

932102

**QUARTERLY OPERATIONS AND
MAINTENANCE REPORT (OCTOBER,
NOVEMBER, DECEMBER 1996)**

FOR THE

**GROUND-WATER TREATMENT/SOIL REMEDIATION SYSTEM
CARBORUNDUM FACILITY**

LOCATED AT

**2040 CORY ROAD
SANBORN, NEW YORK**

JANUARY 1997

PREPARED FOR:

BP EXPLORATION & OIL, INC.

PREPARED BY:

**HULL & ASSOCIATES, INC.
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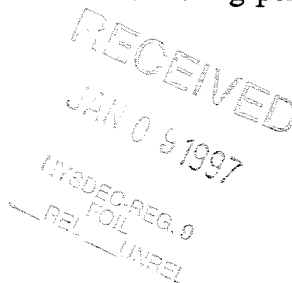


EXECUTIVE SUMMARY

Hull & Associates, Inc. (HAI) has been retained by BP Exploration & Oil Inc. (BP) as of June 16, 1996 to perform operations and maintenance (O&M) for the ground-water treatment/soils remediation system at the Carborundum Facility in Sanborn, New York. Prior to June 16, 1996, O&M was performed by McLaren Hart. BP notified the New York State Department of Environmental Conservation (NYSDEC) of this change in a May 30, 1996 letter from Martin Coleman to Maurice Moore and Marty Doster of NYSDEC.

This quarterly report includes monthly progress reports and associated data summaries for October, November and December 1996. The October, November and December monthly progress reports were prepared by HAI. The attachments included with this report contain only summary information. Specifically, the attachments contain the following information:

- Attachment A includes only the graphs summarizing hours of system operation, but does not include the Hours of System Operation Logs. Completed logs are available and can be provided upon request.
- Attachment B includes only the graphs summarizing pumping rates for PW-1, PW-2, P-2, P-3, and P-4, but does not include Daily Ground-water Well Status Log Sheets for the wells. Completed daily logs are available and can be provided upon request.
- Attachment C includes summary tables and graphs for air monitoring data, but does not include tabular reports of all monitoring data collected. This detailed monitoring data is available and can be provided upon request.
- Attachment D is reserved for analytical results of samples collected by HAI (or by McLaren Hart prior to June 16, 1996) other than the air monitoring results from the MSA VOC Analyzer. This attachment does not include any information because no additional samples were analyzed this quarter.
- Attachment E is reserved for VES Monitoring Trailer Daily Report Forms. These completed forms are not included in this report; however, these forms are available and can be provided upon request.
- Attachment F is reserved for Routine Inspection Log and Record of Operating Conditions forms. These completed forms are not included in this report; however, these forms are available and can be provided upon request.
- Attachment G includes totalized flow graphs for the air/water separator effluent. This section has been discontinued as of the December monitoring period.



- Attachment H contains a list of 40 Hour OSHA trained site personnel. The names of HAI personnel who have been or may be present at the Site are shown at the end of this list. The Carborundum training is no longer required.

The complete monthly progress reports are on file at BP. Information not included in this quarterly report, as described above, is contained in these monthly reports and is available upon request.

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OCTOBER 1996
CARBORUNDUM FACILITY
WHEATFIELD, NEW YORK**

1. Summary of Groundwater Treatment/Soil Remediation System hours of operation.

- See Attachment A for Hours of System Operation Log (GWTS) Log No. 029 October 1996 and accompanying figures for a summary of Groundwater Treatment System hours of operation. This log also delineates when the system was down and the primary reason for the shutdown.
- Daily Groundwater Well (PW-1, PW-2, P-2, P-3 and P-4) Status Log Sheets are presented in Attachment B. Pumping rates at PW-1, PW-2, P-2, P-3, and P-4 for the month of October 1996 are shown graphically in Attachment B.
- See Attachment A for Hours of System Operation Log (VES) Log No. 029 October 1996 and accompanying figures for a summary of Soil Remediation System hours of operation. This log also delineates when the system was down and the primary reason for the shutdown. In addition, a table highlighting which vacuum well lines were operational during the month is included in Attachment A.
- Please refer to Section 3 for a discussion of critical down time issues.

2. Summary of results of sampling, tests and all other performance monitoring data collected during the month.

- Air monitoring performance data for the month of October 1996 is presented in Attachment C. This provides for a tabular reporting of all monitoring data collected for the system from the VES operation, emissions of the air strippers, and at the effluent discharge stack. Graphs depicting the amount of VOCs removed during October 1996, and removed to date, from the operation of the vacuum extraction system are also contained in Attachment C.

Please note that the MSA VOC Analyzer records any value below the preset detection limit as zero. The preset detection limits for the three compounds of interest are as follows: TCE - 0.5 ppm, DCE - 0.05 ppm, and Vinyl Chloride - 0.01 ppm. A zero value is used in all calculations in Attachment C, because incremental mass removal is insignificant at the detection limits.

- Tedlar bag samples are being routinely collected at the mid-point of the vapor phase carbon units and are being analyzed using the MSA VOC analyzer to determine breakthrough of the carbon beds. VOC mass loading has been detected

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during mid-point sampling below the discharge levels identified in the air permit to operate. Results of mid-point sampling are available on-site.

- Performance monitoring data was collected under various conditions using the VES trailer to determine the distribution of mass removal by branch. Testing was performed on twenty three separate occasions during October 1996. Airflow and total VOCs concentration were measured for each branch in operation on selected days. Individual branch air flow rates were determined using FIT 601A. Total VOC concentrations were determined by filling a Tedlar Bag with a sample using a vacuum sampling pump, and then analyzing the sample using a Photovac PID. Results of the performance monitoring testing are given in Attachment E.
- Hull & Associates operated the SVE system over the entire site. VEW wells, as indicated on the VES Monitoring Trailer Daily Report forms included as attachment E, were operated under a vacuum of approximately 8 to 15 inches of mercury. VEW wells across the entire site were operated based on sampling results obtained during VES trailer monitoring. VEW wells exhibiting excessive air flow rates due to short circuiting were not operated until the short circuiting was addressed.

Air Injection Blowers B-901, B-902, B-903 and B-904 were operated based on which VEW well branches were opened. Only the air injection blowers contributing to the area where VEW wells were opened were operational. All air injection wells in close proximity to operational VEW wells were opened during operation. Injected air pressure at the wellhead was regulated to below five pounds per square inch. Because the air flow into the subsurface is less than the capacity of the air injection blowers, Hull & Associates field personnel opened air release points to the atmosphere to allow adequate air flow from the compressor tank. For air injection pressures and operational time see Daily Operations Report (Attachment F).

- Influent temperatures and relative humidity for the vapor phase carbon have averaged less than 100°F and 50%, respectively, during the month of October 1996.
- The Air/Water Separator effluent flow meter readings are depicted graphically and are included as Attachment G.

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3. Summary of major process system operational problems or potential problems and actual or anticipated system down times encountered during the month.

- Daily operations and MSA/Baseline maintenance logs are presented in Attachment F.
- Based on an observed increase in differential pressure across the liquid phase carbon adsorption units, Hull & Associates field personnel performed a backflushing of the carbon units on October 9, 22, & 30, 1996. Differential pressure across the carbon bed was reduced within the manufacturer's recommended levels. However, continuous solids loadings to the carbon bed may eventually require carbon changeout. Backflushing of the liquid phase carbon adsorption unit is a result of the continued solids loading to the liquid system from the air/water separator (SVE operation).
- Pump PW-1B remained in automatic operation for the entire month of October 1996. Pump PW-1A remained off the entire month of October 1996 to prevent on/off cycling caused by low well recharge rates.
- Pumps PW-2A and PW-2B remained in hand operation until October 21, 1996 and in automatic operation the remainder of the month.
- Groundwater Well P-2 remained in automatic operation for the entire month of October 1996.
- Groundwater Well P-3 remained in automatic operation for the entire month of October 1996.
- Groundwater Well P-4 remained in automatic operation for the entire month of October 1996.
- Filter bags for the groundwater treatment system pre-filters continued to foul and required replacement, although significantly less than previous months (see Section 4C). This was due to water/silt infiltration following significant rain fall events.

4. Summary of all inspection/maintenance activities.

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- SRGWTP inspections were performed daily. Equipment operating conditions and status were recorded on a daily log sheet beginning October 1, 1996 and are provided in Attachment F.
- Groundwater Well (PW-1, PW-2, P-2, P-3, and P-4) Status was monitored daily and status sheets are presented in Attachment B.

A. Inspections Performed During Monthly Operations

- Treatment Building and General Grounds
- Piping and Appurtenances
- Transfer and Sump Pumps Inspection
- Vacuum Pumps and Blowers
- Vapor Phase Carbon Units (Inlet RH, Temp. chemical concentrations)
- Volatile Organic Compound Analyzer
- Pneumatic Piezometer
- Heat Trace System
- Other inspections per the O&M Manual

B. Inspections to be Performed Next Period

- Treatment Building and General Grounds
- Piping and Appurtenances
- Transfer and Sump Pumps
- Pneumatic Piezometer
- Vacuum pumps and blowers
- VOC Analyzer
- Vapor phase carbon units (Inlet RH, Temp.)
- Other inspections per the O&M Manual

C. Maintenance that occurred During This Period

- Changed filter bags from Groundwater Treatment Pre-filters a total of 7 times during the month on October 1996. Groundwater Treatment Pre-filters were changed on October 7, 10, 21, 22, 24, 28, and 31, 1996.
- Greased all pumps and motors on October 4, 1996.
- Lubrication oil for Vacuum Blowers P-701A , P-701B, P701C, and P701D was changed on October 10,1996.

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- Lubrication oil for air injection blower B-903 was changed on October 15, 1996.
- Armand Cerrone had a crew on site to remove the soil from the ex-situ cell on October 11, 12, 14, 15, 16, 17, and 18, 1996. During the time that soil was being removed a HAI associate monitored the breathing zone for VOC's using a PID, no concentrations were recorded.
- All treated water from the treatment plant was discharged to the SPDES outfall starting at 0900 on October 2, 1996.
- HAI field personnel repaired VEW 17 on October 3, 1996.
- Seward Equipment technician was on site on October 15, 1996 to repair P805B pump and align pumps P803B, P805B, P806A and P806B.
- JW Danforth Mechanical and their subcontractors were on site starting on October 16, 1996 to move the three vacuum lines for the northeast area the east approximately 10 feet to make more room for the roadway around the new building addition for Metuallics.
- Robert Locey of the NYSDEC was on site for the annual SPDES inspection.
- HAI field personnel cleaned the Air/Water Separator on October 10, 21, and the 28, 1996 due to silt/clay blocking the outlet. The silt was collected and drummed for future disposal at Chemical Waste Management, Inc.'s, TSDF, Model City, New York.
- HAI field personnel cleaned the air water separator level probes which had fouled causing erratic cycling of the air water separator pump on October 21, 1996.
- Hull & Associates field personnel sampled the influent air and effluent air at the carbon units on October 8, 16, 23, and 29, 1996.
- Carrier Controls on site to replace a faulty Part low level meter on P-4 on October 24, 1996.

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- HAI field personnel monitored water levels in all accessible vapor extraction wells on October 5, 12, 19, and 26, 1996.
- M.W Controls was on site on October 29, 1996 to repair the POTW flow meter, all repairs were not completed and M.W Controls are currently scheduled to return next week.

D. Maintenance Anticipated for Next Period

- Vapor Phase Carbon Change Out: Not anticipated for next period based on current operating conditions. Carbon changeout is being evaluated based on the air permit to operate.
- Liquid Phase Carbon Change Out: Not anticipated for next period. General backflushing will be provided to maintain carbon filters.
- Other activities as per the O&M Manual: No major activities anticipated for next period with the exception of bag filters changeout and liquid phase carbon backflushing.

5. Summary of all waste handling and disposal.

- Attachment F contains copies of the waste generation logs completed through October 31, 1996.
- Spent bag filters from the Groundwater Treatment Pre-filters are being stored in fifteen 55-gallon drums within the treatment plant containment area for future disposal at Chemical Waste Management, Inc's TSDF, Model City, New York. The plant operator will coordinate appropriate waste disposal practices with Margaret Bonn of H&A and Werner Sicvol of BP.

6. Environmental releases.

- No releases (i.e., spills, etc.) occurred during this reporting period.

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7. Personnel on Site.

A. Subcontractors on Site

- Armand Cerrone
JW Danforth Co.
Carrier Controls
MW Controls

B. Equipment Vendors on site during operations:

- Seward Equipment

C. Health and Safety: The following section summarizes various health and safety items conducted at the site relative to operations:

1. Hull & Associates Operation and Maintenance Personnel On-Site Hours:

This Period:	252 Hours
Total:	7303 Hours
Without Accident:	2427 Hours

2. Accident Summary: There were no reportable accidents during this reporting period. Two reportable accidents have occurred during Operations and Maintenance to date.
3. Incident Summary: There were no reportable incidents during this reporting period. One reportable incident has occurred during Operations and Maintenance to date.
4. OSHA/Carborundum Trained Site Workers: Attachment H contains a cumulative list of 40 hour OSHA trained and Carborundum trained Operation and Maintenance workers.
5. Health and Safety Monitoring: Operational and Maintenance activities performed this month did not require extensive health and safety monitoring.

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8. Major Correspondence/Action Items

- None this period.

9. Planned Activities

- Removal of soil from the ex-situ cell and removal of ex-situ cell materials.
- Reposition VES lines 121, 115, and 105 to allow more area for the access road around the new Metuallics addition.
- Divert water from the Treatment Plant from the POTW to the SPDES outfall.

Submitted by: Richard C. Becken.

Date: October 31, 1996

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NOVEMBER 1996
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1. Summary of Groundwater Treatment/Soil Remediation System hours of operation.

- See Attachment A for Hours of System Operation Log (GWTS) Log No. 030 November 1996 and accompanying figures for a summary of Groundwater Treatment System hours of operation. This log also delineates when the system was down and the primary reason for the shutdown.
- Daily Groundwater Well (PW-1, PW-2, P-2, P-3 and P-4) Status Log Sheets are presented in Attachment B. Pumping rates at PW-1, PW-2, P-2, P-3, and P-4 for the month of November 1996 are shown graphically in Attachment B.
- See Attachment A for Hours of System Operation Log (VES) Log No. 030 November 1996 and accompanying figures for a summary of Soil Remediation System hours of operation. This log also delineates when the system was down and the primary reason for the shutdown. In addition, a table highlighting which vacuum well lines were operational during the month is included in Attachment A.
- Please refer to Section 3 for a discussion of critical down time issues.

2. Summary of results of sampling, tests and all other performance monitoring data collected during the month.

- Air monitoring performance data for the month of November 1996 is presented in Attachment C. This provides for a tabular reporting of all monitoring data collected for the system from the VES operation, emissions of the air strippers, and at the effluent discharge stack. Graphs depicting the amount of VOCs removed during November 1996, and removed to date, from the operation of the vacuum extraction system are also contained in Attachment C.

Please note that the MSA VOC Analyzer records any value below the preset detection limit as zero. The preset detection limits for the three compounds of interest are as follows: TCE - 0.5 ppm, DCE - 0.05 ppm, and Vinyl Chloride - 0.01 ppm. A zero value is used in all calculations in Attachment C, because incremental mass removal is insignificant at the detection limits.

- Tedlar bag samples are being routinely collected at the mid-point of the vapor phase carbon units and are being analyzed using the MSA VOC analyzer to determine breakthrough of the carbon beds. VOC mass loading has been detected

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during mid-point sampling below the discharge levels identified in the air permit to operate. Results of mid-point sampling are available on-site.

- Performance monitoring data was collected under various conditions using the VES trailer to determine the distribution of mass removal by branch. Testing was performed on twenty three separate occasions during November 1996. Airflow and total VOCs concentration were measured for each branch in operation on selected days. Individual branch air flow rates were determined using FIT 601A. Total VOC concentrations were determined by filling a Tedlar Bag with a sample using a vacuum sampling pump, and then analyzing the sample using a Photovac PID. Results of the performance monitoring testing are given in Attachment E.
- Hull & Associates operated the SVE system over the entire site. VEW wells, as indicated on the VES Monitoring Trailer Daily Report forms included as Attachment E, were operated under a vacuum of approximately 10 to 15 inches of mercury. VEW wells across the entire site were operated based on sampling results obtained during VES trailer monitoring. VEW wells exhibiting excessive air flow rates due to short circuiting were not operated until the short circuiting was addressed.

Air Injection Blowers B-901, B-902, B-903 and B-904 were operated based on which VEW well branches were opened. Only the air injection blowers contributing to the area where VEW wells were opened were operational. All air injection wells in close proximity to operational VEW wells were opened during operation. Injected air pressure at the wellhead was regulated to below five pounds per square inch. Because the air flow into the subsurface is less than the capacity of the air injection blowers, Hull & Associates field personnel opened air release points to the atmosphere to allow adequate air flow from the compressor tank. For air injection pressures and operational time see Daily Operations Report (Attachment F).

- Influent temperatures and relative humidity for the vapor phase carbon have averaged less than 100°F and 50%, respectively, during the month of November 1996.
- The Air/Water Separator effluent flow meter readings are depicted graphically and are included as Attachment G.

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3. Summary of major process system operational problems or potential problems and actual or anticipated system down times encountered during the month.

- Daily operations and MSA/Baseline maintenance logs are presented in Attachment F.
- Based on an observed increase in differential pressure across the liquid phase carbon adsorption units, Hull & Associates field personnel performed a backflushing of the carbon units on November 11, 1996. Differential pressure across the carbon bed was reduced within the manufacturer's recommended levels. However, continuous solids loadings to the carbon bed may eventually require carbon changeout. Backflushing of the liquid phase carbon adsorption unit is a result of the continued solids loading to the liquid system from the air/water separator (SVE operation).
- Pump PW-1B remained in automatic operation for the entire month of November 1996. Pump PW-1A remained off the entire month of November 1996 to prevent on/off cycling caused by low well recharge rates.
- Pumps PW-2A and PW-2B remained in hand operation from November 4, 1996 to November 11, 1996 and November 22, 1996 to the end of the month. Pumps PW-2A and PW-2B were in the automatic mode the rest of the month.
- Groundwater Well P-2 remained in automatic operation for the entire month of November 1996.
- Groundwater Well P-3 remained in automatic operation for the entire month of November 1996.
- Groundwater Well P-4 remained in automatic operation for the entire month of November 1996.
- Filter bags for the groundwater treatment system pre-filters continued to foul and required replacement, although significantly less than previous months (see Section 4C). This was due to water/silt infiltration following significant rain fall events.

4. Summary of all inspection/maintenance activities.

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- SRGWTP inspections were performed daily. Equipment operating conditions and status were recorded on a daily log sheet beginning November 1, 1996 and are provided in Attachment F.
- Groundwater Well (PW-1, PW-2, P-2, P-3, and P-4) Status was monitored daily and status sheets are presented in Attachment B.

A. Inspections Performed During Monthly Operations

- Treatment Building and General Grounds
- Piping and Appurtenances
- Transfer and Sump Pumps Inspection
- Vacuum Pumps and Blowers
- Vapor Phase Carbon Units (Inlet RH, Temp. chemical concentrations)
- Volatile Organic Compound Analyzer
- Pneumatic Piezometer
- Heat Trace System
- Other inspections per the O&M Manual

B. Inspections to be Performed Next Period

- Treatment Building and General Grounds
- Piping and Appurtenances
- Transfer and Sump Pumps
- Pneumatic Piezometer
- Vacuum pumps and blowers
- VOC Analyzer
- Vapor phase carbon units (Inlet RH, Temp.)
- Other inspections per the O&M Manual

C. Maintenance that occurred During This Period

- Changed filter bags from Groundwater Treatment Pre-filters a total of 6 times during the month on November 1996. Groundwater Treatment Pre-filters were changed on November 9, 11, 13, 18, 21, and 26, 1996.
- Greased all pumps and motors on November 5, 1996.
- Lubrication oil for Vacuum Blowers P-701A , P-701B, P701C, and P701D was changed on November 7, 1996.

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- Lubrication oil for air injection blower B901, B902, and B-903 was changed on November 8, 1996.
- Water level readings were taken on November 2, 9, 16, 23, and 30, 1996.
- HAI personnel repaired a broken coupling on P806 B on November 1, 1996 and repaired a broken coupling on P803 A on November 20, 1996.
- HAI personnel performed midpoint sampling on November 6, 13, 21, and 27, 1996.
- HAI personnel cleaned the built up silt out the Air Water Separator on November 16 and 25, 1996.
- The motor for P701 B went down on November 4, 1996, Ferguson Electric personnel checked it on November 11, 1996 and found the motor in need of new bearings and the armature needs rebuilt. Ferguson Electric will quote prices for repair of the existing motor and the purchase of a new motor.
- HAI personnel installed new tube sheets in the Plenty Products filter housings on November 12, 13, and 15, 1996.
- HAI personnel rebuilt valve 832 because of leakage on November 7, 1996.
- Dan Commer of the Niagara County Sewer District was on site for the annual POTW inspection on November 20, 1996.
- HAI personnel repaired PW-2 on November 21, 1996 a Buss fuse had blown the night of November 20, 1996 due to the pumps cycling on and off.
- HAI field personnel cleaned the air water separator level probes which had fouled causing erratic cycling of the air water separator pump on November 16 and 25, 1996.
- HAI personnel shipped 22 drums of filters, poly, and PPE to CWM Model City, NY on November 15, 1996.
- HAI personnel cleaned the particulate filters on the vapor phase on November 25, 1996.

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- HAI field personnel monitored water levels in all accessible vapor extraction wells on November 2, 9, 16, 23, and 30, 1996.
- MW Controls was on site on November 14, 1996 to repair the POTW flow meter, all repairs were completed.
- On November 19, 1996 a truck making a delivery to Metuallics broke VEW 23 and AI 33, I have received a quote to repair the wells from Danforth and submitted it to the trucking company.

D. Maintenance Anticipated for Next Period

- Vapor Phase Carbon Change Out: Not anticipated for next period based on current operating conditions. Carbon changeout is being evaluated based on the air permit to operate.
- Liquid Phase Carbon Change Out: Not anticipated for next period. General backflushing will be provided to maintain carbon filters.
- Other activities as per the O&M Manual: No major activities anticipated for next period with the exception of bag filters changeout and liquid phase carbon backflushing.

5. Summary of all waste handling and disposal.

- Attachment F contains copies of the waste generation logs completed through November 30, 1996.
- Spent bag filters from the Groundwater Treatment Pre-filters are being stored in one 55-gallon drum within the treatment plant containment area for future disposal at Chemical Waste Management, Inc's TSDF, Model City, New York. The plant operator will coordinate appropriate waste disposal practices with Margaret Bonn of H&A and Werner Sicvol of BP.

6. Environmental releases.

- No releases (i.e., spills, etc.) occurred during this reporting period.

7. Personnel on Site.

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A. Subcontractors on Site

- MW Controls

B. Equipment Vendors on site during operations:

- None

C. Health and Safety: The following section summarizes various health and safety items conducted at the site relative to operations:

1. Hull & Associates Operation and Maintenance Personnel On-Site Hours:

This Period:	222 Hours
Total:	7525 Hours
Without Accident:	2649 Hours

2. Accident Summary: There were no reportable accidents during this reporting period. Two reportable accidents have occurred during Operations and Maintenance to date.

3. Incident Summary: There were no reportable incidents during this reporting period. One reportable incident has occurred during Operations and Maintenance to date.

4. OSHA/Carborundum Trained Site Workers: Attachment H contains a cumulative list of 40 hour OSHA trained and Carborundum trained Operation and Maintenance workers.

5. Health and Safety Monitoring: Operational and Maintenance activities performed this month did not require extensive health and safety monitoring.

8. Major Correspondence/Action Items

- None this period.

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9. Planned Activities

- None

Submitted by: Richard C. Becken

Date: November 29, 1996

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December 1996
CARBORUNDUM FACILITY
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1. Summary of Groundwater Treatment/Soil Remediation System hours of operation.

- See Attachment A for Hours of System Operation Log (GWTS) Log No. 031 December 1996 and accompanying figures for a summary of Groundwater Treatment System hours of operation. This log also delineates when the system was down and the primary reason for the shutdown.
- Daily Groundwater Well (PW-1, PW-2, P-2, P-3 and P-4) Status Log Sheets are presented in Attachment B. Pumping rates at PW-1, PW-2, P-2, P-3, and P-4 for the month of December 1996 are shown graphically in Attachment B.
- See Attachment A for Hours of System Operation Log (VES) Log No. 031 December 1996 and accompanying figures for a summary of Soil Remediation System hours of operation. This log also delineates when the system was down and the primary reason for the shutdown. In addition, a table highlighting which vacuum well lines were operational during the month is included in Attachment A.
- Please refer to Section 3 for a discussion of critical down time issues.

2. Summary of results of sampling, tests and all other performance monitoring data collected during the month.

- Air monitoring performance data for the month of December 1996 is presented in Attachment C. This provides for a tabular reporting of all monitoring data collected for the system from the VES operation, emissions of the air strippers, and at the effluent discharge stack. Graphs depicting the amount of VOCs removed during December 1996, and removed to date, from the operation of the vacuum extraction system are also contained in Attachment C.

Please note that the MSA VOC Analyzer records any value below the preset detection limit as zero. The preset detection limits for the three compounds of interest are as follows: TCE - 0.5 ppm, DCE - 0.05 ppm, and Vinyl Chloride - 0.01 ppm. A zero value is used in all calculations in Attachment C, because incremental mass removal is insignificant at the detection limits.

- Tedlar bag samples are being routinely collected at the mid-point of the vapor phase carbon units and are being analyzed using the MSA VOC analyzer to determine breakthrough of the carbon beds. VOC mass loading has been detected

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during mid-point sampling below the discharge levels identified in the air permit to operate. Results of mid-point sampling are available on-site.

- Performance monitoring data was collected under various conditions using the VES trailer to determine the distribution of mass removal by branch. Testing was performed on nineteen separate occasions during December 1996. Airflow and total VOCs concentration were measured for each branch in operation on selected days. Individual branch air flow rates were determined using FIT 601A. Total VOC concentrations were determined by filling a Tedlar Bag with a sample using a vacuum sampling pump, and then analyzing the sample using a Photovac PID. Results of the performance monitoring testing are given in Attachment E.
- Hull & Associates operated the SVE system over the entire site. VEW wells, as indicated on the VES Monitoring Trailer Daily Report forms included as attachment E, were operated under a vacuum of approximately 13 to 17 inches of mercury. VEW wells across the entire site were operated based on sampling results obtained during VES trailer monitoring. VEW wells exhibiting excessive air flow rates due to short circuiting were not operated until the short circuiting was addressed.

Air Injection Blowers B-901, B-902, B-903 and B-904 were operated based on which VEW well branches were opened. Only the air injection blowers contributing to the area where VEW wells were opened were operational. All air injection wells in close proximity to operational VEW wells were opened during operation. Injected air pressure at the wellhead was regulated to below five pounds per square inch. Because the air flow into the subsurface is less than the capacity of the air injection blowers, Hull & Associates field personnel opened air release points to the atmosphere to allow adequate air flow from the compressor tank. For air injection pressures and operational time see Daily Operations Report (Attachment F).

- Influent temperatures and relative humidity for the vapor phase carbon have averaged less than 100°F and 50%, respectively, during the month of December 1996.
- The Air/Water Separator effluent flow meter readings are depicted graphically and are included as Attachment G. December 13, 1996 was the last reading taken due to meter malfunction, at the present time there is no plan of replacement or repair as the information generated has no useful purpose.

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WHEATFIELD, NEW YORK

3. Summary of major process system operational problems or potential problems and actual or anticipated system down times encountered during the month.

- Daily operations and MSA/Baseline maintenance logs are presented in Attachment F.
- Based on an observed increase in differential pressure across the liquid phase carbon adsorption units, Hull & Associates field personnel performed a backflushing of the carbon units on Dec.03, and 19, 1996. Differential pressure across the carbon bed was reduced within the manufacturer's recommended levels. However, continuous solids loadings to the carbon bed may eventually require carbon changeout. Backflushing of the liquid phase carbon adsorption unit is a result of the continued solids loading to the liquid system from the air/water separator (SVE operation).
- Pump PW-1B remained in automatic operation for the entire month of December 1996. Pump PW-1A remained off the entire month of December 1996 to prevent on/off cycling caused by low well recharge rates.
- Pumps PW-2A and PW-2B remained in hand operation December 5, 1996 and December 13, 1996 to December 17, 1996. Pumps PW-2A and PW-2B were in the automatic mode the rest of the month.
- Groundwater Well P-2 remained in automatic operation for the entire month of December 1996.
- Groundwater Well P-3 remained in automatic operation for the entire month of December 1996.
- Groundwater Well P-4 remained in automatic operation for the entire month of December 1996.
- Filter bags for the groundwater treatment system pre-filters continued to foul and required replacement, although significantly less than previous months (see Section 4C). This was due to water/silt infiltration following significant rain fall events.

4. Summary of all inspection/maintenance activities.

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- SRGWTP inspections were performed daily. Equipment operating conditions and status were recorded on a daily log sheet beginning December 2, 1996 and are provided in Attachment F.
- Groundwater Well (PW-1, PW-2, P-2, P-3, and P-4) Status was monitored daily and status sheets are presented in Attachment B.

A. Inspections Performed During Monthly Operations

- Treatment Building and General Grounds
- Piping and Appurtenances
- Transfer and Sump Pumps Inspection
- Vacuum Pumps and Blowers
- Vapor Phase Carbon Units (Inlet RH, Temp. chemical concentrations)
- Volatile Organic Compound Analyzer
- Heat Trace System
- Other inspections per the O&M Manual

B. Inspections to be Performed Next Period

- Treatment Building and General Grounds
- Piping and Appurtenances
- Transfer and Sump Pumps
- Vacuum pumps and blowers
- VOC Analyzer
- Vapor phase carbon units (Inlet RH, Temp.)
- Other inspections per the O&M Manual

C. Maintenance that occurred During This Period

- Changed filter bags from Groundwater Treatment Pre-filters a total of 7 times during the month on December 1996. Groundwater Treatment Pre-filters were changed on December 2, 5, 10, 12, 17,19,23,29 and 30, 1996.
- Greased all pumps and motors on December 9, 1996.
- Lubrication oil for Vacuum Blowers P-701A and P701C was changed on December 9,1996. Lubrication oil for Vac Blower P701D was changed on December 10, 1996.

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WHEATFIELD, NEW YORK

- Lubrication oil for air injection blower B901, and B-903 was changed on December 18,1996. All Air Injection Blowers were greased on December 12,1996.
- HAI personnel repaired P806C on December 5, 1996 the mechanical seal was leaking, while replacing the seal the pump was dropped and the pump support was broken, a new support was ordered and received on December 6, 1996, the pump was back in service at 1200 hours.
- HAI personnel performed midpoint sampling on December 4, 11, 18, and 31, 1996. No midpoint sampling was done the week of December 23,1996 due to the VOC analyzer breakdown.
- HAI personnel cleaned the built up silt out the Air Water Separator on December 11, 23 and 29, 1996.
- The motor for P701 B was replaced on December 31, 1996 by Ferguson Electric and Higgins Erectors personnel.
- HAI personnel started sampling operations, both SPDES and POTW monthly, quarterly, and semiannual sampling on November 25,1996. All samples from this date on will be sent to Advanced Environmental Services in Niagara Falls, NY for analysis.
- HAI field personnel cleaned the air water separator level probes which had fouled causing erratic cycling of the air water separator pump on December 23 , 1996.
- HAI field personnel found that the totalizer meter for Outfall had malfunctioned on December 12,1996 , a new meter was ordered on December 20, 1996 and is due on site in approximately fourteen working days.
- HAI field personnel had numerous high level alarms on air stripper towers A and B due to the extremely cold temperatures on December 20 and 21, 1996. It has been noted that when wind chills reach -20 degrees F below that the level transmitters send out faulty readings generally indicating higher levels then what actually exist. This problem was temporarily

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solved by covering the transmitters with bales of straw then polyethylene sheeting.

D. Maintenance Anticipated for Next Period

- Vapor Phase Carbon Change Out: Not anticipated for next period based on current operating conditions. Carbon changeout is being evaluated based on the air permit to operate.
- Liquid Phase Carbon Change Out: Not anticipated for next period. General backflushing will be provided to maintain carbon filters.
- Other activities as per the O&M Manual: No major activities anticipated for next period with the exception of bag filters changeout and liquid phase carbon backflushing.

5. Summary of all waste handling and disposal.

- Attachment F contains copies of the waste generation logs completed through December 31, 1996.
- Spent bag filters from the Groundwater Treatment Pre-filters are being stored in three 55-gallon drum within the treatment plant containment area for future disposal at Chemical Waste Management, Inc's TSDF, Model City, New York. The plant operator will coordinate appropriate waste disposal practices with Margaret Bonn of H&A and Werner Sicvol of BP.

6. Environmental releases.

- No releases (i.e., spills, etc.) occurred during this reporting period.

7. Personnel on Site.

A. Subcontractors on Site

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A C Cerrone Inc.

B. Equipment Vendors on site during operations:

none

C. Health and Safety: The following section summarizes various health and safety items conducted at the site relative to operations:

1. Hull & Associates Operation and Maintenance Personnel On-Site Hours:

This Period:	214 Hours
Total:	7739 Hours
Without Accident:	2863 Hours

2. Accident Summary: There were no reportable accidents during this reporting period. Two reportable accidents have occurred during Operations and Maintenance to date.

3. Incident Summary: There were no reportable incidents during this reporting period. One reportable incident has occurred during Operations and Maintenance to date.

4. OSHA/Carborundum Trained Site Workers: Attachment H contains a cumulative list of 40 hour OSHA trained and Carborundum trained Operation and Maintenance workers.

5. Health and Safety Monitoring: Operational and Maintenance activities performed this month did not require extensive health and safety monitoring.

8. Major Correspondence/Action Items

- None this period.

9. Planned Activities

- none

Submitted by: Richard C. Becken.

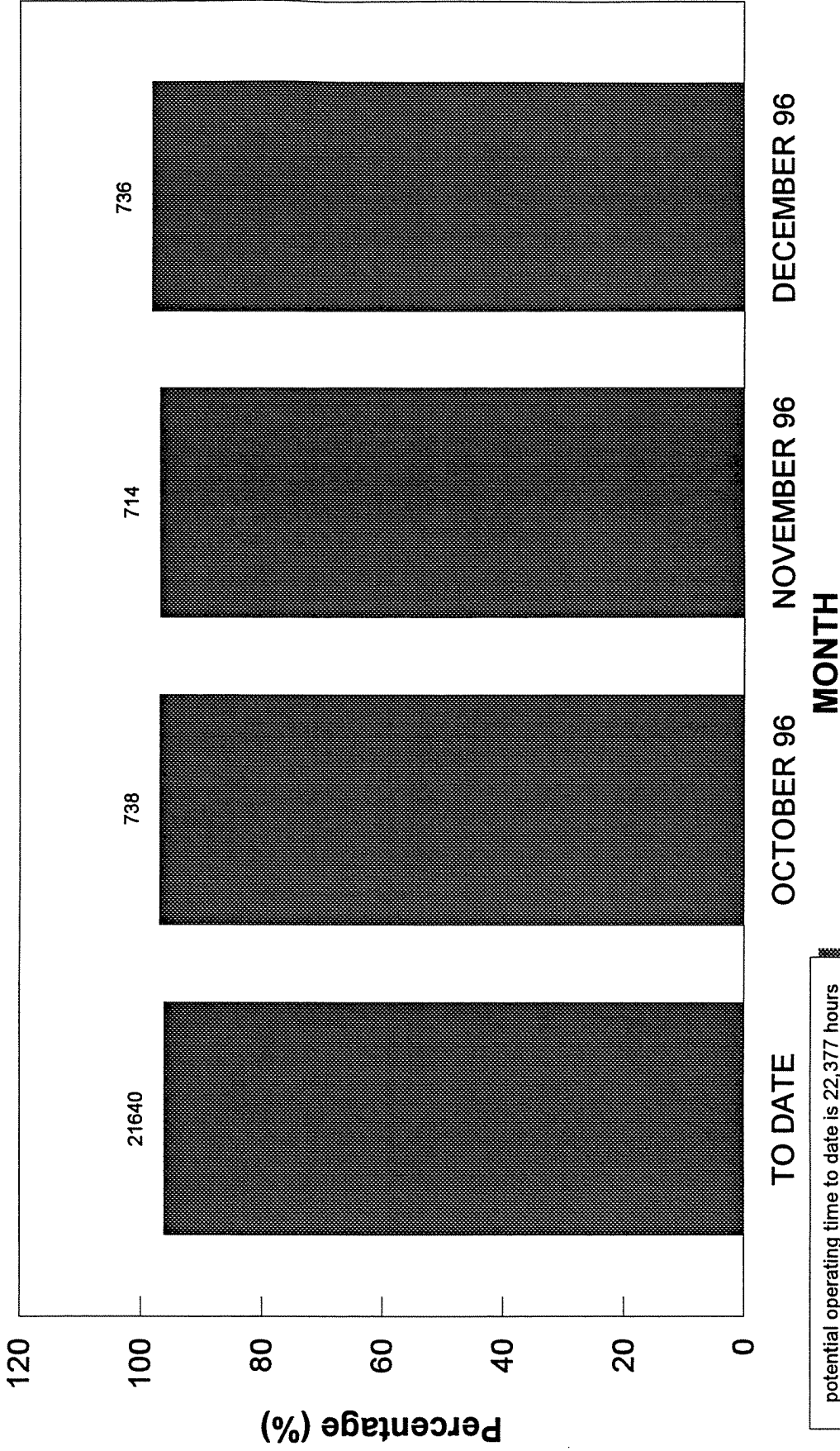
Date: December 31, 1996

ATTACHMENT A

**GROUNDWATER TREATMENT/
SOIL REMEDIATION OPERATIONS INFORMATION**

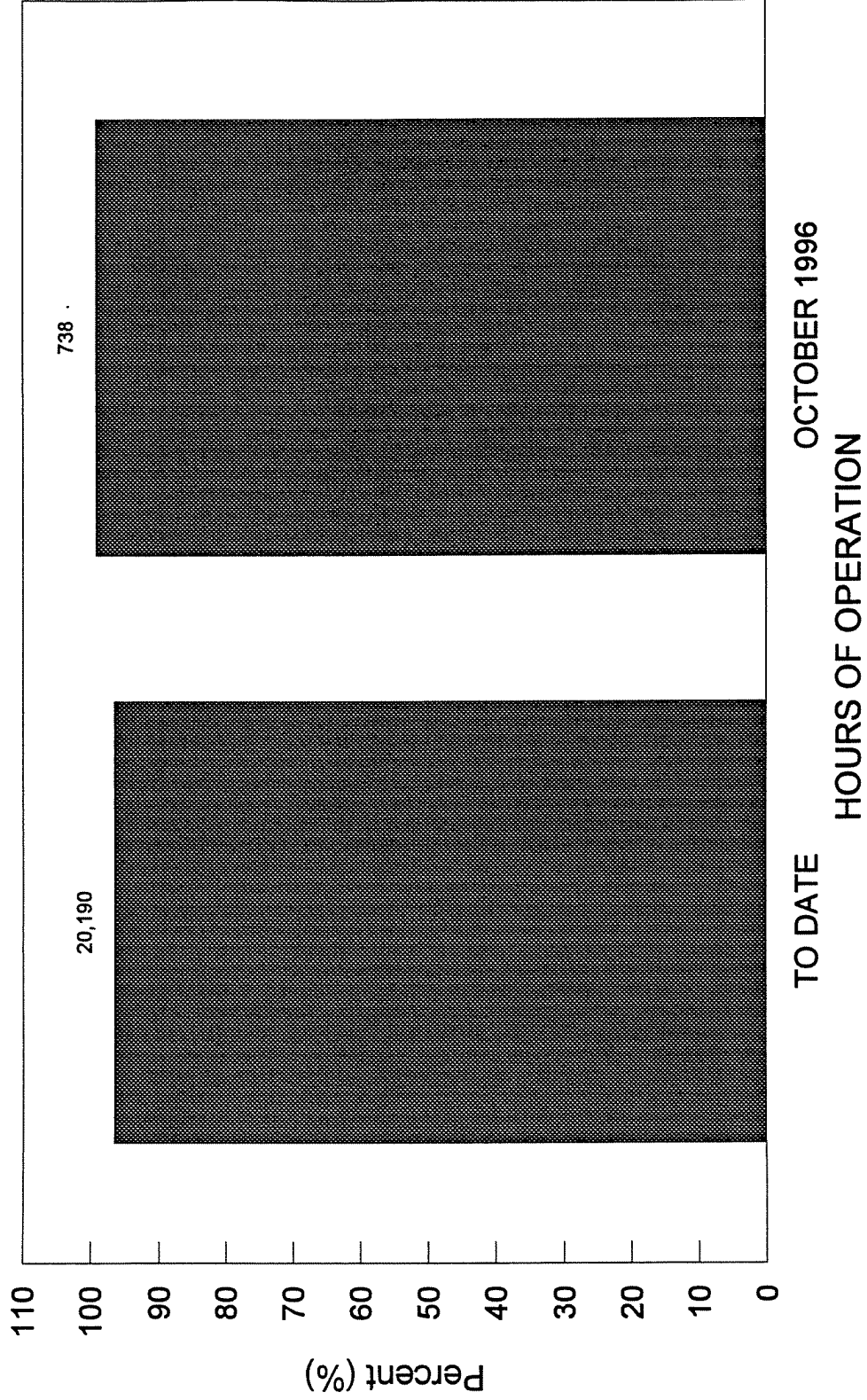
System Operational Hours and Up-Time Percentages

Ground-water Treatment System



System Operational Hours and Up-Time Percentages

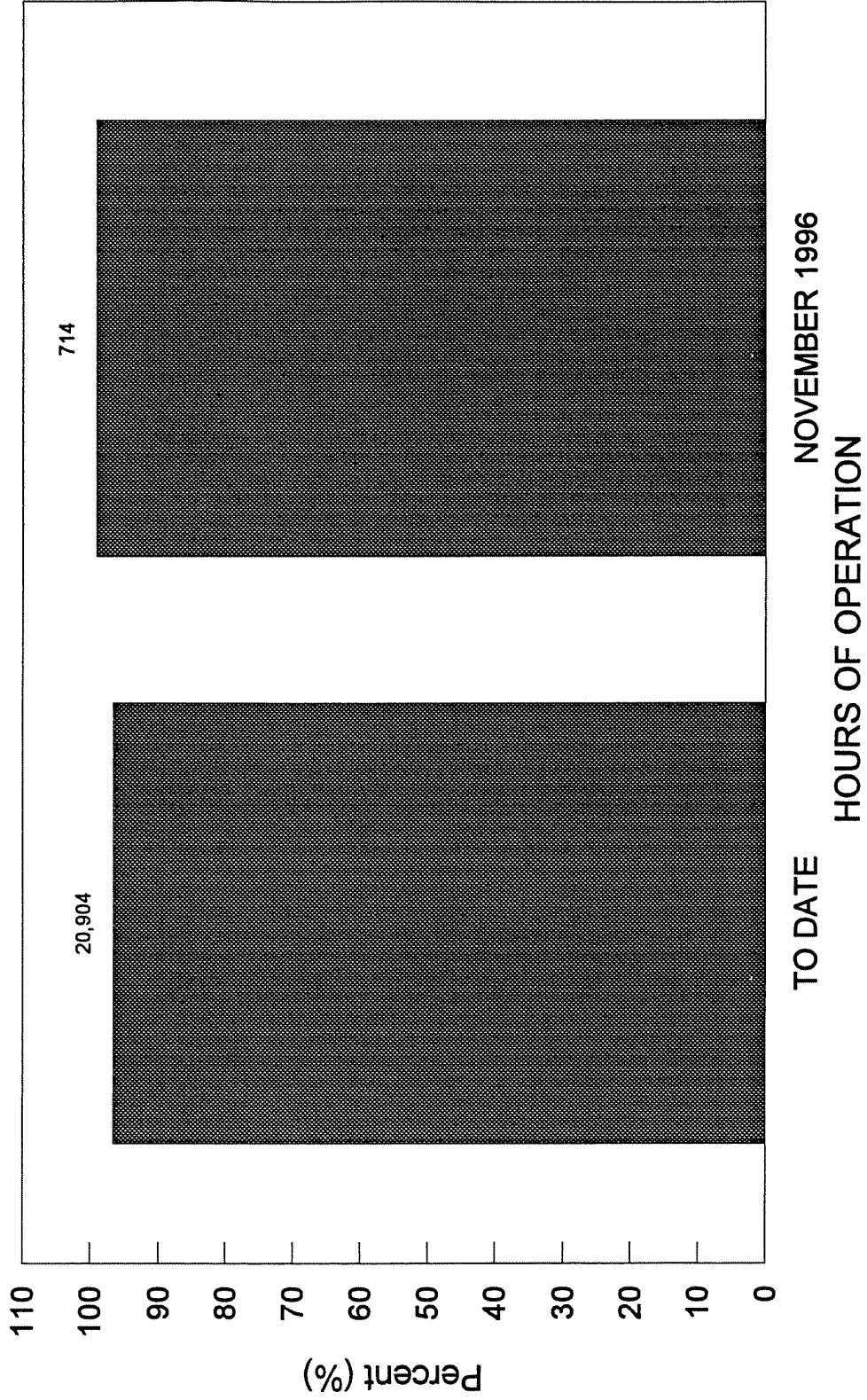
Groundwater Treatment System



potential operating time to date is 20,913 hours

System Operational Hours and Up-Time Percentages

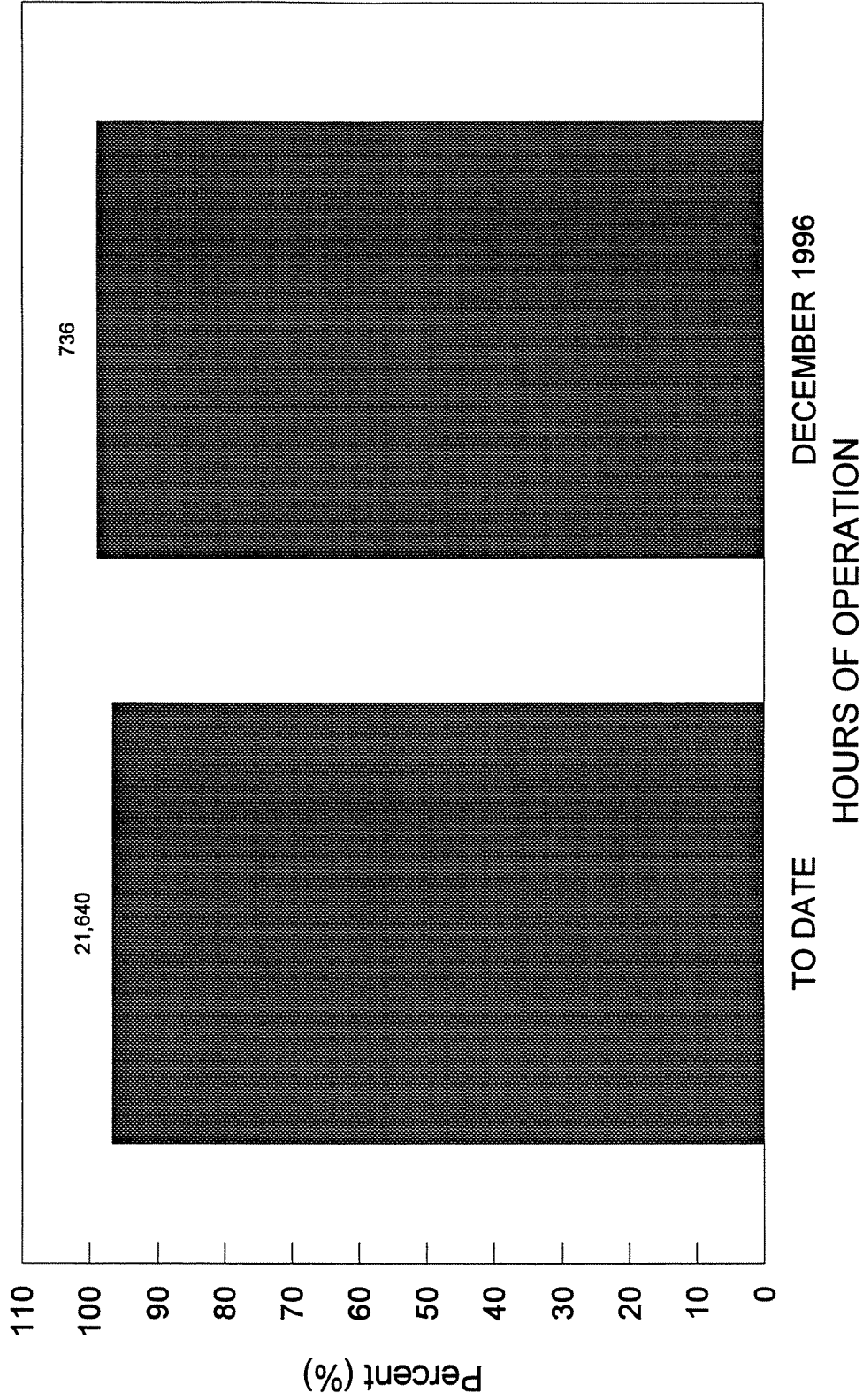
Groundwater Treatment System



potential operating time to date is 21,633 hours

System Operational Hours and Up-Time Percentages

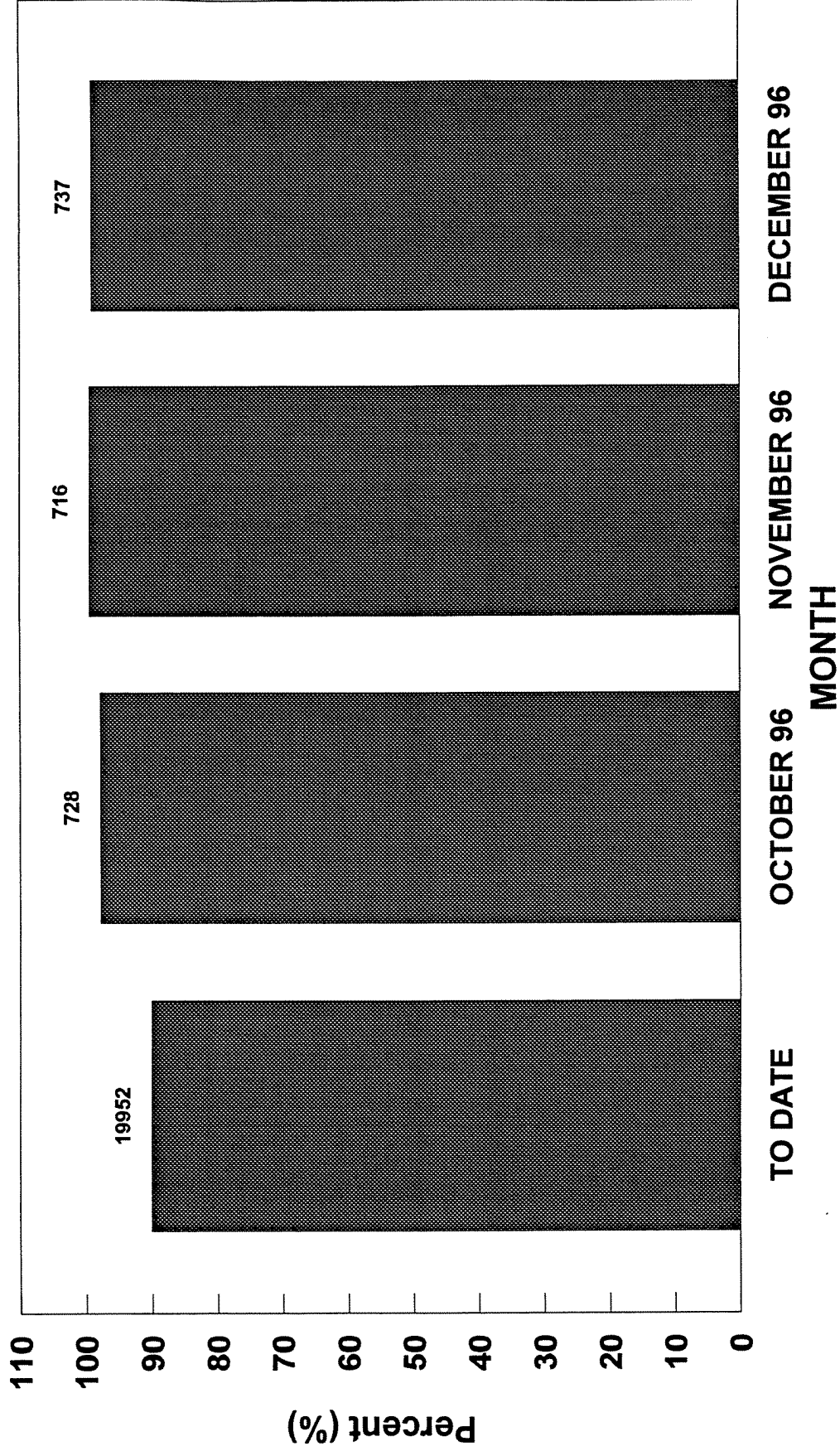
Groundwater Treatment System



potential operating time to date is 22,377 hours

System Operational Hours and Up-Time Percentages

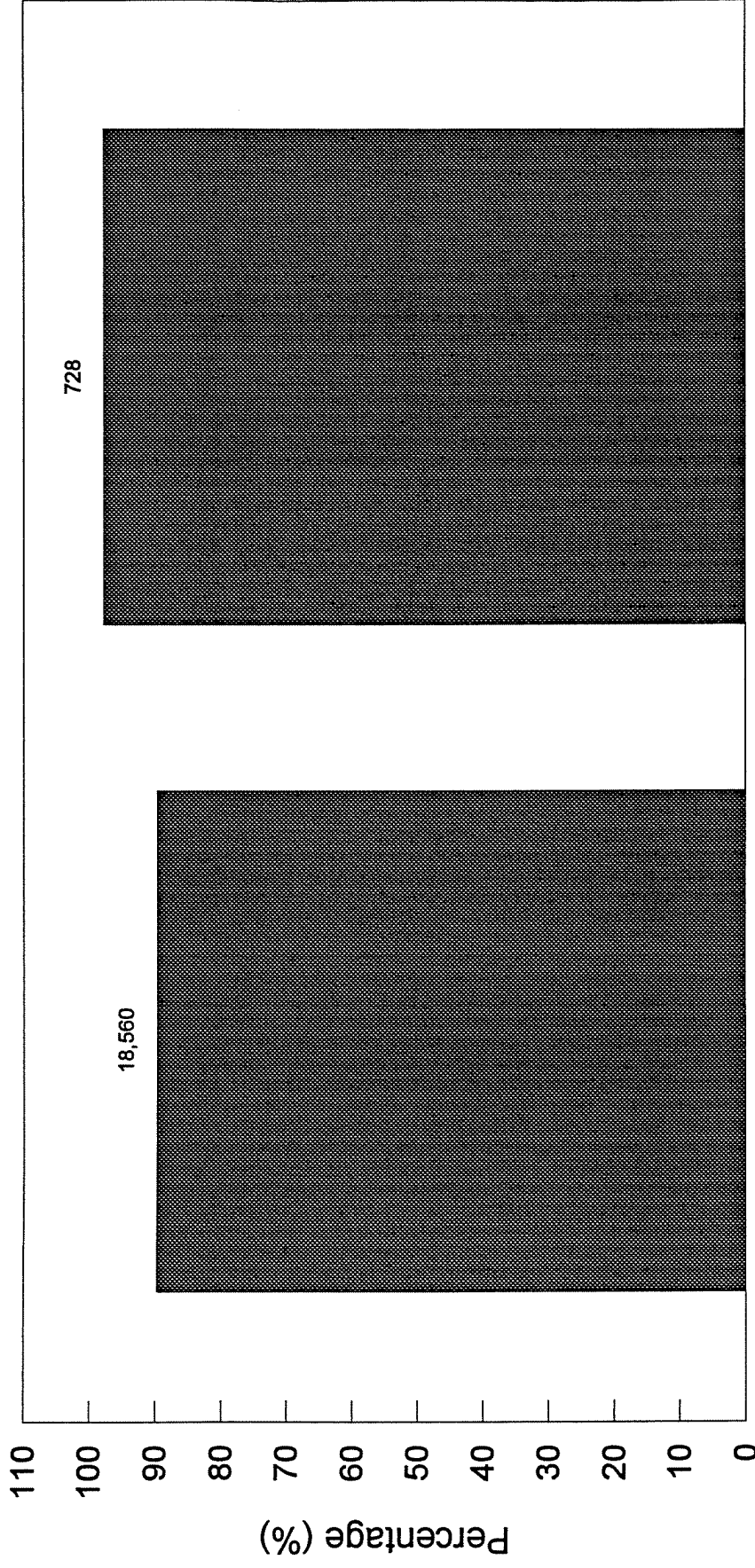
Soil Vapor Extraction System



potential operating time to date is 22,142 hours

System Operational Hours and Up-Time Percentages

Soil Vapor Extraction System



TO DATE

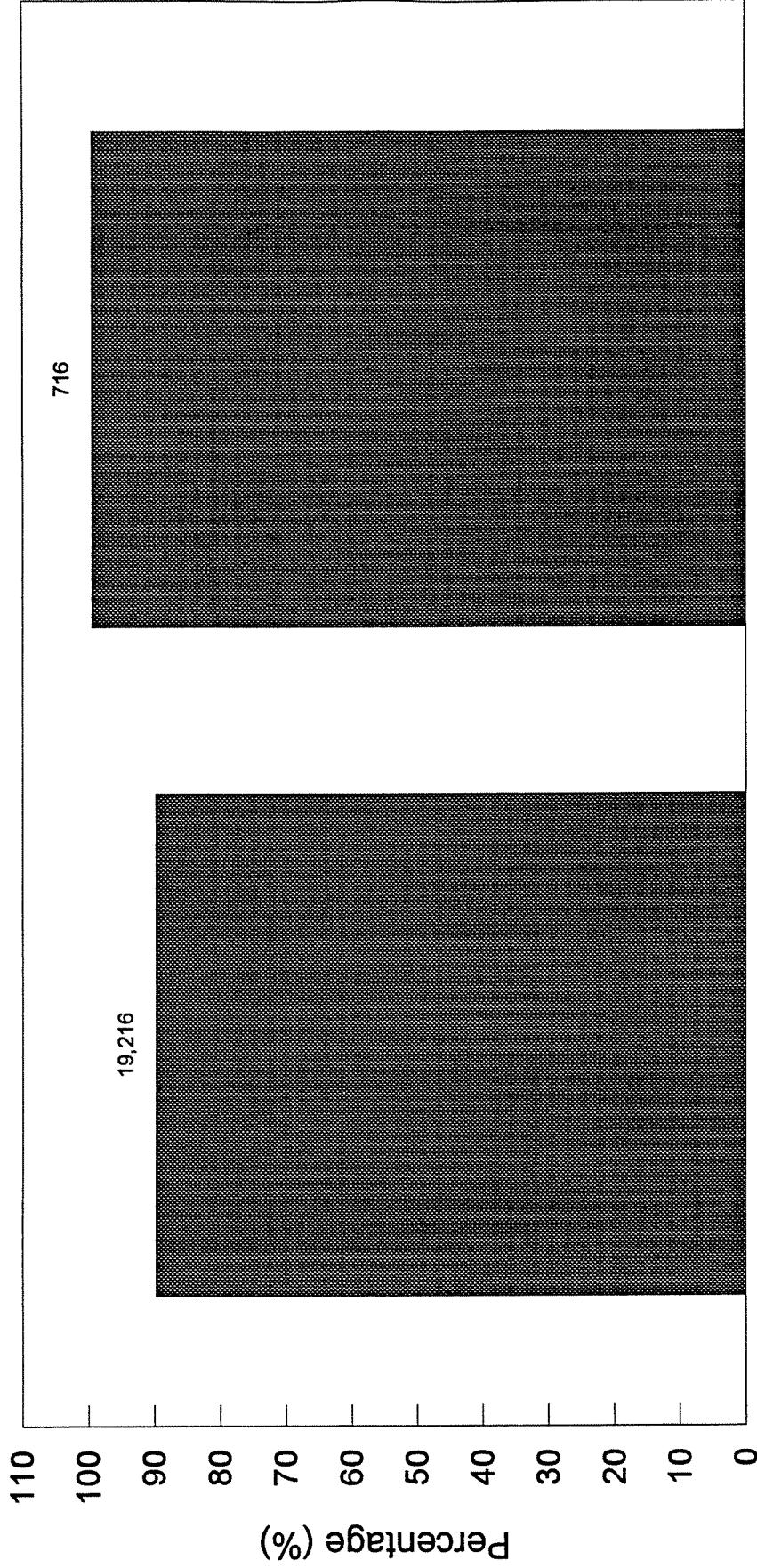
OCTOBER 1996

HOURS OF OPERATION

potential operating time to date is 20,678 hours

System Operational Hours and Up-Time Percentages

Soil Vapor Extraction System



TO DATE

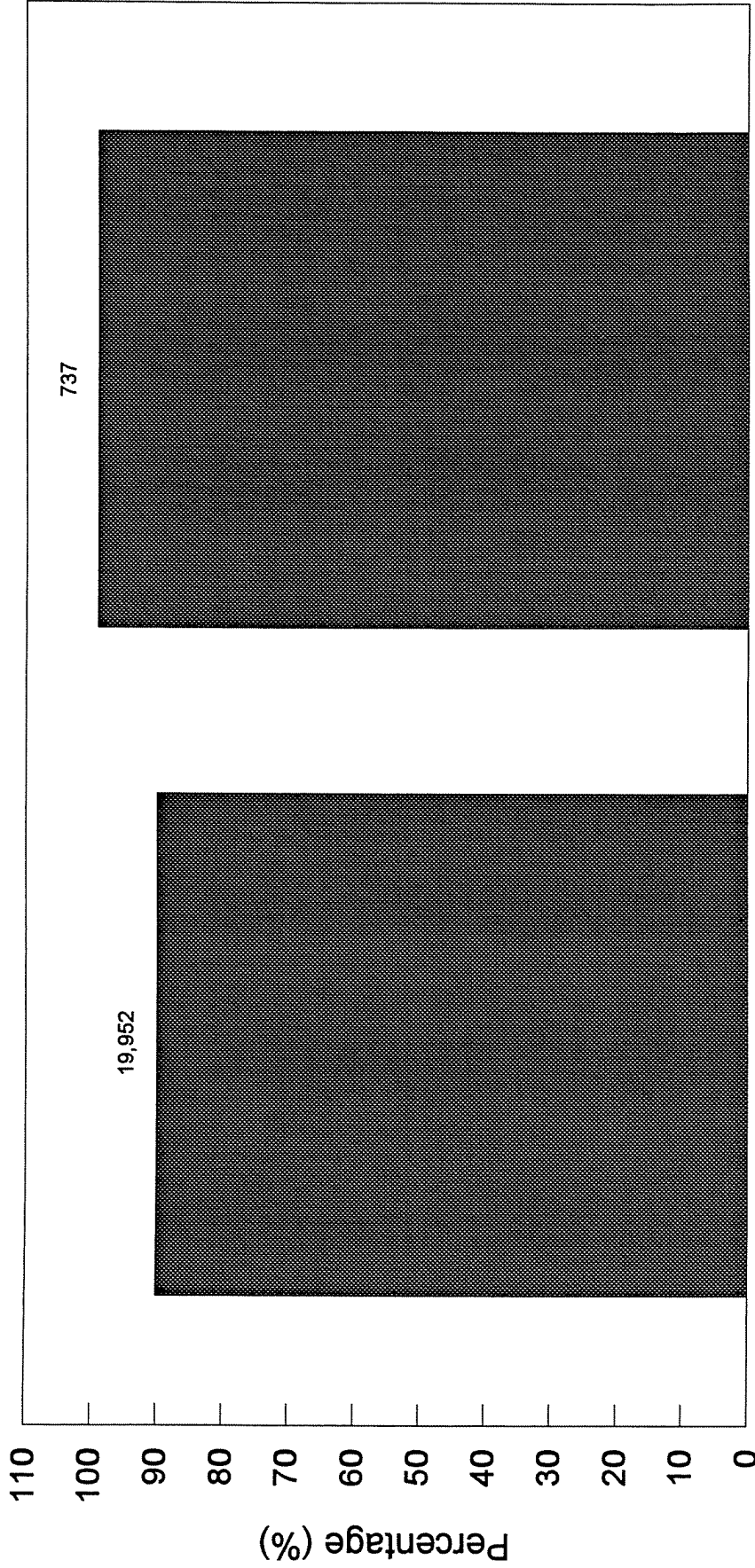
NOVEMBER 1996

HOURS OF OPERATION

potential operating time to date is 21,398 hours

System Operational Hours and Up-Time Percentages

Soil Vapor Extraction System



TO DATE

DECEMBER 1996

HOURS OF OPERATION

potential operating time to date is 22,142 hours

ATTACHMENT B
PW-1/PW-2 STATUS LOG SHEETS

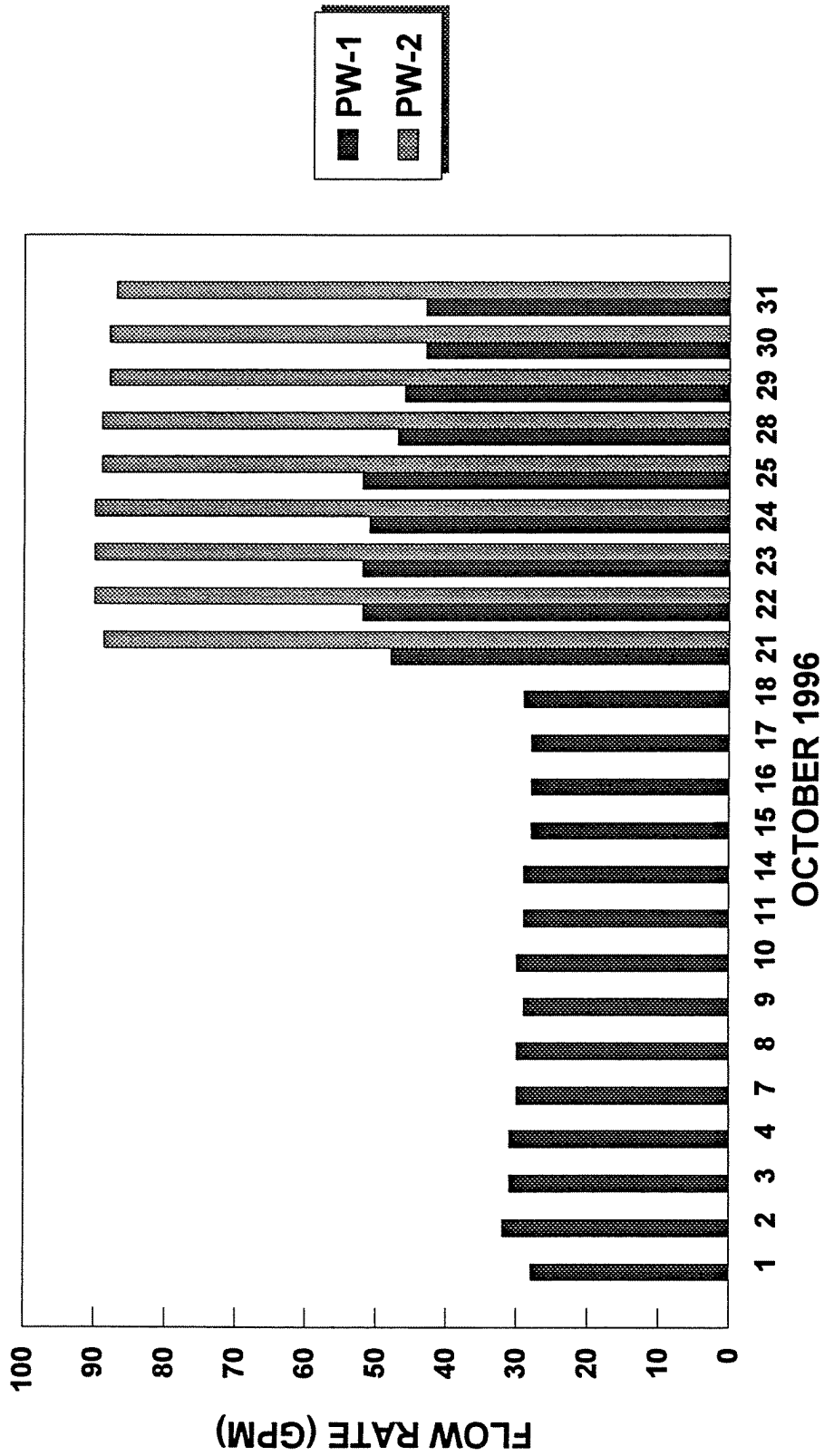
DEWATERING WELL PUMPING RATES

OCTOBER 1996

DATE	PW-1	PW-2	P-2	P-3	P-4
10/01/96	28	0(a)	132	15	20
10/02/96	32	0	132	11	63
10/03/96	31	0	132	89	56
10/04/96	31	0	132	13	4
10/07/96	30	0	132	11	4
10/08/96	30	0	132	12	5
10/09/96	29	0	132	12	4
10/10/96	30	0	132	11	21
10/11/96	29	0	132	11	4
10/14/96	29	0	132	11	4
10/15/96	28	0	132	9	10
10/16/96	28	0	132	12	5
10/17/96	28	0	133	11	5
10/18/96	29	0	133	12	2
10/21/96	48	88.7	135	51	50
10/22/96	52	90	136	24	6
10/23/96	52	90	136	53	39
10/24/96	51	90	176	39	66
10/25/96	52	89	176	74	45
10/28/96	47	89	176	65	86
10/29/96	46	88	175	39	52
10/30/96	43	88	175	36	39
10/31/96	43	87	175	80	9

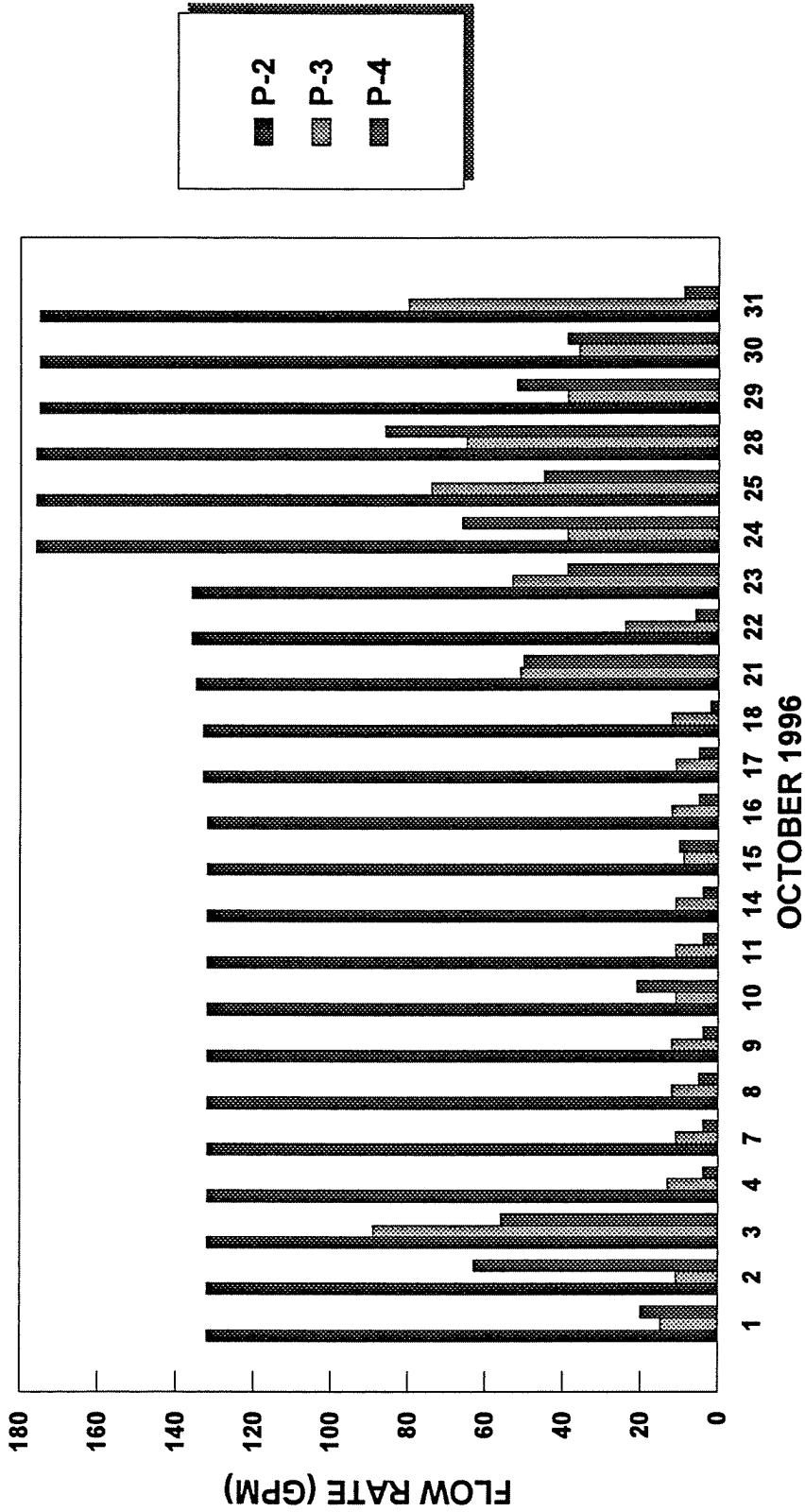
a. Pump deactivated due to low water level in Well.

DEWATERING WELL PUMPING RATES



Pump PW-2 deactivated due to low water level

DEWATERING WELL PUMPING RATES



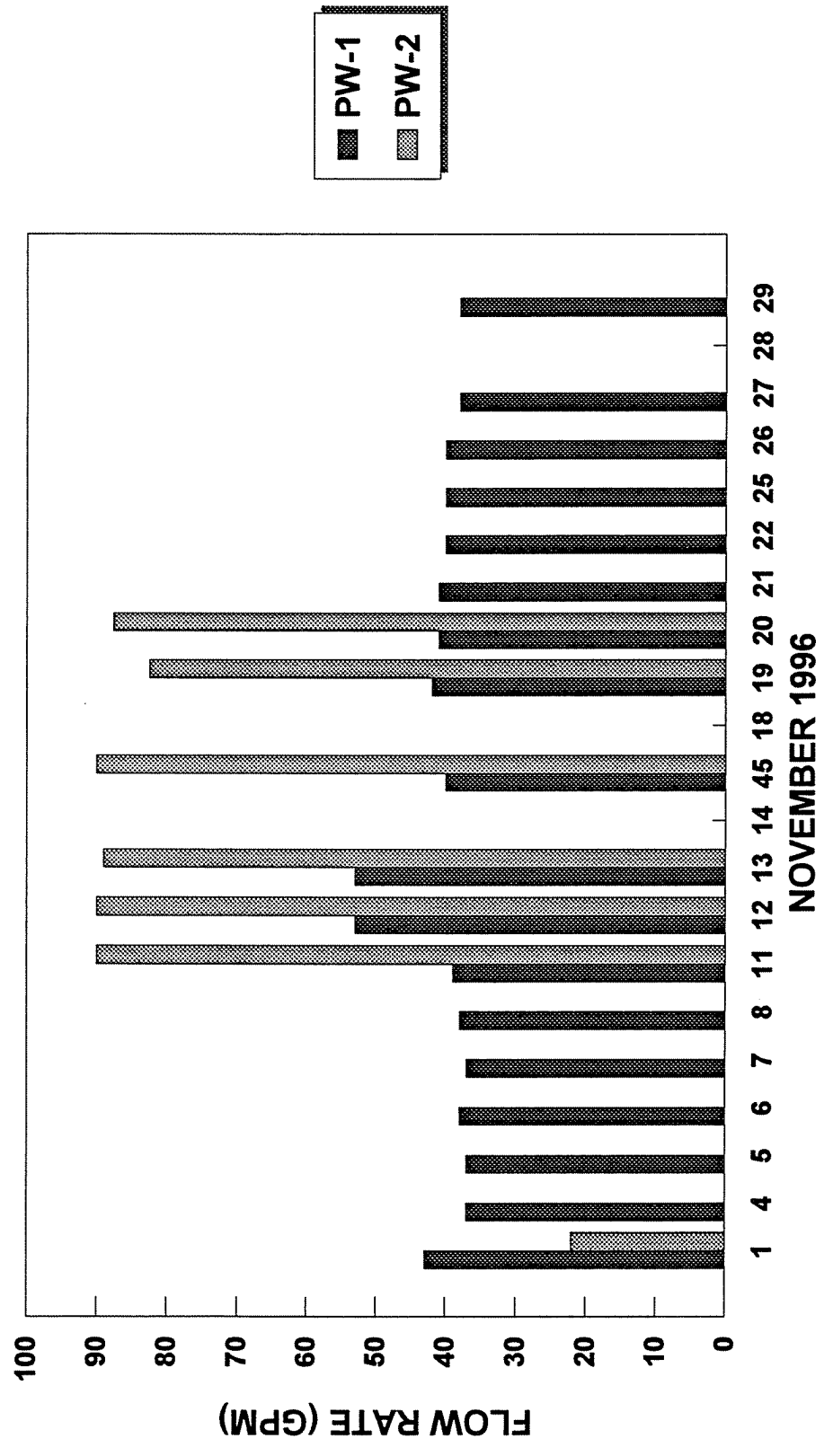
DEWATERING WELL PUMPING RATES

NOVEMBER 1996

DATE	PW-1	PW-2	P-2	P-3	P-4
11/01/96	43	22	174	43	4
11/04/96	37	0(a)	174	27	49
11/05/96	37	0	173	40	4
11/06/96	38	0	173	49	3
11/07/96	37	0	173	63	2
11/08/96	38	0	174	43	2
11/11/96	39	90	176	85	36
11/12/96	53	90	177	80	30
11/13/96	53	89	177	95	43
11/14/96	0	0	0	0	0
11/15/96	40	90	176	29	2
11/18/96	0	0	0	0	0
11/19/96	42	82.5	175	30	19
11/20/96	41	87.6	175	30	15
11/21/96	41	0	175	45	2
11/22/96	40	0	175	39	2
11/25/96	40	0	175	18	62
11/26/96	40	0	175	20	64
11/27/96	38	0	174	53	10
11/28/96	0	0	175	34	1
11/29/96	38	0	175	34	1

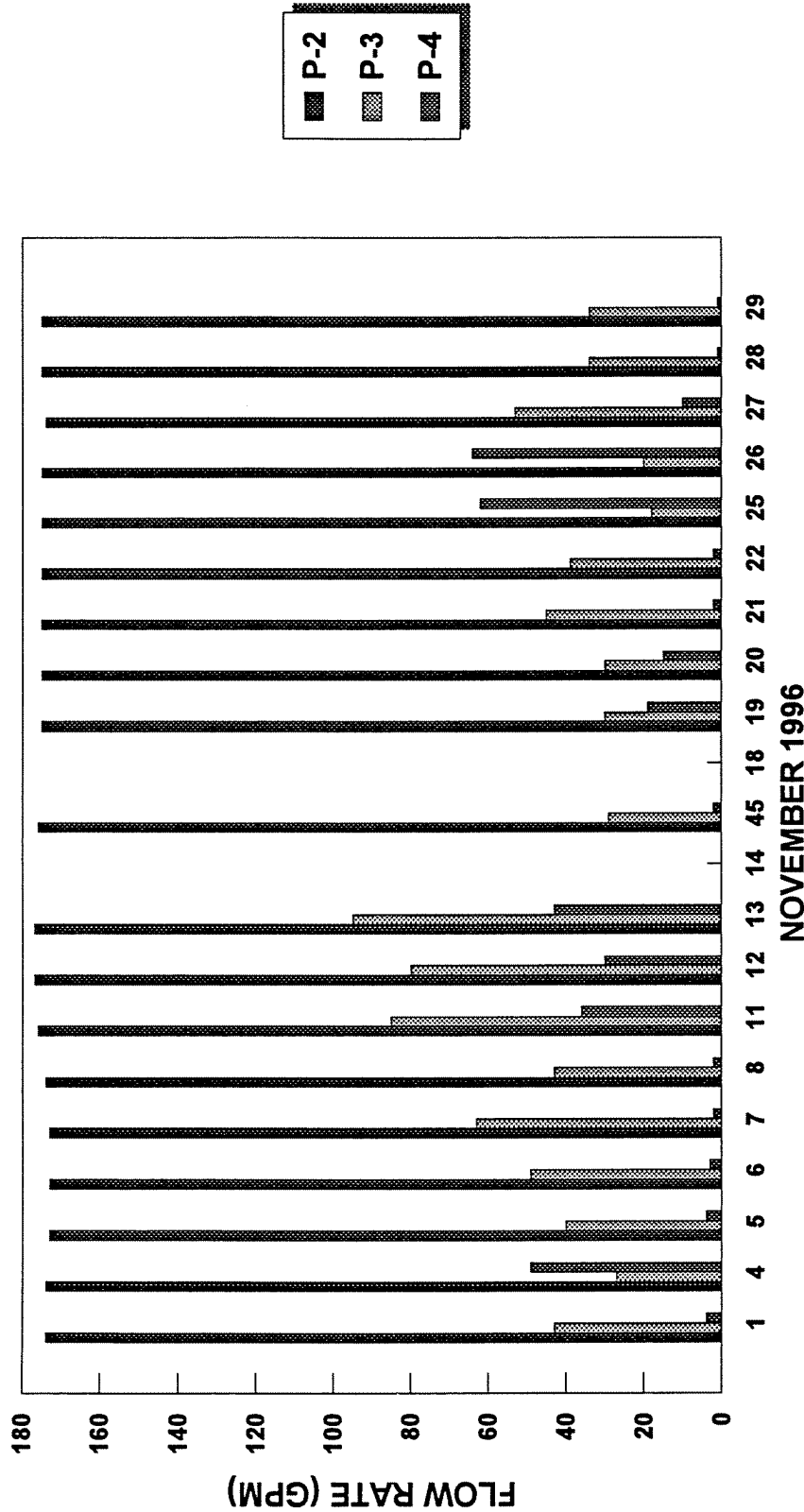
a. Pump deactivated due to low water level in Well.

DEWATERING WELL PUMPING RATES



Pump PW-2 deactivated due to low water level

DEWATERING WELL PUMPING RATES



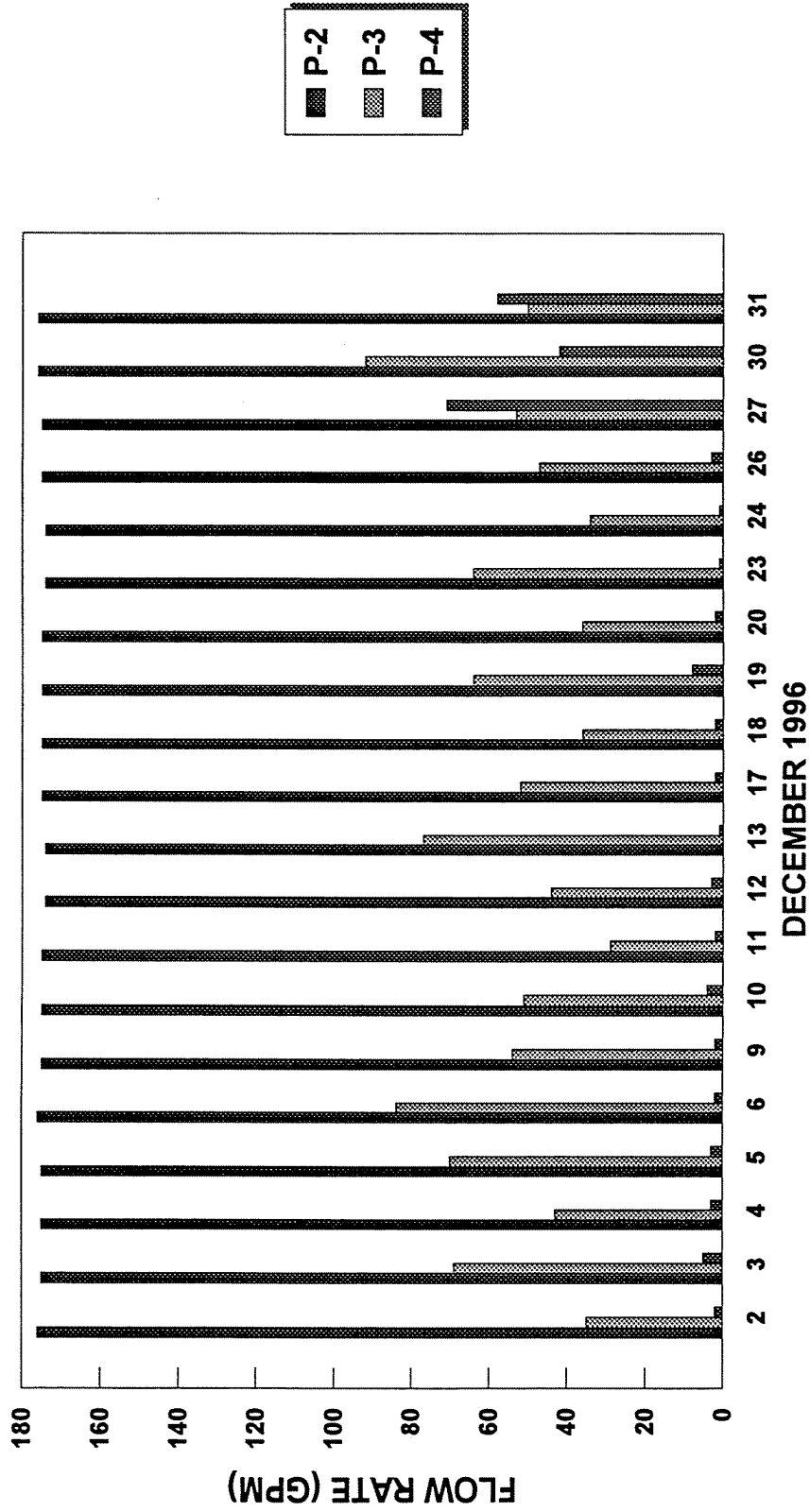
DEWATERING WELL PUMPING RATES

DECEMBER 1996

DATE	PW-1	PW-2	P-2	P-3	P-4
12/02/96	43	89	176	35	2
12/03/96	43	89	175	69	5
12/04/96	43	89	175	43	3
12/05/96	46	89	175	70	3
12/06/96	47	24	176	84	2
12/09/96	44	88	175	54	2
12/10/96	42	88	175	51	4
12/11/96	40	25	175	29	2
12/12/96	38	25.1	174	44	3
12/13/96	31	0(a)	174	77	1
12/17/96	39	91	175	52	2
12/18/96	40	90	175	36	2
12/19/96	39	90	175	64	8
12/20/96	39	90	175	36	2
12/23/96	39	25.6	174	64	1
12/24/96	39	90	174	34	1
12/26/96	44	90	175	47	3
12/27/96	45	91	175	53	71
12/30/96	53	91	176	92	42
12/31/96	52	91	176	50	58

a. Pump deactivated due to low water level in Well.

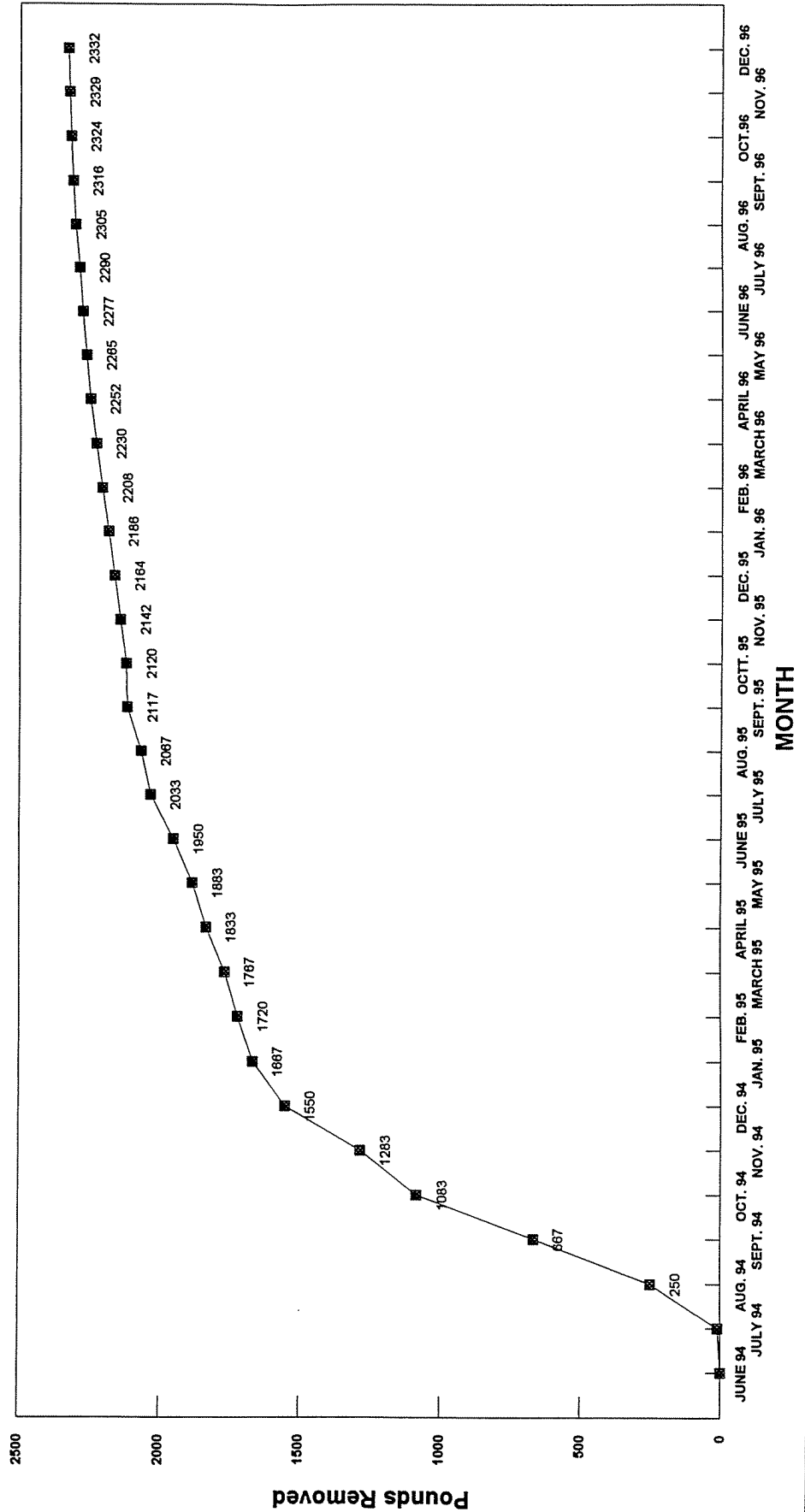
DEWATERING WELL PUMPING RATES



ATTACHMENT C

AIR MONITORING PERFORMANCE DATA

**CUMULATIVE POUNDS OF CONTAMINANTS
REMOVED DURING SVE OPERATION**



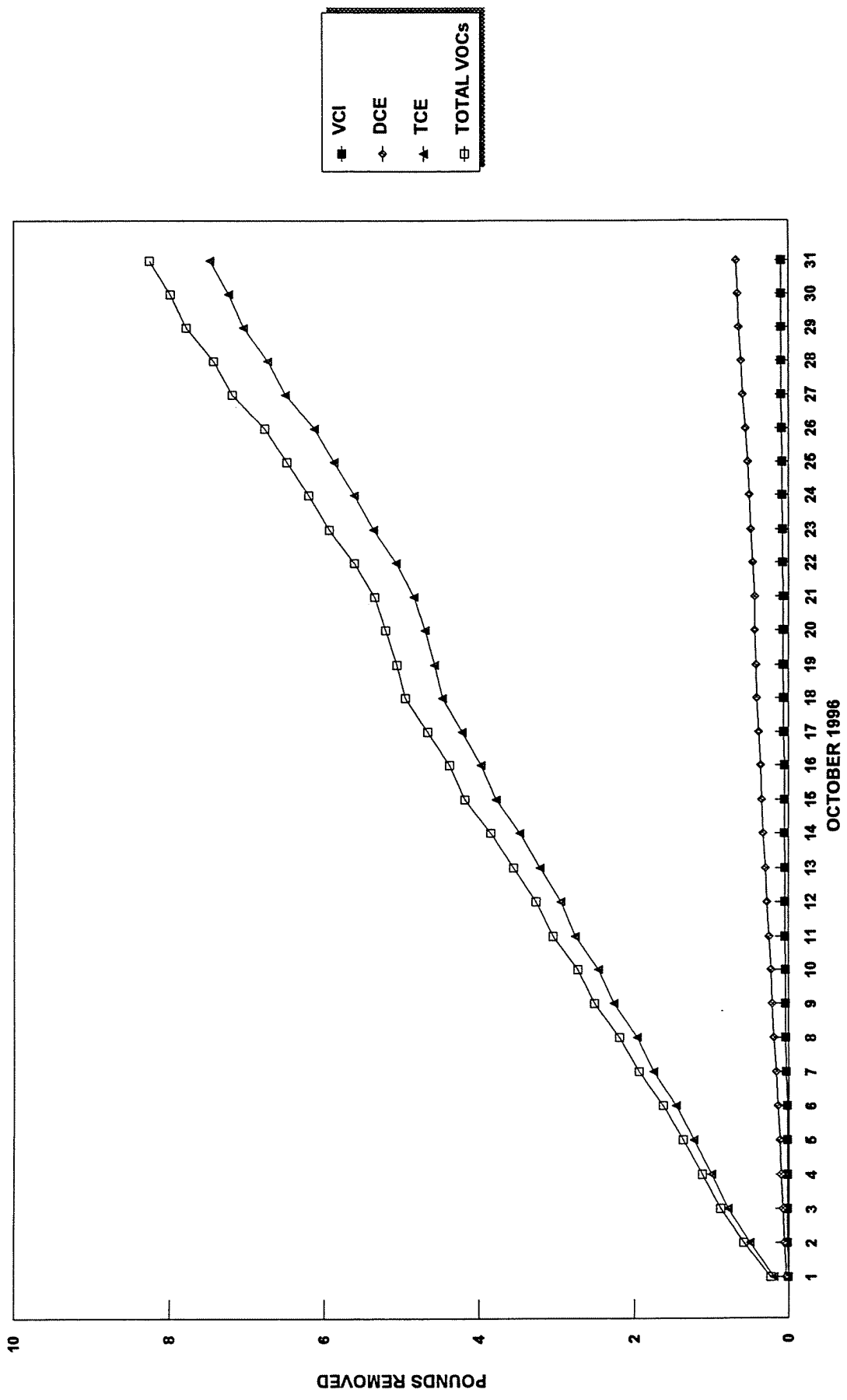
Contaminants Removed During SVE Operations

**Groundwater Treatment and Soil Remediation Program
Carborundum Facility
Wheatfield, New York**

DATE	Daily Load (pounds)			
	VCI	DCE	TCE	TOTAL
10/01/96	0.0085	0.0311	0.1931	0.2327
10/02/96	0.0116	0.0242	0.3104	0.3462
10/03/96	0.0015	0.0241	0.2812	0.3068
10/04/96	0.0009	0.0224	0.2117	0.2350
10/05/96	0.0006	0.0170	0.2300	0.2476
10/06/96	0.0008	0.0205	0.2324	0.2537
10/07/96	0.0069	0.0236	0.2878	0.3183
10/08/96	0.0055	0.0296	0.2166	0.2517
10/09/96	0.0040	0.0174	0.2978	0.3192
10/10/96	0.0007	0.0129	0.2014	0.2150
10/11/96	0.0009	0.0257	0.2972	0.3238
10/12/96	0.0003	0.0262	0.1872	0.2137
10/13/96	0.0042	0.0231	0.2655	0.2928
10/14/96	0.0026	0.0282	0.2590	0.2898
10/15/96	0.0013	0.0229	0.3065	0.3307
10/16/96	0.0041	0.0101	0.1894	0.2036
10/17/96	0.0070	0.0275	0.2450	0.2795
10/18/96	0.0057	0.0217	0.2567	0.2841
10/19/96	0.0032	0.0108	0.0987	0.1127
10/20/96	0.0009	0.0152	0.1247	0.1408
10/21/96	0.0006	0.0036	0.1402	0.1444
10/22/96	0.0028	0.0234	0.2321	0.2583
10/23/96	0.0053	0.0304	0.2916	0.3273
10/24/96	0.0026	0.0173	0.2464	0.2663
10/25/96	0.0024	0.0212	0.2616	0.2852
10/26/96	0.0021	0.0278	0.2567	0.2866
10/27/96	0.0069	0.0380	0.3787	0.4236
10/28/96	0.0014	0.0157	0.2268	0.2439
10/29/96	0.0009	0.0358	0.3127	0.3494
10/30/96	0.0015	0.0136	0.1906	0.2057
10/31/96	0.0014	0.0196	0.2454	0.2664

October 1996	0.0991	0.6806	7.4751	8.2548
Previous Total	18.5377	220.1599	2077.5143	2316.2119
Thru 10/31/96	18.6368	220.8405	2084.9894	2324.4667

CUMULATIVE POUNDS OF CONTAMINANTS REMOVED DURING SVE OPERATIONS



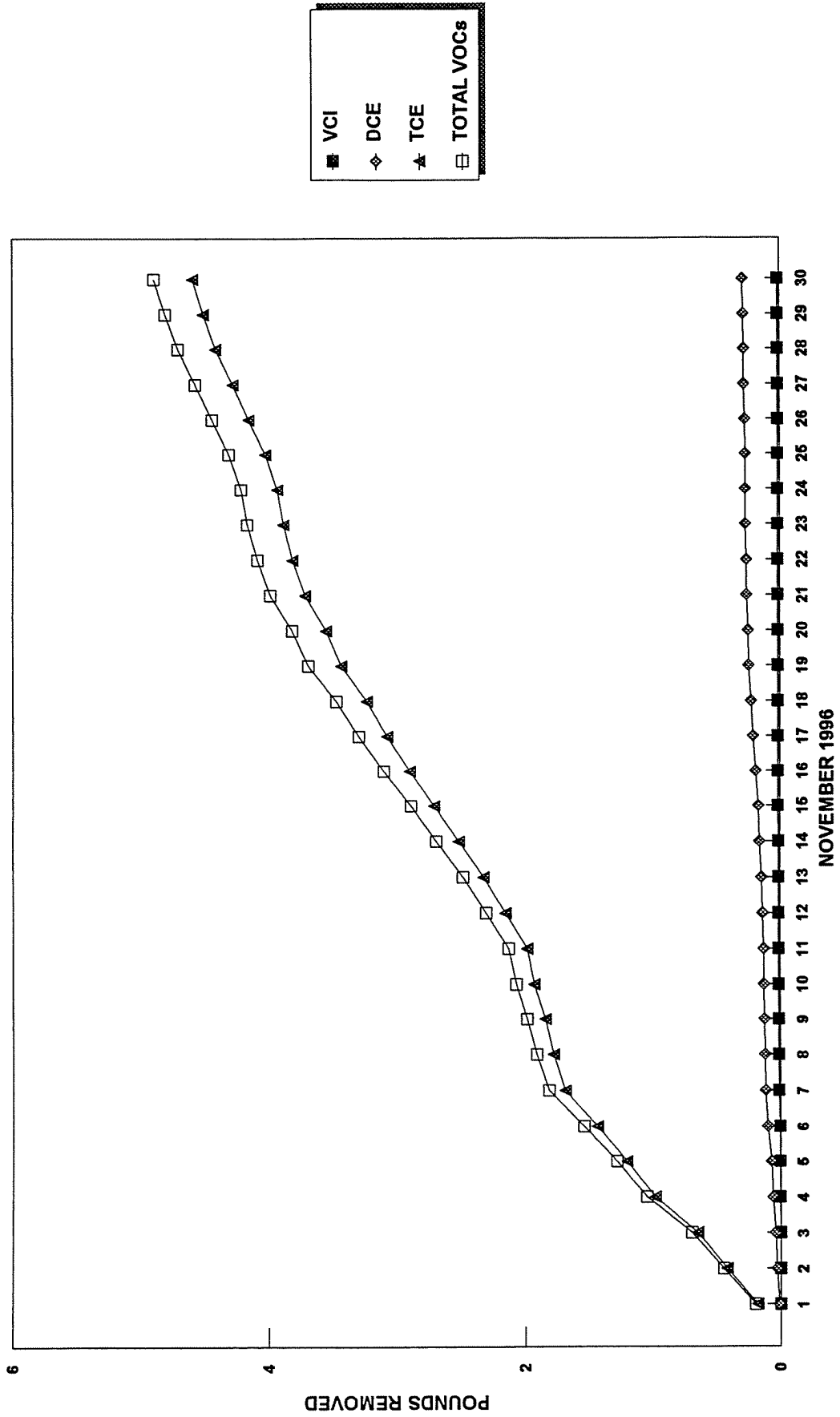
Contaminants Removed During SVE Operations

**Groundwater Treatment and Soil Remediation Program
Carborundum Facility
Wheatfield, New York**

DATE	Daily Load (pounds)			
	VCI	DCE	TCE	TOTAL
11/01/96	0.0003	0.0140	0.1819	0.1962
11/02/96	0.0009	0.0143	0.2365	0.2517
11/03/96	0.0005	0.0139	0.2312	0.2456
11/04/96	0.0006	0.0195	0.3317	0.3518
11/05/96	0.0002	0.0126	0.2208	0.2336
11/06/96	0.0018	0.0248	0.2303	0.2569
11/07/96	0.0075	0.0171	0.2495	0.2741
11/08/96	0.0013	0.0044	0.0932	0.0989
11/09/96	0.0002	0.0058	0.0659	0.0719
11/10/96	0.0002	0.0006	0.0838	0.0846
11/11/96	0.0003	0.0032	0.0577	0.0612
11/12/96	0.0001	0.0062	0.1664	0.1727
11/13/96	0.0001	0.0089	0.1742	0.1832
11/14/96	0.0001	0.0151	0.1916	0.2068
11/15/96	0.0002	0.0083	0.1911	0.1996
11/16/96	0.0003	0.0207	0.1913	0.2123
11/17/96	0.0002	0.0184	0.1736	0.1922
11/18/96	0.0006	0.0170	0.1599	0.1775
11/19/96	0.0004	0.0167	0.2019	0.2190
11/20/96	0.0002	0.0073	0.1196	0.1271
11/21/96	0.0004	0.0105	0.1615	0.1724
11/22/96	0.0001	0.0017	0.0987	0.1005
11/23/96	0.0000	0.0042	0.0752	0.0794
11/24/96	0.0000	0.0007	0.0475	0.0482
11/25/96	0.0000	0.0014	0.0913	0.0927
11/26/96	0.0002	0.0050	0.1297	0.1349
11/27/96	0.0001	0.0056	0.1238	0.1295
11/28/96	0.0001	0.0010	0.1346	0.1357
11/29/96	0.0001	0.0045	0.0958	0.1004
11/30/96	0.0001	0.0037	0.0844	0.0882

November 1996	0.0171	0.2871	4.5946	4.8988
Previous Total	18.6368	220.8405	2084.9894	2324.4667
Thru 11/30/96	18.6539	221.1276	2089.5840	2329.3655

**CUMULATIVE POUNDS OF CONTAMINANTS
REMOVED DURING SVE OPERATIONS**



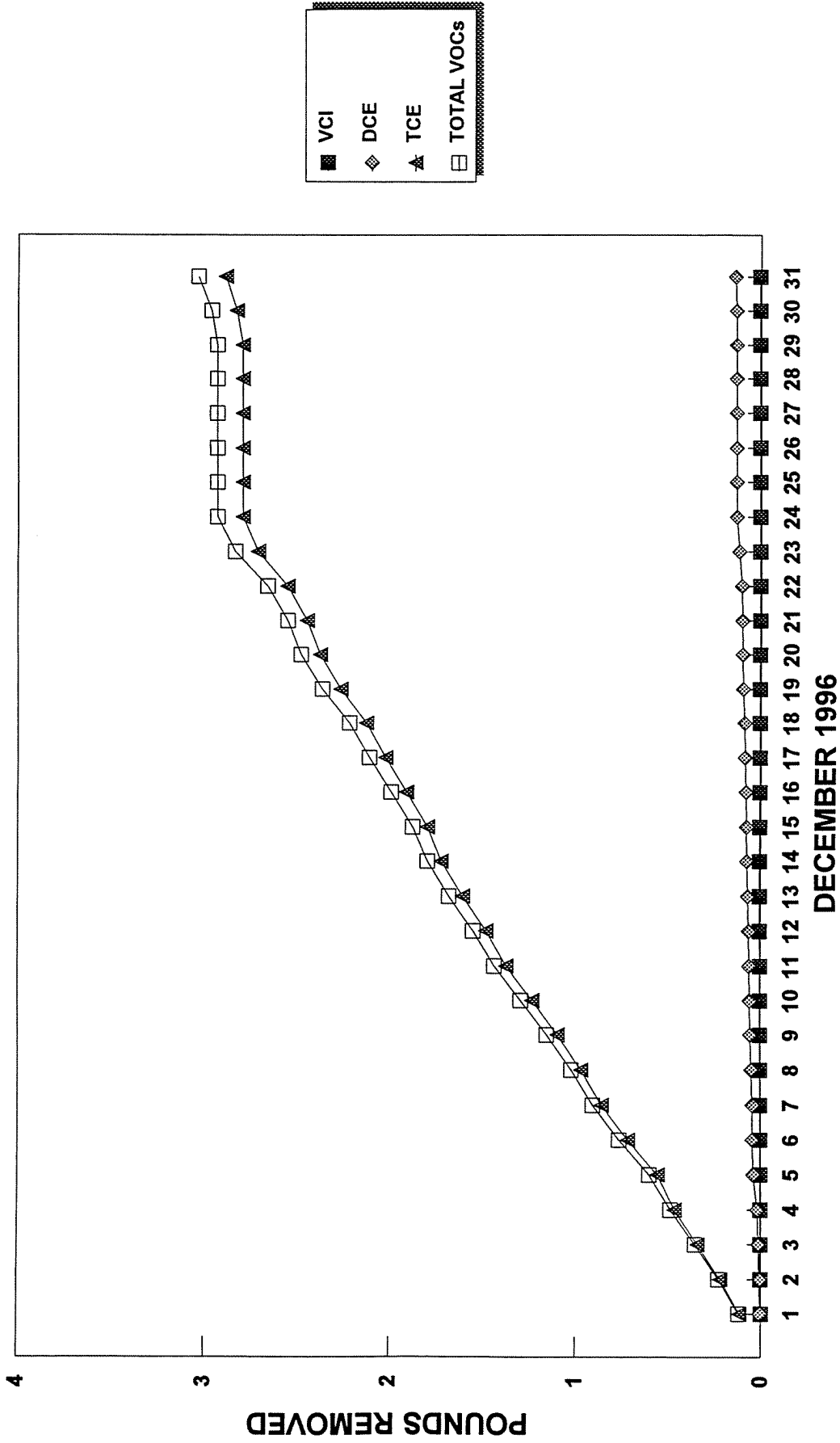
Contaminants Removed During SVE Operations
Groundwater Treatment and Soil Remediation Program
Carborundum Facility
Wheatfield, New York

DATE	Daily Load (pounds)			
	V/CI	DCE	TCE	TOTAL
12/01/96	0.0006	0.0047	0.1161	0.1214
12/02/96	0.0001	0.0034	0.1061	0.1096
12/03/96	0.0010	0.0042	0.1192	0.1244
12/04/96	0.0001	0.0073	0.1269	0.1343
12/05/96	0.0008	0.0205	0.0901	0.1114
12/06/96	0.0000	0.0027	0.1611	0.1638
12/07/96	0.0001	0.0019	0.1389	0.1409
12/08/96	0.0001	0.0060	0.1110	0.1171
12/09/96	0.0003	0.0049	0.1270	0.1322
12/10/96	0.0001	0.0017	0.1369	0.1387
12/11/96	0.0001	0.0035	0.1376	0.1412
12/12/96	0.0002	0.0028	0.1094	0.1124
12/13/96	0.0003	0.0047	0.1249	0.1299
12/14/96	0.0001	0.0048	0.1129	0.1178
12/15/96	0.0002	0.0031	0.0759	0.0792
12/16/96	0.0001	0.0044	0.1128	0.1173
12/17/96	0.0001	0.0035	0.1149	0.1185
12/18/96	0.0000	0.0028	0.1041	0.1069
12/19/96	0.0001	0.0106	0.1371	0.1478
12/20/96	0.0001	0.0021	0.1112	0.1134
12/21/96	0.0001	0.0023	0.0720	0.0744
12/22/96	0.0001	0.0033	0.1043	0.1077
12/23/96	0.0005	0.0145	0.1621	0.1771
12/24/96	0.0007	0.0118	0.0831	0.0956
12/25/96	NR	NR	NR	0.0000
12/26/96	NR	NR	NR	0.0000
12/27/96	NR	NR	NR	0.0000
12/28/96	NR	NR	NR	0.0000
12/29/96	NR	NR	NR	0.0000
12/30/96	0.0000	0.0012	0.0314	0.0326
12/31/96	0.0000	0.0061	0.0634	0.0695

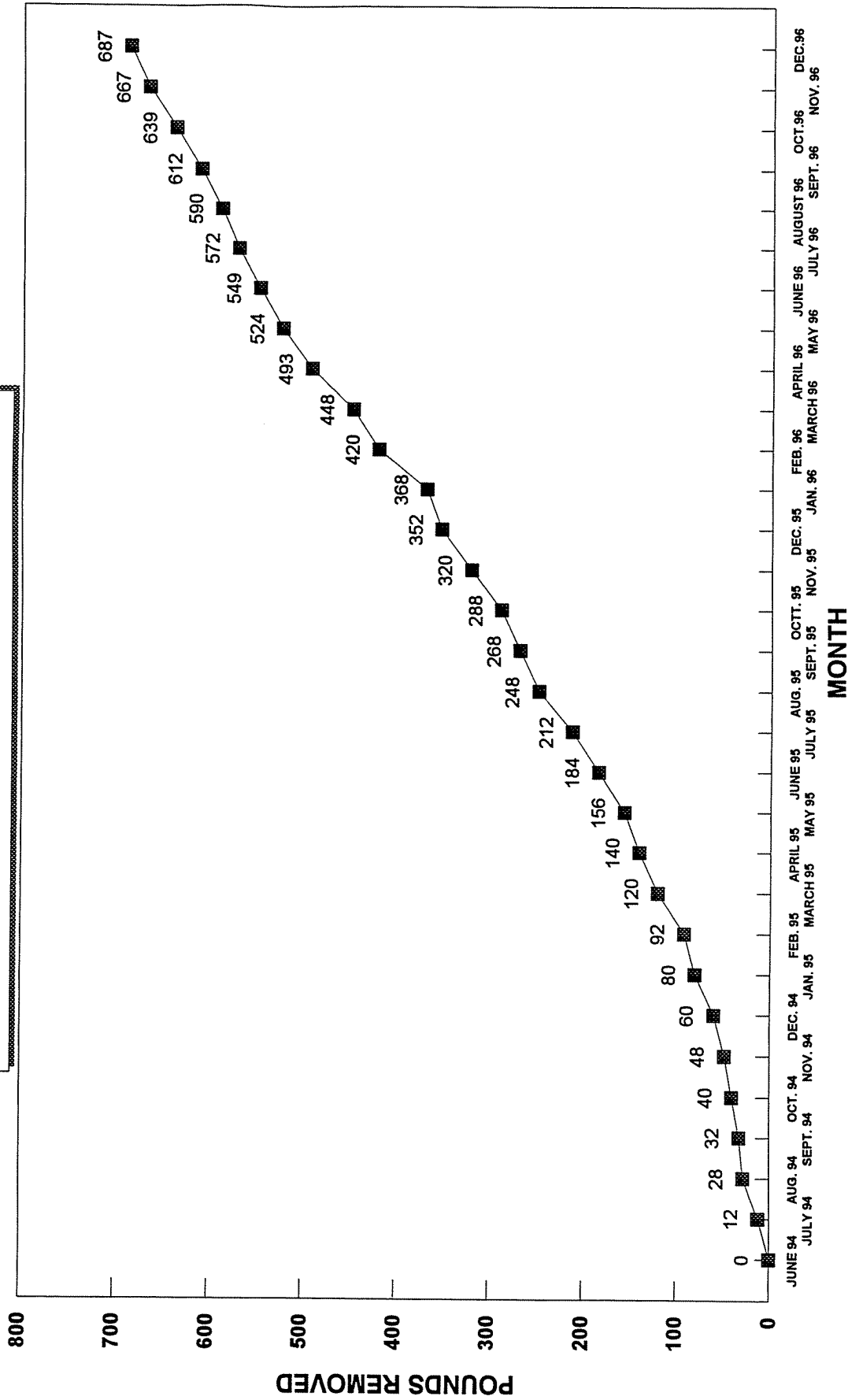
December 1996	0.0059	0.1388	2.8904	3.0351
Previous Total	18.6539	221.1276	2089.5840	2329.3655
Thru 12/31/96	18.6598	221.2664	2092.4744	2332.4006

Note: NR = No Readings collected

CUMULATIVE POUNDS OF CONTAMINANTS REMOVED DURING SVE OPERATIONS



**CUMULATIVE POUNDS OF CONTAMINANTS
REMOVED DURING AIR STRIPPING**



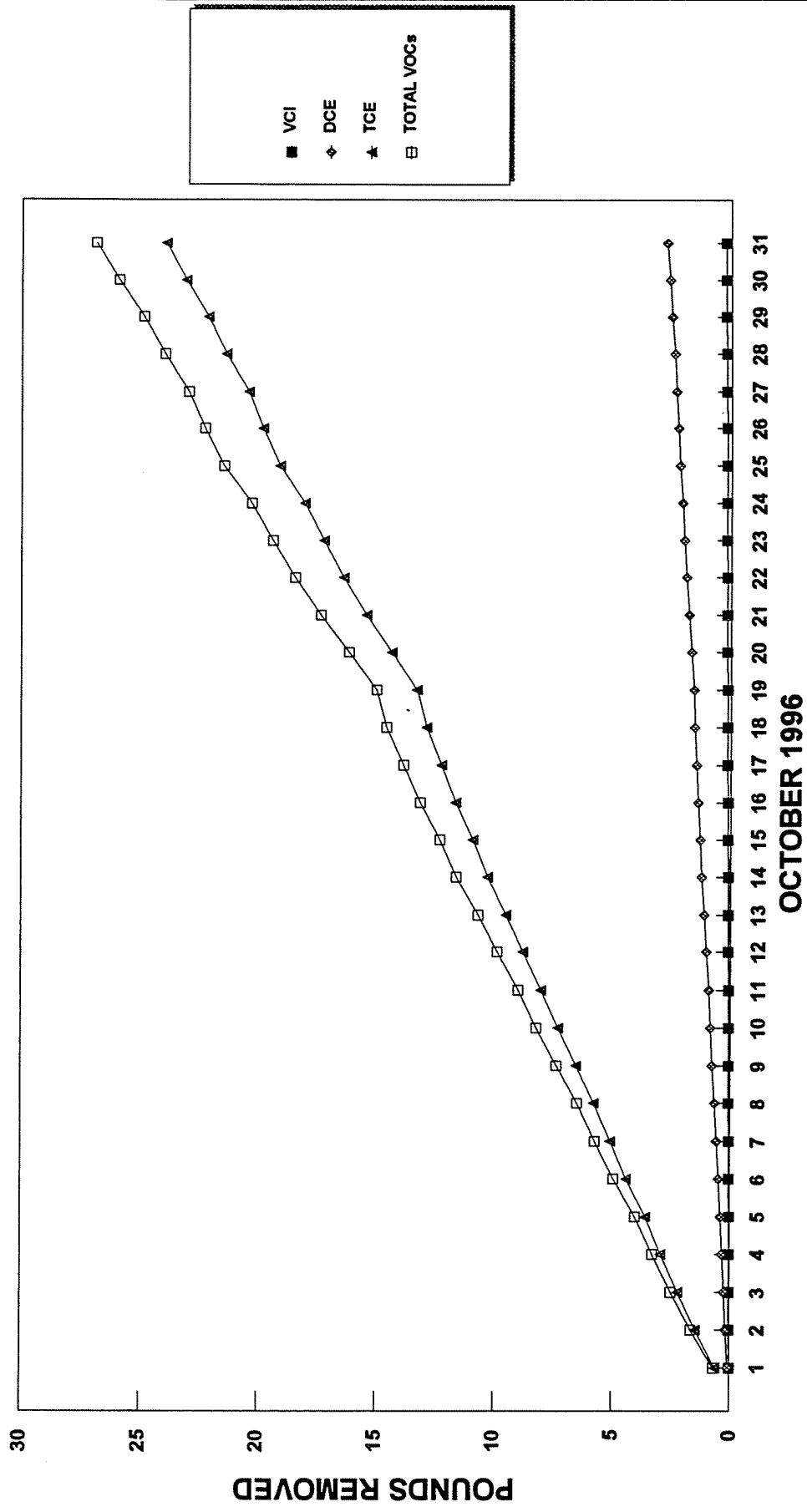
Contaminants Removed Via Air Stripping

Groundwater Treatment and Soil Remediation Program Carborundum Facility Wheatfield, New York

DATE	Daily Load (pounds)			
	V/CI	DCE	TCE	TOTAL
10/01/96	0.0100	0.0723	0.5990	0.6813
10/02/96	0.0087	0.0962	0.8471	0.9520
10/03/96	0.0061	0.0752	0.7728	0.8541
10/04/96	0.0065	0.0803	0.7101	0.7969
10/05/96	0.0061	0.0698	0.6520	0.7279
10/06/96	0.0105	0.0947	0.8231	0.9283
10/07/96	0.0108	0.0826	0.6791	0.7725
10/08/96	0.0090	0.0833	0.6865	0.7788
10/09/96	0.0064	0.0985	0.7662	0.8711
10/10/96	0.0052	0.0721	0.7667	0.8440
10/11/96	0.0046	0.0788	0.6992	0.7826
10/12/96	0.0039	0.1046	0.7693	0.8778
10/13/96	0.0078	0.0970	0.7100	0.8148
10/14/96	0.0103	0.0998	0.8072	0.9173
10/15/96	0.0054	0.0757	0.6236	0.7047
10/16/96	0.0102	0.0952	0.7193	0.8247
10/17/96	0.0110	0.0745	0.6064	0.6919
10/18/96	0.0111	0.0836	0.6290	0.7237
10/19/96	0.0074	0.0229	0.3848	0.4151
10/20/96	0.0062	0.1053	1.0517	1.1632
10/21/96	0.0053	0.1228	1.0833	1.2114
10/22/96	0.0063	0.1047	0.9743	1.0853
10/23/96	0.0086	0.0977	0.8347	0.9410
10/24/96	0.0057	0.0926	0.8132	0.9115
10/25/96	0.0080	0.0993	1.0702	1.1775
10/26/96	0.0071	0.0831	0.7149	0.8051
10/27/96	0.0117	0.0664	0.6139	0.6920
10/28/96	0.0073	0.0803	0.9433	1.0309
10/29/96	0.0077	0.1020	0.7772	0.8869
10/30/96	0.0066	0.0902	0.9415	1.0383
10/31/96	0.0050	0.1101	0.8584	0.9735

October 1996	0.2365	2.7116	23.9280	26.8761
Previous Total	9.8831	117.2828	485.1942	612.3602
Thru 10/31/96	10.1196	119.9944	509.1222	639.2363

**CONTAMINANTS REMOVED VIA
AIR STRIPPING**



Contaminants Removed Via Air Stripping

Groundwater Treatment and Soil Remediation Program Carborundum Facility Wheatfield, New York

DATE	Daily Load (pounds)			
	VCI	DCE	TCE	TOTAL
11/01/96	0.0059	0.0839	0.7436	0.8334
11/02/96	0.0048	0.0887	0.8848	0.9783
11/03/96	0.0058	0.0827	0.9258	1.0143
11/04/96	0.0059	0.0770	0.7291	0.8120
11/05/96	0.0081	0.0778	0.8342	0.9201
11/06/96	0.0101	0.0802	0.7384	0.8287
11/07/96	0.0118	0.0870	0.7839	0.8827
11/08/96	0.0089	0.1092	0.9986	1.1167
11/09/96	0.0053	0.0815	0.7977	0.8845
11/10/96	0.0032	0.0863	0.6966	0.7861
11/11/96	0.0019	0.1077	0.8076	0.9172
11/12/96	0.0036	0.0957	0.7395	0.8388
11/13/96	0.0029	0.0897	0.7354	0.8280
11/14/96	0.0034	0.0861	0.7985	0.8880
11/15/96	0.0030	0.0869	0.8802	0.9701
11/16/96	0.0065	0.1004	1.0240	1.1309
11/17/96	0.0055	0.0884	0.9510	1.0449
11/18/96	0.0040	0.0705	0.7256	0.8001
11/19/96	0.0054	0.0951	0.8895	0.9900
11/20/96	0.0028	0.1061	0.9228	1.0317
11/21/96	0.0043	0.0838	0.8350	0.9231
11/22/96	0.0049	0.0898	0.8946	0.9893
11/23/96	0.0033	0.0828	0.9170	1.0031
11/24/96	0.0027	0.0719	0.8216	0.8962
11/25/96	0.0035	0.0918	1.1177	1.2130
11/26/96	0.0041	0.0920	0.9781	1.0742
11/27/96	0.0037	0.0942	0.8122	0.9101
11/28/96	0.0040	0.0862	0.8061	0.8963
11/29/96	0.0036	0.0802	0.7698	0.8536
11/30/96	0.0056	0.0954	0.8295	0.9305

November 1996	0.1485	2.6490	25.3884	28.1859
Previous Total	10.1196	119.9944	509.1222	639.2363
Thru 11/30/96	10.2681	122.6434	534.5106	667.4222

Contaminants Removed Via Air Stripping

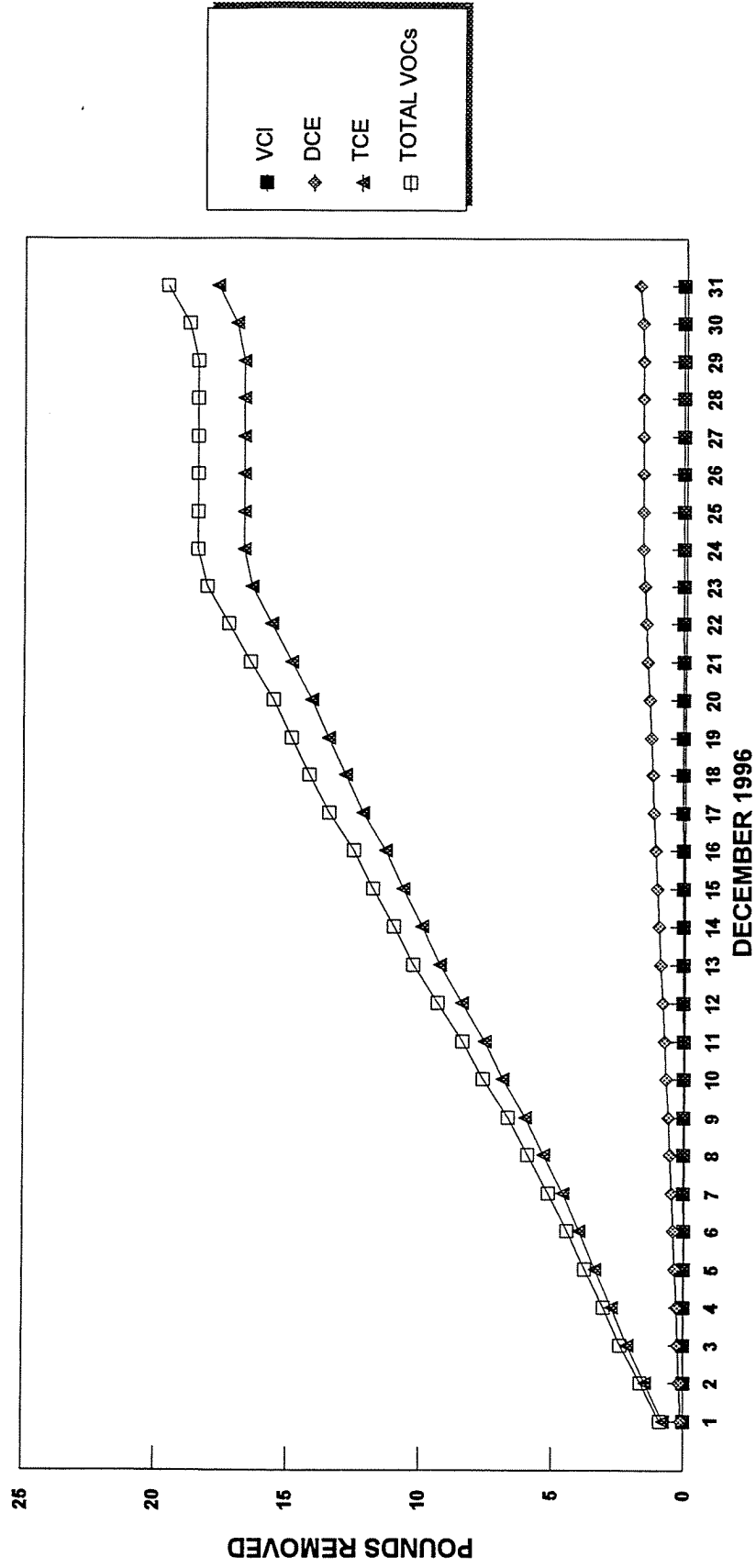
Groundwater Treatment and Soil Remediation Program Carborundum Facility Wheatfield, New York

DATE	Daily Load (pounds)			
	V CI	DCE	TCE	TOTAL
12/01/96	0.0077	0.0887	0.7867	0.8831
12/02/96	0.0037	0.0793	0.6628	0.7458
12/03/96	0.0067	0.0677	0.7020	0.7764
12/04/96	0.0046	0.0468	0.5893	0.6407
12/05/96	0.0048	0.0876	0.6305	0.7229
12/06/96	0.0073	0.0585	0.6275	0.6933
12/07/96	0.0061	0.0615	0.6184	0.6860
12/08/96	0.0045	0.0725	0.7214	0.7984
12/09/96	0.0043	0.0567	0.6895	0.7505
12/10/96	0.0044	0.0874	0.8587	0.9505
12/11/96	0.0043	0.0664	0.6923	0.7630
12/12/96	0.0039	0.0800	0.8496	0.9335
12/13/96	0.0058	0.0855	0.8453	0.9366
12/14/96	0.0053	0.0578	0.6665	0.7296
12/15/96	0.0047	0.0680	0.7060	0.7787
12/16/96	0.0062	0.0605	0.6731	0.7398
12/17/96	0.0052	0.0750	0.8339	0.9141
12/18/96	0.0033	0.0558	0.6852	0.7443
12/19/96	0.0029	0.0535	0.6093	0.6657
12/20/96	0.0030	0.0561	0.6457	0.7048
12/21/96	0.0030	0.0804	0.7762	0.8596
12/22/96	0.0053	0.0695	0.7649	0.8397
12/23/96	0.0062	0.0838	0.7505	0.8405
12/24/96	0.0028	0.0452	0.3065	0.3545
12/25/96	NR	NR	NR	0.0000
12/26/96	NR	NR	NR	0.0000
12/27/96	NR	NR	NR	0.0000
12/28/96	NR	NR	NR	0.0000
12/29/96	NR	NR	NR	0.0000
12/30/96	0.0000	0.0353	0.2820	0.3173
12/31/96	0.0013	0.1023	0.7221	0.8257

December 1996	0.1173	1.7818	17.6959	19.5950
Previous Total	10.2681	122.6434	534.5106	667.4222
Thru 12/31/96	10.3854	124.4252	552.2065	687.0172

Note: NR = No Readings collected

CONTAMINANTS REMOVED VIA AIR STRIPPING



ATTACHMENT D
RESULTS OF SAMPLING

None this period.

ATTACHMENT E

PERFORMANCE MONITORING DATA - SVE SYSTEM

Not Included

Information can be provided upon request

ATTACHMENT F
DAILY OPERATIONS REPORTS

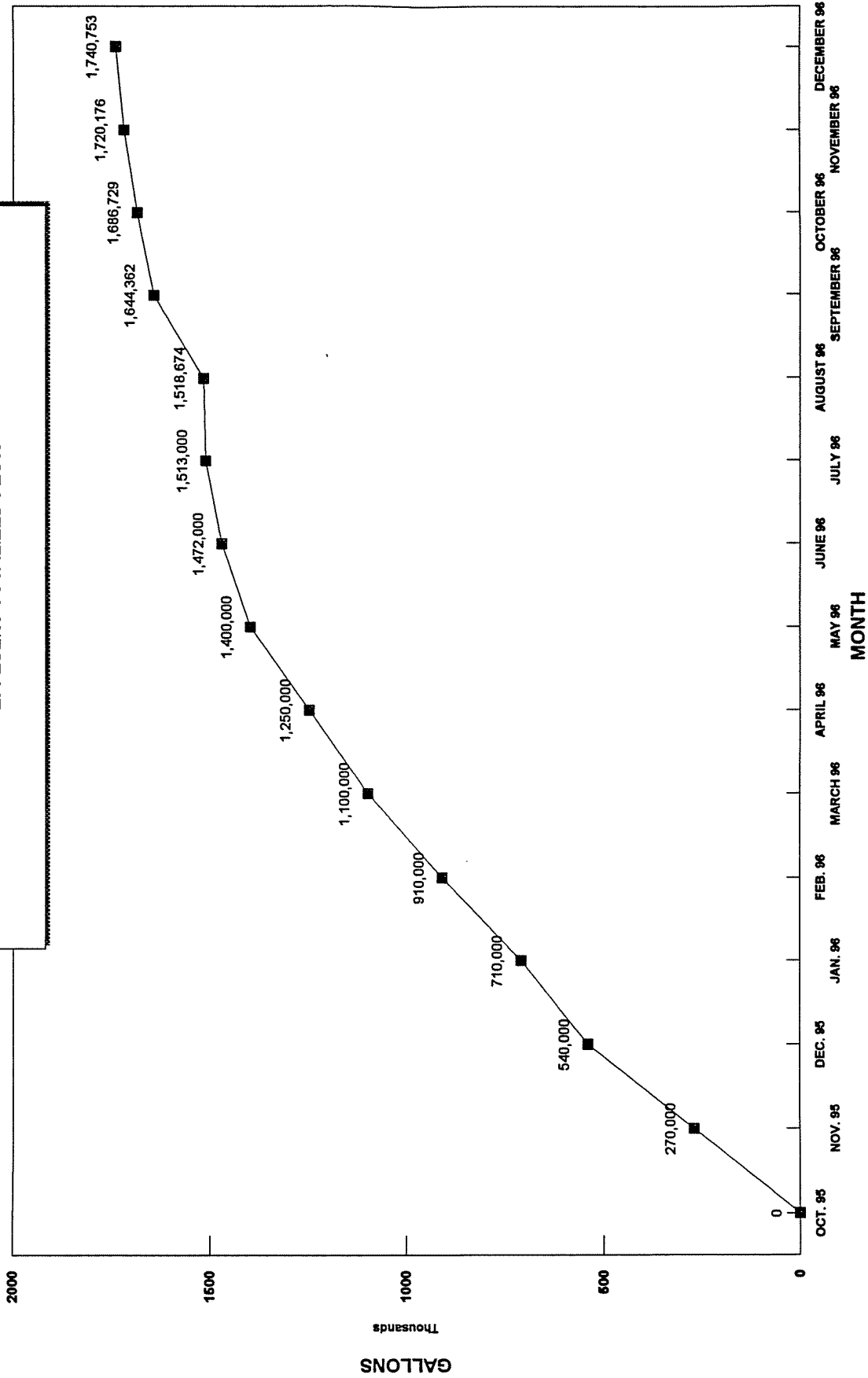
Not Included

Information can be provided upon request

ATTACHMENT G

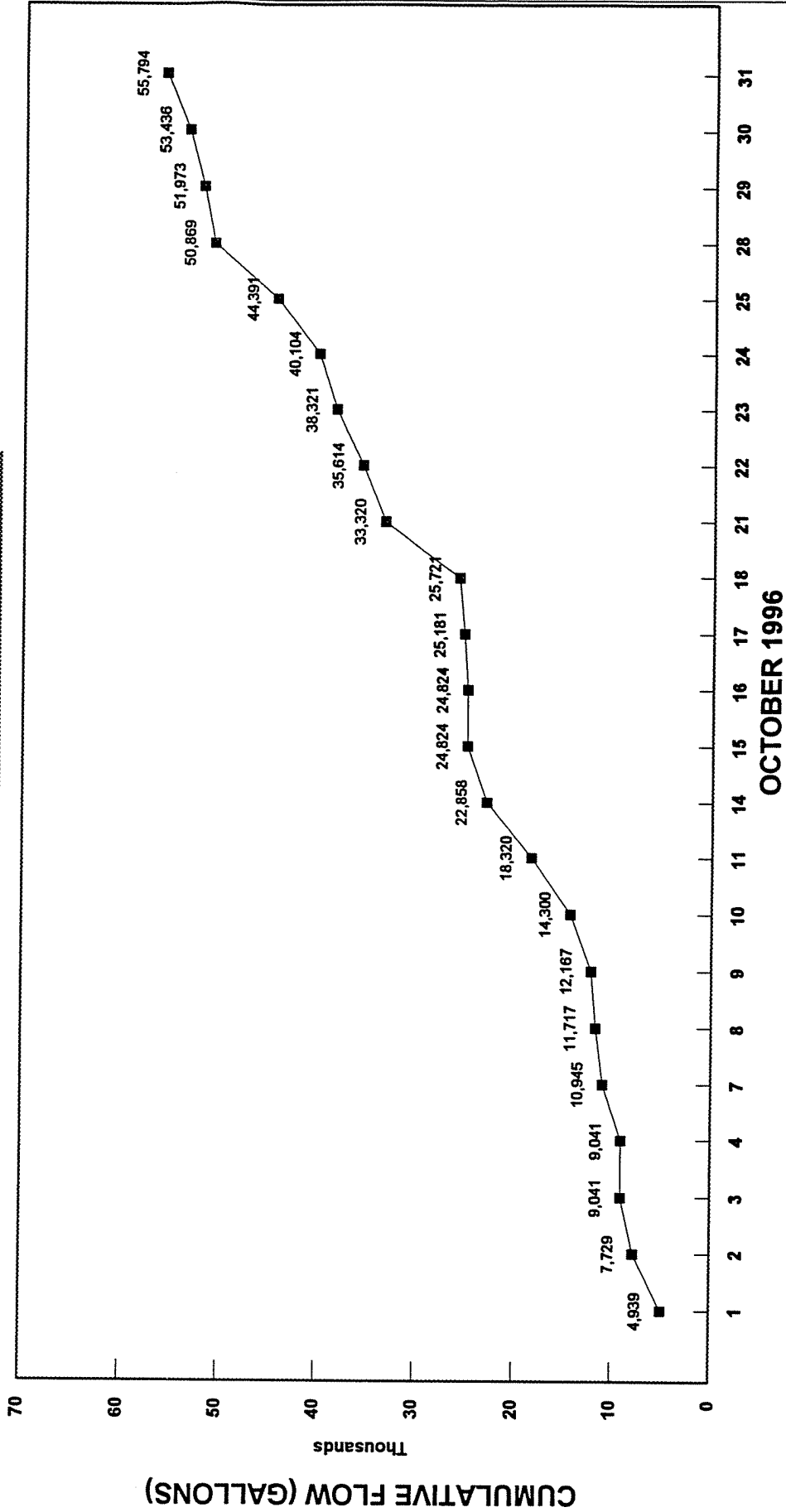
AIR/WATER SEPARATOR EFFLUENT TOTALIZED FLOW GRAPHS

AIR/WATER SEPARATOR PUMP CUMULATIVE EFFLUENT TOTALIZED FLOW



final recorded measurement collected on 12/13/96

AIR/WATER SEPERATOR PUMP EFFLUENT TOTALIZED FLOW



ATTACHMENT H

40 HOUR OSHA TRAINED SITE PERSONNEL

OSHA/CARBORUNDUM TRAINED WORKERS

COMPANY	EMPLOYEE	40 HR. OSHA TRAINED	CARBORUNDUM TRAINING
Haley & Aldrich	Susan L. Boyle	X	X
	Dave Nostrant	X	X
	Brenda G. Hanna	X	X
	Steven H. Phillips	X	X
	Margaret J. Corrigan	X	X
	Dan Putz	X	X
McLaren Hart	Christine A. Retherford	X	X
	Brian Ratus	X	X
	Robert F. DeLisio	X	X
	Steven J. Katzenstein	X	X
	Kevin Baumgartner	X	X
	Ken Andromalos	X	X
	Julie Panko	X	X
	Richard C. Becken (now HAI)	X	X
	Syed Farooq	X	X
	Joseph J. Kilcer	X	X
	Matt Plautz	X	X
	Don Bigley	X	X
	Mike D'Eufeumia	X	X
	Shabad Khalsa	X	X
	Lise Nielsen	X	X
	Dennis Hagerty	X	X
Fred Coll	X	X	
John Parker	X	X	

OSHA/CARBORUNDUM TRAINED WORKERS

COMPANY	EMPLOYEE	40 HR. OSHA TRAINED	CARBORUNDUM TRAINING
	Trevor King	X	X
	Gregory Marmol	X	
	George Bland	X	
	Robert Koltuniak	X	
	Chad Becken (now HAI)	X	
Empire Soils	William L. Levergood	X	X
	Steven Wolkiewicz	X	X
	Ronald Brown	X	X
	Kenneth Fuller	X	X
	Thomas Kasperek	X	X
	Dan Beitz	X	X
	Alan Przywara	X	X
	Philip Bence	X	X
	Robert Taylor	X	X
	David Maddex	X	X
	Anthony Mitwick	X	X
Armand Cerrone	Dave Burns	X	X
	Vincent Cerrone	X	X
	Frank Perri	X	X
	Paul E. Otto	X	X
	Billy Williamson	X	X

OSHA/CARBORUNDUM TRAINED WORKERS

COMPANY	EMPLOYEE	40 HR. OSHA TRAINED	CARBORUNDUM TRAINING
	Donald Kneeppe	X	X
	Mark V. Cerrone	X	X
	Fred J. Diez	X	X
	Lewis D'Antuono	X	X
	George D. Perry	X	X
	Leo Lipomi	X	X
	Rick Bernier	X	X
	Jack D'Antuono	X	X
	Enrico Berulaqua	X	X
	Willy Williams	X	X
	Ed Seefeldt	X	X
Walter J. Johnson	Doug Janeese	X	X
	Robert L. Stevens	X	X
	Robert Aleks	X	X
	Charles A. Locurto	X	X
	Christopher V. Shakarjian	X	X
	Wayne D. Courteau	X	X
	Salvatore A. Nasca	X	X
	Patrick Harrigan	X	X
	Robert J. McNerney	X	X
	James Cali	X	X
	Robert Boland	X	X
	Ronald Hillman	X	X
	Bob Green	X	X
	Ray Mosci	X	X
	Steve Cal	X	X

OSHA/CARBORUNDUM TRAINED WORKERS

COMPANY	EMPLOYEE	40 HR. OSHA TRAINED	CARBORUNDUM TRAINING
	Rick Johnson	X	X
	Brian Perry	X	X
	Ron Follum	X	X
Niagara Boundry	Alan W. Slaughenoupt	X	X
	Paul Glassman	X	X
	Edward Pitz	X	X
	Barry Nichols	X	X
Ferguson Electric	Paul D. Beecher	X	X
	Dan Kroening	X	X
	Don Freedman	X	X
	Gerald Manzi	X	X
	Robert C. Wawro	X	X
	Tim Ried	X	X
	Nicholas Metro, Jr.	X	X
	Jerauld Stanish	X	X
	Steven Frank	X	X
	Kirk Clarkson	X	X
	Salin Kinar	X	X
Frontier Building	Wayne Zimmerman	X	X
	Frank P. Tedesco	X	X
	Michael Kuligsoiski	X	X
	John Hart	X	X
	David McElwain	X	X
Niagara Piping	Steven Bartlet	X	X
	Alex Green	X	X
	Wayne Laska	X	X

OSHA/CARBORUNDUM TRAINED WORKERS

COMPANY	EMPLOYEE	40 HR. OSHA TRAINED	CARBORUNDUM TRAINING
Apollo Steel Corp.	Mike Kessler	X	X
	Wesley Pokelwaldt	X	X
	Robert Fiori	X	X
	Albert Black	X	X
	Roy Owens	X	X
	David Sears	X	X
CIR	Jeff Haseley	X	X
	Charlie Carr	X	X
	Paul Kloosterman	X	X
	Larry Krueger	X	X
J.W. Danforth	Peter Reagan	X	X
	Tom Reagan	X	X
	Mike Adams	X	X
	Mark Gaines	X	
	David Cronkhite	X	X
	Donald Kelly	X	X
	Tab Mardon	X	X
	Mike Calarco	X	X
	Frank Nardello	X	X
	Rickard Bleck	X	X
Fox Fence	Mark Fox	X	X
	Bill Cramer	X	X
	John White	X	X

OSHA/CARBORUNDUM TRAINED WORKERS

COMPANY	EMPLOYEE	40 HR. OSHA TRAINED	CARBORUNDUM TRAINING
Niagara Insulation	Mike Barry	X	X
	Andrew Namynanik	X	X
	John White	X	X
Hayes Buri	L.N. Palmer	X	X
	M.A. Albore	X	X
Carrier Controls	Dave Carrier	X	X
Building Controls	Dan Griffin	X	X
Hull & Associates, Inc.	Dave Richards	X	
	Mark Hoidas	X	
	Kevin Wildman	X	
	Mike Mohr	X	
	Criag Kasper	X	