

LEGGETTE, BRASHEARS & GRAHAM, INC.

**PROFESSIONAL GROUNDWATER AND
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November 21, 2017

Dan Cook
Environmental Specialist Senior
Iowa Department of Natural Resources
Contaminated Sites Section
502 East 9th St.
Des Moines, IA 50022

Re: Environmental Site Assessment Update and
Response to DNR's October 6, 2017 Review Letter
Essentia (formerly Proliant) Facility
Harlan, Iowa

Dear Mr. Cook:

The purpose of this correspondence is to provide the Iowa Department of Natural Resources (DNR), Contaminated Sites Section with an update on the Environmental Assessment (Assessment) being conducted at the above-referenced site by Leggette, Brashears & Graham, Inc., (LBG) on behalf of Essentia Protein Solutions (Essentia). The purpose of the Assessment is to further evaluate the potential impact to the City of Harlan Municipal Utilities (Utilities) south well field from ammonia, chloride, and sodium concentrations from Essentia's facility (Facility). This correspondence also provides our response to the DNR's October 6, 2017 comment letter pertaining to LBG's September 17, 2017 letter outlining the initial approach to the Assessment.

Background

On February 28, 2017, representatives from Essentia, Essentia's environmental engineer Greg Sindt of Bolton & Menk, Inc. (BMI), and I met with DNR Field Services and Compliance Bureau (Field Services) staff and Iowa Geological Survey (IGS) staff. The purpose of the meeting was to discuss Field Services and IGS's review of LBG's October 2015 *Environmental Site Assessment Report* (Phase 1 Report), and what additional work would be required to further assess the impacts, if any, of Facility operations and the ammonia, chloride, and sodium concentrations in groundwater at the Utilities' wells.

On May 25, 2017, LBG submitted the *Induced Groundwater Underflow Evaluation, Site Assessment at the Essentia Facility* work plan (Phase 2 Work Plan) to Field Services for review. The Phase 2 Work Plan was based on the approach discussed and agreed upon in the February meeting, which included an aquifer pumping test (test) to evaluate the potential for underflow of groundwater from the east to the west side of the Nishnabotna River in the vicinity of the Utilities south well field. Field Services reviewed the Phase 2 Work Plan and in their July 14, 2017 letter agreed with the approach in part, while recommending an additional monitoring well be installed near the southwest corner of the Facility’s southern lagoons for monitoring and sampling during the test. Field Services indicated this work would complete the hydrogeological assessment. They also suggested it may be more appropriate to complete an environmental investigation to show if the Facility’s southern lagoons have had a release. As a result, Field Services transferred the project to the Contaminated Sites Section.

On August 18, 2017, Greg Sindt and I discussed DNR’s July 14, 2017 letter with you to better understand DNR’s decision to transfer the project to the Contaminated Sites Section. On behalf of Essentia, LBG and BMI concurred with you that addressing the release question before conducting the test was the appropriate approach based on the available information.

LBG prepared a revised Phase 2 Work Plan dated September 17, 2017 based on DNR’s July 14, 2017 letter, and our August 18th discussion. We agreed to install the monitoring well between the Facility lagoons and the Utilities south well field, and screen the well in the same aquifer that supplies the Utilities wells. Following completion of the monitoring well, groundwater samples would be collected from the wells in the table below, and analyzed for ammonia, chloride, sodium, temperature, pH, and conductivity. Groundwater levels would also be measured to determine the groundwater flow direction.

Facility Monitoring Wells	Harlan Utility Well
1, 2, 3, 4 and proposed new well	4, 5, 11, 14, 24, 25, 28, 30, 31

Following receipt of the monitoring data, a letter report would be prepared to include the analytical results, an updated hydrogeologic cross section, a groundwater flow map, and recommendations for future work, if deemed necessary.

DNR Review and Response

DNR reviewed LBG’s September 17, 2017 letter and responded in writing on October 6, 2017. The letter agreed with the location of the new monitoring well and monitoring plan, with the addition of nitrate and dissolved oxygen (DO) to the list of the analytes.

LBG Response

We concur with the suggestions provide by the Contaminated Site Section in their October 6, 2017 letter, with the exception of including nitrate and DO analyses in this initial round of

groundwater sampling. The original Notice of Violation required that ammonia, chloride and sodium be analyzed. Nitrates are likely to be present in shallow alluvial aquifers (like the aquifer where the facility and City wells are located) when surrounding land use is agricultural consisting of row crops fertilized with nitrogen and animal waste. In addition, ammonia can be derived from natural organic material deposited with the sands and gravels that make the aquifer and the overlying silts and clays. We feel that nitrates, if detected, could be from sources other than the Facility lagoons. As a result, we propose analysis of nitrate be postponed until after the results of this initial monitoring event are evaluated and if these results show further investigation is required. Likewise, we propose to postpone analysis of DO for future sampling events, if necessary.

Monitoring Well Installation (MW-5)

The monitoring well (MW-5) proposed between the Facility lagoons and the south well field was installed and developed on Thursday, October 25, 2017 by Allender Butzke, Engineers, with oversight by a LBG hydrogeologist. The top of the sand and gravel aquifer was encountered at a depth of 25 feet below grade (ft bg) and has a total thickness of 14 feet. The well was screened from 26 to 36 ft bg. The static water level measured 20 feet below the top of the well casing. The map showing the location of MW-5 and the well log are attached.

Groundwater Sampling

Upon your concurrence with this letter and the well construction, Essentia will proceed with the proposed groundwater sampling plan outlined above.

If you have any questions or need additional information, please contact me at (651) 558-9207, or dave.hume@lbgmn.com.

Sincerely,



David S. Hume
Senior Associate

Cc: Brian Haines – Essentia
Erik Johnson - Essentia
Greg Sindt – Bolton & Menk, Inc.

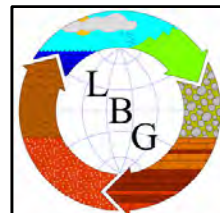
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Attachments



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Service Layer Credits: Copyright: © 2013 National Geographic Society
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- ⊕ Proposed Monitoring Well
- ⊕ Harlan City Well (North Well Field)
- ⊕ Harlan City Well (South Well Field)
- ⊕ Harlan City Monitoring Well (Approximate Location)
- ⊕ Commercial (Former Facility Wells)
- ⊕ Monitoring Well



Prepared By:
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ESSENTIA (FORMERLY PROLIANT)
 HARLAN, IOWA

**CITY WELL FIELDS AND
 MONITORING WELL LOCATIONS**

FILE: g3b\harlan01x.MXD	DATE: 11/21/2017	FIGURE: 1
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GEOLOGIC LOG		OWNER: Essentia
LEGGETTE, BRASHEARS & GRAHAM, INC.		BORING NO. MW-5
ST. PAUL, MINNESOTA		PAGE 1 OF 1 PAGES
LOCATION: Harlan, Iowa	SCREEN: Schedule 40 PVC	
	DIAMETER: 2-inch	SLOT NO. 10
DATE COMPLETED: 10/25/2017	SETTING: 26 to 36 feet bg	
DRILLING COMPANY: Allender Butzke Engineers, Inc.	SAND PACK: .65 FilterSil Filtration sands and gravels	
	SETTING: 21 to 36 feet bg	
DRILLING METHOD: Hollow Stem Auger (8 inch / 4 1/4 inch stem)	CASING: 2-inch Schedule 40 PVC	
SAMPLING METHOD: Split Spoon (Continuous below 15 feet)	SETTING: 2.5 feet above grade to 26 feet bg	
OBSERVER: RFS (WSP)	SEAL TYPE: Pure Gold Medium Chips (1/2 inch)	
REFERENCE POINT: Grade	SETTING: 0 to 21 feet bg	
REFERENCE POINT ELEVATION:	DEVELOPMENT: Bailers	
STICK-UP: 2.5 feet	DURATION:	
SURFACE COMPLETION: PVC riser/4 inch protective casing	WATER LEVEL: 20.07 feet btoc	
REMARKS: 5-feet auger flights	YIELD:	
DEPTH IN FEET		GEOLOGIC DESCRIPTION
FROM	TO	
0.0	5.0	TOPSOIL and SILT; brown.
5.0	10.0	SILT; soft; brown.
10.0	15.0	SILT; soft; brown.
15.0	17.0	SILT; soft; brown.
17.0	18.5	SILT; soft; brown (Sand seam at ~17 feet).
18.5	19.0	Silty SAND; very fine sand; tan.
19.0	20.0	SILT; soft; grey.
20.0	21.0	Silty SAND; very fine sand; grey (traces wood @ ~ 2 inch intervals).
21.0	23.0	SILT; soft; brown (Sand seam at 23 feet; very fine).
23.0	25.0	SILT; soft; brown.
25.0	27.0	SAND; fine to medium (25 to 25.5 feet); SILT; brown (25.5 to 26.5 feet); SAND; fine to medium; grey (26.5 to 27 feet)
27.0	29.0	SAND; fine to medium; grey (fine brown sand at ~29 feet).
29.0	31.0	SAND; fine to medium; grey (29 to 29.5 feet); SILT; dark brown (29.5 to 30.5 feet); fine to medium sand; trace coarse; rusty (30.5 to 31 feet)
31.0	33.0	SAND; fine to medium; brown.
33.0	35.0	SAND; fine to medium; brown (33 to 34.5 feet); SILT; grey (34.5 to 34.75 feet); SAND; very fine; grey (34.75 to 35 feet).
35.0	37.0	SAND; fine to coarse sand; little very coarse sand and fine gravel (35 to 36 feet); fine to medium sand (36 to 36.5 feet); CLAY seam; firm; grey (36.5 to 37 feet).
37	39	SAND; fine to medium; brown (finer at bottom).
39	41	Silty SAND; very fine sand; grey
41	45	CLAY; firm; grey (Till). TD = 45 feet below grade.