



June 13, 2011

Project No. 063-2212A11

James Deutsch  
North Dakota Public Service Commission, Reclamation Division  
600 East Boulevard Avenue  
Department 408  
Bismarck, ND 58505-0480

**RE: SOUTH HEART LIGNITE MINE APPLICATION ALLUVIAL VALLEY FLOOR DATA**

Dear Jim:

Enclosed with this letter please find the data requested by Carrie La Seur of Plains Justice in the letter to you dated May 5, 2011. Requested data includes:

- Color infrared aerial photographs of the proposed mine permit area flown in June 2006, included as seven (7) DVDs
- Raw hourly water level data from wells referenced in the Alluvial Valley Floor Study submitted to your office by Golder Associates Inc. on behalf of South Heart Coal LLC in 2008, included as one DVD
- Raw hourly barometric pressure data corresponding to the water level data, included on the DVD containing the raw water data

The water level and barometric pressure data were collected using pressure transducers and data loggers manufactured by In-Situ Inc. The files provided are the raw files downloaded from the data logger (.wsl file extension). These files can be viewed using In-Situ's free software, Win-Situ 5, available at: [http://www.in-situ.com/Win\\_Situ5](http://www.in-situ.com/Win_Situ5). The water levels reported in the files are depth to water measurements derived from measurements of absolute pressure in the water column. As such, the data required correction for changes in barometric pressure. The correction was performed using In-Situ's free software, Baro Merge, available at: [http://www.in-situ.com/Baro\\_MergeSoftware](http://www.in-situ.com/Baro_MergeSoftware). Water level elevations were calculated by subtracting the corrected depth to water data from the surveyed reference elevation (top of PVC casing). The resulting data were plotted using the software program Microsoft Office Excel 2007 as water level elevation versus time.

Table 1, included as an attachment to this letter, provides an index of the pressure transducer data files provided including Well Identification (Well ID), file name, period of record, and surveyed monitoring point elevation.

84 RC-10-77 Filed 06/14/2011 Pages: 3  
Additional alluvial valley floor data  
Golder and Associates  
Rick Kinshella

i:\06\2212a11\0100\0632212a11\jdeutsch-dvds tl 13jun11.docx

**Golder Associates Inc.**  
44 Union Boulevard, Suite 300  
Lakewood, CO 80228 USA  
Tel: (303) 980-0540 Fax: (303) 985-2080 [www.golder.com](http://www.golder.com)



Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation

Please contact the undersigned with questions regarding the data provided with this letter.

Sincerely,

**GOLDER ASSOCIATES INC.**



Adam Hobson  
Senior Hydrologist



Rick Kinshella  
Associate and Senior Consultant

cc: Rich Southwick, South Heart Coal, LLC

Attachments: Table 1  
Raw hourly water level and barometric pressure data (1 DVD)  
Color infrared imagery (7 DVDs)

ANH/kag

Table 1: Raw Pressure and Temperature Data Recorded in Alluvial Wells July 2007 to November 2007

Well ID	File Name	Date/Time Range		Monitoring Point Elevation (ft amsl)
		Start	End	
SHMW-01A	SHMW-01A 7-26-07 2007-11-06 11-32-48.wsl	7/26/07 8:00	11/6/07 11:00	2490.61
SHMW-01A	SHMW-01A HOURLY 2007-07-26 07-06-56.wsl	6/27/07 12:00	7/26/07 7:00	2490.61
SHMW-09A1	SHMW-09A1 7-26-07 2007-11-07 08-12-20.wsl	7/29/07 12:00	11/7/07 8:00	2504.34
SHMW-09A1	SHMW-09A1 HOURLY 2007-07-26 11-17-22.wsl	6/27/07 13:00	7/26/07 11:00	2504.34
SHMW-09A2	SHMW-09A2 HOURLY 2007-07-26 11-21-29.wsl	6/27/07 13:00	7/29/07 11:00	2504.19
SHMW-09A2	SHMW-09A2 7-26-07 2007-11-07 08-15-42.wsl	7/26/07 12:00	11/7/07 8:00	2504.19
SHMW-11A1	SHMW-11A1 7-26-07 2007-11-06 13-23-25.wsl	7/26/07 10:00	11/6/07 13:00	2520.61
SHMW-11A1	SHMW-11A1 HOURLY 2007-07-26 09-24-00.wsl	6/27/07 13:00	7/26/07 9:00	2520.61
SHMW-11A2	SHMW-11A2 HOURLY 2007-11-06 13-26-50.wsl	6/27/07 13:00	11/6/07 13:00	2520.33
SHMW-14A1	SHMW-14A1 7-26-07 2007-11-06 16-07-37.wsl	7/27/07 11:00	11/6/07 16:00	2516.77
SHMW-14A1	SHMW-14A1 HOURLY 2007-07-26 09-51-37.wsl	6/27/07 13:00	7/26/07 9:00	2516.77
SHMW-14A2	SHMW-14A2 HOURLY 2007-11-06 16-11-13.wsl	6/27/07 13:00	11/6/07 16:00	2516.90
SHMW-15A1	SHMW-15A1 HOURLY 2007-11-06 09-43-29.wsl	6/27/07 12:00	11/6/07 9:30	2464.34
SHMW-15A2	SHMW-15A2 HOURLY 2007-11-06 09-46-21.wsl	6/27/07 12:00	11/6/07 9:00	2464.28
SH BARO	SH BARO 2007-11-14 11-51-36.wsl	6/27/07 17:00	11/14/07 11:00	-