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*Review 3/09
reports prior
to response.*

Written Final Response

**Albany International
Former Chrome Plant
Groundwater Treatment System
Appleton, Wisconsin**

WDNR ERP# 02-45-000015

Prepared for the

WISCONSIN DEPARTMENT OF NATURAL RESOURCES



BADGER LABORATORIES & ENGINEERING INC.

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April 27, 2009

Ms. Jill Zalesny
Wisconsin Department of Natural Resources
107 Sutliff Avenue
Rhinelander WI 54501

Re: Written Final Response
Albany International Former Chrome Plant
Appleton, WI
WDNR ERP# 02-45-000015
CASETRACK# 2009-NEEEE-008

Dear Ms. Zalesny:

Enclosed, please find the Albany International "Written Final Response" as requested in the March 6, 2009 correspondence from to Mr. Ron Buck at Albany International Corporation and as discussed at our meeting on March 31, 2009 in Green Bay.

As requested in that letter, our response will address the following three issues:

1. Additional investigation needed at the Albany International Corp. former Chrome Plant to comply with ch. NR 716, Wis. Adm. Code.
2. Plans for evaluation of the existing remediation system, including performance.
3. Commitment to semi-annual reporting compliance per NR. 724, Wis. Adm. Code.

If you have any questions or require additional information, feel free to contact me.

Very truly yours,
Badger Laboratories and Engineering Co., Inc.

Ron Buck,
Technical Director
Albany International Corporation

David J. Casper
Project Manager
Badger Laboratories and Engineering Inc.

Enclosures: "Written Final Response"

cc: Ron Buck, Albany International, Amy Monk, Albany International
Jennifer Borski, Wisconsin WDNR
Mr. John Stoeger. Stoeger & Associates

Project Background

The Albany International, former Chrome Plant, located at 831 North Meade Street, Appleton, Wisconsin, was in use from 1963 to 1982. The property was sold to Valley Cast in 1984. In 1984, Valley Cast employees noted groundwater collecting in the basement of the building, which subsequent tests indicated contained chromium.

1. In May of 1985, STS Consultants, Inc. submitted a preliminary report based on three soil borings and three wells on the north side of the building. This was followed up by a two-stage work plan to identify probable methods of chromium migration and the extent of chromium contamination in the vicinity of the building.
2. In March of 1986, STS conducted the first part of Stage 1 of this work plan, comprised of field work (test pits) to evaluate the processes that control the movement of chromium contaminated water into and out of the basement area, and to assess the chromium content of water samples from sumps in homes located on the east side of Meade Street. This work determined that chromium contamination was not present in the residential sumps and that chromium contamination of the soil was variable and not present at extremely high concentrations.
3. In June, 1986 soil samples from beneath the basement floor and through two of the basement walls were collected as the second part of Stage I of the work plan. This work determined that soil contamination was variable and relatively low in concentration across the basement floor, with the exception of one sample, which exhibited significant chromium concentration.
4. STS initiated Stage II of the investigation on January 19, 1987. The purpose of the investigation was to determine the horizontal and vertical extent of the chromium contamination and evaluate the effectiveness of the facility's basement sump to collect contaminated groundwater from the north and south sides of the building. Sixteen soil borings to approximately 20-feet below land surface (bls) and one boring to approximately 40-feet bls were performed. Five monitoring wells were constructed, including four water table observation wells and one deep piezometer. Soil samples from the borings yielded variable chromium concentrations. The maximum depth of soil contamination observed was 15-feet.

The results of STS investigation indicated that the chromium contamination appeared limited to areas along the northeast and southeast ends of the building to a depth of approximately 15-feet below grade. Due to soil contamination variability and the lack of definitive correlation of soil contaminant concentrations

with groundwater contaminant concentrations, STS recommended the use of the basement and the construction of a French Drain on the north side of the basement to collect the contaminated groundwater for treatment. There was no recommendation to perform soil removal as a means to mediate the impact of the chromium on the groundwater in the STS report. In 1988, a chemical precipitation process was installed to treat the groundwater collecting in the basement sump. That system was operated until 1998, when it was replaced by an ion exchange treatment system.

5. As a preparatory step for the design and installation of the French Drain recommended by STS, additional subsurface work was performed in 1990. This work included the installation of ten soil borings, from 20-feet to 42-feet bls. Soil samples from the borings were collected and analyzed. Two of the borings were converted to piezometers, and two others were converted to water table observation wells. Rising head field hydraulic conductivity tests were conducted in seven of the wells. These tests were used as the basis of the design for the French Drain.

STS observed a relationship between EP toxicity and total chromium concentration, in its July, 1990 report. STS determined that soil chromium concentrations above 180 ppm would yield an EP toxicity of 5 mg/l. This correlation was used as the basis of STS's estimate that only about 28 of the 105 cubic yards of soil, that would have to be removed to construct the French Drain, would be hazardous.

6. In 1992, the French Drain, consisting of approximately 110 feet of perforated piping, placed 14 feet below grade, was installed along the north side of the building. The piping discharges the collected groundwater to a manhole at the northeast corner of the facility, from which it is pumped into storage tanks located in the basement of the facility.
7. In August 2002, two additional monitoring wells were installed at the south property line of the site as requested by the WDNR. MW18/18A
8. Currently, ten groundwater monitoring wells exist at the site to monitor the chromium contamination. Additionally, the French Drain and basement sump are sampled to track the effectiveness of the treatment system.
9. On April 16, 2003, the Wisconsin WDNR requested additional investigation work at the site to better define the level and extent of the subsurface chromium concentrations. In response, Albany International retained McMahon Associates,

Inc to review the initial STS, Inc. investigation and perform a subsurface investigation to further define the horizontal and vertical extent of the chromium contamination.

10. As part of the investigation, eleven geoprobe monitoring wells were installed in and around the two source areas for chromium contamination. The resultant report, entitled, "Site Investigation Report of the Albany International Former Chrome Plant Property", dated February 11, 2005, summarized the investigation. The conclusions of the report were that the existing groundwater extraction system was likely controlling and reducing the chromium groundwater plume.
11. In June 2007, representatives from Albany International Corp., Badger Laboratories and Engineering and Stoeger & Associates LLC, met with WDNR to discuss the need for additional investigation on the former chrome plant site. At that time, Albany International Corp was of the opinion that, based upon the results of the continued geoprobe monitoring, the chromium plume was contained on-site and within the capture zone created by the two collection system components.
12. At the request of the Wisconsin DNR, the 11 geoprobe monitoring wells on the site were sampled and abandoned on April 23, 2008.

Response to Item # 1: Additional investigation needed at the Albany International Corp. former Chrome Plant to comply with ch. NR 716, Wis. Adm. Code

In the June 2007 meeting with WDNR staff, the status of the site investigation, site closure and potential future monitoring requirements of the site were all discussed. A proposal to install additional groundwater monitoring wells on the north side of the property, and perhaps across Meade Street to the east and northeast was put forth. As discussed in that meeting, these monitoring points would be installed in preparation for the closure of the French Drain portion of the collection system. The French Drain closure and installation of these additional wells was proposed to happen at a future time when the chromium concentrations in the French Drain consistently remained below 7 mg/l Total Chromium. This criteria was chosen since it is the allowable concentration required for direct discharge to the City of Appleton wastewater treatment facility.

As stated in our "Preliminary Written Response" dated April 10, 2009, Albany International Corporation understands the need to comply with NR716 regarding site investigation.

Additional site investigation activities proposed for the site at this time include the construction of 2 additional groundwater monitoring wells in the warehouse portion of the building, west/northwest of the basement area. The approximate location of these wells is shown on Figure 1 enclosed. The groundwater monitoring wells are proposed to be constructed as a nest, with one well constructed as a water table monitoring well, and the other constructed as a piezometer. The groundwater table well will be installed to an approximate depth of 22-feet below ground surface (approx. elev.769) to (approx. elev.747). and the piezometer to approximately 40-feet below ground surface (elev. 729) These additional wells will provide for groundwater monitoring in all directions around the source area. We propose to design and install these wells by June 30, 2009.

Response to Item # 2: Plans for evaluation of the existing remediation system, including performance.

The current groundwater treatment system consists of an ion exchange system utilizing pH adjustment. Since 2007, the system has been modified to include pH adjustment directly in the storage tanks. This improves the treatment efficiency of the ion exchange resin. The storage capacity has also been increased from 1200 to 4000 gallons.

Based upon the calculated chrome removals presented in the 2008 Annual Operation and Maintenance Report, the ion exchange system is effective in removing chromium from the collected groundwater. Trend lines added to the historical chromium concentration graphs in the 2008 Annual Report also show consistently decreasing Total Chromium concentrations in all monitoring wells associated with the site.

The City of Appleton Wastewater Treatment facility has modified the site wastewater discharge permit to allow for direct discharge to the wastewater treatment plant if historical chromium concentrations remain below 7 mg/L. This direct discharge is felt to be an achievable goal.

Albany International Corporation will conduct an evaluation of the historical performance of the collection and treatment system. In addition, Albany will evaluate whether additional groundwater collection opportunities are feasible, within the confines of cost effective remediation. In situ treatment of the soil and groundwater, and source area soil removal opportunities will also be evaluated. We propose to perform this evaluation on the following timeline:

- Develop and initially sample new groundwater monitoring wells by July 10, 2009.

review + respond (sw of mws/ISA)

time frame good - confirm location

win what time period?

OK

- OK • Conduct second round of sampling of new groundwater monitoring devices by August 10, 2009.
- OK • Utilize historic groundwater monitoring data and newly acquired data from the two new groundwater monitoring wells to evaluate contaminant capture of the existing groundwater collection/treatment system
- OK • Evaluate alternatives to groundwater collection and treatment.
- OK • Submit completed evaluation report with recommendations for changes to current groundwater collection and treatment process by October, 15, 2009.

Response to Item # 3: *Documentation regarding alleged abandonment of the temporary wells*

The 11 geoprobe monitoring wells were abandoned following the April 23, 2008 quarterly sampling. Groundwater elevations were collected from each well and each well was sampled for Total Chromium. The geoprobe monitoring well abandonment forms, historical geoprobe groundwater elevations, and a summary of the sampling results have been submitted to the Department in "Geoprobe Monitoring Well Summary Report" dated March 24, 2009. This document was delivered to the Department on March, 26, 2009.

Albany International Corporation therefore has the understanding that with that submittal the required actions of Item #3 have been completed.

Response to Item # 4: *Commitment to semi-annual reporting compliance with NR. 724, Wis. Adm. Code*

OK Albany International Corporation, Badger Laboratories and Engineering and Stoeger & Associates, LLC, agree to commit to the report schedule presented by the WDNR. Semi-annual O&M reports will be submitted to the WDNR within 60 days of the end of each semi-annual period

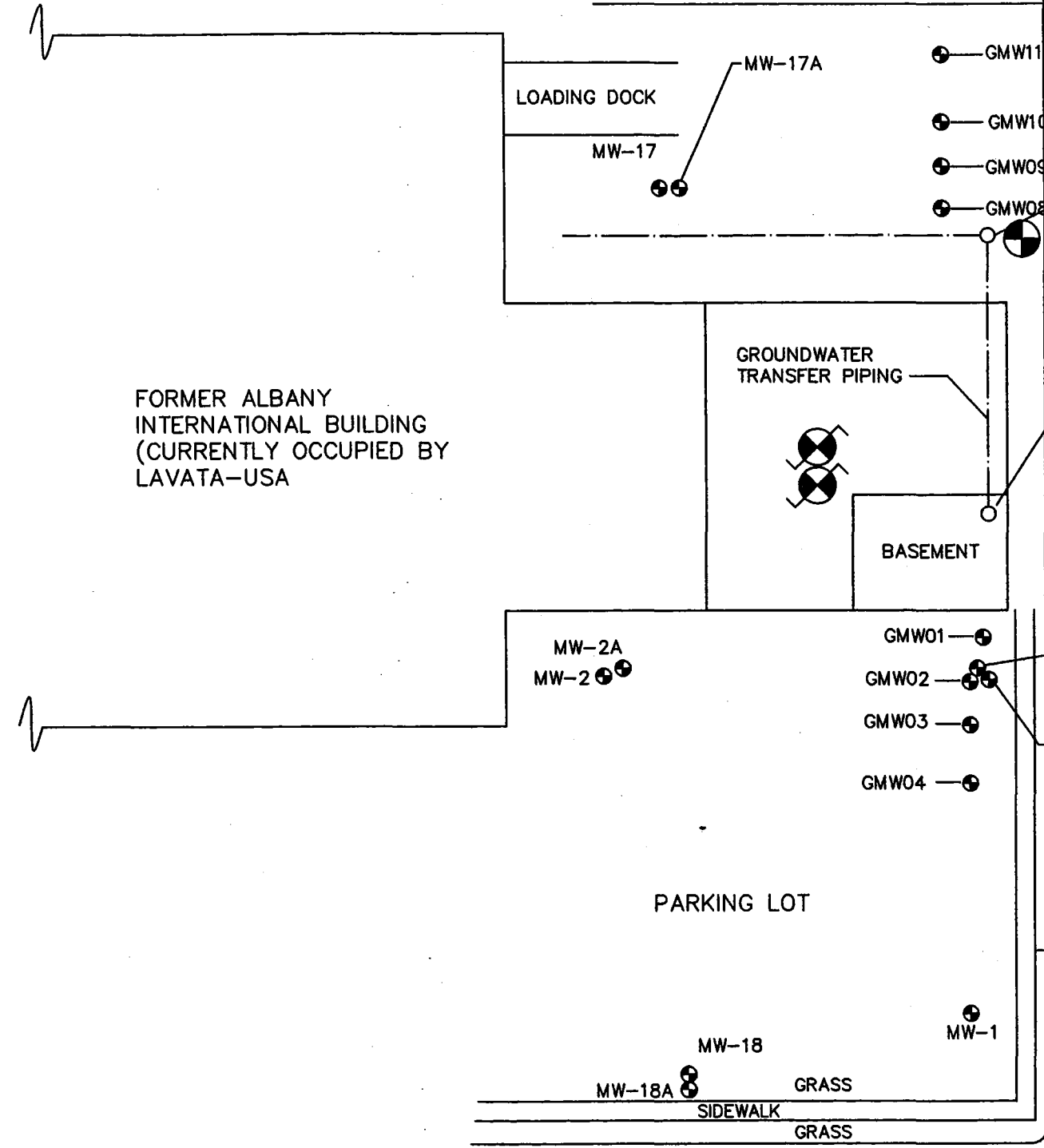
- January 1,- June 30, 2009
- July 1, - December 31, 2009

SA O&M
reports due

~ 8/31 (Jan-Jun)

~ 2/28 (Jul-Dec)

802 E Winnebago?
 WINNEBAGO STREET



French Drain
 820 N made
 Basement Sump
 MW-10-R
 GMW07
 GMW06
 GMW05
 MW-5*
 MW-5A
 MEADE STREET
 Another well here
 802 N made

LEGEND

- MW-1 760.98 MONITORING WELL & GROUNDWATER ELEVATION
- * AS OF 8/13/02 THE DESCRIPTION FOR MW-05 AND MW-05A WERE EXCHANGED
- PROPOSED LOCATION OF FUTURE MONITORING WELLS TO BE INSTALLED FOR CLOSURE OF FRENCH DRAIN
- PROPOSED LOCATION OF ADDITIONAL MONITORING WELLS TO BE INSTALLED IN 2009



DESIGNED BY	DESIGNED BY	DESIGNED BY	DESIGNED BY
DRAWN BY	DRAWN BY	DRAWN BY	DRAWN BY
CHECKED BY	CHECKED BY	CHECKED BY	CHECKED BY
DATE	DATE	DATE	DATE
NO.	NO.	NO.	NO.
Badger Laboratories & Engineering Co. Inc. 501 W. Bell St., Neenah WI 54956 TEL: (920) 728-1100 FAX: (920) 728-4445			
This drawing developed from base drawing provided by Mckelvey Associates Inc. by Badger Laboratories and Engineering Co. Inc.			
Additional Investigation and Closure Well Location Map Albany International Site			
SCALE	DATE	PROJECT NO.	Albany Int. 0102
1" = 40'	4/27/08		
FIGURE NO.			
1			
FILE NO.			
FR			