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**Additional Assessment Work Plan
Delavan Spray Technologies Facility
Bamberg, South Carolina
DHEC Site ID #02211**

July 17, 2007

H&H Job No. GDR-006

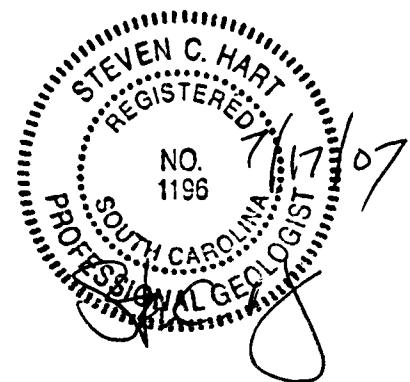
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1.0 Introduction and Background

On behalf of Delavan Spray Technologies (Delavan), Hart & Hickman, PC (H&H) is submitting this work plan for additional assessment activities at the Delevan facility on US Highway 301 South in Bamberg, Bamberg County, South Carolina. Delavan manufactures fuel metering equipment and various spray-type nozzles at the facility. A site location map is provided as Figure 1, and a site layout is provided as Figure 2.

Previous assessment activities indicate the presence of chlorinated volatile organic compounds (VOCs) in ground water at the Delavan facility. The primary constituent of concern is tetrachloroethene (PCE). Other analytes historically detected in ground water samples include trichloroethene (TCE) and cis-1,2-dichloroethene (DCE) which are biodegradation products of PCE.

The results of previous ground water assessment activities are summarized in a Ground Water Assessment report dated March 15, 2004. Following submittal of the March 2004 Ground Water Assessment report, the South Carolina Department of Health and Environmental Control (DHEC) requested that Delavan prepare a remedial plan to address PCE impacts in ground water at three locations in the vicinity of monitor wells MW-1, MW-9, and MW-10. Delavan submitted a Work Plan for Remedial Activities on August 11, 2004 proposing the implementation of enhanced biodegradation using Hydrogen Release Compound (HRC). The Work Plan was approved by DHEC on October 27, 2004.

Prior to conducting the injection of HRC, H&H submitted an Underground Injection Control (UIC) permit application to DHEC's Underground Injection Control (UIC) Section on January

31, 2005. The UIC Section issued an injection permit (Permit No. 816) for the site on February 11, 2005.

The HRC injection was conducted on March 15 and 16, 2005. A HRC injection boring diagram is included as Figure 3. Since the HRC injection in March 2005, quarterly post-injection monitoring events have been conducted in accordance with the DHEC approved-sampling scheme. A comprehensive sampling event was conducted in March 2006 which included the sampling of each site monitoring well. Subsequent to the March 2006 sampling, an additional quarterly sampling event of MW-1, MW-9, and MW-10 was conducted in June 2006. The results of this sampling were presented in an October 10, 2006 monitoring report.

Following review of the October 10, 2006 Ground Water Monitoring report, DHEC requested that a water supply well survey be completed for the residential area located to the east of the Delavan facility. In accordance with DHEC's request, H&H completed a water supply well survey for this residential area on January 12, 2007 by performing site reconnaissance and door-to-door inquiry. Although municipal water service is available to the neighborhood to the east of the facility, H&H identified two water supply wells on properties in this neighborhood which were not connected to the municipal water source (Figure 2).

The two water supply wells were identified as the Frazier water supply well (WSW) and the Thomas WSW. Information pertinent to the two identified WSWs is summarized on Table 1. Based on information obtained from the City of Bamberg Public Works Department, a water account had been set up for the Frazier WSW address, however the account was inactive. No account information was on record for the Thomas WSW address. According to the site residents, the supply wells are approximately 500 ft in depth. Both of the identified wells were observed to be 6-inch diameter steel-cased bored wells. No additional well construction information was available for the water supply wells. The Frazier WSW reportedly supplies potable water to two residences located on tax parcel ID No. 0072-08-02-1. No additional water supply wells were identified in the neighborhood to the east of the facility.

In accordance with DHEC's request, H&H collected water samples from each of these water supply wells in January 2007. The samples were collected from spigots located at the wellheads after allowing the water to run for approximately 5 to 10 minutes. The collected water samples were analyzed for VOCs by EPA Method 8260B.

The results of the supply well sampling indicated VOCs in the Thomas WSW at concentrations below the DHEC maximum contaminant levels (MCLs) (Table 2). The Thomas WSW sample contained 1,2-dichloroethane (2.27 $\mu\text{g/l}$), cis-1,2-dichloropropene (1.14 $\mu\text{g/l}$), trans-1,2-dichloropropene (1.91 $\mu\text{g/l}$), PCE (4.44 $\mu\text{g/l}$), and 1,2,4-trichlorobenzene (2.00 $\mu\text{g/l}$). No VOCs were detected in the ground water sample collected from the Frazier well.

Although no compounds were detected above MCLs in either WSW, Delavan (as a precautionary measure) contacted the owners of the water supply wells and offered to connect the residences served by the wells to municipal water at no charge to the well owner. The owner of the Thomas WSW responded to Delavan's offer to connect to the municipal supply, and Delavan secured written permission to make the municipal connection and to abandon the well. The Frazier property already has a connection.

Based on the results of the water supply well survey, Delavan proposed to resample the wells and continue to include them in the quarterly sampling program. The results of the water supply well survey and associated ground water sampling activities were presented in a Ground Water Monitoring report dated January 30, 2007.

Following review of the January 2007 monitoring report, DHEC requested additional ground water assessment be conducted in a letter dated May 1, 2009. Specifically, DHEC requested that Delavan:

- determine the vertical extent of ground water impacts at the site;
- continue the quarterly monitoring program with the next monitoring report to be a comprehensive event (inclusive of sampling all site monitoring wells);

- re-sample the off-site Thomas and Frazier water supply wells for VOCs;
- provide an update on the municipal water connection for the Thomas WSW;
- determine the total depths of the off-site private water supply wells; and
- submit a work plan for re-sampling the Thomas WSW and vertical delineation of ground water impacts for the site.

In accordance with DHEC's request, Delavan's proposed scope of work to address DHEC's request is provided in the following sections.

2.0 Municipal Water Connection Update

Delavan contacted the owners of the two water supply wells and offered to connect the residences served by the wells to municipal water at no charge to the well owner. The owner of the Thomas WSW, Mrs. Mamie Connelly, granted Delavan permission to connect the residences located on her property to the municipal supply and to abandon her well. As mentioned previously, the owner of the Frazier WSW already had a municipal tap but was not connected to the municipal water supply.

Because there are two residences on the Connelly property and based on the City of Bamberg Public Works requirements, Delavan arranged for two municipal water connections and a sewer connection to be set at the Connelly property. Between June 13 and 15, 2007, the City of Bamberg Public Works Department installed the two municipal water taps and sewer tap in the right-of-way which fronts this property.

After the municipal taps were installed, Delavan arranged for a private plumbing contractor to install service lines from the municipal taps and make the necessary connections to the residences on the Connelly property on June 20, 2007. Delavan's plumbing contractor capped the supply well service lines to these residences and made the final municipal water and associated sewer connections on June 22, 2007. Mrs. Connelly granted Delavan permission to abandon her well, and Delavan is in the process of abandoning this supply well. Prior to the abandonment of this well, H&H and Delavan will determine the static water level, total depth of the well, and depth of surface casing (if possible).

To date the owner of the Frazier WSW property has not responded to Delavan's request to connect the property to municipal water. In accordance with DHEC's request, Delavan will attempt to re-sample the Frazier WSW as part of the routine monitoring program with the owner's permission (see discussion in Section 4.0).

To determine construction details of the Thomas and Frazier WSWs, H&H visited the site to inspect the wells for well tags and visited the Bamberg County Environmental Health

Department to review water well completion records on June 1, 2007. No well tags were observed on or in the vicinity of the supply wells and no records of well completion were found at the Bamberg County Environmental Health Department for these wells. The depth of the Thomas WSW will be determined prior to its abandonment.

3.0 Proposed Ground Water Assessment

3.1 Ground Water Flow

Previous ground water elevation data indicates the ground water flow direction is dependent upon location at the site (Figures 4 and 5). Ground water in the eastern and western portions of the site flows toward the center of the site and then moves generally north and south along a ground water low (or trough). The flow direction in the central and north-central part of the site appears to be toward the north while flow in the south-central portion of the site appears to be toward the south. This north-south ground water divide appears to be located just south of the former PCE containment area near MW-1. It is likely that the location of the north-south ground water divide shifts slightly during the year due to water level fluctuations.

Based on the historical ground water elevation data, it appears that the apparent remnant Carolina Bay upon which the site is located effects the flow regime in the vicinity of the Delavan plant. Carolina Bays are characterized by flow geometries similar to that at the Delavan site. The flow regime appears to be characterized by a ground water trough in the center of the site with ground water flowing both to the north and, to a lesser degree, to the south along the ground water trough. The water level fluctuations are less pronounced within the central portion of the ground water trough (MW-1, MW-3, MW-7, and MW-8) than in the wells along the flanks (MW-2, MW-4, MW-5, MW-6, and MW-10). The net result is a seasonal shifting of flow direction and gradients in the central portion of the site.

3.2 Additional Monitoring Wells

In their letter of May 1, 2007, DHEC requested evaluation of the vertical extent of the ground water impacts. Although no wells have been installed in deeper ground water, H&H anticipates that deeper ground water flow will not be affected by the Carolina Bay feature. As such, we anticipate ground water flow is with regional topography to the west and northwest. Considering the compound distribution and flow direction information, H&H proposes to install three Type III deeper monitoring wells using either hollow-stem auger and mud-rotary and/or sonic drilling

techniques. The deeper wells will generally be installed regionally downgradient of the monitor wells MW-1, MW-9, and MW-10. The locations of the proposed wells are indicated in Figure 6.

Based upon a review of regional geology, the site area is underlain by undifferentiated muddy fine to coarse sand, with rare clay beds. Regional boring logs indicate that calcareous sandstone containing shells and/or sandy limestone may be encountered at approximately 50 ft below ground surface. Based on this information, H&H estimates that the deeper Type III wells will be drilled to depths of approximately 50 ft with 6-inch diameter PVC surface casings to approximate depths of 25 ft. These deeper Type III wells will be completed as 2-inch diameter monitoring wells with 5 ft sections of 10 slot well screen. A typical deeper Type III monitor well diagram is included as Figure 7.

Split-spoon soil samples will be collected at 5 ft intervals for soil lithology classification. Boring logs and well construction records will be prepared and included with the report submittal. To develop deeper ground water flow and cross-section maps, H&H will determine monitoring well top of casing and ground surface elevations for these wells relative to the existing site well network using surveying techniques.

3.3 General Field Procedures

Monitoring well drill cuttings, development water, and purge water will be containerized in labeled 55-gallon drums. For waste characterization purposes, H&H will collect one composite sample each from the drummed drill cuttings, development water, and purge water for analysis of toxicity characteristic leaching procedure (TCLP) VOCs and TCLP metals. Following receipt of characterization data, the investigation derived waste materials will be properly disposed.

Laboratory-supplied sample bottles will be used for sample collection. A chain-of-custody record will be completed for samples collected and will include sample description, date collected, time collected, matrix, sample container information, and analyses required. The chain-of-custody will be signed by H&H field personnel prior to placement in an iced cooler for

shipment to the laboratory. Prior to shipment, a custody seal will be placed on the cooler so that any tampering or opening of the cooler could be detected by the laboratory. The samples will be analyzed by a laboratory certified in South Carolina.

4.0 Ground Water Monitoring Program

In accordance with DHEC's request, the ground water monitoring program will be continued to evaluate the effect of the HRC injection and to monitor ground water contaminant trends. The ground water sampling program will consist of an annual comprehensive sampling event and quarterly monitoring events. The annual comprehensive and quarterly sampling events are discussed below in further detail.

4.1 Annual Comprehensive Sampling Event

Following DHEC's approval of this work plan and installation of the deeper Type III wells, a comprehensive ground water sampling event will be conducted at the site. Each of the existing 11 on-site monitoring wells and the three newly installed deeper wells will be sampled for VOCs by EPA Method 8260B (reporting the EPA 601 list only). In addition to the monitoring well samples, a surface water sample will be collected from the stream located northwest of the Delavan facility in the location of previous surface water sample SW-1 (Figure 2). The surface water sample will be sampled for VOCs by the aforementioned method.

To further evaluate the effect of previous remedial actions, the ground water samples from select shallow wells in the area of the HRC injections (MW-1, MW-9, and MW-10) will be analyzed for geochemical parameters in addition to the VOCs mentioned above. Field geochemical parameters collected from these wells will include dissolved oxygen, oxidation reduction potential (ORP), specific conductivity, pH, and temperature. In addition, laboratory analysis of the samples for total organic carbon (TOC) will be conducted to evaluate potential residual effects of the HRC injection.

H&H will seek permission from the well owner to re-sample the *Frazier WSW* during the annual comprehensive ground water sampling event. Consistent with the previous supply well sampling, the collected water supply well sample will be analyzed for VOCs using EPA Method

8260B. For quality control purposes, a trip blank will accompany the water supply well sample which will also be analyzed for VOCs.

4.2 Quarterly Sampling

In accordance with DHEC's request, Delavan will continue to monitor the three wells in the HRC injection areas and the off-site Frazier water supply well on a quarterly basis (approximately three, six, and nine months following the comprehensive sampling event). Monitoring wells MW-1, MW-9, and MW-10 will be analyzed for VOCs by EPA Method 8260B (reporting the EPA Method 601 list only) and the geochemical parameters and TOC as described in the previous section.

Consistent with the initial water supply well sampling, the off-site Frazier WSW will be analyzed for VOCs using EPA Method 8260B during each quarterly monitoring event. For quality control purposes, a trip blank will accompany the water supply well sample and will also be analyzed for VOCs.

5.0 Data Compilation, Schedule and Reporting

Following DHEC's approval of this work plan, the installation of the three deeper Type III wells, and completion of the comprehensive monitoring event, H&H will prepare an assessment report which describes the method and results of ground water assessment activities conducted at the site since the last submittal in January 2007. The report will include a description of monitoring well installations, ground water sample locations, well construction records, boring logs, laboratory analytical results, tabular summaries of the data, ground water flow maps, figures depicting sample and well locations, figures depicting the extent of ground water impacts, cross-sections, and data evaluation.

A proposed schedule for completion of the activities outlined in this work plan is provided as Figure 8.

Table 1
Water Supply Well Inventory
Delavan Spray Technologies
Bamberg, South Carolina
H&H Job No. GDR-006

| WSW ID | Tax Parcel | Well Address | Owner Information | Well Use | Municipal Water Status |
|-------------|----------------|--|--|--------------|-----------------------------------|
| Frazier WSW | #0072-08-02-1 | 527 Log Branch Road Bamberg, SC 29003 | Lorraine Frazier 623 Calhoun Street Bamberg, SC 29003 (803) 245-4364 | All Purposes | Available. Water Account Inactive |
| Thomas WSW | #0072-08-02-16 | 589 Log Branch Road Bamberg, SC 29003 | Robert A. Thomas c/o Mamie Connelly 1450 Capernaum Road Bamberg, SC 29003 (803) 245-0555 | All Purposes | Available. No Water Account |

Notes:

Water supply wells are shown on Figure 2
 Information from on-site interview, Bamberg County Tax Assessor, and City of Bamberg Public Works

Table 2
Water Supply Well Analytical Summary
Delavan Spray Technologies
Bamberg, South Carolina
H&H Job No. GDR-006

| Sample ID Sample Date Units | Frazier WSW 1/12/2007 (μ g/l) | Thomas WSW 1/12/2007 (μ g/l) | DHEC MCL (μ g/l) |
|-----------------------------------|--|---|-----------------------------|
| <u>VOCs (8260B)</u> | | | |
| 1,2-Dichloroethane | <1.00 | 2.27 | 5 |
| cis-1,3-Dichloropropene | <1.00 | 1.14 | NS |
| trans-1,3-Dichloropropene | <1.00 | 1.91 | NS |
| Tetrachloroethene | <1.00 | 4.44 | 5 |
| 1,2,4-Trichlorobenzene | <1.00 | 2.00 | 70 |

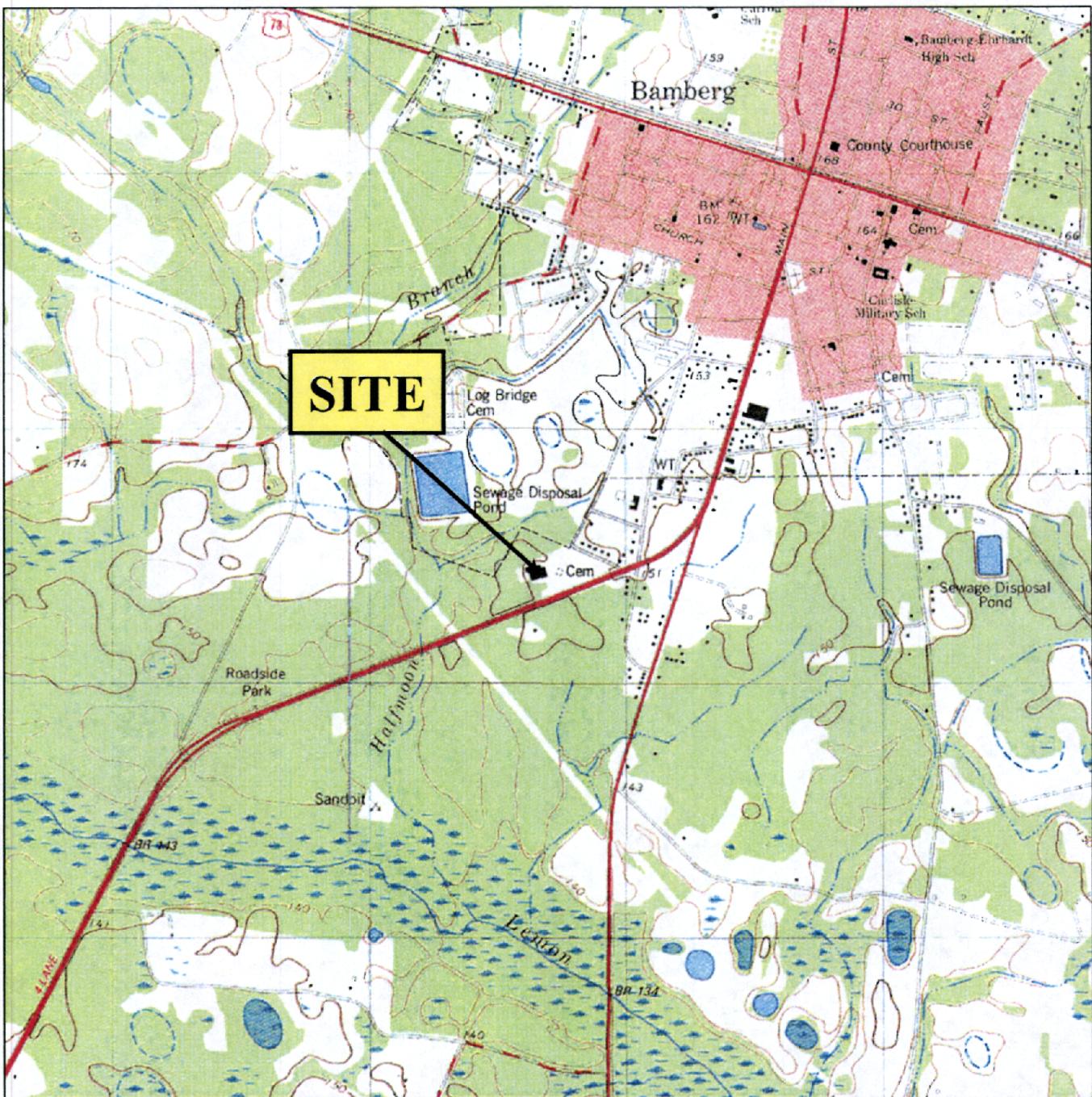
Notes:

Samples analyzed by EPA Method 8260B

Only analytes detected in at least one sample indicated above

MCL = DHEC Maximum Contaminant Level

NS = Not Specified



APPROXIMATE

0 2000 4000

SCALE IN FEET

U.S.G.S. QUADRANGLE MAP

BAMBERG, NC 1979 (PHOTO REVISED 1987)

QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE

SITE LOCATION MAP

PROJECT

DELAVAL SPRAY TECHNOLOGIES
BAMBERG, SOUTH CAROLINA

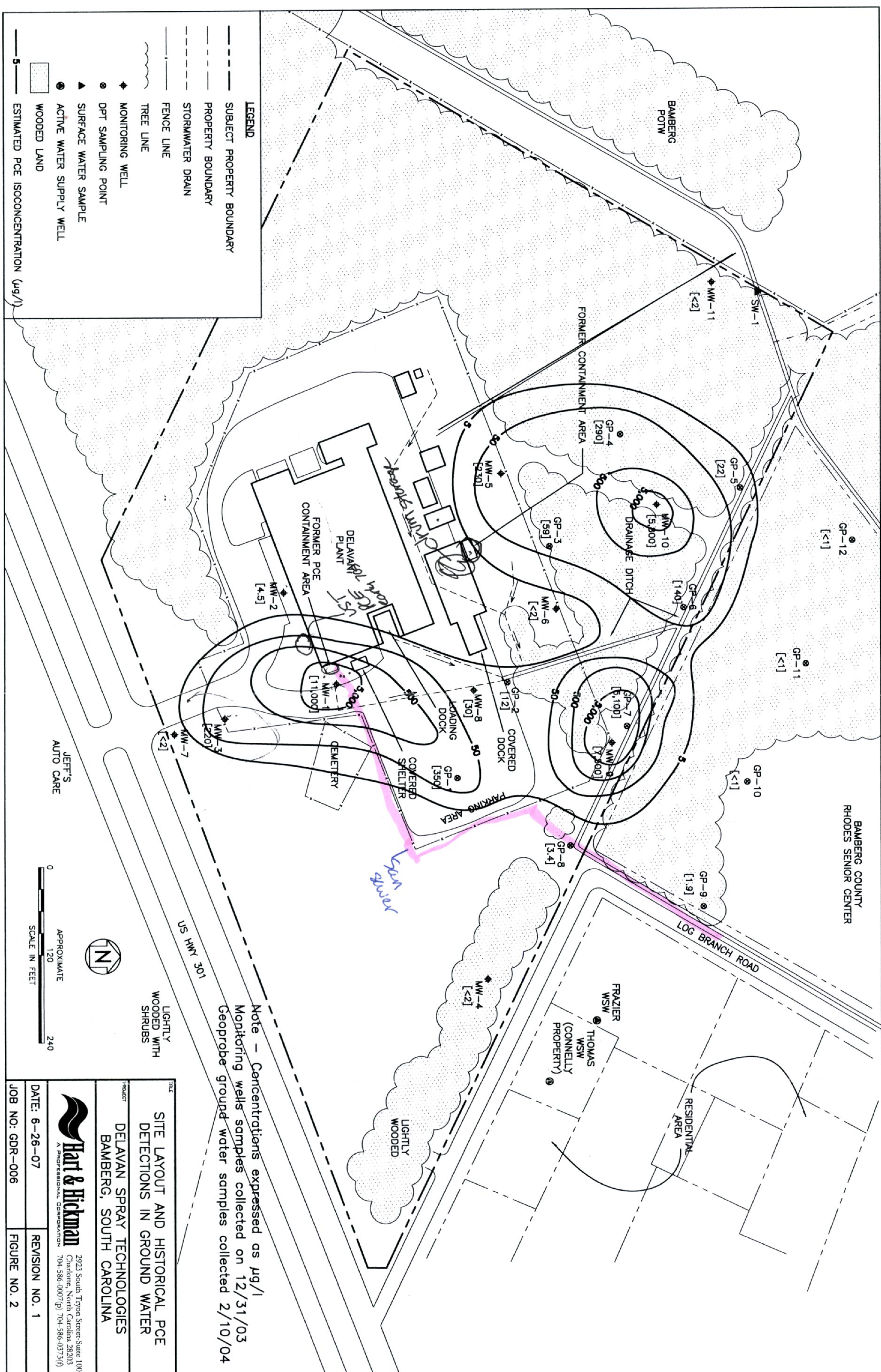


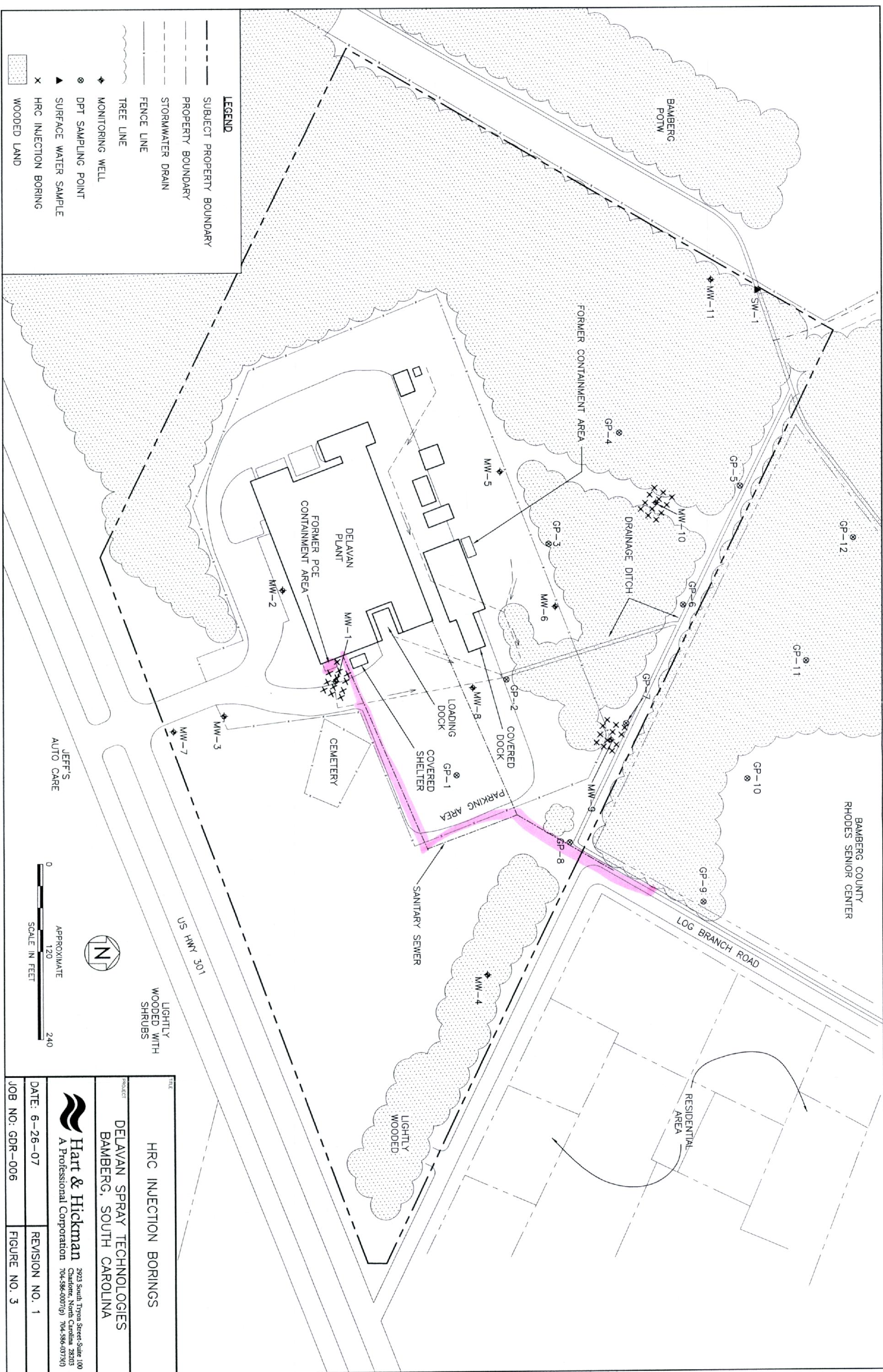
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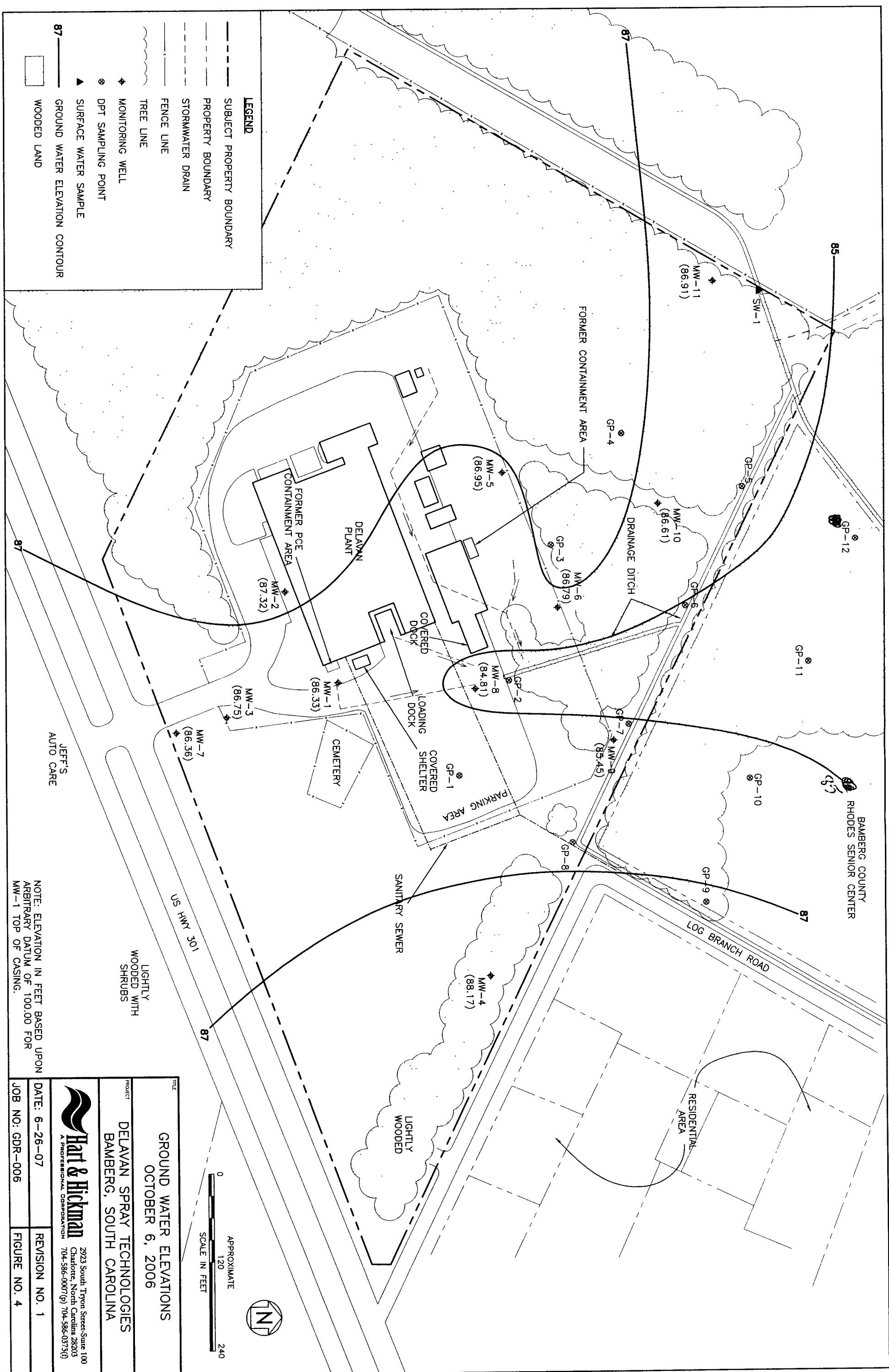
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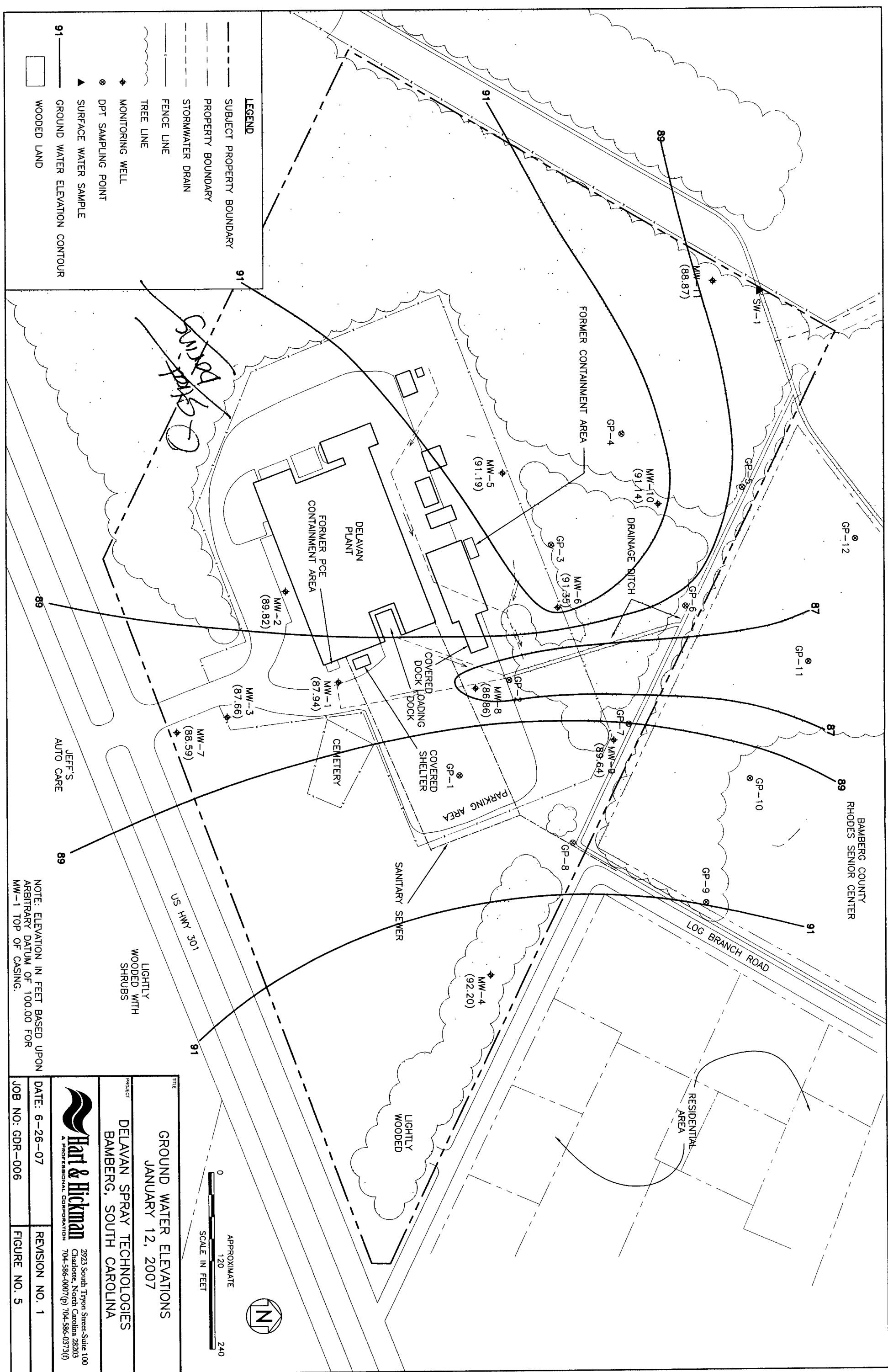
JOB NO: GDR-006 FIGURE NO: 1

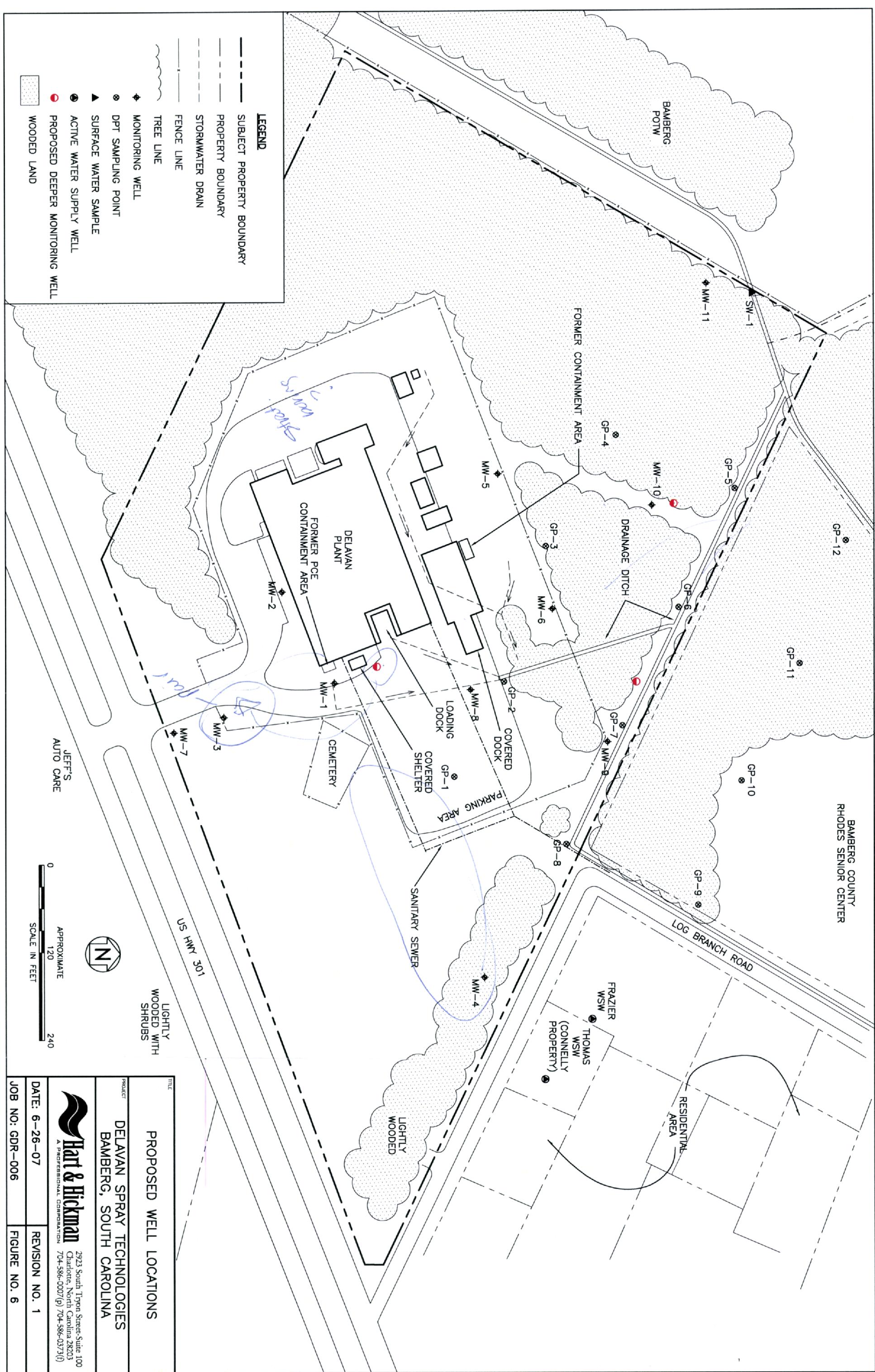


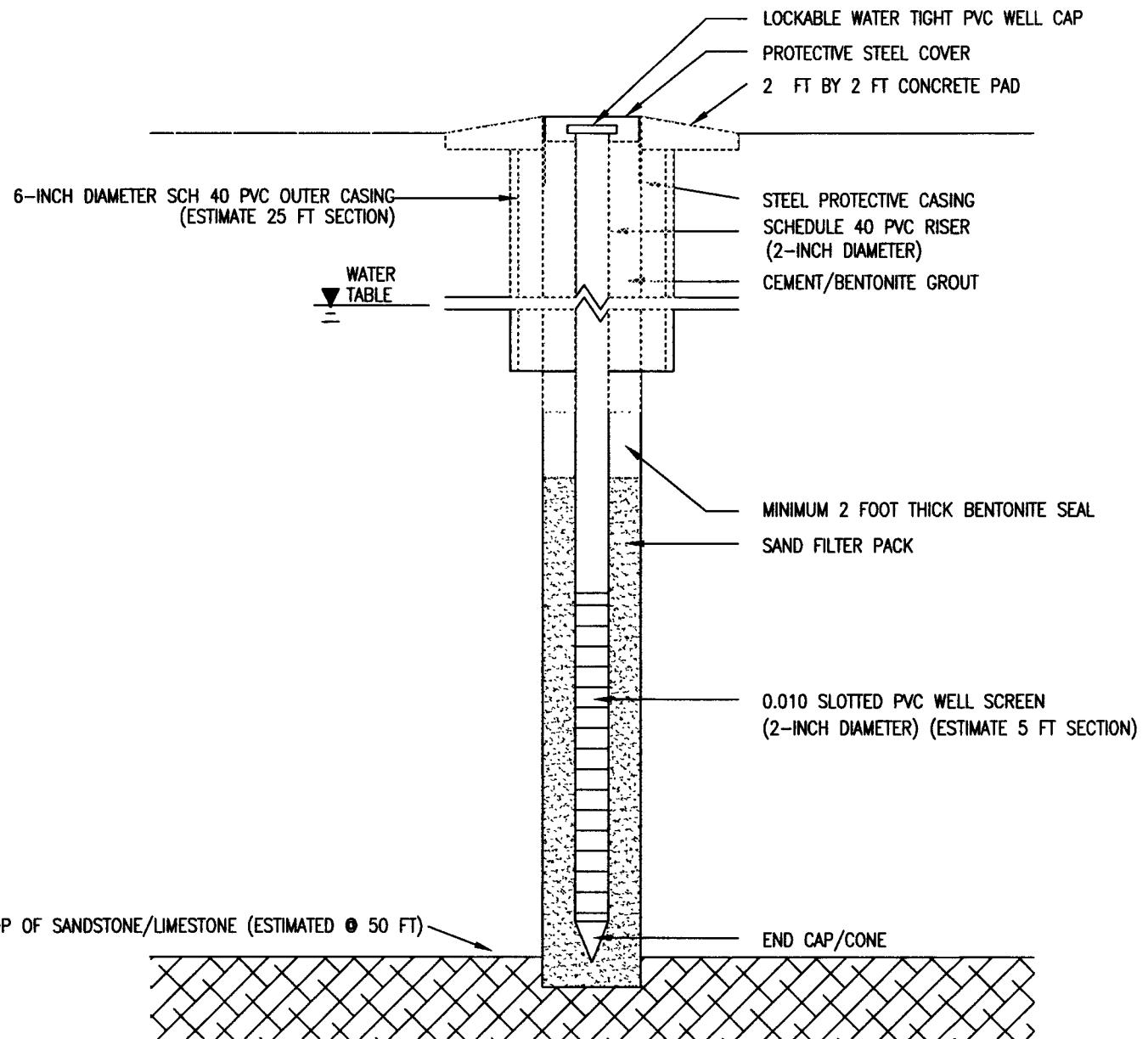




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| DATE: 6-26-07 | REVISION NO. 1 | |
| JOB NO: GDR-006 | FIGURE NO. 4 | |







NOT TO SCALE

| | |
|--|---|
| TITLE | |
| TYPICAL DEEPER TYPE III MONITOR WELL DIAGRAM | |
| PROJECT | DELAVAL SPRAY TECHNOLOGIES BAMBERG, SOUTH CAROLINA |
|  Hart & Hickman A Professional Corporation | |
| 2923 South Tryon Street, Ste 100 Charlotte, North Carolina (704)586-0007 (704)586-0373-fax | |
| DATE: 6-27-07 | REVISION NO. 0 |
| JOB NO: GDR-006 | FIGURE NO. 7 |

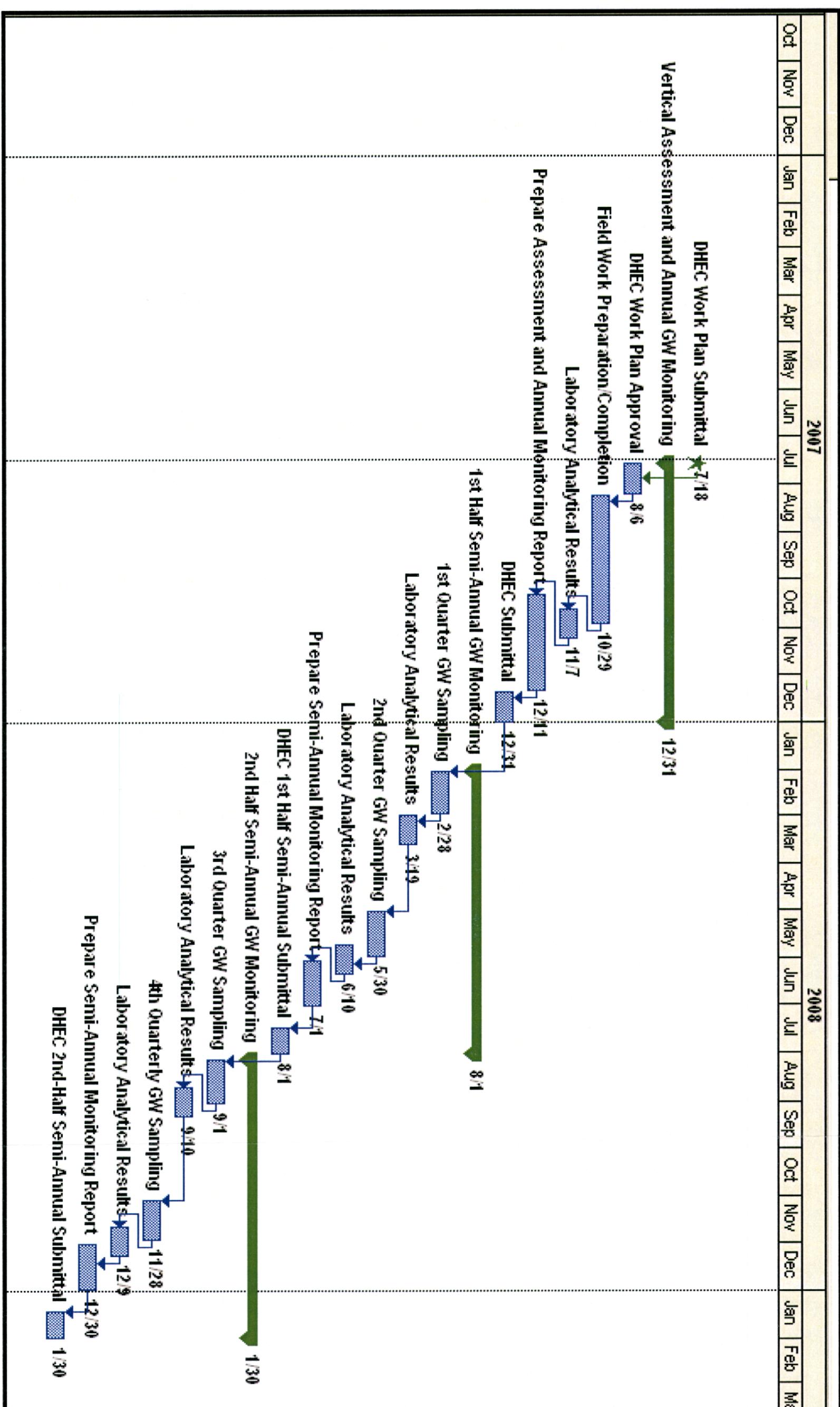


Figure 8: Schedule for Completion