CONSTRUCTION COMPLETION REPORT

Groundwater Remediation

Ward Products Site
Amsterdam, New York
Site # 429004

Submitted to:
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

Prepared for:
New Water Reality Corporation
(f/k/a Ward Products Corporation)
c/o 2900 Orchard Place
Orchard Lake, Michigan 48324

Prepared by:
AECOM
40 British American Boulevard
Latham, New York, 12110

January 2010

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Latham, New York, 12110

Prepared By: Reeti Doshi

Title: Environmental Engineer

Date: December 04, 2009

Reviewed By: Scott Underhill, P.E.

Title: Project Engineer

Date: December 05, 2009

January 2010

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1.0 INTRODUCTION

This Construction Completion Report (CCR) for Groundwater Remediation for the Ward Products Site ("Site"), Site Number 429004, City of Amsterdam, Montgomery County, New York, was prepared by AECOM Technical Services Northeast, Inc. (AECOM), for New Water Realty Corporation (NWR). The Site location is shown in Figure 1.

The remediation was performed pursuant to the New York State Department of Environmental Conservation (NYSDEC) Record of Decision (ROD) for the Ward Products Site, dated March 2007, and the Order On Consent (Index #A4-0588-0507) dated June 2007. The basis of the ROD is the Revised Remedial Investigation Report (RI) (May 2005) and the Feasibility Study Report (FS) (September 2006) prepared by RETEC Engineering. This CCR summarizes the In-Situ Chemical Oxidation (ISCO) injection and pump and treat system construction activities for the groundwater remediation and provides documentation that the site preparation, well installation, ISCO injection, sampling, pump and treat system installation, and operation activities associated with the remediation were performed in substantial conformance with the Work Plan, Contract Documents, ROD, Order on Consent and accepted standards of practice.

Included with this report are as-built drawings, cut-sheets for treatment system components, transporter and disposal manifests for waste removed during the well installation, analytical data for verification samples, and other detailed information.

1.1 Site History

The facility was constructed in 1957 and was occupied by the Gabriel Corporation, which manufactured car antennas. Ward Products purchased Gabriel's operation in 1959. As part of the manufacturing process, small metal parts were cleaned with solvents (vapor degreasing) prior to electroplating operations using nickel/chromium, zinc/cyanide, and cadmium/cyanide lines.

Between 1957 and 1973, untreated electroplating bath solutions containing chromium, zinc, cadmium, and nickel, and the degreasing solvent trichloroethene (TCE) were discharged to the nearby drainage ditch east of the Ward Products building. From 1973 through 1985, Ward pretreated the plating solutions from the nickel/chromium line and dried the resulting sludge on an outdoor concrete pad prior to removal for off-site disposal. The spent cadmium/cyanide plating solution was discharged to an outdoor tank for both natural and mechanical evaporation and offsite disposal of the remaining sludges. The zinc/cyanide line was discontinued in 1973.

Ward products connected to Amsterdam's sewer system in 1983 and discontinued the vapor degreasing system. All electroplating operations at the site were discontinued in 1985. In 1988 and 1989, the plant expanded with a new grinding shop built over the former sludge drying pad and a new warehouse area built to the north. During the expansion, the hillside to the north of the plant was excavated and soil was pushed up the hill behind the facility. Soil around the sludge drying pad was excavated and stockpiled nearby.

In 1985, NYSDEC first listed the site as a Class 2a site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). Class 2a was a temporary classification assigned to a site that had inadequate and/or insufficient data for inclusion in any of the other classifications. A hydrogeologic investigation of the site took place in 1986 and again in 1988. The 1988 investigation included excavation of test pits east and southeast of the former electroplating and treatment operations. Surface water and sediment samples were collected from the drainage ditch. Shallow soil samples were also collected from beneath the sludge drying pad and analyzed for metals and VOCs. In 1989, NYSDEC listed the site as a Class 2 site in the Registry. A Class 2 site is a site where hazardous waste presents a significant threat

to the public health or the environment and action is required. Further hydrogeologic investigation of the Site in 1996 included the installation of four groundwater monitoring wells and additional sediment sample collection from the drainage ditch.

Twenty-four groundwater monitoring wells have been installed on and around the Site. Four on-site wells (MW-1 through MW-4) are installed in the shallow glacial aquifer and the remaining 20 groundwater wells are installed in the fractured bedrock. Trichloroethene (TCE) had been consistently detected above the NYSDEC Standards, Criteria, and Guidelines (SCGs) Ambient Groundwater Quality Standard (5 ug/L) in samples collected from 14 of the 24 wells. Other chlorinated VOCs (e.g. dichloroethene [DCE]) have also been detected in the groundwater. Chromium (predominantly hexavalent [Cr^{+6}]) had been consistently detected in the three of the four glacial till monitoring wells and in eight of the fractured bedrock monitoring wells. There are currently no wells supplying drinking water in the impacted area and potential for ingestion of groundwater is minimal.

1.2 Site Description

Ward Products manufactured automobile antennas at an 8.6-acre property located at 61 Edson Street in the City of Amsterdam, Montgomery County, New York and is located in the Edson Street Industrial Park (Figure 1). The Site currently consists of a vacant 70,000 square foot former manufacturing facility, a large parking lot, areas of open woods to the north, and grassland to the east. The Site overlooks the Mohawk River Valley. The Mohawk River is located approximately 3,000 feet to the southwest of the Site. The land generally slopes gently from north to south and an intermittent stream runs in a drainage ditch along the eastern property line.

The highest concentrations of metals in the drainage ditch were removed from the north of Sam Stratton Road during the 2004 Soils and Sediments Interim Remedial Measure (IRM).

Four separate areas located downgradient from the Ward Products facility and the previous IRM efforts were identified as part of the RI/FS. As a final soil and sediment remediation effort, soils and sediments from four downgradient contaminated areas were excavated and impacted soils were disposed off-site between November 2008 and February 2009 in accordance with the ROD, Work Plan and Order on Consent. The Final Remediation Report (FRR) (AECOM, July 2009) summarizes the removal of impacted sediments from these four areas, as required by the ROD.

The TCE in groundwater is primarily a bedrock contaminant. The concentration on-site is several orders of magnitude higher than off-site. The suspected source of the TCE is in the vicinity of MW-4R, MW-6, and MW-10 (Figure 2). Concentrations in this area typically exceed 2,000 ug/L.

Based on the recent and historical groundwater data [RETEC, 2007], the lateral extent of TCE impacts in excess of the NYSDEC SCG is approximately 300,800 square feet. Approximately half of that area is on-site. Assuming an average aquifer thickness of 50 feet and a bedrock porosity of 2%, the volume of the TCE-impacted groundwater is approximately 2.25 million gallons.

1.3 Project Related Documents

The following is a summary of project related documents prepared prior to the Contract Documents for the Ward Products Site for Installation of Recovery and ISCO Wells:

- Revised Remedial Investigation Report, Ward Products Site (Normandeau Associates, Inc., May 2005)
- Feasibility Study and Risk Assessment, Ward Products Site (RETEC Engineering P.C., September 25, 2006)
- Historical and recent groundwater monitoring results (RETEC Engineering P.C., 2007a)

- Results of a pre-design investigation including a groundwater pump test and ISCO pilot study (RETEC Engineering P.C., 2007b)
- Remedial Design, Remedial Action Work Plan, Ward Products Site, (RETEC Engineering P.C., December 5, 2007)
- Record of Decision (ROD): Ward Products Site, Site No. 429004 (NYSDEC, March 2007)
- Draft Final Remediation Report – Sediment and Soil Remediation, (AECOM, July 2009)

1.4 Remediation Goals

The remediation goals at the Ward Products Site are set forth in the ROD. The goals related to the groundwater remediation, are to eliminate or reduce to the extent practicable:

- Exposure of persons and environment at or around the Site to the chromium, or TCE and other VOCs in groundwater; and
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standard.

Further, the remediation goals for the groundwater remediation include attaining to the extent practicable ambient groundwater quality standards. The groundwater cleanup standards based on the New York State Groundwater Standards and Guidance Values (NYSDEC, June 2008) are shown below.

Groundwater Cleanup Standards

Contaminant	Groundwater Cleanup Objective (ug/L)
Chromium	50
cis1,2-Dichloroethene	5
Tetrachloroethene	5
Trichloroethene	5
Vinyl Chloride	2

The selected remedy for groundwater treatment is intended to reduce on-site sources of contaminants in groundwater and to control or reduce future migration from the Site. In summary, the components of the remedial design for groundwater treatment consist, per ROD [NYSDEC, 2007], of the following:

- On-site groundwater recovery and treatment for TCE;
- Limited on-site ISCO within the TCE plume; and
- Long term on-site and off-site groundwater monitoring and an on-site environmental easement.

2.0 CONSTRUCTION CONTRACT, OVERSIGHT, AND PERMITTING

2.1 Remedial Construction Oversight

The project design and remedial construction oversight services for the groundwater remediation project were conducted by AECOM under contract with New Water Realty Corporation. Tasks performed by AECOM relative to the remedial construction oversight included:

- Preparation of Remedial Design/Remedial Action Work Plan/Health and Safety Plan/Task Hazard Analysis sheets (THAs);
- Attendance at Project Meetings;
- Review of Contractor's Submittals;
- Obtain Publicly Owned Treatment Works (POTW) Permit;
- Baseline Sampling;
- Remedial Construction Oversight ;
- Air Monitoring;
- Well Development Oversight;
- Collect and submit a composite sample of the auger cuttings for waste characterization prior to off-site disposal;
- ISCO Injection ;
- Verification Sampling;
- System Start-up;
- Review and Preparation of Field Orders and Change Orders;
- Construction Record Keeping and Reporting;
- Project Administration;
- Start operation of the system;
- Collect influent and effluent samples;
- Preparation of Site Management Plan (SMP); and
- Provide a hex-chrome mitigation plan to the POTW and NYSDEC if necessary.

Throughout the well and treatment system installation activities, AECOM provided a construction manager and a geologist to oversee the remedial construction operations, including well development, baseline sampling event, ISCO injection activities, treatment system installation, start-up and influent and effluent sample collection.

A SMP and an on-site environmental easement will be prepared in the future and is not included as part of this CCR. Monthly progress reports will continue to be submitted to the NYSDEC until submission and acceptance of the SMP, which will outline the long-term reporting requirements. Two additional ISCO injections are planned at the site; however these are currently on hold as residual levels of potassium permanganate continue to be present in the injection wells.

2.2 Construction Contract

Construction Plans and Specifications for the Ward Products Groundwater Remediation Project prepared by AECOM were based on the NYSDEC approved Remedial Design Remedial Action Work Plan (December 5, 2007). An invitation to bid was presented to a pre-selected list of qualified contractors in March 2008.

The scope of the remedial construction work, under the terms of the Contract, included the following tasks:

- Prepare the job site and clear well installation areas as necessary;
- Obtain a public utility clearance request prior to mobilization;
- Driller mobilization and demobilization;
- Drilling;
- Decontamination of equipments;
- Locate underground cables on the property;
- Procure necessary permits required for construction;
- Construction of the groundwater remediation system; and
- Re-grade the work areas as necessary.

The contract for installation of five wells was awarded to Nothnagle Drilling and the contact for the construction of the groundwater remediation system was awarded to Hour Electric. AECOM subcontracted Adirondack Environmental to perform analytical testing on groundwater samples during the course of the remediation work. Norlite Analytical Laboratory was retained for waste characterization of the auger cuttings.

The Ward Products Site Groundwater Extraction/Treatment and ISCO Injection was conducted in general accordance with the following documents:

1. Remedial Design/Remedial Action Work Plan, December 5, 2007.
2. AECOM's Health and Safety Plan (HASP), April 2009, and Task Hazard Analysis Forms

2.3 Permits and Access Agreements

After initial application on March 17, 2009 and, with assistance of NYSDEC, a long-term POTW discharge permit was obtained from City of Amsterdam on April 1, 2009. The groundwater remediation system is currently not adversely affected by requirements of the POTW. A copy of the permit is attached as Appendix A.

The contractor (Hour Electric) obtained a building permit for the treatment shed.

No underground injection permit is required for the ISCO component of the groundwater treatment; however NYSDEC was and will be notified prior to any ISCO injections.

Since the anticipated VOC emission discharge rate is below NYSDEC guideline of 0.5 pounds per hour (NYSDEC Memorandum, February 28, 2003), no air-discharge permit is required. The calculation sheet with emission discharge calculations for TCE in the air is included in Appendix B.

3.0 REMEDIATION ACTIVITIES

3.1 Introduction

The groundwater remediation by ISCO and pump and treat system is located near the southeastern portion of, and adjacent to, the building located on 61 Edson Street (source area). The groundwater remedy is designed to (1) control groundwater flow in the most impacted area of the site, reducing off-site migration of the contaminants of concern (COC) through pumping, with treatment of the effluent prior to discharge, and (2) reduce the remaining source material through ISCO.

The groundwater remediation goals focus on preventing future exposure of humans or environment to on-site and off-site contaminated groundwater and control of plume migration through the long-term reduction in groundwater COC toxicity, mass, volume, and/or mobility. As a selected remedy, a central groundwater recovery well, with an electric submersible pump and an on-site treatment system was installed. Treated effluent is discharged to the City of Amsterdam's POTW, via the sanitary sewer, under the discharge permit issued on April 1, 2009. The treatment system includes a well pump, a flow totalizer, an air stripper, and a transfer pump; and is in a heated shed. This treatment train currently does not have chromium treatment since the influent chromium concentration was assumed to be below the discharge criteria.

A limited ISCO program was also concurrently implemented with the intent of reducing the duration of extraction and treatment system operations. A 10-year groundwater extraction/treatment period has been assumed with a 30-year groundwater monitoring program. The selected remedy also includes groundwater use restrictions.

Well installation, treatment system construction, sampling, ISCO injection and site activities were documented in the field log book by AECOM.

3.2 Project Kick-Off Meeting

A project kick-off meeting was conducted at the Site on June 1, 2009. The meeting was attended by representatives from all contractors and AECOM. The purpose of the meeting was to introduce team members from each party, review the project schedule, and discuss the execution plan, work approach, project health and safety, and sample collection.

3.3 Mobilization and Site Preparation

Nothnagle Drilling and Hour Electric initiated mobilization on June 1, 2009. A summary of the mobilization activities is listed below:

- Utility Clearance/Markout;
- Mobilization of equipment and materials to the Site;
- Installation of temporary facilities;
- Installation of holding tank and frac tank; and
- Maintaining an adequate supply of drums to place auger cuttings.

3.4 Site Preparation

Nothnagle Drilling and Hour Electric performed clearing activities in preparation for drilling activities and treatment system installation on the Site. The fence in the eastern portion of the Site was not removed for the access for installing IW-2 and IW-3 as originally planned. These two injection wells were moved just west of the chain link fence with NYSDEC approval.

Nothnagle Drilling instituted a public utility clearance request prior to mobilization. Two small trenches were excavated around the treatment shed for the piping. A small portion of the fence in the back of the building was temporarily removed to spread the soils excavated from these trenches with NYSDEC approval.

3.5 Temporary Facilities

A holding tank and a 21,000 gallon frac tank were staged on the Site to store extracted groundwater, well development fluid, and decontamination fluid prior to analysis and discharge to the POTW outfall.

3.6 Equipment

The following equipment was utilized by Nothnagle Drilling and Hour Electric for well and pump & treat system installation:

- Drill rig;
- Excavator; and
- Small dump truck.

3.7 Well Installation

Nothnagle Drilling installed five wells at the Site in conformance with the December 2007 Remedial design/Remedial action Work plan (Work Plan) approved by the NYSDEC. The location of the wells is shown on Figure 2.

The four ISCO wells and the recovery well were installed in a grid encompassing the source area near MW-4R, MW-6, and MW-10 as shown on Figure 2. Bedrock elevations in these areas are 12 to 16 feet below ground surface. The ISCO wells are 2-inch diameter PVC and screened within bedrock with a steel isolation casing extending 2 feet into the bedrock surface. The wells are flush mounted at the ground surface and the top of the PVC casing has a threaded coupling. The 2-inch PVC casing was placed within a 4-inch bedrock borehole, without sandpack, for the purpose of maintaining open bedrock boreholes.

The total depth of the injection wells IW-02 through IW-04 is 80 feet below ground surface (BGS). The total depth of IW-01 is 45.5 feet as the casing could not be held in place due to change in the geology; this decision was made after consultation with on-site NYSDEC representative. IW-02 through IW-04 were screened within the bedrock from 20 to 80 feet below ground surface and IW-01 was screened from 30.5 to 45.5 feet below ground surface. The locations of the IW-02 and IW-03 were moved from the originally planned location to the west side of the chain link fence

The recovery well is constructed of a 6-inch diameter PVC, 80-feet deep and screened within bedrock from 20 to 80 feet below ground surface. The 6-inch PVC casing is placed within a 8.25-inch bedrock borehole, without sandpack. The recovery well head is fitted with a flush mount vault, approximately 24-inches square and 24-inches deep. Well construction logs for the injection wells and recovery well are included in Appendix C.

The wells were installed between June 1, 2009 and June 5, 2009. During installation continuous air monitoring was performed in the worker breathing zone. The air was monitored for dust and VOCs using a dust-meter and photo ionization detector (PID) and the time-weighted average readings were noted every 15 minutes. The levels of dust and VOCs remained below action level throughout the monitoring period. The augur cuttings generated during the well installation were stored in 55-gallon drums prior to disposal.

All five wells were developed on the last day of drilling. The water generated from well development was collected in a holding tank and then pumped to a frac tank prior to disposal.

The wells were surveyed on July 22, 2009 by AECOM. Well construction details are provided in Table 5.

3.8 ISCO Injection

A limited ISCO program has been concurrently implemented with the intent of reducing the contaminant mass in the source area. The ISCO program is intended to reduce TCE concentration within the area of MW-4R, MW-6, and MW-10, in accordance with the FS, the ROD, and the Order on Consent of July 2007. As specified in the Work Plan, three injections of oxidants are anticipated.

This remedy required the handling of potentially dangerous oxidizing chemicals. THA was developed for potassium permanganate. Application of oxidants was carefully monitored and appropriate personal protection equipment (PPE) was used per the site-specific health and safety plan (HASP). Each injection well was injected with 25 lbs of potassium permanganate (KMnO4) in the week of June 15, 2009. The remaining two injections were originally tentatively scheduled for December 2009 and June 2010, but this schedule is likely to be adjusted based on the results of and observations from the initial injection event and subsequent sampling.

Groundwater samples were collected from each of the injection wells prior to injection and analyzed for residual chromium, manganese, and VOCs. This pre-injection sampling was performed on June 15 and 16, 2009 to establish baseline conditions. The samples were sent to Adirondack Environmental Services for analysis.

The introduction of $KMnO_4$ to the subsurface may mobilize precipitated chromium. Any mobilized chromium will be captured by the groundwater extraction system. If the chromium concentrations exceed the POTW discharge limit, system modifications, in consultation with the NYSDEC and/or POTW, may be required.

3.9 Groundwater Treatment System

The groundwater treatment system was constructed by Hour Electric and is shown in Figure 3. The system consists of a submersible pump for groundwater extraction and a flow totalizer, followed by an air stripper in a heated shed. This treatment train assumes that chromium treatment will not be required. Cut-sheets of the main system components (groundwater submersible pump, sir-stripper, blower, flow meter, and transfer pump) are included in Appendix G. The originally proposed ¾ HP submersible pump was replaced with a ½ HP SP4 Grundfos® submersible pump as the recharge rate in the recovery well was lower than anticipated. The pump was adjusted to pump approximately 2.0 GPM to avoid pumping the well dry. The static water level is approximately 11 feet below ground surface and is approximately 19 to 21 feet below ground surface while the pump is operational. A pump protector was also installed on the pump which shuts the pump down for 200 minutes when the water level falls below the pump intake.

The groundwater extraction and treatment system was started on June 15, 2009. The system was shut down after the ISCO injection to provide time for the oxidant to continue to react with the contaminated groundwater. On August 11, 2009, the system was restarted. The groundwater was light pink initially but cleared after a few minutes. Approximately 18,000 gallons of system effluent was pumped into a frac tank for sampling prior to discharge. Influent grab sample and effluent grab and composite samples were collected on August 12 and 24, 2009 and were sent to Adirondack Environmental for analysis for the POTW criteria. The analytical parameters specified in the POTW Permit include pH, TCE, and chromium. The limits for these parameters as per the POTW Permit are included in Table 3. Analytical results of the influent and effluent samples for different sampling events are shown in Table 4 and are within the discharge criteria. The analytical results are included in Appendix D. Since the effluent met the discharge

criteria, the effluent is being directly discharged to the POTW outfall following the treatment. Influent and effluent samples will be collected bi-weekly for the first month, monthly for the second and third months and quarterly thereafter.

3.10 Long-term Monitoring and Environmental Easement

On-site groundwater use restrictions and a long term ground water on-site and off-site monitoring program are required as part of the selected remedy. The groundwater extraction and treatment system may be phased out, with NYSDEC concurrence, when on-site groundwater reaches a stable value and off-site concentrations begin to exhibit a long-term decline, indicating that the source of the TCE has been substantially and permanently remediated within the limits of technical feasibility.

Groundwater will thereafter be monitored for natural attenuation. At present, the groundwater samples at the Site are collected semi-annually.

The use of on-site groundwater is restricted as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH.

An environmental easement will be developed in the future and included as part of the SMP.

3.11 Site Restoration

Upon completion of the treatment system installation, the trenches for piping were backfilled with the excavated soil and seeded.

3.12 Transportation and Disposal

The auger cuttings and fluids were properly containerized for characterization and off-site disposal. A composite sample of the auger cuttings was collected from the 55-gallons drums, in which the auger cuttings were stored. This sample was submitted to the Norlite Analytical Laboratory for waste characterization analysis on June 3, 2009. The analytical results are summarized in Table 1 and the laboratory report is included in Appendix E. Twenty-six 55-gallon drums were transported off-site by United Industrial Services and disposed off at the Bridgeport United Recycling facility on June 25, 2009. A total of 1,430 gallons of solid waste was disposed off-site as non-hazardous waste. The waste disposal manifest is included in Appendix F.

Well development fluid was collected in the on-site frac tank prior to disposal. A water sample was collected from the frac tank and sent to Adirondack Environmental for analysis for the POTW criteria. The analytical results are summarized in the Table 2. The fluid was discharged to a POTW outfall as the analytical results indicated that concentrations were within POTW criteria.

3.13 Demobilization Activities

Following the well and treatment system installation, Hour Electric and Nothnagle Drilling initiated demobilization activities. The demobilization activities included the following:

- Equipment decontamination: Mud and soils were scraped from the machines into the drums containing auger cuttings. The machines were rinsed with a hot-water pressure washer prior to leaving the site. Decontamination water was collected and transferred to the on-site frac tank.
- Cleanup of debris/trash found at the remediation area
- Demobilization of equipment off-site
- Removal of the drums

Demobilization activities related to system installation were completed on June 5, 2009.

4.0 CONCLUSIONS

The groundwater treatment system was constructed in accordance with the NYSDEC ROD for the Ward Products Site (March 2007), the Order On Consent (Index #A4-0588-0507, June 2007), and the Remedial Design/Remedial Action Work Plan (December 2007). Any deviations from the above mentioned documents received NYSDEC field-approval prior to being executed during the remediation. The groundwater remediation objectives, as set forth in the ROD, have been achieved. Continuous groundwater extraction and treatment is required until the results show significant decrease in contaminant concentration and extent. In addition, long-term monitoring will be performed and restrictions will be placed on the use of the Site, as set forth in the ROD.

A SMP will be developed and will be provided under separate cover. The SMP will provide the details for the long-term monitoring and maintenance requirements for both onsite and offsite affected areas and an environmental easement for the Site, as required by the ROD.

5.0 CONSTRUCTION CERTIFICATION

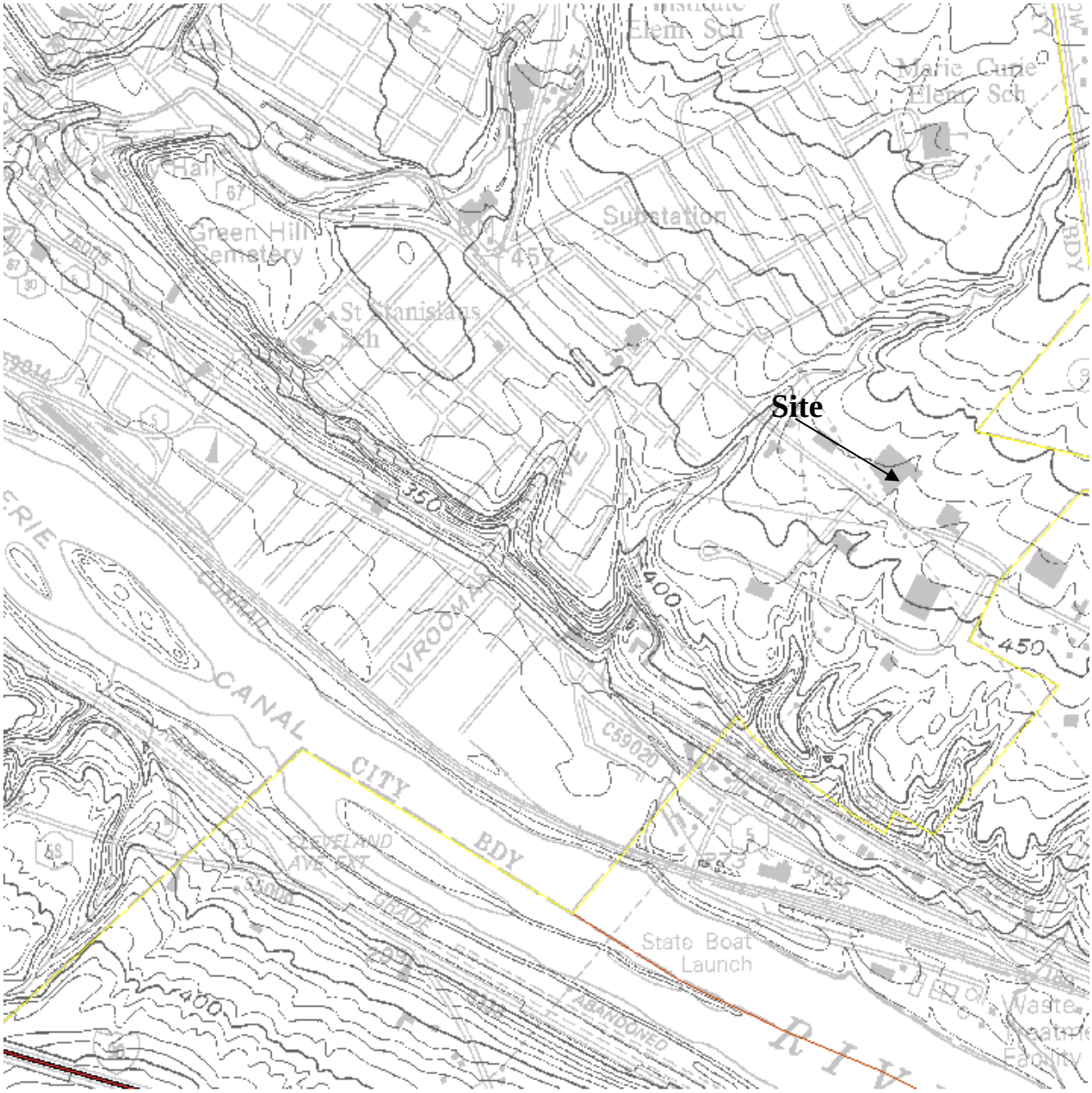
I hereby certify, as a Professional Engineer registered in the State of New York that the remediation treatment system installation completed in August 2009 was performed in full accordance with the project Work Plan (modified with NYSDEC approval as noted herein), Contract Documents, ROD, Order on Consent, and accepted standards of practice.

Respectfully submitted,
AECOM Technical Services Northeast, Inc.

1-21-10

Scott Underhill — Date
Registered Professional Engineer
New York License No. 075332

Figures



Adapted from: New York State Interactive Mapping Gateway, Amsterdam, New York

Former Ward Products Site, Amsterdam, NY

Figure 1: Site Location Map

AECOM

Date: 9/04/09

Project Number 113042

MW-12

61 EDSON ST.

MW-11

MW-5

WELL 1
WELL 1R

FGI-1

WELL 2

MW-6

IW-04

TREATMENT SYSTEM PAD

WELL 3

IW-03

MW-10

POTW OUTFALL

IW-01

RW-01

MW-4

MW-4R

MW-7

IW-02

EDSON STREET

MW-9

MW-13

MW-8

MW-17

MW-16

LEGEND

- PROPERTY LINE
- CHAINLINK FENCE
- RAILROAD TRACKS
- SS SS EXISTING SANITARY SEWER
- DRAIN TILE EXISTING
- DRAIN TILE NEW
- MW-18 MONITORING WELL
- RECOVERY WELL
- ISCO INJECTION WELL
- UTILITY POLE
- CATCH BASIN
- EXCAVATION AREAS

N

30 0 60

1"=60'

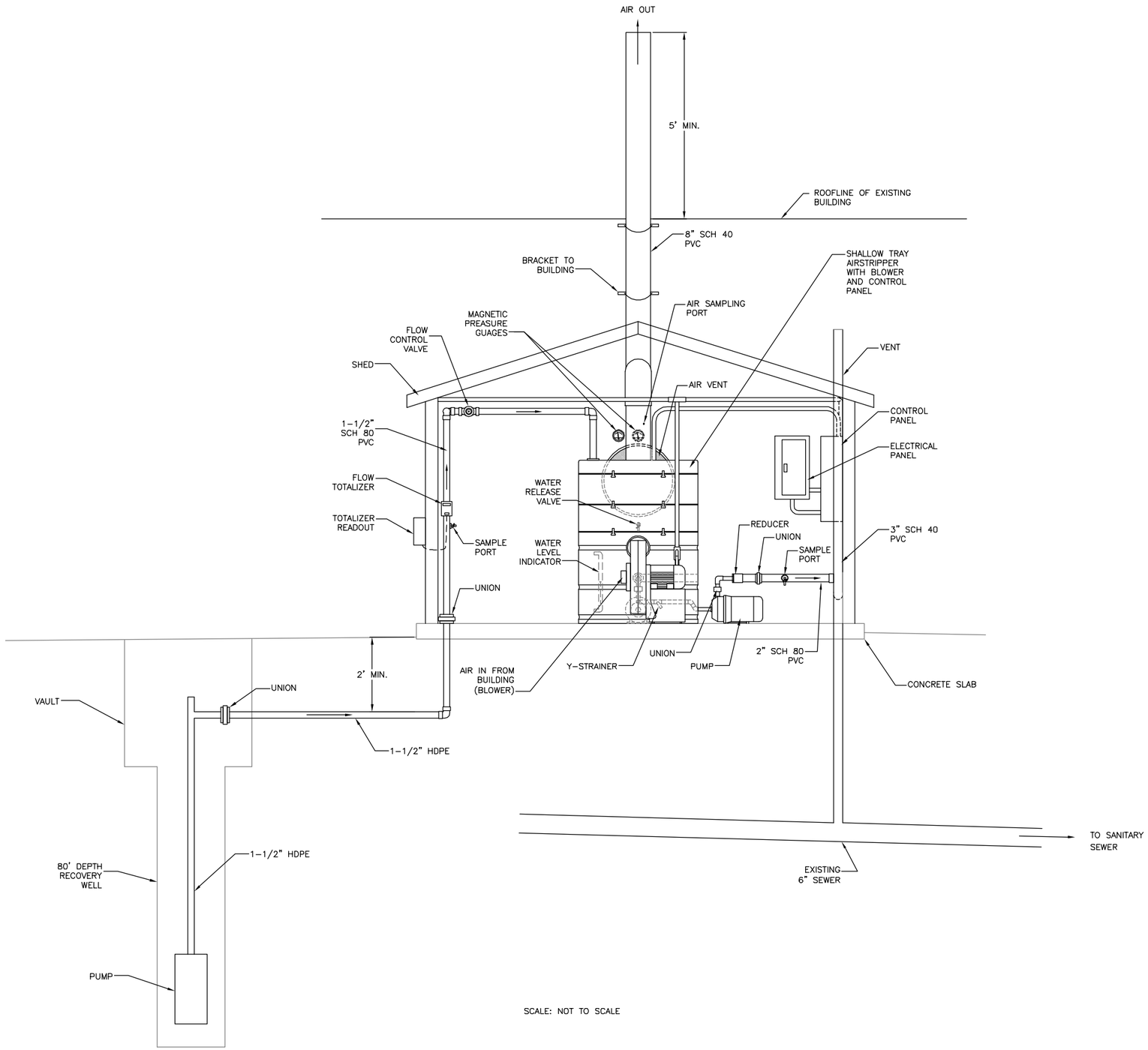
AECOM

FORMER WARD PRODUCTS REMEDIATION
AMSTERDAM, NEW YORK
12518-005-500

DATE: 09/29/09 | DRWN: C.C./DM

WELL LOCATION MAP

FIGURE 2



SCALE: NOT TO SCALE

NOTES:

1. PUMP IS A GRUNDFOS 4-INCH STAINLESS STEEL SUBMERSIBLE; 2-WIRE; 230V; 1/2/HP PUMP WITH A PUMP SAVER PLUS PUMP PROTECTOR 233P-1.5
2. FLOW TOTALIZER IS A MCMATER CARR 4041K23
3. FLOW CONTROLER VALVE IS MCMASTER CARR 4695K47
4. AIR STRIPPER IS NEEP STAINLESS STEEL SHALLOW TRAY MODEL 2321P
5. AIR BLOWER IS AMERICAN FAN MODEL AF-15-B15247-8
6. AIR STRIPPER DISCHARGE PUMP IS A GOULDS MODEL 1ST1C5E4
7. PRESSURE GUAGES FOR SUMP AND FOR STACK ARE MAGNEHELIC DWYER MODEL 2040 AND 2000-0C, RESPECTIVELY
8. LOW AIR PRESSURE SWITCH IS DWYER MODEL 1950-20-2F, PITOT TUBE IS DWYER MODEL 160-8, AND AIR STRIPPER SUMP LEVEL SWITCH IS A SUPER SINGLE PUMP SWITCH
9. SHED IS A LOWES'S COMMERCIAL SERVICES DESIGN NUMBER PB8-002D-4508 WITH 2" OF BLUE BOARD INSULATION ON INTERIOR WALLS AND CEILING. HEATING IS CHROMALOX MODEL CPHH-50031, 2 UNITS TOTALING 1000 WATTS
10. RECOVERY WELL VAULT IS EMCO WHEATON RETAIL PART NUMBER A0717-724ABW

AECOM

FORMER WARD PRODUCTS REMEDIATION AMSTERDAM, NEW YORK 12518-005-500			**GROUNDWATER TREATMENT SYSTEM SCHEMATIC DRAWING AND EQUIPMENT LIST**
DATE: 09/29/09	DRWN: C.C./DM		**FIGURE 3**

Tables

Table 1 - Results of Waste Characteriation Sampling
Former Ward Products Site
Amsterdam, NY

Sample Name	WC-1
Sample Matrix	Solid
Sampling Date	6/3/2009

Analyte	Results	Unit
Total Metals		
Sulfur	2,011.81	mg/Kg
Arsenic	ND<0.07	mg/Kg
Beryllium	0.23	mg/Kg
Cadmium	ND<0.03	mg/Kg
Chromium	6.23	mg/Kg
Copper	5.78	mg/Kg
Lead	ND<0.04	mg/Kg
Barium	80.22	mg/Kg
Mercury	ND<0.07	mg/Kg
Nickel	ND<0.04	mg/Kg
Antimony	ND<0.04	mg/Kg
Selenium	ND<0.04	mg/Kg
Silver	ND<0.04	mg/Kg
Thallium	ND<0.05	mg/Kg
Zinc	70.62	mg/Kg
PCBs		
PCBs	ND<2.0	mg/Kg
TCLP Volatiles		
1,1-Dichloroethene	ND<5	µg/L
1,2-Dichloroethane	ND<5	µg/L
1,4-Dichlorobenzene	ND<5	µg/L
2-Butanone	25	µg/L
Benzene	ND<5	µg/L
Carbon Tetrachloride	ND<5	µg/L
Chlorobenzene	ND<5	µg/L
Chloroform	ND<5	µg/L
Tetrachloroethene	ND<5	µg/L
Trichloroethene	6	µg/L
Vinyl Chloride	ND<10	µg/L

Notes:
ND = Not Detected

Table 2 - Analytical Results of Initial POTW Sampling
Former Ward Products Site
Amsterdam, NY

Sample Name	POTW
Sample Matrix	Aqueous
Sampling Date	6/15/2009

Analyte	Results	Unit
Purgeable Halocarbons		
Trichloroethene	760.00	µg/L
ICP Metals		
Chromium	0.035	mg/L
pH		
pH	8.5	

Sample Name	Trip Blank
Sample Matrix	Water
Sampling Date	6/15/2009

Analyte	Results	Unit
Purgeable Halocarbons		
Trichloroethene	<1.0	µg/L

Notes:
ND = Not Detected

Table 3 - POTW Permit Criteria
Former Ward Products Site
Amsterdam, NY

Parameter	POTW Limit	Unit	Sampling Type
Trichloroethene	N/A	mg/L	Grab
Chromium	10	mg/L	24-hr Composite
pH	6.0-9.0		Grab
Flow	20,000	GPD	Flowmeter

City of Amsterdam Industrial Wastewater Discharge Permit
Effective: 4/1/2009
Expires: 3/31/2012

Table 4 - Analytical Results of the Groundwater Treatment System Influent and Effluent Samples
Former Ward Products Site
Amsterdam, NY

Summary of Groundwater Treatment System Analytical Data
New Water Realty, Amsterdam, NY
City of Amsterdam Industrial Wastewater Discharge Permit
Effective: 4/1/2009
Expires: 3/31/2012

					Effluent		
Parameter	**Units**	**Frequency**	**Type**	**Limits**	**06/15/2009 ****	**8/12/2009**	**8/24/2009**
Totalizer reading	gal	Continuous	Meter	n/a	1700 (approx)		23760
Total volume pumped	gal	Continuous	Meter	n/a	1700 (approx)		
Days run	days	Continuous	Meter	n/a	30 [2]		
Flow	gpd	Continuous	Meter	20000 [1]	57 (approx.)		3024
pH	SU	1/Quarter	Grab	6.0 - 9.0	8.5	8.1	7.8
Trichloroethene	mg/L	1/Quarter	Grab	n/a	0.76	0.7	0.39
Chromium	mg/L	1/Quarter	24-hr Composite	10	0.035	0.071	0.059
					Influent		
pH	SU	1/Quarter	Grab	6.0 - 9.0	ns	7.5	7.2
Trichloroethene	mg/L	1/Quarter	Grab	n/a	ns	6.6	5.5
Chromium	mg/L	1/Quarter	24-hr Composite	10	ns	0.068	0.052

Startup frequency: bi-weekly for 1st month
monthly for 2nd and 3rd month
quarterly thereafter

[1] - Flow limit is the average daily flow in gpd
[2] - system run June 1-30, 2009
** System installed in June 2009, ran for less than one month, restarted on August 11, 2009

Table 5 - Well Construction Details
Former Ward Products Site
Amsterdam, NY

Well	Elevation of Casing (ft)	Date of Installation	Well Diameter (inch)	Diameter of Borehole (inch)	Bottom of Well (ft bgs)	Well Casing (ft bgs)	Top of Rock (ft bgs)	Screen Interval (ft bgs)	Steel Casing Interval (ft bgs)	Cement Bentonite Grount (ft bgs)	Riser Pipe (ft bgs)
RW-01	472.08*	6/1/2009	6	8.25	80	2	14	20-80	0-20	5-15.5	0-20
IW-01	465.69	6/4/2009	2	4	45.3	0.5	30	30.5-45.5	0-28	1-29	0-30.5
IW-02	468.29	6/4/2009	2	4	80	0.5	13.5	20-80	0-15.5	1-15.5	0-20
IW-03	472.01	6/4/2009	2	4	80	0.5	11	20-80	0-13	1-13	0-20
IW-04	470.74	6/4/2009	2	4	80	0.5	13	20-80	0-15	1-15	0-20

* Elevation at the rim of the well cover

Appendix A

CITY OF AMSTERDAM

INDUSTRIAL WASTEWATER DISCHARGE PERMIT

Effective Date: **April 1, 2009** Expiration Date: **March 31, 2012**

In accordance with all terms and conditions of the City of Amsterdam's (City's) Sewer Use Ordinance and with applicable provisions of Federal or State law or regulations, permission is hereby granted to:

New Water Reality
61 Edson Street
Amsterdam, New York 12010

for the discharge of industrial process wastewater into the City's Wastewater Treatment Works.

1. This permit is granted in accordance with the application filed on **March 17, 2008** and in conformity with plans, specifications, discharge monitoring reports and other data which are filed and considered part of this permit, together with the following conditions and requirements.

2. Industrial Wastewater Discharge (IWD) permits are issued to a specific user for a specific operation. IWD permits may not be reassigned or transferred to a new user, sold to a new owner, or used at different premises or for a new or changed operation without prior written approval of the City.

3. PERMIT APPEALS: The permittee may petition to appeal the terms of this permit within thirty (30) days of the receipt of this permit. This petition must be in writing. Failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its' petition the permittee must indicate the permit provisions objected to, the reasons for this objection, and an alternate condition, if any, it seeks to be placed in the permit. The effectiveness of this permit shall not be stayed pending reconsideration by the City. If, after considering the petition, the City determines that reconsideration is proper, the City shall remand the permit for reissuance, and those permit provisions being reconsidered shall be stayed pending reissuance.

4. The permittee shall apply for permit reissuance a minimum of one hundred eighty (180) days prior to the expiration of this permit.

5. Permit issued pursuant to Section 195-7 of the City Sewer Use Ordinance by:

Recommended by:

Richard W. Phillips, P.E.
City Engineer

Approved by:

Ann M. Thane
Mayor of Amsterdam

Permittee:

New Water Reality
61 Edson Street
Amsterdam, New York 12010

Conditions:

1. Duty to Comply: The permittee must comply with all conditions of this permit, with all wastewater discharge prohibitions and limitations set forth in Section 195-5 of the City's Sewer Use Orindnace, and with all applicable prohibitions and limitations set forth in federal pretreatment regulations. Failure to comply with these requirements may be grounds for administrative action or enforcement proceedings.

2. Periodic Monitoring Reports: Quarterly Compliance Monitoring Reports, including laboratory analyses reports, are due on the 15 th day of each month following the quarter of sampling. Reports shall be signed by an authorized representative of the Industrial user and shall be submitted to the Superintendent of the Amsterdam Wastewater Treatment Plant and the City Engineer.

3. Noncompliance Report: If self-monitoring reveals violation of any discharge limitations specified herein, the permittee shall notify the Superintendent of the Amsterdam Wastewater Treatment Plant within 24 hours of becoming aware of the violations. The permittee shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Superintendent of the Amsterdam Wastewater Treatment Plant within thirty days after becoming aware of the violations.

4. Additional Monitoring by the Permittee: If the permittee monitors any pollutant more frequently than required by this permit, using test procedures identified in "Specification for Self Monitoring Program", the results of this monitoring shall be included in the permittee's self monitoring reports.

5. Retention of Records: Copies of all records and reports must be kept by Industrial users for a minimum of three (3) years. Industrial users shall make such records available for inspection and copying by the USEPA, NYSDEC and the City of Amsterdam. These records will be maintained by ENSR at their Ithaca, NY office

6. New or Changed Wastewater Discharge: All industrial users shall apply for and receive written approval from the City of Amsterdam prior to discharging any new waste streams or pollutants, or any substantial increase or decrease in the volume or characteristics of existing waste streams discharged to the City's Wastewater Treatment Plant.

7. Inspection and Entry: The permittee shall allow duly authorized employees or representatives of the City to enter the permittee's premises for purposes of inspection, observation, measurement, sampling, and testing in accordance with Section 195-7 of the City Sewer Use Ordinance.

8. Accidental Discharge Reporting: Any discharge, slug, spill, breakdown, or unanticipated byass of wastewater pretreatment equipment, or any other cause, the permittee shall notify the Superintendent of the Amsterdam Wastewater Plant immediately by telephone. In addition, the permittee shall submit a written statement within seven (7) days of said occurrence describing the discharge, steps taken to reduce or eliminate and steps taken to prevent a reoccurrence of the discharge.

9. Penalties for Violation: The Amsterdam Sewer Use Ordinance provides that any person who shall continue to violate any provision of the SUO and who knowingly makes any false statement or other representation, or who tampers with or knowingly makes any false statement, or who tampers with or knowingly renders inaccurate any City monitoring device shall be guilty of a misdemeanor and shall be punished by a fine of not less than $300 dollars and not more than $1,000 dollars or by imprisonment for not more than six months, or both. In addition, this City may recover expenses arising from loss, damage and litigation from such violations.

10. Permit Modifications: Terms and conditions of this permit may be modified by the City if revision is necessary to meet the City's SPDES discharge permit requirements. If substantial changes of the permittee operations or wastewater occur, or if applicable Federal Pretreatment Standards are amended, or if the City determines that there is good cause to do so.

11. Serviceability: The provisions of this permit are serviceable, and if any provision of this permit or application of any provision of this permit is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

12. Certification Statement: All permit holders must sign a Certification Statement when submitting your monthly/quarterly report; it is a part of your permit conditions obligation.

NOTICE OF VIOLATIONS:

Any industry or transporter that violates The City of Amsterdam's Sewer Use Ordinance shall receive from the City a written Non-Compliance of said violation to be published in the local newspaper. The participant shall be granted reasonable time to correct such violation (Normally 30 days). The City may also suspend service upon formal notice when such suspension is necessary in order to stop an actual discharge that the City may deem inappropriate.

PENALTIES:

Any user who has violated or continues to violate The City's Sewer Use Ordinance or the conditions of their discharge permit shall be liable for a maximum civil penalty of $5,000.00, or not less than $1,000.00 per violation per day. Any person who continues to violate the City's Sewer Use Ordinance or the conditions of this permit, and who records, plans, tampers, renders inaccurate monitoring devices and who makes false statements shall be guilty of a misdemeanor and shall be punished by a fine of not less than $1,000.00 or not more than $5,000.00 per violation and/or imprisonment for not more than 1 year or both.

HAZARDOUS WASTE:

The City of Amsterdam will not accept any hazardous waste that will inhibit or disrupt The Wastewater Plant, its treatment process or operations, which may cause harm to humans or the environment. Under no circumstances will the owner of this permit introduce any waste from a different source that was not originally agreed upon by the City of Amsterdam and without first submitting a complete analysis of said source to The Chief Plant Operator for his approval before any discharge is warranted.

WASTEWATER DISCHARGE LIMITS

Permittee:

New Water Reality
61 Edson Street
Amsterdam, New York 12010

In addition to the limitations set forth in Section 195-5 of the City's Sewer Use Ordinance, the permittee shall not discharge any pollutant in excess of the concentrations specified below.

	Average Day Discharge (GPD)
Flow:	20,000 GPD
	Allowable Range (SU)
pH:	6.0 – 9.0

POLLUTANT	Maximum Daily Concentration (mg/l)
Arsenic	0.5 mg/l
Cadmium	5.0 mg/l
Chromium	10 mg/l
Chromium Hex	5.0 mg/l
Cyanide	1.0 mg/l
Lead	1.0 mg/l
Mercury	0.10 mg/l
Nickel	5.0 mg/l
Silver	0.5 mg/l
Zinc	1.0 mg/l
Bis (2-ethylhexyl) phthalate	0.5 mg/l
Total Phenloics	3.0 mg/l
Suspended Solids	200 mg/l
Copper	1.2 mg/l

MONITORING REQUIREMENTS

From the period beginning on the effective date of the permit until **March 31, 2012;** the permittee shall monitor the project remediation site outfall for the following parameters, and at the indicated frequency:

Parameter	Frequency	Sample Type
Flow (gpd)	Continuous	Meter
pH	1/Quarter	Grab
Trichlorethene	1/Quarter	Grab
Chromium	1/Quarter	24 – hr Composite

Note: The sampling and monitoring frequency requirements at the startup of the remediation project shall be bi-weekly for the first month, monthly for the second and third months, and quarterly thereafter.

USER FEE SCHEDULE

In accordance with Section 195-14 of the City Sewer Use Ordinance the following fee schedule shall apply for this discharge:

Minimum Quarterly	$ 65.25
Fixed Quarterly for Testing (per NYSDEC requirement)	$ 320.00
Discharge Fee (Metered Flow)	$ 0.50/100 cf

Appendix B

CLIENT: New Water Realty Corp **SUBJECT:** Air Emission Calculation
PROJECT: Former Ward Products Site, Amsterdam, NY

Prepared By RD **Date** 9/15/09
Reviewed By SU **Date**
Approved By SU **Date**

TASK

Estimate the quantity of TCE emitted in the air by the air stripper vent.

SITE BACKGROUND AND TREATMENT SYSTEM LAYOUT

The groundwater in the southeastern portion of the Ward Products Site is contaminated with TCE due to former manufacturing operations at the site. A groundwater recovery and treatment system is installed at the site in conjunction with the four in-situ chemical oxidation (ISCO) injection wells. The central well pumps the groundwater to a treatment system using a submersible pump. The treatment system consists of an air stripper and a flow totalizer. The air is passed through the contaminated water to strip the VOCs (TCE) from the water. This air with TCE is being discharged into the atmosphere using a vent. Following calculations estimate the volume and the rate at which the TCE is being discharged into the air. The NYSDEC guidance value for emission discharge for TCE is 0.5 pounds per hour.

DATA

System restarted on 8/11/09

Parameter	Units	Frequency	Type	Limits	06/15/2009 **	8/12/2009	8/24/2009
Totalizer reading	gal	Continuous	Meter	n/a	1700 (approx)		23760
Days run	days	Continuous	Meter	n/a	30 [2]		
Flow	gpd	Continuous	Meter	20000 [1]	57 (approx.)		3024
pH	SU	1/Quarter	Grab	6.0 - 9.0	8.5	8.1	7.8
Trichloroethene	mg/L	1/Quarter	Grab	n/a	0.76	0.7	0.39
Chromium	mg/L	1/Quarter	24-hr Composite	10	0.035	0.071	0.059
pH	SU	1/Quarter	Grab	6.0 - 9.0	ns	7.5	7.2
Trichloroethene	mg/L	1/Quarter	Grab	n/a	ns	6.6	5.5
Chromium	mg/L	1/Quarter	24-hr Composite	10	ns	0.068	0.052

Startup frequency: bi-weekly for 1st month
monthly for 2nd and 3rd month
quarterly thereafter

[1] - Flow limit is the average daily flow in gpd
[2] - system run June 1-30, 2009
** System installed in June 2009, ran for less than one month, restarted in August 2009

CALCULATIONS

Assumptions:

The flowrate observed in August is assumed to be the average flowrate at which the pump is extracting the groundwater from the recovery well. As recorded on August 24, 2009, the frowrate is approximately 3,000 gallons per day.

Calculations:

Influent TCE Concentration on August 12, 2009, I_1: 6,600 ug/L
Effluent TCE Concentration on August 12, 2009, E_1: 700 ug/L

Influent TCE Concentration on August 24, 2009, I_2: 5,500 ug/L
Effluent TCE Concentration on August 24, 2009, E_2: 390 ug/L

Flowrate, F:

$$F \cong 3{,}000 \, {gallons}/{day}$$

$$F = \frac{3{,}000 \, {gallon}/{day} \times 3.785 \, {L}/{gallon}}{24 \, {hr}/{day}} \cong 475 \, {L}/{hr}$$

TCE Removal Rate, R_{TCE} :

$$TCEremovalAug12{,}2009 = 6{,}600 - 700 = 5{,}900 \, {\mu g}/{L}$$

$$TCEremovalAug\,24{,}2009 = 5{,}500 - 400 = 5{,}100 \, {\mu g}/{L}$$

$$AverageTCEremovalRate = 5{,}900 - 5{,}100 = 5{,}500 \, {\mu g}/{L}$$

$$TCEremoval/hour = 5{,}500 \, {\mu g}/{L} \times 475 \, {L}/{hr} \times 10^{-6} \, {g}/{\mu g} = 2.61 \, {g}/{hr}$$

$$TCEremoval/hour = 2.61 \, {g}/{hr} \times 0.002204 \, {lb}/{g} = 0.0057 \, {lbTCE}/{hr}$$

SUMMARY

From the above calculations, it is clear that the TCE being removed by the air stripper per hour is less than 0.5 lbs. Hence, the emission discharge from the treatment vent will contain TCE at lower concentrations than the guidance value for the discharge.

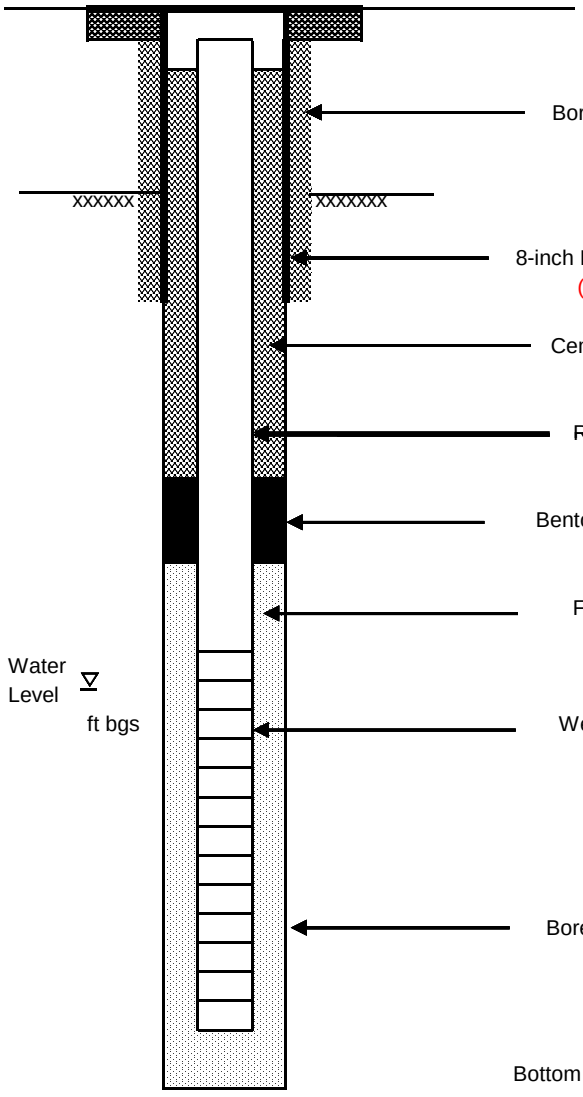
Appendix C

AECOM

RECOVERY WELL DIAGRAM
SINGLE-CASED
FLUSH-MOUNT COMPLETION

Well No. RW-01

Project: FORMER WARD PRODUCTS	Location: Amsterdam, New York	Page 1 of 1		
AECOM Project No.: 113042.100	Subcontractor: Nothnagle Drilling	Water Levels		
Surface Elevation: Ft	Driller: Kevin	Date	Time	Depth
Top of PVC	Well Permit No.:	6/2/09	8:15	11.10'
Casing Elevation: Ft	AECOM Rep.: Mark Howard	6/4/09	12:07	11.01'
Datum: NGVD 1988	Date of Completion: 6/1/2009			



Locking protective flushmount with concrete pad

Ground Surface 472.08* ft

Well casing 2.0 ft bgs

Borehole diameter 8.25 inches

Top of Rock -14 ft bgs

8-inch ID steel casing (TEMPORARY) 0.0 ft to -16.0 ft

Cement-bentonite grout from -5.0 ft to -15.5 ft

Riser Pipe from 0.0 ft to -20.0 ft

Bentonite seal from N/A ft to N/A ft

Filter pack from -17.5 ft to -80.0 ft

Water Level ▽ ft bgs

Sand Size #0

Well screen from -20.0 ft to -80.0 ft

Diameter 6 inches
Slot size 0.010 inches (10 Slot)
Type PVC

Borehole diameter 8.25 inches

Bottom Cap at -80.0 ft

Bottom of Borehole at -80.8 ft

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.
* Elevation of the rim of the cover

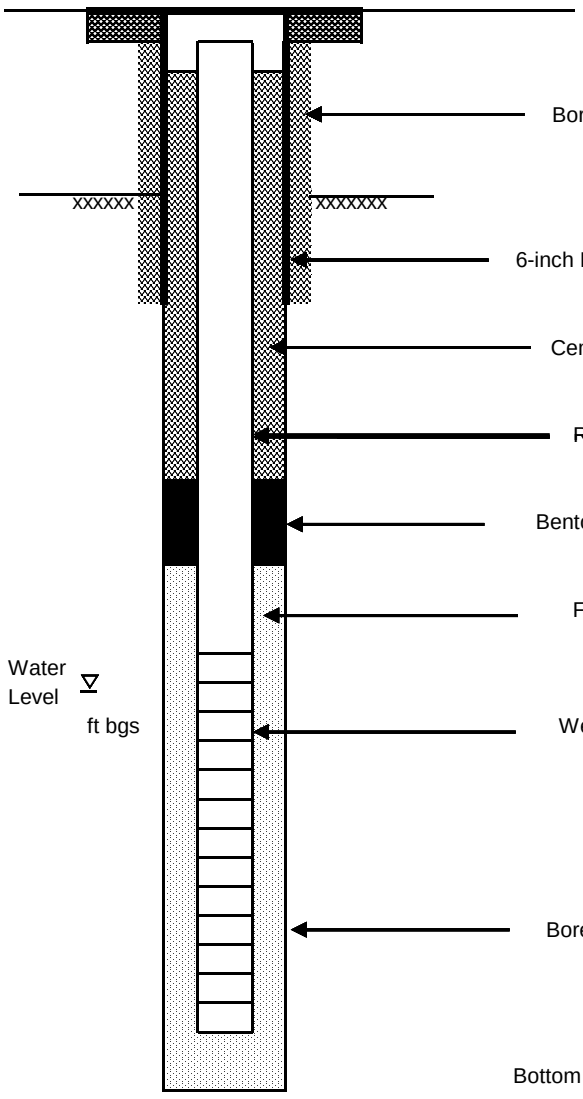
(NOT TO SCALE)

AECOM

INJECTION WELL DIAGRAM
SINGLE-CASED
FLUSH-MOUNT COMPLETION

Well No. IW-01

Project: FORMER WARD PRODUCTS	Location: Amsterdam, New York	Page 1 of 1		
AECOM Project No.: 113042.100	Subcontractor: Nothnagle Drilling	Water Levels		
Surface Elevation: Ft	Driller: Kevin	Date	Time	Depth
Top of PVC	Well Permit No.:	6/4/09	11:59	12.28'
Casing Elevation: Ft	AECOM Rep.: Mark Howard			
Datum: NGVD 1988	Date of Completion: 6/4/2009			



Locking protective flushmount with concrete pad

Ground Surface 466.19 ft

Well casing 0.5 ft bgs

Borehole diameter 8.00 inches

Top of Rock ~-30 ft bgs

6-inch ID steel casing 0.0 ft to -28.0 ft

Cement-bentonite grout from -1.0 ft to -29.0 ft

Riser Pipe from 0.0 ft to -30.5 ft

Bentonite seal from N/A ft to N/A ft

Filter pack from N/A ft to N/A ft

Sand Size N/A

Well screen from -30.5 ft to -45.5 ft

Diameter 2 inches
Slot size 0.010 inches (10 Slot)
Type PVC

Borehole diameter 4.00 inches

Bottom Cap at -45.3 ft

Bottom of Borehole at -45.5 ft

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

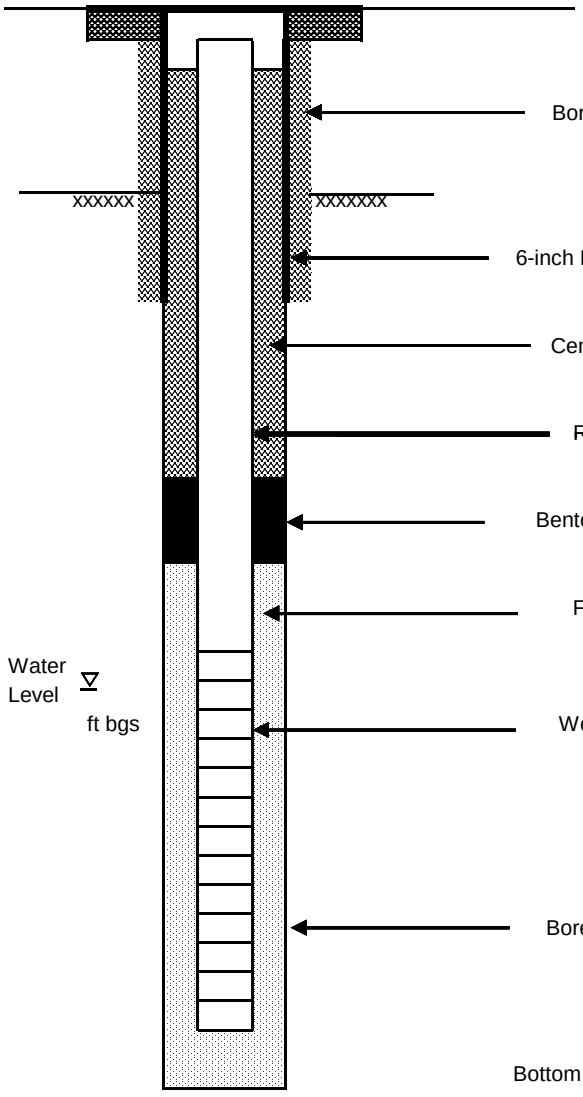
(NOT TO SCALE)

AECOM

INJECTION WELL DIAGRAM
SINGLE-CASED
FLUSH-MOUNT COMPLETION

Well No. IW-02

Project: FORMER WARD PRODUCTS	Location: Amsterdam, New York	Page 1 of 1		
AECOM Project No.: 113042.100	Subcontractor: Nothnagle Drilling	Water Levels		
Surface Elevation: Ft	Driller: Kevin	Date	Time	Depth
Top of PVC	Well Permit No.:	6/4/09	12:01	9.56'
Casing Elevation: Ft	AECOM Rep.: Mark Howard			
Datum: NGVD 1988	Date of Completion: 6/4/2009			



Locking protective flushmount with concrete pad

Ground Surface 468.79 ft

Well casing 0.5 ft bgs

Borehole diameter 8.00 inches

Top of Rock -13.5 ft bgs

6-inch ID steel casing 0.0 ft to -15.5 ft

Cement-bentonite grout from -1.0 ft to -15.5 ft

Riser Pipe from 0.0 ft to -20.0 ft

Bentonite seal from N/A ft to N/A ft

Filter pack from N/A ft to N/A ft

Water Level ▽ ft bgs

Sand Size N/A

Well screen from -20.0 ft to -80.0 ft

Diameter 2 inches
Slot size 0.010 inches (10 Slot)
Type PVC

Borehole diameter 4.00 inches

Bottom Cap at -80.0 ft

Bottom of Borehole at -80.8 ft

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

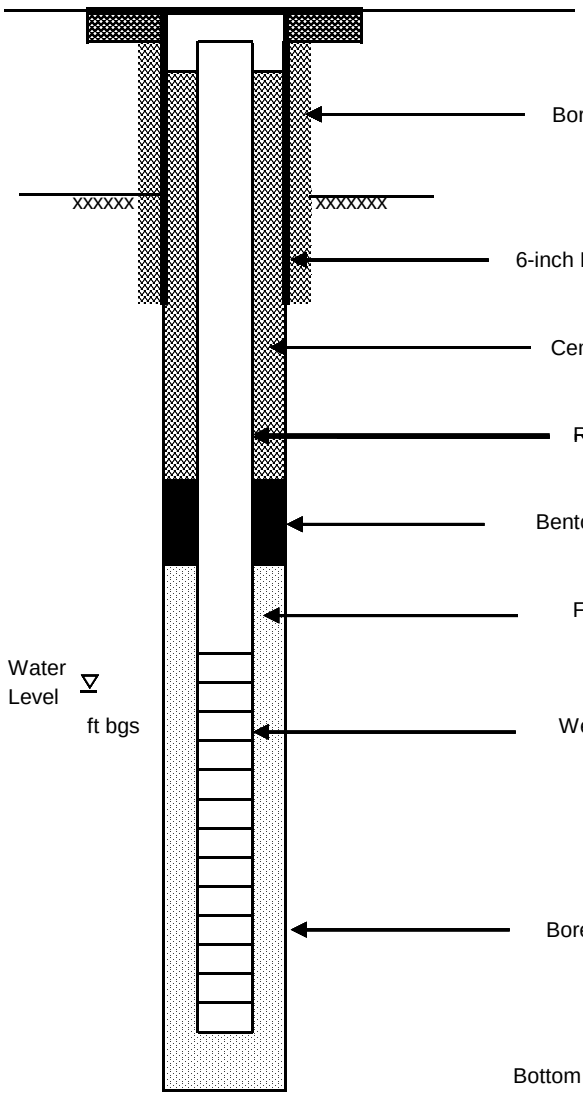
(NOT TO SCALE)

AECOM

INJECTION WELL DIAGRAM
SINGLE-CASED
FLUSH-MOUNT COMPLETION

Well No. IW-03

Project: FORMER WARD PRODUCTS	Location: Amsterdam, New York	Page 1 of 1		
AECOM Project No.: 113042.100	Subcontractor: Nothnagle Drilling	Water Levels		
Surface Elevation: Ft	Driller: Kevin	Date	Time	Depth
Top of PVC	Well Permit No.:	6/4/09	12:03	13.78'
Casing Elevation: Ft	AECOM Rep.: Mark Howard			
Datum: NGVD 1988	Date of Completion: 6/4/2009			



Locking protective flushmount with concrete pad

Ground Surface 472.51 ft

Well casing 0.5 ft bgs

Borehole diameter 8.00 inches

Top of Rock -11 ft bgs

6-inch ID steel casing 0.0 ft to -13.0 ft

Cement-bentonite grout from -1.0 ft to -13.0 ft

Riser Pipe from 0.0 ft to -20.0 ft

Bentonite seal from N/A ft to N/A ft

Filter pack from N/A ft to N/A ft

Sand Size N/A

Well screen from -20.0 ft to -80.0 ft

Diameter 2 inches
Slot size 0.010 inches (10 Slot)
Type PVC

Borehole diameter 4.00 inches

Bottom Cap at -80.0 ft

Bottom of Borehole at -80.8 ft

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

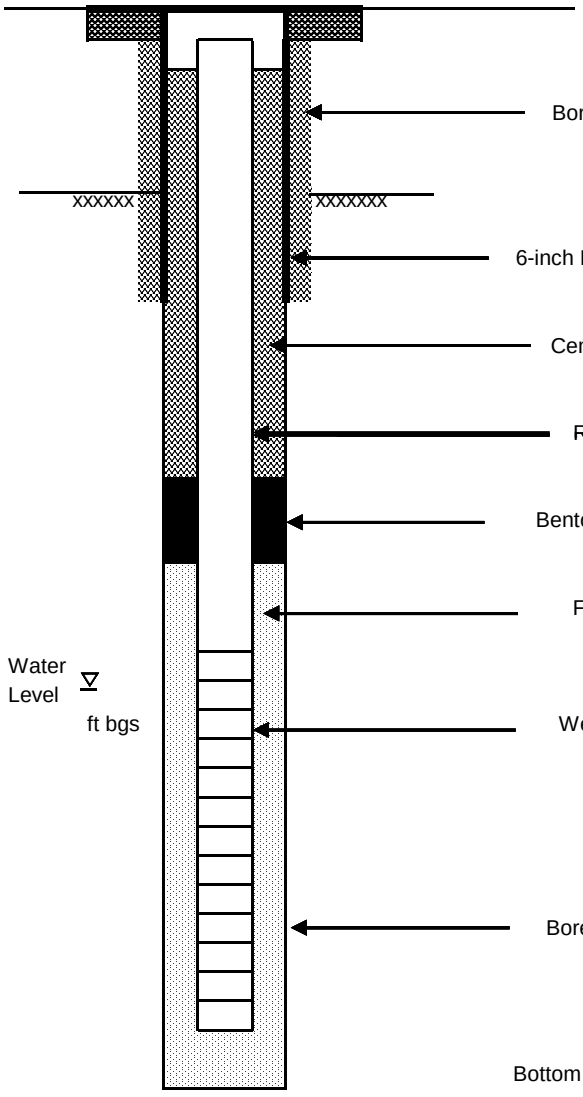
(NOT TO SCALE)

AECOM

INJECTION WELL DIAGRAM
SINGLE-CASED
FLUSH-MOUNT COMPLETION

Well No. IW-04

Project: FORMER WARD PRODUCTS	Location: Amsterdam, New York	Page 1 of 1		
AECOM Project No.: 113042.100	Subcontractor: Nothnagle Drilling	Water Levels		
Surface Elevation: Ft	Driller: Kevin	Date	Time	Depth
Top of PVC	Well Permit No.:	6/4/09	12:05	12.66
Casing Elevation: Ft	AECOM Rep.: Mark Howard			
Datum: NGVD 1988	Date of Completion: 6/4/2009			



Locking protective flushmount with concrete pad

Ground Surface 471.24 ft

Well casing 0.5 ft bgs

Borehole diameter 8.00 inches

Top of Rock -13 ft bgs

6-inch ID steel casing 0.0 ft to -15.0 ft

Cement-bentonite grout from -1.0 ft to -15.0 ft

Riser Pipe from 0.0 ft to -20.0 ft

Bentonite seal from N/A ft to N/A ft

Filter pack from N/A ft to N/A ft

Sand Size N/A

Well screen from -20.0 ft to -80.0 ft

Diameter 2 inches
Slot size 0.010 inches (10 Slot)
Type PVC

Borehole diameter 4.00 inches

Bottom Cap at -80.0 ft

Bottom of Borehole at -80.8 ft

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

Appendix D

Adirondack Environmental Services Inc

Experience is the solution

314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

August 25, 2009

Jennifer Atkins
AECOM Environment
2 Technology Park Drive
Westford, MA 01886

TEL: (978) 589-3000
FAX: (978) 589-3100

Work Order No: 090813001

RE: Ward Products Amsterdam
Semi Annual GW

Dear Jennifer Atkins:

Adirondack Environmental Services, Inc received 18 samples on 8/12/2009 for the analyses presented in the following report.

There were no problems with the analyses and all associated QC met EPA or laboratory specifications, except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Tara Daniels
Laboratory Manager

ELAP#: 10709
AIHA#: 100307

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quanititation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	T - Tentitively Identified Compound-Estimated Conc
	X - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

CLIENT:	AECOM Environment	**Client Sample ID:**	Influent
Work Order:	090813001	**Collection Date:**	8/12/2009 4:10:00 PM
Reference:	Ward Products Amsterdam / Semi Annual GW	**Lab Sample ID:**	090813001-017
PO#:		**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS E200.7 (**Prep: SW3010A - 8/24/2009**)						Analyst: **KH**
Chromium	0.068	0.005		mg/L	1	8/25/2009 2:10:00 PM
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
Bromomethane	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
Vinyl chloride	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
Chloroethane	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
Methylene chloride	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Acetone	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
Carbon disulfide	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,1-Dichloroethene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,1-Dichloroethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
trans-1,2-Dichloroethene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
cis-1,2-Dichloroethene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Chloroform	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,2-Dichloroethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
2-Butanone	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
1,1,1-Trichloroethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Carbon tetrachloride	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Bromodichloromethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,2-Dichloropropane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
cis-1,3-Dichloropropene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Trichloroethene	6600	250		µg/L	50	8/20/2009 7:58:00 PM
Dibromochloromethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,1,2-Trichloroethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Benzene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
trans-1,3-Dichloropropene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Bromoform	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
4-Methyl-2-pentanone	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
2-Hexanone	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
Tetrachloroethene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,1,2,2-Tetrachloroethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Toluene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Chlorobenzene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Ethylbenzene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Styrene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
m,p-Xylene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quanititation limits

B - Analyte detected in the associated Method Blank

X - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

T - Tentitively Identified Compound-Estimated Conc

E - Value above quantitation range

CLIENT:	AECOM Environment	**Client Sample ID:**	Influent
Work Order:	090813001	**Collection Date:**	8/12/2009 4:10:00 PM
Reference:	Ward Products Amsterdam / Semi Annual GW	**Lab Sample ID:**	090813001-017
PO#:		**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
o-Xylene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Methyl tert-butyl ether	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Dichlorodifluoromethane	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
Methyl Acetate	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Cyclohexane	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
Trichlorofluoromethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Methyl Cyclohexane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,2-Dibromoethane	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,3-Dichlorobenzene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
Isopropylbenzene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,2-Dichlorobenzene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,4-Dichlorobenzene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
1,2-Dibromo-3-chloropropane	< 500	500		µg/L	50	8/20/2009 7:58:00 PM
1,2,4-Trichlorobenzene	< 250	250		µg/L	50	8/20/2009 7:58:00 PM
PH SM4500 H B						Analyst: **TG**
pH	7.5	1.0		pH Units	1	8/13/2009 9:55:00 AM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

CLIENT:	AECOM Environment	**Client Sample ID:**	Effluent
Work Order:	090813001	**Collection Date:**	8/12/2009 4:18:00 PM
Reference:	Ward Products Amsterdam / Semi Annual GW	**Lab Sample ID:**	090813001-018
PO#:		**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS E200.7 (**Prep: SW3010A - 8/24/2009**)						Analyst: **KH**
Chromium	0.071	0.005		mg/L	1	8/25/2009 2:14:00 PM
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
Bromomethane	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
Vinyl chloride	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
Chloroethane	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
Methylene chloride	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Acetone	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
Carbon disulfide	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,1-Dichloroethene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,1-Dichloroethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
trans-1,2-Dichloroethene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
cis-1,2-Dichloroethene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Chloroform	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,2-Dichloroethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
2-Butanone	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
1,1,1-Trichloroethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Carbon tetrachloride	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Bromodichloromethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,2-Dichloropropane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
cis-1,3-Dichloropropene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Trichloroethene	700	25		µg/L	5	8/20/2009 2:48:00 PM
Dibromochloromethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,1,2-Trichloroethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Benzene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
trans-1,3-Dichloropropene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Bromoform	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
4-Methyl-2-pentanone	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
2-Hexanone	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
Tetrachloroethene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,1,2,2-Tetrachloroethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Toluene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Chlorobenzene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Ethylbenzene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Styrene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
m,p-Xylene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quanititation limits

B - Analyte detected in the associated Method Blank

X - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

T - Tentitively Identified Compound-Estimated Conc.

E - Value above quantitation range

CLIENT:	AECOM Environment	**Client Sample ID:**	Effluent
Work Order:	090813001	**Collection Date:**	8/12/2009 4:18:00 PM
Reference:	Ward Products Amsterdam / Semi Annual GW	**Lab Sample ID:**	090813001-018
PO#:		**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
o-Xylene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Methyl tert-butyl ether	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Dichlorodifluoromethane	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
Methyl Acetate	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Cyclohexane	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
Trichlorofluoromethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Methyl Cyclohexane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,2-Dibromoethane	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,3-Dichlorobenzene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
Isopropylbenzene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,2-Dichlorobenzene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,4-Dichlorobenzene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
1,2-Dibromo-3-chloropropane	< 50	50		µg/L	5	8/20/2009 2:48:00 PM
1,2,4-Trichlorobenzene	< 25	25		µg/L	5	8/20/2009 2:48:00 PM
PH SM4500 H B						Analyst: **TG**
pH	8.1	1.0		pH Units	1	8/13/2009 9:55:00 AM

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Albany, New York 12207
518-434-4546/434-0891 FAX

A full service analytical research laboratory offering solutions to environmental concerns

CHAIN OF CUSTODY RECORD

AES Work Order # 0908130 01

Client Name: AECOM	Address: 2 Technology Dr. Westford MA 01886		
Send Report To: Paul Kilchenstein	Project Name (Location) Amsterdam NY		Samplers: (Names) Eddie Zygarowski - Brendan Moyer
Client Phone No: 603-224-3917	Client Fax No:	PO Number:	Samplers: (Signature) Eddie Zygarowski

AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.		Sample Type Matrix	Comp	Grab	Number of Cont's	VOCs	Total Cr Analysis Required	Hex Cr Analysis Required
001	MW-14	8/11/09	6:15	A P	GW			2	V		
002	MW-15	8/11/09	7:16	A P	GW			2	V		
003	MW-19	8/11/09	5:43	A P	GW			2	V		
004	MW-20	8/11/09	7:11	A P	GW			2	V		
005	MW-10	8/12/09	3:36	A P	GW			4	V	V	V
006	MW-9	8/12/09	2:22	A P	GW			4	V	V	V
007	MW-13	8/12/09	1:22	A P	GW			4	V	V	V
008	MW-16	8/12/09	11:05	A P	GW			4	V	V	V
009	Dup. 2	8/12/09		A P	GW			4	V	V	V
010	MW-17	8/12/09	9:45	A P	GW			4	V	V	V
011	MW-11	8/12/09	10:46	A P	GW			4	V	V	V
012	MW-5	8/12/09	12:34	A P	GW			2	V		
013	MW-1	8/12/09	1:55	A P	GW			4	V	V	V
014	MW-1R	8/12/09	1:05	A P	GW			4	V	V	V

Shipment Arrived Via: FedEx UPS (Client) AES Other:_____

Turnaround Time Request: ☐ 1 Day ☐ 3 Day ☑ Normal ☐ 2 Day ☐ 5 Day

CC Report To / Special Instructions/Remarks:
VOCs - 8260B
Total Cr - 6010B
Hex Cr SM 3500-Cr-D

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Eddie Zygarowski	[signature]	8-12-09 @ 1705
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received for Laboratory by: [signature]	Date/Time 8-12-09 @ 1750

TEMPERATURE Ambient or (Chilled) Notes: 3°C (cold)

PROPERLY PRESERVED (Y) N Notes:

RECEIVED WITHIN HOLDING TIMES (Y) N Notes:

WHITE - Lab Copy YELLOW - Sampler Copy PINK - Generator Copy

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Albany, New York 12207
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CHAIN OF CUSTODY RECORD

AES Work Order # 0908130001

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: AECOM	Address: 2 Technology Dr. Westford MA. 01886	
Send Report To: Paul Kilchenstein	Project Name (Location) Amsterdam NY	Samplers: (Names) Eddie Zygarowski & Brendan Mayer
Client Phone No: 603-224-3917	Client Fax No:	PO Number:
		Samplers: (Signature) Eddie Zygarowski

AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.		Sample Type: Matrix	Comp	Grab	Number of Cont's	VOCs	Total cr Analysis Required	Hex cr Analysis Required
015	MW-2	8/12/09	3:45	A (P)	GW			4	✓	✓	✓
016	Trip Blank			A P				1	✓		
017	Influent	8/12/09	4:10	A (P)	System		✓	4	✓	✓	PHV (E2) — Run PH only for these two samples
018	Effluent	8/12/09	8 Hour	A P		✓		1		✓	
	Effluent	8/12/09	4:18	A P			✓	3	✓		PHV (E2)
				A P							
				A P							
				A P							
				A P							
				A P							
				A P							
				A P							
				A P							
				A P							
				A P							

Shipment Arrived Via: FedEx UPS (Client) AES Other:_____

Turnaround Time Request: ☐ 1 Day ☐ 3 Day ☑ Normal ☐ 2 Day ☐ 5 Day

CC Report To / Special Instructions/Remarks: Effluent ICP Metal 8 Hour Hand Composite.
VOCs - 8260B
Total cr - 6010B
Hex cr - SM 3500-cr-d
if any question call Eddie Zygarowski 978-302-6105

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Eddie Zygarowski	Bob Hamlin	8-12-09@1705
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received for Laboratory by: Bob Hamlin	Date/Time 8-12-09@1750

Temperature	Properly Preserved	Received Within Holding Times
Ambient or (Chilled)	(Y) N	(Y) N
Notes: 3°C Real	Notes:	Notes:

WHITE - Lab Copy YELLOW - Sampler Copy PINK - Generator Copy

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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by credit card are subject to a 3% additional charge.

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314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

July 15, 2009

Jennifer Atkins
AECOM Environment
2 Technology Park Drive
Westford, MA 01886

TEL: (978) 589-3000
FAX: (978) 589-3100

Work Order No: 090616052
PO#: 2075234

RE: Ward Products
ISCO

Dear Jennifer Atkins:

Adirondack Environmental Services, Inc received 2 samples on 6/16/2009 for the analyses presented in the following report.

There were no problems with the analyses and all associated QC met EPA or laboratory specifications, except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Christopher Hess
QA Manager

ELAP#: 10709
AIHA#: 100307

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quanititation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	T - Tentitively Identified Compound-Estimated Conc.
	X - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

CLIENT:	AECOM Environment	**Date:**	*15-Jul-09*
Project:	Ward Products		
Lab Order:	090616052		

This is a re-issued report 7/15/09. The sample ID was changed at the request of the client on the original report.

Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090616052
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: IW-1
Collection Date: 6/16/2009 10:01:00 AM
Lab Sample ID: 090616052-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS E200.7 (**Prep: SW3010A - 6/17/2009**)						Analyst: **KH**
Chromium	0.053	0.005		mg/L	1	6/29/2009 11:38:00 AM
Manganese	< 0.020	0.020		mg/L	1	6/29/2009 11:38:00 AM
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
Bromomethane	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
Vinyl chloride	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
Chloroethane	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
Methylene chloride	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Acetone	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
Carbon disulfide	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,1-Dichloroethene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,1-Dichloroethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
trans-1,2-Dichloroethene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
cis-1,2-Dichloroethene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Chloroform	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,2-Dichloroethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
2-Butanone	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
1,1,1-Trichloroethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Carbon tetrachloride	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Bromodichloromethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,2-Dichloropropane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
cis-1,3-Dichloropropene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Trichloroethene	10000	250	E	µg/L	50	6/26/2009 1:17:00 PM
Dibromochloromethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,1,2-Trichloroethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Benzene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
trans-1,3-Dichloropropene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Bromoform	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
4-Methyl-2-pentanone	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
2-Hexanone	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
Tetrachloroethene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,1,2,2-Tetrachloroethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Toluene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Chlorobenzene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Ethylbenzene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090616052
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: IW-1
Collection Date: 6/16/2009 10:01:00 AM
Lab Sample ID: 090616052-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Styrene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
m,p-Xylene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
o-Xylene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Methyl tert-butyl ether	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Dichlorodifluoromethane	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
Methyl Acetate	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Cyclohexane	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
Trichlorofluoromethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Methyl Cyclohexane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,2-Dibromoethane	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,3-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
Isopropylbenzene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,2-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,4-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
1,2-Dibromo-3-chloropropane	< 500	500		µg/L	50	6/26/2009 1:17:00 PM
1,2,4-Trichlorobenzene	< 250	250		µg/L	50	6/26/2009 1:17:00 PM
PH SM4500 H B						Analyst: **TG**
pH	9.1	1.0	H	pH Units	1	6/16/2009 4:45:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090616052
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: Trip Blank 3
Collection Date: 6/16/2009
Lab Sample ID: 090616052-002
Matrix: TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
Bromomethane	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
Vinyl chloride	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
Chloroethane	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
Methylene chloride	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Acetone	17	10	B	µg/L	1	6/25/2009 4:35:00 PM
Carbon disulfide	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,1-Dichloroethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
trans-1,2-Dichloroethene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
cis-1,2-Dichloroethene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Chloroform	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
2-Butanone	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Carbon tetrachloride	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Bromodichloromethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Trichloroethene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Dibromochloromethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Benzene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Bromoform	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
4-Methyl-2-pentanone	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
2-Hexanone	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Toluene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Chlorobenzene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Ethylbenzene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Styrene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
m,p-Xylene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
o-Xylene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Methyl tert-butyl ether	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Dichlorodifluoromethane	< 10	10		µg/L	1	6/25/2009 4:35:00 PM

Qualifiers:

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B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
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R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090616052
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: Trip Blank 3
Collection Date: 6/16/2009
Lab Sample ID: 090616052-002
Matrix: TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Methyl Acetate	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Cyclohexane	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
Trichlorofluoromethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Methyl Cyclohexane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,2-Dibromoethane	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,3-Dichlorobenzene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
Isopropylbenzene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,2-Dichlorobenzene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,4-Dichlorobenzene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM
1,2-Dibromo-3-chloropropane	< 10	10		µg/L	1	6/25/2009 4:35:00 PM
1,2,4-Trichlorobenzene	< 5.0	5.0		µg/L	1	6/25/2009 4:35:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
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R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

Adirondack Environmental Services, Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by credit card are subject to a 3% additional charge.

Adirondack Environmental Services, Inc
Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

July 15, 2009

Jennifer Atkins
AECOM Environment
2 Technology Park Drive
Westford, MA 01886

TEL: (978) 589-3000
FAX: (978) 589-3100

Work Order No: 090615036
PO#: 2075234

RE: Ward Products
ISCO

Dear Jennifer Atkins:

Adirondack Environmental Services, Inc received 4 samples on 6/15/2009 for the analyses presented in the following report.

There were no problems with the analyses and all associated QC met EPA or laboratory specifications, except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Christopher Hess
QA Manager

ELAP#: 10709
AIHA#: 100307

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quanititation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	T - Tentitively Identified Compound-Estimated Conc.
	X - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

CLIENT:	AECOM Environment	**Date:**	*15-Jul-09*
Project:	Ward Products		
Lab Order:	090615036		

This is a re-issued report 7/15/09. The sample ID's were changed at the request of the client on the original report.

Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090615036
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: IW-4
Collection Date: 6/15/2009 11:40:00 AM
Lab Sample ID: 090615036-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS E200.7 (**Prep: SW3010A - 6/16/2009**)						Analyst: **KH**
Chromium	0.062	0.005		mg/L	1	6/25/2009 2:40:00 PM
Manganese	0.242	0.020		mg/L	1	6/25/2009 2:40:00 PM
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Bromomethane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Vinyl chloride	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Chloroethane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Methylene chloride	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Acetone	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Carbon disulfide	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1-Dichloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
trans-1,2-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
cis-1,2-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Chloroform	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dichloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
2-Butanone	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
1,1,1-Trichloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Carbon tetrachloride	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Bromodichloromethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dichloropropane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
cis-1,3-Dichloropropene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Trichloroethene	5900	250		µg/L	50	6/26/2009 11:00:00 AM
Dibromochloromethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1,2-Trichloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Benzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
trans-1,3-Dichloropropene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Bromoform	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
4-Methyl-2-pentanone	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
2-Hexanone	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Tetrachloroethene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1,2,2-Tetrachloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Toluene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Chlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Ethylbenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
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E - Value above quantitation range

CLIENT:	AECOM Environment	**Client Sample ID:**	IW-4
Work Order:	090615036	**Collection Date:**	6/15/2009 11:40:00 AM
Reference:	Ward Products / ISCO	**Lab Sample ID:**	090615036-001
PO#:	2075234	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Styrene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
m,p-Xylene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
o-Xylene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Methyl tert-butyl ether	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Dichlorodifluoromethane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Methyl Acetate	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Cyclohexane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Trichlorofluoromethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Methyl Cyclohexane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dibromoethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,3-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Isopropylbenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,4-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dibromo-3-chloropropane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
1,2,4-Trichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
PH SM4500 H B						Analyst: **TG**
pH	7.5	1.0	H	pH Units	1	6/15/2009 3:45:00 PM

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Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090615036
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: IW-4
Collection Date: 6/15/2009
Lab Sample ID: 090615036-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS E200.7 (**Prep: SW3010A - 6/16/2009**)						Analyst: **KH**
Chromium	0.062	0.005		mg/L	1	6/25/2009 2:40:00 PM
Manganese	0.242	0.020		mg/L	1	6/25/2009 2:40:00 PM
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Bromomethane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Vinyl chloride	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Chloroethane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Methylene chloride	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Acetone	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Carbon disulfide	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1-Dichloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
trans-1,2-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
cis-1,2-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Chloroform	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dichloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
2-Butanone	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
1,1,1-Trichloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Carbon tetrachloride	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Bromodichloromethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dichloropropane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
cis-1,3-Dichloropropene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Trichloroethene	5900	250		µg/L	50	6/26/2009 11:00:00 AM
Dibromochloromethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1,2-Trichloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Benzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
trans-1,3-Dichloropropene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Bromoform	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
4-Methyl-2-pentanone	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
2-Hexanone	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Tetrachloroethene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1,2,2-Tetrachloroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Toluene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Chlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Ethylbenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM

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Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090615036
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: IW-4
Collection Date: 6/15/2009
Lab Sample ID: 090615036-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Styrene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
m,p-Xylene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
o-Xylene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Methyl tert-butyl ether	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Dichlorodifluoromethane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Methyl Acetate	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Cyclohexane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
Trichlorofluoromethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Methyl Cyclohexane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dibromoethane	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,3-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
Isopropylbenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,4-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
1,2-Dibromo-3-chloropropane	< 500	500		µg/L	50	6/26/2009 11:00:00 AM
1,2,4-Trichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:00:00 AM
PH SM4500 H B						Analyst: **TG**
pH	7.5	1.0	H	pH Units	1	6/15/2009 3:45:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090615036
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: IW-3
Collection Date: 6/15/2009
Lab Sample ID: 090615036-002
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS E200.7						Analyst: **KH**
(Prep: SW3010A - 6/16/2009)						
Chromium	0.005	0.005		mg/L	1	6/25/2009 2:43:00 PM
Manganese	0.065	0.020		mg/L	1	6/25/2009 2:43:00 PM
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
Bromomethane	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
Vinyl chloride	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
Chloroethane	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
Methylene chloride	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Acetone	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
Carbon disulfide	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,1-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,1-Dichloroethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
trans-1,2-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
cis-1,2-Dichloroethene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Chloroform	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,2-Dichloroethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
2-Butanone	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
1,1,1-Trichloroethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Carbon tetrachloride	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Bromodichloromethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,2-Dichloropropane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
cis-1,3-Dichloropropene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Trichloroethene	10000	250	E	µg/L	50	6/26/2009 11:25:00 AM
Dibromochloromethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,1,2-Trichloroethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Benzene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
trans-1,3-Dichloropropene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Bromoform	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
4-Methyl-2-pentanone	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
2-Hexanone	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
Tetrachloroethene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,1,2,2-Tetrachloroethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Toluene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Chlorobenzene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Ethylbenzene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

CLIENT: AECOM Environment
Work Order: 090615036
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: IW-3
Collection Date: 6/15/2009
Lab Sample ID: 090615036-002
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Styrene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
m,p-Xylene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
o-Xylene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Methyl tert-butyl ether	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Dichlorodifluoromethane	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
Methyl Acetate	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Cyclohexane	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
Trichlorofluoromethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Methyl Cyclohexane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,2-Dibromoethane	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,3-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
Isopropylbenzene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,2-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,4-Dichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
1,2-Dibromo-3-chloropropane	< 500	500		µg/L	50	6/26/2009 11:25:00 AM
1,2,4-Trichlorobenzene	< 250	250		µg/L	50	6/26/2009 11:25:00 AM
PH SM4500 H B						Analyst: **TG**
pH	7.5	1.0	H	pH Units	1	6/15/2009 3:45:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090615036
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: IW-2
Collection Date: 6/15/2009
Lab Sample ID: 090615036-003
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS E200.7						Analyst: **KH**
(Prep: SW3010A - 6/16/2009)						
Chromium	< 0.005	0.005		mg/L	1	6/25/2009 2:52:00 PM
Manganese	< 0.020	0.020		mg/L	1	6/25/2009 2:52:00 PM
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
Bromomethane	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
Vinyl chloride	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
Chloroethane	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
Methylene chloride	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Acetone	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
Carbon disulfide	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,1-Dichloroethene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,1-Dichloroethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
trans-1,2-Dichloroethene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
cis-1,2-Dichloroethene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Chloroform	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,2-Dichloroethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
2-Butanone	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
1,1,1-Trichloroethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Carbon tetrachloride	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Bromodichloromethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,2-Dichloropropane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
cis-1,3-Dichloropropene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Trichloroethene	1800	50		µg/L	10	6/26/2009 11:49:00 AM
Dibromochloromethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,1,2-Trichloroethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Benzene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
trans-1,3-Dichloropropene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Bromoform	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
4-Methyl-2-pentanone	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
2-Hexanone	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
Tetrachloroethene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,1,2,2-Tetrachloroethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Toluene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Chlorobenzene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Ethylbenzene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM

Qualifiers:

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J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

CLIENT:	AECOM Environment	**Client Sample ID:**	IW-2
Work Order:	090615036	**Collection Date:**	6/15/2009
Reference:	Ward Products / ISCO	**Lab Sample ID:**	090615036-003
PO#:	2075234	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Styrene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
m,p-Xylene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
o-Xylene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Methyl tert-butyl ether	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Dichlorodifluoromethane	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
Methyl Acetate	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Cyclohexane	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
Trichlorofluoromethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Methyl Cyclohexane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,2-Dibromoethane	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,3-Dichlorobenzene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
Isopropylbenzene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,2-Dichlorobenzene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,4-Dichlorobenzene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
1,2-Dibromo-3-chloropropane	< 100	100		µg/L	10	6/26/2009 11:49:00 AM
1,2,4-Trichlorobenzene	< 50	50		µg/L	10	6/26/2009 11:49:00 AM
PH SM4500 H B						Analyst: **TG**
pH	7.6	1.0	H	pH Units	1	6/15/2009 3:45:00 PM

Qualifiers:

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E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *15-Jul-09*

CLIENT: AECOM Environment
Work Order: 090615036
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: Trip Blank
Collection Date: 6/15/2009
Lab Sample ID: 090615036-004
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Chloromethane	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
Bromomethane	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
Vinyl chloride	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
Chloroethane	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
Methylene chloride	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Acetone	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
Carbon disulfide	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,1-Dichloroethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
trans-1,2-Dichloroethene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
cis-1,2-Dichloroethene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Chloroform	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
2-Butanone	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Carbon tetrachloride	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Bromodichloromethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Trichloroethene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Dibromochloromethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Benzene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Bromoform	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
4-Methyl-2-pentanone	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
2-Hexanone	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Toluene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Chlorobenzene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Ethylbenzene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Styrene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
m,p-Xylene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
o-Xylene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Methyl tert-butyl ether	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Dichlorodifluoromethane	< 10	10		µg/L	1	6/24/2009 1:47:00 PM

Qualifiers:

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X - Value exceeds Maximum Contaminant Level
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R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

CLIENT: AECOM Environment
Work Order: 090615036
Reference: Ward Products / ISCO
PO#: 2075234

Client Sample ID: Trip Blank
Collection Date: 6/15/2009
Lab Sample ID: 090615036-004
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS SW8260B						Analyst: **ML**
Methyl Acetate	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Cyclohexane	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
Trichlorofluoromethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Methyl Cyclohexane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,2-Dibromoethane	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,3-Dichlorobenzene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
Isopropylbenzene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,2-Dichlorobenzene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,4-Dichlorobenzene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM
1,2-Dibromo-3-chloropropane	< 10	10		µg/L	1	6/24/2009 1:47:00 PM
1,2,4-Trichlorobenzene	< 5.0	5.0		µg/L	1	6/24/2009 1:47:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
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Adirondack Environmental Services, Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by credit card are subject to a 3% additional charge.

Adirondack Environmental Services, Inc.®
Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

June 16, 2009

Paul Kilchenstein
AECOM Environment
2 Technology Park Drive
Westford, MA 01886

TEL: (978) 589-3000
FAX: (978) 589-3100

Work Order No: 090615035

RE: Wastewater
POTW

Dear Paul Kilchenstein:

Adirondack Environmental Services, Inc received 2 samples on 6/15/2009 for the analyses presented in the following report.

There were no problems with the analyses and all associated QC met EPA or laboratory specifications, except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Tara Daniels
Laboratory Manager

ELAP#: 10709
AIHA#: 100307

Paul Kilchenstein - FAX

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits,Estimated	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	T - Tentitively Identified Compound-Estimated Conc.
	X - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *16-Jun-09*

CLIENT: AECOM Environment
Project: Wastewater POTW

LabWork Order: 090615035
PO#:

Lab SampleID: 090615035-001
Client Sample ID: POTW 61509

Collection Date: 6/15/2009 1:58:00 PM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
PURGEABLE HALOCARBONS E601						Analyst: **SO**
Trichloroethene	760	20		µg/L	20	6/16/2009 11:11:32 AM
ICP METALS E200.7 (**Prep: SW3010A - 6/15/2009**)						Analyst: **WB**
Chromium	0.035	0.005		mg/L	1	6/16/2009 12:47:00 PM
PH SM4500 H B						Analyst: **TG**
pH	8.5	1.0	H	pH Units	1	6/15/2009 3:45:00 PM

Lab SampleID: 090615035-002
Client Sample ID: Trip Blank

Collection Date: 6/15/2009 1:58:00 PM
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
PURGEABLE HALOCARBONS E601						Analyst: **SO**
Trichloroethene	< 1.0	1.0		µg/L	1	6/16/2009 12:09:54 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits,Estimated
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

Adirondack Environmental Services, Inc.
Experience is the solution

314 North Pearl Street
Albany, New York 12207
518-434-4546/434-0891 FAX

CHAIN OF CUSTODY RECORD

AES Work Order # 090615035

A full service analytical research laboratory offering solutions to environmental concerns

Client Name:	Address:	
Aecom	2 technology park rd Westford, MA	
Send Report To:	**Project Name (Location)**	**Samplers: (Names)**
Paul Kilchenstein	Ward products 61 Edson St Amsterdam NY	Brendan Mayo
Client Phone No:	**Client Fax No:**	**PO Number:**
609-566-0765		

AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type: Matrix	Comp	Grab	Number of Cont's	Analysis Required
001	POTW 61509	6/15/09	13:58 P	AQ		X	1	Ph
	POTW 61509	6/15/09	13:58 P	AQ	X		1	chromium only
	POTW 61509	6/15/09	13:58 P	AQ		X	2	EPA 601
002	Trip Blank 2	6/15/09	1600 P	W		X	1	TCE only
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					

TCL VOA 8260

Shipment Arrived Via:
FedEx UPS (Client) AES Other:_____

Turnaround Time Request:
☒ 1 Day ☐ 3 Day ☐ Normal
☐ 2 Day ☐ 5 Day

CC Report To / Special Instructions/Remarks:

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Brendan Mayo		6/15/09 1630
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received for Laboratory by: J. Mihaler	Date/Time 6/15/09 3:41 PM

Temperature	Properly Preserved	Received Within Holding Times
Ambient or (Chilled)	(Y) N	(Y) N
Notes:	Notes:	Notes:

WHITE - Lab Copy YELLOW - Sampler Copy PINK - Generator Copy

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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by credit card are subject to a 3% additional charge.

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314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

September 11, 2009

Jennifer Atkins
AECOM Environment
2 Technology Park Drive
Westford, MA 01886

TEL: (978) 589-3000
FAX: (978) 589-3100

Work Order No: 090825007
PO#: 2075234
Project# : 113042.300

RE: Ward Products- Amsterdam

Dear Jennifer Atkins:

Adirondack Environmental Services, Inc received 3 samples on 8/25/2009 for the analyses presented in the following report.

There were no problems with the analyses and all associated QC met EPA or laboratory specifications, except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Tara Daniels
Laboratory Manager

ELAP#: 10709
AIHA#: 100307

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quanititation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	T - Tentitively Identified Compound-Estimated Conc.
	X - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *11-Sep-09*

CLIENT:	AECOM Environment	**Client Sample ID:**	Influent-08242009
Work Order:	090825007	**Collection Date:**	8/24/2009 3:00:00 PM
Reference:	Ward Products- Amsterdam /	**Lab Sample ID:**	090825007-001
PO#:	2075234	**Matrix:**	WATER
	Project# : 113042.300		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
PURGEABLE HALOCARBONS E601						Analyst: **SO**
Trichloroethene	5500	200		µg/L	200	8/27/2009 5:44:05 PM
ICP METALS E200.7 (**Prep: SW3010A - 8/26/2009**)						Analyst: **KH**
Chromium	0.052	0.005		mg/L	1	9/10/2009 1:19:00 PM
PH SM4500 H B						Analyst: **LS**
pH	7.2	1.0	H	pH Units	1	8/25/2009 11:40:00 AM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *11-Sep-09*

CLIENT:	AECOM Environment	**Client Sample ID:**	Effluent-08242009
Work Order:	090825007	**Collection Date:**	8/24/2009 2:30:00 PM
Reference:	Ward Products- Amsterdam /	**Lab Sample ID:**	090825007-002
PO#:	2075234	**Matrix:**	WATER
	Project# : 113042.300		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
PURGEABLE HALOCARBONS E601						Analyst: **SO**
Trichloroethene	390	20		µg/L	20	8/27/2009 6:42:11 PM
ICP METALS E200.7 (**Prep: SW3010A - 8/26/2009**)						Analyst: **KH**
Chromium	0.059	0.005		mg/L	1	9/10/2009 1:42:00 PM
PH SM4500 H B						Analyst: **LS**
pH	7.8	1.0	H	pH Units	1	8/25/2009 11:40:00 AM

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quanititation limits
- B - Analyte detected in the associated Method Blank
- X - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- T - Tentitively Identified Compound-Estimated Conc.
- E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *11-Sep-09*

CLIENT:	AECOM Environment	**Client Sample ID:**	Trip Blank
Work Order:	090825007	**Collection Date:**	8/24/2009
Reference:	Ward Products- Amsterdam /	**Lab Sample ID:**	090825007-003
PO#:	2075234	**Matrix:**	WATER
	Project# : 113042.300		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
PURGEABLE HALOCARBONS E601						Analyst: **SO**
Trichloroethene	< 1.0	1.0		µg/L	1	8/27/2009 7:40:13 PM

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quanititation limits
- B - Analyte detected in the associated Method Blank
- X - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- T - Tentitively Identified Compound-Estimated Conc.
- E - Value above quantitation range

090825007

AECOM

40 British American Blvd.
Latham, NY
12110

P 518.951.2200
F 518.951.2300
www.aecom.com

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

REPORT TO		DATA DELIVERABLE INFORMATION	CHECK DELIVERY METHOD
COMPANY AECOM	PHONE 978-589-3457	☐ NEW YORK STATE ASP "B"	☐ SAMPLES DELIVERED IN PERSON
NAME Jennifer Atkins	FAX	☐ NEW YORK STATE ASP "A"	☒ BY COMMON CARRIER
ADDRESS		☐ OTHER	
CITY / STATE / ZIP		FEDERAL EXPRESS AIRBILL NUMBER: 8690 7923 8821	UPS AIRBILL NUMBER

CLIENT / PROJECT NAME: Ward products

CLIENT PROJECT #: 113042-300

REQUESTED ANALYSES: TCE (EPA 601), pH E150.1, Total Chromium EPA 200.7, Total Chromium EPA 200.7 (6hr. comp)

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	TCE (EPA 601)	pH E150.1	Total Chromium EPA 200.7	Total Chromium EPA 200.7 (6hr. comp)	COMMENTS
001 Influent-08242009	8/24/09 / 3:00 PM		X	X					X	X	X		
002 Effluent-08242009	8/24/09 / 2:30 PM	X	X	X					X	X		X	
003 Trip Blank	— / —			X					X				
	/												
	/												
	/												
	/												
	/												
	/												
	/												
	/												
	/												

RELINQUISHED BY	DATE / TIME	ACCEPTED BY	DATE / TIME	ADDITIONAL REMARKS	COOLER TEMP.
Steve Day	8/24/09 / 3:40	[illegible]	8/25/09 / 9:28	3°	
	/		/		
	/		/		

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

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314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

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Appendix E

Norlite Corporation

628 SO. SARATOGA ST.
P.O. BOX 694
COHOES, NY 12047
PHONE (518) 235-0401
FAX (518) 235-0233

ANALYTICAL DATA PACKAGE FOR

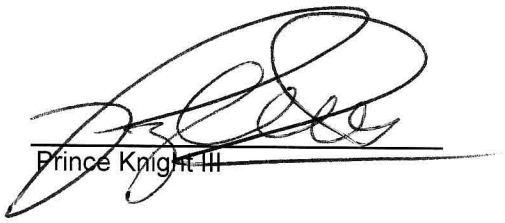
AE COM
ATTN: PAUL KILCHENSTEIN
78 Hooksett Turnpike Rd.
Concord, NH 03301

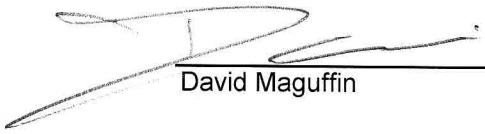
PROJECT: Ward Products, 61 Edson St., Amsterdam, NY
REPORT DATE: June 19, 2009

PROVIDED BY:

NORLITE ANALYTICAL LABORATORY
NORLITE CORPORATION
628 SOUTH SARATOGA STREET
COHOES, NY 12047
518-235-0401
NYS ELAP #: 11526
MA DEP#: M-NY1517

The following individuals have reviewed this data package completely and authorize the release to the intended recipients listed on the title page. Any other use or distribution of the information contained in this data package is at the discretion of the intended recipient.

LABORATORY MANAGER  Prince Knight III DATE: 6/19/09

TECHNICAL DIRECTOR:  David Maguffin DATE: 6/19/09

All samples contained in this data summary package were analyzed following the quality control requirements as set forth in the Norlite Analytical Laboratory Quality Assurance Manual (Rev. #8). All methods employed are to be considered fully NELAP/ELAP certified, where applicable, unless otherwise noted. Any errors, omissions, or failures encountered during the analysis of these samples had corrective actions implemented as per Section 16.0 of the Quality Assurance Manual.

Amended Report

PROJECT CASE NARRATIVE

This data package is comprised of one sample received for analysis on 06/04/09.
The sample was received by the laboratory intact and within holding times.

SAMPLE LIST TABLE

NORLITE ID #	CLIENT ID #	MATRIX	DATE SAMPLED
S060409015	WC-1	SOLID	06/03/09

1. The following analyses were subcontracted to a NYS ELAP certified laboratory:

Analysis	Laboratory ID#
TCLP VOLATILES	#10709

Abbreviation Key: ND = Not Detected
PQL = Practical Quantitation Limit = Detection Limit
ELAP = Environmental Laboratory Approval Program
MCL = Maximum Containment Level

Amended Report

CASE NARRATIVE

All quality assurance parameters were met for the analysis.

Amended Report

NORLITE ANALYTICAL LABORATORY REPORT

LAB/PROFILE NUMBER:	S060409015	**DATE/TIME RECEIVED:**	06/04/09 08:40
GENERATOR NAME:	NEW WATER REALTY CORP.	**DATE/TIME SAMPLED:**	06/03/09 11:37
GENERATOR SAMPLE ID:	WC-1	**MATRIX:**	SOLID
COMMENTS:	SAMPLE RECEIVED AMBIENT AND INTACT		

TOTAL METALS

ICP METALS DIGESTION/ANALYSIS EPA METHOD 3050B/6010B
MERCURY DIGESTION/ANALYSIS EPA METHOD 7471A

ANALYTE	RESULTS	PQL	UNITS	DATE ANALYZED
SULFUR	2,011.81	3.12	mg/Kg	06/09/09
ARSENIC	ND < 0.07	0.07	mg/Kg	06/09/09
BERYLLIUM	0.23	0.01	mg/Kg	06/09/09
CADMIUM	ND < 0.03	0.03	mg/Kg	06/09/09
CHROMIUM	6.23	0.04	mg/Kg	06/09/09
COPPER	5.78	0.03	mg/Kg	06/09/09
LEAD	ND < 0.04	0.04	mg/Kg	06/09/09
BARIUM	80.22	0.06	mg/Kg	06/09/09
MERCURY	ND < 0.07	0.07	mg/Kg	06/09/09
NICKEL	ND < 0.04	0.04	mg/Kg	06/09/09
ANTIMONY	ND < 0.04	0.04	mg/Kg	06/09/09
SELENIUM	ND < 0.04	0.04	mg/Kg	06/09/09
SILVER	ND < 0.04	0.04	mg/Kg	06/09/09
THALLIUM	ND < 0.05	0.05	mg/Kg	06/09/09
ZINC	70.62	0.05	mg/Kg	06/09/09

PCBs

PCB EXTRACTION/ANALYSIS EPA METHOD 8082

ANALYTE	RESULTS	PQL	UNITS	DATE ANALYZED
PCB	ND < 2.0	2.0	mg/Kg	06/09/09

Amended Report

NORLITE ANALYTICAL LABORATORY REPORT

LAB/PROFILE NUMBER:	S060409015	**DATE/TIME RECEIVED:**	06/04/09 08:40
GENERATOR NAME:	NEW WATER REALTY CORP.	**DATE/TIME SAMPLED:**	06/03/09 11:37
GENERATOR SAMPLE ID:	WC-1	**MATRIX:**	SOLID
COMMENTS:	SAMPLE RECEIVED AMBIENT AND INTACT		

TCLP VOLATILES

EPA METHOD SW1311/8260

ANALYTE	RESULTS	PQL	UNITS	DATE ANALYZED
1,1-DICHLOROETHENE	ND < 5	5	µg/L	06/17/09 17:23
1,2-DICHLOROETHANE	ND < 5	5	µg/L	06/17/09 17:23
1,4-DICHLOROBENZENE	ND < 5	5	µg/L	06/17/09 17:23
2-BUTANONE	25	10	µg/L	06/17/09 17:23
BENZENE	ND < 5	5	µg/L	06/17/09 17:23
CARBON TETRACHLORIDE	ND < 5	5	µg/L	06/17/09 17:23
CHLOROBENZENE	ND < 5	5	µg/L	06/17/09 17:23
CHLOROFORM	ND < 5	5	µg/L	06/17/09 17:23
TETRACHLOROETHENE	ND < 5	5	µg/L	06/17/09 17:23
TRICHLOROETHENE	6	5	µg/L	06/17/09 17:23
VINYL CHLORIDE	ND < 10	10	µg/L	06/17/09 17:23

A ROTARY KILN
Norlite
EXPANDED SHALE AGGREGATE

ANALYTICAL LABORATORY CHAIN OF CUSTODY

628 SOUTH SARATOGA STREET
COHOES, NEW YORK 12047
(518) 235-0401/(518) 233-8377 FAX

ACCREDITED IN ACCORDANCE WITH nelac

THE MATRIX SPECIALISTS FOR RAPID, QUALITY, ANALYTICAL DATA

CLIENT:	REPORT TO:			
COMPANY: New Water Realty corp	COMPANY: AE Com - Paul Kilchenstein	LAB PROJECT #	CLIENT PROJECT #	PO#
ADDRESS: 2900 Orchard Place	ADDRESS: 8 78 Hooksett Turnpike Rd			
CITY: Orchard Lake STATE: MI ZIP: 48324	CITY: Concord STATE: NH ZIP: 03301	TURN AROUND TIME (WORKING DAYS)		NORMAL TAT=5 DAYS NOT INCLUDING TCLP
PHONE: FAX:	PHONE: 603-224-3117 FAX:	1 2 3 OTHER		
EMAIL:	EMAIL: Paul.Kilchenstein@AECom.Com	BILLING INFO:		
ATTN:	ATTN: Paul Kilchenstein			

PROJECT NAME (LOCATION)	RECEIVED WITHIN HOLDING TIMES	PROPERLY PRESERVED	TEMPERATURE
Ward Products 61 Edson St Amsterdam NY	NOTES YES NO	NOTES YES NO	NOTES AMBIENT OR CHILLED 21.4°C

NORLITE LAB #	DATE & TIME	SAMPLE ID & LOCATION	SAMPLER'S INIT.	# OF CONTAINERS	MATRIX	COMPOSITE	GRAB	REQUESTED ANALYSIS: WASTE PROFILE	BTUs	HALOGENS *	TOTAL METALS	PCBs	TCLP METALS	VOLATILES	COMMENTS
S060409015	6/3/09 11:37	WC-1	BM	1	soil	X		✓							

RELINQUISHED BY: (DATE/TIME) Brandon Mayo

RELINQUISHED BY: (DATE/TIME)

RECEIVED BY LABORATORY: (DATE/TIME) 6/4/09 0840

RECEIVED BY: (DATE/TIME)

RECEIVED BY: (DATE/TIME)

SPECIAL HANDLING/PRECAUTIONS

SPECIAL INSTRUCTIONS

WHITE-LAB YELLOW-REPORT PINK-CUSTOMER | NYS ELAP ID: 11526 | EPA LAB CODE: NY01517 | MADEP ID: M-NY1517 | *NON NELAP PARAMETER

Appendix F

NONHAZARDOUS WASTE MANIFEST

Please type (or print)

1. Generator's US EPA ID No.: N.Y.D.0.6.6.8.3.3.7.8.1 | Manifest Document No.: | 2. Page 1 of 1

3. Generator's Name and Mailing Address: ~~AECOM Environment~~ ~~78 Hooksett Turnpike Rd.~~ ~~Concord, NH 03301~~ New Water Realty 2900 Orchard Place Orchard Lake, MI 48324

4. Generator's Phone: ~~603~~ 224-3917 (248)682-0568

A. Nonhazardous Waste Manifest Document Number: UIS A 0275746

B. G.S.I. (Gen. Site Address): Former Ward Products Site 61 Edson Street Amsterdam, NY 12010

5. Transporter 1 Company Name: UNITED INDUSTRIAL SERVICES

6. US EPA ID Number: C.T.D.0.2.1.8.1.6.8.8.9

C. S.T.I. (Trans. Lic. Plate #): WY95T98PA

7. Transporter 2 Company Name:

8. US EPA ID Number:

D. Tran. Phone: (203) 238-6745

9. Designated Facility Name and Site Address: BRIDGEPORT UNITED RECYCLING 50 CROSS STREET BRIDGEPORT, CT 06610

10. US EPA ID Number: C.T.D.0.0.2.5.9.3.8.8.7

E. S.T.I. (Trans. Lic. Plate #):

F. Tran. Phone:

G. State Facility's ID (Not Required):

H. Facility's Phone: 203 3341666

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NON DOT / NON RCRA REGULATED MATERIAL NONE, NONE, NONE	26	D.M	1430	G	EPA NONE STATE CR05
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials Listed Above: Drilling Solids-WC-1

K. Handling Codes for Wastes Listed Above

	Interim	Final		Interim	Final
a.			c.		
b.			d.		

15. Special Handling Instructions and Additional Information: 1) PO#1609003N4 - EMERGENCY RESPONSE GUIDE # N/A EMERGENCY PH# (203)238-6745

Point of Departure:

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and all applicable State laws and regulations.

Printed/Typed Name	Signature	Month	Day	Year
X as agent for New Water Realty	X Rebecca Vanderheyden as New Water Realty	06	25	09

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
KEITH A. TILMONT		06	25	09

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

GENERATOR

TRANSPORTER

FACILITY

COPY 1 FACILITY COPY

Appendix G

SP4”

4-Inch Stainless Steel Submersible Pumps

(US) Installation and operating instructions

DRINKING WATER
SYSTEM COMPONENTS
ANSI/NSF 61
65 GM

Please leave these instructions with the pump for future reference.

SAFETY WARNING

WARNING: Reduced risk of electric shock during operation of this pump requires the provision of acceptable grounding. If the means of connection to the supply connected box is other than grounded metal conduit, ground the pump back to the service by connecting a copper conductor (at least the size of the circuit supplying the pump) to the grounding screw provided within the wiring compartment.

NOTICE: This product is designes for pumping water only. Third party agency evalustions are based on pumping water only.

Pre-Installation Checklist

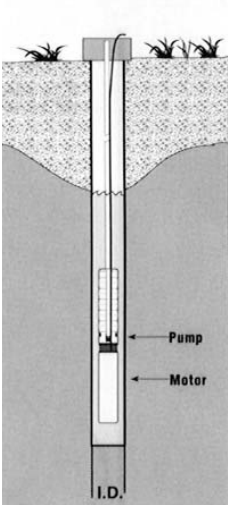
1. Well Preparation

If the pump is to be installed in a new well then the well should be fully developed and bailed or blown free of cuttings and sand. The stainless steel construction of the GRUNDFOS submersibles make it resistant to abrasion; however, no pump made of any material can forever withstand the destructive wear that occurs when constantly pumping sandy water.

If this pump is used to replace an oil-filled submersible or oil-lubricated line-shaft turbine in an existing well, the well must be blown or bailed clear of oil.

2. Make Sure You Have The Right Pump

Determine the maximum depth of the well, and the draw-down level at the pump's maximum capacity. Pump selection and setting depth should be based on this data.



3. Pumped Fluid Requirements

CAUTION: Submersible well pumps are designed for pumping clear, cold water; free of air or gases. Decreased pump performance and life expectancy can occur if the water is not cold, clear or contains air or gasses. Water temperature should not exceed 102°F.

A check should be made to ensure that the installation depth of the pump will always be at least three feet below the maximum drawdown level of the well. The bottom of the motor should never be installed lower than the top of the screen or within five feet of the well bottom.

Ensure that the requirement for minimum flow past the motor is met, as shown in the table below:

Minimum Water Flow Requirements for Submersible Pump Motors

MINIMUM DIAMETER	CASING OR SLEEVE I.D. IN INCHES	MIN. GPM FLOW PASSING THE MOTOR
4-Inch	4	1.2
	5	7
	6	13
	7	21
	8	30

NOTES: For proper motor cooling, a flow inducer or sleeve must be used if the water enters the well above the motor or if there is insufficient water flow past the motor. The minimum water velocity past 4" motors is 0.25 feet per second.

PRE-INSTALLATION CHECKLIST

4. Splicing the Motor Cable

If the splice is carefully made, it will be as efficient as any other portion of the cable, and will be completely watertight. There are a number of cable splicing kits available today – epoxy filled, rubber-sealed and so on. Many perform well if the manufacturer's directions are followed carefully. If one of these kits is not used, we recommend the following method for splicing the motor cable.

Examine the motor cable and drop cable carefully for damage. Cut the motor leads off in a staggered manner. Cut the ends of the drop cable so that the ends match up with the motor leads. Be sure to match the colors. Strip back and trim off one-half inch of insulation from each lead, making sure to scrape the wire bare to obtain a good connection. Be careful not to damage the copper conductor when stripping off the insulation. Insert a properly sized Sta-kon-type connector on each pair of leads, again making sure that colors are matched. Using Sta-kon crimping pliers, indent the lugs. Be sure to squeeze down hard on the pliers, particularly when using large cable. Form a piece of electrical insulation putty tightly around each Sta-Kon. The putty should overlap on the insulation of the wire. Use a good quality tape such as ***#33 Scotch Waterproof*** or ***Plymouth Rubber Company Slipknot Grey***. Wrap each wire and joint tightly for a distance of about 2-1/2 inches on each side of the joint. Make a minimum of four passes over each joint and overlap each pass approximately one inch to assure a completely watertight seal.

INSTALLATION PROCEDURES

1. Attach the Pump to the Motor

When attaching the pump to the motor we recommend the pump be bolted down in a cross pattern around the four bolts. Starting from the back (opposite the cable opening) and using a cross pattern, tighten the motor bolts to 13.5 ft-lbs, using progressive tightening until torque is met. (See figure 1 for example).

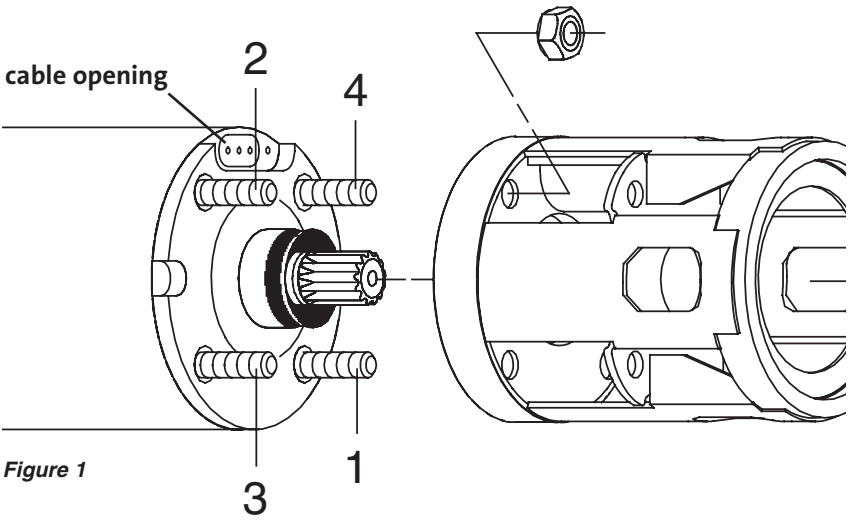


Figure 1

INSTALLATION PROCEDURES

2. Attach the Pump to the Pipe

A back-up wrench should be used when riser pipe is attached to the pump. The pump should only be gripped by the flats on the top of the discharge chamber. Under no circumstances grip the body of the pump, cable guard or motor. When tightened down, the threaded end of the first section of the riser pipe or the nipple must not come in contact with the check valve retainer in the discharge chamber of the pump. After the first section of the riser pipe has been attached to the pump, the lifting cable or elevator should be clamped to the pipe. Do not clamp the pump. When raising the pump and riser section, be careful not to place bending stress on the pump by picking it up by the pump-end only. It is recommended that plastic-type riser pipe be used only with the smaller domestic submersibles. The manufacturer or representative should be contacted to ensure the pipe type and physical characteristics are suitable for this use. Use the correct joint compound recommended by the specific pipe manufacturer. Besides making sure that points are fastened, we recommend the use of a torque arrestor when using plastic pipe.

3. Lower the Pump Into the Well

Make sure the electrical cables are not cut or damaged in any way when the pump is being lowered in the well. Do not use the power cables to support the weight of the pump.

To protect against surface water entering the well and contaminating the water source, the well should be finished off above grade utilizing a locally approved well seal or pitless adaptor unit. We recommend that steel riser pipes always be used with the larger submersibles. A pipe thread compound should be used on all joints. Make sure that the joints are adequately tightened in order to resist the tendency of the motor to loosen the joints when stopping and starting.

The drop cable should be secured to the riser pipe at approximately every 10 ft/3 m to prevent sagging, looping and possible cable damage. Nylon cable clips or waterproof tape may be used. The cable splice should be protected by securing it with clips or tape just above each joint.

Figure 2

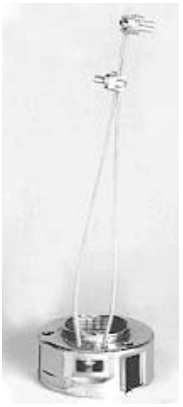


Figure 3

IMPORTANT: *Plastic pipe tends to stretch under load. This stretching must be taken into account when securing the cable to the riser pipe. Leave three to four inches of slack between clips or taped points. This tendency for plastic pipe to stretch will also affect the calculation of the pump setting depth. As a general rule, you can estimate that plastic pipe will stretch to approximately 2% of its length. When plastic riser pipe is used, it is recommended that a safety cable be attached to the pump to lower and raise it. The discharge chamber of GRUNDFOS 4-inch submersibles is designed to accommodate this cable. (See Figures 2 & 3.)*

Check Valves: A check valve should always be installed at the surface of the well and one at a maximum of 25 feet above static water level. In addition, for installations deeper than 200 feet, check valves should be installed at no more than 200 foot intervals.

4. Electrical Connections

WARNING: Reduced risk of electric shock during operation of this pump requires the provision of acceptable grounding. If the means of connection to the supply connected box is other than grounded metal conduit, ground the pump back to the service by connecting a copper conductor (at least the size of the circuit supplying the pump) to the grounding screw provided within the wiring compartment.

Verification of the electrical supply should be made to ensure the voltage, phase and frequency match that of the motor. Motor electrical data can be found on page 6. If voltage variations are larger than ± 10%, do not operate the pump. Single-phase motor control boxes should be connected as shown on the wiring diagram mounted on the inside cover of the control box supplied with the motor. The type of wire used between the pump control boxes should be approved for submersible pump application. The conductor insulation should be type RW, RUW, TW or equivalent.

A high-voltage surge arrestor should be used to protect the motor against lightning and switching surges. Lightning voltage surges in power lines are caused when lightning strikes somewhere in the area. Switching surges are caused by the opening and closing of switches on the main high-voltage distribution power lines.

The correct voltage-rated surge arrestor should be installed on the supply (line) side of the control box or starter (See Figure 4a & 4b). The arrestor must be grounded in accordance with the National Electric Code and local governing regulations.

PUMPS SHOULD NEVER BE STARTED UNLESS THE PUMP IS TOTALLY SUBMERGED. SEVERE DAMAGE MAY BE CAUSED TO THE PUMP AND MOTOR IF THEY ARE RUN DRY.

The control box shall be permanently grounded in accordance with the National Electric Code and local governing codes or regulations. The ground wire should be a bare stranded copper conductor at least the same size as the drop cable wire size. Ground wire should be as short a distance as possible and securely fastened to a true grounding point. True grounding points are considered to be: a grounding rod driven into the water strata; steel well casing submerged into the water lower than the pump setting level; and steel discharge pipes without insulating couplings. If plastic discharge pipe and well casing are used, a properly sized bare copper wire should be connected to a stud on the motor and run to the control panel. Do not ground to a gas supply line. Connect the grounding wire to the ground point first, then to the terminal in the control box.

Single Phase Hookup

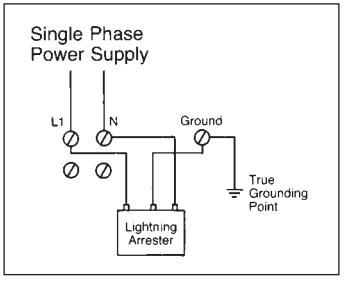


Figure 4a

Three Phase Hookup

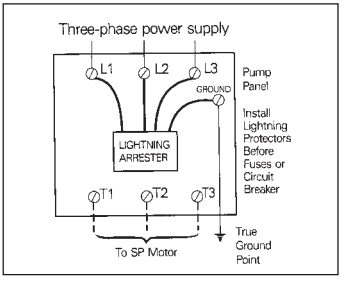
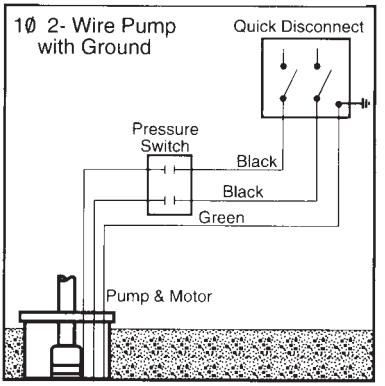


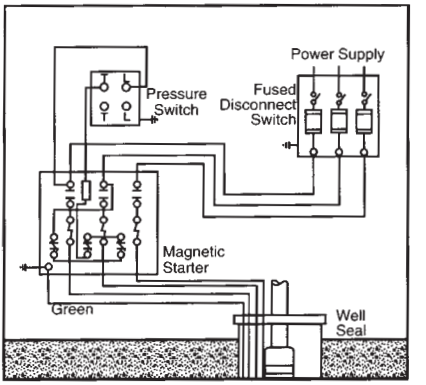
Figure 4b

INSTALLATION PROCEDURES

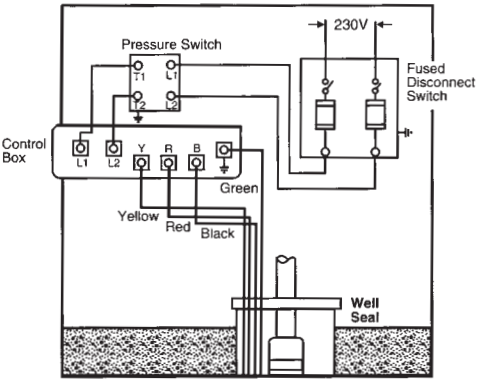
Single-Phase 2-Wire Wiring Diagram for Submersible Motors



Three-Phase Wiring Diagram for Submersible Motors



Single-Phase 3-Wire Control Box for Submersible Motors



4. Starting the Pump for the First Time

A. Attach a temporary horizontal length of pipe to the riser pipe.
B. Install a gate valve and another short length of pipe to the temporary pipe.
C. Adjust the gate valve one-third of the way open.
D. Verify that the electrical connections are in accordance with the wiring diagram.
E. After proper rotation has been checked, start the pump and let it operate until the water runs clear of sand, silt and other impurities.
F. Slowly open the valve in small increments as the water clears until the valve is all the way open. The pump should not be stopped until the water runs clear.
G. If the water is clean and clear when the pump is first started, the valve should still be opened until it is all the way open.

GRUNDFOS MOTORS Submersible Pump Motors -Electrical Data 60Hz

HP	Ph	Volt	S.F.	Circ. Brkr or Fuses Std.	Circ. Brkr or Fuses Delay	Amperage Start	Amperage Max.	Full Load Eff. (%)	Full Load Pwr Fact.	Max. Thrust (lbs)	Line-to-Line Resistance (Ohms) Blk-Yel	Line-to-Line Resistance (Ohms) Red-Yel	KVA Code **	3-Ph. Overload Protection Starter Size	3-Ph. Overload Protection Furnas Amb. Comp
4-Inch, Single Phase, 2-Wire Motors (control box not required)															
MS402B															
1/3	1	230	1.75	15	5	25.7	4.6	59	77	900	6.8-8.2		S	-	-
1/2	1	115	1.60	30	15	55.0	12.0	62	76	900	1.1-1.3		R	-	-
1/2	1	230	1.60	15	7	34.5	6.0	62	76	900	5.2-6.3		R	-	-
3/4	1	230	1.50	20	9	40.5	8.4	62	75	900	3.2-3.8		N	-	-
1	1	230	1.40	25	12	48.4	9.8	63	82	900	2.5-3.1		M	-	-
1-1/2	1	230	1.30	35	15	62.0	13.1	64	85	900	1.9-2.3		L	-	-
4-Inch, Single Phase, 3-Wire Motors															
MS402B															
1/3	1	115	1.75	25	10	29.0	9.0	59	77	900	1.55-1.9	2.4-3	M	-	-
1/3	1	230	1.75	15	5	14.0	4.6	59	77	900	6.8-8.3	17.3-21.1	L	-	-
1/2	1	115	1.60	30	15	42.5	12.0	61	76	900	0.9-1.1	1.9-2.35	L	-	-
1/2	1	230	1.60	15	7	21.5	6.0	62	76	900	4.7-5.7	15.8-19.6	L	-	-
3/4	1	230	1.50	20	9	31.4	8.4	62	75	900	3.2-3.9	14-17.2	L	-	-
1	1	230	1.40	25	12	37.0	9.8	63	82	900	2.6-3.1	10.3-12.5	K	-	-
1-1/2	1	230	1.30	35	15	45.9	11.6	69	89	900	1.9-2.3	7.8-9.6	H	-	-
MS4000															
2	1	230	1.25	30	15	57.0	13.2	72	86	1500	1.5-1.8	3.4-4.1	G	-	-
3	1	230	1.15	45	20	77.0	17.0	74	93	1500	1.2-1.4	2.45-3	F	-	-
5	1	230	1.15	70	30	110	27.5	77	92	1500	0.65-0.85	2.1-2.6	F	-	-
4-Inch, Three Phase, 3-Wire Motors															
MS4000															
1-1/2	3	230	1.30	15	8	40.3	7.3	75	72	750	3.9		K	0	K41
		460	1.30	10	4	20.1	3.7	75	72	750	15.9		K	0	K32
		575	1.30	10	4	16.1	2.9	75	72	750	25.2		K	0	K28
2	3	230	1.25	20	10	48	8.7	76	75	750	3.0		J	0	K50
		460	1.25	10	5	24	4.4	76	75	750	12.1		J	0	K34
		575	1.25	10	4	19.2	3.5	76	75	750	18.8		J	0	K31
3	3	230	1.15	30	15	56	12.2	77	75	1000	2.2		H	0	K54
		460	1.15	15	7	28	6.1	77	75	1000	9.0		H	0	K37
		575	1.15	15	6	22	4.8	77	75	1000	13.0		H	0	K36
5	3	230	1.15	40	25	108	19.8	80	82	1000	1.2		H	1	K61
		460	1.15	20	12	54	9.9	80	82	1000	5.0		H	0	K50
		575	1.15	15	9	54	7.9	80	82	1000	7.3		H	0	K43
7-1/2	3	230	1.15	60	30	130	25.0	81	82	1000	0.84		H	1	K67
		460	1.15	35	15	67	13.2	81	82	1000	3.24		J	1	K56
		575	1.15	30	15	67	10.6	81	82	1000	5.2		J	1	K53
10	3	460	1.15	50	25	90	18.0	81	80	1500	1.16		H	1	K61
		575	1.15	40	20	72	14.4	81	80	1500	1.84		H	1	K58

*All Grundfos 4" motors have a ground (green wire)

GRUNDFOS & Franklin Control Box

RATING HP	RATING VOLT	GRUNDFOS MOTOR MODEL	GRUNDFOS CONTROL BOX	FRANKLIN MOTOR MODEL	FRANKLIN CONTROL BOX
				These models may have additional digits	
1/3	115	MS402B	SA-SPM5	214502	28010249
1/3	230	MS402B	SA-SPM5	214503	28010349
1/2	115	MS402B	SA-SPM5	214504	28010449
1/2	230	MS402B	SA-SPM5	214505	28010549
3/4	230	MS402B	SA-SPM5	214507	28010749
1	230	MS402B	SA-SPM5	214508	28010849
1.5	230	MS402B		224300	2823008
2	230	MS4000		224301	2823018
3	230	MS4000		224302	2823028
5	230	MS4000		224303	2821138
					2821139

*For questions regarding Franklin control boxes - refer to the Franklin Submersible Motors Application Maintenance Manual

MOTOR INFORMATION

The key to long submersible motor life is good cooling. Most submersible pumps rely on moving heat away from the motor by forced convection. The ambient/produced fluid is typically drawn by the motor in the course of pumping to accomplish this task. Submersible motors used in the water supply industry are typically designed to operate at full load in water up to 30°C (86°F), provided the flow velocity can be maintained at a minimum of 0.5 feet per second (fps).

Required Cooling Flow and Velocity

AWWA specifications state the maximum motor diameter and the minimum inside diameter of the well shall be in such relationship that under any operating condition the water velocity past the motor shall not exceed 12 fps (3.7 m/s) nor be less than 0.5 fps (0.15 m/s). The AWWA specification are principally applicable to motors 6-inch and larger, as most 4-inch motor designs are based on a minimum cooling flow velocity of 0.25 fps (0.08 m/s) at rated ambient temperature. Table 8 relates flow, casing and motor size requirements to accomplish minimum cooling velocity.

Table 8: Minimum Submersible Cooling Flow Requirements

Casing/Sleeve I.D. (inches)	4" Motor (0.25 fps)	6" Motor (0.5 fps)
	(gpm)	
4	1.2	–
5	7.0	–
6	13	9
7	20	25
8	30	45
10	50	90
12	80	140
14	110	200
16	150	280
18	–	380

Notes:
1. Minor irregularities associated with motor shape and diameter variations between manufactures are not accounted for in the table.
2. At the velocity specified in the table the temperature differential between the motor surface and ambient water will range from 5° - 15°C (10-30°F).

Some submersible motor manufactures require no cooling fluid flow past the motor, when the produced fluid temperature is 20°C (68°F) or less. Cooling by free convection in such cases, is only permitted in the vertical position and is contingent on no adverse operating conditions present such as; poor power, high stop/start frequency, presence of incrustating deposits on the motor surface, etc. Detramental operating conditions are difficult to identify or predict, and for this reason, the minimum cooling flow should be provided whenever possible - regardless of the ambient fluid temperature.

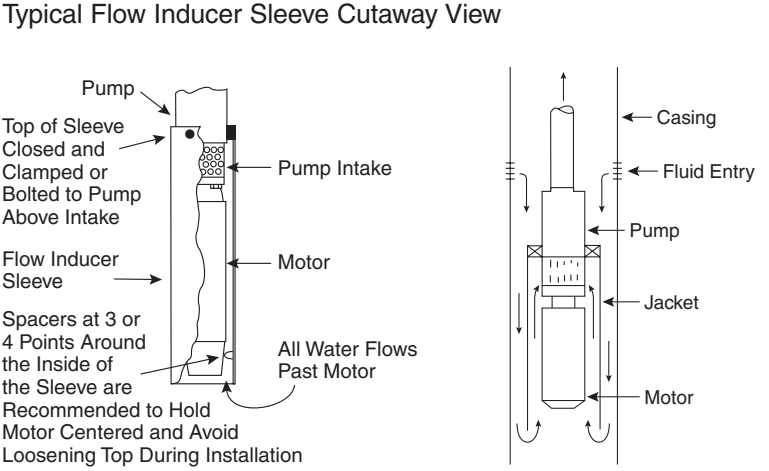
Typical Motor Jacket/Shroud Configurations.

The motor shroud is generally of the next nominal diameter of standard pipe larger than the motor or the pump, depending on the shroud configuration used. The tubular/pipe material can be plastic or thin walled steel (corrosion resistant materials preferred). The cap/top must accommodate power cable without damage and provide a snug fit, so that only a very small amount of fluid can be pulled through the top of the shroud. The fit should not be completely water tight as ventilation is often required to allow escape of the air or gas that might accumulate. The shroud body should be stabilized to prevent rotation and maintain the motor centered within the shroud. The shroud length should extend to a length of 1-2 times the shroud diameter beyond the bottom of the motor when possible. Shrouds are typically attached immediately above the pump intake or at the pump/column correction.

A typical motor sleeve/shroud selection example is sited below and illustrated in Figure 8:

> If a well feeds water from above the pump, has a casing/chamber too small to allow a motor jacket/sleeve on the pump, and does not have adequate level and flow to allow raising the pump above the inflow, it is difficult to properly cool the motor. When possible, the casing depth should be increased to allow flow to come from below the motor. If this is not practical, adequate flow past the motor can usually be attained by employing a motor jacket with a stringer pipe or by using a jet tube.

Figure 8: Typical Motor Jacket Installation Scenarios



MOTOR INFORMATION

Single-Phase 60 Hz

MOTOR RATING		COPPER WIRE SIZE (AWG)								
VOLTS	HP	14	12	10	8	6	4	2	0	00
115	1/3	130	210	340	540	840	1300	1960	2910	
	1/2	100	160	250	390	620	960	1460	2160	
230	1/3	550	880	1390	2190	3400	5250	7960		
	1/2	400	650	1020	1610	2510	3880	5880		
	3/4	300	480	760	1200	1870	2890	4370	6470	
	1	250	400	630	990	1540	2380	3610	5360	6520
	1-1/2	190	310	480	770	1200	1870	2850	4280	5240
	2	150	250	390	620	970	1530	2360	3620	4480
	3	120	190	300	470	750	1190	1850	2890	3610
	5			180	280	450	710	1110	1740	2170

Three-Phase 60 Hz

MOTOR RATIN		COPPER WIRE SIZE (AWG)						
VOLTS	HP	14	12	10	8	6	4	2
208	1-1/2	310	500	790	1260			
	2	240	390	610	970	1520		
	3	180	290	470	740	1160	1810	
		5170	280	4690	1080			1660
230	1-1/2	360	580	920	1450			
	2	280	450	700	1110	1740		
	3	210	340	540	860	1340	2080	
	5		200	320	510	800	1240	1900
460	1-1/2	1700						
	2	1300	2070					
	3	1000	1600	2520				
	5	590	950	1500	2360			
575	1-1/2	2620						
	2	2030						
	3	1580	2530					
	5	920	1480	2330				

FOOTNOTES:

1. If aluminum conductor is used, multiply lengths by 0.5. Maximum allowable length of aluminum is considerably shorter than copper wire of same size.
2. The portion of the total cable which is between the service entrance and a 3Ø motor starter should not exceed 25% of the total maximum length to ensure reliable starter operation. Single-phase control boxes may be connected at any point of the total cable length.
3. Cables #14 to #0000 are AWG sizes, and 250 to 300 are MCM sizes.

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Boulevard TLC No. 15
Parque Industrial Stiva Aeropuerto
Apodaca, N.L. Mexico
C.P. 66600 Apodaca, N.L. Mexico
Telephone: 011-52-81-8144-4000
Fax: 011-52-81-8144-4010

L-SP-TL-048 Rev. 6/04 (US)

ShallowTray® Low Profile Air Stripper Specification Sheet - Polyethylene Systems

hallowTray Serial #: 12717-2321P Customer: AECOM Environment Intended Ship Date: May 28, 2009

gineered By: Dave Cushman Order Date: May 6, 2009 Submittal Approval Required: ____ Yes No ✓

Design Review: Engineering _____ Sales _____

Additional Treatment Equipment:

System Serial #: 12717 **EconoPump Serial #:** N/A

I. Special Components / Requirements / Information / Comments

II. Design Criteria

Design Water Flow Rate: 8 gpm

Maximum Water Flow Rate: 50 gpm, which is considered a ✓ Low Water Flow Design, or ____ a High Water Flow Design, and is based on the blower model selection.

Weir Height: 2 " Inlet, 2 " Outlet

Equipment Power Requirements: 3 Ø, 208 volts, 60 Hz

INSTALL ALL EQUIPMENT PER APPLICABLE NATIONAL AND LOCAL CODES.
CUSTOMER TO PROTECT EXPLOSION-PROOF MOTORS FROM RAIN.

III. Basic System Components

CAUTION: MAXIMUM PRESSURE OR VACUUM ACROSS PLASTIC SYSTEM = 22" WC

✓ Sump Tank, Cover, Rings — Linear low density polyethylene

2 Stripper Trays (quantity) — High density polyethylene

√ Latches — Zinc-plated steel

✓ Main Blower (with inlet screen and damper) — American Fan Model # AF-15-B15247-8

Minimum Required Blower Performance: 300 cfm @ 14 " wc

3 hp, 3 Ø, 208 volts, _____ rpm

60 Hz, ✓ TEFC or ____ EXP

8 "Blower Inlet Size, 8 "Blower Outlet Size

Blower P/N AF-15-B15247-8

Coupling P/N 8" x 8"

Riser P/N Build Riser if needed

✓ Blower on Inlet (Pressure system)

___ Blower on Outlet (Vacuum system)

___ Blowers on In & Out (Combo system)

Main Blower Sized For:
14 "wc required for ShallowTray Air Stripper
0 "wc additional available for airstream equipment

✓ Mist Eliminator Pad — Koch style 4310, 4" thick, 304 ss

✓ Spray Nozzle — Hollow cone, 90° pattern, sized for 15 psi, brass

✓ Sight Tube — Brass fittings, Nalgene tubing

✓ Stripper Tray Gaskets — Medium density neoprene sponge rubber

✓ Inlet Piping Connection — Schedule 80 PVC, Brass

✓ Blower and Vent Line Connections — Flexible PVC couplings

IV. Optional Equipment

___Frame — Solid steel deck, angle runners, painted.

✓ Air Pressure Gauge (0 - 40 "wc) — Dwyer Magnehelic 2000 series SHIP LOOSE

Gravity Discharge Riser — PVC 80 Piping, with vacuum relief valve

Additional Blower (with inlet screen and damper) — _____ Fan Model #_____

Required Performance — _____cfm @ _____" wc Blower P/N_____
_____hp, ____Ø, _ _volts, _____rpm, Hz, ____TEFC or ____EXP
____"Blower Inlet Size, ____"Blower Outlet Size

Feed Pump — _____ Pump Model #_____

Required Performance — _____ gpm @ _____' TDH Feed Pump P/N_____
_____hp, _ Ø, _____volts, _____rpm, Hz, ____TEFC or ____EXP
Port Sizes: _____ inch inlet, _____ inch outlet. Impeller Size _____ inches

✓ Discharge Pump SHIP LOOSE — Goulds Pump Model # 1ST1C5E4

Required Performance — 8 gpm @ 50 ' TDH Discharge Pump P/N 1ST1C5E4
.5 hp, 3 Ø, 200 volts, 3450 rpm, 60 Hz, ✓ TEFC or ____EXP
Port Sizes: 1.25 inch inlet, 1.00 inch outlet. Impeller Size _____ inches

Main Disconnect Switch — Integral with electrical enclosure, rotary style, door/cabinet interlocked

✓ Control Panel SHIP LOOSE — Motor starters, system alarm interlock circuit, operator switches. alarm light.
NEMA 4 Enclosure, _____ Amps, 3 Ø, 200 Volts, 60 Hz, _____ wire plus ground

___Control Panel w/ Pump Controls — Motor starters, system alarm interlock circuit, pump level control circuit, operator switches, alarm light,
NEMA _____ Enclosure, _____ Amps, _____Ø, _____Volts, _____Hz, _____ wire plus ground

PurgePanel ™ — NEMA 7 Main Disconnect switch, NEMA 4 enclosure, air pressure gauge,
Low air pressure switch, Blower (100 cfm @ 2" w.c.)

Autodialer — Manufacturer_____

___Control Circuit Transformer — _____:120vac

Intrinsically-Safe Relay — _____ Pepperl+Fuchs, WE77/Ex2-UL repeater relay Dual Channel, SPDT relay output
_____Warrick 27A1E0 latching relay Single Channel, SPDT relay output

Intermittent Operation — Blower time-delay circuit added to panel design. Blower shuts off 5 minutes after inlet water flow stops.

Auto Operation — # of wells

Well Probes — Warrick, series 3W, Cord Length=_____

___Blower Start/Stop Switch — Local blower switch mounted near blower, NEMA _____

___Power Lapse Indicator — Black-out / Brown-out indicating light, switch, and circuit added to panel design

✓ Individual Alarm Light — Light and relay circuit added to panel design

Strobe Alarm Light — ___Red, ___ Blue, Federal Signal, NEMA 4, UL listed

___Alarm Horn — Federal Signal

✓ Low Air ✓ Press. ___Vacuum Switch — Dwyer 1950-1, preset at 1.6" wc (range=0.3"wc to1.6" wc), Explosion-proof SHIP LOOSE

___High Air ___Press. ___Vacuum Switch — Dwyer 1950, _____"wc to _____"wc, Explosion-proof

___Low Water Level Alarm Float Switch — Mechanical, SJ Electro, (qty)____N.O., (qty)____N.C.

✓ High Water Level Alarm Float Switch — Mechanical, SJ Electro, (qty) 1 N.O., (qty) N.C. INSTALL IN SUMP

✓ Discharge Pump Float Switch — Mechanical, SJ Electro, (qty) 1 N.O., (qty)____N.C. INSTALL IN SUMP

___Water Flow Meter — Manufacturer_____

✓ Air Flow Meter SHIP LOOSE — Dwyer 2000-0 meter, single-point insertion pitot tube, mounting kit, & slide rule

___Water Press. Gauge,___inlet, ___outlet — Dial gauge, liquid-filled

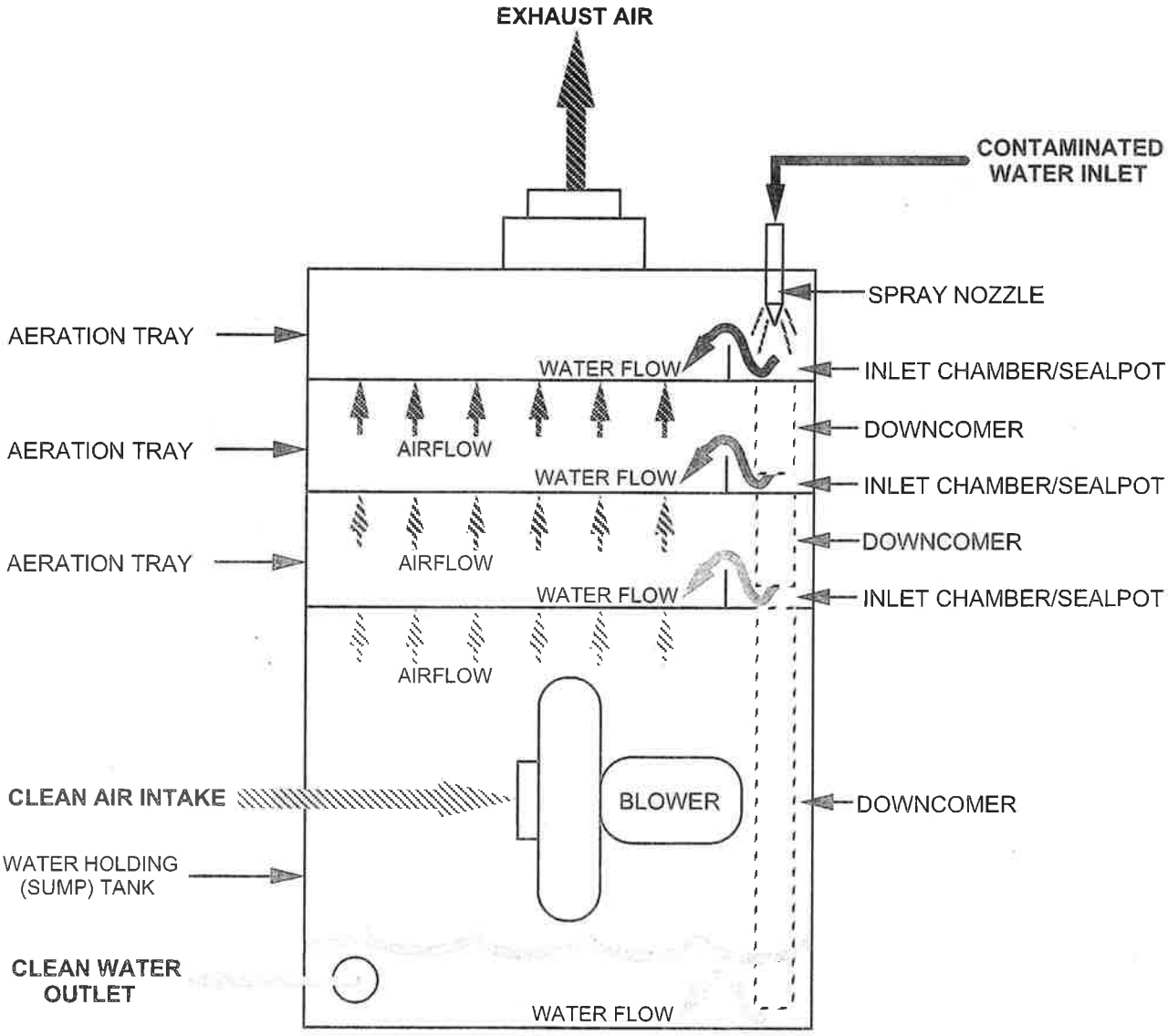
___Water Temp. Gauge,___inlet, ___outlet — Dial gauge

✓ Line Sampling Port, ___inlet, ___outlet — Schedule 80 PVC SHIP LOOSE

___Air Blower Silencer — Manufacturer_____

___Washer Wand — Nozzle, Elbow, 1/4" steel pipe

AERATION PROCESS, COUNTER-CURRENT AIR AND WATER FLOW



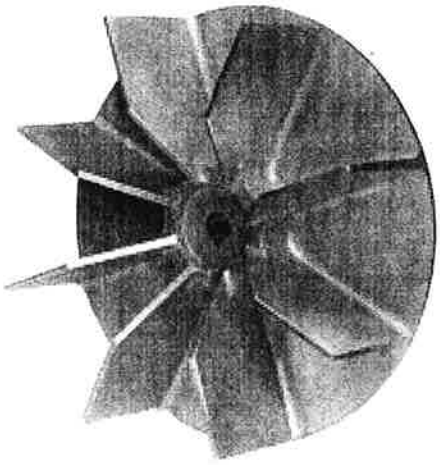
FOR REFERENCE ONLY !

DO NOT ASSEMBLE PER THIS DRAWING. SEE DRAWINGS THAT ARE SPECIFIC TO THIS UNIT.

NORTH EAST ENVIRONMENTAL PRODUCTS, INC.
17 TECHNOLOGY DRIVE
WEST LEBANON, NH 03784
(603) 298-7061

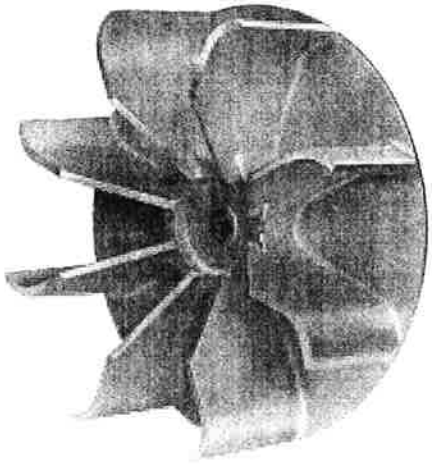
TOLERANCES UNLESS OTHERWISE SPECIFIED ±1 in.	DRAWING NAME: AERATION PROCESS		
	DRAWING #: 900-200-00003		
DRAWN: MS DATE: 1/11/93	CUSTOMER:		
REV: A 3/9/94	SCALE:	SIZE: A	SHEET : OF:

Model: AF-15-B15247-8



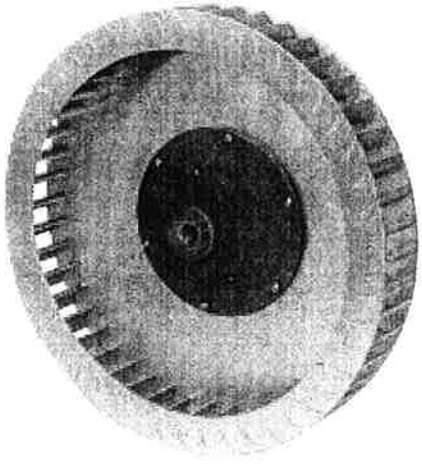
Radial Wheel (Code R)

Cast aluminum radial open design for air and light material applications. Also available in welded steel construction.



Backward Curve Wheel (Code B)

Cast aluminum backward curve blade tip design for clean air applications where lower noise level is a consideration.



Forward Curve Wheel (Code F)

Fabricated aluminum forward curve with cast iron hub design for clean air applications. Has highest performance at a given speed making it ideal for 50 Hz applications where space is a problem.

AF-12-R13446-7

- Fan Size
- Wheel Type
  - ***R*** = Radial
  - ***B*** = Backward Curve
  - ***F*** = Forward Curve
- Wheel Size Code
- Inlet Diameter

All fan/wheel/inlet combinations shown in this catalog have each been thoroughly air and sound performance tested at the American Fan Company Test Laboratory.

Air testing was performed per AMCA 210-85 figure 7, installation type B (free inlet, ducted outlet). Sound testing was performed per AMCA 300-85, installation type B. Fans in this catalog **are not** licensed to bear the AMCA certified ratings seal.

BHP Range	60 Hz RPM	50 Hz RPM
up to 2.00	3450	2875
2.01-5.00	3500	2875
5.01 & higher	3515	2900

Model AF features a rugged, lightweight and rustproof cast aluminum housing making it ideal for demanding industrial applications. Model AF is available in direct or belt drive with a variety of accessories to meet your requirements.

Capacity selections are available up to 4000 CFM and pressure selections up to 20" SP w.g.

- Split housing for maintenance ease
- Even O.D. pipe sizes on inlet and outlet
- Non-sparking cast aluminum housing
- Assortment of wheel sizes to pin-point your performance requirement
- Reliability
- Wheel both statically and dynamically balanced
- Rustproof
- Low initial cost
- Available in arrangements 1,2,4,8 and 9

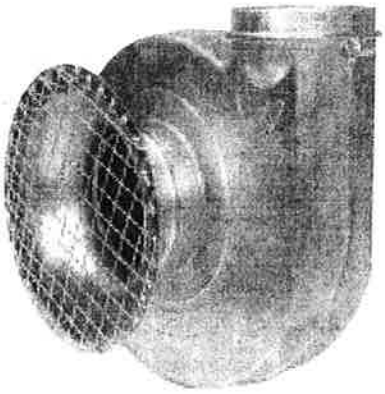
Rubber processing
Food processing
Chemical processing
Fume control
Dust control
Combustion air for incinerators, ovens, furnaces, kilns and dryers
Paper and printing machinery

Cooling electronic equipment, motors, generators and transformers
Textile machinery
Light materials conveying
Woodworking machinery
Forced drying

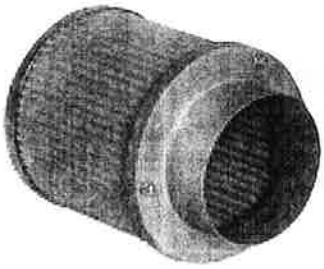
Inlet flange
Outlet flange
Housing drain
Cast Iron housing
Fabricated steel wheel
Shaft seal
Sound attenuator
Inlet filter

Corrosive resistant coatings
Inlet and/or outlet guard
Fabricated stainless wheel and housing
Full or half cut-off
Heat slinger
Drive guard system

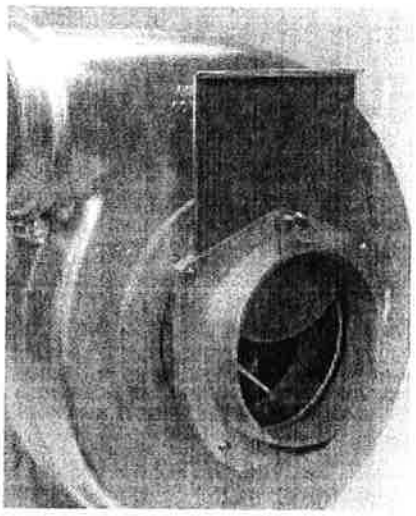
Spun steel venturi provides efficient smooth airflow into fan inlet on non inlet-ducted applications.



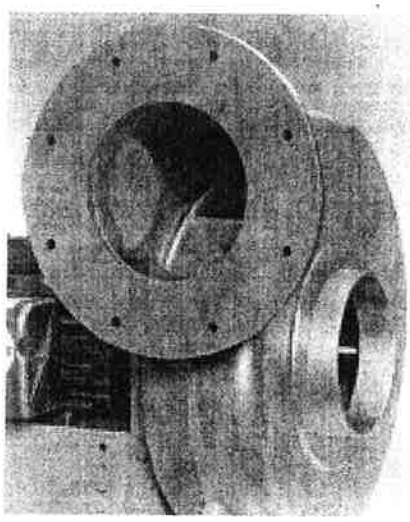
1" square wire cloth is welded to large end of inlet venturi providing OSHA type guarding with minimal airflow restriction.



Oil wetted, crimped steel wire mesh media provides 94% filtration efficiency of particulate of 10 micron or larger. Filters are cleanable and reusable.

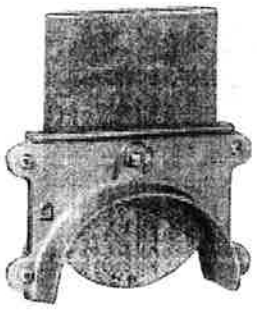


Cast aluminum flange matches ANSI flange bolt patterns. Available with either ANSI mounting hole diameters or 7/16" diameter (standard).



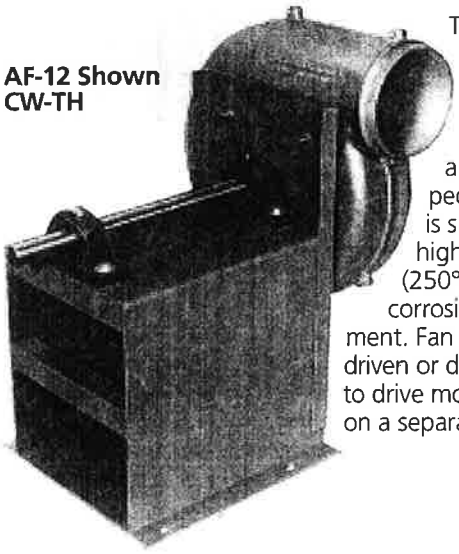
Cast aluminum housing with steel gate allows manual adjustment of CFM. Thumbscrew locks gate in place. Can be mounted on inlet or outlet.

Neoprene isolators with molded-in steel mounting plate and threaded top mounting hole. Provides ¼" static deflection.



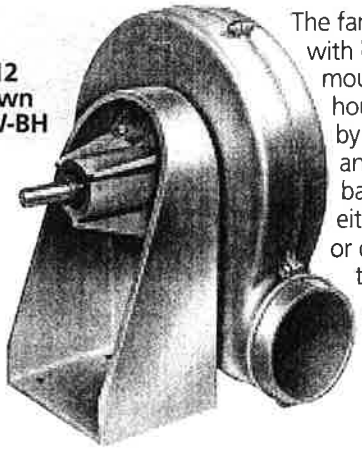
Similar to full cut-offs except half cut-offs are saddle mounted to ductwork on inlet or outlet.

AF-12 Shown CW-TH



The fan wheel is overhung with both bearings mounted on a common pedestal. ARRT. 1 is suitable for high temperature (250°F max.) and/or corrosive environment. Fan can be belt driven or directly coupled to drive motor mounted on a separate base.

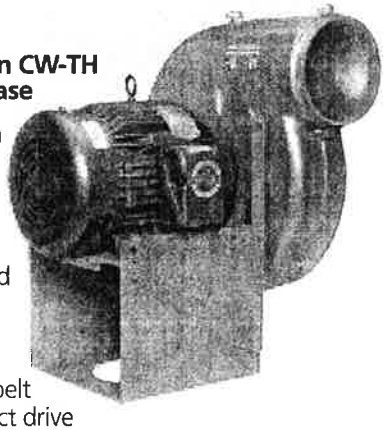
AF-12 Shown CCW-BH



The fan wheel is overhung with both bearings mounted in a cast iron housing supported by the fan housing and a cast aluminum base. Unit can be either belt driven or direct coupled to an independently supported motor.

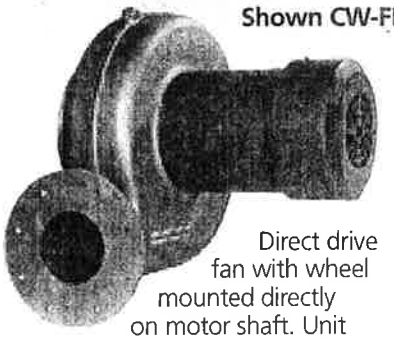
AF-9 Shown CW-TH with cast alum. base

AF-15 Shown CW-TH with steel base



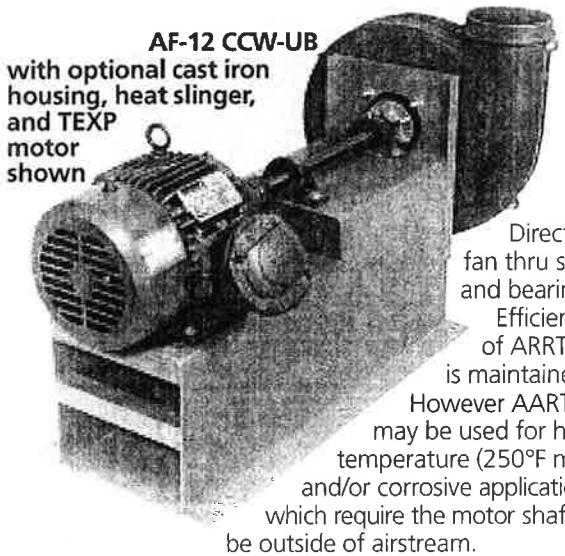
Direct drive fan with wheel mounted directly on motor shaft. Unit is designed for standard temperature applications only. With no belt losses, the direct drive fan operates at a higher efficiency.

FLANGE MOUNT AF-9 Shown CW-FM



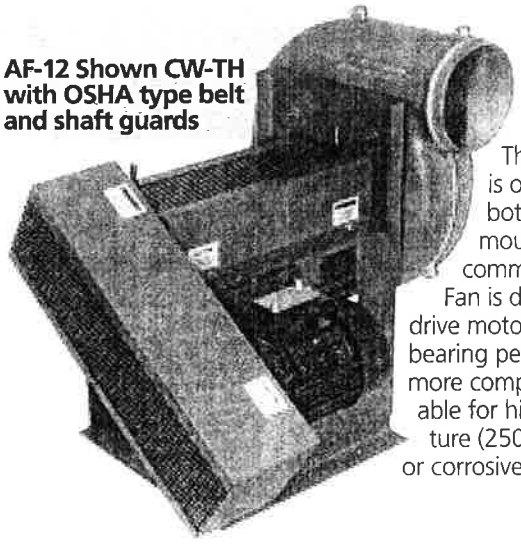
Direct drive fan with wheel mounted directly on motor shaft. Unit is designed to be supported by the outlet flange.

AF-12 CCW-UB with optional cast iron housing, heat slinger, and TEXP motor shown



Direct drive fan thru shaft and bearings. Efficiency of ARRT. 4 is maintained. However AART. 8 may be used for high temperature (250°F max.) and/or corrosive applications which require the motor shaft to be outside of airstream.

AF-12 Shown CW-TH with OSHA type belt and shaft guards

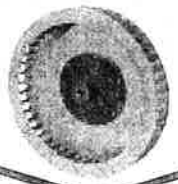


The fan wheel is overhung with both bearings mounted on a common pedestal. Fan is driven with drive motor mounted on bearing pedestal for a more compact unit suitable for high temperature (250°F max.) and/or corrosive environment.

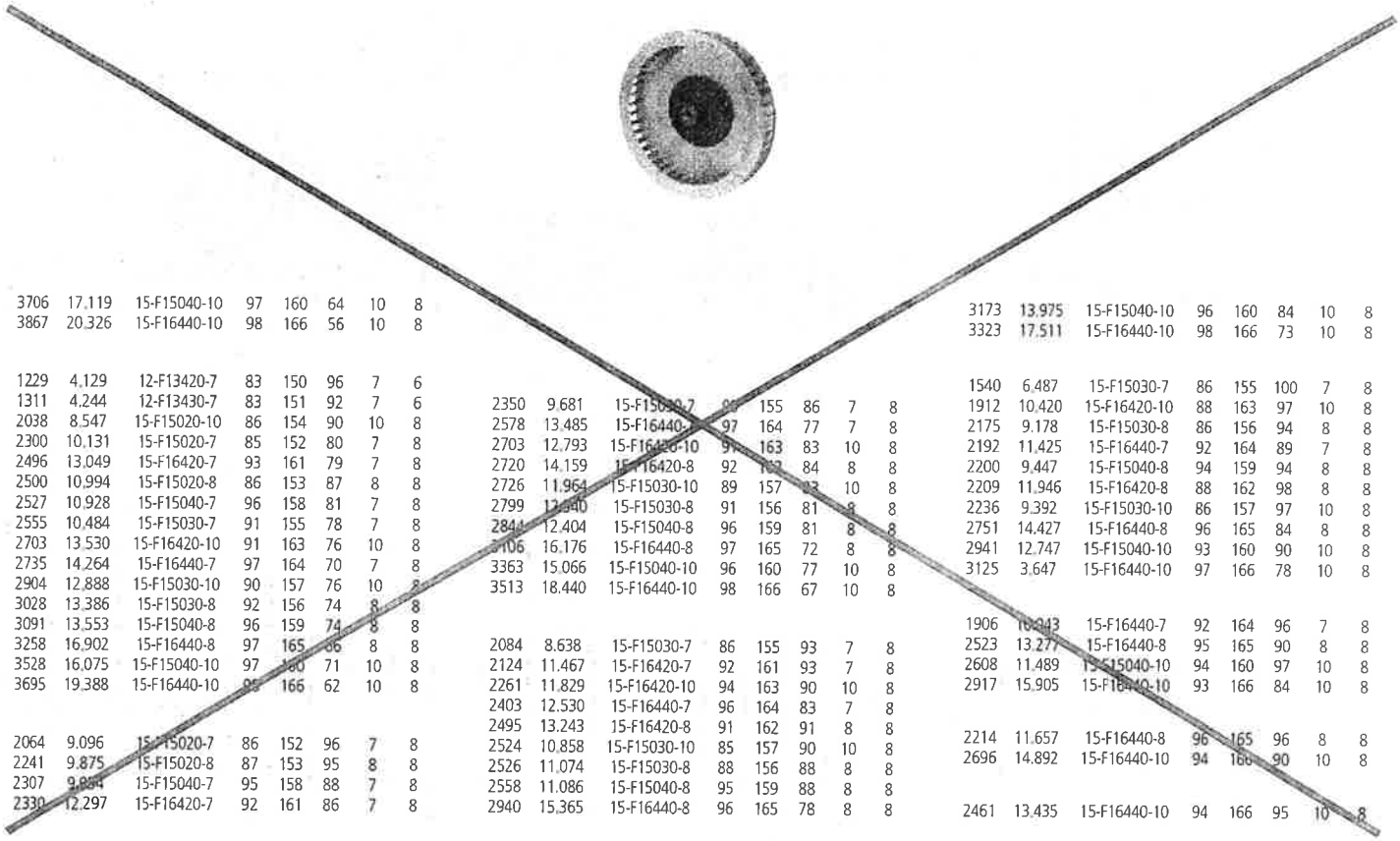
1426	5.464	15-R16422-7	92	38	76	7	8
1487	5.698	15-R16422-10	93	40	78	10	8
1545	5.917	15-R16422-8	96	39	77	8	8
1771	6.603	15-R15550-7	92	35	72	7	8
1779	6.524	15-R15550-8	95	36	75	8	8
1873	6.883	15-R15550-10	96	37	75	10	8
2035	8.445	15-R16550-7	94	41	65	7	8
2173	8.927	15-R16550-8	94	42	66	8	8
2360	9.419	15-R16550-10	96	43	66	10	8
541	1.905	12-R14032-7	92	25	99	7	6
984	3.556	15-R15234-7	93	32	82	7	8
1040	3.777	15-R15234-8	92	33	84	8	8
1089	4.003	15-R15234-10	93	34	89	10	8
1178	4.602	15-R16422-7	92	38	81	7	8
1225	4.842	15-R16422-10	94	40	84	10	8
1233	4.909	15-R16422-8	95	39	83	8	8
1473	5.608	15-R15550-7	91	35	77	7	8
1586	5.859	15-R15550-8	95	36	81	8	8
1678	6.255	15-R15550-10	96	37	81	10	8
1934	8.093	15-R16550-7	93	41	70	7	8
2060	8.503	15-R16550-8	93	42	71	8	8
2229	9.009	15-R16550-10	94	43	71	10	8
676	2.814	15-R15234-8	90	33	90	8	8
687	2.750	15-R15234-7	91	32	87	7	8
731	3.169	15-R15234-10	90	34	96	10	8
817	3.581	15-R16422-7	91	38	87	7	8
836	3.773	15-R16422-8	94	39	89	8	8
885	3.770	15-R16422-10	91	40	90	10	8
1257	5.608	15-R15550-7	91	35	83	7	8
1364	5.136	15-R15550-8	96	36	87	8	8
1457	5.547	15-R15550-10	97	37	86	10	8
1808	7.605	15-R16550-7	93	41	75	7	8
1936	8.050	15-R16550-8	92	42	76	8	8
2074	8.547	15-R16550-10	93	43	76	10	8
319	2.035	15-R15234-8	88	33	96	8	8
421	2.106	15-R15234-7	88	32	93	7	8
462	2.500	15-R16422-7	89	38	93	7	8
523	2.791	15-R16422-8	90	39	95	8	8
526	3.114	15-R16422-10	89	40	96	10	8
1029	4.273	15-R15550-7	90	35	88	7	8
1122	4.352	15-R15550-8	94	36	92	8	8
1187	4.667	15-R15550-10	97	37	92	10	8
1666	7.077	15-R165550-7	93	41	80	7	8
1796	7.549	15-R165550-8	92	42	81	8	8
1909	8.005	15-R165550-10	93	43	81	10	8
148	1.658	15-R15234-7	87	32	99	7	8
154	1.737	15-R16422-7	88	38	99	7	8
807	3.613	15-R15550-10	95	37	98	10	8
1504	6.526	15-R16550-7	91	41	85	7	8
1612	6.957	15-R16550-8	92	42	86	8	8
1719	7.338	15-R16550-10	92	43	86	10	8
1307	5.868	15-R16550-7	96	41	90	7	8
1396	6.232	15-R16550-8	96	42	91	8	8
1497	6.566	15-R16550-10	92	43	91	10	8
1029	4.869	15-R16550-7	100	41	96	7	8
1132	5.266	15-R16550-8	100	42	96	8	8
1219	5.601	15-R16550-10	92	43	96	10	8

184	.174	8-B07025-3	85	72	30	3	4
219	.226	8-B08125-3	86	74	22	3	4
225	.170	8-B07025-4	84	73	33	4	4
289	.285	8-B08125-4	84	75	24	4	4
161	.167	8-B07025-3	85	72	45	3	4
198	.163	8-B07025-4	84	73	49	4	4
202	.221	8-B08125-3	86	74	33	3	4
264	.273	8-B08125-4	84	75	36	4	4
368	.311	9-B08725-4	85	76	28	4	4
383	.319	9-B08725-5	85	77	29	5	4
449	.487	9-B10127-4	86	78	22	4	4
494	.517	9-B10127-5	86	79	23	5	4
571	.836	10-B10127-6	87	80	24	6	5
687	1.151	10-B10727-6	89	81	20	6	5
130	.158	8-B07025-3	84	72	60	3	4
161	.150	8-B07025-4	84	73	65	4	4
187	.216	8-B08125-3	86	74	44	3	4
238	.258	8-B08125-4	84	75	48	4	4
344	.299	9-B08725-4	85	76	37	4	4
358	.305	9-B08725-5	85	77	39	5	4
425	.468	9-B10127-4	86	78	29	4	4
469	.500	9-B10127-5	86	79	31	5	4
542	.809	10-B10127-6	86	80	32	6	5
659	1.116	10-B10727-6	88	81	27	6	5
97	.145	8-B07025-3	85	72	75	3	4
112	.134	8-B07025-4	84	73	81	4	4
163	.207	8-B08125-3	86	74	55	3	4
209	.242	8-B08125-4	84	75	61	4	4
319	.285	9-B08725-4	85	76	46	4	4
333	.290	9-B08725-5	85	77	49	5	4
400	.447	9-B10127-4	86	78	36	4	4
444	.484	9-B10127-5	86	79	39	5	4
514	.799	10-B10127-6	86	80	41	6	5
632	1.092	10-B10727-6	88	81	34	6	5
1085	2.190	12-B13031-7	91	82	24	7	6
36	.114	8-B07025-4	84	73	98	4	4
46	.120	8-B07025-3	85	72	90	3	4
133	.194	8-B08125-3	85	74	66	3	4
171	.220	8-B08125-4	84	75	73	4	4
293	.269	9-B08725-4	85	76	56	4	4
306	.273	9-B08725-5	85	77	59	5	4
373	.425	9-B10127-4	86	78	44	4	4
417	.466	9-B10127-5	86	79	46	5	4
484	.782	10-B10127-6	86	80	49	6	5
605	1.067	10-B10727-6	88	81	41	6	5
1050	2.136	12-B13031-7	91	82	28	7	6
1262	2.962	12-B14132-7	94	83	23	7	6
99	.180	8-B08125-3	85	74	77	3	4
120	.193	8-B08125-4	84	75	85	4	4
266	.251	9-B08725-4	85	76	65	4	4
277	.256	9-B08725-5	85	77	68	5	4
345	.401	9-B10127-4	86	78	51	4	4
382	.440	9-B10127-5	86	79	54	5	4
449	.754	10-B10127-6	86	80	57	6	5
576	1.038	10-B10727-6	87	81	47	6	5
1014	2.081	12-B13031-7	90	82	33	7	6
1231	2.901	12-B14132-7	94	83	27	7	6
42	.160	8-B08125-4	83	75	97	4	4
52	.158	8-B08125-3	85	74	88	3	4
232	.229	9-B08725-4	85	76	74	4	4
238	.233	9-B08725-5	85	77	78	5	4
318	.379	9-B10127-4	86	78	58	4	4
351	.411	9-B10127-5	86	79	62	5	4
402	.698	10-B10127-6	86	80	65	6	5
545	1.004	10-B10727-6	87	81	54	6	5
979	2.027	12-B13031-7	90	82	38	7	6
1201	2.851	12-B14132-7	93	83	31	7	6
164	.189	9-B08725-4	85	76	84	4	4
174	.193	9-B08725-5	85	77	88	5	4
292	.356	9-B10127-4	86	78	65	4	4
326	.380	9-B10127-5	86	79	70	5	4
362	.643	10-B10127-6	83	80	73	6	5
511	.964	10-B10727-6	86	81	61	6	5
945	1.974	12-B13031-7	90	82	42	7	6
1171	2.805	12-B14132-7	93	83	35	7	6
85	.147	9-B08725-5	86	77	98	5	4
89	.150	9-B08725-4	85	76	93	4	4
254	.322	9-B10127-4	86	78	73	4	4
294	.348	9-B10127-5	86	79	77	5	4
326	.596	10-B10127-6	84	80	81	6	5
471	.912	10-B10727-6	84	81	68	6	5
912	1.921	12-B13031-7	89	82	47	7	6
1140	2.756	12-B14132-7	92	83	39	7	6
203	.279	9-B10127-4	86	78	80	4	4
226	.314	9-B10127-5	86	79	85	5	4
271	.530	10-B10127-6	83	80	89	6	5
437	.872	10-B10727-6	84	81	74	6	5

879	1.869	12-B13031-7	89	82	52	7	6
1110	2.706	12-B14132-7	92	83	43	7	6
155	.247	9-B10127-4	86	78	87	4	4
168	.274	9-B10127-4	86	79	93	4	4
172	.435	10-B10127-6	83	80	97	6	5
403	.836	10-B10727-6	84	81	81	6	5
847	1.817	12-B13031-7	88	82	57	7	6
1079	2.653	12-B14132-7	91	83	47	7	6
63	.204	9-B10127-4	86	78	95	4	4
352	.747	10-B10727-6	84	81	88	6	5
817	1.769	12-B13031-7	88	82	61	7	6
1047	2.597	12-B14132-7	91	83	50	7	6
1394	3.023	15-B14132-10	86	86	53	10	8
270	.633	10-B10727-6	84	81	95	6	5
789	1.722	12-B13031-7	88	82	66	7	6
1015	2.539	12-B14132-7	90	83	54	7	6
1308	2.850	15-B14132-7	87	84	51	7	8
1320	2.915	15-B14132-10	86	86	57	10	8
1338	2.900	15-B14132-8	86	85	53	8	8
757	1.670	12-B13031-7	88	82	71	7	6
983	2.479	12-B14132-7	90	83	58	7	6
1247	2.812	15-B14132-10	85	86	61	10	8
1253	2.763	15-B14132-7	87	84	54	7	8
1272	2.790	15-B14132-8	85	85	57	8	8
1831	4.992	15-B15247-10	91	89	52	10	8
720	1.612	12-B13031-7	88	82	76	7	6
950	2.416	12-B14132-7	90	83	62	7	6
1186	2.726	15-B14132-10	87	86	65	10	8
1195	2.671	15-B14132-7	87	84	58	7	8
1204	2.683	15-B14132-8	85	85	61	8	8
1598	4.480	15-B15247-7	90	87	50	7	8
1674	4.795	15-B15247-8	91	88	52	8	8
1761	4.844	15-B15247-10	91	89	55	10	8
673	1.542	12-B13031-7	88	82	80	7	6
919	2.356	12-B14132-7	90	83	66	7	6
1128	2.644	15-B14132-10	87	86	69	10	8
1134	2.574	15-B14132-7	87	84	62	7	8
1138	2.610	15-B14132-8	85	85	64	8	8
1550	4.347	15-B15247-7	89	87	54	7	8
1620	4.632	15-B15247-8	90	88	56	8	8
1699	4.705	15-B15247-10	90	89	58	10	8
617	1.457	12-B13031-7	88	82	85	7	6
886	2.290	12-B14132-7	89	83	70	7	6
1064	2.558	15-B14132-10	87	86	73	10	8
1067	2.466	15-B14132-7	84	84	65	7	8
1069	2.526	15-B14132-8	85	85	68	8	8
1499	4.202	15-B15247-7	89	87	57	7	8
1569	4.453	15-B15247-8	90	88	59	8	8
1634	4.557	15-B15247-10	90	89	62	10	8
536	1.330	12-B13031-7	88	82	90	7	6
850	2.213	12-B14132-7	89	83	73	7	6
994	2.467	15-B14132-10	87	86	77	10	8
995	2.351	15-B14132-7	84	84	69	7	8
995	2.428	15-B14132-8	84	85	72	8	8
1439	4.013	15-B15247-7	89	87	60	7	8
1515	4.269	15-B15247-8	89	88	62	8	8
1566	4.397	15-B15247-10	89	89	65	10	8
2244	7.781	15-B16550-10	94	95	51	10	8
437	1.189	12-B13031-7	88	82	94	7	6
810	2.109	12-B14132-7	89	83	78	7	6
913	2.367	15-B14132-10	87	86	81	10	8
916	2.315	15-B14132-8	84	85	76	8	8
917	2.226	15-B14132-7	84	84	72	7	8
1374	3.810	15-B15247-7	88	87	63	7	8
1457	4.081	15-B15247-8	89	88	65	8	8
1493	4.224	15-B15247-10	89	89	69	10	8
1896	6.861	15-B16550-7	95	93	51	7	8
2094	7.476	15-B16550-8	94	94	52	8	8
2193	7.620	15-B16550-10	93	95	54	10	8
674	2.106	15-B14132-10	86	86	90	10	8
713	1.871	12-B14132-7	89	83	85	7	6
726	1.925	15-B14132-7	84	84	80	7	8
741	2.011	15-B14132-8	84	85	83	8	8
1229	3.398	15-B15247-7	88	87	69	7	8
1320	3.678	15-B15247-8	88	88	72	8	8
1324	3.769	15-B15247-10	88	89	76	10	8
1821	6.603	15-B16550-7	96	93	56	7	8
1992	7.169	15-B16550-8	93	94	57	8	8
2086	7.303	15-B16550-10	93	95	59	10	8
293	1.649	15-B14132-10	86	86	98	10	8
483	1.503	15-B14132-7	84	84	87	7	8
484	1.554	15-B14132-8	84	85	91	8	8
561	1.609	12-B14132-7	89	83	93	7	6
1045	2.969	15-B15247-7	87	87	76	7	8
1112	3.185	15-B15247-8	87	88	79	8	8
1119	3.248	15-B15247-10	87	89	83	10	8
1738	6.303	15-B16550-7	97	93	61	7	8
1890	6.819	15-B16550-8	93	94	62	8	8
1973	6.992	15-B16550-10	92	95	64	10	8
165	1.100	15-B14132-8	84	85	98	8	8
251	1.139	15-B14132-7	84	84	94	7	8
828	2.504	15-B15247-7	87	87	82	7	8
829	2.610	15-B15247-10	87	89	89	10	8
863	2.647	15-B15247-8	87	88	85	8	8
1641	5.934	15-B16550-7	97	93	66	7	8
1779	6.439	15-B16550-8	92	94	68	8	8
1850	6.647	15-B16550-10	91	95	70	10	8
509	2.157	15-B15247-10	87	89	96	10	8
568	1.975	15-B15247-7	87	87	88	7	8
570	2.036	15-B15247-8	87	88	92	8	8
1532	5.543	15-B16550-7	98	93	71	7	8
1655	6.025	15-B16550-8	92	94	73	8	8
1710	6.251	15-B16550-10	91	95	75	10	8
225	1.353	15-B15247-8	87	88	98	8	8
306	1.440	15-B15247-7	87	87	94	7	8
1396	5.114	15-B16550-7	98	93	76	7	8
1490	5.503	15-B16550-8	90	94	78	8	8
1537	5.755	15-B16550-10	90	95	81	10	8
1213	4.608	15-B16550-7	95	93	81	7	8
1296	4.910	15-B16550-8	92	94	83	8	8
1341	5.189	15-B16550-10	90	95	86	10	8
1003	4.026	15-B16550-7	95	93	86	7	8
1071	4.267	15-B16550-8	95	94	88	8	8
1111	4.506	15-B16550-10	89	95	91	10	8
751	3.321	15-B16550-7	93	93	91	7	8
789	3.489	15-B16550-8	97	94	93	8	8
801	3.631	15-B16550-10	89	95	97	10	8
312	2.170	15-B16550-8	88	94	99	8	8
409	2.388	15-B16550-7	94	93	96	7	8



376	.417	8-F07620-3	83	47	20	3	4
592	.884	8-F07620-4	83	48	20	4	4
359	.398	8-F07620-3	83	47	30	3	4
565	.846	8-F07620-4	83	48	30	4	4
339	.397	8-F07620-3	82	47	40	3	4
537	.803	8-F07620-4	82	48	40	4	4
762	1.873	9-F10020-4	88	49	23	4	4
894	2.203	9-F10020-5	86	50	23	5	4
315	.382	8-F07620-3	82	47	50	3	4
503	.746	8-F07620-4	82	48	50	4	4
743	1.809	9-F10020-4	87	49	29	4	4



3706	17.119	15-F15040-10	97	160	64	10	8
3867	20.326	15-F16440-10	98	166	56	10	8
1229	4.129	12-F13420-7	83	150	96	7	6
1311	4.244	12-F13430-7	83	151	92	7	6
2038	8.547	15-F15020-10	86	154	90	10	8
2300	10.131	15-F15020-7	85	152	80	7	8
2496	13.049	15-F16420-7	93	161	79	7	8
2500	10.994	15-F15020-8	86	153	87	8	8
2527	10.928	15-F15040-7	96	158	81	7	8
2555	10.484	15-F15030-7	91	155	78	7	8
2703	13.530	15-F16420-10	91	163	76	10	8
2735	14.264	15-F16440-7	97	164	70	7	8
2904	12.888	15-F15030-10	90	157	76	10	8
3028	13.386	15-F15030-8	92	156	74	8	8
3091	13.553	15-F15040-8	96	159	74	8	8
3258	16.902	15-F16440-8	97	165	86	8	8
3528	16.075	15-F15040-10	97	160	71	10	8
3695	19.388	15-F16440-10	98	166	62	10	8
2064	9.096	15-F15020-7	86	152	96	7	8
2241	9.875	15-F15020-8	87	153	95	8	8
2307	9.884	15-F15040-7	95	158	88	7	8
2330	12.297	15-F16420-7	92	161	86	7	8
2350	9.681	15-F15030-7	89	155	86	7	8
2578	13.485	15-F16440-7	97	164	77	7	8
2703	12.793	15-F16420-10	91	163	83	10	8
2720	14.159	15-F16420-8	92	162	84	8	8
2726	11.964	15-F15030-10	89	157	83	10	8
2799	13.940	15-F15030-8	91	156	81	8	8
2844	12.404	15-F15040-8	96	159	81	8	8
3106	16.176	15-F16440-8	97	165	72	8	8
3363	15.066	15-F15040-10	96	160	77	10	8
3513	18.440	15-F16440-10	98	166	67	10	8
2084	8.638	15-F15030-7	86	155	93	7	8
2124	11.467	15-F16420-7	92	161	93	7	8
2261	11.829	15-F16420-10	94	163	90	10	8
2403	12.530	15-F16440-7	96	164	83	7	8
2495	13.243	15-F16420-8	91	162	91	8	8
2524	10.858	15-F15030-10	85	157	90	10	8
2526	11.074	15-F15030-8	88	156	88	8	8
2558	11.086	15-F15040-8	95	159	88	8	8
2940	15.365	15-F16440-8	96	165	78	8	8
3173	13.975	15-F15040-10	96	160	84	10	8
3323	17.511	15-F16440-10	98	166	73	10	8
1540	6.487	15-F15030-7	86	155	100	7	8
1912	10.420	15-F16420-10	88	163	97	10	8
2175	9.178	15-F15030-8	86	156	94	8	8
2192	11.425	15-F16440-7	92	164	89	7	8
2200	9.447	15-F15040-8	94	159	94	8	8
2209	11.946	15-F16420-8	88	162	98	8	8
2236	9.392	15-F15030-10	86	157	97	10	8
2751	14.427	15-F16440-8	96	165	84	8	8
2941	12.747	15-F15040-10	93	160	90	10	8
3125	3.647	15-F16440-10	97	166	78	10	8
1906	10.043	15-F16440-7	92	164	96	7	8
2523	13.277	15-F16440-8	95	165	90	8	8
2608	11.489	15-F15040-10	94	160	97	10	8
2917	15.905	15-F16440-10	93	166	84	10	8
2214	11.657	15-F16440-8	96	165	96	8	8
2696	14.892	15-F16440-10	94	166	90	10	8
2461	13.435	15-F16440-10	94	166	95	10	8

TYPE A

All parts of the fan in contact with the air or gas being handled shall be made of non-ferrous material.

TYPE B

Fan shall have entirely non-ferrous wheel and a non-ferrous ring about the opening through which the shaft passes.

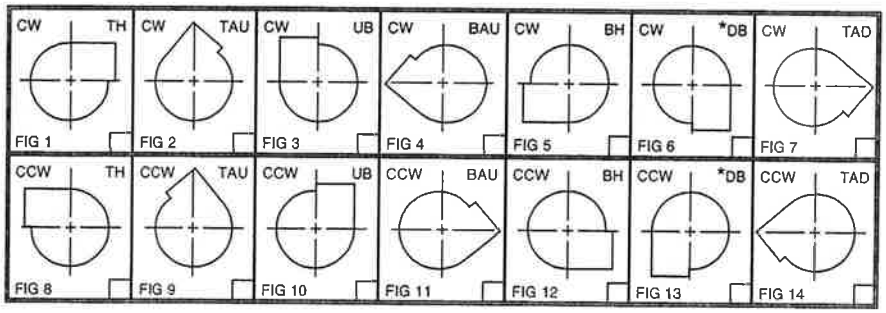
TYPE C

Fan shall be so constructed that a shift of the wheel or shaft will not permit two ferrous parts of the fan to rub or strike.

Model AF meets the requirements of Type A Spark Resistant Construction
(with the exception of the shaft) since they have aluminum wheels and housings.

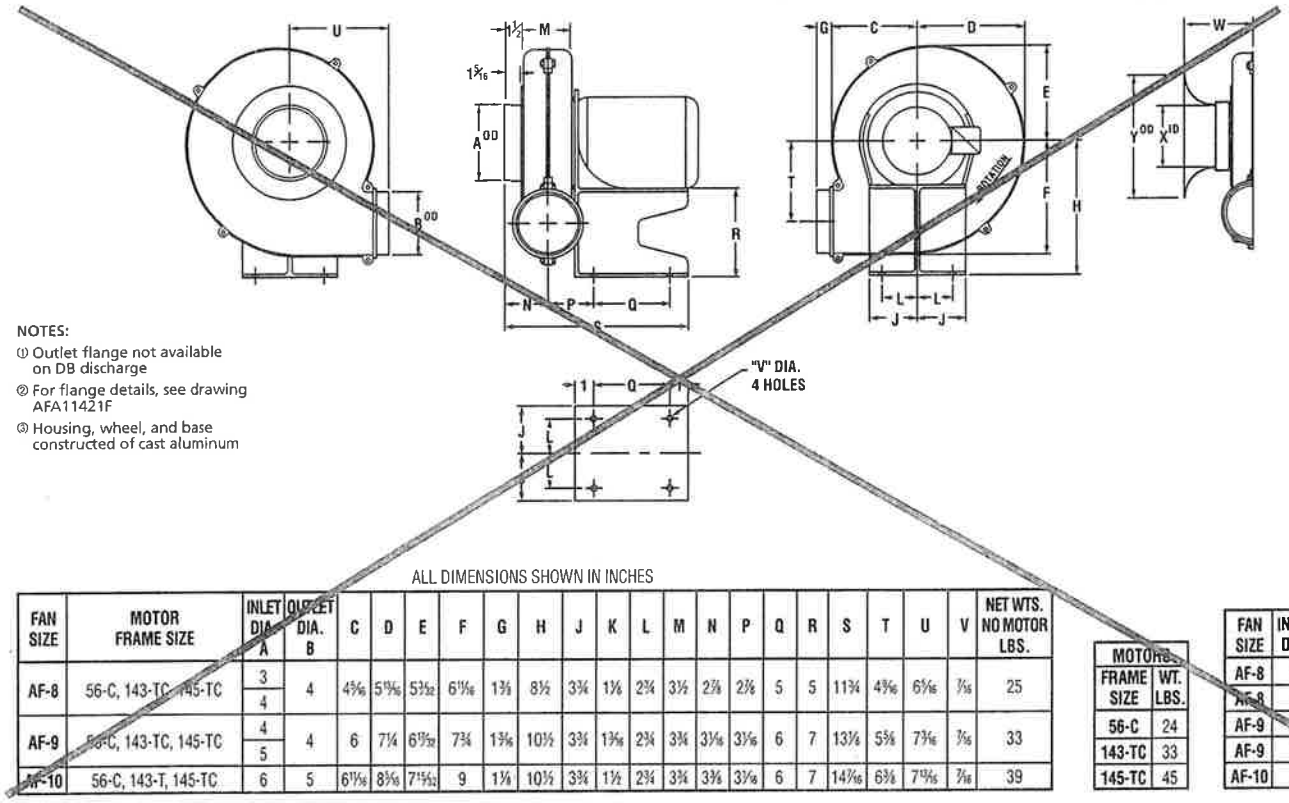
All AF arrangements with cast aluminum radial or backward curve wheels can be operated with airstream temperatures up to 200°F. Blowers with aluminum forward curve wheels can be operated with airstream temperatures up to 150°F. Higher temperature construction up to 700°F is available with welded steel construction (radial wheels only) and welded steel housings in arrangements 1, 8, and 9.

Volume — cubic meters/sec. x 2119 = cubic feet/min. (CFM)
Pressure — Pascals (N/m²) x 0.004 = inches water
Power — kilowatts (Kw) x 1.341 = horsepower
Length — centimeters (cm) x 0.3937 = inches
Temperature — (°C x 1.8) + 32 = °F



NOTE:
Rotation is viewed from driven side.

NOTE:
Downblast discharge not available with outlet flange.



NOTES:

① Outlet flange not available on DB discharge

② For flange details, see drawing AFA11421F

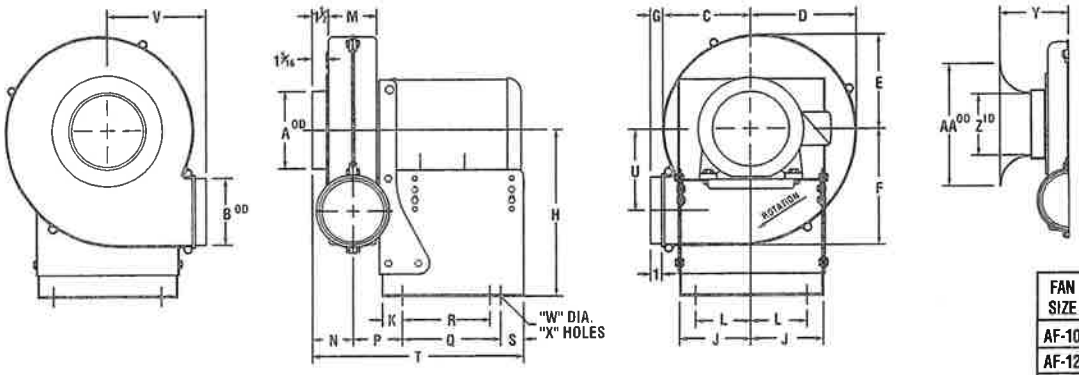
③ Housing, wheel, and base constructed of cast aluminum

ALL DIMENSIONS SHOWN IN INCHES

FAN SIZE	MOTOR FRAME SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	NET WTS. NO MOTOR LBS.
AF-8	56-C, 143-TC, 145-TC	3	4	4 5/16	5 13/16	5 21/32	6 11/16	1 3/8	8 1/2	3 3/4	1 1/8	2 3/4	3 1/2	2 3/8	2 3/8	5	5	11 3/4	4 3/16	6 5/16	7/16	25
		4																				
AF-9	56-C, 143-TC, 145-TC	4	4	6	7 1/4	6 13/32	7 3/4	1 3/8	10 1/2	3 3/4	1 3/16	2 3/4	3 3/4	3 1/16	3 1/16	6	7	13 1/4	5 5/8	7 3/16	7/16	33
		5																				
AF-10	56-C, 143-T, 145-TC	6	5	6 11/16	8 3/16	7 15/32	9	1 3/8	10 1/2	3 3/4	1 1/2	2 3/4	3 3/4	3 3/8	3 7/8	6	7	14 7/16	6 3/8	7 13/16	7/8	39

MOTORS	
FRAME SIZE	WT. LBS.
56-C	24
143-TC	33
145-TC	45

FAN SIZE	INLET DIA.	INLET BELL		
		W	X	Y
AF-8	3	4 1/4	2 5/8	5 1/8
AF-8	4	4 3/4	3 1/8	7 1/4
AF-9	4	4 15/16		
AF-9	5	5 3/16	4 5/8	9 1/4
AF-10	6	6 5/16	5 1/2	11



NOTES:

① AF-15 with 182T/184-T frame motor is not available in DB discharge

② AF-15, Add 7/8" to dimensions "P" & "T" for DB discharge (213T, 215T, 254T, 284TS, 286TS only)

③ AF-15 not available with 56 or 56C frame motors

④ For flange details, see drawing AFA11421F

⑤ Motor base is field adjustable to accept motor frames as shown

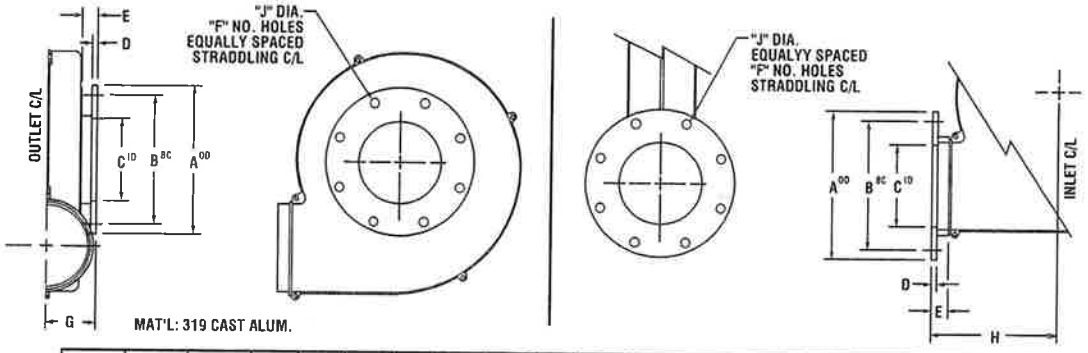
⑥ All sizes "DB" discharge only available less outlet flange

FAN SIZE	INLET DIA.	INLET BELL		
		Y	Z	AA
AF-10	6	6 3/16	5 1/2	11
AF-12	7	6 15/16	6 1/2	13
AF-15	7	7 3/4		
AF-15	8	8 1/4	7 1/2	15
AF-15	10	9 1/4	9 1/2	19

ALL DIMENSIONS SHOWN IN INCHES

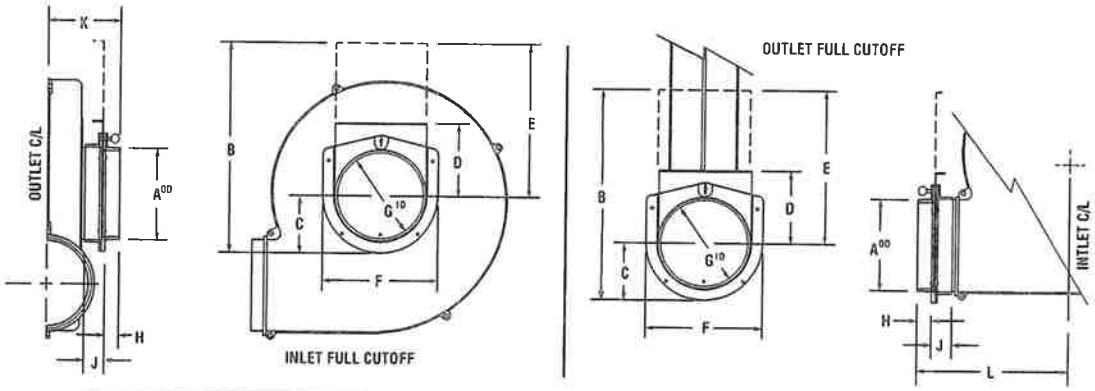
FAN SIZE	MOTOR FRAME SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	NET WTS. NO MOTOR LBS.
AF-10	56, 143T, 145T, 56C, 143TC, 145TC, 182T	6	5	6 11/16	8 3/16	7 15/32	9	1 1/8	11 1/2	5	1 1/16	4	3 3/4	3 3/8	3 1/8	8	7	13/16	15 5/16	6 3/8	7 13/16	1/2	6	39
AF-12	56, 143T, 145T, 56C, 143TC, 145TC, 182T, 184T	7	6	7 3/4	9 1/4	8 1/2	10 7/16	1 1/8	11 1/2	5	1 1/16	4	4 1/4	3 5/8	3 3/8	8	7	13/16	15 13/16	7 5/16	8 7/8	1/2	6	46
AF-12	213T, 215T	7	6	7 3/4	9 1/4	8 1/2	10 7/16	1 1/8	11 1/2	6 5/16	1 1/16	4 3/8	4 1/4	3 5/8	4 1/16	8 3/8	–	2 1/16	18 5/8	7 5/16	8 7/8	9/16	4	46
AF-15	143T, 145T, 182T, 184T, 213T, 215T	7	8	9 3/8	11	10	12	1 5/16	15	6 5/16	1 3/4	4 7/8	5 7/8	4 7/16	② 5 1/8	8 3/8	–	2 1/16	② 20 1/2	7 7/8	10 15/16	9/16	4	79
		8																						
		10																						
AF-15	254T, 256T, 284TS, 286TS	7	8	9 3/8	11	10	12	1 5/16	15	7	1 3/4	4 7/8	5 7/8	4 7/16	② 5 1/8	16 1/4	–	2	② 27 13/16	7 7/8	10 15/16	11/16	4	121
		8																						
		10																						

MOTORS	
FRAME SIZE	WT. LBS.
56C	24
143T	32
145T	40
182T	58
184T	70
213T	100
215T	130
254T	240
256T	300
284TS	403
286TS	420



FAN SIZE	INLET	OUTLET	A	B	C	D	E	F	G	H	MATCHES 125/150 lb. ANSI FLANGE BOLT PATTERN		MATCHES 125/150 lb. ANSI FLANGE BOLT PATTERN EXCEPT HOLE DIA. = 7/16 (AFC STANDARD)	
											J	PART NUMBER	J	PART NUMBER
AF-8	3	X	7½	6	2⅜	¼	1¼	4	3⅛	—	¾	24149F	7/16	24149F-7/16
	4	4	9	7½	3⅜	¼	1¼	8	3⅛	6⅜	¾	24101F	7/16	24101F-7/16
AF-9	4	4	9	7½	3⅜	¼	1¼	8	3⅝	7⅜	¾	24101F	7/16	24101F-7/16
	5	X	10	8½	4⅜	¼	1¼	8	3⅝	—	¾	24103F	7/16	24103F-7/16
AF-10	X	5	10	8½	4⅜	¼	1¼	8	—	8⅛	¾	24103F	7/16	24103F-7/16
	6	X	11	9½	5½	5/16	1¼	8	3⅝	—	⅞	24106F	7/16	24106F-7/16
AF-12	X	6	11	9½	5½	5/16	1¼	8	—	9⅜	⅞	24106F	7/16	24106F-7/16
	7*	X	11	9½	6¼	5/16	1¼	8	3 15/16	—	⅞	24129F	7/16	24129F-7/16
AF-15	7*	X	11	9½	6¼	5/16	1¼	8	4¾	—	⅞	24129F	7/16	24129F-7/16
	8	8	13½	11¾	7½	½	1½	8	4 5/16	11 7/16	⅞	24044F	7/16	24044F-7/16
	10	X	16	14¼	9 11/16	½	1½	12	4 5/16	—	1	24130F	7/16	24130F-7/16

*O.D. and B.C. match 6" ANSI flange



INLET	OUTLET	SIZE	PART NO.	A	B	C	D	E	F	G	H	J	K	L
AF-8	—	3"	63649	2 5/16	7⅛	2⅜	3	5⅜	4	2½	1¼	1 7/16	5½	8⅛
AF-8	AF-8	4"	63650	3 5/16	9⅞	2¾	3¾	7⅛	5	3½	1¼	1 7/16	5½	8⅛
AF-9	AF-9												5⅝	8 5/16
AF-9	AF-10	5"	63651	4 5/16	12⅝	3⅝	4⅞	9	6¾	4½	1¼	1 7/16	5⅝	9⅜
AF-10	AF-12	6"	63652	5 5/16	13⅝	3¾	4¾	9⅞	7½	5½	1¼	1 7/16	5⅝	10⅝
AF-12	—	7"	63653	6 5/16	15⅝	4¼	5¼	11⅛	8½	6½	1¼	1 7/16	5⅞	10⅝
AF-15													6 1/16	12 1/16
AF-15	AF-15	8"	63654	7 5/16	18⅜	5	6⅝	13⅜	10	7½	1¼	1 7/16	6 1/16	12 1/16
AF-15	—	10"	63655	9 5/16	22⅝	6	7⅝	16⅝	12	9½	1¾	1 5/16	6 1/16	12 1/16

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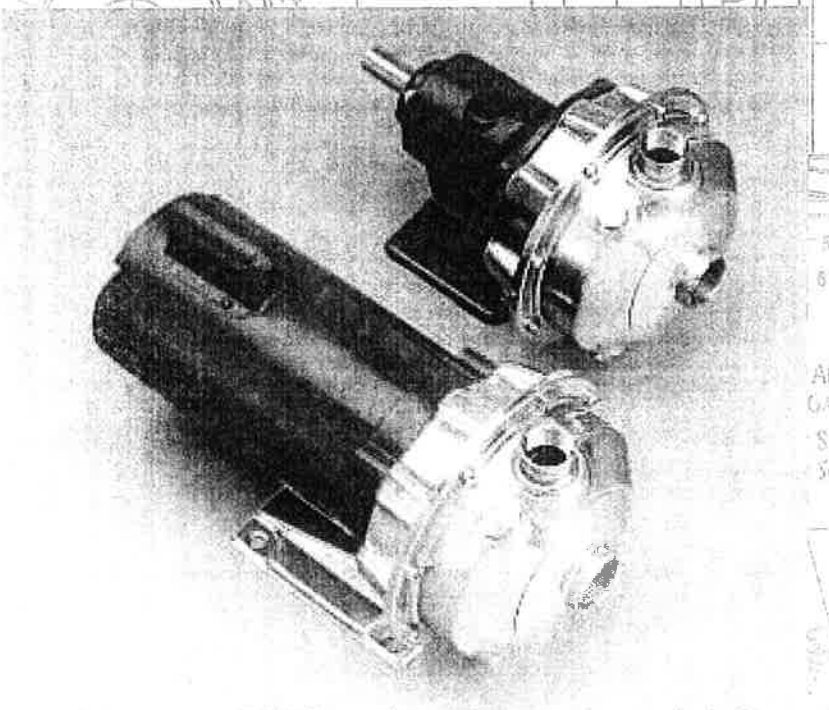
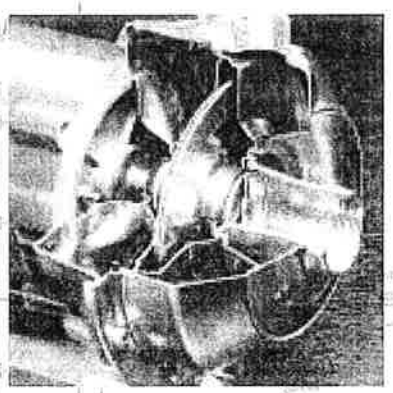
G&L Pumps



NPE
316L SS

NPE Series End Suction Centrifugal Pumps

Bombas Centrífugas de Succión Final Serie NPE



Goulds Pumps

ITT Industries

A Full Range of Product Features
Una Gama Total de Características del Producto

Superior Materials of Construction: Complete AISI 316L stainless steel liquid handling components and mounting bracket for corrosion resistance, quality appearance, and improved strength and ductility.

High Efficiency Impeller: Enclosed impeller with unique floating seal ring design maintains maximum efficiencies over the life of the pump without adjustment.

Casing and Adapter Features: Stainless steel construction with NPT threaded, centerline connections, easily accessible vent, prime and drain connections with stainless steel plugs. Optional seal face vent/flush available.

Mechanical Seal: Standard John Crane Type 21 with carbon versus silicon-carbide faces, Viton elastomers, and 316 stainless metal parts. Optional high temperature and chemical duty seals available.

Motors: NEMA standard open drip-proof, totally enclosed fan cooled or explosion proof enclosures. Rugged ball bearing design for continuous duty under all operating conditions.

Materiales Superiores de Construcción: *Componentes completos para manejo de líquidos en acero inoxidable AISI 316L y consola para el montaje para resistencia a la corrosión, apariencia de calidad, y fuerza y ductilidad mejoradas.*

Impulsor de Eficiencia Superior: *El impulsor encerrado con un diseño único de anillo del sello flotante, mantiene sin ajustes, la eficiencia máxima sobre la vida de la bomba.*

Características de la Carcasa y del Adaptador: *Construcción en acero inoxidable con NPT roscado, conexiones centrales, válvulas de fácil acceso, conexiones de cebado y drenaje con enchufes de acero inoxidable. Cara del sello válvula/chorro opcional disponible.*

Sello Mecánico: *Estándar John Crane Tipo 21 con carbón en contraste con caras de silicón-carbide, elastómeros de Viton, y partes metálicas de acero inoxidable 316. Sellos de alta temperatura y productos químicos están disponibles.*

Motores: *Estándar NEMA a prueba de goteo, ventilador totalmente encerrado o recintos a prueba de explosión. Diseño robusto de balineras de bolas para trabajo continuo en todas las condiciones de funcionamiento.*

Model: 1ST1C5E4

The various versions of the NPE are identified by a product code number on the pump label. This number is also the catalog number for the pump. The meaning of each digit in the product code number is shown at left.

Las diferentes versiones de la NPE se identifican con un número de código del producto en la etiqueta de la bomba. Este número es también el número del catálogo para la bomba. El significado de cada dígito en el número de código del producto se muestra a la izquierda.

NPE Product Line Numbering System
Línea de Producto NPE Sistema de Numeración

Example Product Code,
Ejemplo Código del Producto

1 ST 2 C 1 A 4 F

Seal Vent/Flush Option,
Opción de Sello Válvula/ChorroSeal Ven

Mechanical Seal and O-ring
4 = Pre-engineered standard
For optional mechanical seal modify catalog order no. with seal code listed below.

Sello Mecánico y Anillo 'O'
4 = Estándar aprobado
Para sello mecánico opcional modificar el número de orden del catálogo con el código del sello anotado abajo.

John Crane Type 21 Mechanical Seal (⅝" seal), *Sello Mecánico John Crane Tipo 21 (sello de ⅝")*

Seal Code, *Código del Sello*	Rotary, *Rotativo*	Stationary, *Estacionario*	Elastomers, *Elastómeros*	Metal Parts, *Partes Metálicas*	Part No., *Pieza Número*
[illegible]			[illegible]		[illegible]
4	Carbon	Silicon Carbide	Viton	316 SS	10K55
[illegible]	[illegible]		[illegible]		[illegible]
6	Carbon		Viton		10K62

Impeller Option . . . No Adder Required
For optional impeller diameters modify catalog order no. with impeller code listed. Select optional impeller diameter from pump performance curve.

Código del Impulsor Opcional
Para impulsores con diámetros opcionales modificar el número de orden del catálogo con el código del impulsor anotado. Escoger el impul con diámetro opcional de la curva de funcionamiento de la bomba.

Impeller Code, *Código del Impulsor*	Pump Size, *Tamaño de la Bomba*		
	1 x 1¼ – 6	1¼ x 1½ – 6	1½ x 2 – 6
	Diameter	Diameter	Diameter
K	–	6⅛	–
G	–	5⁹⁄₁₆	5⅛
H	–	5½	5
A	6⅛	5¼	4¾
B	5¾	5⅛	4⅜
C	5⁹⁄₁₆	4⅞	4⅜
[illegible]			
E	4¹⁵⁄₁₆	[illegible]	[illegible]
[illegible]			

Driver, *Conductor*
1 = 1 PH, ODP 7 = 3 PH, XP
2 = 3 PH, ODP 8 = 575 V, XP
3 = 575 V, ODP 9 = 3 PH, TEFC
[illegible]
5 = 3 PH, TEFC [illegible]
[illegible]

HP Rating, *HP Potencia*
C = ½ HP [illegible]
[illegible]

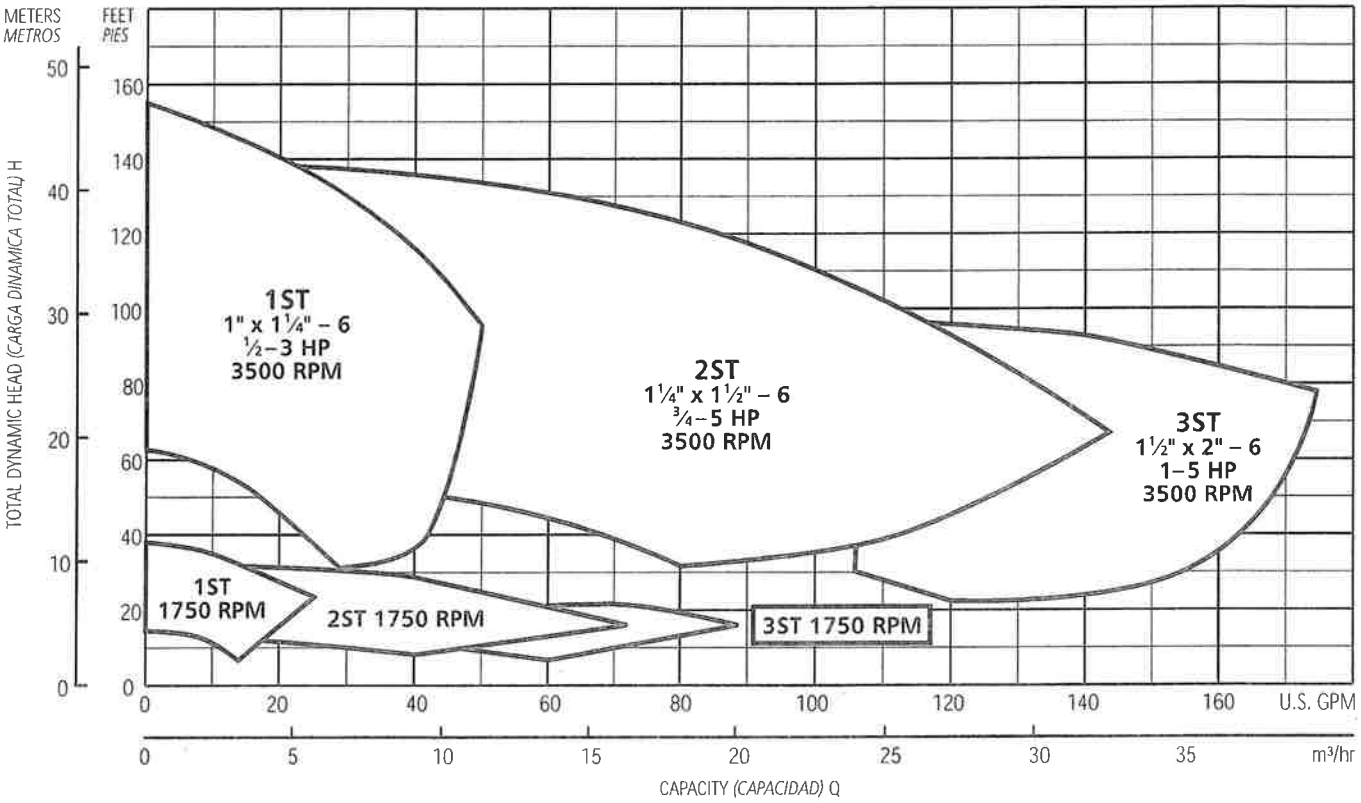
Driver: Hertz/Pole/RPM,
Conductor: Hercios/Polo/RPM
1 = 60 Hz, 2 pole, 3500 RPM
[illegible]
3 = 60 Hz, 6 pole, 1150 RPM
4 = 50 Hz, 2 pole, 2900 RPM
5 = 50 Hz, 4 pole, 1450 RPM

For frame mounted version, substitute the letters "FRM" in these positions.
Para la versión con el armazón montado, sustituya las letras "FRM" en estas posiciones.

Material
ST = Stainless steel, *Acero inoxidable*

Pump Size, *Tamaño de la Bomba*
1 = 1 x 1¼ – 6 [illegible]

Performance Coverage (60 Hz)
Alcance de Funcionamiento (60 Hz)



NOTES:

Not recommended for operation beyond printed H-Q curve.

For critical application conditions consult factory.

Not all combinations of motor, impeller and seal options are available for every pump model. Please check with G&L on non-cataloged numbers.

All standard 3500 RPM ODP and TEFC motors supplied by Goulds, have minimum of 1.15 service factor. Standard catalog units may utilize available service factor. Any motors supplied other than Goulds check available service factor.

NOTAS:

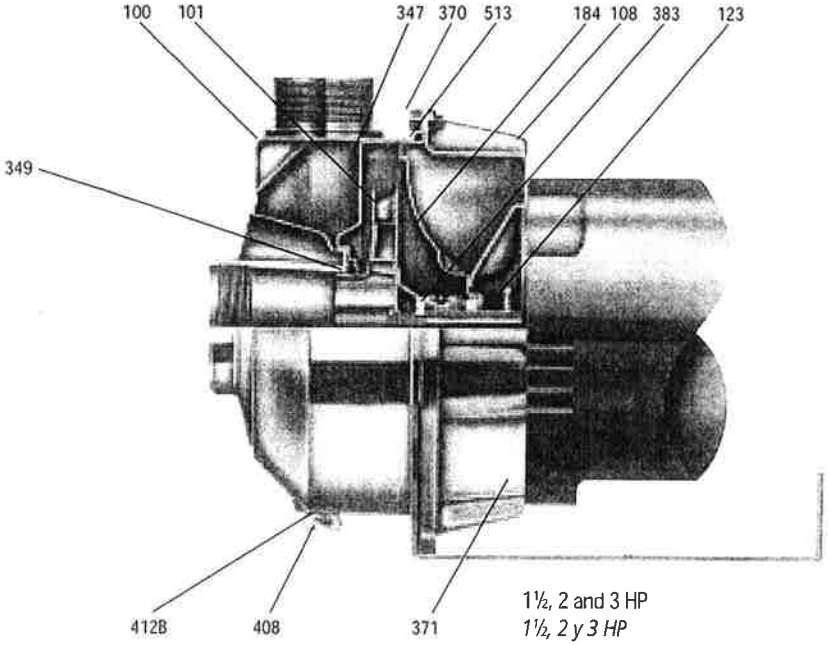
No se recomienda para funcionamiento superior al impreso en la curva H-Q.

Para condiciones de aplicaciones críticas consultar con la fábrica.

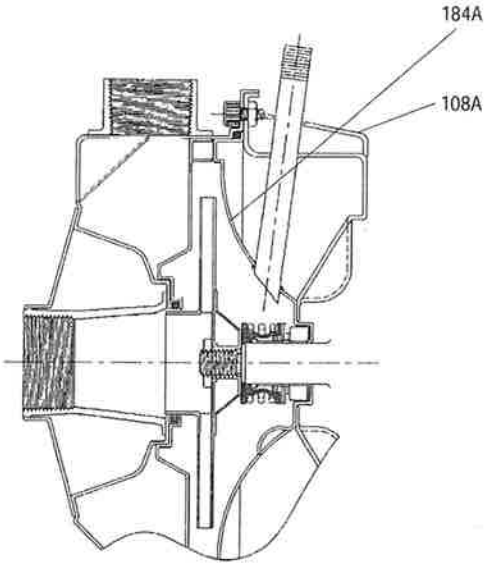
No todas las combinaciones de las opciones de motor, impulsor y sello están disponibles para cada modelo de bombas. Por favor verifique con G&L en los números no catalogados.

Todos los motores estándar de 3500 RPM, ODP (abiertos resguardados) y TEFC (totalmente encerrados con enfriamiento forzado) provistos por Goulds tienen un factor mínimo de servicio de 1,15. Las unidades estándar de catálogo pueden utilizar el factor de servicio disponible. Verificar el factor de servicio disponible de todo motor no provisto por Goulds.

NPE Close Coupled Pump Major Components: Materials of Construction
Bomba Cerrada Acoplada NPE Componentes Principales: Materiales de Construcción

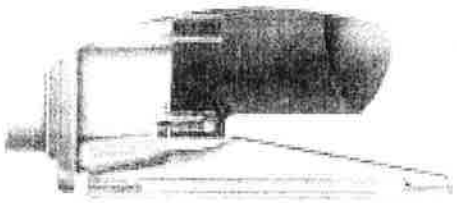


1½, 2 and 3 HP
1½, 2 y 3 HP



Seal Face Vent/Flush Option,
Opción Cara del Sello Válvula/Chorro

Item No., *Parte No.*	Description, *Descripción*	Materials, *Materiales*
100	Casing, *Carcasa*	AISI 316L SS, *AISI 316L Acero inoxidable*
101	Impeller, *Impulsor*	
108	Motor adapter, *Adaptador del motor*	
108A	Motor adapter seal vent/flush, *Sello válvula/chorro del adaptador del motor*	
123	Deflector, *Deflector*	BUNA-N
184	Seal housing, *Alojamiento del sello*	AISI 316L SS, *AISI 316L Acero inoxidable*
184 A	Seal housing seal vent/flush, *Sello válvula/chorro del alojamiento del sello*	
347	Guidevane, *Difusor*	
349	Seal ring, guidevane; *Anillo del sello, difusor*	Viton
370	Socket head screws, casing; *Encajes cabezas de tornillos, carcasa*	AISI 410 SS, *AISI 410 Acero inoxidable*
371	Bolts, motor; *Tornillos, motor*	Plated steel, Acero chapeado
383	Mechanical seal, *Sello mecánico*	**see chart, *ver tabla*
408	Drain and vent plug, casing; *Enchufes de drenaje y válvula, carcasa*	AISI 316L SS, *AISI 316L Acero inoxidable*
412B	O-ring, drain and vent plug; *Anillo 'O', enchufe de drenaje y válvula*	Viton
513	O-ring, casing; *Anillo 'O', carcasa*	
Motor *Motor*	NEMA standard, 56J flange; *NEMA estándar, brida 56J*	

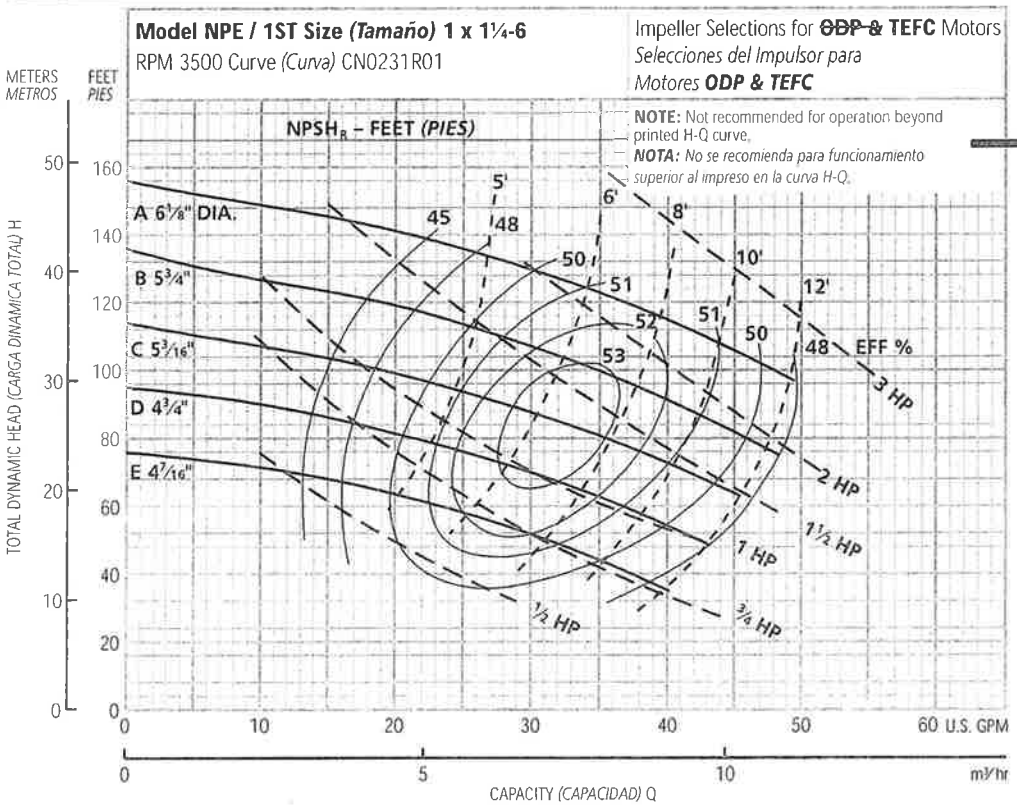


½, ¾ and 1 HP
½, ¾ y 1 HP

Footed motor for 1750 RPM and 5 HP ODP and TEFC, all explosion proof see page 13.

Motor con pie para 1750 RPM, 5 HP ODP y TEFC, a prueba de explosiones en la página 13.

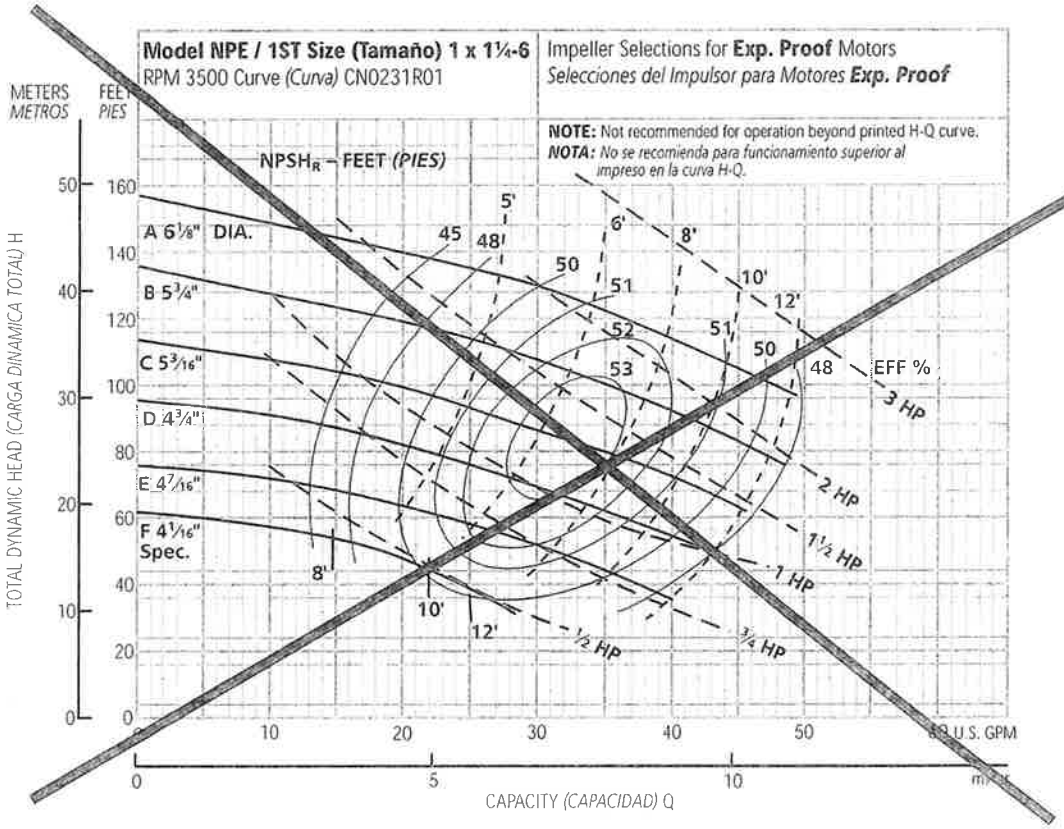
Performance Curves – 60 Hz, 3500 RPM
Curvas de Funcionamiento – 60 Hz, 3500 RPM



Ordering Code, *Código de Pedido*	Standard HP Rating, *Estándar HP Potencia*	Imp. Dia.
E	½	4⁷⁄₁₆"
C	1	5³⁄₁₆
B	1½	5¾
A	2	6⅛

NOTE: Although not recommended, the pump may pass a ⅛" sphere.

NOTA: *Si bien no se recomienda, la bomba puede pasar una esfera de ⅛".*



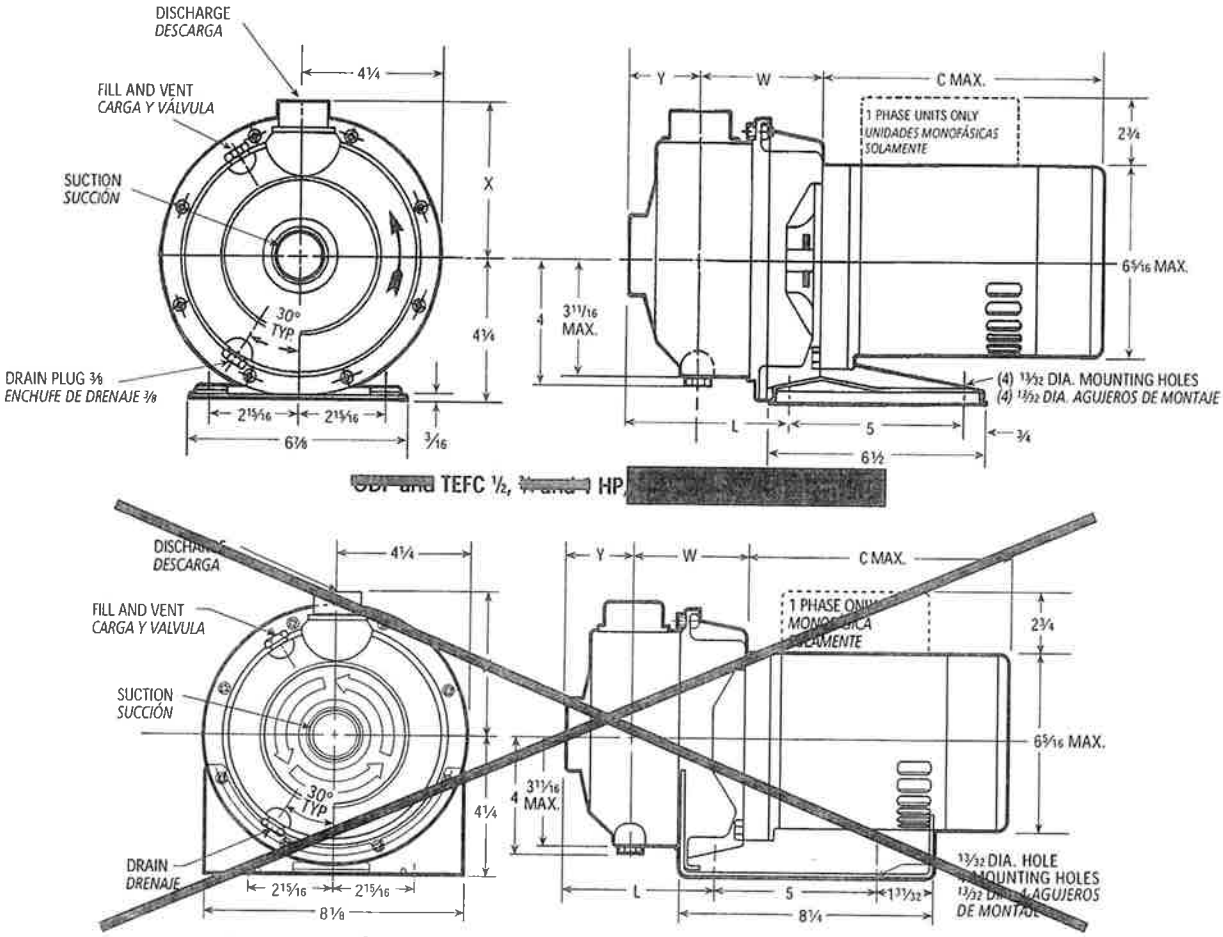
Ordering Code, *Código de Pedido*	Standard HP Rating, *Estándar HP Potencia*	Imp. Dia.
F	½	4¹⁄₁₆" spec.
E	¾	4⁷⁄₁₆
D	1	4¾
C	1½	5³⁄₁₆
B	2	5¾
A	3	6⅛

NOTE: Although not recommended, the pump may pass a ⅛" sphere.

NOTA: *Si bien no se recomienda, la bomba puede pasar una esfera de ⅛".*

NPE Close Coupled – Dimensions, Weights and Specifications
NPE Acople Cerrado – Dimensiones, Pesos y Especificaciones

Clockwise Rotation Viewed from Drive End
Rotación en Dirección de las Agujas del Reloj Visto desde el Extremo del Motor



ODP and TEFC 1½, 2 and 3 HP, *ODP y TEFC 1½, 2 y 3 HP*

Specifications
Especificaciones

Capacities to:
75 GPM (283L/min) at 1750 RPM
150 GPM (550L/min) at 3500 RPM

Heads to:
39 feet (12 m) at 1750 RPM
150 feet (46 m) at 3500 RPM

Working pressures to:
125 PSIG (9 bars)

Maximum temperatures to:
212°F (100°C) with standard seal or 250°F (121°C) with optional high temperature seal.

Direction of rotation:
Clockwise when viewed from motor end.

Motor specifications:
NEMA 56J frame, 1750 RPM, ½ HP. 3500 RPM ½ through 5 HP. Open drip-proof, totally enclosed fan-cooled or 2 HP explosion proof enclosures. Stainless steel shaft with ball bearings.

Single phase: Voltage 115/230 ODP and TEFC. (3 HP model – 230 V only) Built-in overload with auto-reset provided.

Three phase: Voltage 208-230/460 ODP, TEFC and EX PROOF.

NOTE: For three phase motors, overload protection must be provided in starter unit. Starter and heaters must be ordered separately.

Capacidades:
75 GPM (283L/min) a 1750 RPM
150 GPM (550L/min) a 3500 RPM

Cargas:
39 pies (12 m) a 1750 RPM
150 pies (46 m) a 3500 RPM

Presión de trabajo:
125 PSIG (9 baras)

Temperatura máxima:
212°F (100°C) con sello estándar o 250°F (121°C) con sello opcional para alta temperatura.

Dirección de rotación:
En dirección de las agujas del reloj visto desde el extremo final del motor.

Motores:
Armazón 56J NEMA, 1750 RPM ½ HP. 3500 RPM ½ a 5 HP. Cubiertas abiertas resguardadas, totalmente encerradas enfriadas por ventilador o a prueba de explosiones de 2 HP. Eje de acero inoxidable con balineras de bolas.

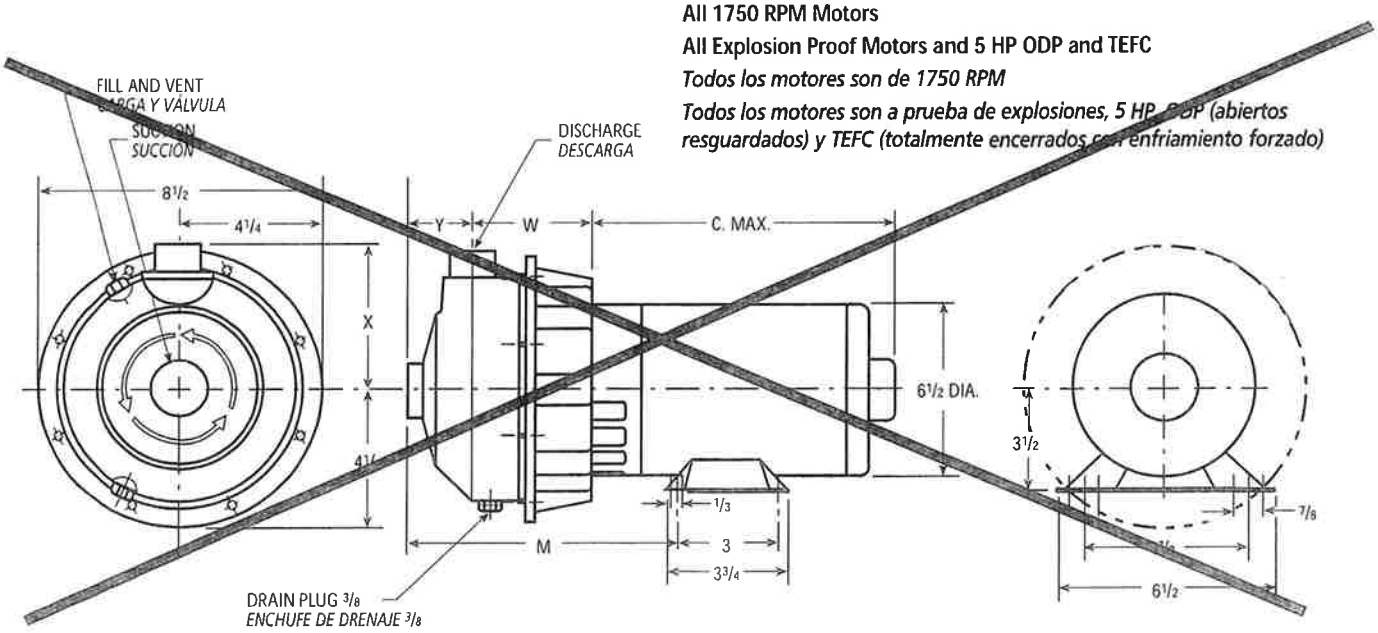
Monofásicos: *Voltaje 115/230 ODP y TEFC. (modelo 3 HP – 230 voltios solamente) Se proporciona protección térmica contra sobrecarga construida con reseteo automático.*

Trifásicos: *Voltaje 208-230/460 ODP, TEFC y EX PROOF.*

NOTA: *Para motores trifásicos se debe de proporcionar la protección térmica contra sobrecarga en la unidad de arranque. El arrancador y los calentadores se deben pedir por separado.*

NPE Close Coupled with Footed Motor, 1750 RPM and Explosion-proof Motors
NPE Acople Cerrado con Motor con Patas, 1750 RPM y Motores a Prueba de Explosión

All 1750 RPM Motors
All Explosion Proof Motors and 5 HP ODP and TEFC
Todos los motores son de 1750 RPM
Todos los motores son a prueba de explosiones, 5 HP ODP (abiertos resguardados) y TEFC (totalmente encerrados con enfriamiento forzado)



Dimensions – Determined by Pump,
Dimensiones – Determinadas por la Bomba

Pump, *Bomba*	Suction, *Succión*	Discharge, *Descarga*	HP	W	X	Y	L	M
1ST	1¼	1	½ – 3	3 5/16	4 ⅜	2	4 9/16	7 5/16

Available Motor Weights and Dimensions,
Pesos y Dimensiones Disponibles del Motor

HP	Motor Weights, *Pesos del Motor*						C Max. Length, *(Longitud)*
	1 Phase, *Monofásicos*			3 Phase, *Trifásicos*			
	ODP	TEFC	EXP	ODP	TEFC	EXP	
½	[illegible]	[illegible]	[illegible]	[illegible]	18	[illegible]	9 15/16
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	22	26	49	23	21	30	11
1½	28	35	56	27	27	37	11 5/16
2	33	39	60	32	33	44	12 1/16
3	40	43	—	41	37	—	12 7/16
5	42	—	—	42	45	—	14¼

Dimensions in inches, weights in pounds.
Dimensiones en pulgadas, pesos en libras.

NOTES:

1. Pump will be shipped with top vertical discharge position as standard. For other orientations, remove casing bolts, rotate discharge to desired position, replace and tighten 6mm bolts to 5 – 6 lbs.-ft.
2. Motor dimensions may vary with motor manufacturers.
3. Dimensions in inches, weights in pounds.
4. For explosion proof motor dimensions consult factory for information.
5. Not to be used for construction purposes unless certified.

NOTAS:

1. Las bombas se transportarán con la descarga vertical superior como estándar. Para otras orientaciones, retirar los tornillos de la carcasa, rotar la descarga a la posición deseada, y reemplazar y apretar los tornillos de 6mm a 5 – 6 libras-pies.

2. Las dimensiones del motor puede que varíen con los fabricantes.

3. Dimensiones en pulgadas, pesos en libras.

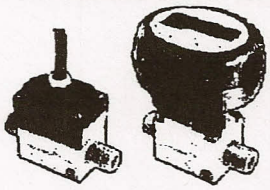
4. Para las dimensiones de los motores a prueba de explosión consultar con la fábrica para información.

5. No usar para propósitos de construcción sin certificar.

Flowmeters/Totalizers & Cold-Water Totalizers

For information about flowmeters/totalizers and totalizers, see pg. 539. For information about pipe size, see pgs. 2-3.

Extended-Life Water Flowmeters and Flowmeters/Totalizers



Flowmeter *Flowmeter/ Totalizer*

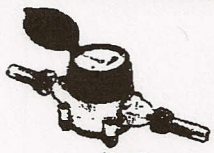
No moving parts means there's less wear and maintenance so these flowmeters/totalizers last longer. They work by creating vortices (whirls of water) that are proportional to the velocity of your flowing media. Mount horizontally or vertically. Body is made of Ryton and is rated NEMA 4X (for use outdoors and in washdown and corrosive environments). Maximum pressure is 150 psi at 70° F. Temperature range is –4° to +176° F. Connections are NPT male.

Flowmeters transmit a pulse output signal to a data recorder, logger, or display (not included). They operate on 12-24 VDC and include 3 feet of cable with wire leads. O-ring is Viton.

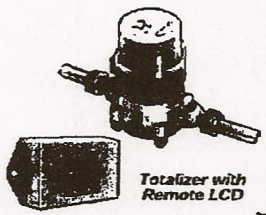
Flowmeters/totalizers have an eight-digit LCD that indicates flow rate (in gallons per minute) as well as total flow volume (up to 99,999,999 gallons). Display is nonresettable. Digit height is ⅜". Battery included.

Flow Range, gpm	Accuracy	Pipe Size	O'all Lg.	*Flowmeters* Each	*Flowmeters/ Totalizers* Each
0.105-1.1	±3%	¾"	5⅛"	3437K61..	$532.14	3437K51..	$869.37
0.75-11.4	±1%	¾"	5⅛"	3437K63..	575.00	3437K53..	899.23
2.2-35.1	±1%	1¼"	7½"	3437K64..	594.64	3437K54..	1043.25

NSF-Certified Cold-Water Totalizers



Totalizer



Totalizer with Remote LCD

Perfect for cold-water service, these totalizers have a brass body that meets NSF 61 for drinking water and a low-flow indicator that detects leaks in the system. All have a nonresettable dial that indicates the total flow volume. Mount horizontally. Fittings are bronze and O-ring is neoprene. Accuracy is ±1.5%. Maximum pressure is 150 psi at 70° F. Temperature range is 33° to 80° F. Meet AWWA (American Water Works Association) C700 standards. All include couplings.

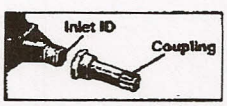
Style A—Coupling connections are NPT male. *Totalizers* register up to 10,000,000 gallons. *Totalizers with remote LCD* register up to 9,999,990 gallons; they generate a pulse to the remote display every gallon.

Style B—Coupling connections are NPT female. *Totalizers* register up to 100,000,000 gallons. *Totalizers with remote LCD* register up to 99,999,000 gallons; they generate a pulse to the remote display every 10 gallons.

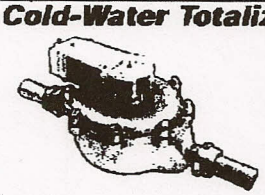
Style C—Coupling connections are NPT male. *Totalizers* register up to 1,000,000 cubic feet. *Totalizers with remote LCD* register up to 999,990 cubic feet; they generate a pulse to the remote display every cubic foot.

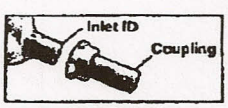
Totalizers with remote LCD allow you to place the display up to 500 feet away from the totalizer—ideal when the totalizer is located in an inaccessible or inconvenient area. Display is nonresettable. Digit height is ¼". Battery included. *Cable for remote LCD* (sold separately below) is required for connecting the display to the totalizer.

Flow Range		Inlet ID	Coupling Pipe Size	O'all Lg.	*Totalizers* Each		*Totalizers with Remote LCD* Each	
A... 0.5-20	gallons per minute	⅝"	½"	12½"	4041K21	$90.21	3786K91	$304.12
A... 0.5-20	gallons per minute	⅝"	¾"	12¾"	4041K22	89.23	3786K92	311.43
A... 0.75-30	gallons per minute	¾"	¾"	14¼"	4041K61	154.76	3786K81	361.70
~~*A*... 0.75-30~~	~~gallons per minute~~	~~¾"~~	~~1"~~	~~14½"~~	~~4041K62~~	~~175.67~~	~~3786K82~~	~~409.18~~
A... 1-50	gallons per minute	1"	1"	16¼"	4041K23	224.27	3786K93	458.48
~~*A*... 1-50~~	~~gallons per minute~~	~~1"~~	~~1¼"~~	~~16⅜"~~	~~4041K24~~	~~305.49~~	~~3786K94~~	~~514.92~~
B... 2-100	gallons per minute	1½"	1½"	12⅝"	4041K25	537.52	3786K95	762.41
B... 2.5-160	gallons per minute	2"	2"	15¼"	4041K26	816.16	3786K96	1030.63
C... 0.067-2.67	cubic feet per minute	⅝"	½"	12½"	4041K71	90.21	3786K41	304.12
C... 0.067-2.67	cubic feet per minute	⅝"	¾"	12¾"	4041K72	92.26	3786K42	311.43
C... 0.134-6.68	cubic feet per minute	1"	1"	16¼"	4041K73	224.27	3786K43	458.48
C... 0.134-6.68	cubic feet per minute	1"	1¼"	16⅜"	4041K74	305.49	3786K44	514.92
Cable for Remote LCD							70985K81	Per Foot $0.12



Cold-Water Totalizers with Switch





Coupling with NPT Male Connection

The switch on these piston-style totalizers closes each time the set amount of water passes through the totalizer. Switches are single pole, single throw normally open (SPST-NO). They turn one circuit from "off" to "on" and can be used to activate a pump, valve, or alarm. They operate on 20/10 amps at 120/250 VAC and include screw terminal connections.

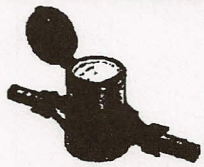
Totalizers have a nonresettable dial that registers the total flow volume up to 9,999,999 gallons. Mount horizontally. Body is bronze. O-ring is Buna-N. Temperature range is 35° to 105° F. All include couplings; connections are NPT male, unless noted.

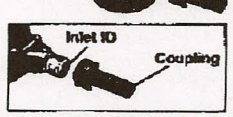
To Order: Please specify the amount of water that will close the switch each time that amount passes through. For 4187K41-K45, please specify: 5, 10, 20, 25, 50, 100, 200, 250, or 500 gallons. For 4187K47 and K48, please specify: 50, 100, 200, 250, 500, or 1000 gallons.

Flow Range, gpm	Accuracy	Max. psi @ 70° F	Inlet ID	Coupling Pipe Size	O'all Lg.	Each
0.25-20	±1.5%	150	⅝"	½"	12¼"	4187K41	$445.45
0.25-20	±1.5%	150	⅝"	¾"	12½"	4187K42	452.73
0.5-30	±1.5%	150	¾"	¾"	14"	4187K43	618.18
0.75-50	±1.5%	150	1"	1"	16"	4187K45	836.36
2-100	±1.5%	150	1½"	1½"	18⅝"	4187K47■	1320.00
2-160	±1.5%	150	2"	2"	21⅝"	4187K48■	1690.91

■ Couplings have NPT female connections.

Corrosion-Resistant Cold-Water Totalizers





Deionized water won't damage these totalizers—all are made of polycarbonate for added corrosion resistance. Totalizers have a nonresettable dial that registers the total flow volume up to 9,999,999 gallons. Mount horizontally. O-ring is Buna-N. Temperature range is 35° to 105° F. All include couplings; connections are NPT male.

Flow Range, gpm	Accuracy	Max. psi @ 70° F	Inlet ID	Coupling Pipe Size	O'all Lg.	Each
0.25-15	±1.5%	70	⅝"	½"	12¼"	4119K41	$232.73
0.25-15	±1.5%	70	⅝"	¾"	12½"	4119K42	238.18

	Per Pair	
Replacement ½" Pipe Size Couplings	4119K77	$25.00
Replacement ¾" Pipe Size Couplings	4119K79	25.00