



**SECOND QUARTER 2004
PROGRESS REPORT**

**PHOTOCIRCUITS AND FORMER PASS & SEYMOUR SITES
31 & 45 SEA CLIFF AVENUE**

SITE NUMBERS 1-30-009 AND 1-30-053A

Prepared for:
Photocircuits Corporation
31 Sea Cliff Avenue
Glen Cove, New York 11542

Prepared by:
Barton and Loguidice, P.C.
2 Corporate Plaza
264 Washington Avenue Extension
Albany, New York 12203

August, 2004

1.0 Introduction

This Second Quarter 2004 Progress Report (2Q04) is being submitted pursuant to the 1997 Order on Consent between Photocircuits Corporation and the New York State Department of Environmental Conservation (NYSDEC).

During the Second Quarter of 2004, the following was accomplished:

- One groundwater sampling event was conducted for monitoring wells located on both the 31 and 45A Sea Cliff Avenue sites during the period of June 21-23.
- Operation of the Soil Vapor Extraction (SVE) and Air Sparging (AS) system at the 45A Sea Cliff Avenue site was continued through the second quarter of 2004.
- Operation of the hydraulic control system at the 31 Sea Cliff Avenue site was continued.

2.0 Discussion of Results

2.1 SVE System at 31 Sea Cliff Avenue

The SVE system is in the process of being decommissioned.

2.2 Bioremediation Pilot Test

The bioremediation pilot test was started during the week of August 28, 2000 when Terra Systems conducted the injection of a nutrient solution (substrate) into the subsurface at the 31 Sea Cliff Avenue site. Following the injection, groundwater samples were collected from the following monitoring wells/points: MW-7, MW-14, SMP-1, DMP-1, SMP-3, DMP-3, SMP-4 and DMP-4. These wells/points were sampled again on October 18-19, December 20, 2000, March 27-28, 2001 and July 11-12, 2001; the March and July sampling events included several wells located along Sea Cliff Avenue (MW-8, MW-9, MW-12 and MW-13) along with the wells sampled during the previous events. By letter dated October 25, 2001, NYSDEC authorized an additional injection of substrate that had been recommended by Photocircuits. A first phase of additional substrate injection was conducted during the period of February 25 to March 3, 2002; during this period, slightly over 5,000 gallons of substrate was injected (as reported in the 1Q 02 report). On April 29, 2002, an additional injection of 5,777 gallons of substrate was injected using the injection points that had been installed during the February-March injection event.

Sampling events conducted in 2002 were January 8-10, April 2-4, June 25-26 and October 2-3. Sampling in 2003 was conducted on January 13-15, April 28-29 and December 16-17. Sampling in 2004 was conducted on March 15-17

The most recent sampling event was conducted on June 21-23, 2004; the results from the June 2004 sampling event are provided in Appendix A of this report (Note: well MW-7 was not sampled during this event as it was filled with oil substrate).

A status report on the pilot test (including the data from the samples collected in June 2004) was prepared by Terra Systems and is included as Appendix B of this report. The main conclusions of the report are as follows

- The addition of the edible oil substrate has enhanced the extent and rate of chlorinated solvent biodegradation at the site; degradation rates as high as 146 ug/L per day of total volatile organic compounds (TVOCs) have been observed in areas of higher concentration.
- A first order degradation half life of 533 days was calculated for the average total VOC concentration within the pilot cell area (January 2003 data); this degradation rate suggests that 90% of the total VOC mass within the pilot test cell will be removed within 48 months. Over the 46 months of operation, the overall average sum of VOCs has decreased by 78%.
- Bioremediation will be the primary treatment technology for contaminant destruction at the site.

The Terra Systems report again contains a recommendation for additional substrate injection; a letter was sent to NYSDEC (dated April 2, 2004) requesting permission to perform the additional injection.

2.3 IRM at 45 Sea Cliff Avenue

As discussed in the 4Q 2000 report, SVE/AS equipment was procured and delivered to the site. The SVE/AS system consists of a 10 horsepower (hp) regenerative blower and 5 hp compressor, along with electrical controls, filters, moisture separators, and valves; the system is contained within an insulated trailer, which has been located just outside of Building 7. Following delivery, the system components were connected to the piping networks for the AS and SVE wells. Two 1200 lb activated carbon adsorbers were attached in series to the blower outlet to treat recovered vapors. The SVE system was started on November 1, 2000; because the initial contaminant concentrations were relatively high, the AS portion of the system was not started. The AS component of this system was started on March 28, 2001. The system was down from April 20-24 due to an electrical problem. The system was down most of June and July due to equipment overheating; the system was re-started on July 30 and shut down on September 20.

Monitoring data was presented in the 2Q01 report, including data from sampling of individual SVE wells (March 2001) and sampling of total SVE system effluent over time. Prior to the start of the AS component, the relationship of total contaminant mass removal versus time was clearly becoming asymptotic. The start of the AS component increased contaminant mass recovery somewhat (see the April 2001 sample results). However, the results of the May vapor sample indicate that mass removal versus time relationship became asymptotic. We concluded at that time that we demonstrated that there is little or no residual contamination at that location, and that further contaminant removal is infeasible.

Based on results from the January 2002 groundwater sampling event, Photocircuits proposed extending the SVE/AS system at the 45A Sea Cliff Avenue site from the west side to the east side of Building 7. The basis for the extension of the system and the proposed piping and equipment layout were provided in the February 13, 2002 letter to NYSDEC.

The SVE wells and AS points were installed at the proposed locations on the east side of Building 7 in late February, 2002 in preparation for the extension of the system. After field evaluation, it was decided that it would be more efficient to move the aboveground portions of the system (equipment trailer, carbon vessels) to the east side of Building 7 rather than to extend their operation by piping from the west side to the east side of Building 7, as originally proposed. The trailer and carbon vessels were moved in April, and electrical service was also provided to the new location April. Piping and mechanical connections were completed in early May; the original blower malfunctioned and a smaller replacement blower was installed.

The SVE portion of the system was started on May 8, 2002, and a sample of the total system effluent, prior to treatment, was collected; tetrachloroethene was detected at a concentration of 5.3 ppmv. Another effluent sample was collected on June 26; tetrachloroethene was detected at a concentration of 142 ppmv and trichloroethene was detected at a concentration of 2 ppmv. Further sampling in 2002 was conducted on October 3, December 12 (tetrachloroethene was detected at 1.2 and 1.1 ppmv in these two samples, respectively). The AS portion of the system was started on December 11, 2002. On May 1, 2003, the system was modified to also extract vapor from monitoring well MW-4S; the well was fitted with a cap and connected to the SVE portion of the system. Concentrations of tetrachloroethene in effluent samples for 2003-2004 are provided in the following table:

Concentrations of tetrachloroethene (ppmv) in AS/SVE system effluent					
Jan-03	May-03	May-03	Aug-03	Dec-03	Mar-04
1.0	0.9	1.1	1.1	0.03	0.00049

On May 28, 2004, a meeting/conference call was held between Photocircuits and NYSDEC to discuss, among other issues, procedures for documenting completion of remedial activities at the 45A Sea Cliff Avenue site. A work plan was submitted to NYSDEC as a follow-up to this meeting; one of the tasks in the work plan is pulsing the SVE system to determine whether residual contamination is present in the subsurface. The SVE system was shut down on June 23 as part of the pulsing task; the system will be re-started and sampled per the approved work plan.

Concentrations of tetrachloroethene (ug/L) in samples from monitoring well MW-4S over time are summarized in the following table:

Concentrations of tetrachloroethene (ug/L) in MW-4S									
Jan-02	Apr-02	Jun-02	Oct-02	Jan-03	Apr-03	Aug-03	Dec-03	Mar-03	Jun-03
1240	1910	2200	2510	3600	1420	118	180	83	29

2.4 Hydraulic Control along Sea Cliff Avenue

A meeting was held with NYSDEC on October 11, 2001 to discuss the progress of the bioremediation pilot test. Although there was substantial disagreement between Photocircuits and the NYSDEC over the progress of the bioremediation pilot test and the need for groundwater remediation, Photocircuits agreed to review available options for containment of groundwater along the northern boundary of the Photocircuits site (31 Sea Cliff Avenue). Photocircuits conducted the review of remedial options, and by letter dated October 26, 2001, Photocircuits presented the results of the review. The recommended approach for the conditions at the Photocircuits site is the use of hydraulic control. Photocircuits submitted a work plan for the performance of pumping tests necessary for the design of a hydraulic control system on November 13, 2001; following receipt of verbal comments from NYSDEC, Photocircuits submitted a revised work plan on December 7, 2001. Approval for implementation of the work plan was received from NYSDEC by letter dated December 19, 2001. The pumping tests were performed in January, 2002 and the remedial design report was submitted to NYSDEC on April 11, 2002. NYSDEC approval of the remedial design was received in a letter dated September 19, 2002.

Four recovery wells were installed in January, 2003. The fifth recovery well could not be installed due to the proximity of numerous underground utility lines. Groundwater modeling conducted for the design of the hydraulic control system (appended to the remedial design report/work plan) indicates that configuration of the four wells is also capable of providing hydraulic control in the subject area. The wells were installed to depths of 80 feet below grade and were constructed as described in the work plan.

The pumps, piping and control systems were installed during the week of April 28, 2003. The layout of the piping and controls are provided on the attached figure. The system was started up on May 1, 2003, with each well pumping at an initial flow rate of one gallon per minute (gpm). On May 20, the pumping rate for each well was increased to three gpm. Data and figures presented in the 2Q03 Report demonstrated that hydraulic control was being achieved in the area hydraulically downgradient of the bioremediation pilot test area. During the August sampling event, it was noted that the pumping rate of the wells had reduced to roughly one gpm, although the pump controllers had not been adjusted. We believe that the reduction in pumping resulted from an interruption in the compressed air supply to the pumps; compressed air is supplied by the facility, and periodic interruptions occur due to maintenance activities. Because the pump controllers are pneumatic, the pump cycle logic re-sets upon re-start. We had planned to provide a back-up compressed air supply to allow the pumps to maintain the three gpm pumping rate, however, an accumulation of weathered soybean oil was detected in well MW-14 during the December 2003 sampling event and again during the March 2004 event. This well is located directly downgradient of the bioremediation pilot test area; fresh soybean oil was found in this well on three occasions in 2002, but has not been detected for roughly a year. We believe that the presence of the weathered soybean oil indicates that the hydraulic control system has not only been collecting contaminated groundwater, but may have accelerated the movement of contaminants from the bioremediation pilot test area. As a result, we plan to continue to operate the hydraulic control system at the lower flow rate (roughly 1 gpm per well). We believe that the water quality and water level data demonstrate that hydraulic control is being achieved, without the undesirable effects of the localized increase in groundwater velocity. Soybean oil was not evident in well MW-14 during the June 2004 sampling event.

3.0 Schedule

The planned schedule of activities for the next few months is attached.

MAIN BUILDING
PHOTOCIRCUITS

DRUM
STORAGE
AREA

WOODEN BUILDING

METAL BUILDING

BLOCK BUILDING

DRUM STORAGE
PAD

ACID/BASE/
SOLVENT
TANK FARM

MW-14

MW-7

19

SMP-1/DMP-1

12

11

18

10

9

8

1

15

14

13

17

6

16

5

4

SAS/DAS

SMP-3/DMP-3

SMP-4/DMP-4

2

3

1

LEGEND

- UTILITY LINE
- ⊕ MONITOR WELL
- EOS INJECTION POINT
- PILOT STUDY INJECTION POINT
- SHALLOW/DEEP MONITORING POINT



SCALE 1" = 20'

