Albany Molecular Research, Inc.®
Organichem Corporation

March 16, 2005

Daniel Lightsey, P.E.
Bureau of Hazardous Site Control
Division of Environmental Remediation
New York State Department of Environmental Conservation
1150 N. Westcott Road
Schenectady, N.Y. 12306

Subject: Sterling Site 1 – Groundwater Intercept Trench Extension & Alterations Work Plan

Dear Mr. Lightsey,

Attached please find a hard copy and a disk containing the above mentioned work plan for proposed activities at Sterling Site 1.

It is our intention to start this work early this spring. We are targeting the middle of April 2005 for commencement of these activities. A critical part of this process is the review and approval by the New York State Department of Environmental Conservation.

I am asking that you review and approve the attached work plan at your earliest convenience so that we can hold a bid meeting on the approved work plan. I believe that this work plan will meet your requirements as it includes your comments from our meeting on February 24, 2005.

If you have any questions or concerns regarding this matter, please contact me at 518-433-7772.

Sincerely,

Dean Malagrida
Environmental Engineering Supervisor

Attachments

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ORGANICHEM COMPANY

RENSSELAER SITE
33 RIVERSIDE AVENUE
Rensselaer County
CITY of RENSSELAER, NEW YORK

GROUNDWATER INTERCEPTOR TRENCH EXTENSION & ALTERATIONS WORK PLAN

March 15, 2005

Prepared for:

Organichem Co.
33 Riverside Avenue
Rensselaer, NY 12144

Prepared by:

18 Computer Drive West
Albany, New York 12205

SPEC Consulting Project #04-127

TABLES

DRAWINGS

APPENDICES

1.0 INTRODUCTION

SPEC Consulting LLC (SPEC) on behalf of Organichem Corporation (Organichem) has prepared this Work Plan for the alterations and additions to the existing north side groundwater interceptor trench located on the north side of Site 1, City of Rensselaer, Rensselaer County, New York. The site is an active pharmaceutical manufacturing plant owned by Organichem Corporation. Throughout this report the Organichem Rensselaer Plant Site is referred to as the *site*.

1.1 Purpose and Scope

The purpose of this Work Plan is to set fourth the tasks necessary to complete the alteration to the existing north plant groundwater interceptor trench including extending the trench west. The interceptor trench existing and proposed locations are shown on drawing S.1 & S.2. The existing trench starts from a groundwater collection manhole located near the center of building 27 and extends east approximately 150 Linear Feet. Organichem is proposing to replace this existing section and install an additional 200 Linear Feet of trench from the existing manhole west. The tasks to be performed under this Work Plan are listed under the headings Pre-Construction Activities, Infrastructure & Construction Activities, Sampling & Analysis Plan (SAP), Spoil Soil & Debris Disposal, and Completion of Work.

Health and Safety sampling including air monitoring is detailed in the site Health and Safety Plan (HASP), which is incorporated into this document by reference as Appendix A. Community Air Monitoring is detailed in the Community Air Monitoring Plan (CAMP) which is attached as Appendix B. The soil characterization analysis will be performed under the site Sampling and Analysis Plan (SAP) presented in Section 4.0 of this document.

The work addressed in this document is as follows:

Pre-Construction Activities:

- Initiate and Implement Site Health and Safety Plan & Community Air Monitoring Plan. Establish Exclusion Zone and Contaminant Reduction Zones. Contractor personnel go through Organichem site specific safety orientation.
- Survey Trench Limits and Identify underground utilities in the work area.
- Procure required materials.
- Mobilize required equipment.
- Implement appropriate storm water pollution prevention and erosion control measures.
- Prepare equipment for dust suppression and air monitoring.
- Prepare soil staging and equipment decontamination areas.

Construction Activities:

- Clear identified Underground utilities.
- Disconnect existing groundwater interception and collection system.
- Saw cut asphalt.
- Excavate trench and install per drawings.
- Reset existing manhole.
- Manage excavated soils.
- Perform Sampling of staged soils by Organichem.
- Repair roadway or Seed and Restore site.
- Decontamination of Equipment.

Spoil Soil & Debris Waste Disposal Offsite (by Organichem):

- Review and Approve Analytical Data on Soils for disposal as hazardous or non-hazardous waste.
- Establish Waste Profiles.
- Prepare Shipping Documents Upon Receipt of Analytical Results.
- Ship Materials to Disposal Facility.
- Submittal of Off-Site Disposal Reports to NYSDEC.

Site Closure Report:

- Prepare Construction Certification Report of Above Work Activities.
- Submit Report to NYSDEC.

1.2 Background Information

The Organichem Rensselaer Site is located in eastern New York State along the Hudson River east of Albany in the City of Rensselaer, Rensselaer County. The property is located off of Riverside Avenue and Rensselaer Avenue, refer to Figures 1 for overall site location. The site is currently owned and operated by Organichem Corporation. The site was the formerly owned by NYCOMED-Amersham, Sterling Organics and Bayer Corporation. The property encompasses an area of approximately 26 acres. The property has manufacturing, office, warehouse and process sewer water pre-treatment. The focus of this Work Plan consists of an area along the north boundary of the property where the existing groundwater interceptor trench is located. Refer to drawing S-4 in Appendix C for the location of the existing interceptor trench and the proposed location of the extension to the existing north plant groundwater interceptor trench.

The existing groundwater inceptor trench was previously installed reportedly in 1988 as part of a NYSDEC approved remedy to recover groundwater impacted by organic contaminants migrating through the groundwater. The existing trench is approximately 150 LF long and extends from a pre-cast concrete manhole behind building 27 east. The trench is located in the access road / grass area adjacent to the north site perimeter fence. The groundwater is recovered at the recovery manhole,

the manhole pumps the water through a bag filter and two (2) granular activated carbon (GAC) canisters placed in series. The treated water is re-injected into the ground at a re-injection trench south of building 30. The site also has a Soil Vapor Extraction System (SVE) located in the vicinity of building 30.

Several months ago, Organichem personnel noted a higher concentration of silt migrating into the manhole and collecting in the bag filter and GAC. It is Organichem's belief that the groundwater collection filter media which consists of filter fabric wrapped stone with a collection pipe and vertical in-plane composite geogrid drain has begun to pass more silt than the original design intended. The silting of the drain may be the result of the overall age of the system.

In order to improve system operation, repair the silted filter media and enhance recovery along the north section, Organichem is proposing the following work.

1. Remove the existing 150 LF groundwater interceptor trench and install a new trench of similar design and length. Organichem is proposing the addition of a low permeability barrier in the trench to minimize groundwater passing through the site and decrease overall flow into the drain.
2. Remove the existing pre-cast concrete recovery manhole and reset the manhole deeper in order to provide a sump which would allow for improved groundwater control and treatment.
3. Extend the recovery trench 200 LF west from the re-set pre-cast concrete recovery manhole.
4. Install two (2) sets of three (3) piezometers at the mid point of each trench segment. The piezometers would be monitored on a periodic basis to verify groundwater elevation on the upstream, down stream side of the trench and to confirm the free flow of water in the trench itself.
5. The existing re-injection system appears to be capable of handling the 8 to 10 gpm maximum flowrate anticipated from the extended trenching system.

1.3 Proposed Project Schedule

The project is anticipated to involve six (6) to eight (8) weeks of on-site construction work activities and four (4) weeks of post construction work report development. The following major project milestones are detailed below in Table 1.

Table 1- Project Schedule

Task #	Task Description	Task Duration
1	Material procurement and site mobilization.	2 weeks
2	Establish exclusion zones, erosion control, set staging areas, sawcut and remove asphalt.	1 week
3	Install trench extension, remove and reset manhole, remove & replace existing trench	3 to 4 weeks
4	Characterize staged spoil soils, dispose of offsite at an appropriately permitted	1 to 2 weeks

	landfill, restore site to pre-construction activities and demobilize contractor from site.	
5	Issue final Professional Engineering Construction Certification report for work.	4 weeks

Organichem and the environmental contractor will take reasonable and prudent efforts to comply with the above proposed draft project schedule.

2.0 PRE-CONSTRUCTION ACTIVITIES

Prior to initiating intrusive trench excavation activities, the following tasks will be completed:

2.1 Implement Site Health And Safety Plan

Construction personnel working on this project site or others working with in the exclusion zone will be required to read, understand, sign, and adhere to applicable sections of the Project Site Specific Health and Safety Plan (HASP). SPEC Consulting, LLC has prepared a project specific HASP. The contractor will be required to have their own HASP which meets the minimum requirements outlined in the Site Specific HASP. The HASP is incorporated into this document by reference the HASP TOC is presented in Appendix A. As part of the overall site and project health and safety monitoring, SPEC has developed a site specific Community Air Monitoring program. The community air monitoring program is detailed in the Community Air Monitoring Plan (CAMP) which is attached as Appendix B. It is anticipated that Level "D" personal protective equipment (PPE) will be required to conduct work outlined in this work plan. PPE upgrades will be implemented as outlined in the site HASP. The exclusion zone (EZ) and contamination reduction zone (CRZ) will be established and delineated with "snow" fence supported by metal or wood stakes or other suitable support equipment. This area will comply with the health and safety standards set in 29 CFR 1910.120. A copy of the HASP and CAMP will be kept at the work zone during intrusive work activities. SPEC personnel will perform air monitoring associated with the HASP & CAMP during intrusive trench work activities and during soil staging (prior to placement of covers) and soil movement (loading into trucks or roll offs or restaging of soils) activities.

2.2 Survey Trench Limits and Underground Utilities

Prior to initiation of work, Organichem, SPEC personnel and representatives from the environmental contractor will field locate and mark the proposed trench alignment and manholes. Soil staging areas will be delineated in the vicinity of the work, local vertical site control monumentation will be identified and the approximate location of known underground utilities will be marked in the field by Organichem. The existing Organichem site base map will be used for site

horizontal control based upon field ties to known monuments (e.g. building corners, utility poles, etc).

2.3 Material Procurement

Prior to initiating field construction activities or during the mobilization phase of the project, the selected environmental contractor will place orders for or procure required construction materials needed for the site.

2.4 Mobilize Required Equipment

The Contractor selected to perform the work will mobilize equipment, materials, and facilities required to perform the work outline in this work plan. Equipment staging areas and temporary facilities will be established at the site to support the work.

2.5 Storm Water and Erosion Management

Currently site storm water in the exclusion zone area travels overland between the fence line and buildings to a series of on site storm water catch basins. In general, the majority of the work zone is asphalt paved, the work area is relatively flat and drains a relatively confined area therefore a limited amount of stormwater and erosion control works is necessary. This work will involve installation of silt fence and hay bails where appropriate to direct storm water away from the staged soil areas. The contractor's use of poly and hay bales will contain sediments within the work zone. Storm water will be redirected away from the exclusion zone excavation area, and the staged soil area, where necessary. The contractor as part of their storm water and erosion/sediment control requirements will direct storm water away from covered soil piles to prevent storm water from contacting excavated soils. If soils come in contact with stormwater, the stormwater will be directed to the trench or a temporary sump will be used to collect stormwater. Stormwater contacting excavated soils or entering the trench will be pumped to a contractor supplied stilling basin, then pumped into a site process sewer manhole where it will be pre-treated at the Organichem treatment plant prior to discharge to the Rensselaer County Publicly-Owned Treatment Works (POTW), per approval from the Rensselaer County Sewer District. The POTW will be available to receive stormwater and groundwater from the project work throughout the duration of the project.

2.6 Site Access and Staging Areas

Construction access into the site is via the contractor's gate Gate #2. The work zone area is easily accessible along a perimeter vehicle access road for the majority of the trench area. The eastern portion of the existing recovery trench is located in a

grass area. No clearing or grubbing of the site or completion of construction access roads will be required. A spoil soil staging area is identified on the drawings.

2.7 Dust Suppression and Air Monitoring

The Contractor will be required to implement dust suppression and vapor control measures during activities that create airborne dust. These measures may include:

- Spraying of water.
- Covering excavated materials after being staged.
- Restricting on-site vehicles to 10 mph.
- Covering roll off or trailer containers prior to on-site relocation and/or off-site transportation.

On-site dust monitoring requirements and procedures are presented in the site HASP. Should site activities result in dust levels or organic vapor exceeding the criteria identified in the HASP, the Organichem Health and Safety Officer (HSO) or Organichem site engineer will direct the Contractor in the appropriate actions. These actions may range from implementation of engineering controls to cessation of on-site activities.

2.8 Soil Staging Pad and Decontamination Area

A temporary soil staging area and decontamination pad will be constructed in the vicinity of the trench, refer to drawing #S-1 in Appendix C for proposed location of the soil staging area. The water generated from decontamination activities will be pumped to a contractor supplied stilling basin, then pumped into a site process sewer manhole where it will be pre-treated at the Organichem treatment plant prior to discharge to the Rensselaer POTW. Soils will be staged adjacent to the trench during daily construction activities. Excess soil will staged at the area designated on the drawings either in pile(s) or in roll offs.

3.0 CONSTRUCTION ACTIVITIES:

Once pre-construction activities have been completed, construction activities as outlined below will commence.

3.1 Trench Preparation Work

A visual barrier will be established along the north fence to the limits shown on the drawing. The purpose of the visual barrier is to provide an visually opaque screen and wind screen due to the close proximity of the work to the adjacent roadway (Rensselaer Avenue). Stormwater management and erosion control activities are expected to be implemented based upon the specific contractor means and methods

of construction. Erosion and stormwater control methods should be minimal and will concentrate in the area of staged soils. Dust monitoring will be implemented. The asphalt will be saw cut along the trench alignment to the limits shown on the drawings. The asphalt will be removed and directly loaded into trucks for offsite disposal or staged for later disposal. The contractor will establish a groundwater handling and conveyance systems which will consist of pumps, hoses, a contractor supplied stilling basin and other equipment which minimizes the transport of soil sediments in the groundwater. Recovered groundwater will be pumped into a site process sewer manhole where it will be pre-treated at the Organichem treatment plant prior to discharge to the Rensselaer POTW.

3.2 Trench Excavation

Prior to initiation of excavation activities in the vicinity of the existing recovery manhole, the contractor will lock out / tag out the existing recovery manhole pumping system equipment. The equipment will be removed from the sump and groundwater will continue to be recovered from the manhole or excavation by the contractor until the permanent sump pumping system is installed. The general limits of the trench excavation are presented on Drawing S-2 and encompass an area approximately 3 feet wide by 350 feet long. Excavation sequencing, excavation support and other construction means and methods for installation of the new interception trench are part of the contractors work responsibility. It is intended that the work activities general follow the following sequencing remove and reset the existing groundwater recovery manhole to the limits shown on the drawings, install the new west portion of the trench and remove the existing interceptor trench and replace in accordance with the engineering plans.

Soils will be screened with a hand-held PID while they are generated in accordance with the site HASP. Staged soils will be placed on poly. All staged soils which are to be left overnight, or if precipitation is anticipated or staged soils with a PID reading over 1 ppm will be covered with poly. The poly will be a minimum of 6 mils. Soil's exhibiting elevated PID readings may be separately handled in closed roll offs. The upper non-clay soils will be used as backfill above the filter stone layer. Visibly contaminated soils (those which are stained with organic contaminants such as those which are brightly stained, unnatural or tarry consistency) will not be returned to the excavation. Installation of the new interceptor trench system is anticipated to generate excess spoil soils, asphalt and demolition debris. Refer to section 4.0 for sampling and handling of these materials. Approximately 100 tons of soil, another 10 tons of asphalt and 5 tons of non-hazardous demo debris are expected to be generated for off site disposal during construction.

After completion of construction of the trench, the site surface will be restored to the pre-existing construction condition, asphalt or grass. Construction equipment

will be decontaminated and inspected (by Organichem or their designated representative) prior to leaving the site.

3.3 Dust Suppression and Air Monitoring

The Contractor will be required to implement dust suppression and vapor control measures as outlined in Section 2.7 of this document.

3.4 Loading of Dump Trucks or Roll-offs

Materials designated for off-site disposal will either be live-loaded at the excavation into roll-off containers, dump trucks or staged on-site for subsequent loading. Prior to loading, each roll-off will be inspected to confirm that an intact liner and tarp is present and in good condition. Once loaded, tarps will be put into place to prevent dust migration out of the roll off and/or stormwater infiltration into the roll off. Staged material will be placed on and covered with poly to prevent storm water infiltration into staged soils and to prevent dust migration from staged materials.

3.5 Interceptor Trench Drain Construction and Backfill

Once the trench depth shown on the project drawings (or depth determined in the field by the onsite designated Organichem representative) is achieved, the interceptor trench will be constructed in accordance with the interceptor trench details shown on the project drawings and detailed in the project technical specifications. In general, the interceptor trench will consist of a filter fabric and crushed stone encased drainage pipe, a vertical in plane composite drain and an impermeable barrier. The remainder of the trench excavation will be backfilled with run of trench material. The disturbed area will be restored to its original condition which would be asphalt paved or seeded and mulched.

3.6 Decontamination

The contractor is responsible for decontamination of excavation equipment prior to leaving the site. Decontamination liquids will be pumped to the Organichem process sewer for pre-treatment in the Organichem water treatment system prior to discharge to the Rensselaer POTW. Sediments and solids remaining in the decon area or in the contractor supplied stilling basin will be stabilized if necessary and consolidated with soils going off site for disposal at an appropriately permitted facility. If dump trucks or roll-offs require cleaning or decontamination at the receiving facility, the receiving facility will perform the decontamination at the receiving facilities designated cleaning area. Prior to use on another site, the roll off company will perform decontamination of roll-off containers or dump trucks.

3.7 On Site Construction Inspection of Contractors Work

In addition to Organichem's on site project personnel, Organichem has designated SPEC Consulting, LLC as their on site construction inspection / construction observation representatives. SPEC will provide personnel to observe the construction work to assure compliance with the approved project plans, specifications and work plans. SPEC personnel will perform air monitoring per the CAMP, collect spoil soil samples for waste characterization and implement SPEC project HASP requirements.

3.8 Construction Documentation

The contractor and SPEC site representative will maintain a marked up set of "as-built" record drawings of the work. After construction SPEC will prepare a construction certification report which documents the "as-built" conditions of the system, summarizes the work performed, provides copies of soil analytical data, manifests, etc.

4.0 SAMPLING AND ANALYSIS PLAN (SAP)

During construction of the trench Organichem anticipates that spoil soils and asphalt road way solid waste material will be generated. The specific sampling methods, sample frequency and QA/QC procedures to be carried out under this work plan for spoil soil materials is outlined in the following sections. Organichem is proposing to handle asphalt road materials as non-hazardous solid waste. Asphalt road materials will be separately staged and disposed of off site without environmental sampling at a properly permitted NYS licensed solid waste (Part 360) landfill.

4.1 Soil Sampling & Analysis

The soils designated for off-site disposal will be sampled and analyzed for one of the four hazardous characteristic properties through regulatory mandated analytical testing as follows:

- Toxicity will be determined based upon one of two testing methodologies
  - TCLP EPA Method 1311 (VOC EPA Method 8260, SVOC EPA Method 8270 and metals SW 846)
- Ignitability – SW 846 Method 1030 Solids

4.2.1 Soil Sampling Frequency and Protocol

The soils designated for off-site disposal (excess spoil soils generated as part of the trench construction process) will be sampled at a minimum frequency of one sample per 50 cubic yards (cy). Based upon current estimates of the excess soil to be generated, this sampling frequency would require two (2) samples.

The frequency and types of tests performed are outlined as follows:

- One grab sample will be taken from each sampling unit (50 cy equivalent) from an area representative of the soil which has the highest PID reading and analyzed for Toxicity TCLP VOCs. If no area of the discrete sampling unit exhibits a reading on the PID, a representative grab sample from one portion of the unit will be obtained for Toxicity TCLP VOCs.
- For each sampling unit a five point composite sample will be taken and analyzed for toxicity TCLP SVOCs, Metals, and Ignitability.

The purpose of this testing is to determine the type of material (solid non-hazardous or solid hazardous) and the appropriate disposal facility.

4.2 Debris Sampling and Analysis (RCRA)

During construction of the trench, a limited amount of non-native "demolition debris" will be generated. This debris includes the existing concrete groundwater collection sump, geotextile materials (fabric and grid), drainage pipes, etc. The debris material will be initially grouped into appropriate like and compatible material categories (waste streams) and will be considered non hazardous solid waste.

4.3 Quality Assurance/Quality Control

Site environmental sampling will be performed in accordance with the following QA/QC procedures.

4.3.1 Sampling Procedures

Samples for chemical analysis will be collected and placed in labeled containers provided by the laboratory. The sample containers will be labeled with the following information:

- Project name.
- Sample identification.
- Date and time of collection.
- Preservation, if applicable.

- Analyses to be performed.
- Initials of sampler(s).

a) Organize sampling jars: One laboratory supplied glass jar per sample.

b) When collecting samples, a new jar will be used for each sample. Disposable sampling equipment will be used and new equipment will be used at each sample location.

c) Keep sample bottles cool (<4 deg. C) in an ice-packed cooler with vermiculite prior to transportation or on-site analysis. Send samples to the laboratory the same day that they were sampled. If on site analysis is performed, complete on-site analysis the same day as sampled.

d) Complete a chain-of-custody form for transmittal to laboratory.

4.3.2 Sampling QA/QC

All QA/QC required by the specified sampling and analytical methods shall be completed. Lab QA/QC summary documentation, including chain of custody, shall be submitted with the analytical results. All QA/QC deliverables as specified by the analytical method will be maintained and be made available to the NYSDEC upon request.

4.3.3 Field QA/QC

Field QA/QC procedures will follow described below.

Quality control samples consisting of trip blanks, equipment blanks, and field duplicates, will be collected in the same type of sample containers and handled in the same manner as the environmental samples.

a) Trip Blanks

Trip blanks will accompany every cooler of samples sent to the laboratory for analysis. Trip blanks will be prepared by the laboratory, shipped with the sample containers to the field, handled like a sample and returned to the laboratory for analysis. Trip blanks will not be opened in the field. Trip blanks only apply to liquid samples.

b) Equipment Blanks

Equipment blanks for samples will be collected by placing distilled water into or pumping distilled water through decontaminated sampling equipment used in the collection of samples. Equipment blank samples will be collected, handled, and analyzed in the same manner as collected environmental samples. Equipment blanks will be used to measure contamination encountered during sampling. One equipment blank will be collected for each piece of sampling equipment used at a maximum frequency of ten percent.

c) Field Duplicates

Field duplicate samples will consist of two samples collected at the same time from the same source, but submitted as separate samples. Field duplicate sample volumes will be collected by alternating the filling of the sample containers for each parameter. These samples are collected to measure the precision of the field sampling procedures, as well as the laboratory's analytical methods. Duplicate samples will be identified on the chain of custody records such that laboratory personnel cannot distinguish field duplicates from other environmental samples. Field duplicate samples will be collected at a minimum frequency of one per every ten samples.

4.3.4 Sample Custody

Chain of custody procedures will be instituted and followed throughout this project. These procedures include field custody and laboratory custody. When the information has been gathered, the file will be inventoried, numbered, and stored for future reference.

Chain of custody records will be initiated in the field when sample collection has been completed. In the field notebook, sample collection personnel will note meteorological observations, equipment employed for sample collection, calculations, and information regarding collection of QA/QC samples. The following physical information will be recorded in the field notebook and on chain of custody records by the field sampling team:

a) Project identification
b) Sample identification
c) Required analysis
d) Data and time of sample collection
e) Type of sample (matrix)
f) Sampling technique

g) Preservation used, if applicable
h) Initials of the sampler

The field sampling personnel shall sign the chain of custody when relinquishing custody that includes the form with the associated samples. Sampling containers may be packed in Styrofoam sheets, and put in plastic bags to help prevent breakage and cross-contamination. Samples will be shipped in coolers containing ice to maintain the inside temperature at approximately 4°C. If commercial vendors (Federal Express, etc.) are used, they will be required to document the transfer of the package with their organization.

4.4 Data Evaluation

Material designated for off-site disposal represented by analytical results below the RCRA characteristics thresholds listed in 40 CFR Part 261 or New York State equivalent will be profiled as non-hazardous for those parameters for the purpose of off-site disposal. Disposal will be to appropriately permitted solid non-hazardous waste (NYS Part 360) landfill.

Material designated for off-site disposal with analytical results that exceed the RCRA characteristic threshold will be classified as hazardous waste and disposed of at an appropriately permitted hazardous waste facility.

A journal of each sampling event will be kept and the journal is to include photographs associated with the sampling event. All project photos will be reviewed by Organichem prior to being released.

4.5 Other Site Sampling Activities

Sampling and analysis for other site activities such as health and safety monitoring, fence line monitoring, dust monitoring are addressed in other reports including the site HASP and CAMP. Sampling and analysis for these activities are primarily via hand-held devices such as PID, Dust Monitor and Draeger Tubes. Refer to these documents for the sampling and analysis requirements for these activities.

4.6 Data Management and Reporting

Copies of laboratory reports, chain of custody records will be included in the final report detailed in Section 7.0. Adirondack Environmental Services (AES), Albany, NY, a NYSDOH certified laboratory will be used for environmental sample analysis.

5.0 SPOIL SOIL & DEBRIS WASTE DISPOSAL

5.1 Spoil Soils

As specified in Section 4.0 the spoil soils will be sampled and appropriately characterized for off-site disposal. Hazardous waste streams will be appropriately packed for shipment off site to an appropriately permitted facility. After characterization, non hazardous soils may be consolidated with other materials such as debris, asphalt and PPE during the project for off-site disposal at an appropriately permitted NYSDEC Part 360 Landfill.

5.2 Prepare Shipping Documents Upon Receipt Of Analytical Data

Analytical data will be used to properly classify the contents of each container, and to prepare either a non-hazardous shipping document or a hazardous waste manifest. Each document will contain appropriate Generator, Transporter, and Facility information, as well as, the waste stream approval code provided by the destination facility. For this project, each shipping document will also carry either an analytical report for the contents, or an analytical report reference number that can be used to view results on-line. Appropriate DOT shipping labels will also be placed on each side of the container. This label shall include accurate Generator information, and proper DOT shipping name to include proper Packing Group and NA or UN number.

5.3 Shipping to Disposal Facility

Prior to leaving the site, the shipping document, truck, and shipping container will be inspected by the transportation contractor to ensure compliance with NYSDOT requirements. If necessary, appropriate corrective actions will be taken. Once the truck arrives and is off-loaded at either the non-hazardous waste landfill, or the Hazardous Waste Landfill(s), the gross, tare, and net weights will be calculated and the driver will be provided with the information.

Solid waste will be handled directly by the contractor and is assumed to go to the Albany County Landfill. It is anticipated that hazardous waste, if generated, leaving the site will be manifested to Chemical Waste Management's (CWM)-Transfer Station.

6.0 COMPLETION OF WORK

The procedures outlined above will be used to complete the groundwater interceptor trench project at the site. Upon completion of work, a Construction Certification Report detailing the work performed under this work plan will be prepared and submitted to Organichem and NYSDEC within 90 days of completion of work. This report will include daily site logs, copies of analytical data for all waste shipped off-site, and waste disposal shipping documents. Post construction drawings presenting final "as-built" conditions will also be prepared and submitted as part of the package.

APPENDIX A

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SITE HEALTH AND SAFETY PLAN
INCORPORATED BY REFERENCE

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Community Air Monitoring Plan (CAMP)

To: DAN GERAGHTY
From: DAN LIGHTSEY, NYSDEC

PLEASE REVIEW ASAP + SEND ANY COMMENTS.

ORGANICHEM
Ground Water Remediation System
Air Monitoring/Odor Control Plan

March, 2005
REVISION 1.0

Prepared by:
SPEC Consulting, LLC
18 Computer Drive West
Albany, NY 12205

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1.0 INTRODUCTION

This Air Quality Monitoring/Odor Control Plan (AMOCP) has been prepared to describe the means and methods to be used in evaluating ambient air quality during remedial action activities at the Organichem Company (Organichem) facility in Rensselaer, New York. This plan has been prepared in accordance with Technical Specifications 020006 (3.3) and may be referenced as an Employee and Community Protection Plan (ECPP). Air quality monitoring for personnel in the site work zones is also described in general. Specific Air Monitoring requirements and procedures for the work zones are specified in the Site Specific Health and Safety Plan (HASP).

The AMOCP/ECPP will describe the methods that will be used to collect direct measurements of air borne particulate matter and Volatile Organic Compounds (VOCs) that may be present at the facility during intrusive site excavation activities.

The AMOCP/ECPP will be implemented in conjunction with the site-specific health and safety plan (HASP), but is not meant to replace the HASP. Investigative activities have identified VOCs and dust particulates as potential air contaminants. The site perimeter atmosphere will be monitored for VOCs and dust during the course of site activities in order to document the impacts (if any) to the site perimeter air quality during a variety of site work.

A designated on-site representative (Health and Safety Officer) will be responsible for the collection of data and maintenance of each temporary monitoring station each workday. This monitoring data will be used to document air quality and guide appropriate action to reduce/minimize air emissions to acceptable levels, if required.

1.1 Site Background

The Organichem site is located on River Road in the city of Rensselaer, County of Rensselaer New York State and is a manufacturer of bulk active pharmaceuticals. The site consists of numerous buildings that house administrative offices; laboratories; process areas; product storage; and raw material storage. There are also numerous above ground tanks utilized for the bulk storage of chemical and petroleum products. The site also has a Waste Water Treatment Plant which treats and discharges process water under a State Discharge Permit.

2.0 ONSITE ACTIVITIES

The existing groundwater remediation system at the Organichem Corporation facility located in Rensselaer, NY has been experiencing marked increases in solids (i.e., grit, soil) being collected and conveyed into the pumping/treatment system, resulting in adverse effect to system components and fouling of discharge water. To address the increase of marked solids in the treatment system and to better control potential off-site migration of impacted groundwater, the existing groundwater remediation system infrastructure is being replaced and the existing trench will be extended. The location of the existing ground water remediation system runs along the north fence line along Rensselaer Avenue, which is also a residential area. Upgrading the ground water collection system will involve the excavation of the trench and the existing manhole. During construction activities, there is the potential for VOCs and dust particulates as potential air contaminants. The site perimeter atmosphere will be monitored for VOCs and dust during the course of site activities in order to document the impacts (if any) to the site perimeter air quality during a variety of site work.

A designated on-site representative (Health and Safety Officer) will be responsible for the collection of data and maintenance of each temporary monitoring station each workday. This monitoring data will be used to document air quality and guide appropriate action to reduce/minimize air emissions to acceptable levels .

TABLE 1 SITE ACTIVITIES

	Potential Air Impacts	
Activity	**Dust**	**VOCs**
Asphalt Road Removal	Yes	No
Groundwater Management Activities	Yes	Yes
Drilling in contaminated soils and groundwater	Yes	Yes
Excavation of contaminated soils	Yes	Yes
Transportation of contaminated soils with trucks, and other equipment	Yes	Yes

3.0 WORK AREA AIR MONITORING

Work area air monitoring at the Organichem site will include direct reading methods as well as integrated sampling strategies. Air monitoring will be conducted during all intrusive activities.

3.1 Direct Reading Air Monitoring

During intrusive work, direct reading air monitoring will be performed in the work area of the Exclusion Zone (EZ) to determine exposure to workers and off-site receptors. Monitoring will also be performed at one upwind location and downwind location at the EZ perimeter. This configuration of monitoring stations takes into account the proximity of the Site Perimeter and the EZ perimeter. Photoionization detectors (PID) will be used to monitor for VOC concentrations. A MIE Data-RAM (or equivalent) will be used to monitor air borne particulates. At the EZ perimeter, levels of >5 ppm for volatiles organic compounds and 150 ug/m^3 for particulates will be used to initiate the evaluation of using engineering controls. Readings of >25 ppm and/or 150 ug/m^3 above background will initiate suspension of intrusive activities and/or site work stoppages until airborne VOC or particulate concentrations have returned to acceptable levels at the perimeter of the EZ. A summary of air monitoring information is provided in the following table.

TABLE 2 AIR MONITORING INFORMATION

Monitoring Location/ Personnel	Monitoring Device	Monitoring Frequency	Action Level*	Minimum Protection Level/Action
EZ intrusive activities/ Equipment Operator (EO) Recovery Technician (RT)	Photoionization Detector	Continuous during intrusive activities	<5 ppm 5 ppm <50 ppm 50 <1000 ppm > 1,000 ppm	Level D Level C Level B Stop work required
EZ excavation areas; EO, RT	Mini-Ram (total dust)	Continuous during intrusive activities	0- 2.5 mg/m3 (TWA) (2.5 mg/m3-12.0 mg/m3 (TWA) >12.0 mg/m3 (TWA)	Level D Level C; Initiate dust suppression controls Stop work required
Site Perimeter	Photoionization Detector	Taken continuously during intrusive activities if EZ reading exceeds 10 ppm	<5 ppm 5 ppm < 25 ppm >25 ppm max >10 ppm max within 20 ft zone	Normal operations Stop intrusive activities until below 5 ppm at EZ or 200' down and Initiate Vapor Emission Response Plan Stop work and initiate Vapor Emission Response Plan (Major Vapor Emissions) Initiate Major Vapor Emission Response Plan

*Action level refers to sustained readings for a minimum of 15 minutes unless otherwise stated.

3.2 INSTRUMENTATION

The following is a description of the air monitoring equipment to be used at this site.

3.2.1 Lower Explosive Limit/Oxygen (LEL/O_2) Meter

3.2.1.1 Types and Operational Aspects

MSA Watchman LEL/O_2 Meter or equivalent

Principle of Operation

- Oxygen detector uses an electrochemical sensor; produces a minute electric current proportional to the oxygen content. Oxygen meter set at the factory to alarm at 19.5% (oxygen deficient atmosphere) combustible gas meter set by the user to alarm at 10% LEL.
- Combustible gas indicators use a combustion chamber containing a filament that ignites flammable vapors; filament is heated or coated with a catalyst (platinum) to facilitate combustion.
- Filament is part of a balanced resistor circuit; combustion in the chamber causes the filament temperature to increase; results in increased filament resistance.
- Change in the filament's resistance causes an imbalance in the circuit proportional to the percent of the lower explosive limit (% LEL).
- Concentrations greater than the LEL and lower than the upper explosive limit (UEL) will read 100% LEL; combustible atmosphere present.
- Concentrations greater than the UEL will read above 100% LEL then return to zero. (NOTE: Some devices have catchment mechanisms, which will cause the needle to remain at 100% until the meter is reset.) This type of response indicates the gas mixture is too rich to burn and is not combustible. The danger is that the addition of air to the gas mixture could bring it into the flammable range (less than the UEL).

3.2.1.2 Calibration Methods/Frequencies

Before the calibration of the combustible gas indicator can be checked, the unit must be in operating condition. The combustible gas indicator (LEL) is normally calibrated on pentane as being representative of the flammability characteristics of most commonly encountered combustible gases. The meter scale is calibrated from zero to 100% LEL, which corresponds in actual volume concentrations of 0 to approximately 14% pentane in air. A booklet of response curves is supplied with the Watchman Meter. These curves may be used to interpret meter readings when sampling combustible gases other than pentane.

It is recommended that calibration be checked before and after using each time. The Site Safety Officer (SSO) will record and log such calibration information into an air-monitoring notebook. The 0_2-meter is calibrated by adjusting the O_2 control knob to 20.8% while the meter is operated in a fresh air atmosphere.

3.2.1.3 Preventative Maintenance (PM)

The primary maintenance of unit is the rechargeable 2.4-volt nickel cadmium battery. Recommended charging time is 16 hours. It may be left on charge for longer periods without damaging the battery .The battery sometimes will not supply full power capacity after repeated partial use between charging. Therefore, it is recommended that the battery be exercised at least once a month by running for eight to 10 hours and recharged. If the instrument has not been used for 30 days, the battery should be charged prior to use.

3.2.2 Photoionization Detector (PID)

3.2.2.1 Type and Operational Aspects

Pill Model PI 101 or equivalent

Principle of Operation

- Ionization potential (IP) -The energy required to remove the outermost electron from a molecule; measured in electron volts (eV); characteristic property of a specific chemical.
- Photoionization -Using ultraviolet (UV) light to remove the outermost electron from a molecule.
- Energy of UV light (10.2,9.5, 11.7 eV) must be equal to or greater than the IP to photoionize the molecule.
- Fan or pump is used to draw air into the detector where the contaminants are exposed to a UV light source (lamp).
- Ions are collected on a charged plate and produce a current directly proportional to the number of ionized molecules; current is amplified and displayed on the meter.

3.2.2.2 Calibration Method/Frequencies

The PID Model PI 101 is designed for trace gas analysis in ambient air and is calibrated at HNU with certified standards of benzene, vinyl chloride, and isobutylene. Other optional calibrations are available (e.g., ammonia, ethylene oxide, H2S, etc.).

This project will use a PID with a 10.2 eV lamp. This lamp has been determined to be most responsive to the contaminants on site. Optional probes containing lamps of 9.5 and 11.7 eV are interchangeable in use within individual read-out assemblies for different applications.

The approximate span settings for the probe that would give different readings of the amounts of trace gas of a particular species in a sample are based upon the relative photoionization sensitivities of various gases twice daily (beginning and end of shift).

It is recommended that calibration be checked twice each day (beginning and end of shift). The SSO will record and log such calibration information into an air-monitoring notebook.

3.2.2.3 Preventative Maintenance

Maintenance of the Pill Model PI 101 consists of cleaning the lamp and ion chamber, and replacement of the lamp or other component parts or sub-assemblies.

3.2.3 Real- Time Aerosol Monitor (Miniram Model Pr100 Data Ram)

3.2.3.1 Type And Operational Aspects

- Detection of light in the near infrared region back scattered to a sensor (photovoltaic detector) by airborne particulate in a sensing volume.
- The higher the dust concentration the more back scattering of light to the sensor, resulting in increased readings.
- Device calibrated at the factory against an air sampling filter/gravimetric analysis reference method.

3.2.3.2 Calibration Methods/Frequencies

There is no calibration method or procedure for calibrating the Mini-RAM monitor. However, it is recommended that the Mini-RAM monitor be re-zeroed once a week. During a zero check, the sampled air passes through the purge air filter and dryer to effect a self-cleaning of the optical chamber.

3.2.3.3 Preventative Maintenance

Maintenance of the Mini-RAM consists of replacement of filters and desiccant; battery replacement; and cleaning of the optical detection assembly.

3.2.4 Gilian Air Sampling Pump (or equivalent)

3 .2.4.1 Type and Operational Aspects

- Air sampling pump is calibrated to draw a specified airflow rate (liters per minute) for a designated period of time.
- Volume of air sampled is then calculated as follows:
  Flow rate (liter/min.) x sample time (min.) = sample volume (liters)
- Use a bubble meter to calibrate air sampling pump; pump equipped with a rotameter that shows the flow rate during the sampling period.
- Equipped with a rechargeable battery for 8-hour average sampling times; must be recharged for at least 16 hours.

- Collection Media: 37 mm MCE cassette.

3.2.4.2 Calibration Methods/Frequencies

Flow rate calibration can be accomplished by using primary standard soap and the Gilibrator Calibrator (or equivalent). The Gilibrator calibrator allows rapid flow rate determination with direct read-out on the built-in display.

Connect the sampler to the calibrator, press the ON push button, and then push the plunger to start a bubble up the flow cell. The flow rate is automatically calculated and shown on the display. Subsequent readings are averaged with the previous readings. It is recommended that calibration of the sampler be checked prior to the start of and after each sampling period.

3.2.4.3 Preventative Maintenance

The Gilian air-sampling pump should not require special maintenance or adjustments under normal conditions. However, as with all instruments, the sampling pump does require some basic care. Basic maintenance consists of filter replacement, installing and removing battery packs, storage conditions, and electronic control assembly.

3.2.5 Colorimetric Detector Tubes

3.2.5.1 Type and Operational Aspects

- Drager Multi Glass Detector Mode121/31

Principle of Operation

- Colorimetric indicator tubes (detector tubes) consist of a glass tube impregnated with an indicating chemical
- Tube is connected to a piston or bellow pump to draw a know volume of air through the tube.
- Contaminant reacts with the indicator chemical in the tube, producing a change in color whose length is proportional to the contaminant concentration; glass tube has degradations in ppm to match the length of stain.
- Preconditioning filter may precede the detector tube to remove interfering contaminants (benzene, vinyl chloride).

3.2.5.2 Calibration Method/Frequencies

There is no method or procedure for calibrating any colorimetric detector tube. However, it is important to read the instructions provided with a specific detector tube to determine number of pump strokes, interfering chemicals, proper color change, and shelf life. It is important that the number of strokes is not exceeded on the first measurement, as this may overload the tube and overshoot the standard range of measurement.

The sampling pump can be checked but not calibrated using the bubble tube. All bellows pumps draw in a specific amount of air during each stroke. This amount should correspond to a specific amount on the bubble tube (i.e., if one stroke equals 100 cc, then the bubble should move 100 cc in the bubble tube). Also, activating a pump stroke, then inserting an unopened colorimetric tube in the pump inlet can conduct a leak check. The pump should not move, if it does, then there is a leak. If the pump fails either the leak test or the volume test, return it back to the manufacturer for repair.

3.2.5.3 Preventative Maintenance

Generally speaking, the reagent of the colorimetric tubes cannot be stored for unlimited periods. The shelf life of the Drager tubes are, therefore, limited to two years (for storage at room temperature).

3.3 AIR MONITORING RECORDKEEPING

The SSO will ensure that all air-monitoring data is logged. Data will include instrument used, wind direction, work process, etc. The Organichem Groundwater Remdediation Project CSP may periodically review this data.

3.4 CALIBRATION REQUIREMENTS

The Pill, LEL 0_2 meter and sampling pumps required with fixed-media air sampling will be calibrated daily before and after use. A log will be kept detailing date, time, span gas, or other standard, and name of person performing the calibration.

3.5 AIR MONITORING RESULTS

Air monitoring results will be posted for personnel inspection, and will be discussed during morning safety meetings. Personal air sampling results will be forwarded to the Project CSP.

4.0 PERIMETER AND REAL- TIME MONITORING ACTIVITIES

4.1 Overview

The project site location is on the North fence line of the facility, along Rensselaer Avenue. The site work is proposed to occur directly along the fence line running east to west from building 30 to the contractor guard house. Hand held monitoring locations will be located along the perimeter of the property. The monitoring stations will be along the three property lines (north, east, west). Wind direction data will come from an Organichem wind sock. Each air monitoring location will have a hand held sensors to monitor concentrations (in ppm) within the ambient atmosphere at the property line. The three stations (one positioned on the north, east and west property lines) contain a personal dataram to monitor particulate concentrations. Table 4 provides some of the chemical specific characteristics and associated action level concentrations of the VOC and airborne particulates.

TABLE 4
VOC AND AIRBORNE INFORMATION

Compound	Odor Threshold Concentration	Permissible Exposure Limit (PEL) Conc.	Boiling Point	Vapor Pressure	Action Level Concentration		
					Work Area	Exclusion Zone (EZ) Perimeter	Property Perimeter
Xylene	1 ppm (odor)	100 ppm (435 mg/m^3)	279-284^{0}F	6.72 mm Hg @ 70^{0}F	5 ppm total VOC as registered by PID	5 ppm total VOC as registered by PID	5 ppm as registered on the VOC sensor
Airborne Particulate	5 mg/m^3 (visible dust)	Varies	NA	NA	2.5mg/m^3	150 $\mu g/m^3$	150 $\mu g/m^3$
VOCs	1 ppm	NA	NA	NA	5 ppm total VOC as registered by PID	5 ppm total VOC as registered by PID	5 ppm as registered on the VOC sensor

Values are a 15-minute TWA

NOTE: The HSM does not have the flexibility to relax any of the action levels without health and safety professional and NYS DOH approval. The HSM does have the authority to implement more stringent action levels if deemed appropriate. Airborne particles will be monitored continuously at the work area and twice daily at the EZ perimeter.

4.2 Perimeter Equipment

Perimeter air monitoring equipment includes:

- Portable hand-held PID or FID VOC monitors with data logging capability.
- Hand-held MIE personal DataRams Dust monitor with data logging capability.

The logger documents each real time VOC concentration so that they can be stored on-site as historical data and for simple referencing. The dust monitors provide direct and continuous readout of air borne particulate matter. The data collected will be saved and downloaded for easy referencing. The air monitoring stations are each enclosed in a weatherproof housing.

4.3 Meteorological Station

The existing onsite Organichem wind sock will provide real time wind direction data

Also visual weather observations (i.e. cloudy, sunny etc.) and approximate inches of rainfall will be entered into the field log.

4.4 Fence Line VOC & Dust Real-Time Monitoring Equipment

Real-time monitoring will be accomplished using several pieces of equipment as per the HASP. Monitoring of VOCs requires the use of a photo-ionization detector (PID) with a 10.2-eV lamp, which will be calibrated daily using an isobutylene standard at 98.2 ppm. VOCs will be monitored in the work area within the EZ zone in accordance with the HASP.

In addition, VOC and dust monitoring will also occur at established fence line monitoring stations. The monitoring locations will be located around the site perimeter where work activities will occur. Perimeter air monitoring locations will monitor for VOC and dust. VOC monitors will detect VOC concentrations from 1 ppm to 100 ppm. VOC monitoring stations are set to alarm if VOC concentrations reach 5 ppm. VOC concentrations will be monitored if EZ limits are exceeded. Calibration of the VOC monitors occurs weekly per the manufacturers recommendation utilizing a calibration standard established by the manufacturer. VOC concentration data recorded off of a 15 minute time weighed average. Therefore, to assure the integrity and quality of the data obtained with the data loggers. This project will utilize a hand held PID field calibrated which will monitor the air in the vicinity of the air monitoring station in the event of an alarm from an air monitoring station.

VOC air monitoring data will be used by the HSM to determine effects of on-site activities to the surrounding community. The vapor emission response plan in Section 6 of this document will be implemented if VOC concentrations are in exceedance of the exclusion zone action limits shown in Table 2. For example, if VOC monitor indicate VOC concentrations exceed 5 ppm in the work area monitoring zone, monitoring will be conducted at the exclusion zone (EZ) perimeter. If the exclusion zone perimeter or property perimeter monitoring station results exceed 5 ppm VOC's, work will be halted and monitoring continued in accordance with the vapor emissions response plan. Mitigation efforts for the VOC excursions include ceasing excavation activities, tarping stockpiles, excavation areas and other appropriate engineering controls. VOC concentrations will be logged at a frequency of 1 sample per 15 minutes.

Dust monitors will detect dust concentrations from 1 $\mu g/m^3$ to 400 mg/m^3. Dust concentrations are logged at a frequency of 1 sample per 5 minutes. Additional dust suppression will be initiated if dust concentration is in exceedance of 100 $\mu g/m^3$ above background. Action limits for dust evaluation are shown on Table 2. Calibration of the dust monitors occurs weekly per the manufacturers recommendation utilizing a calibration standard established by the manufacturer. Dust concentration data is stored in a data logger on the unit and the logged data will be recorded on the field logs

An oxygen/lower explosive limit (O_2/LEL) combustible gas meter will be used on-site in the vicinity of work activities such as drum operations, confined space entry or in cases when VOCs exceed the limits of the PID.

4.5 Inspections and Data Transfer

The VOC and dust monitors will be calibrated in accordance with the manufacturers recommendations. VOC and dust alarm set point will be programmed into the monitors at the levels specified in Section 4.4. Alarms occurring during site activities will be investigated to confirm the source or potential cause of the alarm. Alarm validation will be performed in accordance with procedures specified in Section 4.4. Alarms occurring during periods of time when work is not occurring at the site will be considered "false alarms". Monitoring data will recorded in field logs and will be kept for the duration of the project.
the perimeter monitoring station problem has not been corrected prior to initiating intrusive work, the SHSO will initiate the appropriate contingence monitoring frequency outline in the following Section 4.5.1.

5.0 BASELINE MONITORING

Baseline monitoring will be conducted prior to work activities. This will consist of operating the hand held PID and Dust monitoring instruments at the fence line. This baseline data will be collected prior to the start of construction activities.

Collection of the data will allow for the comparison of particulate and VOC concentrations within the ambient atmosphere during different periods of site activities and the off hours. Interpretation of this data will provide insight as to the effects of the different work activities on the surrounding community as compared to periods of no work activities.

6.0 EMISSION RESPONSE PLANS

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring when opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals; continuous monitoring may be required during sampling activities.

Monitoring of ambient air VOC concentrations within the work area monitoring zone will be conducted continuously during excavation activities. If ambient VOC concentrations in the work area monitoring zone are detected above the action level, monitoring of the down wind work area exclusion zone perimeter will begin. If the organic vapor concentrations at the exclusion zone perimeter are 5 ppm above background than work activities will be halted and monitoring conducted under the provisions of the Vapor Emissions Reponses Plan. If the down wind exclusion zone perimeter organic vapors exceed 5 ppm, then it may be practical to increase the exclusion zone, but not to exceed the limits of the property. The maximum the exclusion zone can be increased will be where the exclusion zone perimeter and the property perimeter monitoring locations are equivalent.

6.1 Vapor Emission Response Plan (VERP)

If VOC concentrations at the exclusion zone perimeter are 5ppm above background, work will be halted and monitoring continued. If perimeter concentrations fall to below 5ppm of background concentrations, work may resume. If perimeter monitoring indicates that VOC levels are between 5 ppm and 25 ppm above background concentrations, then work can be resumed provided the following:

- Monitoring of VOC concentrations 200' downwind of the exclusion zone, property perimeter monitor stations or half the distance to the nearest commercial or residential structure, whichever is less, indicates that VOC levels are no more than 5 ppm above background concentrations.

- Evaluate available resources and utilize appropriate resources to abate the emission source including tarping soil stockpiles, excavation areas and other appropriate engineering controls.

6.1.1 Major Vapor Emission

If any organic levels greater than 25 ppm over background at the exclusion zone perimeter or greater than 5 ppm are identified 200' downwind from the exclusion zone, property perimeter monitoring station or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted and the following steps will be taken

- Monitor VOC concentrations after work stoppage. If VOC concentrations return to acceptable levels, work may resume with an increased sampling frequency.
- If, following work stoppage, levels persist 5 ppm above background, monitor VOC concentrations for 30 minutes within 20' of the perimeter of the nearest residential or commercial structure (20 foot zone).
- If efforts to abate the emission source are unsuccessful and if the organic vapor level is approaching 5 ppm above background persist for more than 30 minutes in the 20 foot zone, then the Major Vapor Emission Response Plan shall be placed into effect. However, the Major Vapor remission Response Plan shall be placed into effect if the organic vapor levels are greater than 10 ppm above background.

6.1.2 Major Vapor Emission Response Plan (MVERP)

Upon activation, the following activities shall apply:

- All appropriate emergency response contacts as listed in the HASP and at Organichem will be notified.
- The local police and fire authorities will immediately be contacted and advised of the situation by the HSM.
- Frequent air monitoring will be conducted at 30-minute intervals within the 20' zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Health and Safety Manager (HSM),
- Utilize all available resources to abate the emission source including tarping soil stockpiles, excavation areas and other appropriate engineering controls.

6.1.3 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored at the upwind and downwind perimeters of the exclusion zone (EZ) at temporary particulate monitoring stations or as otherwise specified. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15-minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue

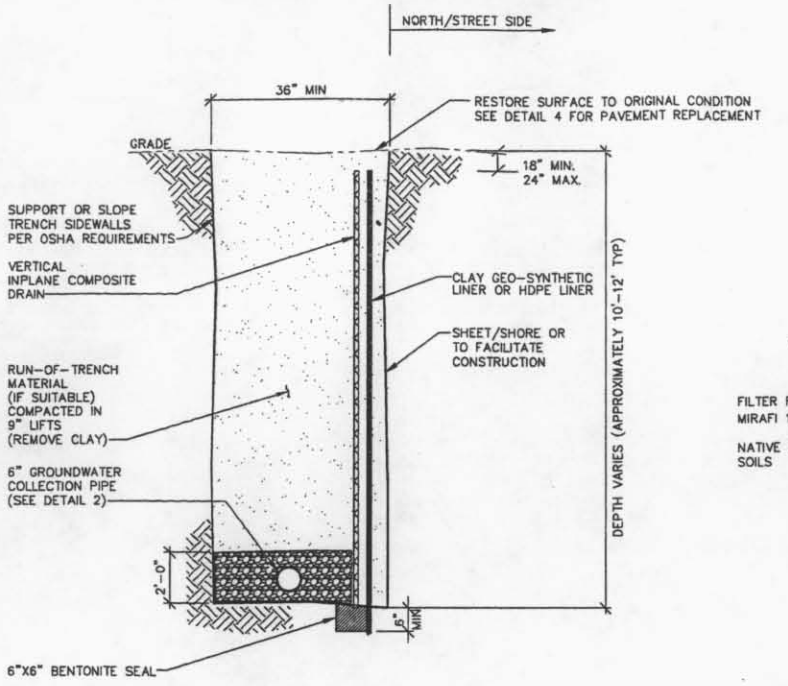
with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will stop and a reevaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

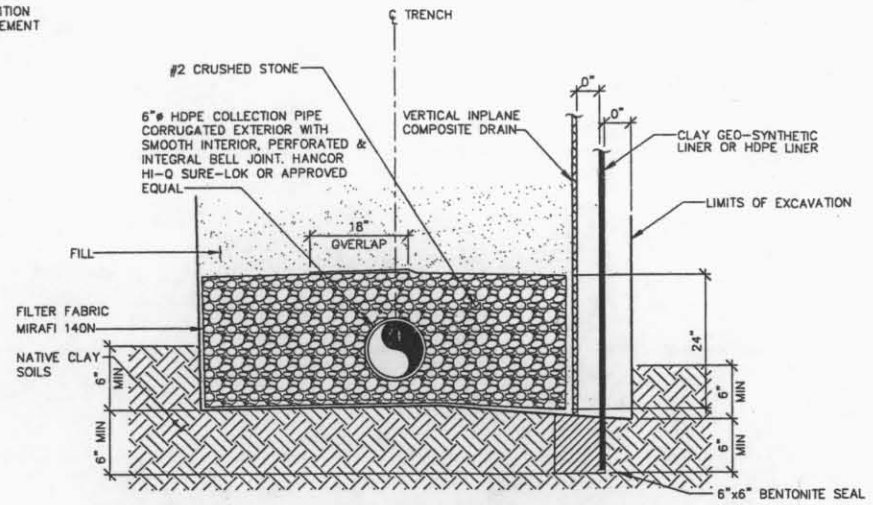
All readings will be recorded and available for State (DEC and DOH) personnel to review

APPENDIX C

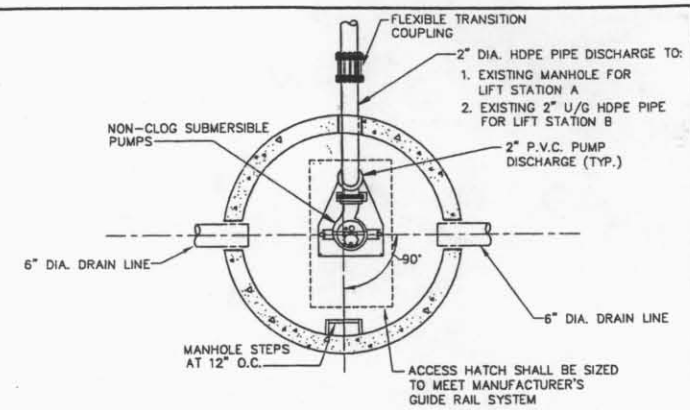
Drawings



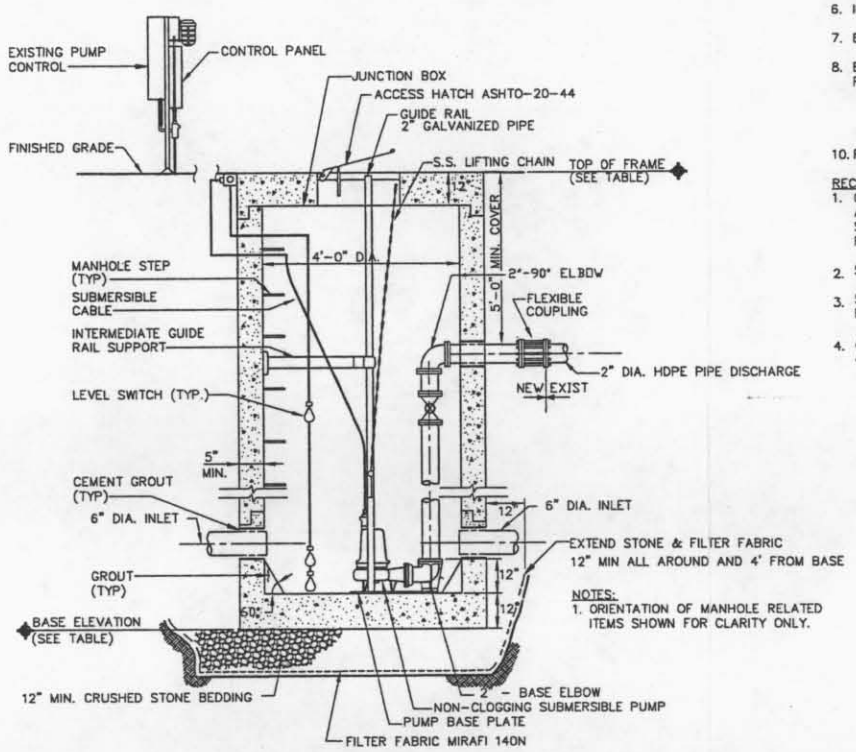
1 D-1 GROUNDWATER INTERCEPTION TRENCH DETAIL
N.T.S.



2 D-1 GROUNDWATER COLLECTION UNDERDRAIN DETAIL
N.T.S.



PLAN



SECTION

PUMP STATION TABLE

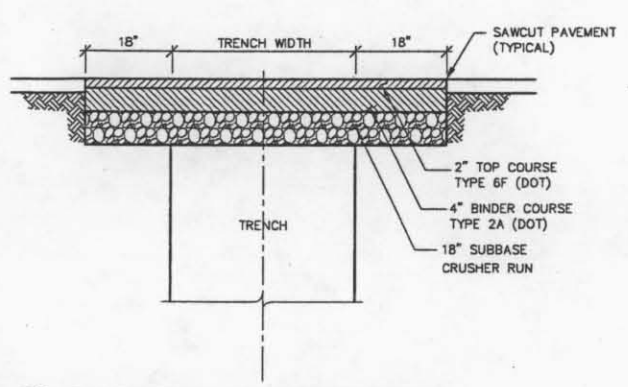
LIFT STATION A	TF ELEV	16.1'
	BASE ELEV	-1.1'
	INV. 6 IN.	3.0'
	ALARM HIGH	4.0'
	PUMP ON	3.0'
	PUMP OFF	0.5'
	PUMP OFF/ALARM LOW	0.25'

3 D-1 RECOVERY TRENCH PUMP STATION DETAIL (MH-2)
N.T.S.

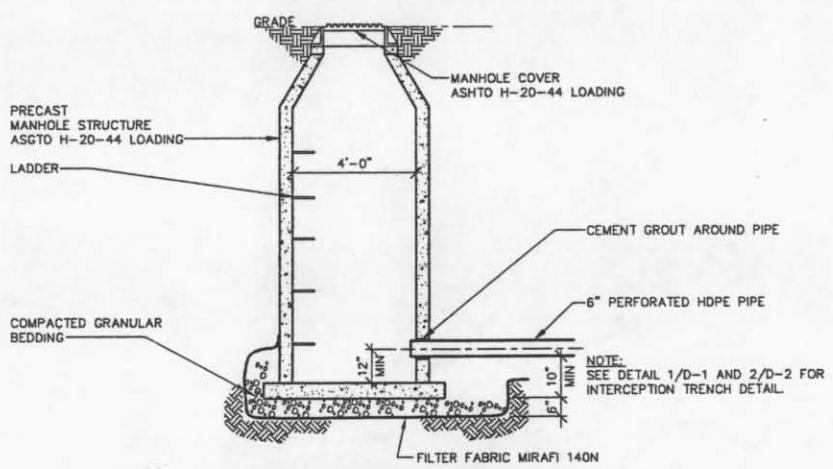
SHEETING AND SHORING NOTES:
1. SHEETING AND SHORING SYSTEMS OTHER THAN THOSE ALLOWED BY THE CODES MAY BE IN ACCORDANCE WITH SPECIFIC DESIGN PLANS PREPARED BY A NEW YORK STATE LICENSED PROFESSIONAL ENGINEER.
2. ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH THE LATEST REVISIONS OF THE FOLLOWING CODES:
   A. SUBPART 23-4, "EXCAVATION OPERATIONS" OF NEW YORK STATE DEPARTMENT OF LABOR INDUSTRIAL CODE RULE 23.
   SUBPART P. "EXCAVATIONS, TRENCHING AND SHORING" OF U.S. DEPARTMENT OF LABOR O.S.H.A. REGULATIONS FOR CONSTRUCTION.
   THE MORE STRINGENT REQUIREMENT IN EACH CODE SHALL APPLY.
3. ALL TRENCH EXCAVATIONS DEEPER THAN 20' MUST BE PREPARED BY A NEW YORK STATE LICENSED PROFESSIONAL ENGINEER EXPERIENCED IN SUCH SYSTEMS.

TRENCHING NOTES:
1. EXCAVATION TO BE MINIMUM OF 36" WIDE. THERE WILL BE NO EXTRA COMPENSATION FOR TRENCHES WIDER THAN SHOWN.
2. EXCAVATION SUPPORT SYSTEM TO BE PROVIDED BY CONTRACTOR.
3. INSTALL GCL LINER ON DOWN GRADIENT WALL OF TRENCH.
4. KEY GCL 6" INTO UNDISTURBED SUBGRADE. SEAL GCL TO SUBGRADE WITH POWDERED BENTONITE.
5. INSTALL INPLANE COMPOSITE (VERTICAL) DRAIN MATERIAL AGAINST GCL.
6. INSTALL GROUNDWATER COLLECTION SYSTEM.
7. ENSURE VERTICAL DRAIN IS PLACED DIRECTLY AGAINST COLLECTION SYSTEM.
8. BACKFILL TRENCH IN 9" LIFTS AT 90% STD PROCTOR USING SUITABLE SOIL REMOVED FROM THE EXCAVATION.
10. RESTORE SURFACE TO EXISTING CONDITIONS OR BETTER.

RECOVERY WELL AND MANHOLE NOTES:
1. CONTRACTOR SHALL GRADE THE AREA SURROUNDING THE PUMP STATION AND APPURTENANCES. GRADE SHALL BE BROUGHT FLUSH WITH THE TOP OF ALL STRUCTURES AND SLOPE AWAY FROM STRUCTURES BLENDING INTO EXISTING GRADE. RESTORE SURFACE TO EXISTING CONDITION.
2. SUMP PUMP: SUPPLIED BY OWNER.
3. SEAL ALL WALL PENETRATIONS WITH NON-SHRINK HYDRAULIC CEMENT GROUT. PROVIDE WATERTIGHT CONNECTION.
4. ALL STRUCTURES TO BE CONSTRUCTED OF PRE-CAST CONCRETE WITH AASHTO H20-44 LOADING.



4 D-1 PAVEMENT REPLACEMENT DETAIL
N.T.S.



5 D-1 TYPICAL MANHOLE CLEANOUT DETAIL
N.T.S.

MANHOLE CLEANOUT TABLE

	MH1	MH3
INV. OUT	5.75	7.75

FOR REGULATORY REVIEW ONLY

ISSUE DATE: 3/14/05

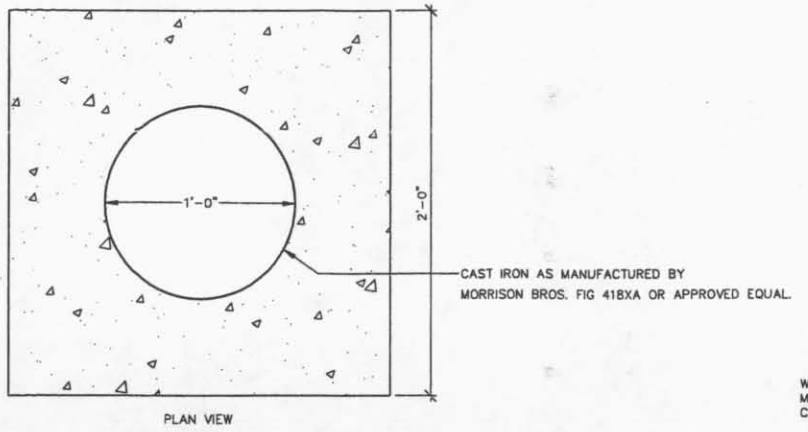
SPEC CONSULTING, LLC 18 COMPUTER DRIVE WEST ALBANY, NY 12205 PHONE: 518.438.6809 FAX: 518.438.8527

REV	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
2	1/24/05	FOR REGULATORY REVIEW	SFT	JSB	
1	3/24/05	ISSUED FOR REVIEW	SFT	JSB	

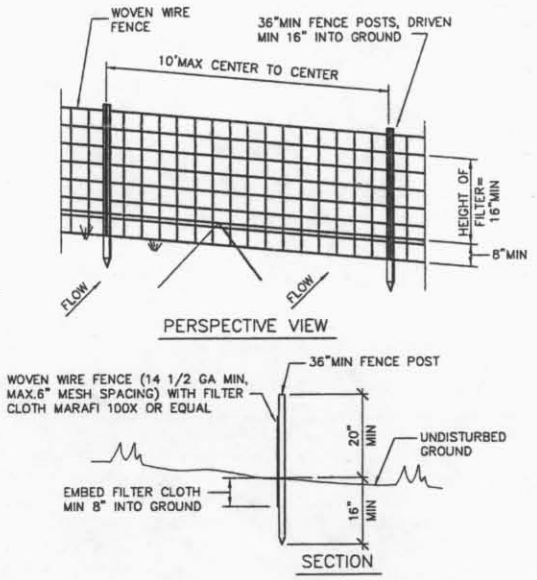
Organichem Corporation
33 RIVERSIDE AVENUE RENSSELAER, NEW YORK 12144

GWTS ENVIRONMENTAL REMEDIATION
GROUNDWATER INTERCEPTOR TRENCH DETAILS

DRAWN BY	DATE	BLDG.	OLD DRAWING NO.
SFT	1/24/05	SITE	
PROJECT NO.	SHEET	SCALE	DRAWING NO.
SPEC 04-127	1 OF 1		TBD (SPEC D-1)

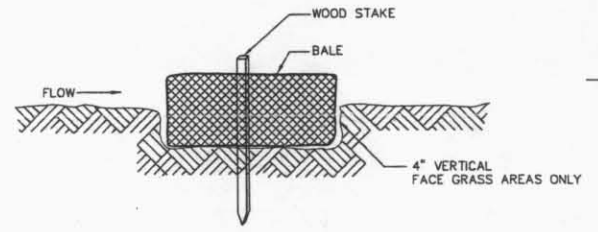


1 / D-2 PIEZOMETER TYPE B
N.T.S.

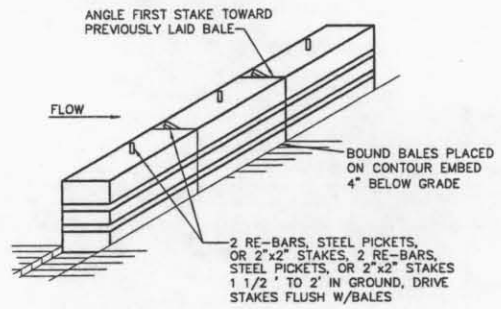


NOTES:
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS W/WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE W/TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIALS REMOVED WHEN "BULGES" DEVELOPE IN THE SILT FENCE.

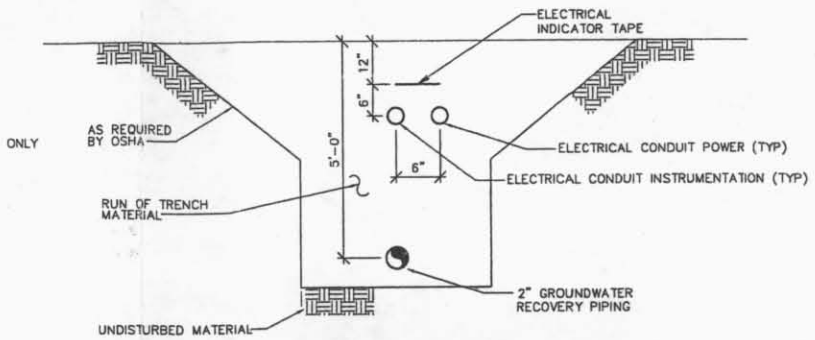
2 / D-2 SLIT FENCE DETAIL
N.T.S.



3 / D-2 BEDDING DETAIL
N.T.S.

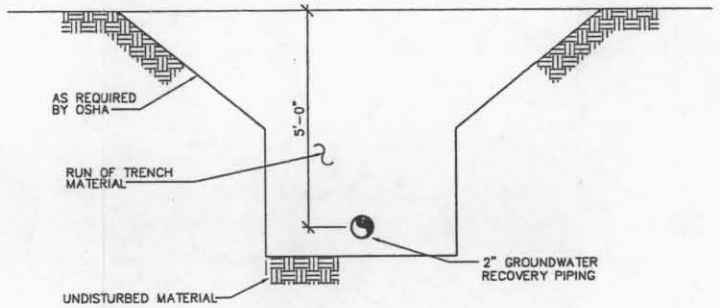


4 / D-2 STRAW BALE DIKE DETAIL
N.T.S.



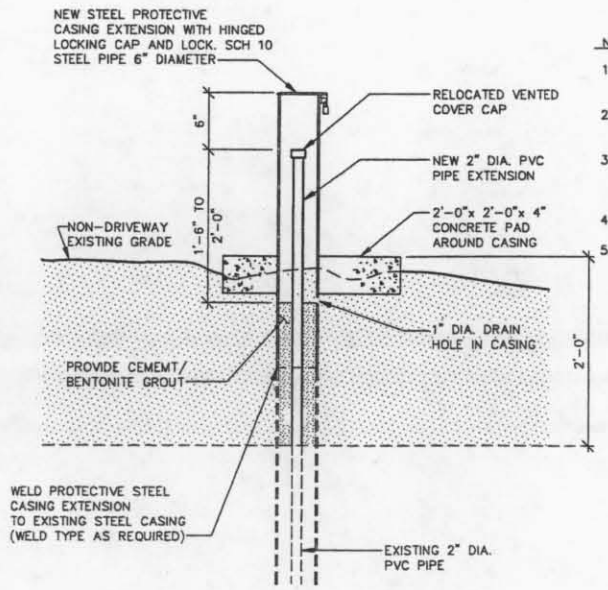
NOTE:
SEE DETAIL 4/D-1 FOR RECOVERY MANHOLE DETAILS.
SEE DRAWING S-2 FOR TRENCH LOCATION AND TIE POINTS.

5 / D-2 TRENCH SECTION
N.T.S.



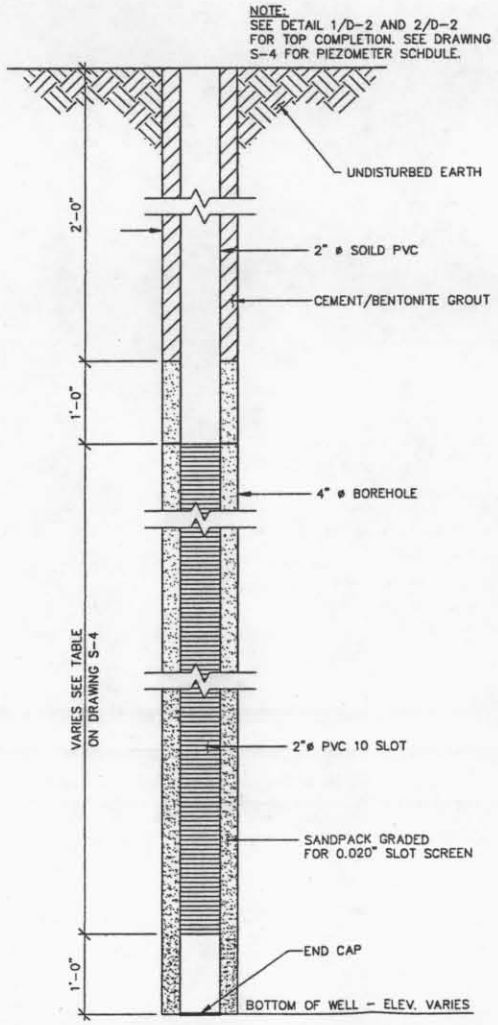
NOTE:
SEE DETAIL 4/D-1 FOR RECOVERY MANHOLE DETAILS.
SEE DRAWING S-2 FOR TRENCH LOCATION AND TIE POINTS.

8 / D-2 TRENCH SECTION
N.T.S.



NOTES:
1. HANDTAMP EMBANKMENT WITHIN A RADIUS OF 2'-0" OF THE WELL.
2. USE FLUSH COUPLE 2" DIA. PVC PIPE TO EXTEND WELLS.
3. DO NOT USE PVC GLUE TO CONNECT PVC PIPE COUPLING OR EXTENSIONS. ALL JOINTS TO BE THREADED.
4. PVC TO BE SCHEDULE 40.
5. SURVEY ELEVATION OF TOP OF PVC BEFORE AND AFTER EXTENSION.

6 / D-2 PIEZOMETER TYPE A
N.T.S.



7 / D-2 PIEZOMETER CONSTRUCTION DETAIL
N.T.S.

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ISSUE DATE: 3/14/05

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1	1/24/05	ISSUED FOR REVIEW	SFT	JSB	

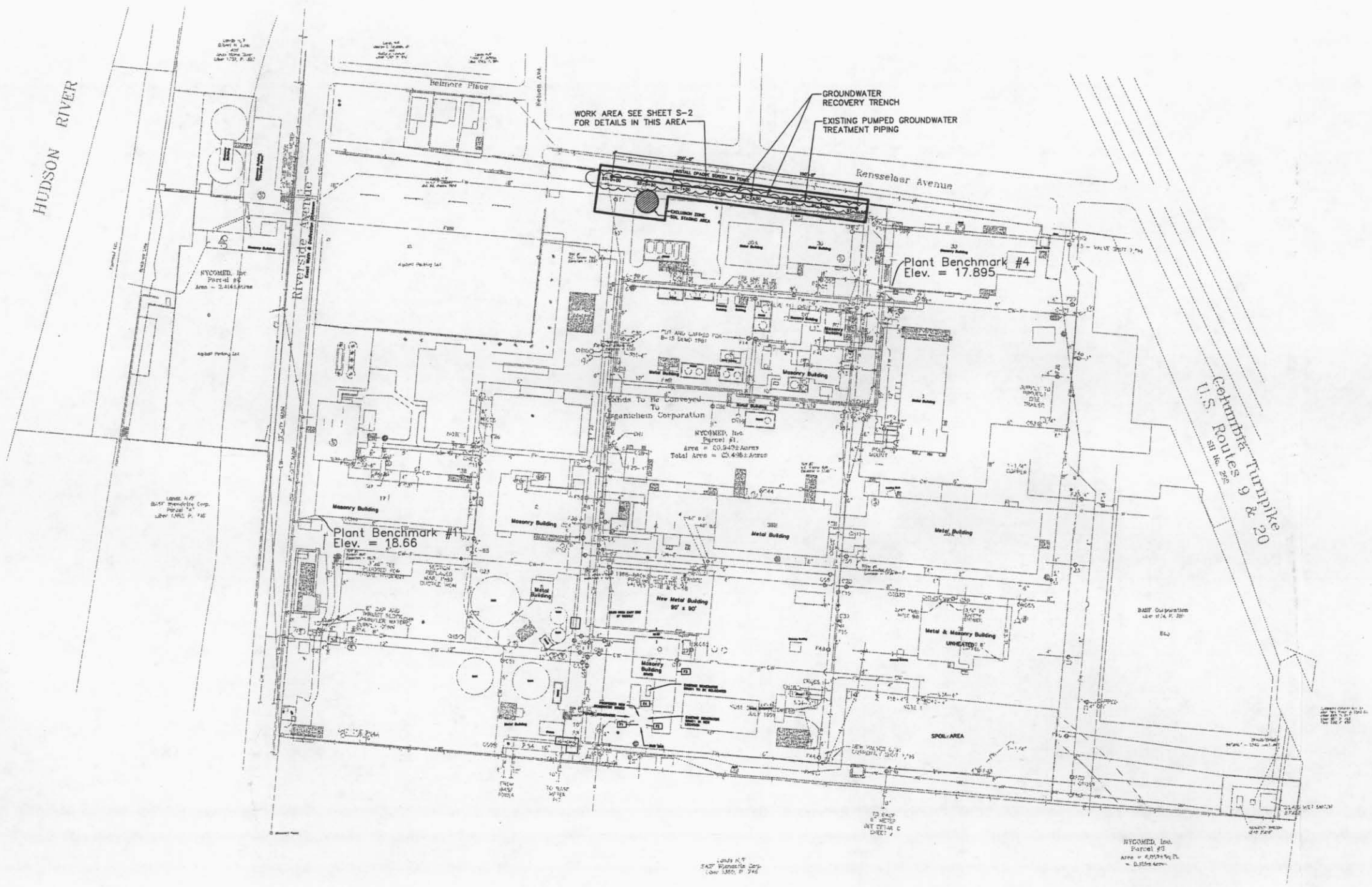
Organichem Corporation
33 RIVERSIDE AVENUE RENSSELAER, NEW YORK 12144

GWTS ENVIRONMENTAL REMEDIATION
GROUNDWATER INTERCEPTOR TRENCH DETAILS

SPEC CONSULTING, LLC 18 COMPUTER DRIVE WEST ALBANY, NY 12205 PHONE: 518.438.6809 FAX: 518.438.8527

DRAWN BY	DATE	BLDG.	OLD DRAWING NO.
SFT	1/24/05	SITE	
PROJECT NO.	SHEET	SCALE	DRAWING NO.
SPEC 04-127	1 OF 1		TBD (SPEC D-2)

NORTH



FOR REGULATORY REVIEW ONLY

ISSUE DATE: 3/14/05

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

REV	DATE	DESCRIPTION	DRAWN	CHKD	APP'D
2	3/11/05	FOR REGULATORY REVIEW	SFT	JSB	
1	12/20/04	FOR REVIEW	SFT	JSB	

Organichem Corporation
33 RIVERSIDE AVENUE RENSSELAER, NEW YORK 12144

GWTS ENVIRONMENTAL REMEDIATION
GROUNDWATER INTERCEPTOR TRENCH
OVERALL SITE PLAN

DRAWN BY	DATE	BLDG.	OLD DRAWING NO.
SFT	1/24/05	SITE	
PROJECT NO.	SHEET	SCALE	DRAWING NO.
SPEC 04-127	1 OF 4	1"=80'-0"	TBD (SPEC S-1)

SPEC CONSULTING, LLC 18 COMPUTER DRIVE WEST ALBANY, NY 12205 PHONE: 518.438.6809 FAX: 518.438.8527

NORTH

CHLOROBENZENE
17 ppb

CAMBF

Rensselaer Avenue

NEW GROUNDWATER COLLECTION TRENCH

SEE DETAIL 5/D-2

SEE DETAIL 8/D-2

200'-0"

150'-0"

INSTALL OPAQUE SCREEN ON FENCE

CHAIN LINK FENCE

OHE

MH-1 MH-2 MH-3

ST-0+00 ST-0+50 ST-1+00 ST-1+50 ST-2+00 ST-2+50 ST-3+00 ST-3+50

PZ-1 PZ-2 PZ-3 PZ-4 PZ-5 PZ-6

EXCLUSION ZONE

SOIL STAGING AREA

Shed

Guard House

48

30

30A
Metal Building
27

Metal Building

TANKS

Observation Well

Hydrogen Tank

Asphalt

SH3-1
SH3

S2-4

Masonry Building

Masonry Building

20
Masonry Building

37
Masonry Building

Ramp

Loading

TANK

Metal Building

19B
Masonry Building

19A

19C

LEGEND

- OVERHEAD ELECTRICAL (OHE)
- CHAIN LINK FENCE
- SEWER PIPING
- FACTORY WATER PIPE LINES
- HYDRANT
- POST INDICATOR VALVE
- CURB BOX VALVE
- VALVE IN MANHOLE
- VALVE
- FACTORY COLD WATER PIPE LINES
- SANITARY SEWER PIPING
- COLD WATER PIPE LINES
- LIGHT
- SOIL STAGING AREA
- EXCLUSION ZONE
- NEW PIEZAMETER (PZ-#)

PZ-#	DEPTH	SCREENED INTERNAL	STYLE
1	12'	36-10	B
2	12'	36-10	B
3	12'	36-10	A
4	11'	36-10	A
5	11'	36-10	A
6	11'	36-10	B

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(IN FEET)
1 inch = 20 ft.

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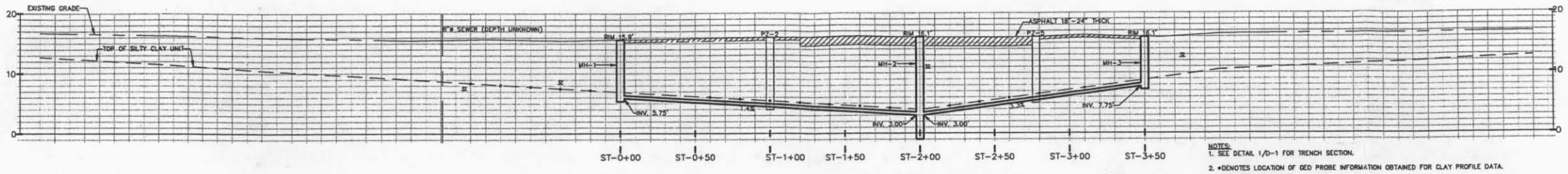
2	1/24/05	FOR REGULATORY REVIEW	SFT	JSB	
1	3/24/05	ISSUED FOR REVIEW	SFT	JSB	

Organichem Corporation
33 RIVERSIDE AVENUE RENSSELAER, NEW YORK 12144

GWTS ENVIRONMENTAL REMEDIATION
GROUNDWATER INTERCEPTOR TRENCH
PARTIAL SITE PLAN

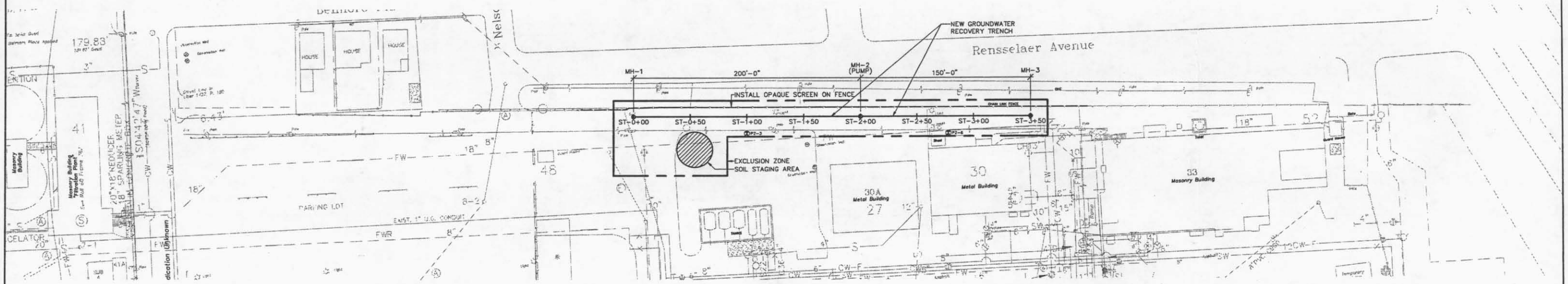
DRAWN BY	DATE	BLDG.	OLD DRAWING NO.
SFT	1/24/05	SITE	
PROJECT NO.	SHEET	SCALE	DRAWING NO.
SPEC 04-127	1 OF 1		TBD (SPEC S-4)



NOTES:
1. SEE DETAIL 1/D-1 FOR TRENCH SECTION.
2. ●DENOTES LOCATION OF GEO PROBE INFORMATION OBTAINED FOR CLAY PROFILE DATA.
3. REMAINING PROFILE BASED UPON DAMES & MOORE 1984 & 1987 RESULTS.
4. ∇ GROUNDWATER ELEVATIONS FROM 2005 GEOPROB DATA.

1/S-3 ELEVATION LOOKING NORTH

SCALE: 1"=40' HORIZONTAL
SCALE: 1"=10' VERTICAL



2/S-3 PARTIAL PLAN

SCALE: 1"=40'

(IN FEET)
1 inch = 40 ft.

FOR REGULATORY REVIEW ONLY

ISSUE DATE: 3/14/05

REV	DATE	DESCRIPTION	DRAWN	CHKD	APP'D
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1	1/24/05	ISSUED FOR REVIEW	SFT	JSB	

SPEC CONSULTING, LLC
18 COMPUTER DRIVE WEST
ALBANY, NY 12205
PHONE: 518.436.8809
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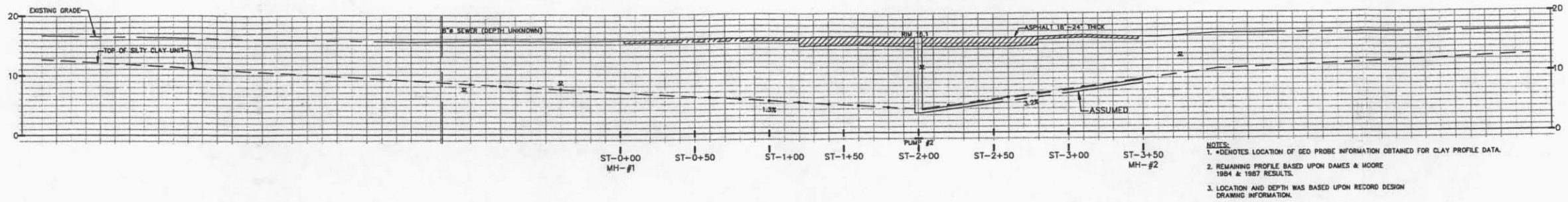
Organichem Corporation
33 RIVERSIDE AVENUE RENSSELAER, NEW YORK 12144

GWTS ENVIRONMENTAL REMEDIATION
NEW GROUNDWATER INTERCEPTOR TRENCH
TRENCH PLAN & ELEVATION

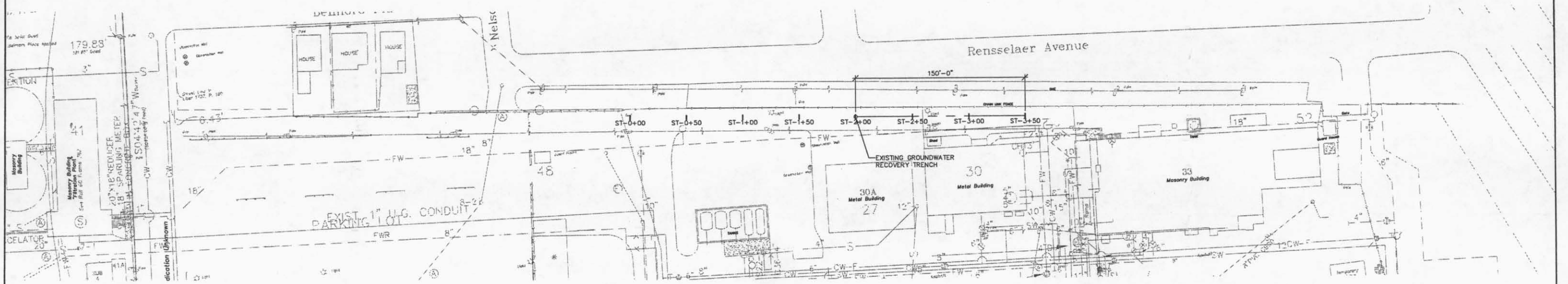
DRAWN BY	DATE	BLDG.	OLD DRAWING NO.
SFT	1/24/05	SITE	
PROJECT NO.	SHEET	SCALE	DRAWING NO.
SPEC 04-127	1 OF 1	AS NOTED	TBD (SPEC S-3)



NOTES:
1. *DENOTES LOCATION OF GED PROBE INFORMATION OBTAINED FOR CLAY PROFILE DATA.
2. REMAINING PROFILE BASED UPON DAMES & MOORE 1984 & 1987 RESULTS.
3. LOCATION AND DEPTH WAS BASED UPON RECORD DESIGN DRAWING INFORMATION.

1/XX ELEVATION LOOKING NORTH

SCALE: 1"=40' HORIZONTAL
SCALE: 1"=10' VERTICAL



2/XX PARTIAL PLAN

SCALE: 1"=40'

(IN FEET)
1 inch = 40 ft

FOR REGULATORY REVIEW ONLY

ISSUE DATE: 3/14/05

REV	DATE	DESCRIPTION	DRAWN	CHKD	APP'D
2	1/24/05	FOR REGULATORY REVIEW	SFT	JSB	
1	1/24/05	ISSUED FOR REVIEW	SFT	JSB	

Organichem Corporation
33 RIVERSIDE AVENUE RENSSELAER, NEW YORK 12144

GWTS ENVIRONMENTAL REMEDIATION
GROUNDWATER INTERCEPTOR TRENCH
EXISTING TRENCH PLAN & ELEVATION

DRAWN BY	DATE	BLDG.	OLD DRAWING NO.
SFT	1/24/05	SITE	
PROJECT NO.	SHEET	SCALE	DRAWING NO.
SPEC 04-127	1 OF 1		TBD (SPEC S-2)

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