northerly boundary line of premises of Ada Scott; thence in a general northwesterly direction along the center of said County Road to a point which point is in the southerly boundary line of premises of Frank Huggins; thence in a general easterly direction along the said premises of Frank Huggins to a point; thence in a general northerly direction along the said premises of Frank Huggins to a point which point is in the southerly boundary of premises of Eugene Bunker; thence in a general easterly direction along the said premises of Eugene Bunker to a point; thence in a general northerly direction along the said premises of Eugene Bunker to a point which point is in the southerly boundary of premises of Frank Huggins; thence in a general easterly direction along said premises of Frank Huggins and along premises of Leland and Beulah Nabinger to a point; thence in a general southerly direction along the premises of said Leland and Beulah Nabinger to a

point, which point is in the northerly boundary of premises of Myrle L. Brundin; thence in a general westerly direction along the said premises of Myrle L. Brundin to a point; thence in a general southerly direction along the premises of Myrle L. Brundin to a point, which point is in the northerly boundary of premises of now or formerly of Howard A. Prentice; thence in a general westerly direction along said premises now or formerly of Howard A. Prentice to a point, which point is in the easterly boundary of premises of Ada Scott; thence in a general northerly direction along said premises of Ada Scott to a point; thence in a general westerly direction along said premises of Ada Scott to the point or place of beginning in the center line of the Windsor-Afton County Road.

EXCEPTING AND RESERVING from the premises hereby conveyed all that tract or parcel of land conveyed by George Collington and wife to Franklin Putman by deed dated February 4, 1851 and recorded in Broome County Clerk's Office on April 12, 1869 in Liber 79 of Deeds Page 414, said premises being described in such deed as follows: "ALL THAT CERTAIN LOT, PIECE OR PARCEL OF LAND, bounded as follows viz, Beginning in the center of the highway north of the bridge between said Putnam house and Stephen Wassons. From thence running north sixty-one degrees east sixty-six links to a stake and stones thence south sixty-five degrees east one chain and seventy-five links to an apple tree thence north forty degrees fifteen minutes east one chain sixty-two links to a chestnut tree thence north nineteen degrees thirty minutes east three chains and three links to a stake and stones thence north fifty-one degrees thirty minutes east six chains sixty-seven links to hemlock tree thence north three degrees east to the line between Evan Northrups and George Collingtons from thence running north eighty-six degrees thirty minutes west fourteen chains and four links to the center of the highway at the southwest corner of Evan Northrups from thence south six degrees thirty minutes east three chains forty-two links thence south thirty-five degrees fifteen minutes east seven chains and seventeen links to the place of beginning containing 7 acres 2 roods 13 rods and 137 square feet of land. Said property of the second part his heirs and assigns is to build and keep in repair forever all of the line fences between said lot of land heretofore described and bounded and granted to the said party of the second part and the lands and premises adjoining now belonging to the said party of the first part."

Being the same premises conveyed to the County of Broome by the Town of Colesville by deed dated January 31, 1969 and recorded in the Broome County Clerk's Office on the 9th day of February, 1970 in Book 1156 of Deeds at page 693.

This conveyance is made subject to a certain right of way, if the same still exists, as more fully set forth in a deed given by Harry Collington and wife to Eugene A. Bunker and recorded in Broome County Clerk's Office on May 8, 1928, in Liber 385 of Deeds at page 535, to which deed reference is hereby made.

PARCEL V

ALL THAT TRACT, PIECE, OR PARCEL OF LAND, situate in the Town of Colesville, County of Broome and State of New York, bounded as follows: BEGINNING in the center of the highway north of the bridge between the house on the

premises here conveyed and Stephen Wassons (formerly); thence running north 61 degrees east, 66 links to a stake and stones; thence south 65 degrees east, 1 chain and 75 links to an apple tree; thence north 40 degrees 15 minutes east, 1 chain and 62 links to a chestnut tree; thence north 19 degrees 30 minutes east, 3 chains and 3 links to a stake and stones; thence north 51 degrees 30 minutes east, 6 chains and 67 links to a hemlock tree; thence north 3 degrees east to the line between Oliver K. Swift (formerly) now the Knox Farm and George Collington, (now Harry Collington); thence north 86 degrees 30 minutes west, 14 chains and 4 links to the center of the highway at the southwest corner of the Oliver K. Swift Farm; thence south 6 degrees 30 minutes east 3 chains and 42 links; thence south 35 degrees 15 minutes east, 7 chains and 17 links to the place of beginning, this parcel as above described containing 7 acres, 2 roods, 13 rods and 137 sq. feet of land, and being the same premises conveyed to Ambrose S. Dibble (now deceased) from Franklin Putnam and wife by deed dated April 9th, 1869 and recorded in Broome County Clerk's Office April 12th, 1869, in Book of Deeds No. 78 at page 336.

Said parties of the second part, their heirs and assigns are to build and keep in repair forever all the line fence between said lot of land herein described and conveyed and the lands and premises adjoining belonging to Harry Collington as provided in said Putnam deed.

And the parties of the first part EXCEPT AND RESERVE from lands above described and here conveyed to second parties, all the rights and privileges heretofore granted by said Ambrose S. Dibble to William E. Knox, his heirs and assigns by Warranty Deed dated May 31st, 1902 and recorded in Book of Deeds No. 185, page 322, conveying certain water privileges to said Knox, bounded and described as follows: All that tract or parcel of land situated in the Town of Colesville, Broome County, New York, and being located on the line between the said parties farms, 50 to 60 rods from the highway or river road leading from Dr. A. S. Dibble's to Doraville in said town, and being a portion of a reservoir lately constructed by said party of the second part on the south line of his farm and extending over onto the land of the party of the first part at a point about 6 rods west from the creek crossing said line and running thence to the Susquehanna River; said portion so extending onto first parties land being and occupying about (and this grant is intended to cover) 14 feet along the line and 8 feet south from said line onto party of the first part (including the reservoir as already constructed) the distance to make up the 14 feet along the line to be equal in distance to make up the 14 feet along the line to be equal in distance from wall on each side, and the 8 feet south includes all vacant space left outside of south wall of said reservoir. This grant is to include the right of way for conducting the water from said reservoir to a hydraulic ram as now located on lands of the part of the first part which is about 9 rods southerly from said reservoir and near the above mentioned creek, thence forced back by said ram along same ditch to a point near the reservoir; thence crossing the said line onto the land of the second party. This grant is also intended to and does include and convey to the said party of the second part, his heirs and assigns a piece of land 20 feet square located at equal distance around said ram for the purpose of fencing and protecting the same. And this grant also includes the right – the right of way or easement to the party of the second part, his heirs and assigns, to at all times when necessary or desirable, to enter and pass back and forth over the lands of

first party for the purpose of fencing said reservoir and ram, keeping same in good order by repairing, relaying or replacing either of the above or the pipes or any of them so laid to conduct water from reservoir to ram and back to said line.

EXCEPTING THEREFROM PREMISES CONVEYED TO THE COUNTY OF BROOME, NEW YORK by Quit Claim Deed dated August 16, 1993, and recorded in the Broome County Clerk's Office on October 22, 1993, in Book 1829 of Deeds at page 1450, bounded and described as follows:

All that piece or parcel of land situated in the Town of Colesville, Broome County, New York State, hereinafter described as follows:

MAP NO. CL – 228 PARCEL NO. 1

Beginning at a point on the easterly boundary of the East Windsor Road, County Highway No. 64 at the intersection of the said boundary with the division line between the property of the County of Broome, Reputed Owner(s) on the south and the property of the grantor(s) on the north. Said point being 21± feet distant northeasterly measured at right angles from station 10+98 of the hereinafter described survey baseline for the proposed reconstruction of a part of the East Windsor Road, County Highway No. 64;

Thence northeasterly along said division line a distance of 24.2 feet to a point 44.3 feet distant northeasterly measured at right angles from station 10+91 of said baseline;

Thence southeasterly continuing along said division line a distance of 8.2 feet to a point 46.8 feet distant northeasterly measured at right angles from station 10+83 of said baseline;

Thence through the property of the granters herein the following 3 courses and distances;

Thence N 41 – 49'-13" E a distance of 20.4 feet to a point 67.00 feet distant northeasterly measured at right angles from station 10+86 of said baseline;

Thence N 49 – 39'-11" W a distance of 40.61 feet to a point 60.00 feet distant northeasterly measured at right angles from station 11+26 of said baseline;

Thence S 40 -58'-58" W a distance of 37.2 feet to its intersection with the easterly boundary of said existing County Highway the last mentioned point being 23± feet distant northeasterly measured at right angles from station 11+20 of said baseline;

Thence southeasterly along the last mentioned boundary of said existing County Highway a distance of 22± feet to the point of beginning.

Said parcel containing 0.032 acre of land to be the same, more or less.

The aforementioned survey baseline as shown on a map on file in the office of the Broome County Department of Public Works is described as follows:

Beginning at P1 station 10+00 thence N 39 -43'-37" W a distance of 381.33 feet to P1 station 13+81.33. Tie locations for the above prescribed baseline are on file in the Broome County Department of Public Works.

All bearing referred to Magnetic North as of March 1988 A.D.

Being the premises conveyed to the County of Broome by Rudolph C. DeFreitas and Ella DeFreitas by deed dated June 23, 1995 and recorded in the Broome County Clerk's Office on July 7, 1995 in Book of Deeds 1852 at page 1296.

ARCADIS

Infrastructure, buildings, environment, communications

ARCADIS G&M, Inc.
88 Duryea Road
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610
www.arcadis-us.com

Mr. Charles R. Scott
1495 East Windsor Road
Nineveh, New York 13813

Subject:
Environmental Easement
Colesville Landfill Project
Broome County, New York

ENVIRONMENTAL

Date:
9 August 2004

Contact:
Steve Feldman

Phone:
631-391-5244

Email:
sfeldman@arcadis-us.com

Dear Mr. Scott:

As discussed during our phone conversation on July 30, 2004, I have enclosed two (2) copies of an Environmental Easement for your review and signature. The Environmental Easement is being requested by the U. S. Environmental Protection Agency (USEPA) to ensure that you (Grantor) shall not construct or use any drinking water well on your property other than the well that was constructed by Broome County. The sole purpose of this easement is to provide the USEPA with a means of ensuring that public health is being protected.

In order to assist me in this matter, I am requesting that you sign both copies of the Environmental Easement and have your signature notarized. In addition, please write in your Social Security number and sign the enclosed TP-584 form so that the easement can be recorded. Please place both signed copies of the easement and the TP-584 form in the enclosed self-addressed envelope and I will make sure that the easement gets recorded. Please do not hesitate to call me at 631-391-5244 if you have any questions.

Sincerely,

ARCADIS G&M, Inc.

Steven Feldman

Steven M. Feldman
Project Manager

Enclosure

bcc:
George Jacob, USEPA
Joe Yavonditte, NYSDEC
Bob Behnke, Broome County
Ray Standish, Broome County

ENVIRONMENTAL PROTECTION EASEMENT
AND
DECLARATION OF RESTRICTIVE COVENANTS

This Environmental Protection Easement and Declaration of Restrictive Covenants is made this day of , 2004, by and between Charles R. Scott, ("Grantor"), having an address of 1495 E. Windsor Road, Nineveh, New York 13813, and, The County of Broome, a municipal corporation organized under the laws of the State of New York ("Grantee"), having an address of Edwin L. Crawford County Office Building, PO Box 1766, Binghamton, New York 13902.

WITNESSETH:

WHEREAS, Grantor is the owner of a parcel of land located in the County of Broome, State of New York, more particularly described on **Exhibit A** attached hereto and made a part hereof together with any buildings and improvements thereon and appurtenances thereto (the "Property"); and

WHEREAS, the property is adjacent to the Colesville Landfill Superfund Site ("Site") which the US Department of Environmental Protection Agency ("EPA"), pursuant to Section 105 of the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA") 42 USC § 9605, placed on the National Priorities list as set forth in Appendix B of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 CFR Part 300 by Publication in the Federal Register on June, 1986; and

WHEREAS, in a Record of Decision dated March, 1991 (the "ROD"), the Regional Administrator of EPA Region II selected, and the New York State Department of Environmental Conservation ("NYSDEC") concurred with, a "response action" for the site, which provides in part, for the following actions: Installation of a multimedia cap over the landfill material, periodic inspection of the cap and maintenance as necessary, initiation of a monitoring program upon completion of the closure activities, and impositions of property deed restrictions if necessary to prevent the installation of drinking water wells at the Site and restrict activities which could effect the integrity of the landfill cap, and

WHEREAS, Site response activities have been implemented except for the imposition of deed restrictions; and

WHEREAS, the parties hereto have agreed that Grantor shall grant a permanent easement and covenant a) to provide a right of access over the Property to the Grantee for purposes of implementing, facilitating and monitoring the response action; and b) to impose on the Property use restrictions that will run with the land for the purpose of protecting human health and the environment; and

WHEREAS, Grantor wishes to cooperate fully with the Grantee in the implementation of all response actions at the Site;

NOW, THEREFORE:

1. Grant: Grantor, on behalf of himself, his successors and assigns, in consideration of Grantees construction of one double encased bed rock well on the property and other good and valuable consideration, does hereby give, grant, covenant and declare in favor of the Grantee that the Property shall be subject to the restrictions on use and rights of access set forth below, and does give, grant and convey to the Grantee with general warranties of title the perpetual right to enforce said restrictions and rights, which shall be of the nature and character, and for the purposes hereinafter set forth, with respect to the Property.

2. Purpose: It is the purpose of this instrument to convey to the Grantee real property rights, which will run with the land, to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to contaminants.

3. Restrictions on use: The following restrictions on use apply to the use of the Property, run with the land and are binding on the Grantor: The Grantor shall take no actions on the property which disturb the integrity of the monitoring wells and extraction wells. Grantor shall not construct or use any drinking water well on the property other than the County constructed well.

4. Modification or termination of restrictions: The restrictions on use specified in the preceding paragraph of this instrument may only be modified, or terminated in whole or in part, in writing, by the Grantee, with the prior written consent of EPA, or New York State Department of Environmental Conservation provided, however, that any modification or termination of said restrictions shall not adversely affect the remedy selected by EPA or NYSDEC for the Site. If requested by the Grantor, such writing will be executed by Grantee in recordable form.

5. Right of access: A right of access to the Property at all reasonable times for the following purposes shall run with the land and be binding on Grantor:

   a) Implementing the response actions in the Record of Decision;

   b) Verifying any data or information relating to the Site;

   c) Verifying that no action is being taken on the Property in violation of the terms of this instrument or of any federal or state environmental laws or regulations;

   d) Conducting investigations under CERCLA relating to contamination on or near the Site, including, without limitation, sampling of air, water, sediments, soils; and

   e) Implementing additional or new response actions under CERCLA.

6. Reserved rights of Grantor: Grantor hereby reserves unto itself, its successors, and assigns, all rights and privileges in and to the use of the Property which are not incompatible with the restrictions, rights, covenants and easements granted herein.

7. Federal authority: Nothing in this document shall limit or otherwise affect EPA's rights of entry and access or EPA's authority to take response actions under CERCLA, the NCP, or other federal law.

8. No public access and use: No right of access or use by the general public to any portion of the Property is conveyed by this instrument.

9. Public notice: Grantor agrees to include in each instrument conveying any interest in any portion of the Property, including but not limited to deeds, leases and mortgages, a notice which is in substantially the following form:

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL PROTECTION EASEMENT AND DECLARATION OF RESTRICTIVE CONVENANTS, DATED _____, 20__, RECORDED IN THE BROOME COUNTY CLERK'S OFFICE ON _____, 20__, IN BOOK _____, PAGE _____, IN FAVOR OF, AND ENFORCEABLE BY, THE COUNTY OF BROOME AND BY THE UNITED STATES OF AMERICA AND THE STATE OF NEW YORK AS THIRD PARTY BENEFICIARIES.

Within thirty (30) days of the date of any such instrument of conveyance is executed, Grantor agrees to provide Grantee and EPA with a certified true copy of said instrument and, if it has been recorded in the public land records, its recording reference.

10. Enforcement: The Grantee shall be entitled to enforce the terms of this instrument by resort to specific performance. All remedies available hereunder shall be in addition to any and all other remedies at law or in equity, including CERCLA. Any forbearance, delay or omission to exercise Grantee's rights under this instrument in the event of a breach of any term of this instrument shall not be deemed to be a waiver by the Grantee of such term or of any of the rights of the Grantee under this instrument.

11. Damages: Grantee shall also be entitled to recover damages for breach of any covenant or violation of the terms of this instrument including any impairment to the remedial action that increases the cost of the selected response action for the Site as a result of such breach or violation.

12. Waiver of certain defenses: Grantor hereby waives any defense of laches, estoppel, or prescription.

13. Covenants: Grantor hereby covenants to and with the Grantee and its assigns, that the Grantor is lawfully seized in fee simple of the Property, that the Grantor has a good and lawful right and power to sell and convey it or any interest therein, that the

Property is free and clear of encumbrances and that the Grantor will forever warrant and defend the title thereto and the quiet possession thereof.

14. Notices: Any notice, demand, request, consent, approval, or communication under this instrument that either party desires or is required to give to the other shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

To Grantor:	To Grantee:
Charles R. Scott 1495 E. Windsor Road Nineveh, New York 13813	Broome County Department of Public Works PO Box 1766 Binghamton, New York 13902

A copy of each such communication shall also be sent to the following:

To EPA:

Chief, New York Remediation Fund
Emergency & Remedial Response Division
United States Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007
Attn: Colesville Landfill Superfund Site Remedial
Project Manager

To NYSDEC:

_____

_____

_____

15. General Provisions:

a) Controlling law: The interpretation and performance of this instrument shall be governed by the laws of the United States or, if there are no applicable federal laws, by the law of the state where the Property is located.

b) Liberal construction: Any general rule of construction to the contrary notwithstanding, this instrument shall be liberally construed in favor of the grant to effect the purpose of this instrument and the policy and purpose of CERCLA. If any provision of this instrument is found to be ambiguous, an interpretation consistent with the purpose of this instrument that would render the provision valid shall be favored over any interpretation that would render it invalid.

c) Severability: If any provision of this instrument, or the application of it to any person or circumstance, is found to be invalid, the remainder of the provisions of this instrument, or the application of such provisions to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

d) Entire agreement: This instrument sets forth the entire agreement of the parties with respect to rights and restrictions created hereby, and supersedes all prior discussions, negotiations, understandings, or agreements relating thereto,

all of which are merged herein; provided that nothing in this instrument shall be deemed to alter or modify the Consent Decree.

e) No forfeiture: Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

f) Joint obligation: If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

g) Successors: The covenants, easements, terms, conditions, and restrictions of this instrument shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running in perpetuity with the Property. The term "Grantor", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantor" and their personal representatives, heirs, successors, and assigns. The term "Grantee", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantee" and their personal representatives, heirs, successors, and assigns.

h) Captions: The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

i) Counterparts: The parties may execute this instrument in two or more counterparts, which shall, in the aggregate, be signed by both parties; each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

j) Third-Party Beneficiary: Grantor and Grantee hereby agree that EPA and NYSDEC shall be, on behalf of the public, third-party beneficiaries of the benefits, rights and obligations conveyed to Grantee in this instrument; provided that nothing in this instrument shall be construed to create any obligations on the part of EPA or NYSDEC.

TO HAVE AND TO HOLD unto the Grantee and its assigns forever.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in his name.

Executed this _____ day of _____, 2004.

_____

CHARLES R. SCOTT

STATE OF NEW YORK)
ss.)
COUNTY OF)

On this day of , Two Thousand Four before me, the subscriber, personally appeared _____ to me personally known and known to me to be the same person described in and who executed the within instrument, and he acknowledged to me that he executed the same.

_____
Notary Public

This instrument is accepted this _____ day of _____, 2004.

COUNTY OF BROOME

By _____
JEFFREY P. KRAHAM
Broome County Executive

STATE OF NEW YORK):

COUNTY OF BROOME):

On this day of in the year 2004, before me, the undersigned, a notary public in and for said state, personally appeared **Jeffrey P. Kraham**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

EXHIBIT A

PARCEL I

ALL THAT TRACT OR PARCEL OF LAND, situate in the Town of Colesville, County of Broome and State of New York, and situated on the east side of the Susquehanna River and lying between Center Village and Doraville, being originally a part of the farm owned and occupied by Harry Collington, bounded and described as follows: Beginning at a point at low water mark at a stake and stone, 77 feet north of lands owned by Ada Scott; thence easterly to lands of the D. & H. Railroad Company to a stake and stones set 73 feet north of lands of the said Ada Scott; thence southerly along the said railroad lands 73 feet to the lands of the said Ada Scott; thence westerly along the lands of Ada Scott to the Susquehanna River at low water mark; thence northerly along said river to the place of beginning containing about one-fourth acre of land, more or less, with the right of ingress and egress by way of a drive across the lands of George A. Springer and Hazel S. Springer (former owners), said driveway being already established, in accordance with a deed given by said Springers to Manual Peters, dated July 8, 1929 and recorded in Broome County Clerk's Office July 19, 1929 in Liber of Deeds, Book No. 398, page 302.

ALSO, ALL THAT TRACT OR PARCEL OF LAND, beginning at the Collington line and thence south along lands now or formerly of owned by the Delaware and Hudson Railroad Corp., 192 feet to an elm tree; thence west to an oak tree which stands on the east bank of the Susquehanna River; thence north along the bank of the Susquehanna River at low water mark about 190 feet to stake and stone; thence east to the place of beginning about nine-tenths of an acre of land be the same more or less.

Being the same premises conveyed to Charles A. Scott and Betty M. Scott by Margaret Rosenzweig and Rudolph Zweig by deed dated August 13, 1976 and recorded in the Broome County Clerk's Office on August 19, 1976 in Book of Deeds 1244 at page 49.

PARCEL II

ALL THAT CERTAIN TRACT OR PARCEL OF LAND, situate in the Town of Colesville, County of Broome and State of New York, bounded and described as follows: Starting at the west side of the Afton-Windsor Highway and running in a westerly direction to the line fence of the Delaware and Hudson Railroad, a distance of three hundred and seventy-two (372) feet; thence north two hundred and twenty-nine (229) feet to a stake and stones; thence east three hundred and eighty-nine (389) feet to highway; thence south two hundred twenty-nine (229) feet to the point of beginning.

This plot is described as formerly being bounded on the south by the farm known as the Abbott Farm; on the west by the Delaware and Hudson Railroad; on the north by the Ada Scott Farm and on the east by the highway; and formerly designated as Tax Map. 10-11-12 on the Broome County Tax Map for the Town of Colesville. Containing about two acres of land, be the same more or less.

Being the same premises conveyed to Charles R. Scott, individually by Charles R. Scott as Administrator of the Estate of Charles A. Scott by deed dated January 22, 1997 and recorded in the Broome County Clerk's Office in Book of Deeds 1876 at page 197.

TP-584 (10/96)

Recording Office Time Stamp

New York State Department of Taxation and Finance

Combined Real Estate Transfer Tax Return and Credit Line Mortgage Certificate

See instructions (TP-584-I) before completing this form. Please print or type.

Schedule A — Information Relating to Conveyance

Grantor ☐ Individual ☐ Corporation ☐ Partnership ☐ Other	Name *(if individual; last, first, middle initial)* Scott, Charles R.			Social Security Number
	Mailing address 1495 E. Windsor Road			Social Security Number
	City Nineveh	State NY	ZIP code 13813	Federal employer ident. number
Grantee ☐ Individual ☒ Corporation ☐ Partnership ☐ Other	Name *(if individual; last, first, middle initial)* County of Broome			Social Security Number
	Mailing address PO Box 1766			Social Security Number
	City Binghamton	State NY	ZIP code 13902	Federal employer ident. number 15 6000449

Location and description of property conveyed

Tax map designation			Address	City/Village	Town	County
Section	Block	Lot				
118.04	-2	12	1495 E. Windsor Road		Colesville	Broome
118.04	-2	9				

Type of property conveyed *(check applicable box)*

1 ☒ 1 - 3 family house
2 ☐ Residential cooperative
3 ☐ Residential condominium
4 ☐ Vacant land
5 ☐ Commercial/Industrial
6 ☐ Apartment building
7 ☐ Office building
8 ☐ Other _____

Date of conveyance: 7 (month) / (day) / 04 (year)

Percentage of real property conveyed which is residential real property _____ % *(see instructions)*

Condition of conveyance *(check all that apply)*

a. – Conveyance of fee interest
b. – Acquisition of a controlling interest (state percentage acquired _____ %)
c. – Transfer of a controlling interest (state percentage transferred _____ %)
d. – Conveyance to cooperative housing corporation
e. – Conveyance pursuant to or in lieu of foreclosure or enforcement of security interest *(attach Form TP-584.1, Schedule E)*
f. – Conveyance which consists of a mere change of identity or form of ownership or organization *(attach Form TP-584.1, Schedule F)*
g. – Conveyance for which credit for tax previously paid will be claimed *(attach Form TP-584.1, Schedule G)*
h. – Conveyance of cooperative apartment(s)
i. – Syndication
j. – Conveyance of air rights or development rights
k. – Contract assignment
l. – Option assignment or surrender
m. – Leasehold assignment or surrender
n. – Leasehold grant
o. ☒ Conveyance of an easement
p. ☒ Conveyance for which exemption from transfer tax is claimed (complete Schedule B, Part III)
q. – Conveyance of property partly within and partly without the state
r. – Other *(describe)* _____

Schedule B — Real Estate Transfer Tax Return (Article 31 of the Tax Law)

Part I – Computation of Tax Due

1	Enter amount of consideration for the conveyance *(if you are claiming a total exemption from tax, check the exemption claimed box, enter consideration and proceed to Part III)* ☒ Exemption claimed	1	1 00
2	Continuing lien deduction *(see instructions if property is taken subject to mortgage or lien)*	2	( )
3	Taxable consideration *(subtract line 2 from line 1)*	3	
4	Tax: $2 for each $500, or fractional part thereof, of consideration on line 3	4	
5	Amount of credit claimed *(see instructions and attach Form TP-584.1, Schedule G)*	5	( )
6	Total tax due* *(subtract line 5 from line 4)*	6	

Part II – Computation of Additional Tax Due on the Conveyance of Residential Real Property for $1 Million or More

1	Enter amount of consideration for conveyance (from Part I, line 1)	1	
2	Taxable consideration *(multiply line 1 by the percentage of the premises which is residential real property; see instructions)*	2	
3	Total additional transfer tax due* *(1% of line 2)*	3	

Please make check(s) payable to the county clerk where the recording is to take place or if the recording is to take place in New York City, make check(s) payable to the ***NYC Department of Finance***. If no recording is required, send this return and your check(s) made payable to the ***Department of Taxation and Finance***, directly to the NYS Tax Department, TTTB-Transfer Tax, PO Box 5045, Albany NY 12205-5045.

For recording officer's use	Amount received	Date received	Transaction number
	Part I $ _____ Part II $		

Schedule B — (continued)

Part III – Explanation of Exemption Claimed in Part I, line 1 *(check any boxes that apply)*

The conveyance of real property is exempt from the real estate transfer tax for the following reason:

a. Conveyance is to the United Nations, the United States of America, the state of New York or any of their instrumentalities, agencies or political subdivisions (or any public corporation, including a public corporation created pursuant to agreement or compact with another state or Canada) ..... a [X]

b. Conveyance is to secure a debt or other obligation ..... b [ ]

c Conveyance is without additional consideration to confirm, correct, modify or supplement a prior conveyance ..... c [ ]

d. Conveyance of real property is without consideration and not in connection with a sale, including conveyances conveying realty as bona fide gifts ..... d [ ]

e. Conveyance is given in connection with a tax sale ..... e [ ]

f. Conveyance is a mere change of identity or form of ownership or organization where there is no change in beneficial ownership. (This exemption cannot be claimed for a conveyance to a cooperative housing corporation of real property comprising the cooperative dwelling or dwellings.) Attach Form TP-584.1, Schedule F ..... f [ ]

g. Conveyance consists of deed of partition ..... g [ ]

h. Conveyance is given pursuant to the federal bankruptcy act ..... h [ ]

i. Conveyance consists of the execution of a contract to sell real property without the use or occupancy of such property or the granting of an option to purchase real property without the use or occupancy of such property ..... i [ ]

j. Conveyance of an option or contract to purchase real property with the use or occupancy of such property where the consideration is less than $200,000 and such property was used solely by the grantor as the grantor's personal residence and consists of a 1-, 2-, or 3-family house, an individual residential condominium unit, or the sale of stock in a cooperative housing corporation in connection with the grant or transfer of a proprietary leasehold covering an individual residential cooperative apartment ..... j [ ]

k. Conveyance is not a conveyance within the meaning of section 1401(e) of Article 31 of the Tax Law *(attach documents supporting such claim)* ..... k [ ]

l. Other *(attach explanation)* ..... l [ ]

Schedule C — Credit Line Mortgage Certificate (Article 11 of the Tax Law)

Complete the following only if the interest being transferred is a fee simple interest.

I (we) certify that: *(check the appropriate box)*

1 [X] The real property being sold or transferred is not subject to an outstanding credit line mortgage.

2 [ ] The real property being sold or transferred is subject to an outstanding credit line mortgage. However, an exemption from the tax is claimed for the following reason:

- [ ] The transfer of real property is a transfer of a fee simple interest to a person or persons who held a fee simple interest in the real property (whether as a joint tenant, a tenant in common or otherwise) immediately before the transfer.
- [ ] The transfer of real property is (A) to a person or persons related by blood, marriage or adoption to the original obligor or to one or more of the original obligors or (B) to a person or entity where 50% or more of the beneficial interest in such real property after the transfer is held by the transferor or such related person or persons (as in the case of a transfer to a trustee for the benefit of a minor or the transfer to a trust for the benefit of the transferor).
- [ ] The transfer of real property is a transfer to a trustee in bankruptcy, a receiver, assignee or other officer of a court.
- [ ] The maximum principal amount secured by the credit line mortgage is $3,000,000 or more and the real property being sold or transferred is **not** principally improved nor will it be improved by a one- to six-family owner-occupied residence or dwelling.

  Please note: for purposes of determining whether the maximum principal amount secured is $3,000,000 or more as described above, the amounts secured by two or more credit line mortgages may be aggregated under certain circumstances. See TSB-M-96(6)-R for more information regarding these aggregation requirements.
- [ ] Other (attach detailed explanation).

3 [ ] The real property being transferred is presently subject to an outstanding credit line mortgage. However, no tax is due for the following reason:

- [ ] A certificate of discharge of the credit line mortgage is being offered at the time of recording the deed.
- [ ] A check has been drawn payable for transmission to the credit line mortgagee or his agent for the balance due, and a satisfaction of such mortgage will be recorded as soon as it is available.

4 [ ] The real property being transferred is subject to an outstanding credit line mortgage recorded in _____ (insert liber and page or reel or other identification of the mortgage). The maximum principal amount of debt or obligation secured by the mortgage is _____. No exemption from tax is claimed and the tax of _____ is being paid herewith. *(Make check payable to county clerk where deed will be recorded or, if the recording is to take place in New York City, make check payable to the **NYC Department of Finance.**)*

Signature (both the grantor(s) and grantee(s) must sign).

The undersigned certify that the above return, including any certification, schedule or attachment, is to the best of his/her knowledge, true and complete.

Grantor	Title	Grantee	Title
Charles R. Scott		County of Broome by Jeffrey P. Kraham	County Executive

Reminder: Did you complete all of the required information in Schedules A and B? Were you required to complete Schedule C? If you checked e, f or g in Schedule A, did you complete TP-584.1? Have you attached your check(s) made payable to the county clerk where recording will take place or, if the recording is in New York City, to the *NYC Department of Finance*? If no recording is required, send your check(s), made payable to the *Department of Taxation and Finance*, directly to the NYS Tax Department, TTTB-Transfer Tax, PO Box 5045, Albany NY 12205-5045.

ARCADIS

Infrastructure, buildings, environment, communications

ARCADIS G&M, Inc.
88 Duryea Road
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610
www.arcadis-us.com

Mr. Harry Ray Scott
49 Main Street
Afton, New York 13730

Subject:
Environmental Easement
Colesville Landfill Project
Broome County, New York

ENVIRONMENTAL

Date:
9 August 2004

Contact:
Steve Feldman

Phone:
631-391-5244

Email:
sfeldman@arcadis-us.com

Dear Mr. Scott:

As discussed during our phone conversation on July 30, 2004, I have enclosed two (2) copies of an Environmental Easement for your review and signature. The Environmental Easement is being requested by the U. S. Environmental Protection Agency (USEPA) to ensure that you (Grantor) shall not construct or use any drinking water well on your property other than the double-cased bedrock well that will be constructed by Broome County if the property is ever occupied. The sole purpose of this easement is to provide the USEPA with a means of ensuring that public health is being protected.

In order to assist me in this matter, I am requesting that you sign both copies of the Environmental Easement and have your signature notarized. In addition, please write in your Social Security number and sign the enclosed TP-584 form so that the easement can be recorded. Please place both signed copies of the easement and the TP-584 form in the enclosed self-addressed envelope and I will make sure that the easement gets recorded. Please do not hesitate to call me at 631-391-5244 if you have any questions.

Sincerely,

ARCADIS G&M, Inc.

Steven Feldman

Steven M. Feldman
Project Manager

Enclosure

bcc:
George Jacob, USEPA
Joe Yavonditte, NYSDEC
Bob Behnke, Broome County
Ray Standish, Broome County

ENVIRONMENTAL PROTECTION EASEMENT
AND
DECLARATION OF RESTRICTIVE COVENANTS

This Environmental Protection Easement and Declaration of Restrictive Covenants is made this day of , 2004, by and between Harry Ray Scott, ("Grantor"), having an address of 49 Main Street, Afton, New York 13730, and, The County of Broome, a municipal corporation organized under the laws of the State of New York ("Grantee"), having an address of Edwin L. Crawford County Office Building, PO Box 1766, Binghamton, New York 13902.

WITNESSETH:

WHEREAS, Grantor is the owner of a parcel of land located in the County of Broome, State of New York, more particularly described on **Exhibit A** attached hereto and made a part hereof together with any buildings and improvements thereon and appurtenances thereto (the "Property"); and

WHEREAS, the property is adjacent to the Colesville Landfill Superfund Site ("Site") which the US Department of Environmental Protection Agency ("EPA"), pursuant to Section 105 of the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA") 42 USC § 9605, placed on the National Priorities list as set forth in Appendix B of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 CFR Part 300 by Publication in the Federal Register on June, 1986; and

WHEREAS, in a Record of Decision dated March, 1991 (the "ROD"), the Regional Administrator of EPA Region II selected, and the New York State Department of Environmental Conservation ("NYSDEC") concurred with, a "response action" for the site, which provides in part, for the following actions: Installation of a multimedia cap over the landfill material, periodic inspection of the cap and maintenance as necessary, initiation of a monitoring program upon completion of the closure activities, and impositions of property deed restrictions if necessary to prevent the installation of drinking water wells at the Site and restrict activities which could effect the integrity of the landfill cap, and

WHEREAS, Site response activities have been implemented except for the imposition of deed restrictions; and

WHEREAS, the parties hereto have agreed that Grantor shall grant a permanent easement and covenant a) to provide a right of access over the Property to the Grantee for purposes of implementing, facilitating and monitoring the response action; and b) to impose on the Property use restrictions that will run with the land for the purpose of protecting human health and the environment; and

WHEREAS, Grantor wishes to cooperate fully with the Grantee in the implementation of all response actions at the Site;

NOW, THEREFORE:

1. Grant: Grantor, on behalf of himself, his successors and assigns, in consideration of Grantees agreement to construct one double encased bed rock well on the property if it is ever occupied and other good and valuable consideration, does hereby give, grant, covenant and declare in favor of the Grantee that the Property shall be subject to the restrictions on use and rights of access set forth below, and does give, grant and convey to the Grantee with general warranties of title the perpetual right to enforce said restrictions and rights, which shall be of the nature and character, and for the purposes hereinafter set forth, with respect to the Property.

2. Purpose: It is the purpose of this instrument to convey to the Grantee real property rights, which will run with the land, to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to contaminants.

3. Restrictions on use: The following restrictions on use apply to the use of the Property, run with the land and are binding on the Grantor: The Grantor shall take no actions on the property which disturb the integrity of the monitoring wells and extraction wells. Grantor shall not construct or use any drinking water well on this property other than the County constructed well.

4. Modification or termination of restrictions: The restrictions on use specified in the preceding paragraph of this instrument may only be modified, or terminated in whole or in part, in writing, by the Grantee, with the prior written consent of EPA, or the New York State Department of Environmental Conservation provided, however, that any modification or termination of said restrictions shall not adversely affect the remedy selected by EPA or NYSDEC for the Site. If requested by the Grantor, such writing will be executed by Grantee in recordable form.

5. Right of access: A right of access to the Property at all reasonable times for the following purposes shall run with the land and be binding on Grantor:

   a) Implementing the response actions in the Record of Decision;

   b) Verifying any data or information relating to the Site;

   c) Verifying that no action is being taken on the Property in violation of the terms of this instrument or of any federal or state environmental laws or regulations;

   d) Conducting investigations under CERCLA relating to contamination on or near the Site, including, without limitation, sampling of air, water, sediments, soils; and

e) Implementing additional or new response actions under CERCLA.

6. Reserved rights of Grantor: Grantor hereby reserves unto itself, its successors, and assigns, all rights and privileges in and to the use of the Property which are not incompatible with the restrictions, rights, covenants and easements granted herein.

7. Federal authority: Nothing in this document shall limit or otherwise affect EPA's rights of entry and access or EPA's authority to take response actions under CERCLA, the NCP, or other federal law.

8. No public access and use: No right of access or use by the general public to any portion of the Property is conveyed by this instrument.

9. Public notice: Grantor agrees to include in each instrument conveying any interest in any portion of the Property, including but not limited to deeds, leases and mortgages, a notice which is in substantially the following form:

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL PROTECTION EASEMENT AND DECLARATION OF RESTRICTIVE CONVENANTS, DATED _____, 20__, RECORDED IN THE BROOME COUNTY CLERK'S OFFICE ON _____, 20__, IN BOOK _____, PAGE _____, IN FAVOR OF, AND ENFORCEABLE BY, THE COUNTY OF BROOME AND BY THE UNITED STATES OF AMERICA AND THE STATE OF NEW YORK AS THIRD PARTY BENEFICIARIES.

Within thirty (30) days of the date of any such instrument of conveyance is executed, Grantor agrees to provide Grantee and EPA with a certified true copy of said instrument and, if it has been recorded in the public land records, its recording reference.

10. Enforcement: The Grantee shall be entitled to enforce the terms of this instrument by resort to specific performance. All remedies available hereunder shall be in addition to any and all other remedies at law or in equity, including CERCLA. Any forbearance, delay or omission to exercise Grantee's rights under this instrument in the event of a breach of any term of this instrument shall not be deemed to be a waiver by the Grantee of such term or of any of the rights of the Grantee under this instrument.

11. Damages: Grantee shall also be entitled to recover damages for breach of any covenant or violation of the terms of this instrument including any impairment to the remedial action that increases the cost of the selected response action for the Site as a result of such breach or violation.

12. Waiver of certain defenses: Grantor hereby waives any defense of laches, estoppel, or prescription.

13. Covenants: Grantor hereby covenants to and with the Grantee and its assigns, that the Grantor is lawfully seized in fee simple of the Property, that the Grantor has a good and lawful right and power to sell and convey it or any interest therein, that the Property is free and clear of encumbrances and that the Grantor will forever warrant and defend the title thereto and the quiet possession thereof.

14. Notices: Any notice, demand, request, consent, approval, or communication under this instrument that either party desires or is required to give to the other shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

To Grantor:	To Grantee:
Harry Ray Scott 49 Main Street Afton, New York 13730	Broome County Department of Public Works PO Box 1766 Binghamton, New York 13902

A copy of each such communication shall also be sent to the following:

To EPA:	To NYSDEC:
Chief, New York Remediation Board Emergency & Remedial Response Division United States Environmental Protection Agency 290 Broadway, 20th Floor New York, New York 10007 Attn: Colesville Landfill Superfund Site Remedial Project Manager	_____ _____ _____

15. General Provisions:

a) Controlling law: The interpretation and performance of this instrument shall be governed by the laws of the United States or, if there are no applicable federal laws, by the law of the state where the Property is located.

b) Liberal construction: Any general rule of construction to the contrary notwithstanding, this instrument shall be liberally construed in favor of the grant to effect the purpose of this instrument and the policy and purpose of CERCLA. If any provision of this instrument is found to be ambiguous, an interpretation consistent with the purpose of this instrument that would render the provision valid shall be favored over any interpretation that would render it invalid.

c) Severability: If any provision of this instrument, or the application of it to any person or circumstance, is found to be invalid, the remainder of the provisions of this instrument, or the application of such provisions to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

d) Entire agreement: This instrument sets forth the entire agreement of the parties with respect to rights and restrictions created hereby, and supersedes all prior discussions, negotiations, understandings, or agreements relating thereto, all of which are merged herein; provided that nothing in this instrument shall be deemed to alter or modify the Consent Decree.

e) No forfeiture: Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

f) Joint obligation: If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

g) Successors: The covenants, easements, terms, conditions, and restrictions of this instrument shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running in perpetuity with the Property. The term "Grantor", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantor" and their personal representatives, heirs, successors, and assigns. The term "Grantee", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantee" and their personal representatives, heirs, successors, and assigns.

h) Captions: The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

i) Counterparts: The parties may execute this instrument in two or more counterparts, which shall, in the aggregate, be signed by both parties; each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

j) Third-Party Beneficiary: Grantor and Grantee hereby agree that EPA and NYSDEC shall be, on behalf of the public, third-party beneficiaries of the benefits, rights and obligations conveyed to Grantee in this instrument; provided that nothing in this instrument shall be construed to create any obligations on the part of EPA or NYSDEC.

TO HAVE AND TO HOLD unto the Grantee and its assigns forever.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in his name.

Executed this _____ day of _____, 2004.

_____

HARRY RAY SCOTT

STATE OF NEW YORK)
ss.)
COUNTY OF)

On this day of , Two Thousand Four before me, the subscriber, personally appeared _____ to me personally known and known to me to be the same person described in and who executed the within instrument, and he acknowledged to me that he executed the same.

_____
Notary Public

This instrument is accepted this _____ day of _____, 2004.

COUNTY OF BROOME

By _____
JEFFREY P. KRAHAM
Broome County Executive

STATE OF NEW YORK):

COUNTY OF BROOME):

On this day of in the year 2004, before me, the undersigned, a notary public in and for said state, personally appeared **Jeffrey P. Kraham**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

EXHIBIT A

All that Tract or Parcel of Land, situate in the Town of Colesville, County of Broome and State of New York, in the First Tract of Warren Township, bounded and described as follows, to wit:

Beginning at a black oak tree at the northwest corner of the farm known as the Abbot Farm on the easterly bank of the Susquehanna River, thence running south 85° east 41 chains and 50 links to a stake and stones; thence north 5° east 16 chains to a stake and stones; thence north 85° west 42 chains and 75 linkd to a stake in the center of the highway; thence north 25° west 1 chain and 75 links; thence south 35° west 14 chains to the river; thence down the river as it winds and turns to the place of beginning, containing seventy-six acres (76) of land be the same more or less. Being the same premises conveyed to Stephen Wasson by E. Rathbone and wife and Robert Harpur and wife by deed June 1st, 1847, which is recorded in the Broome County Liber 32 of Deeds at pages 444 445.

Also, all that certain other Piece or Parcel of Land, situate in the Town of Colesville aforesaid, being a part of the farm formerly owned by Philo Kent, deceased, being bounded and described as follows, to wit: Beginning at the north-westerly corner of said farm and running thence south 84½° east along the north line of said farm 7 chains and 85 links to a stake on the north line on a lot formerly conveyed by James P. Abbott and Wife Asa M. Abbot; thence south 52¼° west 4 chains and 50 links to the Susquehanna River; thence along the river to the place of beginning, containing one and one-fourth acres of land be the same more or less. Being the same premiseconveyed to Stephen Wasson by James P. Abbott and wife by deed dated September 24, 1849, and recorded in Broome County Liber 34 of Deeds at pages 222 and 223.

The aforementioned two parcels of land are the same premises owned and occupied by the said Stephen Wasson in his lifetime and of which he died seized.

Excepting and reserving therefrom that part of said promises heretofore conveyed by said Stephen Wasson and wife to James P. Abbott by deed dated September 24, 1849, conveying one and one-fourth acres; also two and 56/100 acres conveyed by said Stephen Wasson to the Delaware and Hudson Canal Company by deed dated December 14, 1870.

Being the same premises conveyed to Harry Ray Scott by John I. Scott, et al. by deed dated July 31, 1961 and recorded in the Broome County Clerk's Office at Book 1010 of deeds at page 77.

This conveyance is subject, however, to an easement for a high tension power line over the aforesaid lands, heretofore conveyed by the said Ada M. Scott to the Delaware and Hudson R. R. Corp., by an instrument dated August 26, 1930, recorded October 31, 1930, in Liber 400, page 510; Also subject to a water right and agreement therwith made between the said Ada M. Scott and Arthur T. Root, dated July 22, 1939, recorded May 17, 1945, in Liber 550, page 356; reference to which said two instruments is hereby made for a more particular description contained therein. Also excepting and reserving a parcel of land conveyed by said Ada M. Scott to Arthur T. Root, dated Aug. 15, 1936, recorded in Book 463, p. 467.

TP-584 (10/96)

Recording Office Time Stamp

New York State Department of Taxation and Finance

Combined Real Estate Transfer Tax Return and Credit Line Mortgage Certificate

See instructions (TP-584-I) before completing this form. Please print or type.

Schedule A — Information Relating to Conveyance

Grantor	Name *(if individual; last, first, middle initial)*			Social Security Number
[X] Individual	Scott, Harry Ray			
[ ] Corporation	Mailing address			Social Security Number
[ ] Partnership	49 Main Street			
[ ] Other	City	State	ZIP code	Federal employer ident. number
	Afton	NY	13730	
Grantee	Name *(if individual; last, first, middle initial)*			Social Security Number
[ ] Individual	County of Broome			
[X] Corporation	Mailing address			Social Security Number
[ ] Partnership	PO Box 1766			
[ ] Other	City	State	ZIP code	Federal employer ident. number
	Binghamton	NY	13902	15 6000449

Location and description of property conveyed

Tax map designation			Address	City/Village	Town	County
Section	Block	Lot				
118.04	-2	23	1535 East Windsor Road		Colesville	Broome

Type of property conveyed *(check applicable box)*

1 [ ] 1 - 3 family house
2 [ ] Residential cooperative
3 [ ] Residential condominium
4 [X] Vacant land
5 [ ] Commercial/Industrial
6 [ ] Apartment building
7 [ ] Office building
8 [ ] Other _____

Date of conveyance: 7 (month) / (day) / 04 (year)

Percentage of real property conveyed which is residential real property _____ % *(see instructions)*

Condition of conveyance *(check all that apply)*

a. – Conveyance of fee interest
b. – Acquisition of a controlling interest (state percentage acquired _____ %)
c. – Transfer of a controlling interest (state percentage transferred _____ %)
d. – Conveyance to cooperative housing corporation
e. – Conveyance pursuant to or in lieu of foreclosure or enforcement of security interest *(attach Form TP-584.1, Schedule E)*
f. – Conveyance which consists of a mere change of identity or form of ownership or organization *(attach Form TP-584.1, Schedule F)*
g. – Conveyance for which credit for tax previously paid will be claimed *(attach Form TP-584.1, Schedule G)*
h. – Conveyance of cooperative apartment(s)
i. – Syndication
j. – Conveyance of air rights or development rights
k. – Contract assignment
l. – Option assignment or surrender
m. – Leasehold assignment or surrender
n. – Leasehold grant
o. [X] Conveyance of an easement
p. [X] Conveyance for which exemption from transfer tax is claimed (complete Schedule B, Part III)
q. – Conveyance of property partly within and partly without the state
r. – Other *(describe)* _____

Schedule B — Real Estate Transfer Tax Return (Article 31 of the Tax Law)

Part I – Computation of Tax Due

1	Enter amount of consideration for the conveyance *(if you are claiming a total exemption from tax, check the exemption claimed box, enter consideration and proceed to Part III)* [X] **Exemption claimed**	1	1 00
2	Continuing lien deduction *(see instructions if property is taken subject to mortgage or lien)*	2	( )
3	Taxable consideration *(subtract line 2 from line 1)*	3	
4	Tax: $2 for each $500, or fractional part thereof, of consideration on line 3	4	
5	Amount of credit claimed *(see instructions and attach Form TP-584.1, Schedule G)*	5	( )
6	Total tax due* *(subtract line 5 from line 4)*	6	

Part II – Computation of Additional Tax Due on the Conveyance of Residential Real Property for $1 Million or More

1	Enter amount of consideration for conveyance (from Part I, line 1)	1	
2	Taxable consideration *(multiply line 1 by the percentage of the premises which is residential real property; see instructions)*	2	
3	Total additional transfer tax due* *(1% of line 2)*	3	

*Please make check(s) payable to the county clerk where the recording is to take place or if the recording is to take place in New York City, make check(s) payable to the ***NYC Department of Finance***. If no recording is required, send this return and your check(s) made payable to the ***Department of Taxation and Finance***, directly to the NYS Tax Department, TTTB-Transfer Tax, PO Box 5045, Albany NY 12205-5045.

For recording officer's use	Amount received	Date received	Transaction number
	Part I $ / Part II $		

Schedule B — (continued)

Part III – Explanation of Exemption Claimed in Part I, line 1 *(check any boxes that apply)*

The conveyance of real property is exempt from the real estate transfer tax for the following reason:

a. Conveyance is to the United States, the United States of America, the state of New York or any of their instrumentalities, agencies or political subdivisions (or any public corporation, including a public corporation created pursuant to agreement or compact with another state or Canada) ..... a [X]

b. Conveyance is to secure a debt or other obligation ..... b [ ]

c. Conveyance is without additional consideration to confirm, correct, modify or supplement a prior conveyance ..... c [ ]

d. Conveyance of real property is without consideration and not in connection with a sale, including conveyances conveying realty as bona fide gifts ..... d [ ]

e. Conveyance is given in connection with a tax sale ..... e [ ]

f. Conveyance is a mere change of identity or form of ownership or organization where there is no change in beneficial ownership. (This exemption cannot be claimed for a conveyance to a cooperative housing corporation of real property comprising the cooperative dwelling or dwellings.) Attach Form TP-584.1, Schedule F ..... f [ ]

g. Conveyance consists of deed of partition ..... g [ ]

h. Conveyance is given pursuant to the federal bankruptcy act ..... h [ ]

i. Conveyance consists of the execution of a contract to sell real property without the use or occupancy of such property or the granting of an option to purchase real property without the use or occupancy of such property ..... i [ ]

j. Conveyance of an option or contract to purchase real property with the use or occupancy of such property where the consideration is less than $200,000 and such property was used solely by the grantor as the grantor's personal residence and consists of a 1-, 2-, or 3-family house, an individual residential condominium unit, or the sale of stock in a cooperative housing corporation in connection with the grant or transfer of a proprietary leasehold covering an individual residential cooperative apartment ..... j [ ]

k. Conveyance is not a conveyance within the meaning of section 1401(e) of Article 31 of the Tax Law *(attach documents supporting such claim)* ..... k [ ]

l. Other *(attach explanation)* ..... l [ ]

Schedule C — Credit Line Mortgage Certificate (Article 11 of the Tax Law)

Complete the following only if the interest being transferred is a fee simple interest.

I (we) certify that: *(check the appropriate box)*

1 [X] The real property being sold or transferred is not subject to an outstanding credit line mortgage.

2 [ ] The real property being sold or transferred is subject to an outstanding credit line mortgage. However, an exemption from the tax is claimed for the following reason:

- [ ] The transfer of real property is a transfer of a fee simple interest to a person or persons who held a fee simple interest in the real property (whether as a joint tenant, a tenant in common or otherwise) immediately before the transfer.
- [ ] The transfer of real property is (A) to a person or persons related by blood, marriage or adoption to the original obligor or to one or more of the original obligors or (B) to a person or entity where 50% or more of the beneficial interest in such real property after the transfer is held by the transferor or such related person or persons (as in the case of a transfer to a trustee for the benefit of a minor or the transfer to a trust for the benefit of the transferor).
- [ ] The transfer of real property is a transfer to a trustee in bankruptcy, a receiver, assignee or other officer of a court.
- [ ] The maximum principal amount secured by the credit line mortgage is $3,000,000 or more and the real property being sold or transferred is **not** principally improved nor will it be improved by a one- to six-family owner-occupied residence or dwelling.

  Please note: for purposes of determining whether the maximum principal amount secured is $3,000,000 or more as described above, the amounts secured by two or more credit line mortgages may be aggregated under certain circumstances. See TSB-M-96(6)-R for more information regarding these aggregation requirements.
- [ ] Other (attach detailed explanation).

3 [ ] The real property being transferred is presently subject to an outstanding credit line mortgage. However, no tax is due for the following reason:

- [ ] A certificate of discharge of the credit line mortgage is being offered at the time of recording the deed.
- [ ] A check has been drawn payable for transmission to the credit line mortgagee or his agent for the balance due, and a satisfaction of such mortgage will be recorded as soon as it is available.

4 [ ] The real property being transferred is subject to an outstanding credit line mortgage recorded in _____ (insert liber and page or reel or other identification of the mortgage). The maximum principal amount of debt or obligation secured by the mortgage is _____. No exemption from tax is claimed and the tax of _____ is being paid herewith. *(Make check payable to county clerk where deed will be recorded or, if the recording is to take place in New York City, make check payable to the* ***NYC Department of Finance.)***

Signature (both the grantor(s) and grantee(s) must sign).

The undersigned certify that the above return, including any certification, schedule or attachment, is to the best of his/her knowledge, true and complete.

Grantor	Title	Grantee	Title
Harry Ray Scott		County of Broome by Jeffrey P. Kraham	County Executive

Reminder: Did you complete all of the required information in Schedules A and B? Were you required to complete Schedule C? If you checked e, f or g in Schedule A, did you complete TP-584.1? Have you attached your check(s) made payable to the county clerk where recording will take place or, if the recording is in New York City, to the *NYC Department of Finance*? If no recording is required, send your check(s), made payable to the *Department of Taxation and Finance*, directly to the NYS Tax Department, TTTB-Transfer Tax, PO Box 5045, Albany NY 12205-5045.

ARCADIS

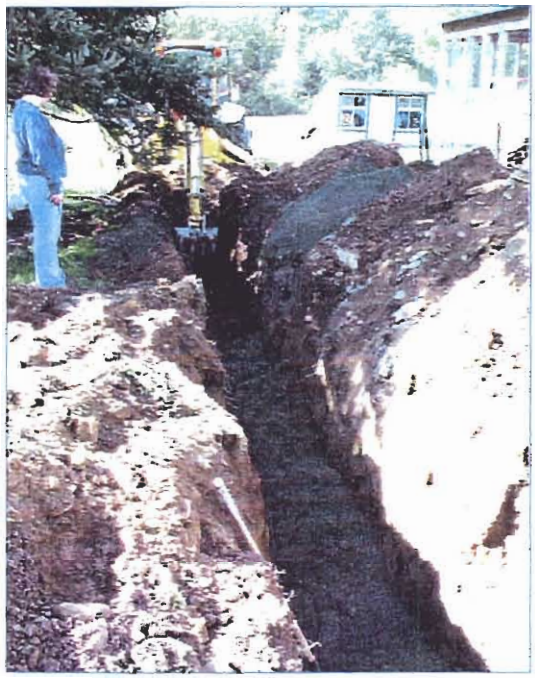
Appendix B

Installation of Domestic Water Supply Wells in the Vicinity of Colesville Landfill

REPORT

Colesville Landfill, Broome County

Arcadis G&M, Inc.



Installation of Domestic Water Supply Wells in the Vicinity of Colesville Landfill

Submitted By:
Barney Moravec, Inc.

November 2002

Barney Moravec, Inc.
Well Drilling
207 ½ Lake Street
Penn Yan, N.Y. 14527
(315) 536-3911
Fax (315) 536-6374
www.moravecwaterwells.com

November 6, 2002

Steven M. Feldman
Project Manager
Arcadis G&M, Inc.
88 Duryea Road
Melville, New York 11747

Dear Mr. Feldman:

Barney Moravec, Inc. is pleased to provide you with this Report on the installation of two domestic water supply wells near the Colesville Landfill in the Town of Colesville, New York (Figure 1). Included in this report are the construction details of both wells and their subsequent pump system installations. All construction activities were in accordance with the New York State Department of Health (NYSDOH) regulations for development of a drinking water source.

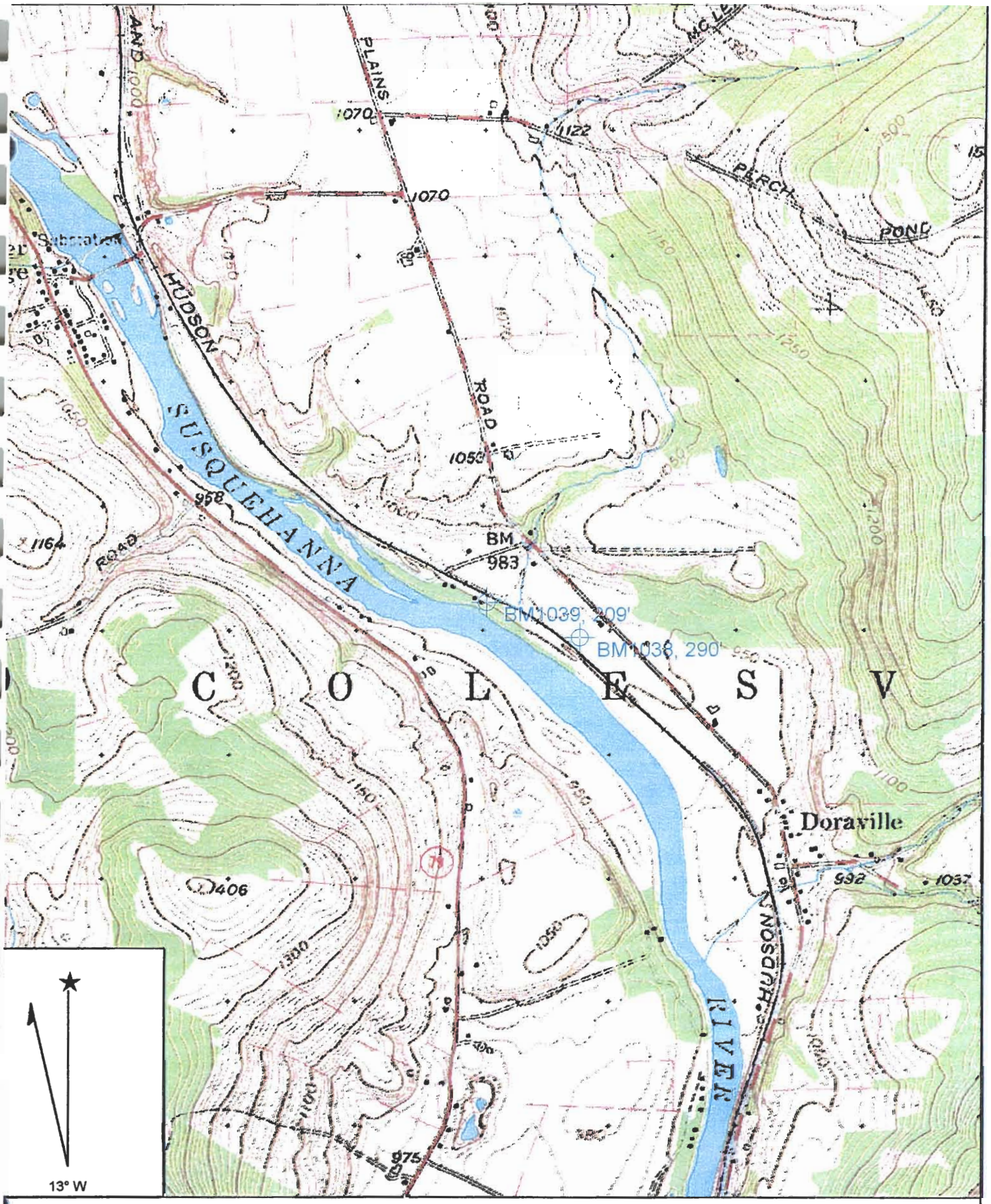
Barney Moravec, Inc. has appreciated the opportunity to work with you on this important project. If you have any questions regarding this Report or this project please do not hesitate to contact me at (315) 536-3911.

Sincerely,

Richard S. Moravec
Hydrogeologist

Enclosure: report, pump cut sheets

Cc: file



Name: AFTON
Date: 11/6/2002
Scale: 1 inch equals 1333 feet

Location: 042° 09' 28.7" N 075° 35' 48.4" W
Caption: Arcadis G _M, Inc.
Colesville Landfill, Broome Co.
Domestic Water Supply Wells

Domestic Well Construction

(1495 East Windsor Road), NYSDEC # BM1038

On September 18, 2002, construction began on a new domestic water supply well at 1495 East Windsor Road. A 10-inch diameter borehole was advanced to a depth of 235 feet. On September 19, 2002, the borehole was advanced to 238 feet. Drilling fluid within the borehole was circulated to ensure the annulus was free of cuttings. A total of 239.5 feet of 0.250-wall, 6-inch steel casing was installed and centralized in the borehole (18 inches of stick-up). A one-inch steel tremie line was installed to the bottom of the borehole. The annulus was cemented from the bottom of the borehole to ground surface using a mixture of one, 94 lb. Bag of type IA Portland cement per 5.5 gallons of water.
On September 20, after the cement was allowed to harden, a 6-inch borehole was advanced using a down-the-hole air hammer to 290 feet. Samples were evaluated and reported to the on-site geologist.

(19 Center Village Loop Road), NYSDEC # BM1039

On September 23, 2002, construction began on a new domestic water supply well at 19 Center Loop Road. A 10-inch diameter borehole was advanced to a depth of 158 feet. On September 24, 2002, the drilling fluid in the borehole was circulated to remove all cuttings. A total of 161 feet of 0.250-wall, 6-inch steel casing was installed and centralized in the borehole (36 inches of stick-up). A one-inch steel tremie line was installed to the bottom of the borehole. The annulus was cemented from the bottom of the borehole to ground surface using a mixture of one, 94 lb. Bag of type IA Portland cement per 5.5 gallons of water.
On September 25, after the cement was allowed to harden, a 6-inch borehole was advanced using a down-the-hole air hammer to 209 feet. Samples were evaluated and reported to the on-site geologist.

Development

Development on BM1038 began on September 20 and was completed the same day. The well was developed initially with a surge block and then by a combination of surging with air and pressurization with potable water. Following development, the well production was estimated using air-lift methods at over 75 gpm. See BM1038 Drillers Report.
Development on BM1039 began on September 25 and was also completed on the same day. The well was developed initially with a surge block and then by a combination of surging with air and pressurization with potable water. Following development, the well production was estimated using air-lift methods at over 20 gpm. See BM1039 Drillers Report.

Pumping Tests and Water Quality Sampling

BM1038

On September 23 performance testing on BM1038 began by installing the permanent pump to a depth of 175 feet. The pump was a Goulds model 7GS, ¾ hp, 230 volt, single phase submersible pump. Power for the pump was supplied by power from the Scott residence. The on-site Geologist from Arcadis G & M recorded water levels using an electronic water level indicator which were measured from the top of the casing. Discharge was monitored using a calibrated container and stopwatch. Water clarity was monitored by the Arcadis G & M Geologist using a field turbidity meter and recorded. The Geologist was present for all pumping test activities.
Once the pump was installed, a 4-hour constant rate test was performed on BM1038. Throughout the test, water levels were monitored at specified intervals as determined by Arcadis G & M.
The test began at just before noon and continued without interruption at 14 gpm until the pump was turned off at 4:00 pm later that day. Water level in BM1038 was observed to have a maximum drawdown of less than 12 feet. Pumping test data was collected and retained by Arcadis G & M.
Near the conclusion of the test, water quality samples were collected for analysis by Arcadis G & M.

BM1039

On September 26 performance testing began on BM1039 by installing the permanent pump to a depth of 203 feet. Power for the pump was supplied by power from the Scott Jr. residence. The on-site Geologist from Arcadis G & M recorded water levels using an electronic water level indicator which were measured from the top of the casing. Discharge was monitored using a calibrated container and stopwatch. Water clarity was monitored by the Arcadis G & M Geologist using a field turbidity meter and recorded. The Geologist was present for all pumping test activities.
Once the pump was installed, a 4-hour constant rate test was performed on BM1039. Throughout the test, water levels were monitored at specified intervals as determined by Arcadis G & M.
The test began at 1:00 pm and continued without interruption at 10 gpm until the pump was turned off at 5:00 pm later that day. Water level in BM1039 was observed to have a maximum drawdown of less than 50 feet. Pumping test data was collected and retained by Arcadis G & M.
Near the conclusion of the test, water quality samples were collected for analysis by Arcadis G & M.

Pump System Installations

BM1038

Residential pump system for BM1038 was installed on September 30. The pump was installed as previously described at 175 feet. The connection to the well was made using a 1 ¾-inch hole-saw to drill through the steel casing and install a brass pitless adaptor model JR-S-10 made by Midwest. Based on the condition of the existing pressure tank, it was determined to replace it with a new tank of similar size.
The trench for the water line was approximately 250 feet in length. The water line was made of 160 psi pure resin pvc and extended through the existing water line hole in the basement wall. The remaining hole from the previous two-line system was filled with a combination of hydraulic cement and sprayed foam insulation. The trench was dug by another contractor hired by Arcadis G & M and under their supervision. Generally the trench was initially dug 4.5 to 5 feet deep and lined with a medium sand in its base. The pvc and direct burial wire were placed into the trench and covered with additional sand and tamped in lifts to approximately 1.5 to 2 feet from ground surface. Specific details of the trench can be provided by Arcadis G & M.

BM1039

Residential pump system for BM1039 was installed on October 1. The pump was installed as previously described at 203 feet. The connection to the well was made using a 1 ¾-inch hole-saw to drill through the steel casing and install a brass pitless adaptor model JR-S-10 made by Midwest. The existing pressure tank was utilized for the new system by removing the attached shallow well pump and rearranging the plumbing.
The trench for the water line was approximately 90 feet in length and extended from the well to the existing water line approximately 75 feet in front of the house. The water line was made of 160 psi pure resin pvc and was connected to the existing water line with a brass, insert adaptor and four, all stainless steel clamps. The trench was dug by another contractor hired by Arcadis G & M and under their supervision. Generally the trench was initially dug 4.5 to 5 feet deep. The native soils removed from the trench were fine sands and silt with some clay. The pvc and direct burial wire were placed into the trench and covered with the native sandy material and tamped in lifts to approximately 1.5 to 2 feet from ground surface. Specific details of the trench can be provided by Arcadis G & M.

Well Abandonment of Existing Well (1495 East Windsor Road)

On September 30, 2002, the existing well at 1495 East Windsor Road was exposed when the soils adjacent to the house were excavated. The well was located approximately 5 feet from the west wall of the house at a depth of approximately 4.5 feet. The well had a 5-inch diameter steel casing with a four bolt, split-top well seal with a 1 1/4 –inch, a 1-inch opening and a ½-inch opening for the vent which was located in the basement of the house. The well seal was removed along with the two pvc drop pipes, the attached jet body and foot valve. A total of 37 bags of bentonite clay (Holeplug) was installed into the well to ground surface. The well seal cap was placed back on the top of the well for burial.

BARNEY MORAVEC, INC.

207 1/2 LAKE STREET

PENN YAN, NEW YORK 14527

315-536-3911

DRILLER'S REPORT

Project:	**Colesville Landfill, Broome County**	**Well No.: Scott**
Location:	**1495 East Windsor Road**	**NYSDEC# BM1038**
Driller(s):	**John K. Moravec and David S. Moravec**	**Start Date: 9/18/02**
Field Geologist:	**Melissa Saurborn**	**Finish Date: 9/20/02**
Contractor:	**ARCADIS Geraghty & Miller**	

Formation	Sketch of Setting	Construction Details
		9/18/02
	Cap; 1.5' above gr.level	Well was advanced by drilling a nominal 10-inch borehole to a
Ground surface 0'		depth of 235 feet using mud-rotary techniques.
Brown gravelly soil		9/19/02
w/coarse gravel		The borehole was continued to 238 feet. A total of 239.5 feet of
18'		6-inch steel casing was lowered into the well and centralized. A
		hardened steel drive shoe was attached to the casing. A
		total of 240 feet of 1-inch steel tremie line was lowered to the
		bottom of the borehole. A mixture of neat cement was pumped
Br to reddish br. alt.		down the tremie line from the bottom of the borehole to ground
layers of silty sand and	6-inch steel	surface. This grout was allowed to cure overnight.
clay with silt	casing	9/20/02
		A 6-inch bit was lowered to the bottom of the well to clean out any
		remaining drilling fluids or cement. The well was then advanced
	10-inch borehole	using a 6-inch air-rotary hammer bit to drill the bedrock to the final
	tremie grouted	depth of 289 feet.
	with portland	Samples were collected and logged at every change.
	cement	The well was developed using air lift methods.
213'		
Gray silt and clay w/		
little sand and cobbles		
from 227-232'		
232'		
Alternating layers and	238'	
seams of gray shale and		
siltstone.		
(weathered rock in upper		
10')		
290'		

GROUND WATER DATA	
Static Water Level:	22.1
Date:	9/23/02
Time:	11:55am
Measured From:	Top of Casing
TOC Elevation:	
Duration of Pumping Test:	4 hours

BARNEY MORAVEC, INC.

207 1/2 LAKE STREET

PENN YAN, NEW YORK 14527

315-536-3911

DRILLER'S REPORT

Project:	**Colesville Landfill, Broome County**	**Well No.: Scott Jr.**
Location:	**19 Center Village Loop Road**	**NYSDEC# BM1039**
Driller(s):	**John K. Moravec and David S. Moravec**	**Start Date: 9/23/02**
Field Geologist:	**Melissa Saurborn**	**Finish Date: 9/25/02**
Contractor:	**ARCADIS Geraghty & Miller**	

Formation	Sketch of Setting	Construction Details
		9/23/02
	Cap — 3.0' above gr.level	Well was advanced by drilling a nominal 10-inch borehole to a
Ground surface 0'		depth of 158 feet using mud-rotary techniques.
Br. Silty sand and clay		9/24/02
7'		Borehole drilling fluids were circulated at 158 feet. 161 feet of
Coarse gravel 9'		6-inch steel casing was lowered into the well and centralized. A
		hardened steel drive shoe was attached to the casing. A
		total of 170 feet of 1-inch steel tremie line was lowered to the
Br to reddish br. alt.		bottom of the borehole. A mixture of neat cement was pumped
layers of silty sand and		down the tremie line from the bottom of the borehole to ground
clay with silt	6-inch steel	surface. This grout was allowed to cure overnight.
	casing	9/25/02
		A 6-inch bit was lowered to the bottom of the well to clean out any
		remaining drilling fluids or cement. The well was then advanced
	10-inch borehole	using a 6-inch air-rotary hammer bit to drill the bedrock to the final
	tremie grouted	depth of 209 feet.
	with portland	Samples were collected and logged at every change.
	cement	The well was developed using air lift methods.
140'		
Gray compact clay		
146'		
Gray glacial till 149'		
Alternating layers and	161'	
seams of gray shale and		
siltstone		
209'		

GROUND WATER DATA	
Static Water Level:	18'
Date:	9/26/02
Time:	12:00pm
Measured From:	Top of Casing
TOC Elevation:	
Duration of Pumping Test:	4 hours

PHOTO LOG

Initial set-up on 1495 East Windsor Road site

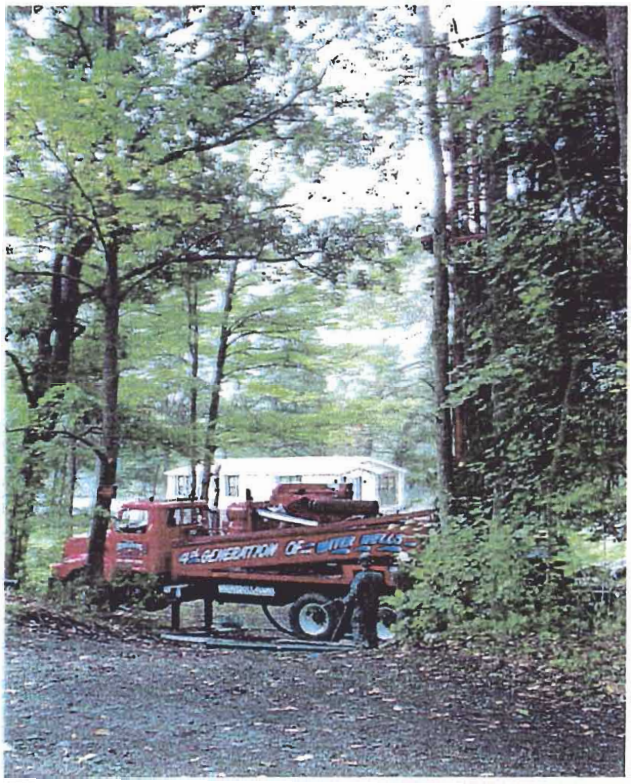
Mud-rotary set up at 1495 East Windsor Road

PHOTO LOG

Setting 6-inch steel casing, note 1-inch tremie line in foreground

Set up at 19 Center Village Loop Road

PHOTO LOG



Set up at 19 Center Village Loop Road from abandoned rail road bed

Installation of Goulds pump at 1495 East Windsor Road

PHOTO LOG

Pumping test at 14 gpm at East Windsor Road; Note: water level indicator and sample port

Excavation for water line and existing well abandonment at 1495 East Windsor Road

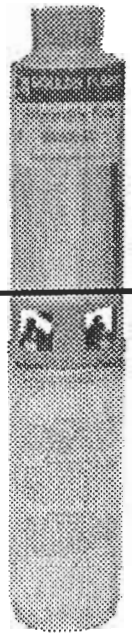
PHOTO LOG

Well Abandonment at 1495 East Windsor Road using bentonite clay (Holeplug)
Note distance from house

GOULDS PUMPS

60 Hz Standard Capacity 4" Submersible Pumps

5GS, 7GS, 10GS, 13GS, 18GS, 25GS



SPECIFICATIONS

Model	Flow Range GPM	Horsepower Range	Best Eff. GPM	Discharge Connection	Minimum Well Size	Rotation①
5GS	1.2 - 7.5	½ - 2	5	1¼	4"	CCW
7GS	1.5 - 10	½ - 3	7	1¼	4"	CCW
10GS	3 - 16	½ - 5	10	1¼	4"	CCW
13GS	4 - 20	½ - 3	13	1¼	4"	CCW
18GS	6 - 28	¾ - 5	18	1¼	4"	CCW
25GS	8 - 33	1 - 5	25	1¼	4"	CCW

① Rotation is counterclockwise when observed from pump discharge end.

"GS" SERIES MATERIALS OF CONSTRUCTION

Part Name	Material
Discharge Head	AISI 303 SS
Check Valve Poppet	AISI 304 SS
Check Valve Seal	BUNA, FDA compliant
Check Valve Seat	AISI 304 SS
Check Valve Retaining Ring	AISI 302 SS
Bearing Spider - Upper	Glass Filled Engineered Composite
Bearing	Urethane, FDA compliant
Klipring	AISI 301 SS
Diffuser	Glass Filled Engineered Composite
Impeller	
Bowl	AISI 304 SS
Intermediate Sleeve①	AISI 304 SS, Powder Metal
Intermediate Shaft Coupling②	AISI 304 SS, Powder Metal
Intermediate Bearing Spider①	Glass Filled Engineered Composite
Intermediate Bearing Spider②	AISI 303 SS
Bearing	Urethane, FDA compliant
Shim	AISI 304 SS
Spacer	AISI 304 SS, Powder Metal
Screws - Cable Guard	AISI 304 SS
Motor Adapter	AISI 303 SS
Casing	AISI 304 SS
Shaft	
Coupling	AISI 304 SS, Powder Metal
Cable Guard	AISI 304 SS
Suction Screen	AISI 304 SS

① Used on pumps over 24 stages.
② Used on models with 27 stages or larger.

FEATURES

■ **Powered for Continuous Operation:** All ratings are within the working limits of the motor as recommended by the motor manufacturer. Pump can be operated continuously without damage to the motor.

■ **Field Serviceable:** Pump can be rebuilt in the field to like new condition with common tools and readily available spare parts. **NOTE: The Model GS has left hand casing threads.**

■ **Sand Resistant Construction:** Field proven over almost four decades, face clearance design and floating impellers for an extremely abrasion resistant configuration.

■ **Stainless Steel Metal Parts:** AISI types 302, 303 and 304 are corrosion resistant, non-toxic and non-leaching.

■ **FDA Compliant Non-Metallic Parts:** Impellers, diffusers and bearing spiders are constructed of a glass filled engineered composite. This material is corrosion resistant and non-toxic.

■ **Discharge Head:** High profile precision cast 303 stainless steel for superior strength and durability. Cast in loop for safety line.

■ **Motor Adapter:** Precision cast 303 stainless steel is extremely rigid for accurate alignment of liquid end to motor. Generous space for removal of motor mounting nuts with regular open-end wrench.

■ **Bowls:** Stainless steel for strength and abrasive resistance.

■ **Check Valve:** Built in check valve constructed of stainless steel and low compression, FDA compliant, BUNA rubber for excellent abrasive resistance and quiet, efficient operation.

■ **Stainless Steel Casing:** Polished stainless steel is attractive and durable in the most corrosive water.

■ **Hex Shaft Design:** Six sided shafts for positive impeller drive.

■ **Shaft Coupling:** Exposed for ease of field alignment to motor shaft and to check pump rotation.

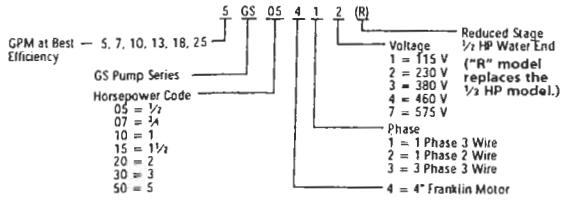
■ **Urethane Upper and Middle Bearings:** Fluted design for free passage of abrasives and excellent resistance to sand damage.

■ **Franklin Electric Motor:**

- Corrosion resistant stainless steel construction through 2 HP, stainless steel casing with nickel plated gray iron end bells on motors over 2 HP.
- Built-in surge arrestor is provided on single phase motors through 5 HP.
- Stainless steel splined shaft.
- Hermetically sealed windings.
- Replaceable motor lead assembly.
- UL 778 recognized.
- NEMA mounting dimensions.
- Control box is required with 3 wire single phase units.
- Three phase units require a magnetic starter with three leg protection. Magnetic starter and heaters must be ordered separately.

■ **Agency Listings:** All complete pump/motor assemblies are UL778 and CSA listed and complies with ANSI/NSF std. 61. All 4" Franklin Electric Motors are UL778 recognized.

ORDER NUMBER CODE



AGENCY LISTINGS

Canadian Standards Association

Underwriters Laboratories
Classified ANSI/NSF 61-1992

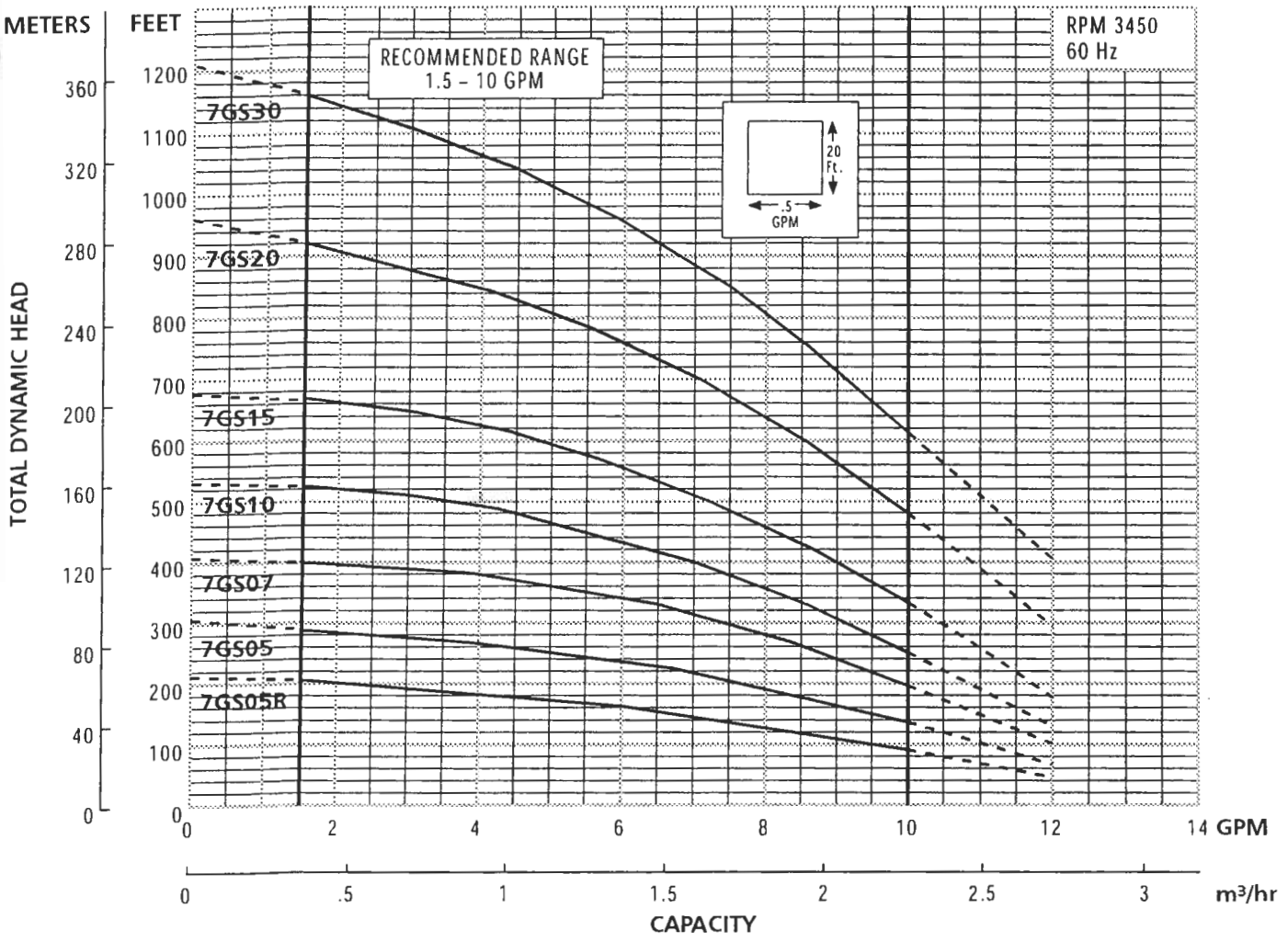
Goulds Pumps is ISO 9001 Registered.

Goulds Pumps

ITT Industries

Model 7GS

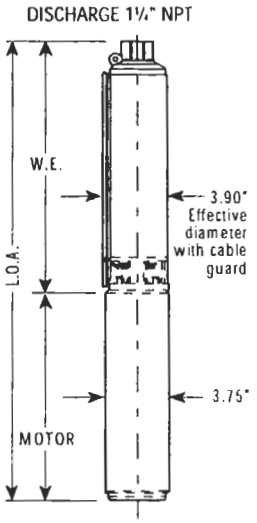
GOULDS PUMPS



DIMENSIONS AND WEIGHTS

Model	HP	Phase	Stages	Length (inches)			Weight (lbs.)		
				W.E.②	Motor	L.O.A.③	W.E.	Motor	Total
7GS05412R,22,11,21①	½R①	1	7	11.1	9.5	20.6	6	18	24
7GS05412,22,11,21	½	1	10	13.3	9.5	22.8	7	18	25
7GS07412,22	¾	1	13	15.4	10.7	26.1	9	20	29
7GS10412,22	1	1	17	18.3	11.8	30.1	10	23	33
7GS15412	1½	1	22	21.9	13.6	35.5	12	28	40
7GS15422	1½	1	22	21.9	15.1	37.0	12	31	43
7GS15432,34	1½	3	22	21.9	11.8	33.7	12	23	35
7GS20412	2	1	27	26.6	15.1	41.7	15	30	45
7GS20432,34	2	3	27	26.6	13.6	40.2	15	28	43
7GS30412	3	1	34	31.6	23.5	55.1	18	52	70
7GS30432,34	3	3	34	31.6	20.6	52.2	18	43	61

① Reduced stage ½ HP pump/water end for low head applications. This model replaces the ⅓ HP water end.
② W.E. = water end or pump without motor.
③ L.O.A. = length of assembly – complete pump – water end and motor.



SELECTION CHART

Horsepower Range ½ – 1, Recommended Range 1.5 – 10 GPM, 60 Hz, 3450 RPM

Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																												
			20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	340	380	420	460	500	540	580	620	660	700	740	780	820
7GS05R	½R	0					9.7	8.7	7.6	6.2	4.3	2.0																		
		20			9.4	8.4	7.4	5.7	3.5	1.5																				
		30		9.2	8.2	7.0	5.4	3.4																						
		40	9.0	8.1	6.9	5.2	3.1																							
		50	7.7	6.5	4.8	3.0																								
		60	6.2	4.3	2.0																									
Shut-off PSI			82	74	65	56	48	39	30	22	13	4																		
7GS05	½	0							9.8	9.2	8.5	7.8	7.0	5.9	4.5	2.8														
		20					9.7	9.0	8.3	7.5	6.6	5.7	4.1	2.0																
		30				9.5	8.9	8.2	7.3	6.4	5.4	4.0	1.5																	
		40		10.0	9.4	8.8	8.1	7.3	6.1	5.1	3.9	1.5																		
		50	10.0	9.3	8.6	8.0	7.1	6.0	4.8	3.3																				
		60	9.2	8.5	7.8	7.0	5.9	4.5	2.8																					
Shut-off PSI			121	113	104	95	87	78	69	61	52	43	35	26	17	9														
7GS07	¾	0										9.8	9.4	8.8	8.4	7.9	7.4	5.8	3.8											
		20								9.7	9.3	8.8	8.3	7.8	7.3	6.5	5.7	3.0												
		30							9.6	9.3	8.7	8.2	7.7	7.0	6.3	5.5	4.5													
		40					10.1	9.5	9.1	8.7	8.2	7.7	6.9	6.2	5.4	4.5	2.7													
		50				10.0	9.4	9.0	8.5	8.0	7.6	6.8	6.0	5.2	4.0	2.5														
		60			9.8	9.4	8.8	8.4	7.9	7.4	6.7	5.8	5.0	3.8	1.5															
Shut-off PSI					148	140	131	123	114	105	97	88	79	71	62	53	45	27	10											
7GS10	1	0													9.7	9.4	9.1	8.2	7.4	6.5	5.2	3.5								
		20											9.7	9.3	8.9	8.5	8.1	7.3	6.3	5.0	3.0									
		30									10.0	9.6	9.2	8.8	8.4	8.1	7.7	6.7	5.6	4.0										
		40								9.9	9.5	9.2	8.7	8.4	8.0	7.7	7.2	6.1	4.8	2.5										
		50							9.8	9.4	9.1	8.7	8.3	7.8	7.5	7.1	6.2	5.4	3.9											
		60						9.7	9.4	9.1	8.6	8.2	7.8	7.4	7.0	6.5	5.8	4.4	2.0											
Shut-off PSI								177	168	159	151	142	133	125	116	107	99	81	64	47	29	12								

Horsepower Range 1½ – 3, Recommended Range 1.5 – 10 GPM, 60 Hz, 3450 RPM

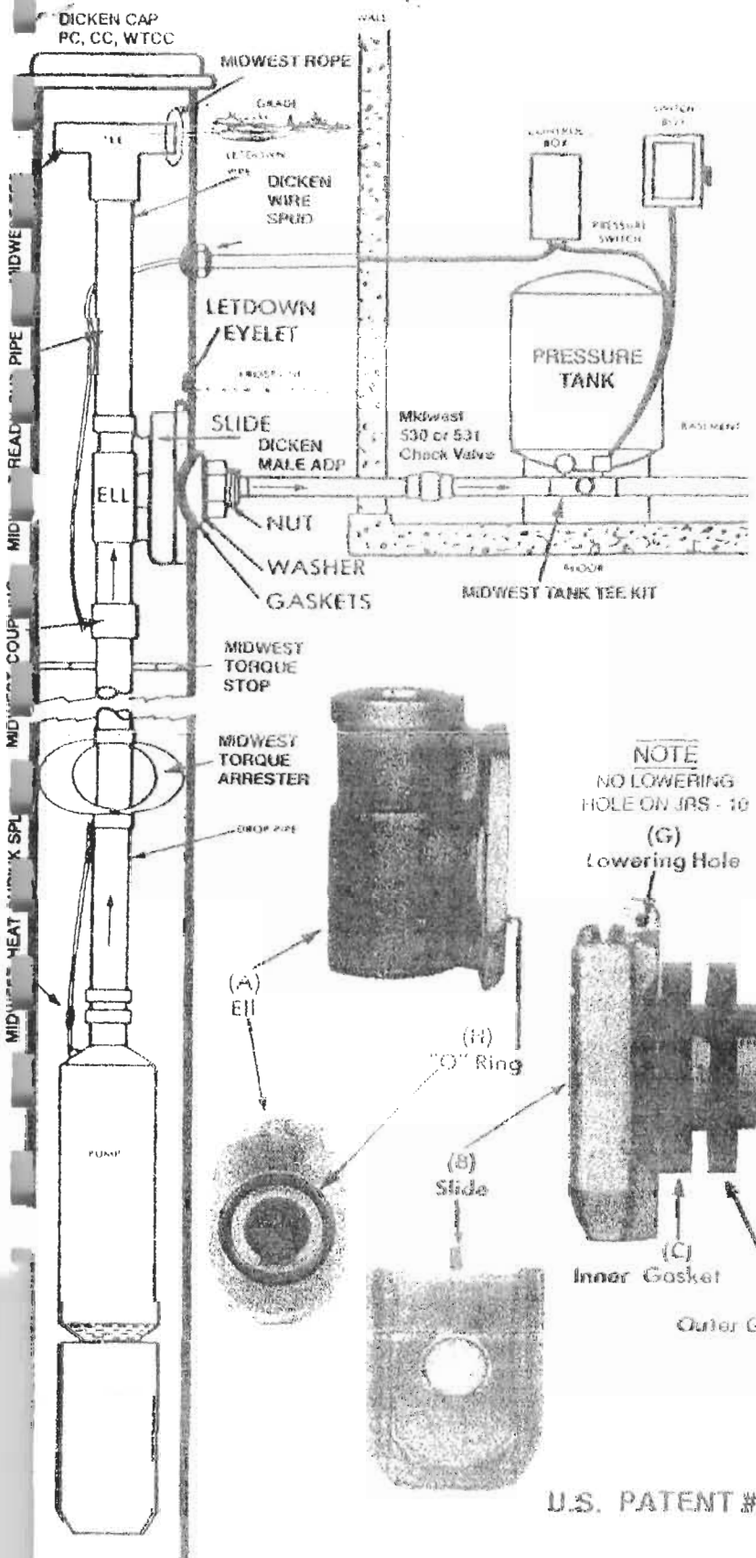
Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																												
			200	220	240	260	280	300	340	380	420	460	500	540	580	620	660	700	740	780	820	860	900	940	980	1020	1060	1100	1140		
7GS15	1½	0							9.8	9.3	8.7	8.0	7.3	6.4	5.4	4.1	1.8														
		20					10.1	9.8	9.2	8.5	7.9	7.2	6.4	5.3	3.8	1.5															
		30				10.0	9.8	9.5	8.8	8.2	7.4	6.7	5.7	4.5	2.8																
		40			10.0	9.7	9.5	9.1	8.4	7.8	7.0	6.2	5.2	3.4																	
		50		9.9	9.6	9.4	9.0	8.7	8.0	7.4	6.5	5.6	4.2	2.3																
		60	9.8	9.6	9.3	9.0	8.7	8.3	7.6	6.9	6.0	4.9	3.1																	
Shut-off PSI			206	198	185	176	168	159	142	124	107	90	72	55	38	20														
7GS20	2	0											9.8	9.3	8.7	8.4	7.8	7.1	6.3	5.4	4.5	3.5	2.2							
		20										9.8	9.3	8.7	8.4	7.7	6.9	6.2	5.3	4.3	3.2	2.8								
		30									9.9	9.5	9.0	8.5	7.9	7.2	6.4	5.7	4.4	3.7										
		40								10.0	9.7	9.2	8.7	8.3	7.5	6.7	6.0	5.2	4.1	3.0										
		50								9.9	9.4	8.9	8.5	7.8	7.2	6.3	5.5	4.7	3.5											
		60							10.0	9.6	9.1	8.7	8.2	7.4	6.6	5.8	5.0	4.0												
Shut-off PSI									268	251	234	216	199	182	165	147	130	113	95	80	61									
7GS30	3	0														9.8	9.5	9.2	8.7	8.3	7.9	7.4	6.8	6.2	5.4	4.7	3.9	3.0	2.0	
		20													9.8	9.4	9.2	8.7	8.3	7.8	7.2	6.7	6.2	5.3	4.5	3.7	3.3	1.7		
		30												10.0	9.6	9.2	8.8	8.5	8.0	7.5	6.9	6.3	5.7	4.8	4.1	3.2	2.3			
		40											10.0	9.7	9.4	9.0	8.6	8.2	7.7	7.2	6.6	5.9	5.2	4.4	3.6	2.7	1.7			
		50											9.9	9.5	9.2	8.7	8.4	7.9	7.4	6.8	6.3	5.5	4.8	3.9	3.1	2.2				
		60										10.0	9.7	9.3	9.0	8.6	8.1	7.6	7.0	6.5	5.8	5.1	4.2	3.4	2.5	1.5				
Shut-off PSI												320	303	286	268	251	234	216	199	182	165	147	130	113	95	78	61	43	27	

MAASS MIDWEST MFG. CO.
P.O. Box 547 11283 Dundee Road
Huntley, IL 60142-0547

Water Systems Council
Certified Watertight
Pitless Adapter Div

Installation Instructions for "S" Series Pitless Adapters

All Brass Construction - Factory Tested at 150 lbs. P.S.I. and Certified Watertight
Dicken Pitless Adapters are versatile and fit all sizes of Casing without Changing Parts



NOTE
NO LOWERING
HOLE ON JRS - 10

NOTE
NO LUGS ON
JR S-10 WASHER

U.S. PATENT #3805891

1. Locate direction pipe will run from well, dig to bury depth desired.

2. Select depth setting of adapter below frost line, center-punch casing, drill pilot hole and then cut with hole saw very slowly (200 RPM).

3. Deburr and lower Slide (B) with Inner Gasket (C) in place, down well casing using wire or heavy twine in Lowering Hole (G). Hold over casing while installing the Outer Gasket (D), Washer (E) and Nut (F).

4. (Note) - Tighten Nut to maximum before installing part (A) with complete assembly. The brass Washer with two lugs (E)* should be in contact with the well casing and all remaining pressure will have pulled Slide (B) and the Inner Gasket (C) against the inner wall of the casing. If necessary Ell (A) and Letdown pipe can be used for vertical alignment while tightening Nut (F).

5. Connect discharge line to Slide (B) connect drop and letdown pipe to Ell (A).

6. Install pump parts on drop pipe.

7. Coat Slide (B) machined surface with Silicone Grease provided.

8. (Note) - On Submersible Pump installation, wires can be run through a Wire Spud (WS-75-100) and a Watertight Cap (W) installed on top of the well casing. Wires may run over top of casing through conduit from a Conduit Cap (C) or Watertight Cap (WTCC).

SPECIFICATIONS

MODELS	DISCHARGE & SUPPLY	FITS CASING SIZES	HOLE SAW SIZES	WORKING LOAD lbs.
JR-S-10	1"	4½" thru 12"	1⅝"	1500
JR-S-10-P*	1"	4½" thru 12"	1⅝"	1500
LD-S-10	1"	5" thru 12"	1¾"	2000
S-10	1"	5" thru 12"	1¾"	5000
LD-S-12	1¼"	5" thru 12"	2¼"	2000
LD-S-12-P*	1¼"	5" thru 12"	2¼"	2000
S-12	1¼"	5" thru 12"	2¼"	5000
S-20	2"	5¾" thru 12"	3⅛"	5000

*Pressurized

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

(1) County Broome

(2) Township Colesville

(3) DEC Well Number BM1038

WELL COMPLETION REPORT

(4) OWNER
Arcadis G+M Inc.

(5) ADDRESS
88 Duryea Rd, Melville NY 11747

(6) LOCATION OF WELL (See Instructions On Reverse) 1495 E. Windsor Rd.
Show Lat/Long if available and method used: 042° 9' 25.05" N 075° 35' 34.26" W
☐ GPS ☐ DEC Website ☒ Map Interpolation

LOG *

Ground Surface EL. 954 ft. above sea level

Top Of Casing is located _____ ft.above (+) or below (-) ground surface

(7) DEPTH OF WELL BELOW LAND SURFACE (Feet) 290

(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (Feet) DATE MEASURED

CASINGS

(9) DIAMETER: 6 in. | in. | in. | in.

(10) LENGTH: 239'6" ft. | ft. | ft. | in.

(11) GROUT TYPE / SEALING: Cement

(12) GROUT / SEALING INTERVAL (Feet) FROM GL TO 239'6"

SCREENS

(13) MAKE & MATERIAL

(14) OPENINGS

(15) DIAMETER: in. | in. | in. | in.

(16) LENGTH: ft. | ft. | ft. | in.

(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)

YIELD TEST

(18) DATE: 9/23/02

(19) DURATION OF TEST: 4hrs.

(20) LIFT METHOD ☒ Pump ☐ Air Lift ☐ Bail

(21) STABILIZED DISCHARGE (GPM): 14

(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing): 22.1

(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing): 10'

(24) RECOVERY (Time in hours/minutes): 100% 10 min

(25) Was the water produced during test discharged away from immediate area? Yes X No ___

PUMP INSTALLATION

(26) PUMP INSTALLED? YES X NO ___

(27) DATE: 9/30/02

(28) PUMP INSTALLER: Chad & Rich Moravec

(29) TYPE: Subm

(30) MAKE: Goulds

(31) MODEL: 7GS07422

(32) MAXIMUM CAPACITY (GPM): 7

(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet): 175'

(34) METHOD OF DRILLING ☒ Rotary ☐ Cable Tool ☐ Other _____

(35) USE OF WATER (see instructions for choices): Domestic

(36) DATE DRILLING WORK STARTED: 9/18/02

(37) DATE DRILLING WORK COMPLETED: 9/20/02

(38) DATE REPORT FILED: 10/15/02

(39) DRILLER & COMPANY: John K. Moravec Barney Moravec Inc

(40) DEC REGISTRATION NO.: 10021

TOP OF WELL

very coarse gravel- lrg. cobbles

—18'

all layers silty sand clay mix br - reddish br

—213'

gr. glacial till - silty sand mix? hard

—220'

Compact clay - br

—232'

Shale

—290'

BOTTOM OF HOLE

* Show log of geologic materials encountered with depth below ground surface, water bearing beds and water levels in each; casings; screens; pump; additional pumping tests and other matters of interest, e.g., water quality (sulphur, salt, methane). Describe repair work. Attach separate sheet if necessary.

See further instructions titled "Instructions for New York State Well Completion Report".

OWNER COPY

LOCATION SKETCH - Indicate north

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

(1) County Broome

(2) Township Colesville

(3) DEC Well Number BM1039

WELL COMPLETION REPORT

(4) OWNER
Arcadis G&M Inc.

(5) ADDRESS
88 Duryea Rd. Melville NY 11747

(6) LOCATION OF WELL (See Instructions On Reverse) 19 Center Village Loop Rd
Show Lat/Long if available and method used: 042° 9' 28.89" N 075° 35' 47.21" W
☐ GPS ☐ DEC Website ☒ Map Interpolation

LOG *

Ground Surface EL. 949 ft. above sea level

Top Of Casing is located _____ ft.above (+) or below (-) ground surface

(7) DEPTH OF WELL BELOW LAND SURFACE (Feet)	(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (Feet) DATE MEASURED
209	

CASINGS

(9) DIAMETER	(10) LENGTH	(11) GROUT TYPE / SEALING	(12) GROUT / SEALING INTERVAL (Feet)
6 in. | in. | in. | in.	161 ft. | ft. | ft. | in.	Cement	FROM GL TO 161'

SCREENS

(13) MAKE & MATERIAL	(14) OPENINGS	(15) DIAMETER	(16) LENGTH
		in. | in. | in. | in.	ft. | ft. | ft. | in.

(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)

YIELD TEST

(18) DATE	(19) DURATION OF TEST
9/26/02	4 hrs.

(20) LIFT METHOD	(21) STABILIZED DISCHARGE (GPM)
☒ Pump ☐ Air Lift ☐ Bail	10

(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing)	(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing)
18'	30'

(24) RECOVERY (Time in hours/minutes)	(25) Was the water produced during test discharged away from immediate area?
100% 30 min	Yes X No ___

PUMP INSTALLATION

(26) PUMP INSTALLED?	(27) DATE	(28) PUMP INSTALLER
YES X NO ___	9/30/02	Chad Rich Moravec

(29) TYPE	(30) MAKE	(31) MODEL
Subm.	Goulds	7GS07422

(32) MAXIMUM CAPACITY (GPM)	(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet)
7	203'

(34) METHOD OF DRILLING	(35) USE OF WATER (see instructions for choices)
☒ Rotary ☐ Cable Tool ☐ Other _____	Domestic

(36) DATE DRILLING WORK STARTED	(37) DATE DRILLING WORK COMPLETED
9/23/02	9/25/02

(38) DATE REPORT FILED	(39) DRILLER & COMPANY	(40) DEC REGISTRATION NO.
10/15/02	John M. Moravec Barney Moravec Inc	10024

TOP OF WELL

Silty sand clay mix
—7'
gravel
—9'
alt. layers sand + clay br.
—140'
compact clay to gl. till gray
—146'
gl. till on shale (weathered)
—149'
Shale
—209'

BOTTOM OF HOLE

* Show log of geologic materials encountered with depth below ground surface, water bearing beds and water levels in each; casings; screens; pump; additional pumping tests and other matters of interest, e.g., water quality (sulphur, salt, methane). Describe repair work. Attach separate sheet if necessary.

See further instructions titled "Instructions for New York State Well Completion Report".

OWNER COPY

LOCATION SKETCH - Indicate north

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Appendix C

Groundwater Remediation System
Startup Summary Report

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Appendix A

Groundwater Remediation System Startup Summary Report

Colesville Landfill, Broome County, New York
NYSDEC Site 704010

ARCADIS

Kenneth Zegel
Staff Engineer

Steven M. Feldman
Project Manager

ARCADIS Engineers & Architects of New York, P.C.

Christina Tuohy, P.E.
Vice President

Appendix A
Groundwater Remediation System Startup Summary Report

Colesville Landfill, Broome County, New York
NYSDEC Site 704010

Prepared for:
Broome County Division of Solid Waste Management

Prepared by:
ARCADIS G&M, Inc.
88 Duryea Road
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610

Our Ref.:
NY000949.0014.0004

Date:
15 May 2003

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Tables

Figures

Attachment

Disclosure Statement

The laws of New York State require that the corporations which render engineering services in New York be owned by individuals licensed to practice engineering in the State. ARCADIS cannot meet that requirement. Therefore, all engineering services rendered to Broome County in New York are being performed by ARCADIS Engineers and Architects of New York, P.C., a New York Professional corporation qualified to render professional engineering in New York. There is no surcharge or extra expense associated with the rendering of professional services by ARCADIS Engineers and Architects of New York, P.C.

ARCADIS is performing all those services that do not constitute professional engineering, and is providing administrative and personnel support to ARCADIS Engineers and Architects of New York, P.C. All matters relating to the administration of the contract with Broome County are being performed by ARCADIS pursuant to its Amended and Restated Services Agreement with ARCADIS Engineers and Architects of New York, P.C.

1. Introduction

ARCADIS was retained by Broome County to design and construct a groundwater remediation system at the Colesville Landfill in Broome County, New York (site). The site location is shown on Figure A-1. The Groundwater Remediation System is comprised of a groundwater pump-and-treat (PT) system combined with an automated reagent injection (ARI) system for in-situ enhanced reductive dechlorination (ERD). The groundwater remediation system design was approved on August 24, 2000 by the New York State Department of Environmental Conservation (NYSDEC). This Groundwater Remediation System Startup Summary Report documents the system startup conducted from August 27, 2002 to September 12, 2002. System startup was conducted in accordance with the Groundwater Remediation System Startup and Performance Analysis Plan which was submitted to the NYSDEC on June 28, 2002.

2. Pre-Startup Injection Well Monitoring

Prior to system startup, groundwater samples were collected from Injection Wells IW-3, IW-8, and IW-13 on August 30, 2002 for field testing of pH and laboratory analysis of total organic carbon (TOC). TOC samples were analyzed using USEPA Method 415.1. TOC and pH results from the three injection wells were used to establish baseline (pre-injection) groundwater conditions along the injection perimeter. Baseline TOC and pH results are provided in Table A-3 of the 2002 Annual Report, the locations of all injection wells are shown on Figure A-2.

3. Groundwater Pump-and-Treat System Startup

The following section describes the startup procedures and system performance monitoring for the PT system.

3.1 PT System Mechanical Testing

Mechanical testing of the PT system was conducted from August 27, 2002 to September 7, 2002. Mechanical testing of the PT system consisted of testing each system component to ensure that it performed in conformance with the Design Drawings and manufacturers specifications. Individual components tested included the pneumatic recovery pumps in recovery wells GMPW-3, GMPW-4 and GMPW-5, air compressor AC-200, low profile air stripper AS-100, blower B-300, transfer pump TP-400, and all associated piping and appurtenances. In addition to testing individual components, the PT system was temporarily operated as a whole to ensure smooth

operation and to test PT system alarms, interlocks, and controls. During the mechanical testing, all system components, alarms, interlocks, and controls operated in conformance with their respective design criteria and manufacturers specifications. The PT system was permanently brought on-line on September 8, 2002.

3.2 PT System Startup Performance Testing

System startup performance testing was conducted from September 8, 2002 to September 12, 2002. System startup performance testing consisted of recording system operating parameters on a daily basis and collecting system performance samples on September 8, 2002 and September 10, 2002.

Table A-1 summarizes the significant PT system operating parameters recorded during startup. System operating parameters were recorded on an hourly basis during the first day of startup and were recorded twice per day thereafter. As shown in Table A-1, individual recovery well average daily flowrates ranged from 0.55 to 0.59 gallons per minute (gpm) for Well GMPW-3, from 0.20 to 0.22 gpm for Well GMPW-4, and from the 0.35 to 0.39 gpm for Well GMPW-5. The total effluent daily average flow-rate ranged from 1.01 to 1.05 gpm. During the PT system performance monitoring, water level measurements were collected from the individual recovery wells; however, the water level fell below the top of each respective pneumatic recovery pump and the water level measuring device was unable to take an accurate reading. Based on water level measurements within the recovery wells, calculated daily average flowrates, and the maximum flowrate capable of each pneumatic pump, groundwater is being extracted from the recovery wells at a rate equal to or greater than the rate of recovery. Low profile air stripper system operating parameters were consistent with the design criteria and the manufacturer's specifications. The low profile air stripper blower B-300 effluent flow-rate ranged from 142.2 to 426.3 standard cubic feet per minute (scfm), while the discharge pressure ranged from 6.0 to 8.2 inches of water column (i.w.c.). The effluent flowrate of 426.3-scfm and discharge pressure of 6.0 i.w.c. were recorded immediately following system startup and do not represent normal operating conditions.

Table A-2 summarizes the PT system performance sampling results. PT system performance samples were collected on September 8, 2002 and September 10, 2002. The collection of PT samples included:

- Individual recovery well samples for Wells GMPW-3, GMPW-4, and GMPW-5.

- Total influent to low profile air stripper AS-100.
- Total effluent from AS-100 prior to entering bag filters BF-400/401; and,
- Total effluent from low profile air stripper AS-100 immediately following bag filters BF-400/401.

All groundwater samples were analyzed for volatile organic compounds (VOCs) using USEPA Method 8260 and total iron following USEPA Method 6010. According to the New York State Department of Environmental Conversation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.2.1, one of the purposes of the Model Technology Best Professional Judgment (BPJ) limits is to provide guidance to NYSDEC staff responsible for writing requirements equivalent to SPDES permits for discharges from remediation sites. As such, these values have been selected as the effluent design criteria for the PT system. As shown in Table A-2, all groundwater COCs were effectively treated to below their respective BPJ limits via the low profile air stripper and cartridge filters.

As indicated in Table A-2, the majority of the VOC analytical results are denoted as estimated values because of an oversight by the groundwater analytical laboratory. These samples were analyzed outside of the recommended 14-day USEPA holding times. ARCADIS has discussed the exceeded holding times with the analytical laboratory on several occasions who has ensured us that the oversight will not occur again.

In addition to groundwater samples, an effluent vapor samples were collected from the discharge stack of low profile air stripper AS-100 on September 8 and September 10, 2002. All vapor samples were analyzed using a modified (direct-inject) USEPA Method TO-14/15. Vapor analytical results are provided in Table A-3. A NYSDEC Air Guide DAR-1 model was performed utilizing the effluent vapor analytical data. Based on the DAR-1 analysis, all COCs in vapor are well below their respective short-term guidance concentrations (SGCs) and annual guidance concentrations (AGCs). A printout of the DAR-1 results has been provided in Attachment A-1.

4. Automated Reagent Injection System Startup

The following section describes the startup procedures and system performance monitoring for the ARI system.

4.1 System Mechanical Testing and Startup

Mechanical testing of the ARI system was conducted from August 27, 2002 to September 7, 2002. Mechanical testing of the ARI system consisted of testing each system component to ensure that it performed in conformance with the Design Drawings and manufacturer's specifications. Individual components tested included molasses pump MP-700, transfer pumps TP-600 and TP-900, molasses mixer MM-800, and all associated piping and appurtenances. In addition to testing individual components, the automated reagent injection system was temporarily operated as a whole to ensure smooth operation and to test PT system alarms, interlocks, and controls. This consisted of performing manual mixing and injection sequences (20-gallons of molasses solution to each injection well) on September 7, 2002. During the mechanical testing, all system components, alarms, interlocks, and controls operated in conformance with their respective design criteria and manufacturer's specifications. However, it was determined that an electrically actuated ball valve (designated as SV-26, see Figure A-3) was required to control the input of raw molasses during a molasses reagent mixing event. In addition, it was determined that low-flow alarms were required for both the raw molasses-feed line and the molasses solution injection line. The raw molasses feed line low-flow alarm will serve as the indicator that the raw molasses totes are empty. The molasses solution injection line low-flow alarm will serve as a backup to pressure switch high PSH-902 and will assist in shutting the ARI system down in the event of an injection well fouling, pipe break, or pump failure. The ARI system was permanently brought on-line on September 8, 2002.

4.2 System Startup Performance Testing

ARI system startup performance testing was conducted on September 8, 2002. System performance testing consisted of visually observing system operation and recording system operating parameters during the first day of system operation. Prior to initiating the initial ARI sequence, system input parameters were defined to set the molasses solution strength, molasses solution injection volume to each well, rinse water injection volume to each well, and injection frequency. These parameters were defined based on field and analytical data collected from the ERD Pilot Test (ARCADIS Geraghty & Miller 1998). Table A-4 summarizes the initial ARI system input parameters. During the first day of operation, minor system control problems were encountered; therefore, the initial automated mixing and injection sequence was conducted at two intervals during the day in order to test and correct the deficiencies.

Table A-5 summarizes the significant system operating parameters recorded during the first day of automated operation and during the manual injection performed on September 7, 2002. As discussed above, the initial automated injection was conducted over two intervals to correct system control deficiencies; therefore, these injection parameters do not reflect the actual ARI input parameters (Table A-4). Following the third injection interval, all operational deficiencies were corrected. Molasses solution injections thereafter will be conducted in accordance with the input parameters listed in Table A-4 unless otherwise specified in subsequent quarterly monitoring reports.

5. Conclusions

Based on the results of the system mechanical testing and system startup performance testing, the Groundwater Remediation System is performing as designed. The PT system is achieving the maximum possible groundwater recovery rate and is effectively treating impacted groundwater to below BPJ Limits. In addition, low profile air stripper AS-100 air emissions are well below the NYSDEC DAR-1 regulatory standards. Following minor ARI system control problems encountered during the first day of system operation, the ARI system was fully operational and has performed in conformance with its design criteria. Long-term PT system and ARI system monitoring and reporting will be conducted in accordance with the Long-Term Monitoring Plan submitted to the NYSDEC on June 28, 2002.

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Table A-1. Pump-and-Treat System Startup Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Date	Time Recorded	Air Stripper Measurements		Flow Measurements				
		Blower Discharge Pressure PI-301 (i.w.c.)	Blower Effluent Flowrate (scfm)	Total Effluent Totalizer FQI-401 (gallons)	Water Bypass Totalizer FQI-402 (gallons)	GMPW-3 Totalizer FQI-101 (gallons)	GMPW-4 Totalizer FQI-102 (gallons)	GMPW-5 Totalizer FQI-103 (gallons)
9/8/2002	8:45 AM	6.0	426.3	1,778.5	14.2	846.2	554.8	691.0
	10:30 AM	8.0	181.7	1,881.1	42.5	891.5	577.5	738.2
	11:30 AM	8.0	175.8	1,944.1	42.5	923.8	589.1	758.5
	12:30 PM	8.2	158.0	2,000.8	40.3	962.8	603.4	782.5
	1:30 PM	8.2	163.6	2,070.7	42.5	996.5	616.2	804.3
	2:30 PM	8.2	166.5	2,133.5	42.5	1,027.5	627.8	824.6
	3:30 PM	8.2	179.4	2,176.0	42.5	1,061.3	640.3	845.9
	4:30 PM	8.2	157.7	2,249.3	42.5	1,094.9	652.7	867.1
	5:30 PM	8.2	166.3	2,319.0	42.5	1,137.5	668.0	894.8
		Average Daily Flowrate (gpm) =		**1.03**	**0.05**	**0.55**	**0.22**	**0.39**
9/9/2002	8:30 AM	8.2	149.4	3,255.2	771.1	1,651.1	852.3	1,216.5
	4:15 PM	8.2	143.3	3,724.9	1,237.2	1,918.2	947.6	1381.0
		Average Daily Flowrate (gpm) =		**1.01**	**1.00**	**0.57**	**0.21**	**0.35**
9/10/2002	7:40 AM	8.2	154.0	4,695.5	2,200.9	2,461.8	1,138.0	1,717.0
	6:20 PM	8.1	147.8	5,357.9	2,858.9	2,837.5	1,269.8	1,949.6
		Average Daily Flowrate (gpm) =		**1.04**	**1.03**	**0.59**	**0.21**	**0.36**
9/11/2002	7:40 AM	8.1	142.2	6,202.2	3,698.1	3,298.0	1,432.3	2,238.0
	5:15 PM	8.2	147.1	6,800.4	4,292.8	3,628.5	1,550.3	2,447.9
		Average Daily Flowrate (gpm) =		**1.04**	**1.03**	**0.57**	**0.21**	**0.37**
9/12/2002	7:40 AM	8.2	154.9	7,698.6	5,186.1	4,118.4	1,725.6	2,760.3
	4:20 PM	8.2	160.6	8,244.5	5,739.3	4,413.1	1,831.0	2,948.9
		Average Daily Flowrate (gpm) =		**1.05**	**1.06**	**0.57**	**0.20**	**0.36**

See Notes on Last Page of Table

Table A-1. Pump-and-Treat System Startup Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Notes:

gpm	Gallons per minute.
i.w.c.	Inches of water column
acfm	Actual cubic feet per minute

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Table A-2. Concentrations of Compounds Detected in Groundwater Samples Collected During System Startup, Colesville Landfill Groundwater Remediation System, Broome County, New York.

Constituents	Model Technology BPJ Limits[1,2] (ug/L)	Sample ID: Date:	GMPW-3* 9/8/2002		GMPW-3* 9/10/2002		GMPW-4* 9/8/2002		GMPW-4* 9/10/2002	
VOCs (units in ug/L)										
Chloromethane	10		< 1.0	J	< 1.0	J	< 1.0	J	< 1.0	J
Vinyl Chloride	10-50		12	J	12	J	18	J	17	J
Chloroethane	--		13	J	13	J	22	J	22	J
1,1-Dichloroethene	10		3.6	J	3.4	J	6.3	J	5.6	J
Methylene Chloride	10-50		22	J	20	J	31	J	29	J
trans-1,2-Dichloroethene	10-50		< 1.0	J	< 1.0	J	< 1.0	J	< 1.0	J
1,1-Dichloroethane	10		60	J	59	J	84	J	77	J
cis-1,2-Dichloroethene	10		48	J	48	J	92	J	87	J
Chloroform	--		1.3	J	1.3	J	< 1.0	J	1.0	J
1,1,1-Trichloroethane	10-20		110	J	110	J	140	J	140	J
Benzene	5		11	J	9.9	J	13	J	13	J
1,2-Dichloroethane	10-30		< 1.0	J	< 1.0	J	1.1	J	< 1.0	J
Trichloroethene	10		67	J	58	J	100	J	92	J
Ethyl Benzene	5		< 1.0	J	< 1.0	J	4.4	J	3.6	J
m+p-Xylenes	5		2.8	J	< 2.0	J	15	J	13	J
o-Xylene	5		< 1.0	J	< 1.0	J	4.8	J	3.9	J
1,2,4-Trimethylbenzene	--		< 1.0	J	< 1.0	J	1.1	J	1.1	J
Dichlorodifluoromethane	--		3.0	J	3.4	J	3.8	J	4.0	J
Total VOCs			350.70		338.00		536.50		504.20	

Metals (units in mg/L)	Model Technology BPJ Limits[3,4] (mg/L)	Sample ID: Date:	GMPW-3* 9/8/2002	GMPW-3* 9/10/2002	GMPW-4* 9/8/2002	GMPW-4* 9/10/2002
Total Iron	1.2 / 0.61		1.66	0.653	1.69	0.584

See Notes on Last Page.

Table A-2. Concentrations of Compounds Detected in Groundwater Samples Collected During System Startup, Colesville Landfill Groundwater Remediation System, Broome County, New York.

Constituents	Model Technology BPJ Limits[1] (ug/L)	Sample ID: Date:	GMPW-5* 9/8/2002		GMPW-5* 9/10/2002		Influent 9/8/2002		Influent* 9/10/2002	
VOCs (units in ug/L)										
Chloromethane	10		< 1.0	J	< 1.0	J	2.1	J	< 1.0	J
Vinyl Chloride	10-50		< 1.0	J	< 1.0	J	3.4	J	6.6	J
Chloroethane	–		< 1.0	J	1.6	J	3.9	J	3	J
1,1-Dichloroethene	10		< 1.0	J	< 1.0	J	1.4	J	1.2	J
Methylene Chloride	10-50		1.5	J	< 1.8	J	7.6	J	13	J
trans-1,2-Dichloroethene	10-50		< 1.0	J	< 1.0	J	< 1.0		1.1	J
1,1-Dichloroethane	10		2.6	J	5.1	J	17	J	36	J
cis-1,2-Dichloroethene	10		2.6	J	5.0	J	17	J	32.0	J
Chloroform	–		< 1.0	J	< 1.0	J	< 1.0		< 1.0	J
1,1,1-Trichloroethane	10-20		4	J	8.1	J	32	J	66	J
Benzene	5		< 1.0	J	< 1.0	J	3	J	5.9	J
1,2-Dichloroethane	10-30		< 1.0	J	< 1.0	J	< 1.0		< 1.0	J
Trichloroethene	10		3.1	J	5.6	J	24	J	38	J
Ethyl Benzene	5		< 1.0	J	< 1.0	J	< 1.0	J	< 1.0	J
m+p-Xylenes	5		8.6	J	3.6	J	7.6	J	< 2.0	J
o-Xylene	5		2.4	J	1.4	J	2.1	J	< 1.0	J
1,2,4-Trimethylbenzene	–		< 1.0	J	< 1.0	J	< 1.0		< 1.0	J
Dichlorodifluoromethane	–		< 1.0	J	< 1.0	J	< 1.0		1.7	J
Total VOCs			25.10		25.40		121.10		203.40	

Metals (units in mg/L)	Model Technology BPJ Limits[3,4] (mg/L)	Sample ID: Date:	GMPW-5* 9/8/2002	GMPW-5* 9/10/2002	Influent 9/8/2002	Influent* 9/10/2002
Total Iron	1.2 / 0.61		0.407	1.27	0.590	0.386

See Notes on Last Page.

Table A-2. Concentrations of Compounds Detected in Groundwater Samples Collected During System Startup, Colesville Landfill Groundwater Remediation System, Broome County, New York.

Constituents	Model Technology BPJ Limits[1] (ug/L)	Sample ID: Date:	Effluent-BC 9/8/2002	Effluent-BC 9/10/2002	Effluent-AC 9/8/2002	Effluent-AC* 9/10/2002
VOCs (units in ug/L)						
Chloromethane	10		--	--	1.8	< 1.0 J
Vinyl Chloride	10-50		--	--	< 1.0	< 1.0 J
Chloroethane	--		--	--	< 1.0	< 1.0 J
1,1-Dichloroethene	10		--	--	< 1.0	< 1.0 J
Methylene Chloride	10-50		--	--	< 1.0	< 1.0 J
trans-1,2-Dichloroethene	10-50		--	--	< 1.0	< 1.0 J
1,1-Dichloroethane	10		--	--	< 1.0	< 1.0 J
cis-1,2-Dichloroethene	10		--	--	< 1.0	< 1.0 J
Chloroform	--		--	--	< 1.0	< 1.0 J
1,1,1-Trichloroethane	10-20		--	--	< 1.0	< 1.0 J
Benzene	5		--	--	< 1.0	< 1.0 J
1,2-Dichloroethane	10-30		--	--	< 1.0	< 1.0 J
Trichloroethene	10		--	--	< 1.0	< 1.0 J
Ethyl Benzene	5		--	--	< 1.0	< 1.0 J
m+p-Xylenes	5		--	--	< 2.0	< 2.0 J
o-Xylene	5		--	--	< 1.0	< 1.0 J
1,2,4-Trimethylbenzene	--		--	--	< 1.0	< 1.0 J
Dichlorodifluoromethane	--		--	--	< 1.0	< 1.0 J
Total VOCs			0.00	0.00	1.8	0.00
Metals (units in mg/L)	Model Technology BPJ Limits[3,4] (mg/L)	Sample ID: Date:	Effluent-BC 9/8/2002	Effluent-BC 9/10/2002	Effluent-AC 9/8/2002	Effluent-AC* 9/10/2002
Total Iron	1.2 / 0.61		1.47	0.505	< 0.035	< 0.035

See Notes on Last Page.

Table A-2. Concentrations of Compounds Detected in Groundwater Samples Collected During System Startup, Colesville Landfill Groundwater Remediation System, Broome County, New York.

Notes:

1. Model Technology BPJ Limits recommended for Air Stripping with appropriate pretreatment from Attachment C of TOGS 1.2.1.
2. When a range is listed for the BPJ limit, a variation in available references was found. Recommended daily maximum limits should be in this range.
3. Model Technology BPJ Limits recommended for Lime, Settle and Filter treatment.
4. The recommended daily max permit limit is 1.2 mg/L and the recommended daily average permit limit is 0.61 mg/L.
5. Groundwater Remediation System startup completed on September 8, 2002.
6. Production wells were sampled in accordance with the schedule set forth in Table 3 of the Long-Term Monitoring Plan (ARCADIS 2002).

J	Estimated value.
ug/L	Micrograms per liter.
mg/L	Milligrams per liter.
Bold	Constituent detected above method detection limit.
VOCs	Volatile Organic Compounds
*	Indicates sample exceeded the recommended USEPA holding time for VOCs.
AC	After Cartridge Filter
BC	Before Cartridge Filter

Table A-3. Concentrations of Volatile Organic Compounds Detected in Air Stripper Effluent, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Compounds	CAS Numbers	Sample ID:	Effluent_ Day 1	Effluent_ Day 3
		Date Sampled:	9/8/2002	9/10/2002
			ppb	ppb
Vinyl Chloride	75-01-4		ND	ND
Chloroethane(Ethyl Chloride)	75-00-3		ND	ND
1,1-Dichloroethene(Vinylidene Chloride)	75-35-4		ND	ND
Methylene Chloride(Dichloromethane)	75-09-2		ND	12
1,1-Dichloroethane	75-34-3		ND	ND
cis-1,2 - Dichloroethylene	156-59-2		ND	ND
Chloroform	67-66-3		ND	ND
1,1,1-Trichloroethane(Methyl Chloroform)	71-55-6		ND	ND
Benzene	71-43-2		ND	ND
Trichloroethene	79-01-6		ND	ND
Toluene	108-88-3		7.4	5.6
Ethyl benzene	100-41-4		ND	ND
m,p-Xylene	108-38-3/106-42-3		ND	ND
o-Xylene	95-47-6		ND	ND
1,2,4-Trimethylbenzene	95-63-6		ND	ND
2-Propanol (Isopropyl alcohol)	67-63-0		18	10
Dichlorodifluoromethane(Freon 12)	75-71-8		ND	ND

ppb: parts per billion
ND: Denotes analyte not detected at or above it's laboratory quantification limit.

Notes/Assumptions:

1. Samples collected by ARCADIS personnel on the dates shown and submitted to Air Toxics Laboratories LTD. for volatile organic compound (VOC) analyses using a modified USEPA Method TO 14A/15.
2. Compounds listed were detected in influent groundwater and/or air stripper effluent during startup.

Table A-4. Initial Automated Reagent Injection System Input Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Molasses to Water Ratio (%) =	27	Programmed Mixing Time (min.)[1] =	30
Injection Frequency (per week) =	2	PSL-701 Setpoint (i.w.c.) =	NA
PSH-902 Setpoint (psi) =	39	PSN-901 Setpoint (psi) =	20
FAL-701 Setpoint (gpm) =	0.33	FAL-901 Setpoint (gpm) =	1

Injection Well ID	Molasses Solution Injection Quantity (gal.)	Rinse[2] Quantity (gal.)	Raw Molasses Per Well (gal.)
PW-6	37	5	10
IW-3	37	5	10
IW-1	37	4	10
IW-2	37	3	10
GMMW-1	37	3	10
IW-4	37	4	10
IW-5	37	5	10
IW-6	37	7	10
IW-7	37	8	10
IW-8	37	9	10
IW-9	37	11	10
IW-10	37	12	10
IW-11	37	13	10
IW-12	37	15	10
IW-13	37	16	10
IW-14	37	18	10
IW-15	37	19	10

Notes:

gal.	Gallons
min.	Minutes
i.w.c.	Inches of water column.
psi	Pounds per square inch.
gpm	Gallons per minute.
NA	Not applicable.
FAL	Flow alarm low.
PSH	Pressure switch high.
PSL	Pressure switch low.
PSN	Pressure switch normal.
1.	Programmed mixing time is calculated from the expiration time of the molasses injection countdown timer to the startup of transfer pump TP-900 during an injection sequence or from the end of transfer pump TP-600 operation to the restart of an injection during a mixing sequence.
2.	Rinse quantity is approximately 1-pipeline volume for each injection well.

Table A-5. Initial Automated Reagent Injection System Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Initial Injection - Injection Number 1a[4]

Injection Date = 9/7/2002

Molasses to Water Ratio (%) = 27

Programmed Mixing Time (min.)[1] = 30

Injection Well ID	Molasses Solution Injection Quantity (gal.)	Rinse[2] Quantity (gal.)	Raw Molasses Per Well (gal.)	Max. Injection Flowrate (gpm)	Max. Injection Pressure (psi)
PW-6	20	5	5.40	14.7	31
IW-3	20	5	5.40	16.7	34
IW-1	20	4	5.40	15.5	35
IW-2[3]	18	3	4.86	16.3	33
GMMW-1	20	3	5.40	12.8	36
IW-4	20	4	5.40	15.6	36
IW-5	20	5	5.40	17.1	34
IW-6	20	7	5.40	15.1	34
IW-7	20	8	5.40	13.5	36
IW-8	20	9	5.40	15.8	34
IW-9	20	11	5.40	16.1	33
IW-10	20	12	5.40	16	33
IW-11	20	13	5.40	15.8	34
IW-12	20	15	5.40	15.8	34
IW-13	20	16	5.40	15.9	33
IW-14	20	18	5.40	10.9	36
IW-15	20	19	5.40	12.8	34
Totals (gal.) =	338	157	91.26	NA	NA

Notes:

gal. Gallons
min. Minutes
psi Pounds per square inch.
gpm Gallons per minute.
NA Not applicable.
1. Programmed mixing time is calculated from the expiration time of the molasses injection countdown timer to the startup of transfer pump TP-900 during an injection sequence or from the end of transfer pump TP-600 operation to the restart of an injection during a mixing sequence.
2. Rinse quantity is approximately 1-pipeline volume for each injection well.
3. A reduced quantity of molasses solution injected into well IW-2 because of an unsecured wellhead.
4. Initial injection performed on September 7, 2002 was conducted manually to test system equipment.

Table A-5. Initial Automated Reagent Injection System Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Initial Injection - Injection Number 1b

Injection Date = 9/8/2002

Molasses to Water Ratio (%) = 27

Programmed Mixing Time (min.)[1] = 30

Injection Well ID	Molasses Solution Injection Quantity (gal.)	Rinse[2] Quantity (gal.)	Raw Molasses Per Well (gal.)	Max. Injection Flowrate (gpm)	Max. Injection Pressure (psi)
PW-6	5	5	1.35	NM	NM
IW-3	5	5	1.35	NM	NM
IW-1	5	4	1.35	NM	NM
IW-2	5	3	1.35	NM	NM
GMMW-1	5	3	1.35	NM	NM
IW-4	5	4	1.35	NM	NM
IW-5	5	5	1.35	NM	NM
IW-6	5	7	1.35	NM	NM
IW-7	5	8	1.35	NM	NM
IW-8	5	9	1.35	NM	NM
IW-9	5	11	1.35	NM	NM
IW-10	5	12	1.35	NM	NM
IW-11	5	13	1.35	NM	NM
IW-12	5	15	1.35	NM	NM
IW-13	5	16	1.35	NM	NM
IW-14	5	18	1.35	NM	NM
IW-15	5	19	1.35	NM	NM
Totals (gal.) =	85	157	22.95	NA	NA

Notes:

gal. Gallons
min. Minutes
psi Pounds per square inch.
gpm Gallons per minute.
NM Not measured.
NA Not applicable.
1. Programmed mixing time is calculated from the expiration time of the molasses injection countdown timer to the startup of transfer pump TP-900 during an injection sequence or from the end of transfer pump TP-600 operation to the restart of an injection during a mixing sequence.
2. Rinse quantity is approximately 1-pipeline volume for each injection well.

Table A-5. Initial Automated Reagent Injection System Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Initial Injection - Injection Number 1c

Injection Date = 9/8/2002

Molasses to Water Ratio (%) = 27 Programmed Mixing Time (min.)[1] = 30

Injection Well ID	Molasses Solution Injection Quantity (gal.)	Rinse[2] Quantity (gal.)	Raw Molasses Per Well (gal.)	Max. Injection Flowrate (gpm)	Max. Injection Pressure (psi)
PW-6	12	5	3.24	15.8	34
IW-3	12	5	3.24	15.9	33
IW-1	12	4	3.24	15	35
IW-2	12	3	3.24	15.5	33
GMMW-1	12	3	3.24	15.5	33
IW-4	12	4	3.24	13	35
IW-5	12	5	3.24	14.4	35
IW-6	12	7	3.24	14.6	35
IW-7	12	8	3.24	12.8	35
IW-8	12	9	3.24	11.7	37
IW-9	12	11	3.24	11.6	37
IW-10	12	12	3.24	12.6	36
IW-11	12	13	3.24	13.5	36
IW-12	12	15	3.24	13.5	35
IW-13	12	16	3.24	11	37
IW-14	12	18	3.24	7.6	38
IW-15	12	19	3.24	10.3	37
Totals (gal.) =	204	157	55.08	NA	NA

Notes:

gal. Gallons
min. Minutes
psi Pounds per square inch.
gpm Gallons per minute.
NA Not applicable.
1. Programmed mixing time is calculated from the expiration time of the molasses injection countdown timer to the startup of transfer pump TP-900 during an injection sequence or from the end of transfer pump TP-600 operation to the restart of an injection during a mixing sequence.
2. Rinse quantity is approximately 1-pipeline volume for each injection well.

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Attachment A-1

NYSDEC DAR-1 Results

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Table A1-1. NYSDEC DAR-1 Air Modeling Data, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Parameters for 9/8/2002 Sampling Event				
Discharge Temperature		T	524.67	°R
Ambient Temperature		Ta	529.67	°R
Stack Diameter		D	6	in
Stack Radius		R	0.25	ft
Stack Area		A	0.20	ft^2
Exit Velocity		V	14.03	fps
Exit Flow		Q	165	acfm
Exit Flow		Q	166	scfm
Stack Height		h_s	17	ft
Building Height		h_b	13.25	ft
Ratio of Heights		h_s/h_b	1.28	
Plume rise credit? $h_s/h_b > 1.5$?		(If no, $h_e=h_s$)	(If Yes, $h_e = h_s + 1.1 (F_m)^{1/3}$)	
Momentum Flux	Fm = Ta/T * V2 * R2		n/a	ft^4/s^2
Effective Stack Height		h_e	17.00	ft
Reduction Factor? $2.5 > h_s/h_b > 1.5$?			No, do not reduce impact	
Actual Annual Impact		C_a	$RF*6*Q_a/h_e^{2.25}$	
Mass Flow		Q_a	S lbs emitted for last 12 months	

fps: feet per second
acfm: actual cubic feet per minute
ug/m^3: micrograms per cubic meter
lb/yr: pounds per year
lb/hr: pounds per hour
ppb: parts per billion

Notes/Assumptions:

1. The stack discharge temperature is 65°F based on recorded parameters.
2. The ambient temperature is approximately 70°F, the average temperature during start-up.
3. Calculations assume that the system will run with the maximum allowable concentrations between quarterly readings.
4. AGC refers to the Annual Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated July 12, 2000.
5. To be conservative the lower detection limit was used for compounds that were below the limit of detection, but are found in the influent groundwater of the Groundwater Remediation System.

Table A1-1. NYSDEC DAR-1 Air Modeling Data, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Calculation of AGC based on 9/8/2002 Sampling Event

Compounds	CAS Numbers	Maximum Limit on C_a (AGC[4])	Maximum Mass Flow Q_a	Lab Data 9/8/02	Detection Limit Used[5]	Actual Emissions C_a	Actual Mass Flow per Hour	Actual Mass Flow per Year	**Percent of Annual**
		ug/m^3	lb/yr	ppb		ug/m^3	lb/hr	lb/yr	%
Vinyl Chloride	75-01-4	0.02	1.96	5	*	12.99	8.09E-06	0.07047	**3.60**
Chloroethane(Ethyl Chloride)	75-00-3	10,000	978,044.97	5	*	13.41	8.35E-06	0.07275	**0.00**
1,1-Dichloroethene(Vinylidene Chloride)	75-35-4	0.02	1.96	5	*	20.15	1.26E-05	0.10932	**5.59**
Methylene Chloride(Dichloromethane)	75-09-2	2.10	205.39	5	*	17.66	1.10E-05	0.09578	**0.05**
1,1-Dichloroethane	75-34-3	20	1,956.09	5	*	20.57	1.28E-05	0.11159	**0.01**
cis-1,2 - Dichloroethylene	156-59-2	1,900	185,828.54	5	*	20.15	1.26E-05	0.10932	**0.00**
Chloroform	67-66-3	0.04	4.21	5	*	24.82	1.55E-05	0.13462	**3.20**
1,1,1-Trichloroethane(Methyl Chloroform)	71-55-6	1,000	97,804.50	5	*	27.73	1.73E-05	0.15044	**0.00**
Benzene	71-43-2	0.13	12.71	5	*	16.24	1.01E-05	0.08807	**0.69**
Trichloroethene	79-01-6	0.45	44.01	5	*	27.31	1.70E-05	0.14816	**0.34**
Toluene	108-88-3	400	39,121.80	7.4		28.34	1.77E-05	0.15375	**0.00**
Ethyl benzene	100-41-4	1,000	97,804.50	5	*	22.07	1.37E-05	0.11970	**0.00**
m,p-Xylene	108-38-3/106-42-3	700	68,463.15	5	*	21.65	1.35E-05	0.11742	**0.00**
o-Xylene	95-47-6	700	68,463.15	5	*	22.07	1.37E-05	0.11970	**0.00**
1,2,4-Trimethylbenzene	95-63-6	290	28,363.30	5	*	24.98	1.56E-05	0.13552	**0.00**
2-Propanol (Isopropyl alcohol)	67-63-0	7,000	684,631.48	18		44.97	2.80E-05	0.24396	**0.00**
Dichlorodifluoromethane(Freon 12)	75-71-8	12,000	1,173,653.96	5	*	12.49	7.78E-06	0.06777	**0.00**

fps: feet per second
acfm: actual cubic feet per minute
ug/m^3: micrograms per cubic meter
lb/yr: pounds per year
lb/hr: pounds per hour
ppb: parts per billion

Notes/Assumptions:

1. The stack discharge temperature is 65°F based on recorded parameters.
2. The ambient temperature is approximately 70°F, the average temperature during start-up.
3. Calculations assume that the system will run with the maximum allowable concentrations between quarterly readings.
4. AGC refers to the Annual Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated July 12, 2000.
5. To be conservative the lower detection limit was used for compounds that were below the limit of detection, but are found in the influent groundwater of the Groundwater Remediation System.

Table A1-1. NYSDEC DAR-1 Air Modeling Data, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Parameters for 9/10/2002 Sampling Event				
Discharge Temperature		T	524.67	°R
Ambient Temperature		Ta	529.67	°R
Stack Diameter		D	6	in
Stack Radius		R	0.25	ft
Stack Area		A	0.20	ft^2
Exit Velocity		V	12.5	fps
Exit Flow		Q	147	acfm
Exit Flow		Q	148	scfm
Stack Height		h_s	17	ft
Building Height		h_b	13.25	ft
Ratio of Heights		h_s/h_b	1.28	
Plume rise credit? $h_s/h_b > 1.5$?		(If no, $h_e=h_s$)	(If Yes, $h_e = h_s + 1.1\ (F_m)^{1/3}$)	
Momentum Flux	Fm = Ta/T * V2 * R2		n/a	ft^4/s^2
Effective Stack Height		h_e	17.00	ft
Reduction Factor? $2.5 > h_s/h_b > 1.5$?			No, do not reduce impact	
Actual Annual Impact		C_a	$RF*6*Q_a/h_e^{2.25}$	ug/m^3
Mass Flow		Q_a	S lbs emitted for last 12 months	

fps: feet per second
acfm: actual cubic feet per minute
ug/m^3: micrograms per cubic meter
lb/yr: pounds per year
lb/hr: pounds per hour
ppb: parts per billion

Notes/Assumptions:

1. The stack discharge temperature is 65°F based on recorded parameters.
2. The ambient temperature is approximately 70°F, the average temperature during start-up.
3. Calculations assume that the system will run with the maximum allowable concentrations between quarterly readings.
4. AGC refers to the Annual Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated July 12, 2000.
5. To be conservative the lower detection limit was used for compounds that were below the limit of detection, but are found in the influent groundwater of the Groundwater Remediation System.

Table A1-1. NYSDEC DAR-1 Air Modeling Data, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Calculation of AGC based on 9/10/2002 Sampling Event

Compounds	CAS Numbers	Maximum Limit on C_a (AGC[4])	Maximum Mass Flow Q_a	Lab Data 9/10/02	Detection Limit Used[5]	Actual Emissions C_a	Actual Mass Flow per Hour	Actual Mass Flow per Year	**Percent of AGC**
		ug/m^3	lb/yr	ppb		ug/m^3	lb/hr	lb/yr	%
Vinyl Chloride	75-01-4	0.02	1.96	5	*	12.99	7.21E-06	0.06277	**3.21**
Chloroethane(Ethyl Chloride)	75-00-3	10,000	978,044.97	5	*	13.41	7.44E-06	0.06480	**0.00**
1,1-Dichloroethene(Vinylidene Chloride)	75-35-4	0.02	1.96	5	*	20.15	1.12E-05	0.09737	**4.98**
Methylene Chloride(Dichloromethane)	75-09-2	2.10	205.39	12		42.37	2.35E-05	0.20474	**0.10**
1,1-Dichloroethane	75-34-3	20	1,956.09	5	*	20.57	1.14E-05	0.09940	**0.01**
cis-1,2 - Dichloroethylene	156-59-2	1,900	185,828.54	5	*	20.15	1.12E-05	0.09737	**0.00**
Chloroform	67-66-3	0.04	4.21	5	*	24.82	1.38E-05	0.11991	**2.85**
1,1,1-Trichloroethane(Methyl Chloroform)	71-55-6	1,000	97,804.50	5	*	27.73	1.54E-05	0.13400	**0.00**
Benzene	71-43-2	0.13	12.71	5	*	16.24	9.01E-06	0.07845	**0.62**
Trichloroethene	79-01-6	0.45	44.01	5	*	27.31	1.52E-05	0.13197	**0.30**
Toluene	108-88-3	400	39,121.80	5.6		21.45	1.19E-05	0.10364	**0.00**
Ethyl benzene	100-41-4	1,000	97,804.50	5	*	22.07	1.22E-05	0.10662	**0.00**
m,p-Xylene	108-38-3/106-42-3	700	68,463.15	5	*	21.65	1.20E-05	0.10459	**0.00**
o-Xylene	95-47-6	700	68,463.15	5	*	22.07	1.22E-05	0.10662	**0.00**
1,2,4-Trimethylbenzene	95-63-6	290	28,363.30	5	*	24.98	1.39E-05	0.12071	**0.00**
2-Propanol (Isopropyl alcohol)	67-63-0	7,000	684,631.48	5	*	12.49	6.93E-06	0.06036	**0.00**
Dichlorodifluoromethane(Freon 12)	75-71-8	12,000	1,173,653.96	5	*	12.49	6.93E-06	0.06036	**0.00**

fps: feet per second
acfm: actual cubic feet per minute
ug/m^3: micrograms per cubic meter
lb/yr: pounds per year
lb/hr: pounds per hour
ppb: parts per billion

Notes/Assumptions:

1. The stack discharge temperature is 65°F based on recorded parameters.
2. The ambient temperature is approximately 70°F, the average temperature during start-up.
3. Calculations assume that the system will run with the maximum allowable concentrations between quarterly readings.
4. AGC refers to the Annual Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated July 12, 2000.
5. To be conservative the lower detection limit was used for compounds that were below the limit of detection, but are found in the influent groundwater of the Groundwater Remediation System.

ARCADIS

Table A1-2: NYSDEC Dar-1 Air Modeling Data, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Calculation of the Short-Term Guideline Concentration (SGC) for Sampling Event on 9/8/2002

Compounds	CAS Numbers	Maximum Limit (SGC) (ug/m^3)	Analytical Concentration (ppb)	Detection Limit Used	Actual Emissions C_a (ug/m^3)	Mass/hour (lb/hr)	Maximum Potential Impact (Step III.A.3 in DAR-1) (ug/m^3)	Short Term Impact (Step III.A.5 in DAR-1) (ug/m^3)	Percent of the SGC (%)
Vinyl Chloride	75-01-4	180,000	5	*	12.99	8.08E-06	0.0014	0.08973	5.0E-05
Chloroethane(Ethyl Chloride)	75-00-3	--	5	*	13.41	8.34E-06	0.0014	0.09263	NA
1,1-Dichloroethene(Vinylidene Chloride)	75-35-4	--	5	*	20.15	1.25E-05	0.0021	0.13920	NA
Methylene Chloride(Dichloromethane)	75-09-2	14,000	5	*	17.66	1.10E-05	0.0019	0.12195	8.7E-04
1,1-Dichloroethane	75-34-3	--	5	*	20.57	1.28E-05	0.0022	0.14210	NA
cis-1,2 - Dichloroethylene	156-59-2	--	5	*	20.15	1.25E-05	0.0021	0.13920	NA
Chloroform	67-66-3	150	5	*	24.82	1.54E-05	0.0026	0.17141	1.1E-01
1,1,1-Trichloroethane(Methyl Chloroform)	71-55-6	68,000	5	*	27.73	1.72E-05	0.0029	0.19156	2.8E-04
Benzene	71-43-2	1,300	5	*	16.24	1.01E-05	0.0017	0.11215	8.6E-03
Trichloroethene	79-01-6	54,000	5	*	27.31	1.70E-05	0.0029	0.18866	3.5E-04
Toluene	108-88-3	37,000	7.4		28.34	1.76E-05	0.0030	0.19577	5.3E-04
Ethyl benzene	100-41-4	54,000	5	*	22.07	1.37E-05	0.0023	0.15242	2.8E-04
m,p-Xylene	108-38-3/106-42-3	4,300	5	*	21.65	1.35E-05	0.0023	0.14952	3.5E-03
o-Xylene	95-47-6	4,300	5	*	22.07	1.37E-05	0.0023	0.15242	3.5E-03
1,2,4-Trimethylbenzene	95-63-6	--	5	*	24.98	1.55E-05	0.0027	0.17256	NA
2-Propanol (Isopropyl alcohol)	67-63-0	120,000	18		44.97	2.80E-05	0.0048	0.31064	2.6E-04
Dichlorofluoromethane(Freon 12)	75-71-8	--	5	*	25.13	1.56E-05	0.0027	0.17358	NA

ug/m^3: Micrograms per cubic meter
ppb: parts per billion
*: Analyte concentration below detection limit, detection limit was used in calculations
lb/hr: pounds per hour
--: No SGC listed for compound

Notes:

1. DAR-1 refers to DAR-1 AGC/SGC Tables dated 12 July 2000
2. SGC refers to the Short-Term Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated July 12, 2000.
3. To be conservative the lower detection limit was used for compounds that were below the limit of detection, but are found in the influent groundwater of the Groundwater Remediation System.

Table A1-2: NYSDEC Dar-1 Air Modeling Data, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

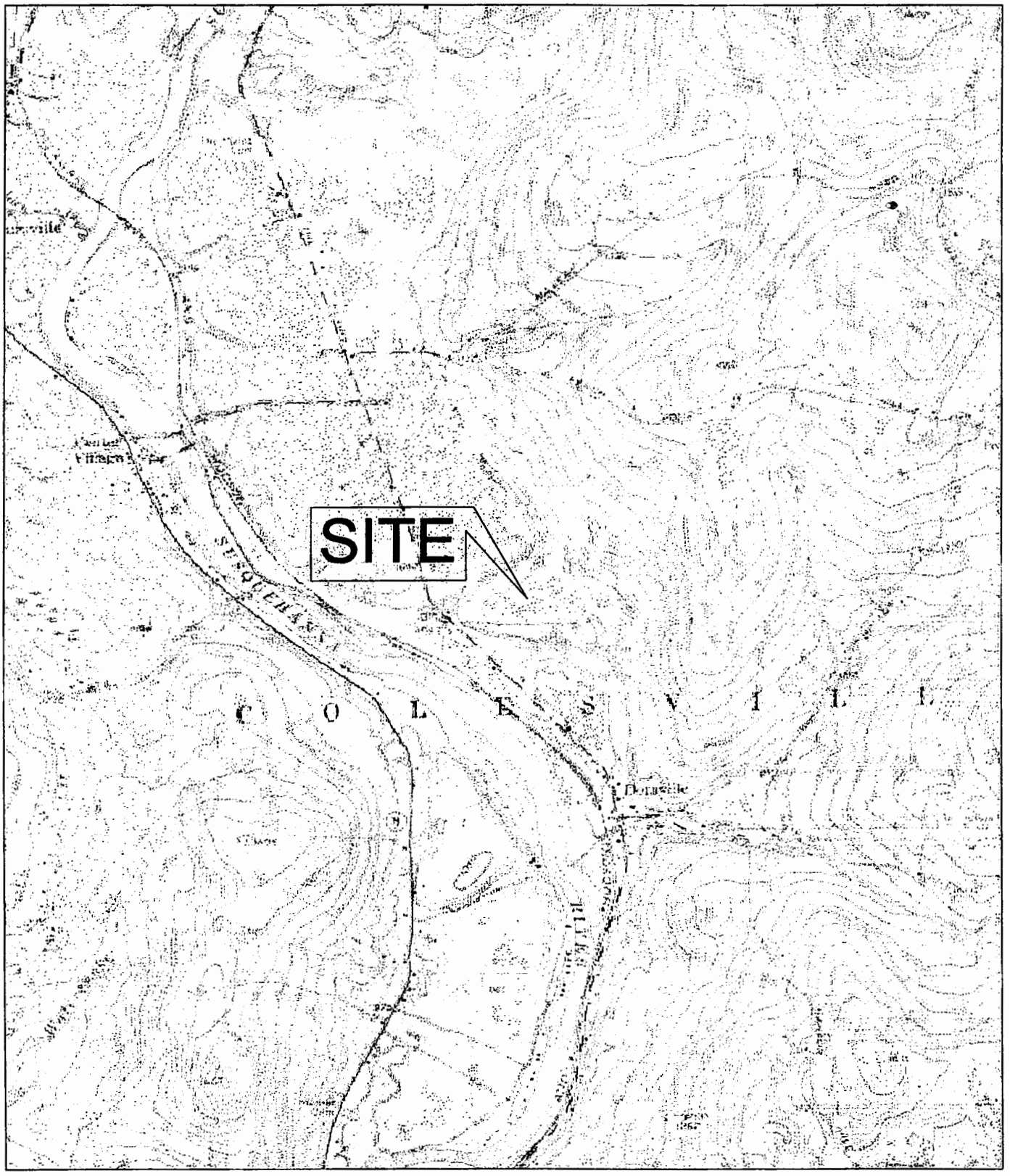
Calculation of the Short-Term Guideline Concentration (SGC) for Sampling Event on 9/10/2002

Compounds	CAS Numbers	Maximum Limit (SGC) (ug/m^3)	Analytical Concentration (ppb)	Detection Limit Used	Actual Emissions C_a (ug/m^3)	Mass/hour (lb/hr)	Maximum Potential Impact (Step III.A.3 in DAR-1) (ug/m^3)	Short Term Impact (Step III.A.5 in DAR-1) (ug/m^3)	Percent of the SGC (%)
Vinyl Chloride	75-01-4	180,000	5	*	12.99	7.20E-06	0.0012	0.08000	4.4E-05
Chloroethane(Ethyl Chloride)	75-00-3	--	5	*	13.41	7.43E-06	0.0013	0.08259	NA
1,1-Dichloroethene(Vinylidene Chloride)	75-35-4	--	5	*	20.15	1.12E-05	0.0019	0.12410	NA
Methylene Chloride(Dichloromethane)	75-09-2	14,000	12		42.37	2.35E-05	0.0040	0.26095	1.9E-03
1,1-Dichloroethane	75-34-3	--	5	*	20.57	1.14E-05	0.0019	0.12669	NA
cis-1,2 - Dichloroethylene	156-59-2	--	5	*	20.15	1.12E-05	0.0019	0.12410	NA
Chloroform	67-66-3	150	5	*	24.82	1.38E-05	0.0024	0.15283	1.0E-01
1,1,1-Trichloroethane(Methyl Chloroform)	71-55-6	68,000	5	*	27.73	1.54E-05	0.0026	0.17079	2.5E-04
Benzene	71-43-2	1,300	5	*	16.24	9.00E-06	0.0015	0.09999	7.7E-03
Trichloroethene	79-01-6	54,000	5	*	27.31	1.51E-05	0.0026	0.16820	3.1E-04
Toluene	108-88-3	37,000	5.6		21.45	1.19E-05	0.0020	0.13208	3.6E-04
Ethyl benzene	100-41-4	54,000	5	*	22.07	1.22E-05	0.0021	0.13589	2.5E-04
m,p-Xylene	108-38-3/106-42-3	4,300	5	*	21.65	1.20E-05	0.0021	0.13331	3.1E-03
o-Xylene	95-47-6	4,300	5	*	22.07	1.22E-05	0.0021	0.13589	3.2E-03
1,2,4-Trimethylbenzene	95-63-6	--	5		24.98	1.38E-05	0.0024	0.15385	NA
2-Propanol (Isopropyl alcohol)	67-63-0	120,000	10		24.98	1.39E-05	0.0024	0.15386	1.3E-04
Dichlorofluoromethane(Freon 12)	75-71-8	--	5	*	25.13	1.56E-05	0.0027	0.17358	NA

ug/m^3: Micrograms per cubic meter
ppb: parts per billion
*: Analyte concentration below detection limit, detection limit was used in calculations
lb/hr: pounds per hour
--: No SGC listed for compound

Notes:

1. DAR-1 refers to DAR-1 AGC/SGC Tables dated 12 July 2000
2. SGC refers to the Short-Term Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated July 12, 2000.
3. To be conservative the lower detection limit was used for compounds that were below the limit of detection, but are found in the influent groundwater of the Groundwater Remediation System.

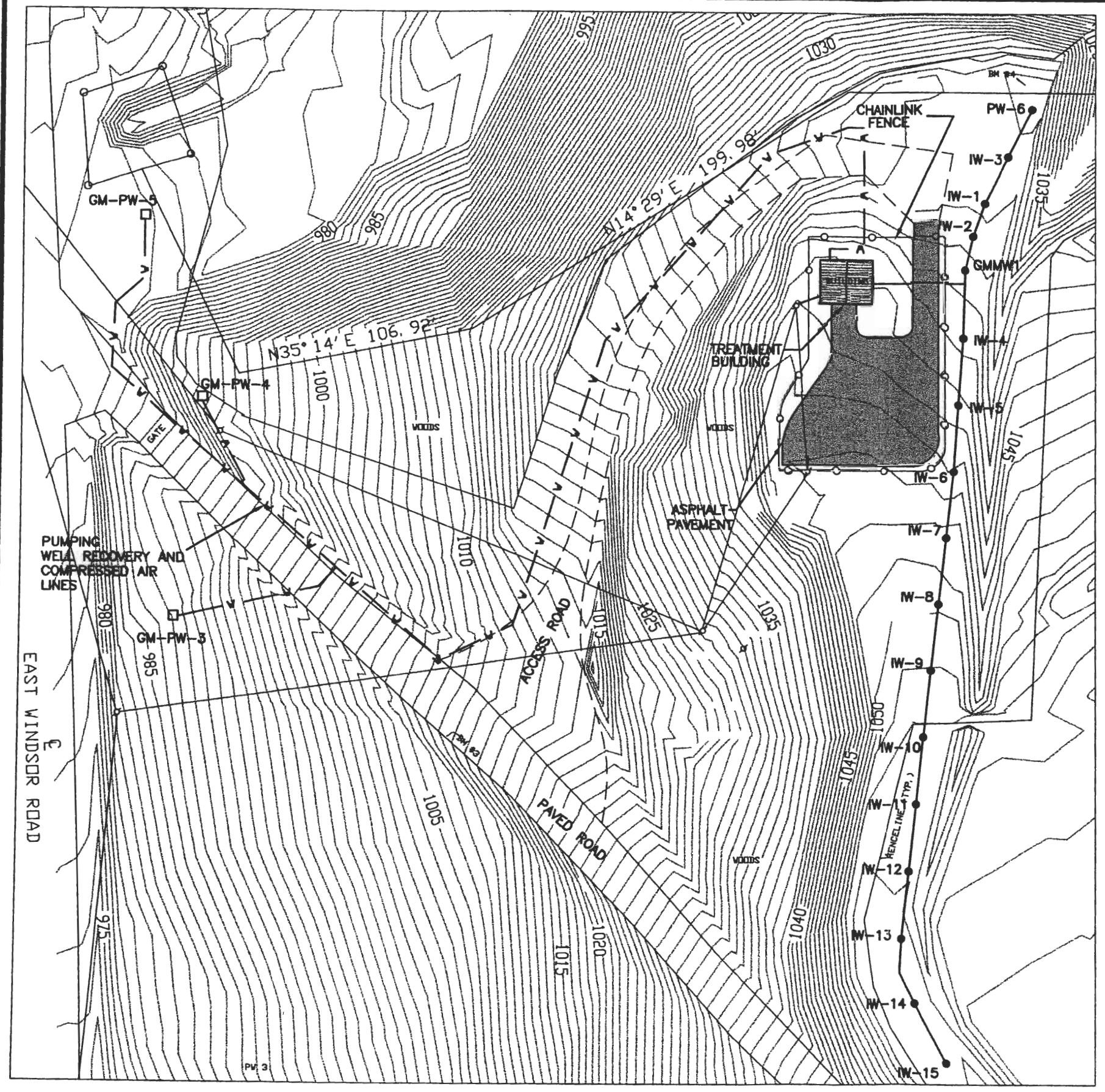


SOURCE: U.S.G.S. QUADRANGLES, 7.5 MINUTE SERIES,AFTON, N.Y. , REVISED 1957.

NO.	DATE	REVISION DESCRIPTION	BY / CKD

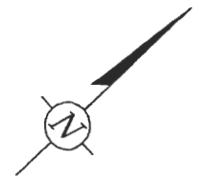
ARCADIS G&M
88 Duryea Road
Melville, NY 11747
Tel: (631) 249-7600 Fax: (631) 249-7610

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
KZ	12/19/02	KZ	NV
SITE LOCATION MAP		LEAD DESIGN PROF. CT	CHECKED KZ
COLESVILLE LANDFILL BROOME COUNTY, NEW YORK		PROJECT NUMBER NY00949.014	DRAWING NUMBER A-1



SITE PLAN

SCALE: 1"=50'-0"



LEGEND

- IW-15 ● – INJECTION WELL
- GM-PW-3 □ – PUMPING WELL
- —v—v— – RECOVERY/PNEUMATIC LINES
- ——— – INJECTION LINES
- —o—o— – FENCELINE
- ——— – EXISTING CONTOURS

NO.	DATE	REVISION DESCRIPTION	BY
			CKD

COLESVILLE LANDFILL

BROOME COUNTY, NEW YORK

SITE PLAN

ARCADIS

65 Duryea Road
Melville, New York 11747
Tel: 631/249-7800 Fax: 631/249-7810

PROJECT MANAGER	DEPARTMENT MANAGER
S. FELDMAN	N. VALKENBURG
LEAD DESIGN PROF.	CHECKED
C. TUOHY	K. ZEGEL
DRAWN	DATE
LMC	3/11/03
PROJECT NUMBER	DRAWING NUMBER
NY000949	A-2

C:\APROJECT\BROOME\Ny0949.014\Reports\startup_planfig2_r1.dwg Mar. 13, 2003

Appendix D

Analytical Results of Domestic Water Supply Wells

BUCK
ENVIRONMENTAL LABORATORIES, INC.
accredited environmental analysis

Report Date: *08-Nov-02*
Lab Log No: 0209244

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209244-01A

Client Sample ID: SCOTT MAIN
Sampled By: M. SAURBORN
Collection Date: 09/24/02
Received at Lab: 09/25/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
HEXAVALENT CHROMIUM		Analyst: **DS**	Analysis Date:**09/26/02**			
Chromium, Hexavalent	18540-29-9	1	0.0200	ND	mg/L	
ALKALINITY BY EPA 310.1		Analyst: **DS**	Analysis Date:**10/10/02**			
Alkalinity, Total (As CaCO3)		1	2.00	**92.0**	mg/L CaCO3	
COLOR - COLORIMETRIC, PLATINUM-COBALT		Analyst: **DS**	Analysis Date:**09/27/02**			
Color		1	5.0	ND	units	
CONDUCTANCE BY EPA 120.1		Analyst: **DS**	Analysis Date:**09/30/02**			
Specific Conductance		1	5.00	**459**	µmhos/cm	
EH		Analyst: **DS**	Analysis Date:**09/30/02**			
EH		1	1.00	**550**	mV	
HARDNESS		Analyst: **PB**	Analysis Date:**11/08/02**			
Hardness (As CaCO3)	471-34-1	1	1.00	**53.1**	mg/L	
ANIONS BY ION CHROMATOGRAPHY		Analyst: **SET**	Analysis Date:**10/01/02**			
Bromide	24959-67-9	10	1.00	ND	mg/L	
Chloride	16887-00-6	10	1.00	**78.4**	mg/L	
Nitrogen, Nitrate (As N)	7727-37-9	10	1.00	ND	mg/L	
Nitrogen, Nitrite	7727-37-9	10	1.00	ND	mg/L	
Sulfate	14808-79-8	10	10.0	**30.2**	mg/L	
PH BY EPA 150.1		Analyst: **DS**	Analysis Date:**09/26/02**			
pH		1	0.1000	**7.69**	pH units	
TURBIDITY BY EPA 1801.1		Analyst: **DS**	Analysis Date:**09/30/02**			
Turbidity		1	0.0500	**0.400**	NTU	

NYSDOH ELAP #10795

John H. Buck, P.E.
Laboratory Director

Abbreviations:
ND - Not Detected at the Reporting Limit
D - Surrogate diluted out
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Est., Value exceeds quantitation range
H - Est., Holding time exceedance

3821 Buck Drive, Cortland, NY 13045-5150
Tel 607.753.3403 Fax 607.753.3415

BUCK
ENVIRONMENTAL LABORATORIES, INC.
accredited environmental analysis

Report Date: *08-Nov-02*
Lab Log No: 0209244

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209244-01C

Client Sample ID: SCOTT MAIN
Sampled By: M. SAURBORN
Collection Date: 09/24/02
Received at Lab: 09/25/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
COD BY EPA 410.1		Analyst: **DS**	Analysis Date:**09/27/02**			
Chemical Oxygen Demand		1	2.00	ND	mg/L	
AMMONIA AS N BY LACHAT 10-107-06-1-B		Analyst: **SET**	Analysis Date:**09/27/02**			
Nitrogen, Ammonia (As N)	7727-37-9	1	0.0200	**0.0760**	mg/L	
TOTAL PHENOLICS		Analyst: **SET**	Analysis Date:**11/07/02**			
Phenolics, Total Recoverable		1	0.00500	ND	mg/L	
TOTAL KJELDAHL NITROGEN(N)		Analyst: **SET**	Analysis Date:**10/14/02**			
Nitrogen, Kjeldahl, Total	7727-37-9	1	0.200	ND	mg/L	
TOTAL ORGANIC CARBON BY EPA 415.1		Analyst: **DS**	Analysis Date:**10/11/02**			
Organic Carbon, Total	7440-44-0	1	0.500	**0.671**	mg/L	

This laboratory analysis has been performed in accordance with generally accepted laboratory practices and requirements of the New York State Department of Health ELAP Program. Buck Environmental Laboratories, Inc. makes no recommendations, representations or warranties other than as specifically set forth in this report and shall not be responsible or liable for any action or the consequences of any action taken in connection with this report.

NYSDOH ELAP #10795

John H. Buck, P.E.
Laboratory Director

Abbreviations:
ND - Not Detected at the Reporting Limit
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BUCK
ENVIRONMENTAL LABORATORIES, INC.
accredited environmental analysis

Report Date: *08-Nov-02*
Lab Log No: 0209244

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209244-01B

Client Sample ID: SCOTT MAIN
Sampled By: M. SAURBORN
Collection Date: 09/24/02
Received at Lab: 09/25/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
MERCURY, TOTAL		Analyst: **MB**	Analysis Date:**09/25/02**			
Mercury	7439-97-6	1	0.000200	**0.000444**	mg/L	
METALS BY ICP		Analyst: **MB**	Analysis Date:**10/08/02**			
Aluminum	7429-90-5	1	0.0400	ND	mg/L	
Antimony	7440-36-0	1	0.0500	ND	mg/L	
Arsenic	7440-38-2	1	0.0250	**ND**	mg/L	
Barium	7440-39-3	1	0.0450	**0.638**	mg/L	
Beryllium	7440-41-7	1	0.00500	ND	mg/L	
Boron	7440-42-8	1	0.0500	**0.0760**	mg/L	
Cadmium	7440-43-9	1	0.00500	ND	mg/L	
Calcium	7440-70-2	1	0.210	**16.8**	mg/L	
Chromium	7440-47-3	1	0.00500	ND	mg/L	
Cobalt	7440-48-4	1	0.0150	ND	mg/L	
Copper	7440-50-8	1	0.0100	**0.0182**	mg/L	
Iron	7439-89-6	1	0.0350	**0.113**	mg/L	
Lead	7439-92-1	1	0.00500	ND	mg/L	
Magnesium	7439-95-4	1	0.320	**2.71**	mg/L	
Manganese	7439-96-5	1	0.00500	**0.0857**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	
Potassium	7440-09-7	1	0.260	**1.00**	mg/L	
Selenium	7782-49-2	1	0.0200	ND	mg/L	
Silver	7440-22-4	1	0.0150	ND	mg/L	
Sodium	7440-23-5	1	0.670	**82.3**	mg/L	
Thallium	7440-28-0	1	0.0300	**ND**	mg/L	
Vanadium	7440-62-2	1	0.0150	ND	mg/L	
Zinc	7440-66-6	1	0.0100	**0.0364**	mg/L	

NYSDOH ELAP #10795

John H. Buck, P.E.
Laboratory Director

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BUCK
ENVIRONMENTAL LABORATORIES, INC.
accredited environmental analysis

Report Date: *08-Nov-02*
Lab Log No: 0209244

CLIENT:	ARCADIS GERAGHTY & MILLER, INC. 88 DURYEA ROAD MELVILLE, NY 11747-	**Client Sample ID:**	SCOTT MAIN
		Sampled By:	M. SAURBORN
		Collection Date:	09/24/02
Project:	COLESVILLE LANDFILL	**Received at Lab:**	09/25/02
Lab ID:	0209244-01E	**Matrix:**	AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
BIOCHEMICAL OXYGEN DEMAND BY EPA 405.1	Analyst: **SET**		Analysis Date:**09/26/02**			
Biochemical Oxygen Demand		1	2.0	**9.8**	mg/L	
TOTAL DISSOLVED SOLIDS BY EPA 160.1	Analyst: **KC**		Analysis Date:**09/30/02**			
Total Dissolved Solids (Residue, Filterable)		1	1.00	**289**	mg/L	

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Report Date: *08-Nov-02*
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CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209244-01F

Client Sample ID: SCOTT MAIN
Sampled By: M. SAURBORN
Collection Date: 09/24/02
Received at Lab: 09/25/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
PURGEABLE ORGANIC COMP.-EPA 524		Analyst: **JHB**	Analysis Date:**10/04/02**			
1,1,1,2-Tetrachloroethane	630-20-6	1	0.50	ND	ug/L	
1,1,1-Trichloroethane	71-55-6	1	0.50	ND	ug/L	
1,1,2,2-Tetrachloroethane	79-34-5	1	0.50	ND	ug/L	
1,1,2-Trichloroethane	79-00-5	1	0.50	ND	ug/L	
1,1-Dichloroethane	75-34-3	1	0.50	ND	ug/L	
1,1-Dichloroethene	75-35-4	1	0.50	ND	ug/L	
1,1-Dichloropropene	563-58-6	1	0.50	ND	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.50	ND	ug/L	
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	
1,2-Dibromoethane	106-93-4	1	0.50	ND	ug/L	
1,2-Dichlorobenzene	95-50-1	1	0.50	ND	ug/L	
1,2-Dichloroethane	107-06-2	1	0.50	ND	ug/L	
1,2-Dichloropropane	78-87-5	1	0.50	ND	ug/L	
1,3,5-Trimethylbenzene	108-67-8	1	0.50	ND	ug/L	
1,3-Dichlorobenzene	541-73-1	1	0.50	ND	ug/L	
1,3-Dichloropropane	142-28-9	1	0.50	ND	ug/L	
1,4-Dichlorobenzene	106-46-7	1	0.50	ND	ug/L	
2,2-Dichloropropane	590-20-7	1	0.50	ND	ug/L	
2-Chlorotoluene	95-49-8	1	0.50	ND	ug/L	
4-Chlorotoluene	106-43-4	1	0.50	ND	ug/L	
Benzene	71-43-2	1	0.50	ND	ug/L	
Bromobenzene	108-86-1	1	0.50	ND	ug/L	
Bromochloromethane	74-97-5	1	0.50	ND	ug/L	
Bromodichloromethane	75-27-4	1	0.50	ND	ug/L	
Bromoform	75-25-2	1	0.50	ND	ug/L	
Bromomethane	74-83-9	1	0.50	ND	ug/L	
Carbon tetrachloride	56-23-5	1	0.50	ND	ug/L	

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BUCK
ENVIRONMENTAL LABORATORIES, INC.
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Report Date: *08-Nov-02*
Lab Log No: 0209244

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209244-01F

Client Sample ID: SCOTT MAIN
Sampled By: M. SAURBORN
Collection Date: 09/24/02
Received at Lab: 09/25/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
Chlorobenzene	108-90-7	1	0.50	ND	ug/L	
Chloroethane	75-00-3	1	0.50	ND	ug/L	
Chloroform	67-66-3	1	0.50	ND	ug/L	
Chloromethane	74-87-3	1	0.50	**1.2**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.50	ND	ug/L	
cis-1,3-Dichloropropene	10061-01-5	1	0.50	ND	ug/L	
Dibromochloromethane	124-48-1	1	0.50	ND	ug/L	
Dibromomethane	74-95-3	1	0.50	ND	ug/L	
Dichlorodifluoromethane	75-71-8	1	0.50	ND	ug/L	
Ethylbenzene	100-41-4	1	0.50	ND	ug/L	
Hexachlorobutadiene	87-68-3	1	0.50	ND	ug/L	
Isopropylbenzene	98-82-8	1	0.50	ND	ug/L	
m,p-Xylene	1330-20-7	1	1.0	ND	ug/L	
Methylene chloride	75-09-2	1	0.50	ND	ug/L	
n-Butylbenzene	104-51-8	1	0.50	ND	ug/L	
n-Propylbenzene	103-65-1	1	0.50	ND	ug/L	
Naphthalene	91-20-3	1	0.50	ND	ug/L	
o-Xylene	95-47-6	1	0.50	ND	ug/L	
p-Isopropyltoluene	99-87-6	1	0.50	ND	ug/L	
sec-Butylbenzene	135-98-8	1	0.50	ND	ug/L	
Styrene	100-42-5	1	0.50	ND	ug/L	
tert-Butylbenzene	98-06-6	1	0.50	ND	ug/L	
Tetrachloroethene	127-18-4	1	0.50	ND	ug/L	
Toluene	108-88-3	1	0.50	ND	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.50	ND	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.50	ND	ug/L	
Trichloroethene	79-01-6	1	0.50	ND	ug/L	
Trichlorofluoromethane	75-69-4	1	0.50	ND	ug/L	
Vinyl chloride	75-01-4	1	0.50	ND	ug/L	
Surr: 4-Bromofluorobenzene	460-00-4	1	85.3-110.1	96.7	%REC	
Surr: Dibromofluoromethane	1868-53-7	1	81.9-116	106	%REC	

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NYSDOH ELAP #10795

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BUCK
ENVIRONMENTAL LABORATORIES, INC.
accredited environmental analysis

Report Date: *08-Nov-02*
Lab Log No: 0209244

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209244-01F

Client Sample ID: SCOTT MAIN
Sampled By: M. SAURBORN
Collection Date: 09/24/02
Received at Lab: 09/25/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
Surr: Toluene-d8	2037-26-5	1	85.5-113.5	103	%REC	

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B U C K
ENVIRONMENTAL LABORATORIES. INC.
3821 Buck Drive, P.O. Box 5150
Cortland, NY 13045
607.753.3403 fax 607.753.3415

Laboratory Report

Date: 09/26/02

ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE NY 11747-

Sample Number: ***209276-01***

System:
Federal Id:
Sampled By: M. SAURBORN
Source: Type:
Sample Site: PORT

Sampling Time: 13:30
Sampling Date: 09/24/02
Received: 09/25/02

Contaminant	EPA Method	Lab	Date	Units	Notation	Results
Coliform, total	SM16 909A	10795	09/25/02	C/.1L	OK	<1.0

These results indicate that the water supply meets the sanitary requirements of NYSDOH Part 5 for public water supplies.

I certify that the methods used to generate these results conform to New York State Department of Health ELAP requirements and generally accepted laboratory standards. Any chlorine residual values reported above were measured in the field by the sampler.

(LT => less than detection limit)
(NEG => not detected)

ACCREDITED IN ACCORDANCE WITH nelac

John H. Buck, P.E.
Laboratory Director
ELAP ID: 10795

FLI
FRIEND LABORATORY I · N · C

32 ITHACA STREET WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

Date:24-OCT-2002

Lab Sample ID: L95060-1

Buck Environmental Labs
Pam Davis
P.O. Box 5150
3821 Buck Drive
Cortland, NY 13045

Sample Source: BUCK ENV. LABS
Origin: 0209244-01D
Description: GRAB
Sampled On: 24-SEP-02 13:20 by CLIENT
Date Received: 04-OCT-02 12:45
P.O. No: N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Cyanide, Total	U	mg/l	0.005	05-OCT-02 17:23	EPA 335.4	02-063-24

Approved by: Lab Director

NY 10252 NJ 73168 PA 68180 EPA NY 00033

QC

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligram per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

BUCK
ENVIRONMENTAL LABORATORIES, INC.
accredited environmental analysis

Report Date: *08-Nov-02*
Lab Log No: 0209277

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209277-01A

Client Sample ID: SCOTT RIVER
Sampled By: M. SAURBORN
Collection Date: 09/27/02
Received at Lab: 09/27/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
HEXAVALENT CHROMIUM		Analyst: **DS**	Analysis Date:**10/01/02**			
Chromium, Hexavalent	18540-29-9	1	0.0200	ND	mg/L	
ALKALINITY BY EPA 310.1		Analyst: **DS**	Analysis Date:**10/10/02**			
Alkalinity, Total (As CaCO3)		1	2.00	**98.0**	mg/L CaCO3	
COLOR - COLORIMETRIC, PLATINUM-COBALT		Analyst: **DS**	Analysis Date:**09/27/02**			
Color		1	5.0	ND	units	
CONDUCTANCE BY EPA 120.1		Analyst: **DS**	Analysis Date:**09/30/02**			
Specific Conductance		1	5.00	**271**	µmhos/cm	
EH		Analyst: **DS**	Analysis Date:**09/30/02**			
EH		1	1.00	**355**	mV	
HARDNESS		Analyst: **PB**	Analysis Date:**11/08/02**			
Hardness (As CaCO3)	471-34-1	1	1.00	**52.5**	mg/L	
ANIONS BY ION CHROMATOGRAPHY		Analyst: **SET**	Analysis Date:**10/01/02**			
Bromide	24959-67-9	1	0.100	**0.364**	mg/L	
Chloride	16887-00-6	1	0.100	**27.4**	mg/L	
Nitrogen, Nitrate (As N)	7727-37-9	1	0.100	**0.184**	mg/L	
Nitrogen, Nitrite	7727-37-9	1	0.100	**ND**	mg/L	
Sulfate	14808-79-8	1	1.00	**2.62**	mg/L	
PH BY EPA 150.1		Analyst: **DS**	Analysis Date:**09/30/02**			
pH		1	0.1000	**8.22**	pH units	
TURBIDITY BY EPA 1801.1		Analyst: **DS**	Analysis Date:**09/30/02**			
Turbidity		1	0.0500	**2.10**	NTU	

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NYSDOH ELAP #10795

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BUCK
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Report Date: *08-Nov-02*
Lab Log No: 0209277

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209277-01B

Client Sample ID: SCOTT RIVER
Sampled By: M. SAURBORN
Collection Date: 09/27/02
Received at Lab: 09/27/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
MERCURY, TOTAL		Analyst: **MB**	Analysis Date: **10/11/02**			
Mercury	7439-97-6	1	0.000200	**ND**	mg/L	
METALS BY ICP		Analyst: **MB**	Analysis Date: **10/01/02**			
Aluminum	7429-90-5	1	0.0400	**0.152**	mg/L	
Antimony	7440-36-0	1	0.0500	ND	mg/L	
Arsenic	7440-38-2	1	0.0250	**ND**	mg/L	
Barium	7440-39-3	1	0.0450	**0.601**	mg/L	
Beryllium	7440-41-7	1	0.00500	ND	mg/L	
Boron	7440-42-8	1	0.0500	**0.0967**	mg/L	
Cadmium	7440-43-9	1	0.00500	ND	mg/L	
Calcium	7440-70-2	1	0.210	**17.4**	mg/L	
Chromium	7440-47-3	1	0.00500	**ND**	mg/L	
Cobalt	7440-48-4	1	0.0150	ND	mg/L	
Copper	7440-50-8	1	0.0100	**0.0691**	mg/L	
Iron	7439-89-6	1	0.0350	**0.312**	mg/L	
Lead	7439-92-1	1	0.00500	**0.00545**	mg/L	
Magnesium	7439-95-4	1	0.320	**2.20**	mg/L	
Manganese	7439-96-5	1	0.00500	**0.0748**	mg/L	
Nickel	7440-02-0	1	0.0100	ND	mg/L	
Potassium	7440-09-7	1	0.260	**1.04**	mg/L	
Selenium	7782-49-2	1	0.0200	ND	mg/L	
Silver	7440-22-4	1	0.0150	ND	mg/L	
Sodium	7440-23-5	1	0.670	**26.2**	mg/L	
Thallium	7440-28-0	1	0.0300	ND	mg/L	
Vanadium	7440-62-2	1	0.0150	ND	mg/L	
Zinc	7440-66-6	1	0.0100	**0.0666**	mg/L	

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BUCK
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accredited environmental analysis

Report Date: *08-Nov-02*
Lab Log No: 0209277

CLIENT:	ARCADIS GERAGHTY & MILLER, INC. 88 DURYEA ROAD MELVILLE, NY 11747-	**Client Sample ID:**	SCOTT RIVER
		Sampled By:	M. SAURBORN
		Collection Date:	09/27/02
Project:	COLESVILLE LANDFILL	**Received at Lab:**	09/27/02
Lab ID:	0209277-01C	**Matrix:**	AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
COD BY EPA 410.1		Analyst: **DS**	Analysis Date:**10/28/02**			
Chemical Oxygen Demand		1	2.00	ND	mg/L	
AMMONIA AS N BY LACHAT 10-107-06-1-B		Analyst: **SET**	Analysis Date:**10/22/02**			
Nitrogen, Ammonia (As N)	7727-37-9	1	0.0200	ND	mg/L	
TOTAL PHENOLICS		Analyst: **SET**	Analysis Date:**11/07/02**			
Phenolics, Total Recoverable		1	0.00500	**ND**	mg/L	
TOTAL KJELDAHL NITROGEN(N)		Analyst: **SET**	Analysis Date:**10/14/02**			
Nitrogen, Kjeldahl, Total	7727-37-9	1	0.200	ND	mg/L	
TOTAL ORGANIC CARBON BY EPA 415.1		Analyst: **DS**	Analysis Date:**10/11/02**			
Organic Carbon, Total	7440-44-0	1	0.500	**0.939**	mg/L	

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Report Date: *08-Nov-02*
Lab Log No: 0209277

CLIENT:	ARCADIS GERAGHTY & MILLER, INC.	**Client Sample ID:**	SCOTT RIVER
	88 DURYEA ROAD	**Sampled By:**	M. SAURBORN
	MELVILLE, NY 11747-	**Collection Date:**	09/27/02
Project:	COLESVILLE LANDFILL	**Received at Lab:**	09/27/02
Lab ID:	0209277-01E	**Matrix:**	AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
BIOCHEMICAL OXYGEN DEMAND BY EPA 405.1	Analyst: **SET**		Analysis Date:**09/26/02**			
Biochemical Oxygen Demand		1	2.0	**ND**	mg/L	
TOTAL DISSOLVED SOLIDS BY EPA 160.1	Analyst: **KC**		Analysis Date:**09/30/02**			
Total Dissolved Solids (Residue, Filterable)		1	1.00	**165**	mg/L	

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Tel 607.753.3403 Fax 607.753.3415

BUCK
ENVIRONMENTAL LABORATORIES, INC.
accredited environmental analysis

Report Date: *08-Nov-02*
Lab Log No: 0209277

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209277-01F

Client Sample ID: SCOTT RIVER
Sampled By: M. SAURBORN
Collection Date: 09/27/02
Received at Lab: 09/27/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
PURGEABLE ORGANIC COMP.-EPA 524		Analyst: **JHB**	Analysis Date: **10/04/02**			
1,1,1,2-Tetrachloroethane	630-20-6	1	0.50	ND	ug/L	
1,1,1-Trichloroethane	71-55-6	1	0.50	ND	ug/L	
1,1,2,2-Tetrachloroethane	79-34-5	1	0.50	ND	ug/L	
1,1,2-Trichloroethane	79-00-5	1	0.50	ND	ug/L	
1,1-Dichloroethane	75-34-3	1	0.50	ND	ug/L	
1,1-Dichloroethene	75-35-4	1	0.50	ND	ug/L	
1,1-Dichloropropene	563-58-6	1	0.50	ND	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.50	ND	ug/L	
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	
1,2-Dibromoethane	106-93-4	1	0.50	ND	ug/L	
1,2-Dichlorobenzene	95-50-1	1	0.50	ND	ug/L	
1,2-Dichloroethane	107-06-2	1	0.50	ND	ug/L	
1,2-Dichloropropane	78-87-5	1	0.50	ND	ug/L	
1,3,5-Trimethylbenzene	108-67-8	1	0.50	ND	ug/L	
1,3-Dichlorobenzene	541-73-1	1	0.50	ND	ug/L	
1,3-Dichloropropane	142-28-9	1	0.50	ND	ug/L	
1,4-Dichlorobenzene	106-46-7	1	0.50	ND	ug/L	
2,2-Dichloropropane	590-20-7	1	0.50	ND	ug/L	
2-Chlorotoluene	95-49-8	1	0.50	ND	ug/L	
4-Chlorotoluene	106-43-4	1	0.50	ND	ug/L	
Benzene	71-43-2	1	0.50	ND	ug/L	
Bromobenzene	108-86-1	1	0.50	ND	ug/L	
Bromochloromethane	74-97-5	1	0.50	ND	ug/L	
Bromodichloromethane	75-27-4	1	0.50	ND	ug/L	
Bromoform	75-25-2	1	0.50	ND	ug/L	
Bromomethane	74-83-9	1	0.50	ND	ug/L	
Carbon tetrachloride	56-23-5	1	0.50	ND	ug/L	

This laboratory analysis has been performed in accordance with generally accepted laboratory practices and requirements of the New York State Department of Health ELAP Program. Buck Environmental Laboratories, Inc. makes no recommendations, representations or warranties other than as specifically set forth in this report and shall not be responsible or liable for any action or the consequences of any action taken in connection with this report.

NYSDOH ELAP #10795

John H. Buck, P.E.
Laboratory Director

Abbreviations:
ND - Not Detected at the Reporting Limit
D - Surrogate diluted out
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Est., Value exceeds quantitation range
H - Est., Holding time exceedance

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Lab Log No: 0209277

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209277-01F

Client Sample ID: SCOTT RIVER
Sampled By: M. SAURBORN
Collection Date: 09/27/02
Received at Lab: 09/27/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
Chlorobenzene	108-90-7	1	0.50	ND	ug/L	
Chloroethane	75-00-3	1	0.50	ND	ug/L	
Chloroform	67-66-3	1	0.50	ND	ug/L	
Chloromethane	74-87-3	1	0.50	ND	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.50	ND	ug/L	
cis-1,3-Dichloropropene	10061-01-5	1	0.50	ND	ug/L	
Dibromochloromethane	124-48-1	1	0.50	ND	ug/L	
Dibromomethane	74-95-3	1	0.50	ND	ug/L	
Dichlorodifluoromethane	75-71-8	1	0.50	ND	ug/L	
Ethylbenzene	100-41-4	1	0.50	ND	ug/L	
Hexachlorobutadiene	87-68-3	1	0.50	ND	ug/L	
Isopropylbenzene	98-82-8	1	0.50	ND	ug/L	
m,p-Xylene	1330-20-7	1	1.0	ND	ug/L	
Methylene chloride	75-09-2	1	0.50	ND	ug/L	
n-Butylbenzene	104-51-8	1	0.50	ND	ug/L	
n-Propylbenzene	103-65-1	1	0.50	ND	ug/L	
Naphthalene	91-20-3	1	0.50	ND	ug/L	
o-Xylene	95-47-6	1	0.50	ND	ug/L	
p-Isopropyltoluene	99-87-6	1	0.50	ND	ug/L	
sec-Butylbenzene	135-98-8	1	0.50	ND	ug/L	
Styrene	100-42-5	1	0.50	ND	ug/L	
tert-Butylbenzene	98-06-6	1	0.50	ND	ug/L	
Tetrachloroethene	127-18-4	1	0.50	ND	ug/L	
Toluene	108-88-3	1	0.50	ND	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.50	ND	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.50	ND	ug/L	
Trichloroethene	79-01-6	1	0.50	ND	ug/L	
Trichlorofluoromethane	75-69-4	1	0.50	ND	ug/L	
Vinyl chloride	75-01-4	1	0.50	ND	ug/L	
Surr: 4-Bromofluorobenzene	460-00-4	1	85.3-110.1	101	%REC	
Surr: Dibromofluoromethane	1868-53-7	1	81.9-116	96.7	%REC	

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NYSDOH ELAP #10795

John H. Buck, P.E.
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Report Date: *08-Nov-02*
Lab Log No: 0209277

CLIENT: ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE, NY 11747-
Project: COLESVILLE LANDFILL
Lab ID: 0209277-01F

Client Sample ID: SCOTT RIVER
Sampled By: M. SAURBORN
Collection Date: 09/27/02
Received at Lab: 09/27/02
Matrix: AQUEOUS

Analyses	CAS	DF	PQL	Result	Units	Qual
Surr: Toluene-d8	2037-26-5	1	85.5-113.5	96.2	%REC	

This laboratory analysis has been performed in accordance with generally accepted laboratory practices and requirements of the New York State Department of Health ELAP Program. Buck Environmental Laboratories, Inc. makes no recommendations, representations or warranties other than as specifically set forth in this report and shall not be responsible or liable for any action or the consequences of any action taken in connection with this report.

NYSDOH ELAP #10795

John H. Buck, P.E.
Laboratory Director

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BUCK
ENVIRONMENTAL LABORATORIES. INC.
3821 Buck Drive. P.O. Box 5150
Cortland, NY 13045
607.753.3403 fax 607.753.3415

Laboratory Report

Date: 09/30/02

ARCADIS GERAGHTY & MILLER, INC.
88 DURYEA ROAD
MELVILLE NY 11747-

Sample Number: ***209316-01***

System:
Federal Id:
Sampled By: M. SAURBORN
Source: Type:
Sample Site: SCOTT RIVER

Sampling Time: 12:00
Sampling Date: 09/26/02
Received: 09/27/02

Contaminant	EPA Method	Lab	Date	Units	Notation	Results
Coliform, total	SM16 909A	10795	09/27/02	C/.1L	OK	<1.0

These results indicate that the water supply meets the sanitary requirements of NYSDOH Part 5 for public water supplies.

I certify that the methods used to generate these results conform to New York State Department of Health ELAP requirements and generally accepted laboratory standards. Any chlorine residual values reported above were measured in the field by the sampler.

(LT => less than detection limit)
(NEG => not detected)

ACCREDITED IN ACCORDANCE WITH nelac

John H. Buck, P.E.
Laboratory Director
ELAP ID: 10795

FLI
FRIEND LABORATORY I · N · C

32 ITHACA STREET WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

Date:24-OCT-2002

Lab Sample ID: L95060-2

Buck Environmental Labs
Pam Davis
P.O. Box 5150
3821 Buck Drive
Cortland, NY 13045

Sample Source: BUCK ENV. LABS
Origin: 0209277-01D
Description: GRAB
Sampled On: 27-SEP-02 12:00 by CLIENT
Date Received: 04-OCT-02 12:45
P.O. No: N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Cyanide, Total	U	mg/l	0.005	05-OCT-02 17:29	EPA 335.4	02-063-24

Approved by: _____ Lab Director

NY 10252 NJ 73168 PA 68180 EPA NY 00033

QC MLO

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligram per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit