DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP
2501 BLAIR MILL ROAD, WILLOW GROVE, PENNSYLVANIA 19090
GEOSCIENCES (215) 657-5000 ENGINEERING (215) 657-7134

January 14, 1992

New York State Department of
Environmental Conservation
Operation & Maintenance Section
Bureau of Construction Services
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, New York 12233-7010

Attention: Mr. John Strang, P.E.
Senior Sanitary Engineer

Re: Decommissioning and Replacement of
Ground Water Monitoring Wells
Sterling Drug - Site 1
NYSDEC Site No. 4-42-009
Dames & Moore Job No. 07425-067

Dear Mr. Strang:

In accordance with Dames & Moore's October 23, 1991 letter to you, the ground water monitoring system at the Sterling Drug Rensselear, New York facility (Sterling Site 1) was modified on October 24, 1991. The modification consisted of the decommissioning of on-site monitoring well MW-6 and drilling a replacement well, designated MW-6A. Figure 1, enclosed with this lett2er shows the location of former monitoring well MW-6 and replacement monitoring well MW-6A.

Monitoring well decommissioning and drilling of the replacement well followed standard Dames & Moore procedures and New York State Department of Environmental Conservation (NYSDEC) standards. The monitoring well decommissioning was conducted per you verbal approval and in accordance with procedures discussed during our telephone conversation on October 8, 1991 and as outlined in your May 16, 1990 letter to Dames & Moore, that addressed the decommissioning of former on-site monitoring well MW-4. Decommissioning procedures are presented in Attachment A, enclosed with this letter. Procedures for the installation and construction of replacement monitoring well MW-6A is included as Attachment B. A detailed soil boring log and monitoring well construction diagram is presented as Attachment C to this letter.

Dames & Moore's October 23, 1991 letter indicated that off-site monitoring well OS-4 would also be decommissioned and a replacement well would be drilled adjacent to the former well location. However, a closer inspection of this well indicated that the PVC well casing had not been broken. The sediment that had accumulated in OS-4 was removed from the well casing using a compressed air surge. The surge of air successfully cleared the well casing of the sediment. Following the compressed air surge, monitoring well OS-4 was allowed to recharge.

We trust this meets your current requirements. If you have any questions regarding the information presented in this letter, please contact us.

Very truly yours,

DAMES & MOORE
A Professional Limited Partnership

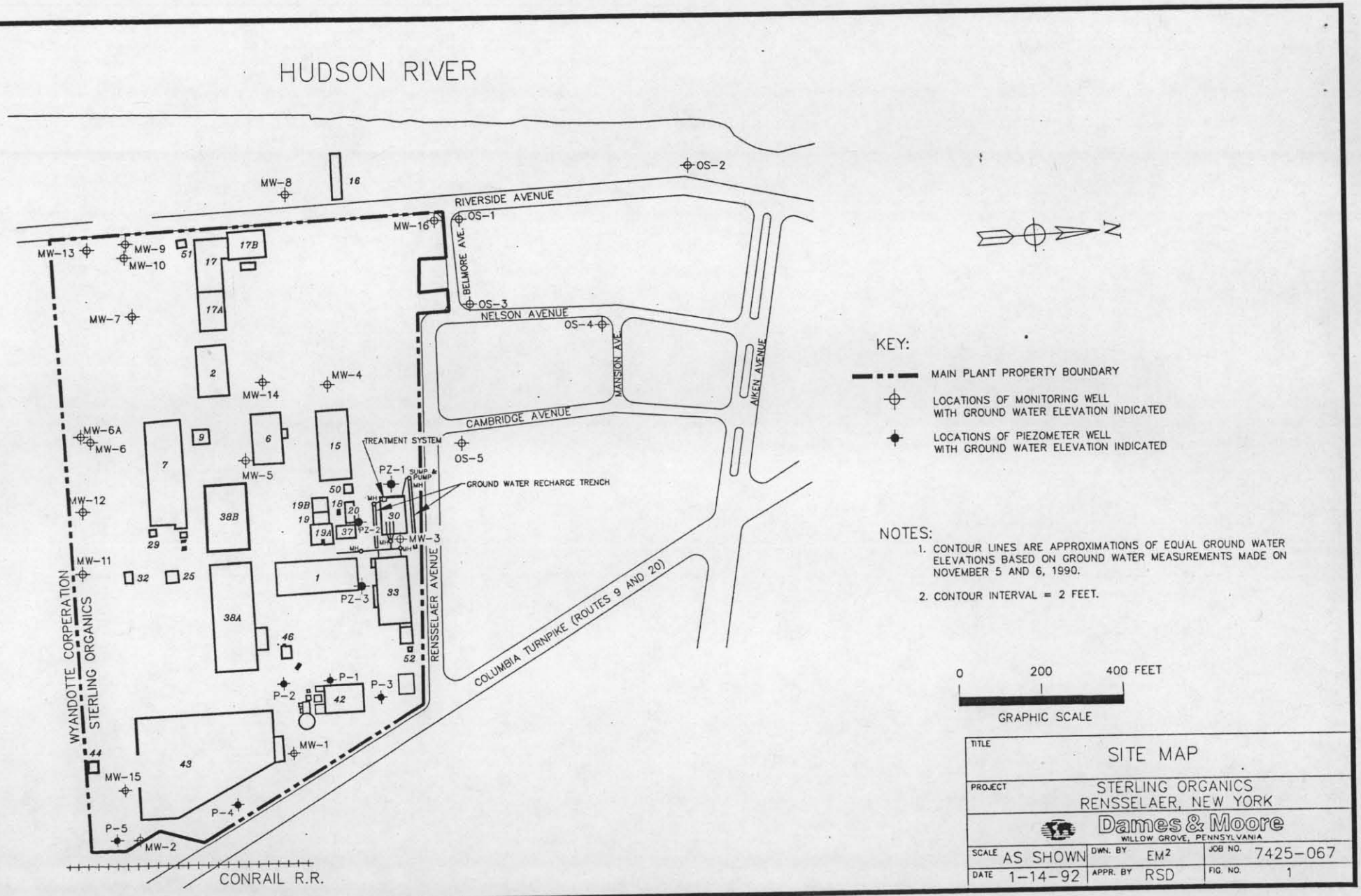
Michael J. Rykaczewski, P.E.
Managing Associate, Engineering

Mark Piazza
Project Geologist

Enclosures

MP:ld
002051.anx

cc: Charles Smith - Sterling
John Hughes - Sterling
David W. Moore - Sterling
Frank Vernese - Dames & Moore
Robb Davis - Dames & Moore



TITLE	SITE MAP		
PROJECT	STERLING ORGANICS RENSSELAER, NEW YORK		
	Dames & Moore WILLOW GROVE, PENNSYLVANIA		
SCALE AS SHOWN	DWN. BY EM²	JOB NO.	7425-067
DATE 1-14-92	APPR. BY RSD	FIG. NO.	1

SORNTEM4 (3)

ATTACHMENT A

MONITORING WELL DECOMMISSIONING PROCEDURES

DAMES & MOORE
WELL DECOMMISSIONING PROCEDURES
MONITORING WELL MW-6
STERLING DRUGS, INC. - SITE 1

1. Dames & Moore submitted a detailed description of the procedures that were used to seal monitoring well MW-6 to NYSDEC.

2. NYSDEC approval was obtained prior to decommissioning the monitoring well.

3. Sealing of the well proceeded as follows:

   a) The well was cleared of its existing protective casing and any other obstructions.

   b) The PVC well riser and screen were pulled out of the ground. The resulting hole was sealed using a tremie pipe and cement bentonite grout.

   c) An air compressor was used to clear the hole of sand and other loose fill that was introduced into the borehole when the PVC casing was removed.

4. The well sealing mixture consisted of a 3 to 5 percent bentonite/cement ratio, using approximately 5 gallons of water per each bag of cement.

5. Approximately 24 hours after sealing the well borehole, the top of the borehole was inspected for settling. No settling was observed by Dames & Moore, and a cement cap was placed over the decommissioned well.

AAW01C22

ATTACHMENT B

MONITORING WELL INSTALLATION AND
CONSTRUCTION PROCEDURES

ATTACHMENT B

MONITORING WELL CONSTRUCTION PROCEDURES

General Specifications and Procedures

Casing and Well Screen:	Four-inch, I.D. Schedule 40 PVC, with threaded joints.
Screen slot size:	0.010 inch, machine slotted.
Storage of casing and screen:	Dirty casings were rejected and not allowed on-site. The casing and screen lengths were not stored directly on the ground. The well string was prepared on a clean plastic sheet spread out over level ground.
Cleaning of casing screen:	Casing and screen were steam-cleaned with a heavy-duty, non-phosphate laundry detergent (approximately one cup to 10 gallons of town water), and rinsed with town water before installation into the boring.
Gravel Pack:	The gravel pack material is 90 percent by weight larger than 0.010 inch, and has a uniformity coefficient of 2.5 or less.
Placement of the sand pack:	The gravel pack was emplaced so that it extends at least one foot above the top of the well screen. This was confirmed by measuring down the annular space with a weighted tape. The volume of gravel pack material emplaced was compared with the volume computed as required, based on the screen diameter and length. The gravel pack was poured directly down the annular space.
Bentonite seal:	A bentonite seal was placed in the annular space above the gravel pack in each well by emplacing 1/4-inch diameter bentonite pellets in the annular space. At least 1 foot of bentonite was placed in the well. This was confirmed by measuring down the annular space with a weighted tape.
Well Development:	Each well was developed after completion of its installation. Development consisted of pumping the well with a centrifugal pump and dedicated 3/4" black poly pipe with attached foot value installed. Each well was developed for a minimum of 45 minutes.

The discharge rate during development was estimated using a five-gallon bucket and a stop watch. Development was continued until a trace amount of fines and suspended solids appears in the discharge water, or until the pH, specific conductance, and temperature of the development water stabilized. All development and rinse water was diverted from surface drainage.

Grouting Annular Space: A bentonite-cement grout (5 lbs. bentonite and one bag of cement to 8 to 10 gallons of water) was pumped into the annular space to fill the space from the top of the volclay bentonite seal to the ground surface. This was completed as soon as the well was developed.

Protective Casing: A length of six-inch I.D. steel casing was placed over the four-inch well casing in each case to protect it. It was set about two feet into the bentonite-cement grout in the annular space, and extends above the ground about three feet. A lockable cap was affixed to the protective casing. Two sets of keys were provided (one each to Dames & Moore and Sterling). A 1/8-inch diameter hole was drilled in the top of the well casing or cap to prevent pressurization within the well during water level fluctuations. Three protective 3" guard posts were installed around each well for additional protection, where necessary.

Well Labeling: The full number of each sampling well was painted on the protective casing or cap.

Surveying: A level survey was performed in which the elevation of the top of the PVC well casing (not the surrounding steel protective casing) of each well was determined to ± 0.01 vertical ft., and the reference point marked. Elevation datum was referenced to the National Geodetic Vertical Datum, 1929.

Well Construction Procedures

1. After installation of the well screen, casing, and gravel pack, volclay pellets were emplaced to form a minimum of one-foot thick seal in the annular space above the gravel pack.

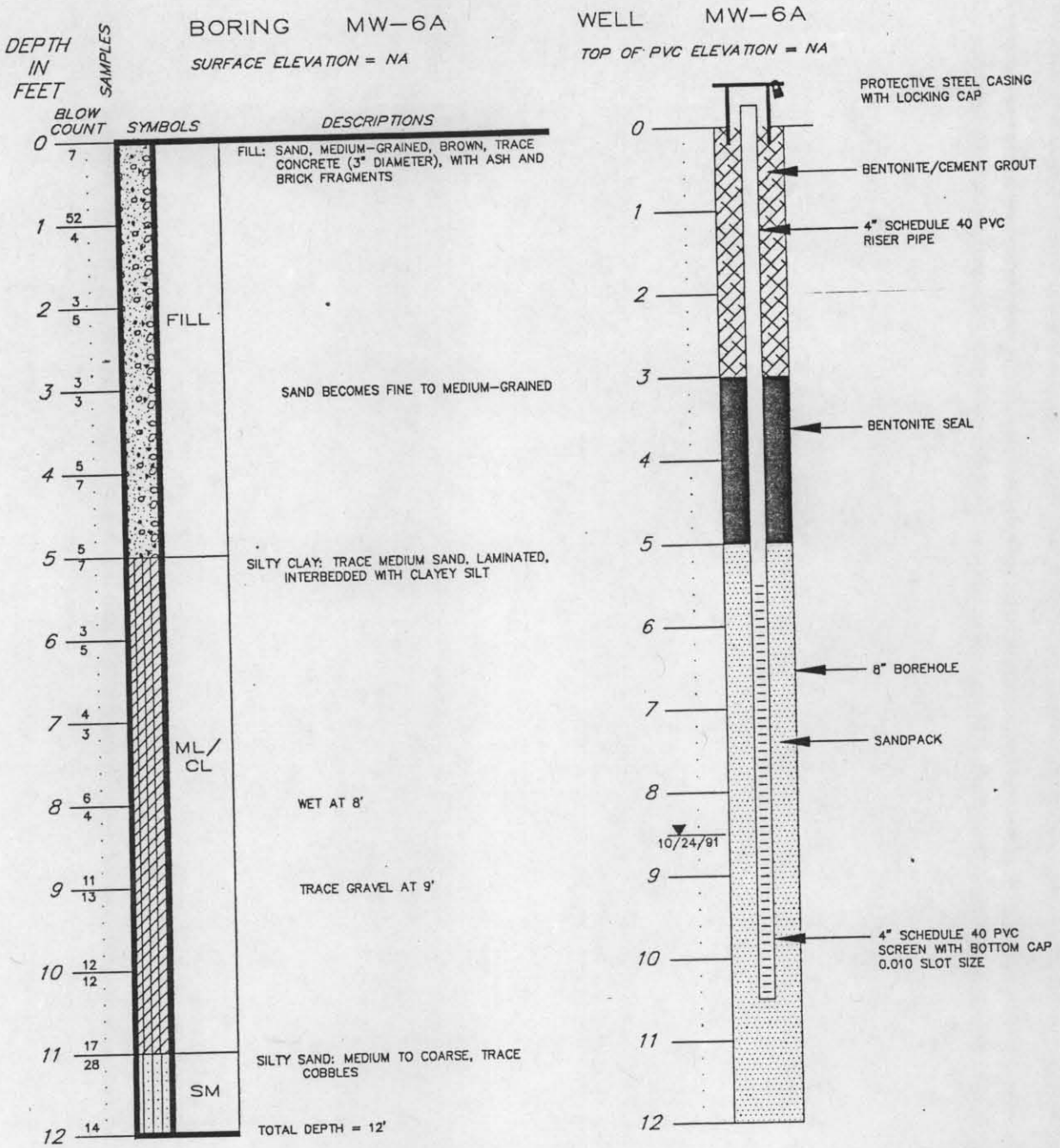
2. A bentonite-cement grout (described in the foregoing section), was pumped into the annular space so as to fill that space with grout from the volclay pellet seal to ground surface.

3. The well was developed and completed as described under General Specifications and Procedures.

AAW01C97

ATTACHMENT C

BORING LOG AND MONITORING WELL
CONSTRUCTION DIAGRAMS



LOG OF BORING AND MONITORING WELL DETAIL STERLING SITE 1 RENSSELAER, NEW YORK

NOTES:

1. BORING WAS DRILLED BY EMPIRE SOILS INVESTIGATION, BALLSTON SPA, NEW YORK., DRILLING METHOD USED: 6" DIAMETER FLUSH JOINT CASING, EQUIPMENT: CME-55.
2. CONTINUOUS SPLIT-SPOON SAMPLES.
3. BORING LOGGED BY M. EBERLE AND APPROVED BY M. EDELMAN OF DAMES AND MOORE.
4. WATER WAS ENCOUNTERED AT 8'6" BELOW GROUND SURFACE.
5. 3' STICK-UP ABOVE GROUND SURFACE.

ECB-MW6A (3)

DAMES & MOORE