



Pennsylvania Department of Environmental Protection

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July 25, 2001

Bureau of Radiation Protection

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Fax: 717-783-8965

Larry Harmon, Plant Manager
Safety Light Corporation
4150-A Old Berwick Road
Bloomsburg, PA 17815

Re: DEP Groundwater/Surface Water Assessment

Dear Mr. Harmon:

Enclosed with this letter is a copy of the Final End of Project Report for Groundwater and Surface Water Assessment of the Safety Light Corporation Site (Volume I of II). Volume II consists of sample data sheets and analytical procedures and is not included because of its large size. It can be provided at a later date at your request if you consider it important to have in your records.

Please be aware that the results for radium analysis contained in this report are not valid due to the analytical method used by the laboratory. The Department of Environmental Protection considers the results for the non-radiological analysis and all radiological analysis other than radium valid.

If you have any questions regarding the report provided with this letter or wish to have a copy of Volume II, please contact Robert Maiers of my office at 717-783-8979.

Sincerely,

David J. Allard, CHP

Director

Bureau of Radiation Protection

cc: R. Maiers, BRP w/o enclosure
M. Miller, NRC w/o enclosure

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**FINAL END OF PROJECT REPORT
FOR
GROUNDWATER AND SURFACE WATER ASSESSMENT
SAFETY LIGHT CORPORATION SITE**

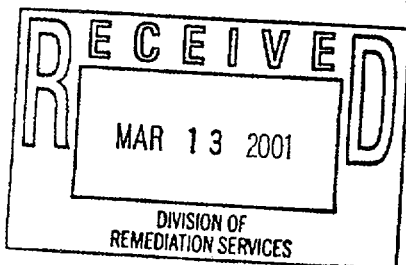
VOLUME I OF II

**SOUTH CENTRE TOWNSHIP
COLUMBIA COUNTY, PA**

**PADEP CONTRACT NO. ME-359186 (GTAC-3)
WORK REQUISITION NO. 34-030**

Prepared for:

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March 2001

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James N. DiClementi, P.E.
Program Manager

NOTICE

The information in this document has been funded by the Pennsylvania Department of Environmental Protection (PADEP) under Contract No. ME-359186 to Foster Wheeler Environmental Corporation (FWENC). This document has been formally released by PADEP.

**SAFETY LIGHT CORPORATION SITE
END OF PROJECT REPORT**

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SAFETY LIGHT CORPORATION SITE END PROJECT REPORT

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1.0 INTRODUCTION

The Pennsylvania Department of Environmental Protection (PADEP) implemented a Hazardous Sites Cleanup Act (HSCA) funded assessment of the Safety Light Corporation (SLC) property located in South Centre Township, Columbia County. Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) was contracted to conduct the site assessment activities. As part of the activities, Foster Wheeler Environmental is submitting this End of Project Report to document the activities completed and to report the analytical findings of the water samples collected. The assessment included the collection and analysis of samples of the following:

- groundwater from monitoring wells located on the site;
- surface water obtained from the adjacent Susquehanna River; and
- nearby residential well water.

This report also contains the Contaminated Materials Handling Plan that details disposal recommendations to PADEP for the Investigation Derived Wastes (IDW). Details on budget and close-out expenditures, as well as final waste disposition documentation, were to be included in this report. This information will be submitted at the end of all project activities. The report is organized as follows:

- Introduction
- Project Background
- Summary of Field Activities
- Summary of Analytical Results
- Contaminated Materials Handling Plan
- Comparison of Previous Analytical Data to Current Data
- Conclusion

2.0 PROJECT BACKGROUND

The SLC Site encompasses an area of approximately 10 acres. The site location is shown in Figure 1. SLC utilizes a 1.5-acre area of the site for its current manufacturing operations. The site has been used since the 1940s to manufacture self-illuminated watches and instrument dials, and other articles containing radioactive materials. Most recently, the facility has been used to manufacture self-illuminating exit signs and other light sources (luminous paints, gas chromatograph foils, and accelerator targets). The facility has also been used for metal finishing and plating.

Radioactive wastes are currently being stored on site. In the past, radioactive wastes were stored and disposed in underground silos, injected into dry wells, spilled, discharged to the sanitary sewer system, and discharged to the Susquehanna River. Additional background and site history, along with other information, is contained in the July 1991, USEPA Preliminary Assessment. Past sampling data is included in a Health Consultation report, dated April 2000, by the Agency for Toxic Substances and Disease Control.

Past sampling events indicated that the site is impacted with radioactive materials, including Tritium, Strontium 90, Cesium 137, Radium 226, Nickel 63, and Americium 241. Other radionuclides, some metals, and to a lesser extent, organic contaminants also exist at the site.

3.0 SUMMARY OF FIELD ACTIVITIES

The primary objective of the scope of work was to perform sample collection and analysis to assess the surface water and groundwater in and around the site. Figure 2 illustrates the site layout and sample locations for groundwater, surface water, and residential well water. A Sampling and Analysis Plan (SAP) for the work was submitted by Foster Wheeler Environmental to PADEP, and approved prior to mobilization. Foster Wheeler Environmental personnel mobilized to the site on August 7, 2000, and completed the field activities on August 9, 2000. Additional field work was conducted on December 19 and 20, 2000, to prepare the IDW for disposal. As part of the field activities, the following types of samples were collected for analysis:

- static water level measurements and the groundwater from 21 monitoring wells located on and around the site;
- surface water (one up-gradient, three down-gradient) from the adjacent Susquehanna River;
- groundwater from two nearby residential wells;
- a composite for each of the waste types generated (solid and liquid) during the field activities; and
- a composite of the IDW for disposal facility acceptance requirements.

Field measurements for water quality parameters were collected to determine aquifer stabilization during purging and are included Appendix A. Air monitoring and radiological data were recorded in the field notes.

PADEP contracted Severn Trent Laboratory (STL) to perform chemical and radioactivity analyses on the water and waste characterization samples. Groundwater and surface water samples were analyzed for the following radioactive parameters:

- Gross Alpha radiation;
- Gross Beta radiation;
- Gamma Scan, which included Cesium 137 (CS 137), Cobalt 60 (Co 60); and
- the following radionuclides:
 - Tritium (H_3);
 - Strontium 90 (Sr 90);
 - Radium 226 (Ra 226);
 - Carbon 14 (C 14);
 - Nickel 63 (Ni 63);
 - Americium 241 (Am 241); and
 - Polonium 210 (Po 210).

Figure 2
 Foster Wheeler Environmental
 Corporation
 Safety Light Corporation Site
 Site Layout and Sample Location Map

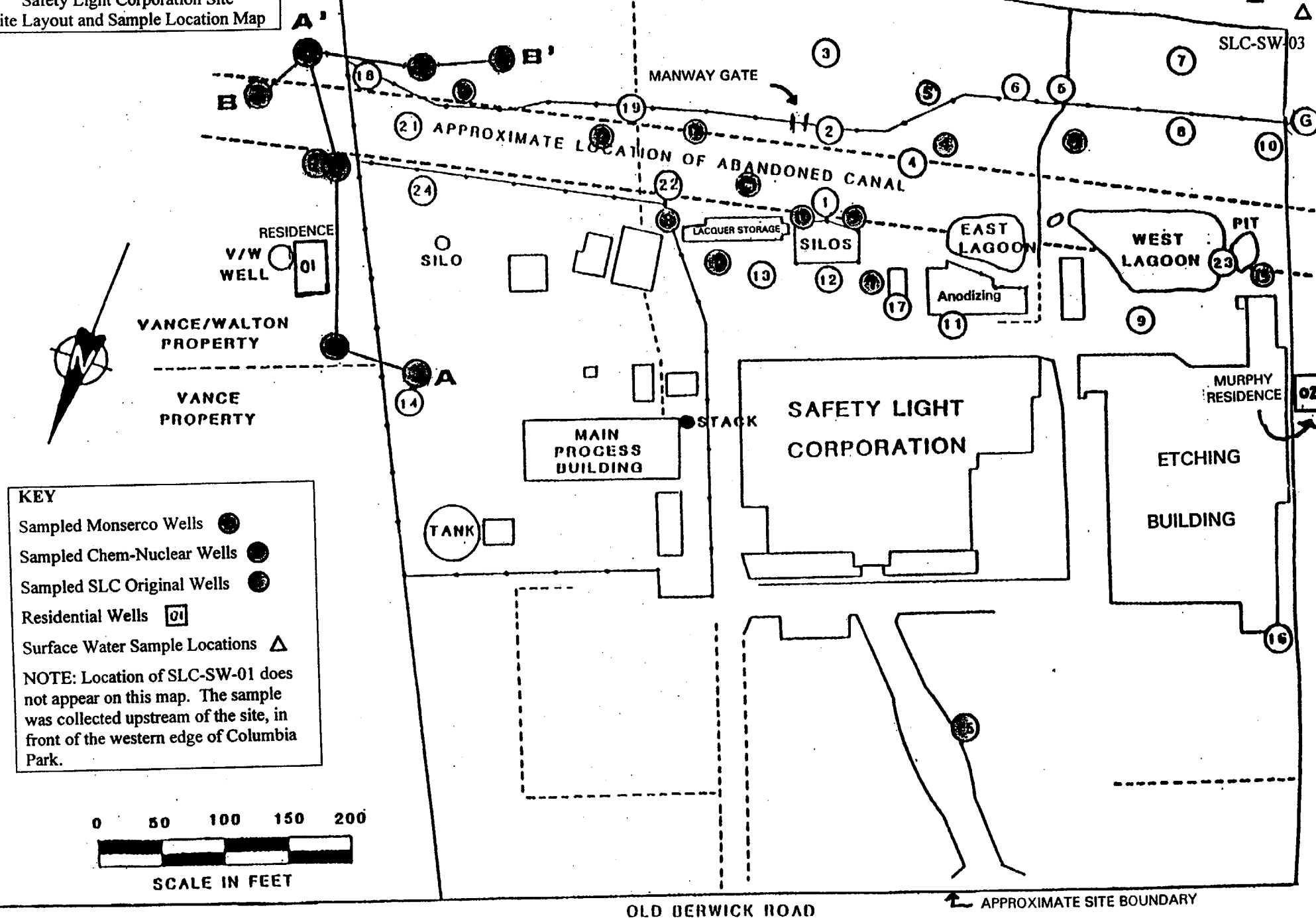


Figure 2 shows the locations all of the monitoring wells found on the site. A total of 23 monitoring wells were selected to be sampled during the field activities, including: thirteen wells installed by Monserco (MS-01 through MS-13), nine wells installed by Chem-Nuclear (CN-A through CN-I), and one Safety Light Corporation well (SL-15). The Monserco and Chem-Nuclear wells were selected because they were in good condition and they were at strategic locations throughout the site. The spatial distribution of the twenty-two wells was considered representative of the site. SL-15 was selected because it was relatively new, in good condition, and was in an up-gradient location of the site. This well was used to establish pre-site "background" conditions. Groundwater samples were collected from 21 of the 23 originally proposed wells. Monitoring wells CN-C and CN-E did not recharge adequately enough after purging to enable samples to be collected.

Whenever possible, at least three volumes of water were purged from the monitoring wells prior to sample collection. Many of the wells purged dry prior to achieving the required three volumes of water. Samples were collected from these wells after recharge without further purging. Water quality parameters were obtained with a Horiba model U-22 to establish that the aquifer groundwater was stabilized. The water quality parameters for each of the wells are located in Appendix A.

Approximately 0.14 feet free-phase product was measured in well MS-07. The product was a thick, black material with a strong petroleum odor. Analytical results of the groundwater sample collected from well MS-07 are discussed in Section 4.2 of this report. Free-phase product was not observed in any of the other wells.

3.2 Surface Water Sample Collection

Samples were collected at four locations along the banks of the Susquehanna River, as directed by PADEP. The approximate locations of the four samples are shown on Figure 2. Surface water sample SLC-SW-01 was collected approximately one mile upstream of the site on the Susquehanna River, within Columbia Park. This location was selected to represent "background", or pre-site conditions of the surface water. Surface water sample SLC-SW-02 was collected on the eastern edge of the site (southeast of the benchmark located near the Vance/Walton property). This sample represented the first location where potential impacts to the surface water would be expected. Surface water sample SLC-SW-03 was collected on the western edge of the site, in front of the Murphy residence property. This sample represented a location downstream of the site, where site impacts could potentially be the greatest on the surface waters. These three samples were collected at the shoreline of the river, approximately three to four feet from the bank. Surface water sample SLC-SW-04 was collected approximately 50 feet upstream from sample SLC-SW-03, further out from the bank, in the free flowing current to assess the impact of the site on water within the natural current.

Each sample was collected by submerging the laboratory-prepared bottles into the river. Care was taken to collect river water that was not impacted by disturbance of nearby sediments. For parameter aliquots requiring preservative, a clean, dedicated laboratory bottle was used to collect

the sample, and then the sample aliquot was transferred into the appropriate bottle. The sample was then labeled and placed into an iced cooler for shipment to the laboratory. River water samples were not filtered.

3.3 Residential Well Sample Collection

Foster Wheeler Environmental collected groundwater samples from two nearby residential wells. Samples were collected from either an outdoor spigot or from the whole house intake spigot directly into the laboratory bottles. An in-line filter device was used to obtain the filtered fraction for the TAL inorganics analysis. Sample bottles were labeled and placed into an iced cooler for shipment to the laboratory.

3.4 Waste Classification Sample Collection

Two samples were collected from IDW at the completion of the field activities. A composite sample was collected from the IDW liquids and from the IDW solids to gain representative samples for waste classification analysis of the IDW. The IDW included well purge water, equipment decontamination water, spent PPE, plastic sheeting and tubing which was stored in steel 55-gallon storage drums to await waste classification and disposal. The IDW consisted of one drum of solid waste and 5 partially full drums of liquid waste. Waste classification composite samples, SLC-WC-01 (solid) and SLC-WC-02 (liquid), were collected from the drums of IDW. Both composite samples were analyzed for the full Federal TCLP list, and RCRA Waste Characteristics, Gross Alpha, and Beta Radiation, and Tritium. The IDW was also scanned with a radiological survey meter to determine whether the waste was below the standard of 100 counts per minute (cpm) above established background. The results from the radiological scan were less than 100 cpm above background. Analytical data for IDW is summarized in Section 4 of this report.

Samples were also collected from the waste material for additional analysis required by the disposal facility, and are discussed in detail in Section 6 of this report.

3.5 Radiological Screen of Sampling Equipment, Samples and IDW

All decontaminated sampling equipment, samples leaving the site, and all containerized wastes were scanned with the Eberline ASP-1 survey meter with the HP-260 rod probe for radiological levels before being shipped off-site or stored to await transport and disposal. All screening indicated that the equipment and materials were below the 100 cpm limit.

3.6 QA/QC Sample Collection

QA/QC samples (blind field duplicates and rinsate blanks) were collected. Blind field duplicates were collected for 5% of the total samples collected, and were analyzed for the same parameters as the original sample. Rinsate blanks (if required) were collected from decontaminated sample collection equipment at a rate of 1 per day.

3.7 Decontamination Procedures

The majority of the sample collection equipment was dedicated to individual wells. Prior to use, between sample locations, and upon completion of sampling activities, sampling equipment (pumps, tubing, etc.) were decontaminated when required, as detailed in the SAP. The decontamination area was located away from expected sources of contamination to ensure that radiological screening was not impacted by nearby contamination sources. Materials used during sample collection were decontaminated and screened with a radiological survey meter after use to ensure that they were not contaminated with radioactive materials. All wastes generated during decontamination were collected in tubs and transferred to drums appropriately labeled for storage.

4.0 SUMMARY OF ANALYTICAL RESULTS

The laboratory analytical results are discussed below. Appendix B contains the summary tables for analytical data. Appendix C, (included as Volume 2 of this report), contains the laboratory data.

4.1 Analytical Protocols

PADEP contracted STL, in Pittsburgh PA, to perform the analysis, and provided laboratory bottles to Foster Wheeler Environmental. Analytical methods included US EPA SW-846 and 500 Series. PADEP selected the chemical and radiological analytical methods. Groundwater and residential well water sample results for VOCs, SVOCs, and TAL inorganics were compared to the PADEP Medium Specific Concentrations for Organic Regulated Substances in Groundwater, Used Aquifer, Total Dissolved Solids <2500 ug/L, Residential Criteria (PADEP Act 2 MSCs). As directed by PADEP, radiological analytical results for groundwater were compared to the Environmental Protection Agency (EPA) Drinking Water Standards, Maximum Contaminant Levels (MCL) for Radionuclides (EPA Drinking Water MCLs). Surface water organic and inorganic results were compared to Pennsylvania Title 25, Part 1, Subpart A, Chapter 16, Water Quality Toxics Management Strategy, Water Quality Criteria for Toxic Substances, Human Health Criteria. Radiological results for surface water samples are not compared to any criteria. Waste classification sample results were compared to the Federal TCLP and RCRA Characteristics Criteria for waste disposal. Waste classification radiological results have been compared to the disposal facility's criteria for the waste identity profile.

All aqueous samples were analyzed for the inorganic parameters (TAL inorganics), Gross Alpha radiation, Gross Beta radiation, Gamma radiation nuclides, and radionuclides including: tritium (H_3); Strontium 90 (Sr 90); Cesium 137 (Cs 137); Radium 226 (Ra 226); Carbon 14 (C 14); Cobalt 60 (Co 60); Nickel 63 (Ni 63); Americium 241 (Am 241); and Polonium 210 (Po 210). Radium 228 (Ra 228) was also run by the laboratory, and is required for comparison to the EPA Drinking Water MCLs. All samples collected for TAL inorganics analysis were analyzed for both filtered (dissolved) and the non-filtered (total) fractions, with the exception of the four river samples. During sample collection, a 0.45 micron in-line filter was used to filter the samples selected for dissolved TAL inorganics analysis.

Groundwater samples were analyzed for VOCs and SVOCs as selected by PADEP prior to field activities. Samples from the two residential wells and three monitoring wells, (MS-09, CN-B, and SL-15) were analyzed for VOCs and SVOCs. The sample from well MS-07 was found to contain free product, and at the direction of PADEP, the water sample collected from MS-07 was analyzed for VOCs and SVOCs. The product was a light non-aqueous phase liquid (LNAPL), and had a petroleum-like odor and a black, viscous, oily appearance. The groundwater sample was slightly turbid water containing small blobs of LNAPL.

Waste classification composite samples (one liquid, one solid) were analyzed for the full Federal TCLP list, and RCRA Waste Characteristics, Gross Alpha, and Beta Radiation, and Tritium.

QA/QC samples (blind field duplicates, rinsate blanks, etc) were to be analyzed as detailed in the Work Plan. Two rinsate blanks were collected; one to be analyzed for organics and TAL inorganics, and the other for TAL inorganics only. However, the blank was not analyzed for organics, as the laboratory failed to log in the organic analysis request for the blank.

4.2 Groundwater Analytical Results

Twenty-one wells were sampled and analyzed for various parameters. Tables 1, 2, 3, and 4, located in Appendix B, summarize the groundwater analytical results for VOCs, SVOCs, total and dissolved TAL inorganics, and radionuclides, respectively.

4.2.1 VOC and SVOC Results

Groundwater samples were collected from four wells for VOC and SVOC analysis. A blind duplicate was collected from well MS-09. VOC analytical results from samples SLC-GW-CN-B, SLC-GW-MS-7, and SLC-GW-SL-15 were below the PADEP Act 2 MSCs. Sample SLC-GW-MS-09 exceeded only the PADEP Act 2 MSC for vinyl chloride at 3.4 ug/L. The PADEP Act 2 MSC for vinyl chloride is 2 ug/L. The blind duplicate (SLC-GD-MS-09) of SLC-GW-MS-09 was below all PADEP Act 2 MSCs, including the MSC for vinyl chloride. SVOC analytical results for samples SLC-GW-CN-B, SLC-GW-MS-7, SLC-GW-SL-15, and SLC-GD-MS-09 were below the PADEP Act 2 MSCs. Sample SLC-GW-MS-09 exceeded the PADEP MSC for bis(2-ethylhexyl)phthalate of 6 ug/L with a result of 14 ug/L.

As discussed previously, LNAPL was observed in well MS-7 during sample collection. The sample was predominantly water and contained a very small amount of product. Although elevated organic concentrations may have been anticipated, VOC analytical results were non-detect for all VOCs except acetone, and extremely low levels of SVOCs were present in the sample. These low levels of organics may be due to the fact that the sample was predominantly water, and little or no product was in the aliquot that was analyzed by the laboratory.

4.2.2 Inorganic Analyte Results

Twenty-one groundwater samples and one blind duplicate were analyzed for total (unfiltered) and dissolved (filtered) TAL inorganics. Results from several groundwater samples exhibited exceedances of the PADEP Act 2 MSCs for inorganics. The range of concentrations and the number of samples in exceedance of the PADEP Act 2 MSCs are shown on Table 4-1, below. The majority of exceedances occurred in the unfiltered sample analyses. Analytical results of several filtered samples exhibited an exceedance of the PADEP Act 2 MSC for thallium. Analytical results of all other filtered samples were below the PADEP Act 2 MSCs. It should be noted that the majority of samples contained significant suspended solids or sediments. Based on the comparison of dissolved to total fraction results, the presence of inorganics may be attributed to the sediments rather than the groundwater. There may also have been some break-through during filtering due to the high sediment content of the groundwater. When break-through was noted, the fraction was re-filtered with a new in-line filter and placed into a clean bottle.

TABLE 4-1
INORGANIC ANALYTES IN EXCEEDANCE OF THE PADEP ACT 2 MSCs

| ANALYTES IN EXCEEDANCE | NUMBER OF SAMPLES IN EXCEEDANCE | ANALYTE RANGE ug/L | PADEP ACT 2 MSC ug/L |
|------------------------|---------------------------------|--------------------|----------------------|
| ANTIMONY | 1 | 7.8 | 6 |
| ARSENIC | 3 | 55-234 | 50 |
| BARIUM | 1 | 2470 | 2000 |
| BERYLLIUM | 4 | 4.6-16.2 | 4 |
| CADMIUM | 2 | 14.3-78.7 | 5 |
| CHROMIUM | 4 | 157-589 | 100 |
| LEAD | 13 | 9.7-689 | 5 |
| NICKEL | 6 | 129-559 | 100 |
| SILVER | 1 | 189 | 100 |
| THALLIUM | 20 | 4.2-43.6 | 2 |
| VANADIUM | 14 | 4.5-137 | 2.1 |
| ZINC | 1 | 21100 | 2000 |

4.2.3 Radiological Results

Twenty-one groundwater samples and one blind duplicate were analyzed for radiological nuclides. The Gross Alpha analysis had a range of results from non-detect to 3580 pCi/L. The Gross Beta results ranged from non-detect to 66,500 pCi/L. The H₃ results ranged from non-detect to 9050 pCi/L. The Gamma Scan indicated that Cs 137, Co 60, and Pb 214 were present in the groundwater samples. Cs 137 results ranged from non-detect to 1830 pCi/L. Co 60 results ranged from non-detect to 4.07 pCi/L. Lead 214 results ranged from non-detect to 197 pCi/L. Individual radiological scans indicated that Ra 226, C 14, Sr 90, Nil 63, Am 241, and Po210 were present in the groundwater samples. Results for Ra 226 ranged from non-detect to 95.5 pCi/L. C14 results ranged from non-detect to 16.6 pCi/L. Sr 90 results ranged from non-detect

to 29,500 pCi/L. Ni 63 results ranged from 3.02 to 83 pCi/L. Am 241 results ranged from non-detect to 1.46 pCi/L. Results for Po 210 ranged from non-detect to 110 pCi/L.

When compared to the EPA Drinking Water MCLs, numerous sample results were in exceedance of the standards. The following table details the exceedances for the groundwater samples. Note that the EPA Drinking Water MCLs have standards for gross alpha, gross beta, radium 226/radium 228, tritium, and strontium only. The laboratory report states that when strontium 90 is present, it usually causes elevated radium 228 results. The radium 228 result is used in a calculation to obtain the radium 226 result. This then causes an over-correction to the radium 226 results, hence the large negative values of radium 226. The majority of radium exceedances were in samples containing elevated strontium 90 concentrations, and according to the laboratory, the radium results may be erroneous.

TABLE 4-2
RADIONUCLIDES IN EXCEEDANCE OF THE EPA DRINKING WATER MCLs

| Sample ID | Gross Alpha | Gross Beta | Tritium | Radium 226/ 228 | Strontium |
|--------------------------------|-------------|------------|---------|-----------------|-----------|
| EPA Drinking Water MCL (pCi/L) | 15 | 50 | 20,000 | 5* | 8 |
| SLC-GW-CN-A | 301 | 3820 | 1980 | 16.9/13.3 | 21 |
| SLC-GW-CN-D | 64 | 200 | 5560 | 53.6/38.9 | 68.9 |
| SLC-GW-CN-H | 17.8 | 21.5 | 2720 | 1.02/0.867 | 0.205 |
| SLC-GW-CN-I | 26.6 | 47.7 | 1820 | 1.52/0.872 | 1.36 |
| SLC-GW-MS-01 | 52.1 | 755 | 4290 | -279/181 | 345 |
| SLC-GW-MS-02 | 20 | 153 | 9050 | -86.1/48.5 | 87.6 |
| SLC-GW-MS-03 | 39.1 | 371 | 5790 | -37.8/26.5 | 44.5 |
| SLC-GW-MS-04 | 496 | 9650 | 3780 | -979/615 | 6450 |
| SLC-GW-MS-05 | 387 | 866 | 2860 | 56/95.5 | 159 |
| SLC-GW-MS-06 | 264 | 2100 | 4210 | -61.8/44.2 | 140 |
| SLC-GW-MS-07 | 25.7 | 106 | 1600 | -14.8/9.58 | 35.5 |
| SLC-GW-MS-08 | 89.3 | 1490 | 5700 | -360/237 | 696 |
| SLC-GW-MS-09 | 413 | 34,200 | 3830 | -7330/3950 | 10,000 |
| SLC-GD-MS-09 | 1570 | 34,200 | 3600 | -7580/4710 | 9410 |
| SLC-GW-MS-10 | 3580 | 66,500 | 2940 | -17,900/114,000 | 29,500 |
| SLC-GW-MS-11 | 144 | 2190 | 1510 | -676/439 | 1110 |
| SLC-GW-MS-12 | 27.4 | 67.7 | 1830 | -313/204 | 351 |
| SLC-GW-MS-13 | 70.2 | 99.3 | 2960 | -0.167/7.12 | 10.6 |
| SLC-GW-SL-15 | 3.14 | 7.83 | 325 | -12.1/8.33 | 1.03 |

* Radium 226 and Radium 228 results are summed and compared to a total standard of 5 pCi/L. Negative numbers were considered non-detects, and were zeroed when summed to gain a conservative estimate for the sum of the two isotopes.

Note: results do not include laboratory reported error result.

Bold results indicate exceedance.

4.3 Surface Water Analytical Results

Four surface water samples were collected from the Susquehanna River. No surface water samples were analyzed for VOCs and SVOCs as per the SAP. Tables 5 and 6, located in Appendix B, summarize the surface water analytical results for total TAL inorganics and radionuclides, respectively.

4.3.1 Inorganic Analyte Results

Four surface water samples were analyzed for total (unfiltered) TAL inorganics. Analysis of samples SLC-SW-01, SLC-SW-02, SLC-SW-03, and SLC-SW-04 indicated that the over half of the inorganics analyzed for were non-detect. Sample results for antimony, beryllium, cadmium, chromium, cobalt, lead, mercury, nickel, selenium, silver, thallium, vanadium, and cyanide were non-detect for all samples. The remaining analytes were present in levels above detection levels. However, when comparing the results to the Water Quality Criteria for Toxic Substances, no surface water sample results exceeded the criteria for inorganics.

4.3.2 Radiological Results

Four surface water samples were analyzed for radiological nuclides. The Gross Alpha analysis indicated non-detect levels. The Gross Beta results ranged from non-detect to 3.3 pCi/L. The H₃ results ranged from 260 to 390 pCi/L. The Gamma Scan indicated that Cs 137 and Co 60 were present in the surface water samples. Cs 137 results ranged from non-detect to 2.9 pCi/L. Co 60 results were non-detect. Individual radiological scans indicated that Ra 226, C 14, Sr 90, Ni 63, Am 241, and Po 210 were present in the surface water samples. Results for Ra 226 ranged from 0.325 to 0.553 pCi/L. C 14 results ranged from 0.442 to 3.08 pCi/L. Sr 90 results ranged from non-detect to 19.5 pCi/L. Ni 63 results ranged from 6.12 to 13.1 pCi/L. Am 241 results ranged from non-detect to 0.073 pCi/L. Results for Po 210 ranged from non-detect to 0.0417 pCi/L.

4.4 Residential Well Water Analytical Results

Two samples and one blind duplicate were collected from residential wells. All samples were analyzed for VOCS, SVOC, total and dissolved TAL inorganics, and radiological parameters. Tables 7, 8, 9, and 10, located in Appendix B, summarize the groundwater analytical results for VOCs, SVOCs, total and dissolved TAL inorganics, and radionuclides, respectively.

4.4.1 VOC and SVOC Results

VOC and SVOC analysis of the residential well water indicated that no results were in exceedance of the PADEP Act 2 MSCs.

4.4.2 Inorganic Analyte Results

The lead result from one of the unfiltered residential well samples was found to be in exceedance of the PADEP Act 2 MSC of 5 ug/L. The concentration of lead in SLC-RW-02, and its blind duplicate, SLC-RD-02, was 5.5 and 5 ug/L, respectively. Lead concentrations were non-detect in the filtered fraction of the same sample. Both the unfiltered and filtered sample results for copper in SLC-RW-02 and blind duplicate, SLC-RD-02, exceeded the PADEP Act 2 MSC of 1000 ug/L. Sample results for total copper in SLC-RW-02 and SLC-RD-02 were 1210 and 1220 ug/L, respectively. Sample results for dissolved copper in SLC-RW-02F and SLC-RD-02F were 1530 and 1580 ug/L, respectively. All other inorganic results were below the PADEP Act 2 MSCs for the residential well samples.

4.4.3 Radiological Results

The residential well water samples were analyzed for radiological nuclides. The Gross Alpha analysis indicated non-detect to 0.879 pCi/L. The Gross Beta results ranged from 2.3 to 2.58 pCi/L. The H₃ results ranged from 1170 to 2180 pCi/L. The Gamma Scan indicated that Cs 137 and Co 60 may be present in the groundwater samples. Cs 137 results ranged from non-detect to 6.24 pCi/L. Co 60 results were non-detect. Individual radiological scans indicated that Ra 226, C 14, Sr 90, Ni 63, Am 241, and Po 210 may be present in the groundwater samples. Results for Ra 226 ranged from non-detect to 0.209 pCi/L. C14 levels were non-detect. Sr 90 results ranged from 0.378 to 0.515 pCi/L. Ni 63 results ranged from non-detect to 4.32 pCi/L. Am 241 results ranged from 0.0216 to 0.0497. Results for Po 210 ranged from non-detect to 0.109 pCi/L.

No results from samples collected from the residential wells exceeded the EPA Drinking Water MCLs.

4.5 Waste Classification Analytical Results

Two waste classification samples were collected from the IDW generated during the sampling activities. Table 11, in Appendix B, summarizes the Waste Classification analytical results for the IDW. Sample SLC-WC-01 (solid IDW) results were below the TCLP and RCRA Characteristic criteria. Radiological results for Gross Alpha, Gross Beta, Tritium, as well as, the groundwater analytical results collected during this investigation, indicated that the solid material is not classified as a low-level radiological waste. Sample SLC-WC-02 (liquid IDW) results indicated that the waste is a RCRA Characteristically Hazardous Waste for Lead. The lead result of 15.5 mg/L exceeds the Federal TCLP criteria for lead of 5 mg/L. The analytical results for the liquid waste indicated that the waste will be handled and disposed of as a Hazardous Waste. Disposal requirements and additional details for the IDW are described in Section 5.0 of this report.

4.6 QA/QC Sample Collection Results

Results of blind duplicate samples and rinsate blanks are reported on the summary tables in Appendix B.

5.0 COMPARISON OF PREVIOUS ANALYTICAL DATA TO CURRENT DATA

Previous analytical data was provided to FWENC by PADEP in two documents, "Preliminary Assessment of Safety Light Corporation" prepared for the Hazardous Site Control Division, Environmental Protection Agency (EPA) by NUS Corporation, July 17, 1991, and "Characterization Survey of Safety Light Corporation Site at Bloomsburg, PA", prepared by Monserco Limited. The Monserco document was submitted to the Nuclear Regulatory Commission on September 5, 1996. The available and applicable data pertaining to groundwater sample analysis contained in these documents was tabulated for comparison to the current groundwater data detailed in this report. There was insufficient documentation pertaining to previous residential and surface water samples to make a comparison to current data (i.e., actual location of sample collection unclear). Table 12 in Appendix B contains the comparison data, and the discussion of the comparison follows below.

Results for radiological analyses of groundwater for ChemNuclear wells (Wells A, B, C, D, E, F, G, H, I, and Safety Light Well 15) were presented in the NUS Corporation document. Analysis was performed on groundwater samples for gross alpha, gross beta, tritium, Cs-137, and St-90 in 1990 by ChemNuclear and in 1991 by NUS Corporation. Comparison of past tritium results with current results shows a significant decrease in tritium concentrations in the groundwater. The sample data shows a decrease of at least an order of magnitude in tritium concentrations from the previous sampling events. The comparison of gross alpha and gross beta results indicates a moderate to significant increase of radionuclide concentrations in the majority of samples. Groundwater samples from wells CN-A and CN-D show the most significant increase in alpha and beta emitters. The majority of Cs-137 and St-90 results indicate little change from the past sampling events to the current event.

Incomplete data was provided in the Monserco Limited document. Groundwater samples were collected from Monserco Wells 1 through 13 for radionuclide, VOC, and metals analyses. A summary of analyses was provided in the document, however, actual concentrations for each compound or analyte were not detailed. More appropriate data may have been contained in the appendices of the document however, they were not provided to FWENC when it was determined that the appendices were not present in the document.

6.0 INVESTIGATION DERIVED WASTES

On December 19 and 20, 2000, waste handling activities were conducted on site to prepare the IDW for shipment and to meet the disposal facilities requirements (Envirocare, Utah). The facility requires that no free liquids be present in the wastes. The waste consists of purge water and decontamination water, PPE and plastic. The liquid waste was solidified, in the DOT-

approved shipping drums, with a solidification/stabilization agent that produced a low-temperature cure (Aquaset). The drums were placed onto drum spill pallets for secondary containment until shipment to the facility. The pallets and the drums were then tarped. The drums were stored in the temporary enclosed storage facility at the site. The drums were appropriately labeled as "hazardous waste", as required for storage and shipping. The federal Department of Transportation (DOT) does not require wastes with less than 2 nCi/g of radioactive nuclides to be labeled as a radioactive waste.

As discussed previously, the waste was sampled for waste characterization during the investigation activities. The presence of radionuclides in the waste required that the waste be disposed of at a low-level radioactive waste disposal facility, however, the waste is not classified as a low level radioactive or mixed waste based on analytical results. The solidified liquid and solid (PPE) waste will be considered one waste stream for the facility documentation. The wastewater is also considered characteristically hazardous for lead (D008), based on the TCLP analysis performed during the field investigation activities. Treatment of the material with the solidification/stabilization agent changed the physical state of the waste, from liquid to solid, however, the waste remains a characteristically hazardous waste.

On December 20, 2000, two composite samples of the waste were collected for analysis to ensure that the waste meets the facility's disposal requirements. In order to meet the facility disposal requirements, a free-liquids (Paint Filter Liquids Test) analysis was performed on one waste sample. The sample was sent (December 21, 2000) to STL Laboratory for analysis. Once the result was received, the waste profile application was submitted to the Envirocare facility for approval of the waste profile. The waste profile has been preliminarily approved, and the second composite sample of the waste was shipped to the Envirocare facility on March 5, 2001. The sample was submitted to Envirocare under chain-of-custody, with the Pre-sample Shipment Profile, to meet their testing requirements. Once the waste is tested and final waste shipment approval is completed by the facility, a contract for disposal will be completed with FWENC. The waste will then be transported by a permitted and approved transporter, and disposed of as a solid hazardous waste to the Envirocare facility.

All federal, state and local regulations will be followed during the material handling, shipping and disposal. The waste drums do not have to be screened by radiological survey meter prior to shipment for exposure dosage because the waste is below the DOT requirement of 2 nCi/g, and is not considered a radioactive waste. However, in order to meet Envirocare's acceptance requirements, the waste must be documented on a Radiological Waste Manifest. Since the waste is classified as a hazardous waste, the Pennsylvania Hazardous Waste Manifest will also accompany the waste shipment (Utah does not have a state hazardous manifest). Radiological and hazardous waste manifests will be completed by Foster Wheeler Environmental and signed by a PADEP representative (as generator) to accompany the waste to the disposal facility. Documentation regarding final disposition of the waste will be submitted to PADEP in an addendum letter, and will include all shipping documentation.

7.0 CONCLUSION

Sample collection and analysis generated results that indicate that the groundwater and, potentially, the surface water at the Safety Light Corporation site are impacted by previous site activities. The available data is limited, and the collection and evaluation of additional data may assist in better quantifying actual and potential future impacts to the environment from the contamination existing in the site media.

Analytical results indicate that the groundwater is impacted by radionuclides and some inorganic analytes. The majority of groundwater sample results confirm the presence of radionuclides above non-detect levels. Comparison of the groundwater analytical results indicated that many samples exceeded the EPA Drinking Water MCLs for gross alpha, gross beta, radium 226 and radium 228 (combined), and strontium 90. The highest concentrations of radionuclides were found in the groundwater collected from the monitoring wells closest to the location of the underground waste disposal silos, wells MS-09 and MS-10. None of the residential well sample results were found to exceed the EPA Drinking Water MCLs for radionuclides.

Analytical results of groundwater samples collected from the monitoring wells indicate that numerous inorganic analytes were detected at concentrations that exceed the PADEP Act 2 MSCs. Some of these exceedances may be attributed to the elevated level of suspended solids in the groundwater samples. The majority of the inorganic exceedances were detected in the unfiltered fraction of the groundwater samples. Thallium was the only inorganic analyte detected above the PADEP Act 2 MSCs in the filtered fraction of the monitoring well samples. Lead and copper were found to be in exceedance of the PADEP Act 2 MSCs in one of the residential well water samples. As copper was not detected in other groundwater samples, the elevated copper levels may be attributed to the residential plumbing system.

Low-level organic contaminants were detected in the groundwater samples collected from the site. Groundwater samples were collected from selected monitoring wells and analyzed for VOCs and SVOCs. Vinyl chloride and bis(2-ethylhexyl)phthalate were the only organic contaminants to exceed the PADEP Act 2 MSCs, and were detected in samples from only one monitoring well, MS-09. Bis(2-ethylhexyl)phthalate is a very common laboratory contaminant. However, in this case, it was not consistently present in the laboratory blanks, which would have identified it as a laboratory contaminant. None of the residential well water samples exceeded the PADEP Act 2 MSCs for VOCs or SVOCs. The majority of the residential well sample organic results were non-detect.

Analytical results from surface water samples collected from the Susquehanna River showed no obvious impact to the river water from site activities. Analyses for radionuclides showed that low concentrations of radionuclides are present in the surface waters of the Susquehanna River. Standards for radionuclide concentrations in surface water were not used for data comparison, as none were determined applicable for this event by PADEP. All surface water sample results were below the inorganics Water Quality Criteria for Toxic Substances. Surface water samples were not analyzed for VOCs and SVOCs.

APPENDIX A

FIELD WATER QUALITY PARAMETERS

Well I.D. CN-ADate 8/7/00Well Depth (from TOC) 26.38 ft.Well Diameter 3.94ⁱⁿ 2 in.Static Water Level 3.99 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

26.38 - 3.99 = 22.39 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²22.39 x .163 x 1² = 3.7 gal./volumeTotal Gallons Purged = 12 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|-----|-------|-----------|-------|-------|------|------|-----|
| Initial | 1748 | 6.6 | 0.267 | 6.5 | 12.34 | 19.0 | 0.0 | 0.17 | 261 |
| 1 volume | 1753 | 6.0 | 0.271 | 34.5 | 0.00 | 13.3 | 0.0 | 0.18 | 242 |
| 2 volume | 1758 | 6.0 | 0.272 | 10 | 0.00 | 13.2 | 0.0 | 0.18 | 244 |
| 3 volume | 1803 | 6.0 | 0.273 | 10 | 0.00 | 13.2 | 0.0 | 0.18 | 244 |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: Submersible pumpNotes/Observations: Water initially turbid, black fines becoming clear
after 2 volumes purged.Samplers: Jim Ruffing

Well I.D. CN-BDate 8/8/00Well Depth (from TOC) 31.74 ft.Well Diameter 2 in.Static Water Level 11.63 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

31.74 - 11.63 = 20.11 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²20.11 x .163 x 1² = 3.3 gal./volumeTotal Gallons Purged = 10 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|-------|-----|-------|-----------|------|-------|------|------|-----|
| Initial | 17:55 | 6.7 | 0.318 | <10 | 7.56 | 13.3 | 0.0 | 0.21 | 183 |
| 1 volume | 17:01 | 6.2 | 0.319 | <10 | 4.60 | 13.0 | 0.0 | 0.21 | 204 |
| 2 volume | 17:05 | 6.1 | 0.319 | <10 | 4.52 | 13.0 | 0.0 | 0.21 | 210 |
| 3 volume | 17:08 | 6.1 | 0.319 | <10 | 4.50 | 13.0 | 0.0 | 0.21 | 211 |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Water clear, No odor.Samplers: J. M. Ruffing

Well I.D. CN-CDate 8/9/00Well Depth (from TOC) 23.17 ft.Well Diameter 2 in.Static Water Level 16.04 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

23.17 - 16.04 = 7.13 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²7.13 x .163 x 1² = 1.2 gal./vol.Total Gallons Purged = 1 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|-----|-------|-----------|----|-------|------|-----|-----|
| Initial | — | 6.4 | 670 | 244 | — | — | — | — | — |
| 1 volume | | | | | | | | | |
| 2 volume | | | | | | | | | |
| 3 volume | | | | | | | | | |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Well purged dry before full volume collectedWell did not rechargeSamplers: none

Well I.D. CN - FDate 8/9/00Well Depth (from TOC) 28.09 ft.Well Diameter 2 in.Static Water Level 6.17 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

28.09 - 6.17 = 21.92 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²21.92 x .163 x 1² = 3.6 gal./volumeTotal Gallons Purged = 16 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|-------|-----|-------|-----------|-------|-------|------|-----|-----|
| Initial | 12:01 | 7.3 | 0.247 | 2-10 | 9.85 | 16.3 | - | - | 149 |
| 1 volume | 12:07 | 7.2 | 0.281 | 2-10 | 11.41 | 16.1 | - | - | 157 |
| 2 volume | - | 7.0 | 0.291 | 2-10 | 8.82 | 15.3 | - | - | 163 |
| 3 volume | - | 7.1 | 0.284 | 2-10 | 8.16 | 15.2 | - | - | 171 |
| 4 volume | - | 7.1 | 0.281 | 2-10 | 8.55 | 15.1 | - | - | 180 |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Water clear. No odor.Samplers: Jim Rottling

Well I.D. CN-GDate 8/7/00Well Depth (from TOC) 19.96 ft.Well Diameter 2 in.Static Water Level 8.05 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

19.96 - 8.05 = 11.91 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²11.91 x .163 x 1² = 1.9 gal./volume

Total Gallons Purged = _____ gallons

Water Quality

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|----|-------|-----------|----|-------|------|-----|-----|
| Initial | | | | | | | | | |
| 1 volume | | | | | | | | | |
| 2 volume | | | | | | | | | |
| 3 volume | | | | | | | | | |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: Submers. pump

Notes/Observations: Pump clog after one volume 2/340
1400 - collect sample, no water quality parameters
recovered. water is cloudy

Samplers: Jason Rank

Well I.D. CN-14Date 8/8/00Well Depth (from TOC) 21.75 ft.Well Diameter 2 in.Static Water Level 11.50 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

21.75 - 11.50 = 10.25 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²10.25 x .163 x 1² = 1.7 gal./vol.Total Gallons Purged = 10 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|------|-------|-----------|-------|-------|------|-----|-----|
| Initial | 17.0 | 6.15 | 1200 | <.1 | 10.50 | 14.1 | - | - | 297 |
| 1 volume | - | 6.12 | 1220 | >.999 | 8.7 | 13.7 | - | - | 270 |
| 2 volume | - | 6.25 | 1245 | >.999 | 6.32 | 13.6 | - | - | 281 |
| 3 volume | - | 6.20 | 1315 | 999 | 5.65 | 13.5 | - | - | 261 |
| 4 volume | - | 6.22 | 1322 | 932 | 5.98 | 13.2 | - | - | 263 |
| 5 volume | - | 6.25 | 1320 | 527 | 5.50 | 12.5 | - | - | 266 |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Turbidity did not stabilize because pump was
moved inside the well during purgingSamplers: Jason Funk

Well I.D. CN - IDate 8/8/00Well Depth (from TOC) 26.57 ft.Well Diameter 2 in.Static Water Level 16.29 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

26.57 - 16.29 = 10.28 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²10.28 x .163 x 1² = 1.7 gal./volumeTotal Gallons Purged = 10 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|------|-------|-----------|------|-------|------|-----|-----|
| Initial | - | 6.18 | 0.315 | >999 | 9.27 | 17.8 | - | - | 212 |
| 1 volume | - | 5.77 | 0.311 | >999 | 6.05 | 13.5 | - | - | 236 |
| 2 volume | - | 5.49 | 0.300 | 596 | 5.01 | 13.4 | - | - | 262 |
| 3 volume | - | 5.42 | 0.300 | 413 | 4.81 | 13.2 | - | - | 285 |
| 4 volume | - | 5.42 | 0.298 | 187 | 4.81 | 13.2 | - | - | 291 |
| 5 volume | - | 5.42 | 0.288 | 179 | 4.79 | 13.2 | - | - | 296 |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: _____

Notes/Observations: Water very turbid becoming less turbid.Samplers: Jagan Funk

Well I.D. MS-03Date 8/8/00Well Depth (from TOC) 10.00 ft.Well Diameter 2 in.Static Water Level 4.59 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

10.00 - 4.59 = 5.41 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²5.41 x .163 x 1² = 0.9 gal./volumeTotal Gallons Purged = 1.5 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|------|-------|-----------|------|-------|------|-----|-----|
| Initial | - | 6.93 | 0.578 | 3.1 | 5.74 | 17.7 | | | 115 |
| 1 volume | - | 6.58 | 0.463 | 96.5 | 7.45 | 16.6 | | | 80 |
| 2 volume | | | | | | | | | |
| 3 volume | | | | | | | | | |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: _____

Notes/Observations: Well pumped dry after 1 volume. Water turbid.Samplers: Jason Fork

Well I.D. MS-04Date 8/8/00Well Depth (from TOC) 14.22 ft.Well Diameter 2 in.Static Water Level 7.42 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

14.22 - 7.42 = 6.80 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²6.80 x .163 x 1² = 1.1 gal./volumeTotal Gallons Purged = 1.5 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|-----|-------|-----------|-----|-------|------|------|-----|
| Initial | 1733 | 5.7 | 0.270 | 7989 | 3.0 | 16.1 | 0.0 | 0.18 | 107 |
| 1 volume | | | | | | | | | |
| 2 volume | | | | | | | | | |
| 3 volume | | | | | | | | | |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Water turbid, tan. No odor. Purged dry after
1 volume.Samplers: Jim Roffing

Well I.D. MS-05Date 8/7/00Well Depth (from TOC) 13.22 ft.Well Diameter 2 in.Static Water Level 6.28 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

13.22 - 6.28 = 6.94 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²6.94 x .163 x 1² = 1.1 gal./volumeTotal Gallons Purged = 1.5 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|-----|-------|-----------|------|-------|------|------|-----|
| Initial | 1415 | 6.3 | 2417 | 2999 | 5.55 | 18.0 | 0.0 | 0.27 | -32 |
| 1 volume | | | | | | | | | |
| 2 volume | | | | | | | | | |
| 3 volume | | | | | | | | | |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: Submersible pumpNotes/Observations: Well purged dry after 1 volume.Grey, tan w. turbid. Sulfur odor.Samplers: Jim Rutling

Well I.D. MS-06Date 8/8/00Well Depth (from TOC) 12.97 ft.Well Diameter 2 in.Static Water Level 5.30 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

12.97 - 5.30 = 7.67 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²7.67 x .163 x 1² = 1.3 gal./volumeTotal Gallons Purged = 10³ 6 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|-----|-------|-----------|------|-------|------|-----|-----|
| Initial | — | 6.1 | 0.265 | >999 | 7.79 | 14.0 | — | — | 248 |
| 1 volume | — | 6.2 | 0.261 | >999 | 4.53 | 13.9 | — | — | 275 |
| 2 volume | — | 6.2 | 0.262 | >999 | 3.78 | 13.8 | — | — | 278 |
| 3 volume | — | 6.2 | 0.263 | >999 | 3.48 | 13.9 | — | — | 301 |
| 4 volume | — | 6.2 | 0.263 | >999 | 3.20 | 13.9 | — | — | 317 |
| 5 volume | — | 6.2 | 0.264 | >999 | 3.10 | 13.8 | — | — | 327 |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: _____

Notes/Observations: Water brown, turbid.Samplers: Jason Funk

Well I.D. MS-07Date 8/9/00Well Depth (from TOC) 21.94 ft.Well Diameter 2 in.Static Water Level 15.2 ft. (product)Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

$$\underline{21.94} - \underline{15.2} = \underline{6.74} \text{ ft.}$$

Gallons of Water per VolumeGallons = $T \times .163 \times \text{Radius}^2$

$$\underline{6.74} \times .163 \times \underline{1^2} = \underline{1.1} \text{ gal./volume}$$

Total Gallons Purged = 5 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|----|-------|-----------|----|-------|------|-----|-----|
| Initial | | | | | | | | | |
| 1 volume | | | | | | | | | |
| 2 volume | | | | | | | | | |
| 3 volume | | | | | | | | | |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: bailing

Notes/Observations: Water has product (black, oily) on top of it.
No water quality readings collected to protect water quality meter.

Samplers: Jim Rottling

Well I.D. MS-08Date 8/8/00Well Depth (from TOC) 16.62 ft.Well Diameter 2 in.Static Water Level 12.18 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

16.62 - 12.18 = 4.46 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²4.46 x .163 x 1² = 0.7 gal./volumeTotal Gallons Purged = 4 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|------|-------|-----------|------|-------|------|-----|-----|
| Initial | - | 6.29 | 0.409 | 244 | 7.08 | 15.8 | - | - | 11 |
| 1 volume | - | 5.85 | 0.455 | 510 | 0.93 | 15.2 | - | - | -26 |
| 2 volume | - | 5.89 | 0.456 | 289 | 0.00 | 15.1 | - | - | -35 |
| 3 volume | - | 5.90 | 0.458 | 258 | 0.00 | 15.1 | - | - | -38 |
| 4 volume | - | 5.91 | 0.457 | 238 | 0.00 | 15.1 | - | - | -42 |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: _____

Notes/Observations: Water very turbid.Samplers: Jason Funk

Well I.D. MS-09Date 8/8/00Well Depth (from TOC) 18.77 ft.Well Diameter 2 in.Static Water Level 12.51 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

18.77 - 12.51 = 6.26 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²6.26 x .163 x 1² = 1.0 gal./volumeTotal Gallons Purged = 4.5 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|-----|-------|-----------|------|-------|------|------|-----|
| Initial | - | 6.4 | 0.392 | 466 | 5.36 | 15.4 | 0.0 | 0.24 | -85 |
| 1 volume | - | 6.4 | 0.466 | 113 | 1.31 | 14.9 | 0.0 | 0.31 | -80 |
| 2 volume | - | 6.4 | 0.477 | 10 | 0.22 | 14.8 | 0.0 | 0.31 | -81 |
| 3 volume | - | 6.5 | 0.489 | 10 | 0.22 | 14.8 | 0.0 | 0.32 | -83 |
| 4 volume | - | 6.5 | 0.493 | 10 | 0.22 | 14.8 | 0.0 | 0.32 | -85 |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: Submersible
Electric pumpNotes/Observations: Water brown, turbid becoming clear. Water in
purge bucket showing a sheen.Samplers: Jim Ritting

Well I.D. MS-10Date 8/9/00Well Depth (from TOC) 19.52 ft.Well Diameter 2 in.Static Water Level 7.01 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

19.52 - 7.01 = 12.51 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²12.51 x .163 x 1² = 2.0 gal./volumeTotal Gallons Purged = 8 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|------|-------|-----------|------|-------|------|-----|-----|
| Initial | 0735 | 5.71 | 0.510 | >999 | 2.0 | 14.1 | - | - | 61 |
| 1 volume | 0737 | 5.75 | 0.528 | >999 | 0.00 | 14.0 | - | - | 72 |
| 2 volume | - | 5.82 | 0.547 | >999 | 0.00 | 14.0 | - | - | -4 |
| 3 volume | 0741 | 5.88 | 0.553 | >999 | 0.00 | 14.0 | - | - | -15 |
| 4 volume | 0743 | 5.94 | 0.562 | 624 | 0.00 | 14.0 | - | - | -26 |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Water brown, turbid. Slight sulfur odor.Samplers: Jim Rutting

Well I.D. MS-11Date 8/8/00Well Depth (from TOC) 12.27 ft.Well Diameter 2 in.Static Water Level 8.18 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

12.27 - 8.18 = 4.09 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²4.09 x .163 x 1² = 0.7 gal./volumeTotal Gallons Purged = 4 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|-----|-------|-----------|------|-------|------|------|-----|
| Initial | 1150 | 6.5 | 0.404 | 799 | 7.27 | 15.5 | 0.0 | 0.25 | -3 |
| 1 volume | 1152 | 6.4 | 0.376 | 799 | 7.08 | 14.9 | 0.0 | 0.24 | -11 |
| 2 volume | 1154 | 6.5 | 0.365 | 520 | 6.84 | 14.8 | 0.0 | 0.23 | -4 |
| 3 volume | 1156 | 6.5 | 0.359 | 274 | 6.00 | 14.8 | 0.0 | 0.23 | 1 |
| 4 volume | 1158 | 6.4 | 0.357 | 208 | 0.00 | 14.8 | 0.0 | 0.23 | 1 |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Water initially black/brown very turbid becoming brown,
less turbid. Sulfur odor.Samplers: Jim Rottling

Well I.D. MS-12Date 8/8/00Well Depth (from TOC) ~~21.48~~⁵² 14.15 ft.Well Diameter 2 in.Static Water Level ~~15.17~~⁵² 6.82 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

~~21.48~~⁵² 14.15 - ~~15.17~~⁵² 6.82 = ~~6.24~~⁵² 7.33 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²~~6.24~~⁵² 7.33 x .163 x 1² = 1.2 gal./volume.Total Gallons Purged = 4 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|------|-------|-----------|------|-------|------|-----|-----|
| Initial | 0:50 | 6.49 | 0.364 | >999 | 2.44 | 14.1 | - | - | 11 |
| 1 volume | 0:51 | 5.84 | 0.350 | >999 | 0.42 | 13.7 | - | - | 78 |
| 2 volume | 0:52 | 5.62 | 0.344 | >999 | 0.16 | 13.6 | - | - | 101 |
| 3 volume | 0:53 | 5.53 | 0.342 | >999 | 0.04 | 13.6 | - | - | 121 |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Water turbid, brown/ten.Samplers: Jim Ruffing

Well I.D. MS-13Date 8/9/00Well Depth (from TOC) 21.48 ft.Well Diameter 2 in.Static Water Level 15.19 ft.Well Radius 1 in.**Height of Water in Well**

T = Well Depth - Static Water Level

21.48 - 15.19 = 6.29 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²6.29 x .163 x 1² = 1.0 gal./volumeTotal Gallons Purged = 4 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|-------|------|-------|-----------|------|-------|------|-----|-----|
| Initial | 10:21 | 6.35 | 0.463 | 418 | 6.75 | 13.7 | - | - | -62 |
| 1 volume | - | 6.30 | 0.404 | 2999 | 0.07 | 13.4 | - | - | -67 |
| 2 volume | - | 6.20 | 0.387 | 2999 | 0.00 | 13.3 | - | - | -61 |
| 3 volume | - | 6.09 | 0.382 | 613 | 0.00 | 13.2 | - | - | -58 |
| 4 volume | 10:25 | 6.06 | 0.383 | 477 | 0.00 | 13.2 | - | - | -56 |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Water grey/brown turbid becoming less turbid.Samplers: Jin Ruttig

Well I.D. 5.2-15Date 8/9/00Well Depth (from TOC) 36.12 ft.Well Diameter 4 in.Static Water Level 25.29 ft.Well Radius 3 in.**Height of Water in Well**

T = Well Depth - Static Water Level

36.12 - 25.29 = 10.83 ft.**Gallons of Water per Volume**Gallons = T x .163 x Radius²10.83 x .163 x 3² = 15.9 gal/volumeTotal Gallons Purged = 16 gallons**Water Quality**

| | Time | pH | Cond. | Turbidity | DO | Temp. | Sal. | TDS | ORP |
|----------|------|-----|-------|-----------|------|-------|------|-----|-----|
| Initial | - | 6.4 | 0.362 | 0.47 | 2.13 | 14.8 | - | - | 100 |
| 1 volume | | | | | | | | | |
| 2 volume | | | | | | | | | |
| 3 volume | | | | | | | | | |
| 4 volume | | | | | | | | | |
| 5 volume | | | | | | | | | |
| 6 volume | | | | | | | | | |
| 7 volume | | | | | | | | | |

Purge Method: submersible pumpNotes/Observations: Well pumped dry prior to well volumeSamplers: Iron Fork

APPENDIX B

ANALYTICAL SUMMARY TABLES

TABLE 1
SAFETY LIGHT CORPORATION SITE, PADEP
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS - GROUNDWATER

| LAB ID | | SLC-GW-CN-B | SLC-GW-MS-07 | SLC-GW-MS-09 | SLC-GD-MS-09 | SLC-GW-SL-15 |
|----------------------------|-------------|--------------|--------------|--------------|--------------|--------------|
| SAMPLE ID | PADEP Act 2 | FOH100291008 | FOH160319001 | FOH100291011 | FOH100291012 | FOH160319002 |
| DATE COLLECTED | MSCs | 8/800 | 8/9/2000 | 8/8/2000 | 8/8/2000 | 8/9/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | ug/l | ug/l | ug/l | ug/l | ug/l | |
| COMMENTS | | | | | | |
| 1,1,1-Trichloroethane | 200 | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1,2,2-Tetrachloroethane | na | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1,2-Trichloroethane | 5 | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1-Dichloroethane | 27 | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1-Dichloroethene | 7 | 5 U | 5 U | 2.4 J | 2 J | 5 U |
| 1,2-Dichloroethane | 5 | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,2-Dichloroethene (total) | 70 | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,2-Dichloropropane | 5 | 5 U | 5 U | 2.6 J | 2.2 J | 5 U |
| 2-Butanone | 2800 | 20 U | 20 U | 5 U | 5 U | 5 U |
| 2-Hexanone | na | 20 U | 20 U | 20 U | 20 U | 20 U |
| 4-Methyl-2-pentanone | na | 20 U | 20 U | 20 U | 20 U | 20 U |
| Acetone | 3700 | 20 U | 14 J | 20 U | 20 U | 20 U |
| Benzene | 5 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Bromodichloromethane | 100 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Bromoform | 100 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Bromomethane | 10 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Carbon disulfide | 1900 | 5 U | 5 U | 1.6 J | 5 U | 5 U |
| Carbon tetrachloride | 5 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chlorobenzene | 55 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chloroethane | 28000 | 10 U | 10 U | 3.1 J | 2.8 J | 10 U |
| Chloroform | 100 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chloromethane | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| cis-1,3-Dichloropropene | na | 5 U | 5 U | 5 U | 5 U | 5 U |
| Dibromochloromethane | na | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 700 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Methylene chloride | 5 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 100 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Tetrachloroethene | 5 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Toluene | 1000 | 5 U | 5 U | 5 U | 5 U | 5 U |
| trans-1,3-Dichloropropene | na | 5 U | 5 U | 5 U | 5 U | 5 U |
| Trichloroethene | 5 | 5 U | 5 U | 5 U | 5 U | 5 U |
| Vinyl chloride | 2 | 5 U | 5 U | 3.4 J | 5 U | 5 U |
| Xylenes (total) | 10000 | 5 U | 5 U | 5 U | 5 U | 5 U |

TABLE 2
SAFETY LIGHT CORPORATION SITE, PADEP
SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS - GROUNDWATER

| LAB ID | PADEP Act 2 MSCs | SLC-GW-CN-B | SLC-GW-MS-07 | SLC-GW-MS-09 | SLC-GD-MS-09 | SLC-GW-SL-15 |
|------------------------------|---------------------|--------------|--------------|--------------|--------------|--------------|
| SAMPLE ID | | FOH100291008 | FOH160319001 | FOH100291011 | FOH100291012 | FOH160319002 |
| DATE COLLECTED | | | | | | |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | | | | | | |
| 1,2,4-Trichlorobenzene | 70 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dichlorobenzene | 600 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,3-Dichlorobenzene | 600 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,4-Dichlorobenzene | 75 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,2'-oxybis(1-Chloropropane) | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4,5-Trichlorophenol | 3700 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4,6-Trichlorophenol | 60 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dichlorophenol | 20 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dimethylphenol | 730 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dinitrophenol | 19 | 50 U | 50 U | 50 U | 50 U | 50 U |
| 2,4-Dinitrotoluene | 2.1 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,6-Dinitrotoluene | 37 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chloronaphthalene | 2900 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chlorophenol | 40 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Methylnaphthalene | 1500 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Methylphenol | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Nitroaniline | 2.1 | 50 U | 50 U | 50 U | 50 U | 50 U |
| 2-Nitrophenol | 2300 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 3,3'-Dichlorobenzidine | 1.5 | 50 U | 50 U | 50 U | 50 U | 50 U |
| 3-Nitroaniline | 2.1 | 50 U | 50 U | 50 U | 50 U | 50 U |
| 4,6-Dinitro-2-methylphenol | na | 50 U | 50 U | 50 U | 50 U | 50 U |
| 4-Bromophenyl phenyl ether | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chloro-3-methylphenol | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chloroaniline | 150 | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chlorophenyl phenyl ether | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Methylphenol | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Nitroaniline | 2.1 | 50 U | 50 U | 50 U | 50 U | 50 U |
| 4-Nitrophenol | 60 | 50 U | 50 U | 50 U | 50 U | 50 U |
| Acenaphthene | 2200 | 10 U | 1.3 J | 10 U | 10 U | 10 U |
| Acenaphthylene | 2200 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Anthracene | 43 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(a)anthracene | 0.9 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(a)pyrene | 0.2 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(b)fluoranthene | 0.9 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(ghi)perylene | 0.26 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(k)fluoranthene | 0.55 | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Chloroethoxy)methane | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Chloroethyl) ether | 0.13 | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Ethylhexyl) phthalate | 6 | 1.6 J | 1.8 J | 8.9 J | 14 | 1.4 J |
| Butyl benzyl phthalate | 2700 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Carbazole | 700 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Chrysene | 1.8 | 10 U | 1.2 J | 10 U | 10 U | 10 U |
| Di-n-butyl phthalate | 3700 | 10 U | 1.9 J | 10 U | 10 U | 1.6 J |
| Di-n-octyl phthalate | 730 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dibenzo(a,h)anthracene | 0.09 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dibenzofuran | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| Diethyl phthalate | 500 | 10 U | 10 U | 1.9 J | 10 U | 10 U |
| Dimethyl phthalate | na | 10 U | 10 U | 10 U | 10 U | 10 U |
| Fluoranthene | 270 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Fluorene | 190 | 10 U | 2 J | 10 U | 10 U | 10 U |
| Hexachlorobenzene | 1 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorobutadiene | 1 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorocyclopentadiene | 50 | 50 U | 50 U | 50 U | 50 U | 50 U |
| Hexachloroethane | 1 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Indeno(1,2,3-cd)pyrene | 0.9 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Isophorone | 100 | 10 U | 10 U | 10 U | 10 U | 10 U |
| N-Nitrosodi-n-propylamine | 0.094 | 10 U | 10 U | 10 U | 10 U | 10 U |
| N-Nitrosodiphenylamine | 130 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Naphthalene | 20 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Nitrobenzene | 18 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Pentachlorophenol | 1 | 50 U | 50 U | 50 U | 50 U | 50 U |
| Phenanthrene | 1200 | 10 U | 1.9 J | 10 U | 10 U | 10 U |
| Phenol | 4000 | 10 U | 10 U | 10 U | 10 U | 10 U |
| Pyrene | 13 | 10 U | 1.7 J | 10 U | 10 U | 10 U |

MSCs-Medium Specific Concentrations for Organic Regulated Substances in Groundwater, Used Aquifer,
TDS <2500, Residential Criteria

TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | PADEP MSCs ¹ | SLC-RB-01 | SLC-RB-01-F | SLC-RB-02 | SLC-RB-02-F | SLC-GW-CN-A |
|---------------------|----------------------------|--------------|--------------|--------------|--------------|--------------|
| LAB ID | | F0H100153001 | F0H100153007 | F0H100153019 | F0H100153020 | F0H100153006 |
| DATE COLLECTED | | 8/7/2000 | 8/7/2000 | 8/8/2000 | 8/8/2000 | 8/7/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | | | | | | |
| Aluminum-Dissolved | NA | | 200 U | | 200 U | |
| Aluminum | NA | 200 U | | 200 U | | 9660 |
| Antimony-Dissolved | 6 | | 60 U | | 60 U | |
| Antimony | 6 | 60 U | | 60 U | | 60 U |
| Arsenic-Dissolved | 50 | | 10 U | | 10 U | |
| Arsenic | 50 | 10 U | | 2.3 B | | 7.2 B |
| Barium-Dissolved | 2000 | | 200 U | | 200 U | |
| Barium | 2000 | 200 U | | 200 U | | 1930 |
| Beryllium-Dissolved | 4 | | 5 U | | 5 U | |
| Beryllium | 4 | 5 U | | 5 U | | 5 U |
| Cadmium-Dissolved | 5 | | 5000 U | | 5000 U | |
| Cadmium | 5 | 5000 U | | 5000 U | | 3.1 B |
| Calcium-Dissolved | NA | | 5000 U | | 5000 U | |
| Calcium | NA | 5000 U | | 5000 U | | 26500 |
| Chromium-Dissolved | 100 | | 10 U | | 10 U | |
| Chromium | 100 | 10 U | | 10 U | | 7.8 B |
| Cobalt-Dissolved | NA | | 50 U | | 50 U | |
| Cobalt | NA | 50 U | | 50 U | | 157 |
| Copper-Dissolved | 1000 | | 25 U | | 25 U | |
| Copper | 1000 | 25 U | | 25 U | | 25.8 |
| Iron-Dissolved | NA | | 100 U | | 100 U | |
| Iron | NA | 100 U | | 100 U | | 13200 |
| Lead-Dissolved | 5 | | 3 U | | 3 U | |
| Lead | 5 | 3 U | | 3 U | | 9.7 |
| Magnesium-Dissolved | NA | | 5000 U | | 5000 U | |
| Magnesium | NA | 5000 U | | 5000 U | | 7670 |
| Manganese-Dissolved | NA | | 15 U | | 15 U | |
| Manganese | NA | 15 U | | 15 U | | 69600 |
| Mercury-Dissolved | 2 | | 0.2 U | | 0.2 U | |
| Mercury | 2 | 0.2 U | | 0.2 U | | 0.2 U |
| Nickel-Dissolved | 100 | | 13.5 B | | 40 U | |
| Nickel | 100 | 40 U | | 40 U | | 28.2 B |
| Potassium-Dissolved | NA | | 5000 U | | 5000 U | |
| Potassium | NA | 5000 U | | 5000 U | | 6370 |
| Selenium-Dissolved | 50 | | 5 U | | 5 U | |
| Selenium | 50 | 5 U | | 5 U | | 5 U |
| Silver-Dissolved | 100 | | 10 U | | 10 U | |
| Silver | 100 | 10 U | | 10 U | | 11.7 |
| Sodium-Dissolved | NA | | 5000 U | | 467 B | |
| Sodium | NA | 5000 U | | 229 B | | 9210 |
| Thallium-Dissolved | 2 | | 10 U | | 10 U | |
| Thallium | 2 | 10 U | | 10 U | | 7 B |
| Vanadium-Dissolved | 2.1 | | 50 U | | 50 U | |
| Vanadium | 2.1 | 50 U | | 50 U | | 9.9 B |
| Zinc-Dissolved | 2000 | | 20 U | | 7.5 B | |
| Zinc | 2000 | 5 B | | 20 U | | 85.9 |
| Cyanide-Dissolved | 200 | | 5 U | | | |
| Cyanide | 200 | 5 U | | 16 U | 5 U | 5 U |

MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer, Metals-GW
TDS <2500, Residential Criteria

SLC data.xls

TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | PADEP MSCs ¹ | SLC-GW-CN-A-F | SLC-GW-CN-B | SLC-GW-CN-B-F | SLC-GW-CN-D | SLC-GW-CN-D-F |
|---------------------|----------------------------|---------------|--------------|---------------|--------------|---------------|
| LAB ID | | FOH100153012 | FOH100291008 | FOH100291017 | FOH100153004 | FOH100153010 |
| DATE COLLECTED | | 8/7/2000 | 8/8/2000 | 8/8/2000 | 8/7/2000 | 8/7/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | | | | | | |
| Aluminum-Dissolved | NA | 200 U | | 200 U | | 200 U |
| Aluminum | NA | | 200 U | | 54000 | |
| Antimony-Dissolved | 6 | 60 U | | 60 U | | 60 U |
| Antimony | 6 | | 60 U | | 60 U | |
| Arsenic-Dissolved | 50 | 10 U | | 10 U | | 1.6 B |
| Arsenic | 50 | | 10 U | | 24.8 | |
| Barium-Dissolved | 2000 | 54.2 B | | 40 B | | 55.2 B |
| Barium | 2000 | | 44.2 B | | 458 | |
| Beryllium-Dissolved | 4 | 5 U | | 5 U | | 5 U |
| Beryllium | 4 | | 5 U | | 2.4 B | |
| Cadmium-Dissolved | 5 | 5000 U | | 5000 U | | 5000 U |
| Cadmium | 5 | | 5000 U | | 5000 U | |
| Calcium-Dissolved | NA | 26500 | | 33200 | | 31900 |
| Calcium | NA | | 32600 | | 34200 | |
| Chromium-Dissolved | 100 | 10 U | | 10 U | | 10 U |
| Chromium | 100 | | 10 U | | 60.5 | |
| Cobalt-Dissolved | NA | 4.8 B | | 50 U | | 50 U |
| Cobalt | NA | | 50 U | | 37.7 B | |
| Copper-Dissolved | 1000 | 25 U | | 25 U | | 25 U |
| Copper | 1000 | | 25 U | | 72.9 | |
| Iron-Dissolved | NA | 100 U | | 100 U | | 100 U |
| Iron | NA | | 176 | | 75300 | |
| Lead-Dissolved | 5 | 3 U | | 3 U | | 3 U |
| Lead | 5 | | 3 U | | 44.9 | |
| Magnesium-Dissolved | NA | 6170 | | 7430 | | 7100 |
| Magnesium | NA | | 7140 | | 16800 | |
| Manganese-Dissolved | NA | 4400 | | 15 U | | 215 |
| Manganese | NA | | 83.7 | | 2180 | |
| Mercury-Dissolved | 2 | 0.2 U | | 0.2 U | | 0.2 U |
| Mercury | 2 | | 0.2 U | | 0.2 U | |
| Nickel-Dissolved | 100 | 40 U | | 40 U | | 19.8 B |
| Nickel | 100 | | 40 U | | 73.3 | |
| Potassium-Dissolved | NA | 3810 B | | 3190 B | | 2630 B |
| Potassium | NA | | 3710 B | | 11700 | |
| Selenium-Dissolved | 50 | 5 U | | 5 U | | 5 U |
| Selenium | 50 | | 5 U | | 5 U | |
| Silver-Dissolved | 100 | 10 U | | 10 U | | 10 U |
| Silver | 100 | | 10 U | | 10 U | |
| Sodium-Dissolved | NA | 9550 | | 11800 | | 11000 |
| Sodium | NA | | 11700 | | 10700 | |
| Thallium-Dissolved | 2 | 10 U | | 10 U | | 10 U |
| Thallium | 2 | | 10 U | | 8.8 B | |
| Vanadium-Dissolved | 2.1 | 50 U | | 50 U | | 50 U |
| Vanadium | 2.1 | | 50 U | | 61.1 | |
| Zinc-Dissolved | 2000 | 7.8 B | | 20 U | | 10 B |
| Zinc | 2000 | | 4.6 B | | 238 | |
| Cyanide-Dissolved | 200 | 5 U | | 5 U | | 5 U |
| Cyanide | 200 | | 5 U | | 5 U | |

MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer, Metals-GW
TDS <2500, Residential Criteria

SLC data.xls
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TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | PADEP MSCs ¹ | SLC-GW-CN-F | SLC-GW-CN-F-F | SLC-GW-CN-G | SLC-GW-CN-G-F | SLC-GW-CN-H |
|---------------------|----------------------------|--------------|---------------|--------------|---------------|--------------|
| LAB ID | | FOH100291034 | FOH100291035 | FOH100153002 | FOH100153008 | FOH100291010 |
| DATE COLLECTED | | 8/9/2000 | 8/9/2000 | 8/7/2000 | 8/7/2000 | 8/8/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | | | | | | |
| Aluminum-Dissolved | NA | | 200 U | | 200 U | |
| Aluminum | NA | 200 U | | 3650 | | 13600 |
| Antimony-Dissolved | 6 | | 60 U | | 60 U | |
| Antimony | 6 | 60 U | | 60 U | | 60 U |
| Arsenic-Dissolved | 50 | | 10 U | | 10 U | |
| Arsenic | 50 | 10 U | | 6.7 B | | 13.6 |
| Barium-Dissolved | 2000 | | 43.6 B | | 79.3 B | |
| Barium | 2000 | 44.9 B | | 117 B | | 237 |
| Beryllium-Dissolved | 4 | | 5 U | | 5 U | |
| Beryllium | 4 | 5 U | | 5 U | | 0.72 B |
| Cadmium-Dissolved | 5 | | 5000 U | | 3.9 B | |
| Cadmium | 5 | 5000 U | | 5000 U | | 5000 U |
| Calcium-Dissolved | NA | | 30400 | | 30400 | |
| Calcium | NA | 29100 | | 28200 | | 38600 |
| Chromium-Dissolved | 100 | | 10 U | | 17.8 | |
| Chromium | 100 | 10 U | | 184 | | 18 |
| Cobalt-Dissolved | NA | | 50 U | | 50 U | |
| Cobalt | NA | 50 U | | 6.6 B | | 18.8 B |
| Copper-Dissolved | 1000 | | 25 U | | 25 U | |
| Copper | 1000 | 25 U | | 62.2 | | 54.7 |
| Iron-Dissolved | NA | | 100 U | | 89.3 B | |
| Iron | NA | 149 N | | 7460 | | 22100 |
| Lead-Dissolved | 5 | | 3 U | | 3 U | |
| Lead | 5 | 3 U | | 3.8 | | 26.6 |
| Magnesium-Dissolved | NA | | 7220 | | 6870 | |
| Magnesium | NA | 6850 | | 6600 | | 7640 |
| Manganese-Dissolved | NA | | 15 U | | 501 | |
| Manganese | NA | 26.1 | | 2320 | | 2580 |
| Mercury-Dissolved | 2 | | 0.2 U | | 0.2 U | |
| Mercury | 2 | 0.2 U | | 0.2 U | | 0.2 U |
| Nickel-Dissolved | 100 | | 40 U | | 40 U | |
| Nickel | 100 | 19.7 B | | 40 U | | 29.4 B |
| Potassium-Dissolved | NA | | 3690 B | | 2240 B | |
| Potassium | NA | 5000 U | | 3000 B | | 8730 |
| Selenium-Dissolved | 50 | | 5 U | | 5 U | |
| Selenium | 50 | 5 U | | 5 U | | 5 U |
| Silver-Dissolved | 100 | | 10 U | | 10 U | |
| Silver | 100 | 10 U | | 10 U | | 10 U |
| Sodium-Dissolved | NA | | 11500 E | | 9040 | |
| Sodium | NA | 10700 | | 9740 | | 11100 |
| Thallium-Dissolved | 2 | | 10 U | | 10 U | |
| Thallium | 2 | 10 U | | 10 U | | 10 U |
| Vanadium-Dissolved | 2.1 | | 50 U | | 50 U | |
| Vanadium | 2.1 | 50 U | | 50 U | | 8.9 B |
| Zinc-Dissolved | 2000 | | 20 U | | 11.3 B | |
| Zinc | 2000 | 6.2 BE | | 29.5 | | 73.8 |
| Cyanide-Dissolved | 200 | | 5 U | | 5 U | |
| Cyanide | 200 | 5 U | | 5 U | | 5 U |

MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer, Metals-GW
TDS <2500, Residential Criteria

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TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | | SLC-GW-CN-H-F | SLC-GW-CN-I | SLC-GW-CN-I-F | SLC-GW-MS-01 | SLC-GW-MS-01-F |
|---------------------|----------------------------|---------------|--------------|---------------|--------------|----------------|
| LAB ID | | FOH100291015 | FOH100291009 | FOH100291016 | FOH100291032 | FOH100291037 |
| DATE COLLECTED | | 8/8/2000 | 8/8/2000 | 8/8/2000 | 8/9/2000 | 8/9/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | PADEP MSCs ¹ | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | | | | | | |
| Aluminum-Dissolved | NA | 200 U | | 200 U | | 200 U |
| Aluminum | NA | | 65900 | | 9530 N | |
| Antimony-Dissolved | 6 | 60 U | | 60 U | | 60 U |
| Antimony | 6 | | 60 U | | 60 U | |
| Arsenic-Dissolved | 50 | 10 U | | 10 U | | 11.7 |
| Arsenic | 50 | | 42.3 | | 17.2 | |
| Barium-Dissolved | 2000 | 35.9 B | | 38.3 B | | 159 B |
| Barium | 2000 | | 986 | | 239 | |
| Beryllium-Dissolved | 4 | 5 U | | 5 U | | 5 U |
| Beryllium | 4 | | 5.4 | | 5 U | |
| Cadmium-Dissolved | 5 | 3.4 B | | 4.4 B | | 5000 U |
| Cadmium | 5 | | 5000 U | | 5000 U | |
| Calcium-Dissolved | NA | 33100 | | 26600 | | 36400 |
| Calcium | NA | | 68100 | | 37400 | |
| Chromium-Dissolved | 100 | 10 U | | 10 U | | 10 U |
| Chromium | 100 | | 73.9 | | 13 | |
| Cobalt-Dissolved | NA | 50 U | | 50 U | | 50 U |
| Cobalt | NA | | 140 | | 8.3 B | |
| Copper-Dissolved | 1000 | 25 U | | 25 U | | 25 U |
| Copper | 1000 | | 252 | | 38.9 | |
| Iron-Dissolved | NA | 100 U | | 100 U | | 21900 N |
| Iron | NA | | 95100 | | 36600 N | |
| Lead-Dissolved | 5 | 3 U | | 3 U | | 3 U |
| Lead | 5 | | 88.6 | | 41.8 | |
| Magnesium-Dissolved | NA | 5560 | | 6130 | | 5990 |
| Magnesium | NA | | 20900 | | 7900 | |
| Manganese-Dissolved | NA | 4.4 B | | 2.9 B | | 8410 N |
| Manganese | NA | | 3420 | | 8460 | |
| Mercury-Dissolved | 2 | 0.2 U | | 0.2 U | | 0.2 U |
| Mercury | 2 | | 0.18 B | | 0.2 U | |
| Nickel-Dissolved | 100 | 40 U | | 40 U | | 40 U |
| Nickel | 100 | | 559 | | 25.9 B | |
| Potassium-Dissolved | NA | 5550 | | 3210 B | | 6180 |
| Potassium | NA | | 14000 | | 8520 | |
| Selenium-Dissolved | 50 | 5 U | | 5 U | | 5 U |
| Selenium | 50 | | 3.5 B | | 5 U | |
| Silver-Dissolved | 100 | 10 U | | 10 U | | 10 U |
| Silver | 100 | | 10 U | | 10 U | |
| Sodium-Dissolved | NA | 11600 | | 11500 | | 9660 E |
| Sodium | NA | | 11600 | | 9880 | |
| Thallium-Dissolved | 2 | 10 U | | 10 U | | 4.5 B |
| Thallium | 2 | | 8.8 B | | 10 U | |
| Vanadium-Dissolved | 2.1 | 50 U | | 50 U | | 50 U |
| Vanadium | 2.1 | | 82.8 | | 7.5 B | |
| Zinc-Dissolved | 2000 | 5.8 B | | 5.9 B | | 5.6 B |
| Zinc | 2000 | | 305 | | 65.4 E | |
| Cyanide-Dissolved | 200 | 5 U | | 5 U | | 5 U |
| Cyanide | 200 | | 5 U | | 5 U | |

TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | | SLC-GW-MS-02 | SLC-GW-MS-02-F | SLC-GW-MS-03 | SLC-GW-MS-03-F | SLC-GW-MS-04 |
|---------------------|----------------------------|--------------|----------------|--------------|----------------|--------------|
| LAB ID | | F0H100291007 | F0H100291018 | F0H100291020 | F0H100291029 | F0H100291019 |
| DATE COLLECTED | | 8/7/2000 | 8/7/2000 | 8/8/2000 | 8/8/2000 | 8/8/00 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | PADEP MSCs ¹ | | | | | |
| Aluminum-Dissolved | NA | | 200 U | | 200 U | |
| Aluminum | NA | 2970 | | 1010 N | | 18400 |
| Antimony-Dissolved | 6 | | 60 U | | 60 U | |
| Antimony | 6 | 60 U | | 60 U | | 60 U |
| Arsenic-Dissolved | 50 | | 10 U | | 10 U | |
| Arsenic | 50 | 3.5 B | | 3.9 B | | 26.2 |
| Barium-Dissolved | 2000 | | 70.8 B | | 75 B | |
| Barium | 2000 | 96.6 B | | 96.1 B | | 331 |
| Beryllium-Dissolved | 4 | | 5 U | | 5 U | |
| Beryllium | 4 | 5 U | | 5 U | | 0.67 B |
| Cadmium-Dissolved | 5 | | 5000 U | | 2.9 B | |
| Cadmium | 5 | 5000 U | | 5000 U | | 5000 U |
| Calcium-Dissolved | NA | | 28000 | | 49900 | |
| Calcium | NA | 27200 | | 46900 | | 36400 |
| Chromium-Dissolved | 100 | | 10 U | | 10 U | |
| Chromium | 100 | 10 U | | 13.5 | | 22.1 |
| Cobalt-Dissolved | NA | | 50 U | | 6.7 B | |
| Cobalt | NA | 50 U | | 50 U | | 13.9 B |
| Copper-Dissolved | 1000 | | 25 U | | 25 U | |
| Copper | 1000 | 8 B | | 14 B | | 49.5 |
| Iron-Dissolved | NA | | 61.5 B | | 4020 | |
| Iron | NA | 4250 | | 10900 N | | 48900 |
| Lead-Dissolved | 5 | | 3 U | | 3 U | |
| Lead | 5 | 3.8 | | 3.3 | | 20.1 |
| Magnesium-Dissolved | NA | | 6270 | | 7130 | |
| Magnesium | NA | 6390 | | 6780 | | 8620 |
| Manganese-Dissolved | NA | | 623 | | 4730 | |
| Manganese | NA | 531 | | 4430 | | 6190 |
| Mercury-Dissolved | 2 | | 0.2 U | | 0.2 U | |
| Mercury | 2 | 0.2 U | | 0.2 U | | 0.2 U |
| Nickel-Dissolved | 100 | | 40 U | | 40 U | |
| Nickel | 100 | 40 U | | 13.6 B | | 31.3 B |
| Potassium-Dissolved | NA | | 3910 B | | 6770 | |
| Potassium | NA | 4430 B | | 5770 | | 9470 |
| Selenium-Dissolved | 50 | | 5 U | | 5 U | |
| Selenium | 50 | 5 U | | 5 U | | 5 U |
| Silver-Dissolved | 100 | | 10 U | | 10 U | |
| Silver | 100 | 10 U | | 10 U | | 8.5 B |
| Sodium-Dissolved | NA | | 10600 | | 14600 | |
| Sodium | NA | 11000 | | 14000 | | 9330 |
| Thallium-Dissolved | 2 | | 10 U | | 10 U | |
| Thallium | 2 | 10 U | | 10 U | | 4.8 B |
| Vanadium-Dissolved | 2.1 | | 50 U | | 50 U | |
| Vanadium | 2.1 | 50 U | | 50 U | | 13.7 B |
| Zinc-Dissolved | 2000 | | 14.5 B | | 7.5 B | |
| Zinc | 2000 | 22.7 | | 26.5 E | | 118 |
| Cyanide-Dissolved | 200 | | 5 U | | 5 U | |
| Cyanide | 200 | 5.6 U | | 5 U | | 5 U |

MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer, Metals-GW
TDS <2500, Residential Criteria

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TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | | SLC-GW-MS-04-F | SLC-GW-MS-05 | SLC-GW-MS-05-F | SLC-GW-MS-06 | SLC-GW-MS-06-F |
|---------------------|----------------------------|----------------|--------------|----------------|--------------|----------------|
| LAB ID | | FOH100291030 | FOH100153003 | FOH100153009 | FOH100291022 | FOH100291027 |
| DATE COLLECTED | | 8/8/2000 | 8/7/2000 | 8/7/2000 | 8/8/2000 | 8/8/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | PADEP MSCs ¹ | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | | | | | | |
| Aluminum-Dissolved | NA | 200 U | | 200 U | | 200 U |
| Aluminum | NA | | 334000 | | 65200 N | |
| Antimony-Dissolved | 6 | 60 U | | 60 U | | 60 U |
| Antimony | 6 | | 7.8 B | | 60 U | |
| Arsenic-Dissolved | 50 | 16.5 | | 15.1 | | 1.6 B |
| Arsenic | 50 | | 211 | | 46.9 | |
| Barium-Dissolved | 2000 | 174 B | | 103 B | | 63.1 B |
| Barium | 2000 | | 2470 | | 654 | |
| Beryllium-Dissolved | 4 | 5 U | | 5 U | | 5 U |
| Beryllium | 4 | | 16.2 B | | 4.8 B | |
| Cadmium-Dissolved | 5 | 5000 U | | 5000 U | | 5000 U |
| Cadmium | 5 | | 14.3 B | | 5000 U | |
| Calcium-Dissolved | NA | 37100 | | 40300 | | 26200 |
| Calcium | NA | | 77400 | | 37400 | |
| Chromium-Dissolved | 100 | 10 U | | 10 U | | 10 U |
| Chromium | 100 | | 589 | | 73.8 | |
| Cobalt-Dissolved | NA | 50 U | | 50 U | | 50 U |
| Cobalt | NA | | 209 B | | 98 | |
| Copper-Dissolved | 1000 | 25 U | | 25 U | | 25 U |
| Copper | 1000 | | 614 | | 181 | |
| Iron-Dissolved | NA | 19500 | | 6450 | | 100 U |
| Iron | NA | | 566000 | | 118000 N | |
| Lead-Dissolved | 5 | 3 U | | 3 U | | 3 U |
| Lead | 5 | | 689 | | 111 | |
| Magnesium-Dissolved | NA | 5280 | | 8420 | | 5700 |
| Magnesium | NA | | 82800 | | 21000 | |
| Manganese-Dissolved | NA | 6010 | | 7300 | | 9.7 BN |
| Manganese | NA | | 18300 | | 2550 | |
| Mercury-Dissolved | 2 | 0.2 U | | 0.2 U | | 0.2 U |
| Mercury | 2 | | 0.66 | | 0.2 U | |
| Nickel-Dissolved | 100 | 40 U | | 40 U | | 40 U |
| Nickel | 100 | | 494 | | 129 | |
| Potassium-Dissolved | NA | 7580 | | 3930 B | | 3440 B |
| Potassium | NA | | 43000 | | 12400 | |
| Selenium-Dissolved | 50 | 5 U | | 5 U | | 5 U |
| Selenium | 50 | | 5 U | | 5 U | |
| Silver-Dissolved | 100 | 10 U | | 10 U | | 10 U |
| Silver | 100 | | 189 | | 10 U | |
| Sodium-Dissolved | NA | 9420 | | 12000 | | 11300 E |
| Sodium | NA | | 16800 | | 11800 | |
| Thallium-Dissolved | 2 | 10 U | | 10 U | | 10 U |
| Thallium | 2 | | 43.6 | | 10.5 | |
| Vanadium-Dissolved | 2.1 | 50 U | | 50 U | | 50 U |
| Vanadium | 2.1 | | 410 | | 99.3 | |
| Zinc-Dissolved | 2000 | 11.4 B | | 7.3 B | | 4.8 B |
| Zinc | 2000 | | 2060 | | 311 E | |
| Cyanide-Dissolved | 200 | 5 U | | 5 U | | 5 U |
| Cyanide | 200 | | 5 U | | 5 U | |

MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer, Metals-GW
TDS <2500, Residential Criteria

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TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | | SLC-GW-MS-07 | SLC-GW-MS-07-F | SLC-GW-MS-08 | SLC-GW-MS-08-F | SLC-GW-MS-09 |
|---------------------|----------------------------|--------------|----------------|--------------|----------------|--------------|
| LAB ID | | F0H160319001 | F0H160319004 | F0H100291023 | F0H100291026 | F0H100291011 |
| DATE COLLECTED | | 8/9/2000 | 8/9/2000 | | | 8/8/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | PADEP MSCs ¹ | | | | | |
| Aluminum-Dissolved | NA | | 200 U | | 200 U | |
| Aluminum | NA | 36100 N* | | 10900 N | | 361 |
| Antimony-Dissolved | 6 | | 3.5 B | | 60 U | |
| Antimony | 6 | 60 U | | 60 U | | 60 U |
| Arsenic-Dissolved | 50 | | 3.5 B | | 7.7 B | |
| Arsenic | 50 | 26.7 | | 234 | | 3.1 B |
| Barium-Dissolved | 2000 | | 201 | | 136 B | |
| Barium | 2000 | 536 | | 610 | | 179 B |
| Beryllium-Dissolved | 4 | | 5 U | | 5 U | |
| Beryllium | 4 | 2.6 B | | 0.96 B | | 5 U |
| Cadmium-Dissolved | 5 | | 5 U | | 5000 U | |
| Cadmium | 5 | 0.79 B | | 5000 U | | 5000 U |
| Calcium-Dissolved | NA | | 45800 | | 39300 | |
| Calcium | NA | 48900 N | | 44100 | | 48800 |
| Chromium-Dissolved | 100 | | 10 U | | 42 | |
| Chromium | 100 | 40.7 | | 18.9 | | 10 U |
| Cobalt-Dissolved | NA | | 50 U | | 50 U | |
| Cobalt | NA | 25.8 B | | 50 U | | 50 U |
| Copper-Dissolved | 1000 | | 25 U | | 25 U | |
| Copper | 1000 | 94.7 | | 34.5 | | 25 U |
| Iron-Dissolved | NA | | 11000 | | 18000 N | |
| Iron | NA | 71000 N | | 249000 | | 30200 |
| Lead-Dissolved | 5 | | 3 U | | 3 U | |
| Lead | 5 | 54.8 | | 26.6 | | 3 U |
| Magnesium-Dissolved | NA | | 5050 | | 5670 | |
| Magnesium | NA | 11700 | | 8030 | | 7170 |
| Manganese-Dissolved | NA | | 7550 | | 10100 N | |
| Manganese | NA | 8960 N | | 13200 | | 7900 |
| Mercury-Dissolved | 2 | | 0.2 U | | 0.2 U | |
| Mercury | 2 | 0.2 U | | 0.2 U | | 0.2 U |
| Nickel-Dissolved | 100 | | 4.4 B | | 40 U | |
| Nickel | 100 | 55.7 | | 26.3 B | | 40 U |
| Potassium-Dissolved | NA | | 4700 B | | 6460 | |
| Potassium | NA | 11700 * | | 8660 | | 5740 |
| Selenium-Dissolved | 50 | | 5 U | | 5 U | |
| Selenium | 50 | 5 UN | | 5 U | | 5 U |
| Silver-Dissolved | 100 | | 10 U | | 10 U | |
| Silver | 100 | 10 U | | 14.7 | | 10 U |
| Sodium-Dissolved | NA | | 15600 | | 9490 E | |
| Sodium | NA | 15900 | | 9680 | | 12900 |
| Thallium-Dissolved | 2 | | 5.5 B | | 5.4 B | |
| Thallium | 2 | 7.7 B | | 27.4 | | 5.8 B |
| Vanadium-Dissolved | 2.1 | | 50 U | | 50 U | |
| Vanadium | 2.1 | 63 | | 28.4 B | | 50 U |
| Zinc-Dissolved | 2000 | | 20 U | | 9.7 B | |
| Zinc | 2000 | 192 N | | 100 E | | 56.5 |
| Cyanide-Dissolved | 200 | | 5 U | | 5 U | |
| Cyanide | 200 | 5 U | | 5 U | | 5 U |

MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer, Metals-GW
TDS <2500, Residential Criteria

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TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | | SLC-GW-MS-09-F | SLC-GD-MS-09 | SLC-GD-MS-09-F | SLC-GW-MS-10 | SLC-GW-MS-10-F |
|---------------------|----------------------------|----------------|--------------|----------------|--------------|----------------|
| LAB ID | | FOH100291014 | FOH100291012 | FOH100291013 | FOH100291031 | FOH100291038 |
| DATE COLLECTED | | 8/8/2000 | 8/8/2000 | 8/8/2000 | 8/9/2000 | 8/9/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | PADEP MSCs ¹ | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | | | | | | |
| Aluminum-Dissolved | NA | 200 U | | 200 U | | 200 U |
| Aluminum | NA | | 218 | | 84900 N | |
| Antimony-Dissolved | 6 | 60 U | | 60 U | | 60 U |
| Antimony | 6 | | 60 U | | 60 U | |
| Arsenic-Dissolved | 50 | 2.3 B | | 2.5 B | | 3.9 B |
| Arsenic | 50 | | 1.8 B | | 55 | |
| Barium-Dissolved | 2000 | 176 B | | 175 B | | 136 B |
| Barium | 2000 | | 178 B | | 902 | |
| Beryllium-Dissolved | 4 | 5 U | | 5 U | | 5 U |
| Beryllium | 4 | | 5 U | | 5.7 | |
| Cadmium-Dissolved | 5 | 4.4 B | | 3.1 B | | 5000 U |
| Cadmium | 5 | | 5000 U | | 5000 U | |
| Calcium-Dissolved | NA | 52200 | | 51600 | | 45200 |
| Calcium | NA | | 48700 | | 58400 | |
| Chromium-Dissolved | 100 | 10 U | | 10 U | | 10 U |
| Chromium | 100 | | 10 U | | 181 | |
| Cobalt-Dissolved | NA | 50 U | | 50 U | | 50 U |
| Cobalt | NA | | 50 U | | 78.9 | |
| Copper-Dissolved | 1000 | 25 U | | 25 U | | 25 U |
| Copper | 1000 | | 25 U | | 243 | |
| Iron-Dissolved | NA | 30700 | | 30800 | | 15000 N |
| Iron | NA | | 30000 | | 191000 N | |
| Lead-Dissolved | 5 | 3 U | | 3 U | | 3 U |
| Lead | 5 | | 3 U | | 182 | |
| Magnesium-Dissolved | NA | 7830 | | 7750 | | 8700 |
| Magnesium | NA | | 7120 | | 26200 | |
| Manganese-Dissolved | NA | 8310 | | 8170 | | 4200 N |
| Manganese | NA | | 7870 | | 8440 | |
| Mercury-Dissolved | 2 | 0.2 U | | 0.2 U | | 0.2 U |
| Mercury | 2 | | 0.2 U | | 0.14 B | |
| Nickel-Dissolved | 100 | 40 U | | 18.3 B | | 40 U |
| Nickel | 100 | | 40 U | | 304 | |
| Potassium-Dissolved | NA | 8120 | | 7160 | | 6470 |
| Potassium | NA | | 6480 | | 23500 | |
| Selenium-Dissolved | 50 | 5 U | | 5 U | | 5 U |
| Selenium | 50 | | 5 U | | 3.5 B | |
| Silver-Dissolved | 100 | 10 U | | 10 U | | 10 U |
| Silver | 100 | | 10 U | | 10 U | |
| Sodium-Dissolved | NA | 13900 | | 13600 | | 11800 E |
| Sodium | NA | | 12800 | | 12600 | |
| Thallium-Dissolved | 2 | 5.7 B | | 5.7 B | | 4.5 B |
| Thallium | 2 | | 4.2 B | | 21.2 | |
| Vanadium-Dissolved | 2.1 | 50 U | | 50 U | | 50 U |
| Vanadium | 2.1 | | 50 U | | 137 | |
| Zinc-Dissolved | 2000 | 7.9 B | | 14.6 B | | 4.9 B |
| Zinc | 2000 | | 73 | | 530 E | |
| Cyanide-Dissolved | 200 | 5 U | | 5 U | | 5 U |
| Cyanide | 200 | | 5 U | | 5 U | |

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TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | | SLC-GW-MS-11 | SLC-GW-MS-11-F | SLC-GW-MS-12 | SLC-GW-MS-12-F | SLC-GW-MS-13 |
|---------------------|----------------------------|--------------|----------------|--------------|----------------|--------------|
| LAB ID | | FOH100291024 | FOH100291025 | FOH100291021 | FOH100291028 | FOH100291033 |
| DATE COLLECTED | | 8/8/2000 | 8/8/2000 | 8/8/2000 | 8/8/2000 | 8/9/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | PADEP MSCs ¹ | | | | | |
| Aluminum-Dissolved | NA | | 200 U | | 200 U | |
| Aluminum | NA | 4700 N | | 60300 N | | 33500 N |
| Antimony-Dissolved | 6 | | 60 U | | 60 U | |
| Antimony | 6 | 60 U | | 60 U | | 60 U |
| Arsenic-Dissolved | 50 | | 3.7 B | | 10 U | |
| Arsenic | 50 | 9 B | | 37.6 | | 30.4 |
| Barium-Dissolved | 2000 | | 95.6 B | | 69 B | |
| Barium | 2000 | 134 B | | 529 | | 405 |
| Beryllium-Dissolved | 4 | | 5 U | | 5 U | |
| Beryllium | 4 | 5 U | | 3.9 B | | 1.2 B |
| Cadmium-Dissolved | 5 | | 5000 U | | 5000 U | |
| Cadmium | 5 | 4.1 B | | 3.7 B | | 78.7 B |
| Calcium-Dissolved | NA | | 38400 | | 33200 | |
| Calcium | NA | 38100 | | 38100 | | 32600 |
| Chromium-Dissolved | 100 | | 10 U | | 10 U | |
| Chromium | 100 | 14.2 | | 157 | | 2980 |
| Cobalt-Dissolved | NA | | 50 U | | 50 U | |
| Cobalt | NA | 9.8 B | | 66.9 | | 20.2 B |
| Copper-Dissolved | 1000 | | 25 U | | 25 U | |
| Copper | 1000 | 32.5 | | 136 | | 14500 |
| Iron-Dissolved | NA | | 5300 | | 1330 | |
| Iron | NA | 22300 N | | 170000 N | | 184000 N |
| Lead-Dissolved | 5 | | 3 U | | 3 U | |
| Lead | 5 | 14.2 | | 132 | | 326 |
| Magnesium-Dissolved | NA | | 7150 | | 6830 | |
| Magnesium | NA | 7680 | | 20500 | | 12200 |
| Manganese-Dissolved | NA | | 4300 | | 137 | |
| Manganese | NA | 4430 | | 1910 | | 7880 |
| Mercury-Dissolved | 2 | | 0.2 U | | 0.2 U | |
| Mercury | 2 | 0.2 U | | 0.19 B | | 0.17 B |
| Nickel-Dissolved | 100 | | 18.9 B | | 15.3 B | |
| Nickel | 100 | 24 B | | 203 | | 373 |
| Potassium-Dissolved | NA | | 3910 B | | 2740 B | |
| Potassium | NA | 4980 B | | 13000 | | 8760 |
| Selenium-Dissolved | 50 | | 5 U | | 5 U | |
| Selenium | 50 | 5 U | | 5 U | | 4.4 B |
| Silver-Dissolved | 100 | | 10 U | | 10 U | |
| Silver | 100 | 10 U | | 10 U | | 77.4 |
| Sodium-Dissolved | NA | | 10900 | | 11200 | |
| Sodium | NA | 10800 | | 11600 | | 11700 |
| Thallium-Dissolved | 2 | | 10 U | | 10 U | |
| Thallium | 2 | 10 U | | 14.4 | | 21.1 |
| Vanadium-Dissolved | 2.1 | | 50 U | | 50 U | |
| Vanadium | 2.1 | 50 U | | 91.8 | | 60.3 |
| Zinc-Dissolved | 2000 | | 8.5 B | | 6 B | |
| Zinc | 2000 | 108 E | | 479 E | | 21100 E |
| Cyanide-Dissolved | 200 | | 5 U | | 5 U | |
| Cyanide | 200 | 5 U | | 5 U | | 5 U |

MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer, Metals-GW
TDS <2500, Residential Criteria

SLC data.xls

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TABLE 3
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | PADEP MSCs ¹ | SLC-GW-MS-13-F | SLC-GW-SL-15 | SLC-GW-SL-15-F |
|---------------------|----------------------------|----------------|--------------|----------------|
| LAB ID | | F0H100291036 | F0H160319002 | F0H160319003 |
| DATE COLLECTED | | 8/9/2000 | 8/9/2000 | 8/9/2000 |
| MATRIX | | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l |
| COMMENTS | | | | |
| Aluminum-Dissolved | NA | 200 U | | 200 U |
| Aluminum | NA | | 324 N* | |
| Antimony-Dissolved | 6 | 60 U | | 2.6 B |
| Antimony | 6 | | 60 U | |
| Arsenic-Dissolved | 50 | 3.9 B | | 10 U |
| Arsenic | 50 | | 10 U | |
| Barium-Dissolved | 2000 | 121 B | | 65.3 B |
| Barium | 2000 | | 158 B | |
| Beryllium-Dissolved | 4 | 5 U | | 5 U |
| Beryllium | 4 | | 5 U | |
| Cadmium-Dissolved | 5 | 5000 U | | 5 U |
| Cadmium | 5 | | 0.95 B | |
| Calcium-Dissolved | NA | 29500 | | 30700 |
| Calcium | NA | | 29800 N | |
| Chromium-Dissolved | 100 | 10 U | | 10 U |
| Chromium | 100 | | 1.3 B | |
| Cobalt-Dissolved | NA | 50 U | | 50 U |
| Cobalt | NA | | 50 U | |
| Copper-Dissolved | 1000 | 25 U | | 25 U |
| Copper | 1000 | | 18.8 B | |
| Iron-Dissolved | NA | 19900 N | | 173 |
| Iron | NA | | 92800 N | |
| Lead-Dissolved | 5 | 3 U | | 3 U |
| Lead | 5 | | 3 U | |
| Magnesium-Dissolved | NA | 5420 | | 8000 |
| Magnesium | NA | | 7660 | |
| Manganese-Dissolved | NA | 5460 N | | 236 |
| Manganese | NA | | 1070 N | |
| Mercury-Dissolved | 2 | 0.2 U | | 0.2 U |
| Mercury | 2 | | 0.2 U | |
| Nickel-Dissolved | 100 | 40 U | | 40 U |
| Nickel | 100 | | 40 U | |
| Potassium-Dissolved | NA | 2210 B | | 5000 U |
| Potassium | NA | | 5000 U | |
| Selenium-Dissolved | 50 | 5 U | | 5 U |
| Selenium | 50 | | 5 U | |
| Silver-Dissolved | 100 | 10 U | | 10 U |
| Silver | 100 | | 10 U | |
| Sodium-Dissolved | NA | 11000 E | | 13400 |
| Sodium | NA | | 12900 | |
| Thallium-Dissolved | 2 | 5.5 B | | 4.7 B |
| Thallium | 2 | | 9.9 B | |
| Vanadium-Dissolved | 2.1 | 50 U | | 50 U |
| Vanadium | 2.1 | | 50 U | |
| Zinc-Dissolved | 2000 | 371 | | 6.7 B |
| Zinc | 2000 | | 18.9 BN | |
| Cyanide-Dissolved | 200 | 5 U | | 5 U |
| Cyanide | 200 | | 5 U | |

SLC data.xls
 MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer, Metals-GW
 TDS <2500, Residential Criteria
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TABLE 4
SAFETY LIGHT CORPORATION SITE, PADEP
RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | SLC-RB-01 | SLC-RB-02 | SLC-GW-CN-A | SLC-GW-CN-B | SLC-GW-CN-D | |
|----------------|------------------|--------------|-----------------|-----------------|------------------|--------------|
| LAB ID | F0H100153001 | F0H100153019 | F0H100153006 | F0H100291008 | F0H100153004 | |
| DATE COLLECTED | 8/7/2000 | 8/8/2000 | 8/7/2000 | 8/7/2000 | 8/7/2000 | |
| MATRIX | WATER | WATER | WATER | WATER | WATER | |
| COMMENTS | Rinse Blank | Rinse Blank | Monitoring Well | Monitoring Well | Monitoring Well | |
| UNITS | pCi/L | pCi/L | pCi/L | pCi/L | pCi/L | |
| | uncert. | uncert. | uncert. | uncert. | uncert. | |
| GROSS ALPHA | 15 | 0.33 U 0.39 | -0.07 U 0.34 | 301 47 | 0.846 0.999 | 64 14 |
| GROSS BETA | 50 | 1 U 1.1 | 0.6 U 1 | 3820 380 | 3.31 1.14 | 200 25 |
| TRITIUM | 20,000 | -110 U 110 | 60 U 120 | 1980 260 | 2060 267 | 5560 600 |
| GAMMA SCAN | | | | | | |
| Cesium 137 | na | 4.1 U 6.9 | 2.1 U 6 | -2.6 U 7.2 | -4.36 U 8.56 | 7.8 U 8.1 |
| Cobalt 60 | na | -1.4 U 6.1 | 1.3 U 8.2 | -3.5 U 9.1 | -7.07 U 9.3 | 1.3 U 7.2 |
| Lead 214 | na | U | U | 79 18 | 32.5 22 | 78 20 |
| OTHERS | | | | | | |
| Radium 226 | 5 ³ | 0.0825 0.193 | 0.0101 0.159 | -16.9 U 3.4 | 0.251 0.129 | -53.6 U 8.71 |
| Radium228 | { ² } | 0.897 0.89 | 0.589 0.839 | 13.3 1.84 | 0.944 0.456 | 38.9 4.19 |
| Carbon 14 | na | 0.517 2.9 | 1.11 2.8 | 4.78 2.9 | -3.33 U 4.8 | 3.93 2.9 |
| Strontium 90 | 8 | 0.32 0.83 | 0.39 0.98 | 21 4.44 | 1.8 0.517 | 68.9 13.7 |
| Nickel 63 | na | 3.02 11 | 4.03 9.7 | 9.01 11 | 5.78 12 | 8.45 11 |
| Americium 241 | na | 0.057 0.21 | -0.089 U 0.06 | -0.042 U 0.098 | -0.0439 U 0.0769 | 0.1 0.37 |
| Polonium 210 | { ⁴ } | 0 0.12 | -0.0091 U 0.013 | 4.27 1.1 | -0.0057 U 0.011 | 2.5 0.77 |

Notes:

U- Result is less than the sample detection limit.

na-not applicable

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does includes all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total. When St 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result. This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha

TABLE 4
SAFETY LIGHT CORPORATION SITE, PADEP
RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | LAB ID | EPA | SLC-GW-CN-F | | SLC-GW-CN-G | | SLC-GW-CN-H | | SLC-GW-CN-I | | SLC-GW-MS-01 | |
|----------------|------------------------|-----|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|---------|
| DATE COLLECTED | DRINKING | | FOH100291034 | | FOH100153002 | | FOH100291010 | | FOH100291009 | | FOH100291032 | |
| MATRIX | WATER | | 8/9/2000 | | 8/7/2000 | | 8/7/2000 | | 8/7/2000 | | 8/9/2000 | |
| COMMENTS | STANDARDS ² | | WATER | | WATER | | WATER | | WATER | | WATER | |
| UNITS | pCi/L | | Monitoring Well | | Monitoring Well | | Monitoring Well | | Monitoring Well | | Monitoring Well | |
| | | | pCi/L | uncert. | pCi/L | uncert. | pCi/L | uncert. | pCi/L | uncert. | pCi/L | uncert. |
| GROSS ALPHA | 15 | | 0.506 | 0.843 | 9.3 | 2.4 | 17.8 | 3.53 | 26.6 | 6.87 | 52.1 | 8.88 |
| GROSS BETA | 50 | | 3.91 | 1.26 | 23 | 3 | 21.5 | 3.08 | 47.7 | 7.8 | 755 | 75.5 |
| TRITIUM | 20,000 | | 1920 | 254 | 1280 | 200 | 2720 | 327 | 1820 | 245 | 4290 | 475 |
| GAMMA SCAN | | | | | | | | | | | | |
| Cesium 137 | na | | -7.12 U | 9.33 | -12.2 U | 7.5 | -7.31 U | 8.26 | -5.7 U | 6.17 | -7.15 U | 8.09 |
| Cobalt 60 | na | | -11.2 U | 9.86 | -7.7 U | 7.7 | -7.13 U | 7.83 | 2.61 | 9.11 | -2.07 U | 8.73 |
| Lead 214 | na | | 10.8 | 16.2 | U | | 57.3 | 23.1 | 0.242 | 16.5 | 5.06 | 14.1 |
| OTHERS | | | | | | | | | | | | |
| Radium 226 | 5 ³ | | 0.212 | 0.134 | -4.8 U | 3.75 | 1.02 | 0.17 | 1.52 | 0.337 | -279 U | 47 |
| Radium228 | { ⁴ } | | 0.422 | 0.475 | 3.41 | 0.937 | 0.867 | 0.478 | 0.872 | 0.641 | 181 | 18.1 |
| Carbon 14 | na | | 0.989 | 2.8 | 3.12 | 4.7 | -0.53 U | 2.9 | -1.35 U | 2.9 | -1.05 U | 2.7 |
| Strontium 90 | 8 | | 0.67 | 0.426 | 5.98 | 1.62 | 0.205 | 0.403 | 1.36 | 0.472 | 345 | 68 |
| Nickel 63 | na | | 12.3 | 11 | 4.97 | 11 | 9.81 | 12 | 4.92 | 13 | 7.32 | 12 |
| Americium 241 | na | | -0.0151 U | 0.145 | 0.18 | 0.33 | -0.00753 U | 0.0151 | 0.043 | 0.101 | 0.0623 | 0.102 |
| Polonium 210 | { ⁴ } | | 0.144 | 0.21 | 1.93 | 0.69 | 3.92 | 1.1 | 4.05 | 1.3 | 0.407 | 0.28 |

Notes:

U- Result is less than the sample detection limit.

na-not applicable

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does includes all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total. When St 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result. This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha

TABLE 4
SAFETY LIGHT CORPORATION SITE, PADEP
RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | LAB ID | SLC-GW-MS-02 | SLC-GW-MS-03 | SLC-GW-MS-04 | SLC-GW-MS-05 | SLC-GW-MS-06 |
|------------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| DATE COLLECTED | EPA | F0H100291007 | F0H100291020 | F0H100291019 | F0H100153003 | F0H100291022 |
| MATRIX | DRINKING | 8/7/2000 | 8/8/2000 | 8/8/2000 | 8/7/2000 | 8/8/2000 |
| COMMENTS | WATER | WATER | WATER | WATER | WATER | WATER |
| STANDARDS ² | Monitoring Well | Monitoring Well | Monitoring Well | Monitoring Well | Monitoring Well | Monitoring Well |
| UNITS | pCi/L | pCi/L | pCi/L | pCi/L | pCi/L | pCi/L |
| GROSS ALPHA | 15 | 20 3.17 | 39.1 6.45 | 496 94.2 | 387 52 | 264 58.4 |
| GROSS BETA | 50 | 153 15.5 | 371 37.2 | 9650 965 | 866 90 | 2100 223 |
| TRITIUM | 20,000 | 9050 936 | 5790 619 | 3780 426 | 2860 340 | 4210 467 |
| GAMMA SCAN | | | | | | |
| Cesium 137 | na | 34.5 12.5 | 0.785 8.6 | -0.0684 U 9.04 | 1830 200 | 21.6 15.7 |
| Cobalt 60 | na | -0.0173 U 9.4 | 1.36 6.17 | 1.38 8.06 | 0.9 U 7.1 | -2.17 U 8.21 |
| Lead 214 | na | 55.4 18.7 | -15.1 U 15.5 | 62.1 18.6 | 197 37 | 16 17.1 |
| OTHERS | | | | | | |
| Radium 226 | 5 ³ | -86.1 U 13.6 | -37.8 U 5.52 | -979 U 210 | 56 5.6 | -61.8 U 8.33 |
| Radium 228 | { ⁴ } | 48.5 4.97 | 26.5 2.83 | 615 61.5 | 95.5 9.72 | 44.2 4.65 |
| Carbon 14 | na | 0.604 2.8 | 0.14 2.9 | 2.6 3 | 2.77 2.9 | -2.14 U 2.9 |
| Strontium 90 | 8 | 87.6 17.3 | 44.5 8.81 | 6450 1270 | 159 31.4 | 140 27.6 |
| Nickel 63 | na | 2.46 12 | 1.41 13 | 36.3 13 | 16.7 12 | 9.09 11 |
| Americium 241 | na | 0.174 0.167 | 0.00696 0.107 | 0.207 0.192 | 1.46 0.56 | 0.144 0.167 |
| Polonium 210 | { ⁴ } | 4.73 1.4 | 0.208 0.21 | 38.1 9 | 110 19 | 10.2 3.1 |

Notes:

U- Result is less than the sample detection limit.

na-not applicable

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does includes all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total. When St 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result. This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha

TABLE 4
SAFETY LIGHT CORPORATION SITE, PADEP
RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | LAB ID | EPA | SLC-GW-MS-07 | SLC-GW-MS-08 | SLC-GW-MS-09 | SLC-GD-MS-09 | SLC-GW-MS-10 |
|----------------|------------------------|-----|-----------------|-----------------|-----------------|---------------------------|-----------------|
| DATE COLLECTED | DRINKING | | FOH160319001 | FOH100291023 | FOH100291011 | FOH100291012 | FOH100291031 |
| MATRIX | WATER | | 8/9/2000 | 8/8/2000 | 8/7/2000 | 8/7/2000 | 8/9/2000 |
| COMMENTS | STANDARDS ² | | WATER | WATER | WATER | WATER | WATER |
| UNITS | pCi/L | | Monitoring Well | Monitoring Well | Monitoring Well | Monitoring Well Duplicate | Monitoring Well |
| | | | pCi/L | pCi/L | pCi/L | pCi/L | pCi/L |
| | | | uncert. | uncert. | uncert. | uncert. | uncert. |
| GROSS ALPHA | 15 | | 25.7 | 89.3 | 413 | 1570 | 3580 |
| GROSS BETA | 50 | | 106 | 1490 | 34200 | 34200 | 66500 |
| TRITIUM | 20,000 | | 1600 | 5700 | 3830 | 3600 | 2940 |
| | | | 255 | 610 | 431 | 409 | 348 |
| GAMMA SCAN | | | | | | | |
| Cesium 137 | na | | -8.08 U | -6.76 U | -10.9 U | 9.22 | 3.11 |
| Cobalt 60 | na | | -11.2 U | -5.18 U | 1.84 | 8.05 | 9.65 |
| Lead 214 | na | | -10.8 U | -4.55 U | 7.24 | 9.2 | -5.56 U |
| OTHERS | | | 14.9 | 14 | 17.2 | 27.1 | 7.85 |
| | | | | | | | 57.5 |
| | | | | | | | 34.1 |
| Radium 226 | 5 ³ | | -14.8 U | -360 U | -7330 U | -7580 U | -17900 U |
| Radium 228 | (⁴) | | 9.58 | 237 | 3950 | 4710 | 114000 |
| | | | 1.31 | 23.7 | 395 | 471 | 1140 |
| Carbon 14 | na | | 2.33 | -3.01 U | 12.6 | 10.5 | 11.4 |
| Strontium 90 | 8 | | 35.5 | 696 | 10000 | 3.3 | 3.1 |
| Nickel 63 | na | | 11.8 | 137 | 1970 | 9410 | 29500 |
| Americium 241 | na | | 0.454 | 5.98 | 34 | 13 | 83 |
| Polonium 210 | (⁴) | | 0.347 | 0.3 | 0.209 | -0.019 U | 0.103 |
| | | | 0.69 | 0.24 | 0.335 | 0.149 | 0.147 |
| | | | | 2.28 | 0.78 | 0.614 | 11.6 |
| | | | | 0.82 | 0.4 | 0.39 | 2.5 |

Notes:

U- Result is less than the sample detection limit.

na-not applicable

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does includes all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total. When St 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result. This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha

TABLE 4
SAFETY LIGHT CORPORATION SITE, PADEP
RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | LAB ID | EPA | SLC-GW-MS-11 | SLC-GW-MS-12 | SLC-GW-MS-13 | SLC-GW-SL-15 |
|----------------|------------------------|-----|--------------------|-----------------------|----------------------|--------------------|
| DATE COLLECTED | DRINKING | | F0H100291024 | F0H100291021 | F0H100291033 | F0H160319002 |
| MATRIX | WATER | | 8/8/2000 | 8/8/2000 | 8/9/2000 | 8/9/2000 |
| COMMENTS | STANDARDS ² | | WATER | WATER | WATER | WATER |
| UNITS | pCi/L | | Monitoring Well | Monitoring Well | Monitoring Well | Background Well |
| | | | pCi/L uncert. | pCi/L uncert. | pCi/L uncert. | pCi/L uncert. |
| GROSS ALPHA | 15 | | 144 25.7 | 27.4 6.48 | 70.2 12.4 | 3.14 1.58 |
| GROSS BETA | 50 | | 2190 219 | 67.7 8.78 | 99.3 12.2 | 7.83 2.32 |
| TRITIUM | 20,000 | | 1510 218 | 1830 245 | 2960 349 | 325 159 |
| GAMMA SCAN | | | | | | |
| Cesium 137 | na | | 5.94 9.7 | 15.8 12.8 | -0.995 U 7.78 | -15.5 U 8.57 |
| Cobalt 60 | na | | 4.07 6.09 | -7.82 U 8.34 | 0.0416 9.76 | -8.16 U 9.48 |
| Lead 214 | na | | 37.9 21.9 | 5.6 16.3 | 62.8 30.7 | -11.2 U 14.6 |
| OTHERS | | | | | | |
| Radium 226 | 5 ³ | | -676 U 88.5 | -313 U 49.5 | -0.167 U 0.0193 | -12.1 U 2.05 |
| Radium 228 | (⁴) | | 439 43.9 | 204 20.4 | 7.12 0.958 | 8.33 1.37 |
| Carbon 14 | na | | -1.72 U 2.9 | -2.64 U 2.8 | 0.522 2.8 | 1.47 2.8 |
| Strontium 90 | 8 | | 1110 220 | 351 69.1 | 10.6 2.23 | 1.03 0.826 |
| Nickel 63 | na | | 4.23 12 | 1.89 11 | 4.37 10 | 6.59 10 |
| Americium 241 | na | | 0.107 0.109 | -0.0125 U 0.0987 | 0.0374 0.0976 | 0.131 0.229 |
| Polonium 210 | (⁴) | | 6.01 1.5 | 7.16 2 | 22.5 4.3 | 1.07 0.48 |

Notes:

U- Result is less than the sample detection limit.

na-not applicable

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does includes all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total. When St 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result. This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha

TABLE 5
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS - SURFACE WATER

| SAMPLE ID | PADEP | SLC-SW-01 | SLC-SW-02 | SLC-SW-03 | SLC-SW-04 |
|----------------|-------------------------|--------------|--------------|--------------|--------------|
| LAB ID | Water Quality | FOH100153021 | FOH100153014 | FOH100153016 | FOH100153017 |
| DATE COLLECTED | for | 8/8/2000 | 8/8/2000 | 8/8/2000 | 8/8/2000 |
| MATRIX | Toxic | WATER | WATER | WATER | WATER |
| UNITS | Substances ¹ | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | ug/L | | | | |
| Aluminum | NA | 119 B | 327 | 318 | 211 |
| Antimony | 10 | 60 U | 60 U | 60 U | 60 U |
| Arsenic | 50 | 2.7 B | 1.5 B | 2.6 B | 10 U |
| Barium | NA | 36 B | 40.1 B | 39.8 B | 36.9 B |
| Beryllium | NA | 5 U | 5 U | 5 U | 5 U |
| Cadmium | 10 | 5000 U | 5000 U | 5000 U | 5000 U |
| Calcium | NA | 31500 | 33400 | 33000 | 32000 |
| Chromium | 15 | 10 U | 10 U | 10 U | 10 U |
| Cobalt | NA | 50 U | 50 U | 50 U | 50 U |
| Copper | 1000 | 10.3 B | 25 U | 25 U | 25 U |
| Iron | NA | 540 | 849 | 1280 | 634 |
| Lead | 50 | 3 U | 3 U | 3 U | 3 U |
| Magnesium | NA | 7750 | 8410 | 8040 | 7890 |
| Manganese | NA | 138 | 102 | 172 | 75.6 |
| Mercury | 0.144 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Nickel | 600 | 40 U | 40 U | 40 U | 40 U |
| Potassium | NA | 1920 B | 3790 B | 3380 B | 4270 B |
| Selenium | NA | 5 U | 5 U | 5 U | 5 U |
| Silver | 200 | 10 U | 10 U | 10 U | 10 U |
| Sodium | NA | 16000 | 19200 | 18400 | 18200 |
| Thallium | 2 | 10 U | 10 U | 10 U | 10 U |
| Vanadium | NA | 50 U | 50 U | 50 U | 50 U |
| Zinc | 5000 | 20 U | 19.7 B | 14.3 B | 9 B |
| Cyanide | 700 | 5 U | 5 U | 5 U | 5 U |

TABLE 6
SAFETY LIGHT CORPORATION SITE, PADEP
RADIOLOGICAL ANALYTICAL RESULTS - SURFACE WATER

| SAMPLE ID | SLC-SW-01 | | SLC-SW-02 | | SLC-SW-03 | | SLC-SW-04 | |
|----------------|---------------|---------|---------------|---------|---------------|---------|---------------|---------|
| LAB ID | FOH100153021 | | FOH100153014 | | FOH100153016 | | FOH100153017 | |
| DATE COLLECTED | 8/8/2000 | | 8/8/2000 | | 8/8/2000 | | 8/8/2000 | |
| MATRIX | WATER | | WATER | | WATER | | WATER | |
| COMMENTS | Surface Water | | Surface Water | | Surface Water | | Surface Water | |
| UNITS | pCi/L | uncert. | pCi/L | uncert. | pCi/L | uncert. | pCi/L | uncert. |
| GROSS ALPHA | 0.73 U | 0.71 | 0.3 U | 0.53 | 0.7 U | 0.78 | 0.22 U | 0.58 |
| GROSS BETA | 1.8 U | 1.2 | 3.2 J | 1.3 | 2.9 J | 1.2 | 3.3 J | 1.2 |
| TRITIUM | 390 J | 160 | 260 J | 130 | 350 J | 130 | 310 J | 130 |
| GAMMA SCAN | | | | | | | | |
| Cesium 137 | -1.6 U | 7.4 | -3.1 U | 7.7 | -3.2 U | 8.5 | 2.9 U | 6.9 |
| Cobalt 60 | 1.4 U | 8.2 | -4.1 U | 6.1 | -2.9 U | 8.4 | 1.1 U | 9 |
| OTHERS | | | | | | | | |
| Radium 226 | 0.0814 | 0.21 | 0.0726 | 0.172 | -0.016 U | 0.134 | 0.634 | 0.263 |
| Radium 228 | 0.325 | 0.756 | 0.472 | 0.885 | 0.553 | 0.813 | 0.353 | 0.825 |
| Carbon 14 | 3.08 | 2.9 | 2.18 | 2.8 | 0.442 | 2.8 | 2.4 | 2.8 |
| Strontium 90 | 19.5 | 4.15 | -0.23 U | 1.02 | NA | NA | 0.742 | 1.06 |
| Nickel 63 | 9.59 | 11 | 6.12 | 11 | 13.1 | 12 | 10.4 | 11 |
| Americium 241 | -0.081 U | 0.06 | 0.073 | 0.18 | -0.1 U | 0.18 | -0.0084 U | 0.13 |
| Polonium 210 | -0.00752 U | -0.011 | 0.0444 | 0.0972 | 0.0417 | 0.091 | 0 U | 0.14 |

Notes:

U- Result is less than the sample detection limit.

na-not applicable

NA-not available

TABLE 7
SAFETY LIGHT CORPORATION SITE, PADEP
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS - RESIDENTIAL WELL WATER

| LAB ID | PADEP Act 2 MSCs ug/l | SLC-RW-01 | SLC-RW-02 | SLC-RD-02 |
|----------------------------|---------------------------------|--------------|--------------|--------------|
| SAMPLE ID | | FOH100291001 | FOH100291002 | FOH100291003 |
| DATE COLLECTED | | 8/8/2000 | 8/9/2000 | 8/9/2000 |
| MATRIX | | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l |
| COMMENTS | | | | |
| 1,1,1-Trichloroethane | 200 | 0.64 J | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | na | 1 U | 1 U | 1 U |
| 1,1,2-Trichloroethane | 5 | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | 27 | 0.23 J | 1 U | 1 U |
| 1,1-Dichloroethene | 7 | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | 5 | 1 U | 1 U | 1 U |
| 1,2-Dichloroethene (total) | 70 | 1 U | 1 U | 1 U |
| 1,2-Dichloropropane | 5 | 1 U | 1 U | 1 U |
| 2-Butanone | 2800 | 5 U | 5 U | 5 U |
| 2-Hexanone | na | 5 U | 5 U | 5 U |
| 4-Methyl-2-pentanone | na | 5 U | 5 U | 5 U |
| Acetone | 3700 | 10 U | 10 U | 10 U |
| Benzene | 5 | 1 U | 1 U | 1 U |
| Bromodichloromethane | 100 | 1 U | 1 U | 1 U |
| Bromoform | 100 | 1 U | 1 U | 1 U |
| Bromomethane | 10 | 2 U | 2 U | 2 U |
| Carbon disulfide | 1900 | 1 U | 1 U | 1 U |
| Carbon tetrachloride | 5 | 1 U | 1 U | 1 U |
| Chlorobenzene | 55 | 1 U | 1 U | 1 U |
| Chloroethane | 28000 | 2 U | 2 U | 2 U |
| Chloroform | 100 | 1 U | 1 U | 1 U |
| Chloromethane | na | 2 U | 2 U | 2 U |
| cis-1,3-Dichloropropene | na | 1 U | 1 U | 1 U |
| Dibromochloromethane | na | 1 U | 1 U | 1 U |
| Ethylbenzene | 700 | 1 U | 1 U | 1 U |
| Methylene chloride | 5 | 1 U | 1 U | 1 U |
| Styrene | 100 | 1 U | 1 U | 1 U |
| Tetrachloroethene | 5 | 1 U | 1 U | 1 U |
| Toluene | 1000 | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | na | 1 U | 1 U | 1 U |
| Trichloroethene | 5 | 1 U | 1 U | 1 U |
| Vinyl chloride | 2 | 2 U | 2 U | 2 U |
| Xylenes (total) | 10000 | 1 U | 1 U | 1 U |

TABLE 8
SAFETY LIGHT CORPORATION SITE, PADEP
SEMI-VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS - RESIDENTIAL WELL WATER

| LAB ID | | SLC-RW-01 | SLC-RW-02 | SLC-RD-02 |
|------------------------------|-------------|--------------|--------------|--------------|
| SAMPLE ID | PADEP Act 2 | FOH100291001 | FOH100291002 | FOH100291003 |
| DATE COLLECTED | MSCs | 8/8/2000 | 8/9/2000 | 8/9/2000 |
| MATRIX | | WATER | WATER | WATER |
| UNITS | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | | | | |
| 1,2,4-Trichlorobenzene | 70 | 10 U | 10 U | 10 U |
| 1,2-Dichlorobenzene | 600 | 10 U | 10 U | 10 U |
| 1,3-Dichlorobenzene | 600 | 10 U | 10 U | 10 U |
| 1,4-Dichlorobenzene | 75 | 10 U | 10 U | 10 U |
| 2,2'-oxybis(1-Chloropropane) | na | 10 U | 10 U | 10 U |
| 2,4,5-Trichlorophenol | 3700 | 10 U | 10 U | 10 U |
| 2,4,6-Trichlorophenol | 60 | 10 U | 10 U | 10 U |
| 2,4-Dichlorophenol | 20 | 10 U | 10 U | 10 U |
| 2,4-Dimethylphenol | 730 | 10 U | 10 U | 10 U |
| 2,4-Dinitrophenol | 19 | 50 U | 50 U | 50 U |
| 2,4-Dinitrotoluene | 2.1 | 10 U | 10 U | 10 U |
| 2,6-Dinitrotoluene | 37 | 10 U | 10 U | 10 U |
| 2-Chloronaphthalene | 2900 | 10 U | 10 U | 10 U |
| 2-Chlorophenol | 40 | 10 U | 10 U | 10 U |
| 2-Methylnaphthalene | 1500 | 10 U | 10 U | 10 U |
| 2-Methylphenol | na | 10 U | 10 U | 10 U |
| 2-Nitroaniline | 2.1 | 50 U | 50 U | 50 U |
| 2-Nitrophenol | 2300 | 10 U | 10 U | 10 U |
| 3,3'-Dichlorobenzidine | 1.5 | 50 U | 50 U | 50 U |
| 3-Nitroaniline | 2.1 | 50 U | 50 U | 50 U |
| 4,6-Dinitro-2-methylphenol | na | 50 U | 50 U | 50 U |
| 4-Bromophenyl phenyl ether | na | 10 U | 10 U | 10 U |
| 4-Chloro-3-methylphenol | na | 10 U | 10 U | 10 U |
| 4-Chloroaniline | 150 | 10 U | 10 U | 10 U |
| 4-Chlorophenyl phenyl ether | na | 10 U | 10 U | 10 U |
| 4-Methylphenol | na | 10 U | 10 U | 10 U |
| 4-Nitroaniline | 2.1 | 50 U | 50 U | 50 U |
| 4-Nitrophenol | 60 | 50 U | 50 U | 50 U |
| Acenaphthene | 2200 | 10 U | 10 U | 10 U |
| Acenaphthylene | 2200 | 10 U | 10 U | 10 U |
| Anthracene | 43 | 10 U | 10 U | 10 U |
| Benzo(a)anthracene | 0.9 | 10 U | 10 U | 10 U |
| Benzo(a)pyrene | 0.2 | 10 U | 10 U | 10 U |
| Benzo(b)fluoranthene | 0.9 | 10 U | 10 U | 10 U |
| Benzo(ghi)perylene | 0.26 | 10 U | 10 U | 10 U |
| Benzo(k)fluoranthene | 0.55 | 10 U | 10 U | 10 U |
| bis(2-Chloroethoxy)methane | na | 10 U | 10 U | 10 U |
| bis(2-Chloroethyl) ether | 0.13 | 10 U | 10 U | 10 U |
| bis(2-Ethylhexyl) phthalate | 6 | 4.7 J | 3.9 J | 10 U |
| Butyl benzyl phthalate | 2700 | 10 U | 10 U | 10 U |
| Carbazole | 700 | 10 U | 10 U | 10 U |
| Chrysene | 1.8 | 10 U | 10 U | 10 U |
| Di-n-butyl phthalate | 3700 | 10 U | 10 U | 10 U |
| Di-n-octyl phthalate | 730 | 10 U | 10 U | 10 U |
| Dibenzo(a,h)anthracene | 0.09 | 10 U | 10 U | 10 U |
| Dibenzofuran | na | 10 U | 10 U | 10 U |
| Diethyl phthalate | 5000 | 1.7 J | 2.6 J | 10 U |
| Dimethyl phthalate | na | 10 U | 10 U | 10 U |
| Fluoranthene | 270 | 10 U | 10 U | 10 U |
| Fluorene | 190 | 10 U | 10 U | 10 U |
| Hexachlorobenzene | 1 | 10 U | 10 U | 10 U |
| Hexachlorobutadiene | 1 | 10 U | 10 U | 10 U |
| Hexachlorocyclopentadiene | 50 | 50 U | 50 U | 50 U |
| Hexachloroethane | 1 | 10 U | 10 U | 10 U |
| Indeno(1,2,3-cd)pyrene | 0.9 | 10 U | 10 U | 10 U |
| Isophorone | 100 | 10 U | 10 U | 10 U |
| N-Nitrosodi-n-propylamine | 0.094 | 10 U | 10 U | 10 U |
| N-Nitrosodiphenylamine | 130 | 10 U | 10 U | 10 U |
| Naphthalene | 20 | 10 U | 10 U | 10 U |
| Nitrobenzene | 18 | 10 U | 10 U | 10 U |
| Pentachlorophenol | 1 | 50 U | 50 U | 50 U |
| Phenanthrene | 1200 | 10 U | 10 U | 10 U |
| Phenol | 4000 | 10 U | 10 U | 10 U |
| Pyrene | 13 | 10 U | 10 U | 10 U |

MSCs-Medium Specific Concentrations for Organic Regulated Substances in Groundwater, Used Aquifer,
TDS <2500, Residential Criteria

TABLE 9
SAFETY LIGHT CORPORATION SITE, PADEP
TAL INORGANICS ANALYTICAL RESULTS
- RESIDENTIAL WELL WATER

| SAMPLE ID | | SLC-RW-01 | SLC-RW-01-F | SLC-RW-02 | SLC-RW-02-F | SLC-RD-02 | SLC-RD-02-F |
|---------------------|----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| LAB ID | | FOH100291001 | FOH100291006 | FOH100291002 | FOH100291005 | FOH100291003 | FOH100291004 |
| DATE COLLECTED | | 8/8/2000 | 8/8/2000 | 8/9/2000 | 8/9/2000 | 8/9/2000 | 8/9/2000 |
| MATRIX | | WATER | WATER | WATER | WATER | WATER | WATER |
| UNITS | | ug/l | ug/l | ug/l | ug/l | ug/l | ug/l |
| COMMENTS | PADEP MSCs ¹ | | | | | | |
| Aluminum-Dissolved | NA | | 200 U | | 200 U | | 200 U |
| Aluminum | NA | 200 U | | 200 U | | 200 U | |
| Antimony-Dissolved | 6 | | 60 U | | 60 U | | 60 U |
| Antimony | 6 | 60 U | | 60 U | | 60 U | |
| Arsenic-Dissolved | 50 | | 10 U | | 10 U | | 10 U |
| Arsenic | 50 | 10 U | | 10 U | | 10 U | |
| Barium-Dissolved | 2000 | | 43.8 B | | 39.4 B | | 39.1 B |
| Barium | 2000 | 43.8 B | | 38.4 B | | 39.5 B | |
| Beryllium-Dissolved | 4 | | 5 U | | 5 U | | 5 U |
| Beryllium | 4 | 5 U | | 5 U | | 5 U | |
| Cadmium-Dissolved | 5 | | 5000 U | | 4.4 B | | 4.2 B |
| Cadmium | 5 | 5000 U | | 5000 U | | 5000 U | |
| Calcium-Dissolved | NA | | 33200 | | 37300 | | 37200 |
| Calcium | NA | 31700 | | 36400 | | 37300 | |
| Chromium-Dissolved | 100 | | 10 U | | 10 U | | 10 U |
| Chromium | 100 | 10 U | | 10 U | | 10 U | |
| Cobalt-Dissolved | NA | | 50 U | | 50 U | | 50 U |
| Cobalt | NA | 50 U | | 50 U | | 50 U | |
| Copper-Dissolved | 1000 | | 17.9 B | | 1530 | | 1580 |
| Copper | 1000 | 20.1 B | | 1210 | | 1220 | |
| Iron-Dissolved | NA | | 100 U | | 666 | | 767 |
| Iron | NA | 100 U | | 1380 | | 1340 | |
| Lead-Dissolved | 5 | | 3 U | | 3 U | | 3 U |
| Lead | 5 | 3 U | | 5.5 | | 5 | |
| Magnesium-Dissolved | NA | | 7940 | | 8370 | | 8350 |
| Magnesium | NA | 7440 | | 7880 | | 8110 | |
| Manganese-Dissolved | NA | | 15 U | | 27.7 | | 28.4 |
| Manganese | NA | 15 U | | 28.8 | | 29.8 | |
| Mercury-Dissolved | 2 | | 0.2 U | | 0.2 U | | 0.2 U |
| Mercury | 2 | 0.2 U | | 0.2 U | | 0.2 U | |
| Nickel-Dissolved | 100 | | 40 U | | 40 U | | 13.9 B |
| Nickel | 100 | 40 U | | 40 U | | 40 U | |
| Potassium-Dissolved | NA | | 4220 B | | 2990 B | | 2320 B |
| Potassium | NA | 2010 B | | 2840 B | | 3000 B | |
| Selenium-Dissolved | 50 | | 5 U | | 5 U | | 5 U |
| Selenium | 50 | 5 U | | 5 U | | 5 U | |
| Silver-Dissolved | 100 | | 10 U | | 10 U | | 10 U |
| Silver | 100 | 10 U | | 10 U | | 10 U | |
| Sodium-Dissolved | NA | | 15800 | | 11800 | | 11700 |
| Sodium | NA | 14900 | | 11400 | | 11700 | |
| Thallium-Dissolved | 2 | | 10 U | | 10 U | | 10 U |
| Thallium | 2 | 10 U | | 10 U | | 10 U | |
| Vanadium-Dissolved | 2.1 | | 50 U | | 50 U | | 50 U |
| Vanadium | 2.1 | 50 U | | 50 U | | 50 U | |
| Zinc-Dissolved | 2000 | | 74.7 | | 57.1 | | 700 |
| Zinc | 2000 | 71.2 | | 62.8 | | 64.6 | |
| Cyanide-Dissolved | 200 | | 5 U | | 5 U | | 5 U |
| Cyanide | 200 | 5 U | | 5 U | | 5 U | |

MSCs-Medium Specific Concentrations for Inorganic Regulated Substances in Groundwater, Used Aquifer,
TDS <2500, Residential Criteria

SLC data.xls
Metals- RW
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TABLE 10
SAFETY LIGHT CORPORATION SITE, PADEP
RADIOLOGICAL ANALYTICAL RESULTS - RESIDENTIAL WELL WATER

| SAMPLE ID | | SLC-RW-01 | | SLC-RW-02 | | SLC-RD-02 | |
|----------------|------------------------|------------------|---------|------------------------|---------|------------------------------------|---------|
| LAB ID | EPA | FOH100291001 | | FOH100291002 | | FOH100291003 | |
| DATE COLLECTED | DRINKING | 8/8/2000 | | 8/9/2000 | | 8/8/2000 | |
| MATRIX | WATER | WATER | | WATER | | WATER | |
| COMMENTS | STANDARDS ² | Murphy Residence | | Vance/Walton Residence | | Vance/Walton Residence - duplicate | |
| UNITS | pCi/L | pCi/L | uncert. | pCi/L | uncert. | pCi/L | uncert. |
| GROSS ALPHA | 15 | -0.35 U | 0.572 | 0.879 | 0.937 | 0.263 | 0.58 |
| GROSS BETA | 50 | 2.53 | 1.16 | 2.38 | 1.12 | 2.3 | 1.06 |
| TRITIUM | 20,000 | 1170 | 190 | 2180 | 279 | 2060 | 267 |
| GAMMA SCAN | | | | | | | |
| Cesium 137 | na | -0.0538 U | 6.66 | -5.12 U | 8.99 | 6.24 | 8.4 |
| Cobalt 60 | na | -2.5 U | 5.55 | -8.42 U | 5.89 | -1.94 U | 8.09 |
| OTHERS | | | | | | | |
| Radium 226 | 5 ³ | 0.0728 | 0.162 | -0.744 U | 0.259 | 0.209 | 0.139 |
| Radium 228 | { ⁴ } | 0.511 | 0.417 | 0.637 | 0.376 | 0.196 | 0.423 |
| Carbon 14 | na | -3.77 U | 2.8 | -2.33 U | 2.8 | -0.803 U | 2.9 |
| Strontium 90 | 8 | 0.378 | 0.4 | 0.413 | 0.428 | 0.515 | 0.466 |
| Nickel 63 | na | -1.51 U | 10 | 3.03 | 12 | 4.32 | 11 |
| Americium 241 | na | 0.0497 | 0.234 | 0.0228 | 0.106 | 0.0216 | 0.134 |
| Polonium 210 | { ⁵ } | 0.109 | 0.17 | 0.0421 | 0.092 | 0 U | 0.16 |

Notes:

U- Result is less than the sample detection limit.

BOLD result-indicates exceedance of standard

na-not applicable

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does includes all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total.

⁴ Included in gross alpha

TABLE 11

SAFETY LIGHT CORPORATION, PADEP
WASTE DISPOSAL CRITERIA ANALYTICAL RESULTS - INVESTIGATION DERIVED WASTES

All quantities in ppm, except where noted.

| Analyte ¹ | RCRA Limits | | |
|---|-------------------|--------------|--------------|
| | Sample ID | SLC-WC-01 | SLC-WC-02 |
| | Lab ID | F0H160319005 | F0H160319006 |
| | Matrix | Solid | Water |
| | Date Collected | 8/9/2000 | 8/9/2000 |
| TCLP VOC | | | |
| Benzene | 0.5 | <0.05 | <0.05 |
| Carbon Tetrachloride | 0.5 | <0.05 | <0.05 |
| Chlorobenzene | 100 | <0.05 | <0.05 |
| Chloroform | 6 | <0.05 | <0.05 |
| 1,2-Dichloroethane | 0.5 | <0.05 | <0.05 |
| 1,1-Dichloroethylene (1,1-Dichloroethene) | 0.7 | <0.05 | <0.05 |
| Methyl Ethyl Ketone (2-Butanone) | 200 | <0.2 | <0.2 |
| Tetrachloroethene | 0.7 | <0.05 | <0.05 |
| Trichloroethene | 0.5 | <0.05 | <0.05 |
| Vinyl Chloride | 0.2 | <0.1 | <0.1 |
| TCLP SVOCs | | | |
| 1,4-Dichlorobenzene | 7.5 | 0.0059 | <0.05 |
| 2,4-Dinitrotoluene | 0.13 | <0.05 | <0.05 |
| 2,4,5-Trichlorophenol | 400 | <0.05 | <0.05 |
| 2,4,6-Trichlorophenol | 2.0 | <0.05 | <0.05 |
| 2-Methylphenol | 200 | <0.05 | <0.05 |
| 4-Methylphenol | 200 | <0.05 | <0.05 |
| Pentachlorophenol | 100 | <0.25 | <0.25 |
| Hexachlorobenzene | 0.13 | <0.05 | <0.05 |
| Hexachlorobutadiene | 0.5 | <0.05 | <0.05 |
| Hexachloroethane | 3.0 | <0.05 | <0.05 |
| Nitrobenzene | 2.0 | <0.05 | <0.05 |
| Pyridine | 5 | <0.1 | <0.1 |
| TCLP METALS | | | |
| Arsenic | 5 | <0.0035 | 0.0113 |
| Barium | 100 | 0.096 | 0.236 |
| Cadmium | 1 | <0.00075 | 0.0066 |
| Chromium | 5 | 0.003 | 0.037 |
| Lead | 5 | 0.0211 | 15.5 |
| Mercury | 0.2 | <0.001 | <0.001 |
| Selenium | 1 | <0.006 | <0.006 |
| Silver | 5 | <0.0035 | <0.0035 |

< Detected below the detection limits

- (1) VOC-Volatile Organic Compounds, SVOC-Semi-Volatile Organic Compounds
(2) Reported lab concentration is the sum of the three constituent SVOC.

TABLE 11

SAFETY LIGHT CORPORATION, PADEP
WASTE DISPOSAL CRITERIA ANALYTICAL RESULTS - INVESTIGATION DERIVED WASTES

All quantities in ppm, except where noted.

| Analyte ¹ | RCRA Limits | | |
|-------------------------------------|----------------|--------------|----------------|
| | Sample ID | SLC-WC-01 | SLC-WC-02 |
| | Lab ID | FOH160319005 | FOH160319006 |
| | Matrix | Solid | Water |
| <u>TCLP PESTICIDES</u> | | | |
| Chlordane | 0.03 | <0.005 | <0.005 |
| Endrin | 0.02 | <0.0005 | <0.0005 |
| Heptachlor | 0.008 | <0.0005 | <0.0005 |
| Heptachlor Epoxide | 0.008 | <0.0005 | <0.0005 |
| Lindane | 0.4 | <0.0005 | <0.0005 |
| Methoxychlor | 10 | <0.001 | <0.001 |
| Toxaphene | 0.5 | <0.020 | <0.020 |
| <u>TCLP HERBICIDES</u> | | | |
| 2,4-D | 10 | <0.01 | <0.01 |
| 2,4,5 T (Silvex) | 1 | <0.04 | <0.04 |
| <u>WASTE CHARACTERISTICS</u> | | | |
| Corrosivity | >2 <12.5 pH | 7 | 7.5 |
| Flash Point | >60°C | >60 | >60 |
| Reactive Sulfide | 500 | <4.66 | <4.44 |
| Reactive Cyanide | 100 | <0.026 | <0.025 |
| Total Moisture % | - | 3.1 | not applicable |

< Detected below the detection limits

- (1) VOC-Volatile Organic Compounds, SVOC-Semi-Volatile Organic Compounds
(2) Reported lab concentration is the sum of the three constituent SVOC.

SLC data.xls
IDW-TCLP-RCRA
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TABLE 11 (continued)

SAFETY LIGHT CORPORATION, PADEP
WASTE CLASSIFICATION RADIOLOGICAL ANALYTICAL RESULTS - INVESTIGATION DERIVED WASTES

| SAMPLE ID | | SLC-WC-01 | | SLC-WC-02 | |
|----------------|--|-----------------|---------|-----------------|---------|
| LAB ID | | F0H160319005 | | F0H160319006 | |
| DATE COLLECTED | | 8/9/2000 | | 8/9/2000 | |
| MATRIX | | SOLID | | WATER | |
| COMMENTS | | Waste composite | | Water Composite | |
| UNITS | | pCi/g | uncert. | pCi/L | uncert. |
| GROSS ALPHA | | 0.185 | 0.143 | 20.3 | 4.45 |
| GROSS BETA | | 0.844 | 0.208 | 61.6 | 7.57 |
| TRITIUM | | 0.117 | 0.572 | 2540 | 339 |
| | | | | | |

TABLE 12
SAFETY LIGHT CORPORATION SITE, PADEP
COMPARISON OF RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | EPA | SLC-GW-CN-A | | WELL A | | SLC-GW-CN-B | | WELL B | |
|----------------|------------------------|-----------------|---------|------------------------|--------|-----------------|---------|------------------------|--------|
| DATA SOURCE | DRINKING | FWENC 2000 | | PRELIMINARY ASSESSMENT | | FWENC 2000 | | PRELIMINARY ASSESSMENT | |
| DATE COLLECTED | WATER | 8/7/2000 | | 1990 | 1991 | 8/7/2000 | | 1990 | 1991 |
| MATRIX | STANDARDS ² | WATER | | WATER | WATER | WATER | | WATER | WATER |
| COMMENTS | | Monitoring Well | | CNSI/SLC | NUS | Monitoring Well | | CNSI/SLC | NUS |
| UNITS | pCi/L | pCi/L | uncert. | pCi/L | pCi/L | pCi/L | uncert. | pCi/L | pCi/L |
| GROSS ALPHA | 15 | 301 | 47 | -0.8 +/- 0.9 | <1.14 | 0.846 | 0.999 | -0.3 +/- 0.9 | <1.39 |
| GROSS BETA | 50 | 3820 | 380 | 28 +/- 5 | 15.8 | 3.31 | 1.14 | 6 +/- 4 | 3.25 |
| TRITIUM | 20,000 | 1980 | 260 | 11,800 +/- 300 | 10,700 | 2060 | 267 | 12,200 +/- 400 | 11,300 |
| GAMMA SCAN | | | | | | | | | |
| Cesium 137 | na | -2.6 U | 7.2 | NA | <5.00 | -4.38 U | 8.56 | NA | <4.34 |
| Cobalt 60 | na | -3.5 U | 9.1 | NA | NA | -7.07 U | 9.3 | NA | NA |
| Lead 214 | na | 79 | 18 | NA | NA | 32.5 | 22 | NA | NA |
| OTHERS | | | | | | | | | |
| Radium 226 | 5 ¹ | -16.9 U | 3.4 | NA | NA | 0.251 | 0.129 | NA | NA |
| Radium 228 | { ² } | 13.3 | 1.84 | NA | NA | 0.944 | 0.456 | NA | NA |
| Carbon 14 | na | 4.78 | 2.9 | NA | NA | -3.33 U | 4.8 | NA | NA |
| Strontium 90 | 8 | 21 | 4.44 | 13 +/- 3 | 3.4 | 1.8 | 0.517 | 0 +/- 2 | <2.0 |
| Nickel 63 | na | 9.01 | 11 | NA | NA | 5.78 | 12 | NA | NA |
| Americium 241 | na | -0.042 U | 0.098 | NA | NA | -0.0439 U | 0.0769 | NA | NA |
| Polonium 210 | { ⁴ } | 4.27 | 1.1 | NA | NA | -0.0057 U | 0.011 | NA | NA |

Notes:

NUS Preliminary Assessment of Safety Light Corp, Appendix E Data Tables, July 17, 1991

CNSI/SLC-ChemNuclear/Safety Light Corp, 8/90, NRC Samples Analyzed by DOE Sciences Laboratory

NUS-Safety Light Project Groundwater Sample Results Summary

U- Result is less than the sample detection limit.

na-not applicable

NA-NOT AVAILABLE

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does include all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total.

When Sr 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result.

This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha

TABLE 12
SAFETY LIGHT CORPORATION SITE, PADEP
COMPARISON OF RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | EPA | SLC-GW-CN-D | | WELL D | | SLC-GW-CN-F | | WELL F | |
|----------------|------------------------|-----------------|---------|------------------------|--------|-----------------|---------|------------------------|-------|
| DATA SOURCE | DRINKING | FWENC 2000 | | PRELIMINARY ASSESSMENT | | FWENC 2000 | | PRELIMINARY ASSESSMENT | |
| DATE COLLECTED | WATER | 8/7/2000 | | 1990 | 1991 | 8/9/2000 | | 1990 | 1991 |
| MATRIX | STANDARDS ² | WATER | | WATER | WATER | WATER | | WATER | WATER |
| COMMENTS | | Monitoring Well | | CNSI/SLC | NUS | Monitoring Well | | CNSI/SLC | NUS |
| UNITS | pCi/L | pCi/L | uncert. | pCi/L | pCi/L | pCi/L | uncert. | pCi/L | pCi/L |
| GROSS ALPHA | 15 | 64 | 14 | 0 +/- 0.9 | <1.25 | 0.506 | 0.843 | 4.6 +/- 1.5 | <1.56 |
| GROSS BETA | 50 | 200 | 25 | 116 +/- 10 | 64.7 | 3.91 | 1.26 | 2 +/- 4 | 3.76 |
| TRITIUM | 20,000 | 5560 | 600 | 50,000 +/- 1000 | 46,500 | 1920 | 254 | 8,700 +/- 400 | 7640 |
| GAMMA SCAN | | | | | | | | | |
| Cesium 137 | na | 7.8 U | 8.1 | NA | <4.63 | -7.12 U | 9.33 | NA | <4.39 |
| Cobalt 60 | na | 1.3 U | 7.2 | NA | NA | -11.2 U | 9.86 | NA | NA |
| Lead 214 | na | 78 | 20 | NA | NA | 10.8 | 16.2 | NA | NA |
| OTHERS | | | | | | | | | |
| Radium 226 | 5 ³ | -53.6 U | 8.71 | NA | NA | 0.212 | 0.134 | NA | NA |
| Radium 228 | (³) | 38.9 | 4.19 | NA | NA | 0.422 | 0.475 | NA | NA |
| Carbon 14 | na | 3.93 | 2.9 | NA | NA | 0.989 | 2.8 | NA | NA |
| Strontium 90 | 8 | 68.9 | 13.7 | 60 +/- 4 | 44 | 0.67 | 0.426 | NA | 1.9 |
| Nickel 63 | na | 8.45 | 11 | NA | NA | 12.3 | 11 | NA | NA |
| Americium 241 | na | 0.1 | 0.37 | NA | NA | -0.0151 U | 0.145 | NA | NA |
| Polonium 210 | (³) | 2.5 | 0.77 | NA | NA | 0.144 | 0.21 | NA | NA |

Notes:

NUS Preliminary Assessment of Safety Light Corp. Appendix E Data Tables, July 17, 1991

CNSI/SLC-ChemNuclear/Safety Light Corp. 8/90, NRC Samples Analyzed by DOE Sciences Laboratory

NUS-Safety Light Project Groundwater Sample Results Summary

U- Result is less than the sample detection limit.

na-not applicable

NA-NOT AVAILABLE

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does includes all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total.

When St 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result.

This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha

TABLE 12
SAFETY LIGHT CORPORATION SITE, PADEP
COMPARISON OF RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | EPA | SLC-GW-CN-G | | WELL G | | SLC-GW-CN-H | | WELL H | |
|----------------|------------------------|-----------------|---------|------------------------|-------|-----------------|---------|------------------------|--------|
| DATA SOURCE | DRINKING | FWENC 2000 | | PRELIMINARY ASSESSMENT | | FWENC 2000 | | PRELIMINARY ASSESSMENT | |
| DATE COLLECTED | WATER | 8/7/2000 | | 1990 | 1991 | 8/7/2000 | | 1990 | 1991 |
| MATRIX | STANDARDS ² | WATER | | WATER | WATER | WATER | | WATER | WATER |
| COMMENTS | | Monitoring Well | | CNSI/SLC | NUS | Monitoring Well | | CNSI/SLC | NUS |
| UNITS | pCi/L | pCi/L | uncert. | pCi/L | pCi/L | pCi/L | uncert. | pCi/L | pCi/L |
| GROSS ALPHA | 15 | 9.3 | 2.4 | -1.1 +/- 0.9 | <1.39 | 17.8 | 3.63 | 0.3 +/- 0.8 | <1.81 |
| GROSS BETA | 50 | 23 | 3 | 9 +/- 4 | 7.62 | 21.5 | 3.08 | 10 +/- 4 | 5.59 |
| TRITIUM | 20,000 | 1280 | 200 | 6,200 +/- 300 | 5,790 | 2720 | 327 | 12,400 +/- 400 | 11,800 |
| GAMMA SCAN | | | | | | | | | |
| Cesium 137 | na | -12.2 U | 7.5 | NA | <2.52 | -7.31 U | 8.26 | NA | <5.21 |
| Cobalt 60 | na | -7.7 U | 7.7 | NA | NA | -7.13 U | 7.83 | NA | NA |
| Lead 214 | na | U | | NA | NA | 57.3 | 23.1 | NA | NA |
| OTHERS | | | | | | | | | |
| Radium 226 | 5 ³ | -4.8 U | 3.75 | NA | NA | 1.02 | 0.17 | NA | NA |
| Radium 228 | {} | 3.41 | 0.937 | NA | NA | 0.867 | 0.478 | NA | NA |
| Carbon 14 | na | 3.12 | 4.7 | NA | NA | -0.53 U | 2.9 | NA | NA |
| Strontium 90 | 8 | 5.98 | 1.62 | 5 +/- 2 | 3.9 | 0.205 | 0.403 | 1.7 +/- 2.1 | <0.9 |
| Nickel 63 | na | 4.97 | 11 | NA | NA | 9.81 | 12 | NA | NA |
| Americium 241 | na | 0.18 | 0.33 | NA | NA | -0.00753 U | 0.0151 | NA | NA |
| Polonium 210 | {} | 1.93 | 0.69 | NA | NA | 3.92 | 1.1 | NA | NA |

Notes:

NUS Preliminary Assessment of Safety Light Corp, Appendix E Data Tables, July 17, 1991

CNSI/SLC-ChemNuclear/Safety Light Corp, 8/90, NRC Samples Analyzed by DOE Sciences Laboratory

NUS-Safety Light Project Groundwater Sample Results Summary

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na-not applicable

NA-NOT AVAILABLE

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does include all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total.

When St 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result.

This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha

TABLE 12
SAFETY LIGHT CORPORATION SITE, PADEP
COMPARISON OF RADIOLOGICAL ANALYTICAL RESULTS - GROUNDWATER

| SAMPLE ID | EPA | SLC-GW-CN-1 | | WELL 1 | | SLC-GW-SL-15 | | WELL 15-SLC | |
|----------------|------------------------|-----------------|---------|------------------------|--------|-----------------|---------|------------------------|-------|
| DATA SOURCE | DRINKING | FWENC 2000 | | PRELIMINARY ASSESSMENT | | FWENC 2000 | | PRELIMINARY ASSESSMENT | |
| DATE COLLECTED | 8/7/2000 | 8/7/2000 | | 1990 | 1991 | 8/9/2000 | | 1990 | 1991 |
| MATRIX | WATER | WATER | | WATER | WATER | WATER | | WATER | WATER |
| COMMENTS | STANDARDS ¹ | Monitoring Well | | CNSI/SLC | NUS | Background Well | | CNSI/SLC | NUS |
| UNITS | pCi/L | pCi/L | uncert. | pCi/L | pCi/L | pCi/L | uncert. | pCi/L | pCi/L |
| GROSS ALPHA | 15 | 26.6 | 6.87 | 0.8 +/- 0.9 | <0.91 | 3.14 | 1.58 | 0 +/- 0.6 | NA |
| GROSS BETA | 50 | 47.7 | 7.8 | 0 +/- 14 | <1.73 | 7.83 | 2.32 | -3 +/- 8 | NA |
| TRITIUM | 20,000 | 1820 | 245 | 30,500 +/- 700 | 27,700 | 325 | 159 | 4,300 +/- 300 | NA |
| GAMMA SCAN | | | | | | | | | |
| Cesium 137 | na | -5.7 U | 6.17 | NA | <3.34 | -15.5 U | 8.57 | NA | NA |
| Cobalt 60 | na | 2.61 | 9.11 | NA | NA | -8.16 U | 9.48 | NA | NA |
| Lead 214 | na | 0.242 | 16.5 | NA | NA | -11.2 U | 14.6 | NA | NA |
| OTHERS | | | | | | | | | |
| Radium 226 | 5 ³ | 1.52 | 0.337 | NA | NA | -12.1 U | 2.05 | NA | NA |
| Radium 228 | { ⁴ } | 0.872 | 0.841 | NA | NA | 8.33 | 1.37 | NA | NA |
| Carbon 14 | na | -1.35 U | 2.9 | NA | NA | 1.47 | 2.8 | NA | NA |
| Strontium 90 | 8 | 1.36 | 0.472 | NA | <1.0 | 1.03 | 0.826 | NA | NA |
| Nickel 63 | na | 4.92 | 13 | NA | NA | 6.59 | 10 | NA | NA |
| Americium 241 | na | 0.043 | 0.101 | NA | NA | 0.131 | 0.229 | NA | NA |
| Polonium 210 | { ⁴ } | 4.05 | 1.3 | NA | NA | 1.07 | 0.48 | NA | NA |

NUS Preliminary Assessment of Safety Light Corp, Appendix E Data Tables, July 17, 1991

CNSI/SLC-ChemNuclear/Safety Light Corp, 8/90, NRC Samples Analyzed by DOE Sciences Laboratory

NUS-Safety Light Project Groundwater Sample Results Summary

U- Result is less than the sample detection limit.

na-not applicable

NA-NOT AVAILABLE

BOLD result-indicates exceedance of standard

¹ Source: Federal Register Volume 65, No. 236, December 7, 2000

² Standard excludes uranium and radon, but reported result does includes all alpha emitters.

³ Results of radium 226 and radium 228 are summed for each sample and compared to the standard of 5 pCi/L total.

When St 90 is present it usually causes elevated Ra 228 results which cause an over-correction to the Ra 226 result.

This leads to inaccuracy of the result and generally causes a very negative activity result for Ra 226.

⁴ Included in gross alpha