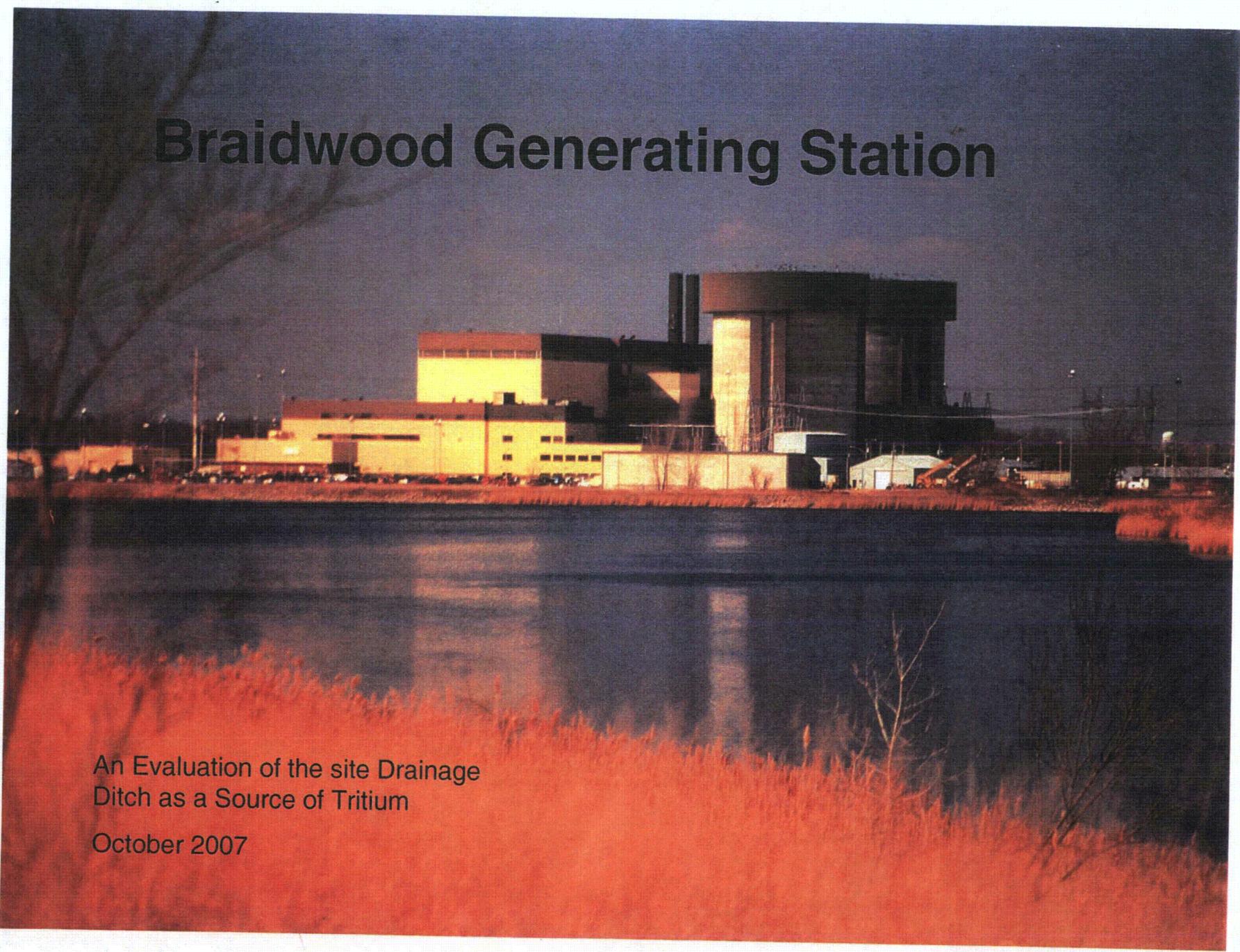


# Braidwood Generating Station



An Evaluation of the site Drainage  
Ditch as a Source of Tritium

October 2007

11/25/11

AN EVALUATION OF THE  
BRAIDWOOD STATION  
SITE DRAINAGE DITCH TO ACT  
AS A SOURCE OF TRITIUM IN LOCAL GROUNDWATER

Prepared by James Gosnell P.E., Exelon Engineering  
With review and comment by Conestoga-Rovers and Associates

October 2, 2007

## **1.0 Background**

The site drainage ditch enters the east side of Exelon property a block south of the intersection of Smiley Road and Cemetery Street. From there it flows west and is joined with a large feeder ditch that collects water from ditches along Center Street and Smiley road. The ditch turns northwest 1500 feet from the protected area and continues past the east side of the switchyard. It traverses under the access road just north of the security checkpoint and turns due west for 200 yards when directly north of the plant. This is the north most part of the ditch's travel. From there it turns southwest, paralleling route 53, until it reaches the station's western property line then south along the town of Godley. The ditch leaves Exelon property near the Main Cooling Pond spillway. The ditch profile and route are depicted on site structural drawings, S-151 and S-152 as well as CRA figure 1.2 from the Fleetwide Assessment, attached. In addition to surface runoff from the fields around the plant, the site drainage ditch accepts plant run off after being processed through one of the three on-site oil separators. On the west side of the property, the ditch also accepts runoff from the town of Godley.

Except during prolonged dry periods (drought), the ditch flows due to the intrusion of local groundwater because the site has a high water table (usually within 5 feet of the surface) and very porous sandy soil.

Just before the site drainage ditch passes the switchyard, it traverses an area contaminated with tritium from a spill from vacuum breaker 1 in 1996. This area has been a source of water and tritium into the ditch, just east of the switchyard, until the remedial groundwater pumping system was started in October 2006. Without remedial pumping, ground water in this area is typically higher than the bottom of the ditch so groundwater naturally flows into the ditch, taking tritium with it. Now, with remedial pumping, the water table is too low in this area to intersect the ditch.

In spring of 2006, Exelon installed a temporary weir across the site drainage ditch downstream of the Vacuum Breaker 1 plume area in an attempt to keep the plume from being drawn into the ditch. The weir height was chosen to be above the expected maximum water table elevation in the area of the plume. The concept was that the weir would hold back water in the site drainage ditch in the plume area and allow ground water and ditch water levels to equalize thereby reducing the inflow into the ditch. Upon installation, there was a gradual reduction in tritium concentration while flow from the area was arrested except for passing significant precipitation runoff. The weir was removed in the fall of 2006 after remedial pumping at the Vacuum Breaker 1 plume area depresses the water table and dried up the ditch.

In 2000, Exelon determined that groundwater usually flows into the ditch as it passes near Godley (west side of plant) except during periods of significant run off when the water in the ditch will momentarily feed the local water table. These arguments were first developed through studies made in response to litigation raised as the result of a diesel oil spill from the north oil separator. The study used hydraulic measurements as well as bank sampling to draw its conclusions. The study put to rest the assertion that

diesel fuel could have escaped the site drainage ditch near the town of Godley. These same findings were later extrapolated by the tritium team to apply to tritium transport along the entire ditch downstream of the plume near vacuum breaker 1. The extrapolation of these findings is valid for the ditch down stream of Godley since the ditch is excavated deeper into a rising water table. And, the observation of ground water entering the ditch east of the switchyard is an obvious indication of the ditch being excavated into the water table. Exelon did not however, have sufficient data to provide arguments that the north most part of the ditch, where the water table elevation is lowest, would also receive ground water.

## **2.0 Issue**

As part of the 95001 Inspection Process, the Inspectors reviewed Site Responses to NRC Questions on Braidwood Groundwater Tritium Reports dated 10/20/06. The Inspectors and the NRC Hydrogeologists commented on the response to question #4. Question #4 related to the site drainage ditch acting as a potential source of tritium into the groundwater.

The NRC stated they did not agree with the arguments and assumptions made in the response document without further evaluation of the ditch's ability to feed the shallow sand aquifer during high flow conditions especially in the northern part of the ditch where the local ground water migration is to the north. The NRC Hydrogeologists were not convinced that there is a static inward flow at the northern end solely based on observations and measurements made further downstream. The NRC requested that the Station to determine how much water could exit the ditch under high flow conditions.

In further discussions with the Region, we agreed that a specific modeling or evaluation of water leaving the ditch would be less rigorous than providing actual sample results from ground water collected in the area north of the site drainage ditch's north most travel. This area is chosen as a bounding case since it represents the lowest part of the water table. Ground water on the site flows northerly and therefore the groundwater elevation is lowest on the north part of the site. See the attached regional ground water contour maps. If water were to escape the ditch any where along its travel to the outfall, it will be at its northern end where the potential is greatest for the water table to be below the ditch invert. The regional northward flow has been confirmed by CRA repeatedly but most notably in the hydraulic monitoring being performed monthly for the remediation work around Exelon pond.

## **3.0 Investigation**

Since analysis or modeling of ground water transport out of the ditch is highly dependent on water table elevation, duration and intensity of precipitation, and tritium source concentration, the team elected to install wells on the northern bank of the site drainage ditch at its north most extent of travel. If tritium, in measurable concentration, had been escaping the ditch, it would be detected in the ground water. Wells were installed in three locations off the north bank. Sets of wells, consisting of a shallow well and a deep

well, were located approximately 20, 40, and 80 feet from the water's edge. See Figures 1 and 2 for location details. CRA (Conestoga-Rovers and Associates) and their drilling subcontractor installed and sampled the six wells around February 15, 2007. The wells were named DN-1, DN-1D, DN-2, DN-2D, DN-3, and DN-3D. Environmental Inc. performed the tritium analysis to an LLD of 200 pCi/L. All results were below the lab's LLD. See the attached lab report 2631 from Environmental Inc. for lab results. CRA sampled the wells again on March 12, 2007 as a confirmatory round. The results of this second round confirm that tritium is not migrating beyond the ditch in significant quantities. See the attached Environmental Inc. lab report 2636. A third round of samples taken on August 15, 2007 yielded similar results except for wells DN-2 and DN-3 which were slightly above 200. A fourth and final round of samples was collected on September 20, 2007. The lab reported (report 2706) that DN-3 had returned to less than LLD but now DN-1 and DN-2 were slightly above LLD. This can be interpreted as a manifestation of the sporadic and low-level effect that the ditch may be having on the local groundwater during the brief, dry summer period.

The sampling and analysis of the six wells provide compelling evidence that the ditch is not acting as a significant source of tritium. The small amounts detected in the August and September samples, will be easily diluted out to below 200 prior to reaching the site boundary. During the Characterization phase of the tritium project at Braidwood, Conestoga-Rovers and Associates performed several modeling scenarios for more highly concentrated sources, up to one million pCi/L. Extrapolating the results of these models, demonstrates that the aquifer can dilute out these small detections within a hundred feet of the wells.

In addition to the sampling presented above, the team also contracted CRA and Atwell Hicks to provide groundwater elevation, ditch invert, and ditch water level measurements. The results of these measurements show that, in February, the water level in the ditch was lower than the local water level in the wells. This means that the ground water was flowing into the ditch at the north most extent of travel and therefore could not be allowing water to be escaping from the ditch. These measurements were repeated in August 2007 with slightly different results.

The August measurements were taken on the day after a rainfall. The Morris Illinois weather reporting station recorded 0.32 inches of rain on August 14 ([www.wunderground.com](http://www.wunderground.com)). The rain caused an ephemeral increase in ditch water level (as well as dilution) so that when measurements were taken the next day, the ditch water level was slightly above the local water table. This is an expected condition. It is not known the exact time that the runoff passed the ditch and water levels returned to normal however, the measured local water table remained higher than the ditch invert. This means that, since the ditch slopes continuously to the outfall, ground water would resume its inward flow once the run off left the ditch.

The water table at the 6 DN wells recorded in August had an average 0.64 feet of level decrease from the February reading. This drop was not enough however to reduce the water table below the invert of the ditch (588.0) therefore the ditch will continue to

intercept ground water at this location as long as there is no significant runoff from rainfall. See Figure 3 and Table 1 for graphical and tabular details (the August data is not graphed). These observations and conclusion are however, secondary to the sampling analysis, since a drought could lower the water table below the ditch invert and allow water in the ditch to escape.

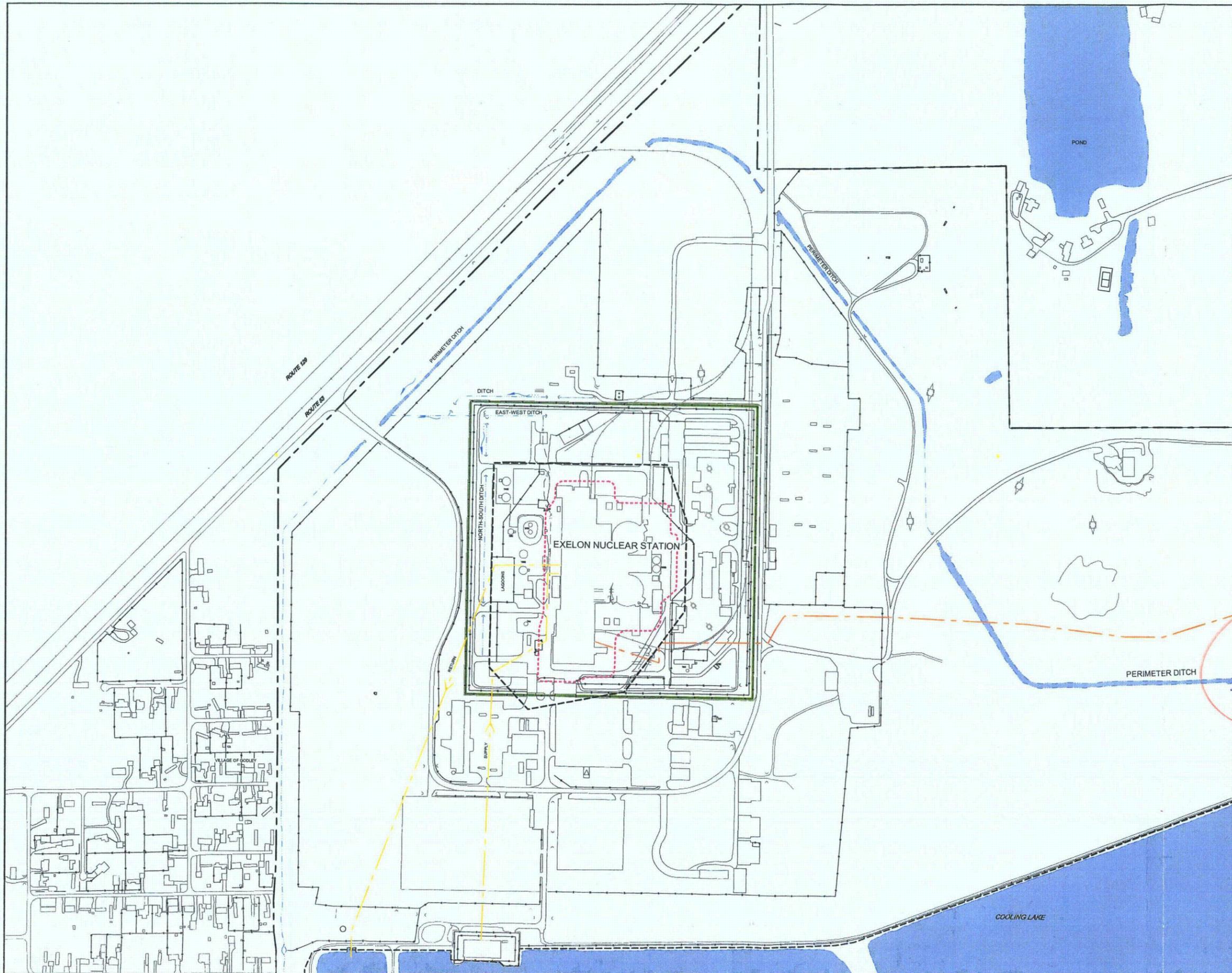
Other qualitative arguments could be made for a minimal potential for the ditch to feed tritium into the groundwater with either high water levels in the ditch or low groundwater levels. With high water levels (large volume of runoff) in the ditch, there would be significant dilution of any tritium present. With low groundwater levels, the leaching of the tritium near VB-1 into the ditch would also be reduced. These qualitative arguments only supplement the results of sampling. Finally, the potential for feeding tritium into the ditch is being removed through active remediation of the Vacuum Breaker 1 site.

#### **4.0 Conclusions**

- Sampling and analysis performed in February, March, August and September of 2007 confirmed that the site drainage ditch has not fed a significant amount of tritium into the aquifer at the north end of the site, the most likely area to receive water from the ditch.
- With the implementation of remediation at the Vacuum Breaker 1 site, the last known source of tritium into the ditch is being removed. (Prior to remedial actions, the Vacuum Breaker 1 plume was able to feed water into the ditch at 1000 pCi/L.)
- Since the ditch is excavated deeper into the water table as it passes the town of Godley, there is even less likelihood that detectable tritium could be found outside the confines of the drainage ditch.
- With the self-cleaning nature of the ditch, the removal of the last known source, and ongoing ditch monitoring, the future potential for introducing tritium into the aquifer by this path is virtually eliminated.

**Ditch Profile  
& Plan**

---



**LEGEND**

- EXISTING FENCE LINE
- - - - - BLOWDOWN LINE
- APPROXIMATE PROPERTY BOUNDARY
- PROTECTED AREA
- SLURRY WALL
- - - - - LIMIT OF FORMER EXCAVATION
- - - - - STORMWATER SEWER
- SURFACE WATER FLOW DIRECTION

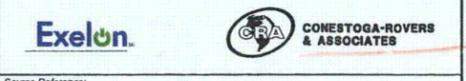
SECURITY-RELATED INFORMATION  
 WITHHOLD FROM PUBLIC DISCLOSURE  
 UNDER 10 CFR 2.390 AND  
 5 ILCS 140/7(1)(a) & (m)

SCALE VERIFICATION  
 THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

EXELON GENERATION COMPANY, LLC

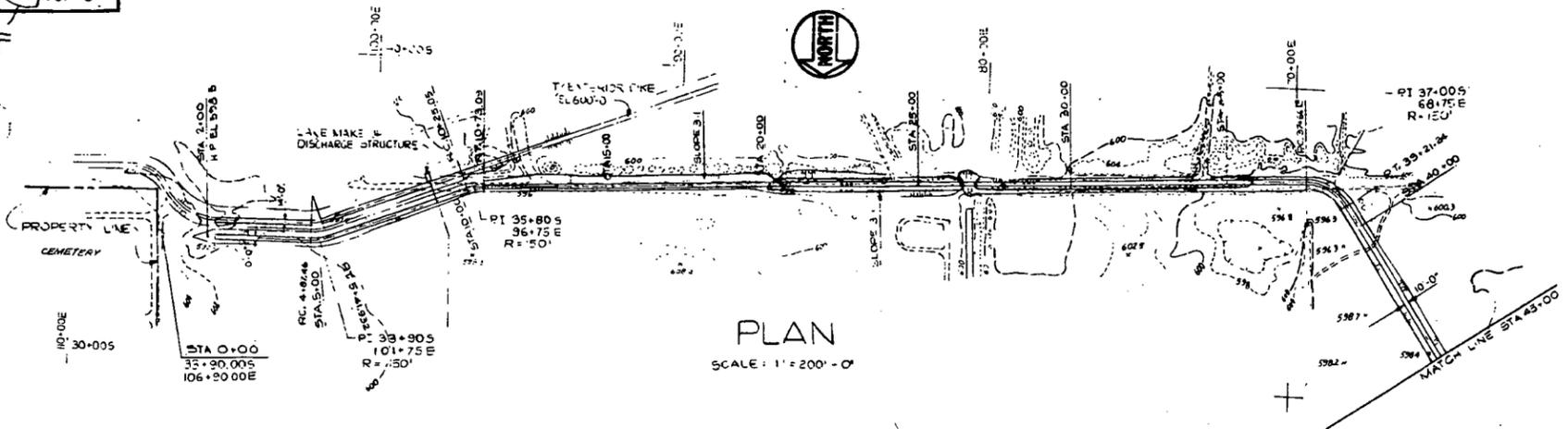
FLEETWIDE ASSESSMENT

STATION BOUNDARIES AND FEATURES  
 BRAIDWOOD GENERATING STATION  
 BRACEVILLE, ILLINOIS

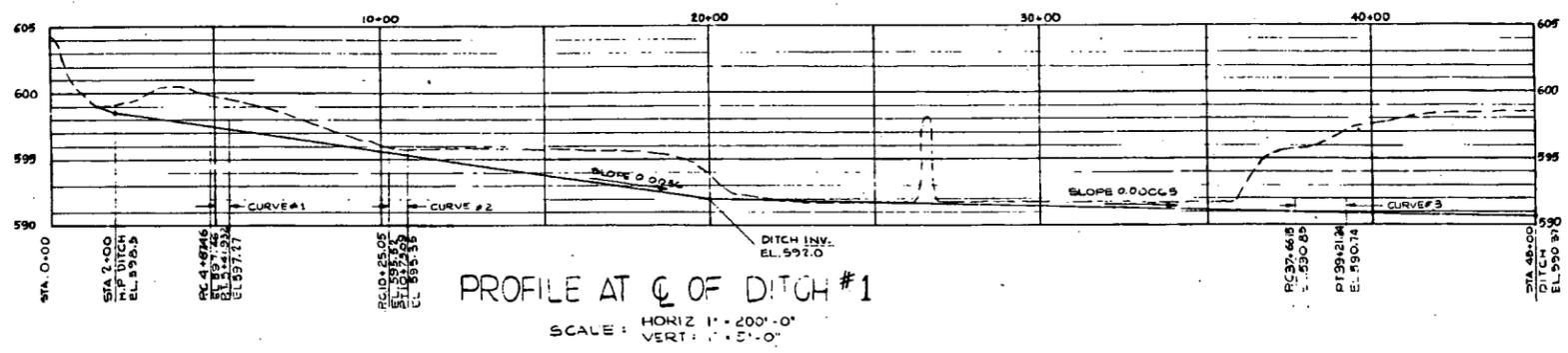


Source Reference:

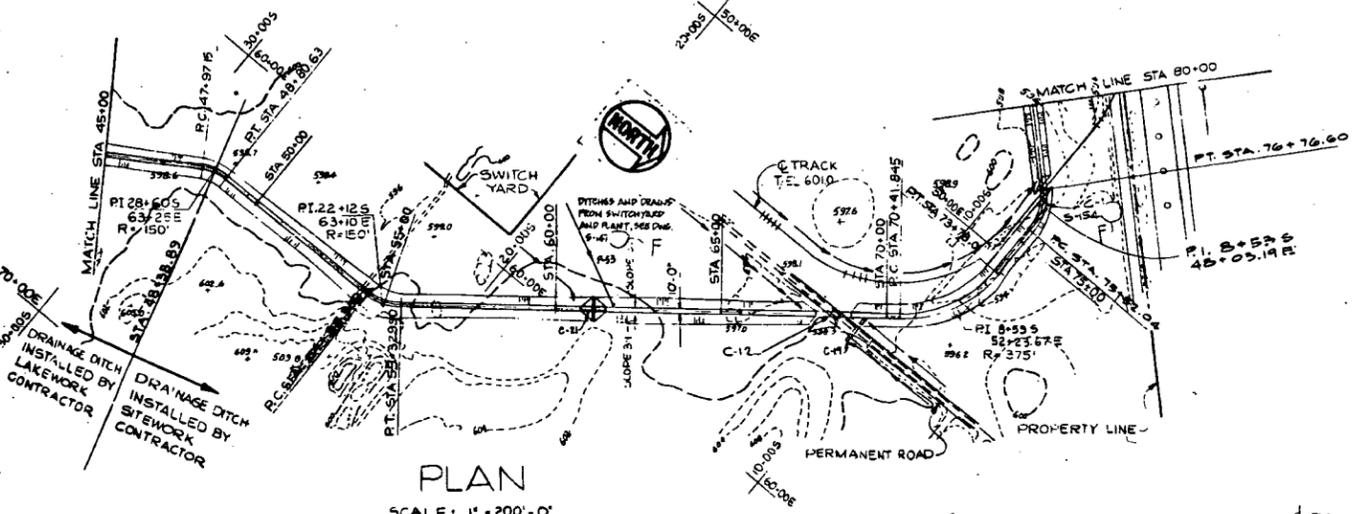
|                               |                          |                           |
|-------------------------------|--------------------------|---------------------------|
| Project Manager:<br>S. OUGLEY | Reviewed By:<br>M. KELLY | Date:<br>AUGUST 2006      |
| Scale:<br>AS SHOWN            | Project No:<br>45136-20  | Report No:<br>012         |
|                               |                          | Drawing No:<br>figure 1.2 |



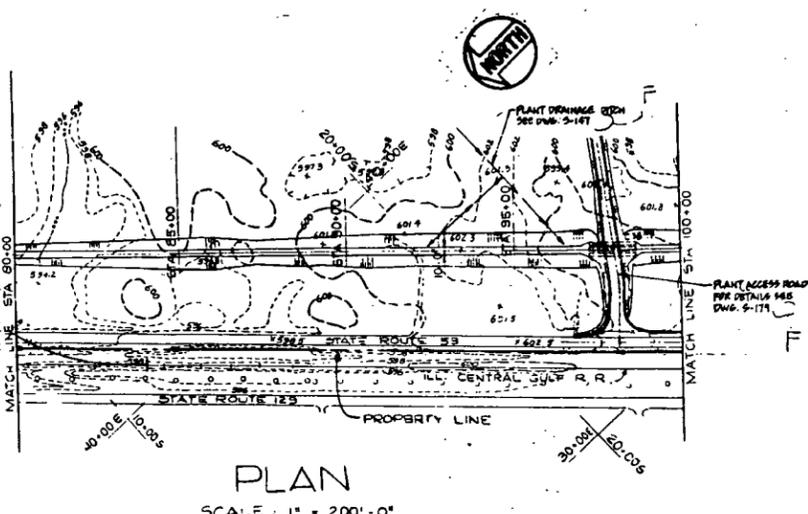
PLAN  
SCALE: 1" = 200'-0"



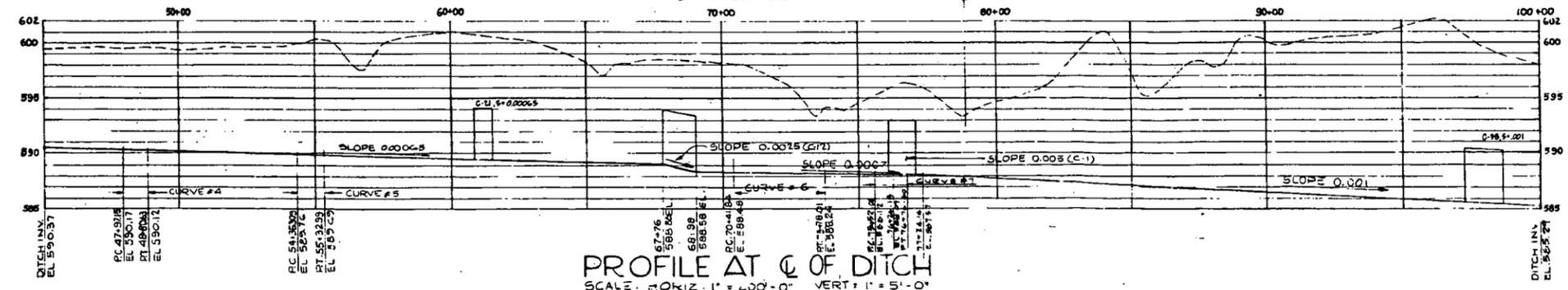
PROFILE AT Q OF DITCH #1  
SCALE: HORIZ 1" = 200'-0"  
VERT: 1" = 5'-0"



PLAN  
SCALE: 1" = 200'-0"



PLAN  
SCALE: 1" = 200'-0"



PROFILE AT Q OF DITCH  
SCALE: HORIZ 1" = 200'-0"  
VERT: 1" = 5'-0"

- NOTES**
- FOR LAKEWOOD GENERAL NOTES SEE DWG. S-59
  - ALL EARTHWORK SHOWN ON THIS DRAWING SHALL BE IN ACCORDANCE WITH JOB SPEC L-2879 UNLESS OTHERWISE NOTED.
  - ALL OTHER EARTHWORK SHOWN ON THIS DRAWING SHALL BE IN ACCORDANCE WITH JOB SPEC L-2714

- REFERENCE DRAWINGS**
- S-41 BRAIDWOOD LAKE EXCAVATION FULL SHEET 2
  - S-42 BRAIDWOOD LAKE EXCAVATION FULL SHEET 3
  - S-43 BRAIDWOOD LAKE EXCAVATION FULL SHEET 4
  - S-32 EXTERIOR DIKE PROFILE BRAIDWOOD LAKE SH 15
  - S-17M MISC BRAIDWOOD SITEWORK, PUMP STATION & PAVING PLAN SHEET 1
  - S-14T PLANT AREA DRAINAGE PLAN

THIS DWG. SUPERSEDED  
DWG. S-151-BR REV. F  
DATE: 7-16-87

| REV. | SPEC. NO. | DATE     | DRAWN       | CHECKED     | ENGR. APPROVAL | DESCRIPTION                           |
|------|-----------|----------|-------------|-------------|----------------|---------------------------------------|
| A    | L-2714    | 8-29-74  | [Signature] | [Signature] | [Signature]    | FOR BID SPEC. L-2879                  |
| B    | L-2714    | 9-25-75  | [Signature] | [Signature] | [Signature]    | REV. PERMANENT DITCH PROFILE AND PLAN |
| C    | L-2879    | 11-2-76  | [Signature] | [Signature] | [Signature]    | REV. ADD. 1                           |
| D    | L-2714    | 2-24-76  | [Signature] | [Signature] | [Signature]    | REVISED FOR CONSTRUCTION              |
| E    | L-2879    | 10-6-76  | [Signature] | [Signature] | [Signature]    | FOR CONSTRUCTION                      |
| F    | L-2879    | 09-07-79 | [Signature] | [Signature] | [Signature]    | ADDED PROJECT NO. FOR RECORD          |

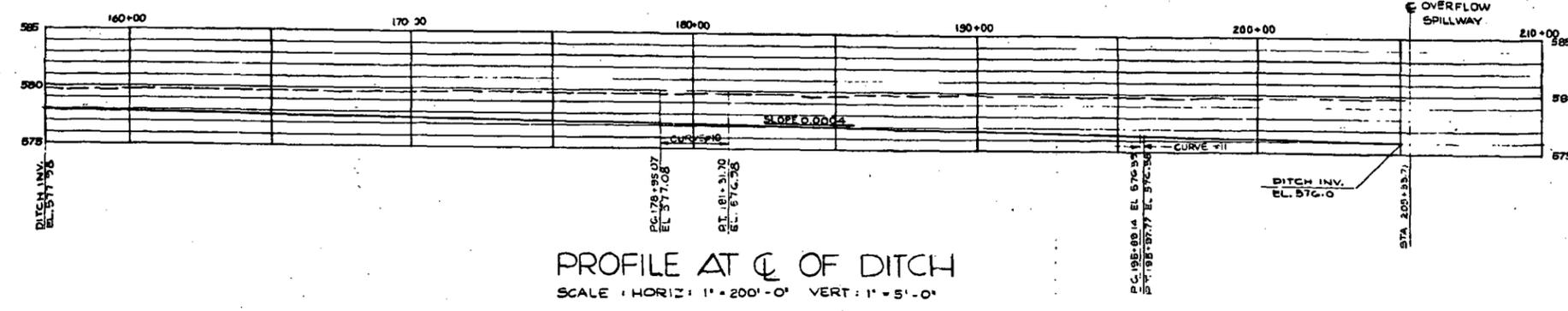
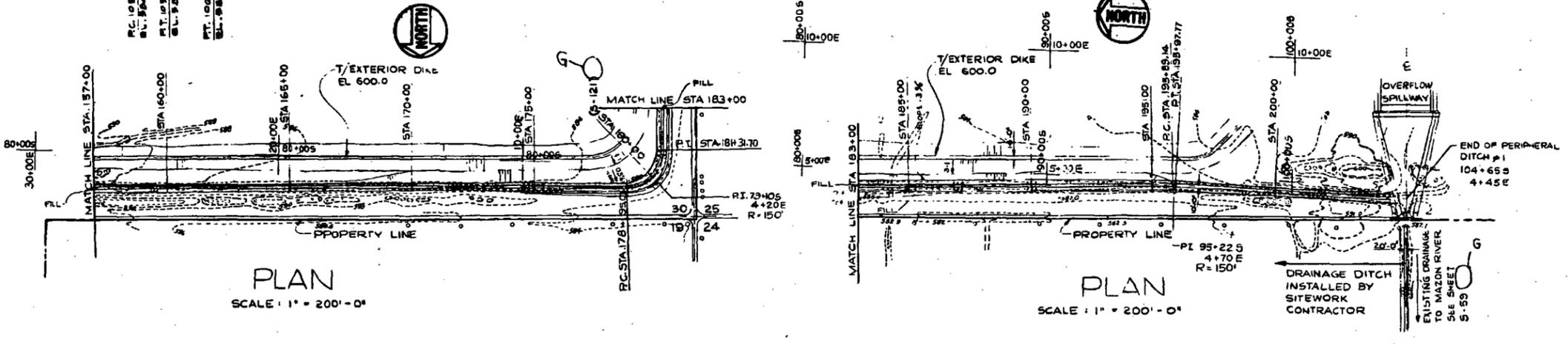
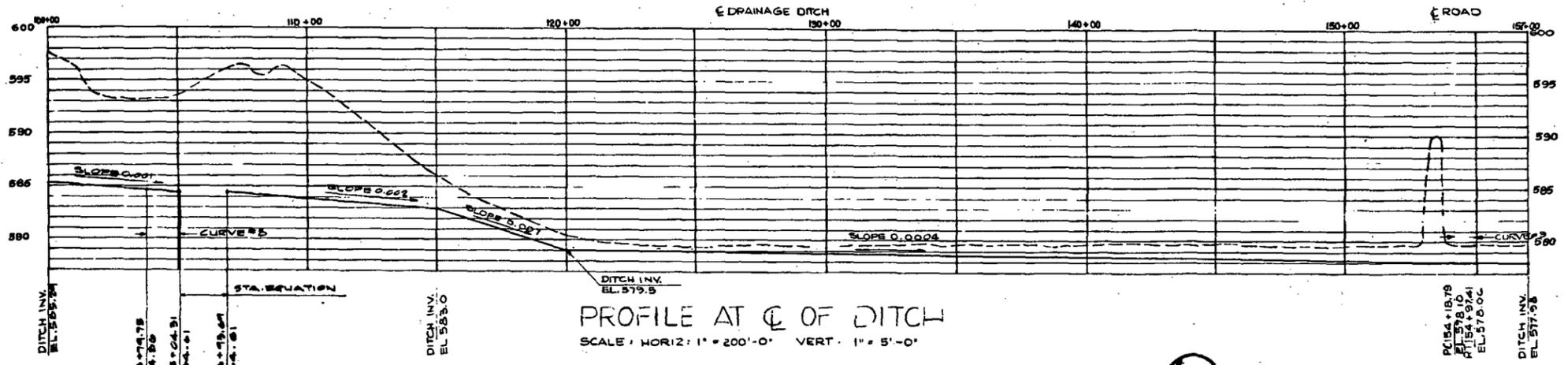
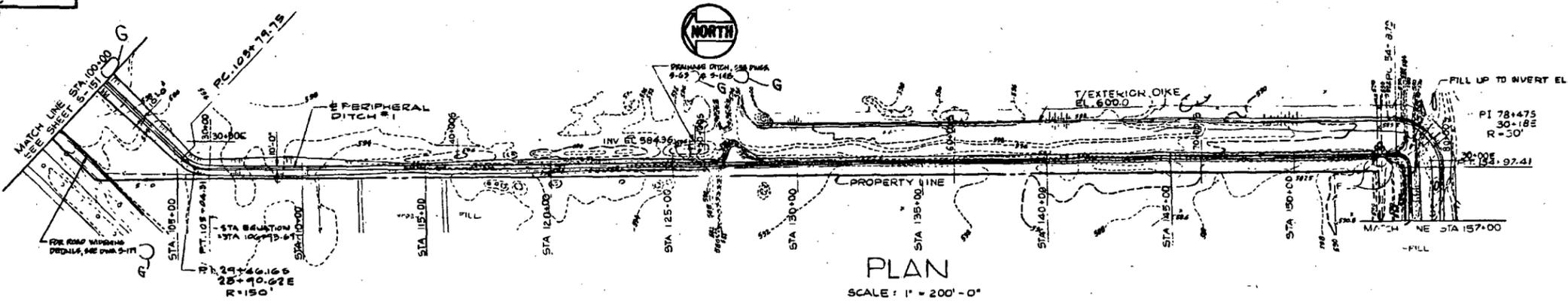
| REV. | SPEC. NO. | DATE     | DRAWN       | CHECKED     | ENGR. APPROVAL | DESCRIPTION   |
|------|-----------|----------|-------------|-------------|----------------|---|
| E    | L-2714    | 10-16-88 | [Signature] | [Signature] | [Signature]    | RECORD ONE - LIMITED BACKGROUND, ADDED REF. DWG.  |
| F    | L-2714    | 7-16-87  | [Signature] | [Signature] | [Signature]    | RECORD TWO - ALL REVISIONS PRIOR TO REV. F WERE ISSUED UNDER S-151-BR, DELETED SUFFICES |



A. JASUNAS AS SHOWN  
DRAWN BY [Signature]  
CHECKED BY [Signature]  
ENGR. APPROVAL [Signature]  
DATE 8-25-85

PROJECT NUMBER: 4683-24  
DATE: 8-24-85  
PERIPHERAL DITCH PROFILE  
SHEET 1  
BRAIDWOOD STATION UNITS 1 & 2  
COMMONWEALTH LIDSON CO.  
CHICAGO, ILLINOIS

**SARGENT & LUNDY**  
ENGINEERS  
CHICAGO  
DRAWING NO. S-151 OF F  
REV. F



**NOTES**

- FOR SITEWORK GENERAL NOTES SEE DWG S-148
- ALL EARTHWORK SHOWN ON THIS DRAWING SHALL BE IN ACCORDANCE WITH JOB SPECIFICATION L-2714 UNLESS OTHERWISE NOTED.

**REFERENCE DRAWINGS**

- S-63 BRAIDWOOD LAKE EXCAVATION & FILL SHEET 4
- S-67 BRAIDWOOD LAKE EXCAVATION & FILL SHEET 5
- S-78 EXTERIOR DIKE PROFILE BRAIDWOOD LAKE SHEET 1
- S-79 EXTERIOR DIKE PROFILE BRAIDWOOD LAKE SHEET 2
- S-80 EXTERIOR DIKE PROFILE BRAIDWOOD LAKE SHEET 3
- S-171 MISCELLANEOUS SITEWORK, FURNISH GRADES & FINISH PLANS SHEET 3
- S-148 CONSTRUCTION AREA DRAINAGE PLAN

THIS DRAWING SUPERSEDES  
DWG. S-152-BR REV. G  
DATE: 7-16-87

| DRAWING RELEASE RECORD |           |          |       |         | DRAWING RELEASE RECORD |                                     |      |      |           |          |       |         |                |  |      |
|------------------------|-----------|----------|-------|---------|------------------------|-------------------------------------|------|------|-----------|----------|-------|---------|----------------|--|------|
| REV.                   | SPEC. NO. | DATE     | DRAWN | CHECKED | ENGR. APPROVAL         | DESCRIPTION                         | FILM | REV. | SPEC. NO. | DATE     | DRAWN | CHECKED | ENGR. APPROVAL | DESCRIPTION  | FILM |
|                        |           | 9-30-74  |       |         |                        | FOR BID SPEC L-2879                 |      |      |           |          |       |         |                | ADDED PROJECT NO. FOR RECORD                       |      |
| A                      | L-2714    | 8-29-75  |       |         |                        | FOR CONSTRUCTION                    |      | E    | L-2879    | 08-07-79 |       |         |                | ISSUED UNDER S-152-BR, DELETED SUFFIXES            |      |
| B                      | L-2714    | 4-25-76  |       |         |                        | REV. PERIPHERAL DITCH PROFILE PLANS |      | F    | L-2712    | 10-10-83 |       |         |                | RECORDED DWG. - ALL REVISIONS PRIOR TO REV. G WERE |      |
| C                      | L-2714    | 11-17-79 |       |         |                        | REVISED FOR CONSTRUCTION            |      | G    | L-2714    | 7-16-87  |       |         |                | ISSUED UNDER S-152-BR, DELETED SUFFIXES            |      |
| D                      | L-2714    | 2-24-76  |       |         |                        | REVISED FOR CONSTRUCTION            |      |      |           |          |       |         |                |  |      |
| E                      | L-2879    | 08-07-79 |       |         |                        | FOR CONSTRUCTION                    |      |      |           |          |       |         |                |  |      |

CATEGORY II



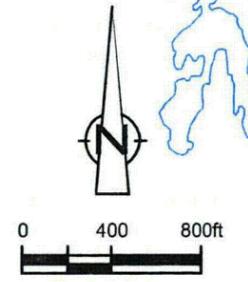
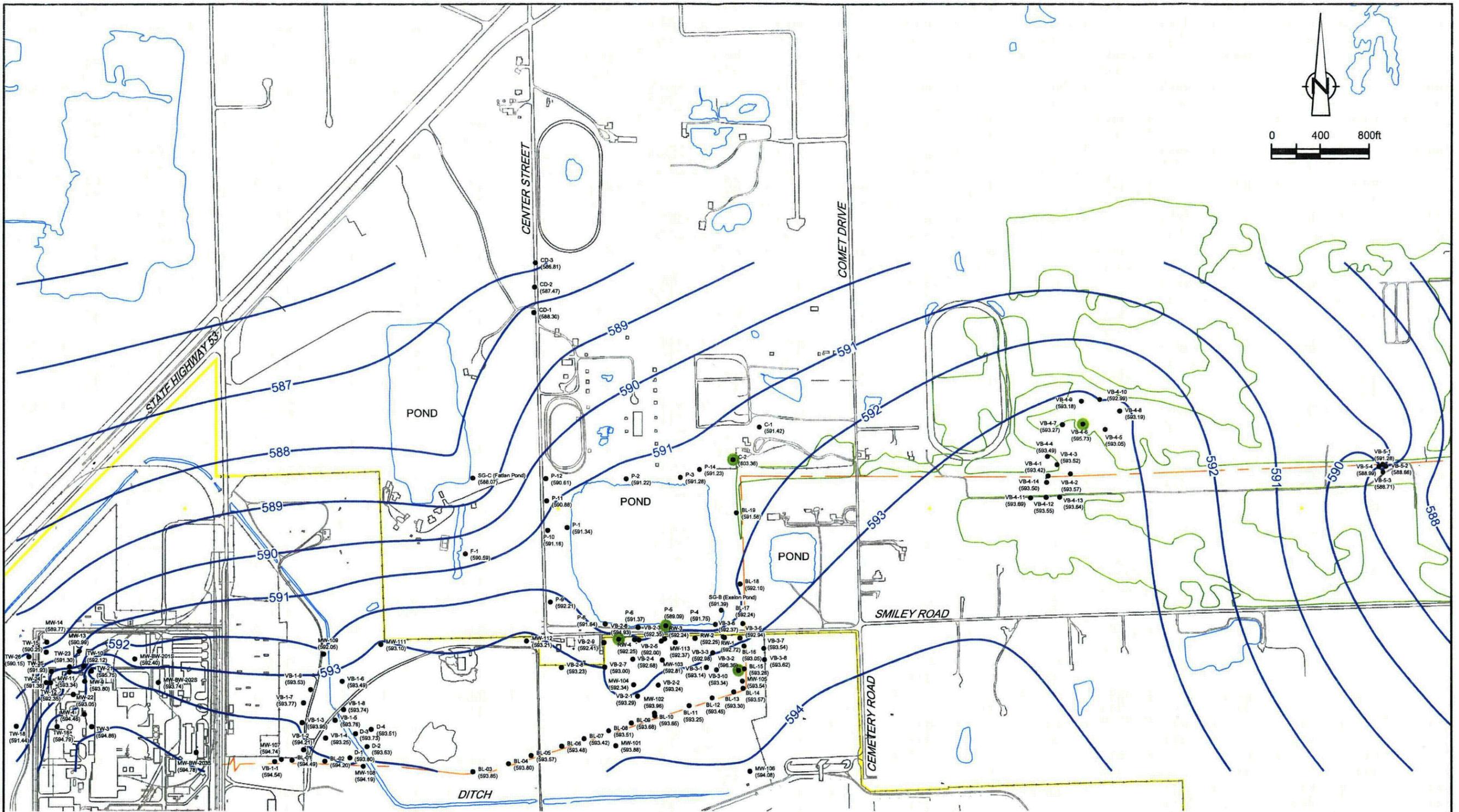
A. JABUNAS AS SHOWN  
 DRAWN: [Signature]  
 CHECKED: [Signature]  
 ENGINEER: [Signature]  
 DATE: 8-28-75

PROJECT NUMBER  
 SCALE: 4683-241  
 DATE: 4684-04

PERIPHERAL DITCH PROFILE  
 SHEET 2  
 BRAIDWOOD STATION UNITS 1 & 2  
 COMMONWEALTH EDISON CO.  
 CHICAGO, ILLINOIS

**SARGENT & LUNDY**  
 ENGINEERS  
 CHICAGO  
 DRAWING NO. G-9-152  
 REV. G

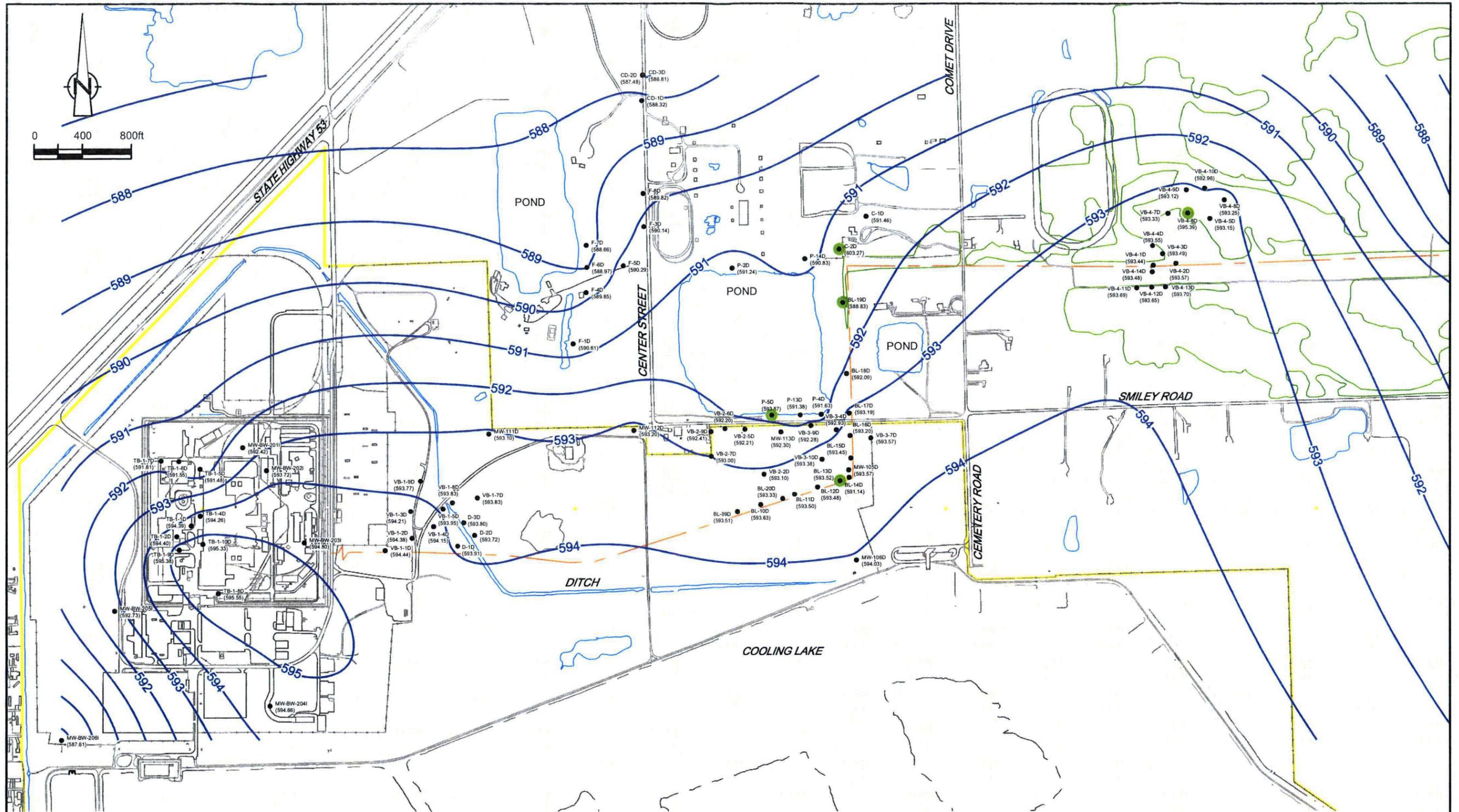
**Regional  
Groundwater  
Contours**



**LEGEND**

- PROPERTY BOUNDARY
- BLOWDOWN LINE
- 593 GROUNDWATER CONTOUR
- MW-108 MONITORING WELL LOCATION
- (594.19) GROUNDWATER ELEVATION (ft AMSL)
- NOT USED FOR CONTOURING

figure 2.1  
**OBSERVED GROUNDWATER CONTOURS  
 SHALLOW ZONE (WEST) - MAY 2006**  
**EXELON GENERATION - BRAIDWOOD STATION**  
*Braceville, Illinois*



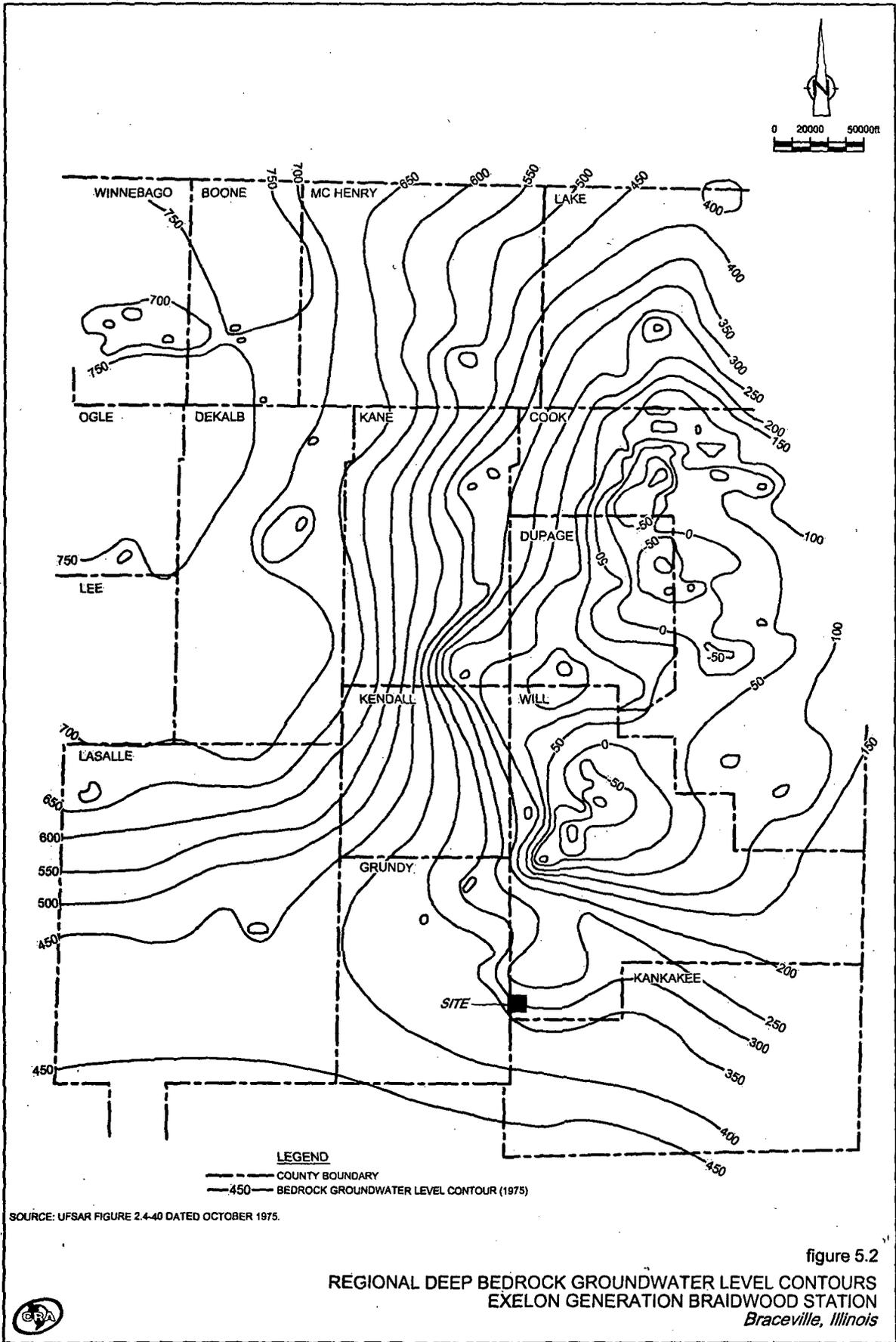
**LEGEND**

- PROPERTY BOUNDARY
- BLOWDOWN LINE
- 593 GROUNDWATER CONTOUR
- MONITORING WELL LOCATION
- GROUNDWATER ELEVATION (ft AMSL)
- NOT USED FOR CONTOURING

figure 2.3

OBSERVED GROUNDWATER CONTOURS  
 DEEP ZONE (WEST) - MAY 2006  
 EXELON GENERATION - BRAIDWOOD STATION  
 Braceville, Illinois





**Ditch Figures**

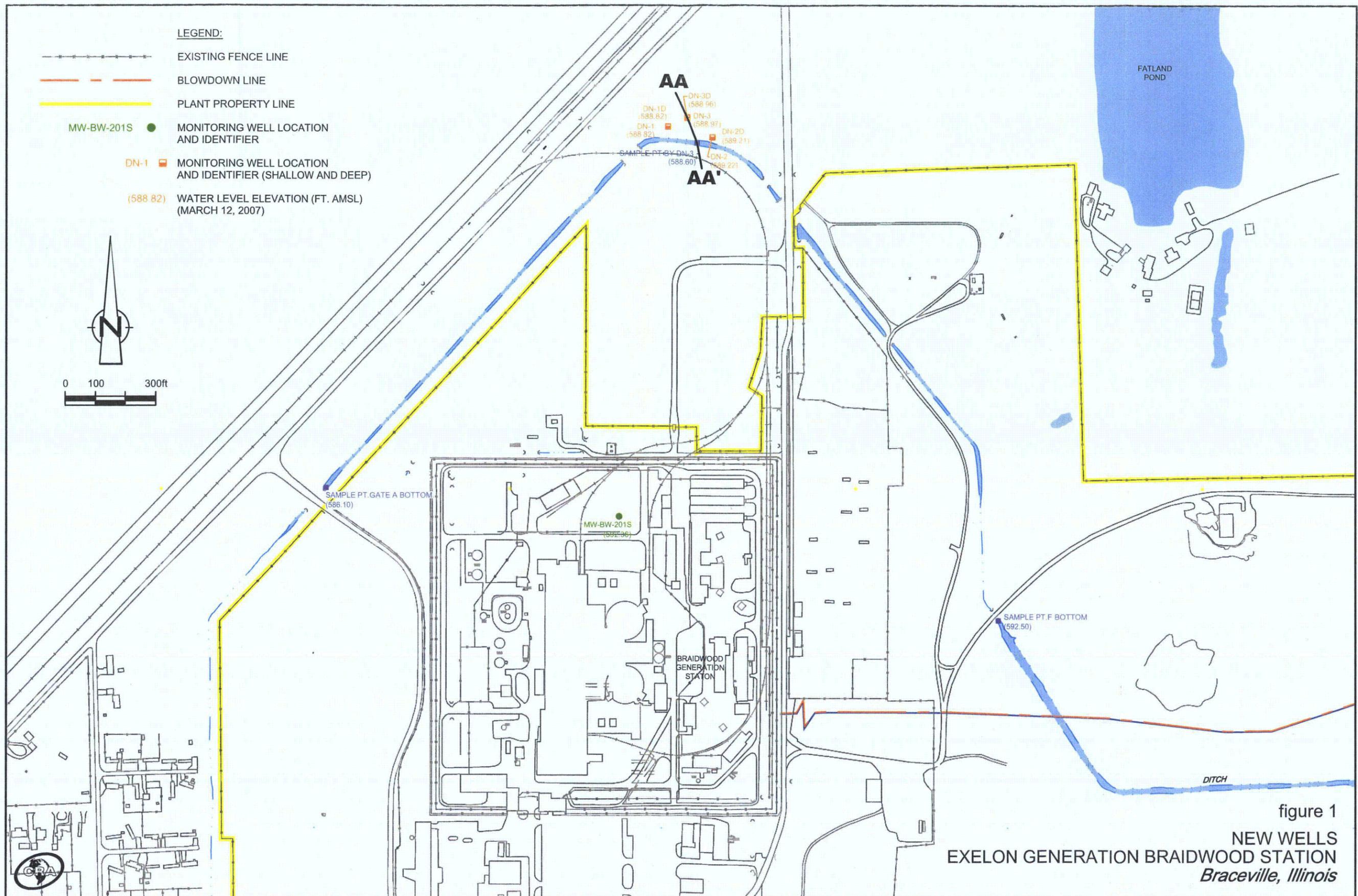
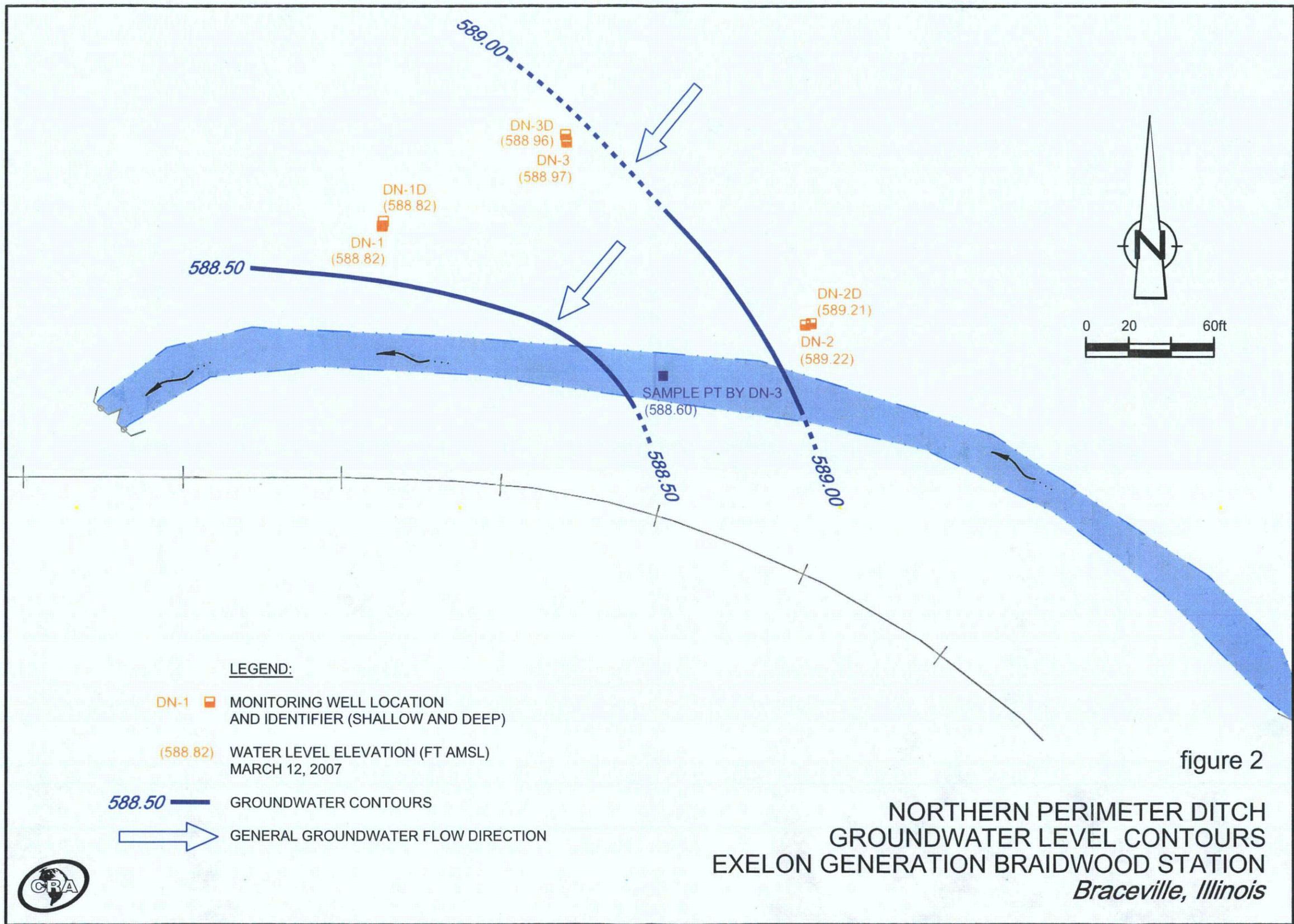


figure 1  
 NEW WELLS  
 EXELON GENERATION BRAIDWOOD STATION  
 Braceville, Illinois



**LEGEND:**

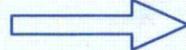
- DN-1  MONITORING WELL LOCATION AND IDENTIFIER (SHALLOW AND DEEP)
- (588.82) WATER LEVEL ELEVATION (FT AMSL) MARCH 12, 2007
- 588.50  GROUNDWATER CONTOURS
-  GENERAL GROUNDWATER FLOW DIRECTION

figure 2

**NORTHERN PERIMETER DITCH  
GROUNDWATER LEVEL CONTOURS  
EXELON GENERATION BRAIDWOOD STATION  
Braceville, Illinois**



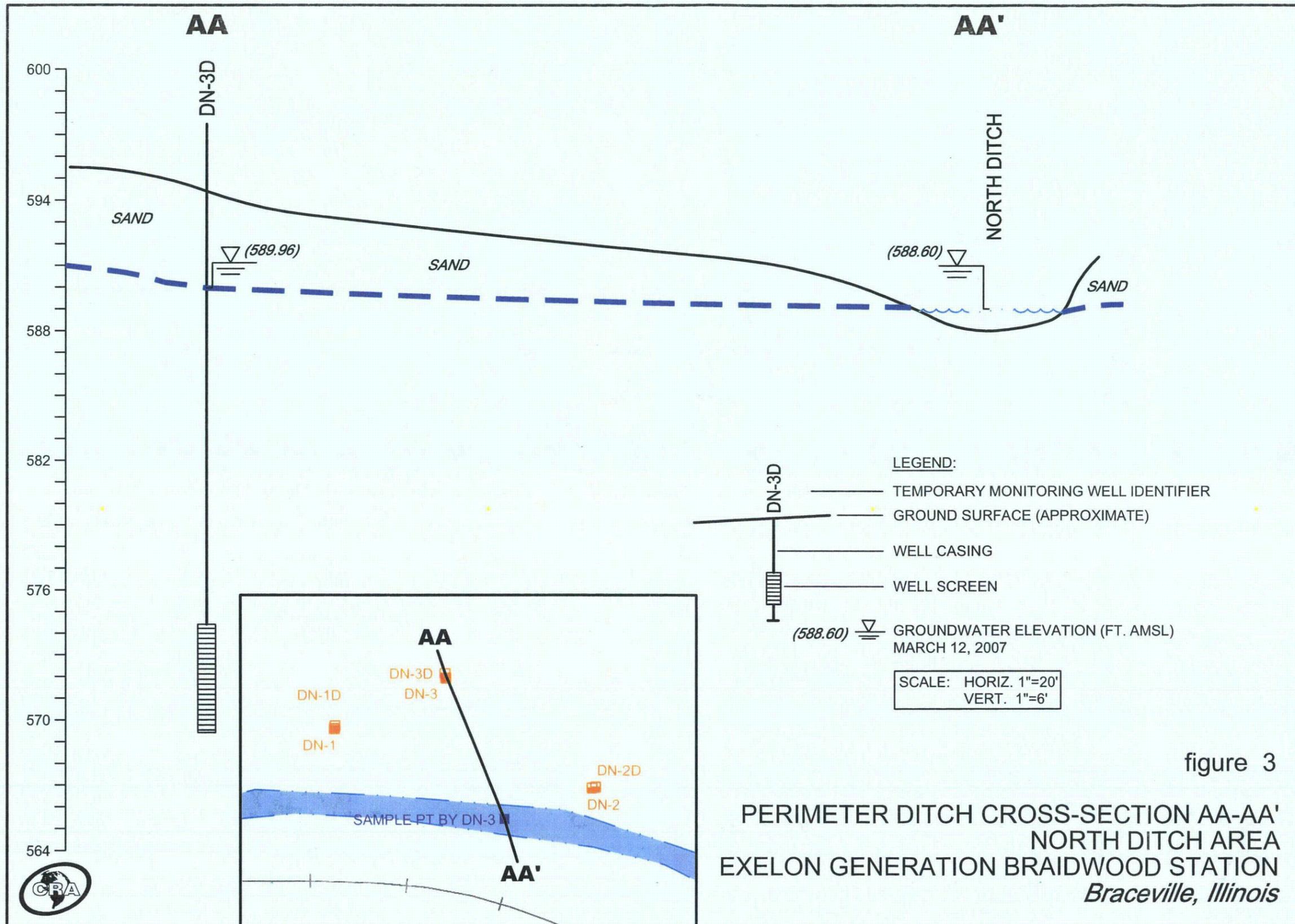




Table 1

| <u>Well ID/Ditch Location</u> | <u>Ground Elevation</u> | Sample Date:                 | Sample Date:                 |
|-------------------------------|-------------------------|------------------------------|------------------------------|
|                               |                         | 2/15/07                      | 8/15/07                      |
|                               |                         | <u>Groundwater Elevation</u> | <u>Groundwater Elevation</u> |
| SAMPLE PT.F WATER LINE        |                         | 592.5                        |                              |
| SAMPLE PT.F BOTTOM            | 591.6                   |                              |                              |
| SAMPLE PT BY DN-3 WTR.LINE    |                         | 588.6                        | 588.4                        |
| SAMPLE PT BY DN-3 BOTOM       | 588.0                   |                              |                              |
| SAMPLE PT.GATE A WTR.LINE     |                         | 586.1                        |                              |
| SAMPLE PT.GATE A BOTTOM       | 585.5                   |                              |                              |
| SAMPLE PT.H WTR.LINE          |                         | 577.0                        |                              |
| SAMPLE PT.H BOTTOM            | 576.1                   |                              |                              |
| DN-1                          | 594.4                   | 588.8                        | 588.2                        |
| DN-1D                         | 594.4                   | 588.8                        | 588.19                       |
| DN-2                          | 593.4                   | 589.2                        | 588.68                       |
| DN-2D                         | 593.5                   | 589.2                        | 588.478                      |
| DN-3                          | 594.4                   | 589.0                        | 588.34                       |
| DN-3D                         | 594.4                   | 589.0                        | 588.28                       |

---

[The main body of the page is mostly blank with scattered noise and artifacts.]

**Environmental, Inc.**

**Midwest Laboratory**

An Allegheny Technologies Company  
700 Landwehr Road \* Northbrook, IL 60062-2310  
Phone (847) 564-0700 \* Fax (847) 564-4517

LABORATORY REPORT NO.:

8004-100-2631

DATE:

03-06-07

SAMPLES RECEIVED:

02-20-07

TYPE OF REPORT

COMPLETE

Dr. John A. Wilson  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

Dear Dr. Wilson:

Below are the results of the tritium analyses performed on twenty-seven water samples and two duplicates collected at Braidwood Station.

If you have any questions or comments, please feel free to contact me.

| Sample #            | Tritium (pCi/L)       | Sample Type   | Collection Date      | Location Name                  |
|---------------------|-----------------------|---------------|----------------------|--------------------------------|
| <del>BDWW-990</del> | <del>-99 ± 97</del>   | <del>WW</del> | <del>2/15/2007</del> | <del>GW-021507-PG-BL-21</del>  |
| BDWW-991            | 119 ± 104             | WW            | 2/15/2007            | GW-021507-JK-DN-1              |
| BDWW-992            | -61 ± 98              | WW            | 2/15/2007            | GW-021507-JK-DN-1D             |
| BDWW-993            | -5 ± 100              | WW            | 2/15/2007            | GW-021507-JK-DN-3D             |
| BDWW-994            | 196 ± 107             | WW            | 2/15/2007            | GW-021507-JK-DN-3              |
| BDWW-995            | 119 ± 104             | Duplicate/994 | 2/15/2007            | GW-021507-JK-DN-3              |
| BDWW-996            | -59 ± 98              | WW            | 2/15/2007            | GW-021507-JK-DN-2D             |
| BDWW-997            | 114 ± 104             | WW            | 2/15/2007            | GW-021507-JK-DN-2              |
| <del>BDWW-998</del> | <del>7554 ± 255</del> | <del>WW</del> | <del>2/15/2007</del> | <del>GW-021507-JK-VB 3-2</del> |
| <del>BDWW-999</del> | <del>-15 ± 100</del>  | <del>WW</del> | <del>2/15/2007</del> | <del>GW-021507-JK-VB 4-1</del> |

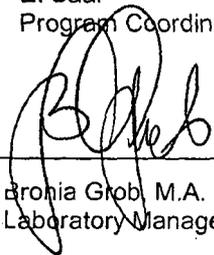
cc: T. Meents

Sincerely,



E. Saar  
Program Coordinator

APPROVED BY \_\_\_\_\_

  
Bronia Grob, M.A.  
Laboratory Manager

SAMPLES WILL BE RETAINED THIRTY DAYS AFTER ANALYSIS

**Environmental, Inc.****Midwest Laboratory**

An Allegheny Technologies Company  
 700 Landwehr Road \* Northbrook, IL 60062-2310  
 Phone (847) 564-0700 \* Fax (847) 564-4517

LABORATORY REPORT NO.:

8004-100-2636

DATE:

03-23-07

SAMPLES RECEIVED:

03-19-07

TYPE OF REPORT

COMPLETE

John A. Wilson  
 Exelon Nuclear  
 4300 Winfield Road  
 Warrenville, IL 60555

Dear Dr. Wilson:

Below are the results of the tritium analyses performed on seventeen water samples and one duplicate collected at Braidwood Station.

If you have any questions or comments, please feel free to contact me.

| Sample # | Tritium (pCi/L) | LLD (pCi/L) | Remarks        | Sample Type | Collection Date | Location Name        |
|----------|-----------------|-------------|----------------|-------------|-----------------|----------------------|
| BDWW-144 | 69 ± 95         | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-DN-1D   |
| BDWW-144 | 124 ± 97        | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-DN-1    |
| BDWW-144 | 52 ± 95         | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-DN-3D   |
| BDWW-144 | 92 ± 96         | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-DN-3    |
| BDWW-144 | -15 ± 92        | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-DN-2D   |
| BDWW-145 | 141 ± 98        | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-DN-2    |
| BDWW-145 | -8 ± 92         | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-BL 27   |
| BDWW-145 | -77 ± 90        | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-BL 24   |
| BDWW-145 | 16 ± 93         | < 187       |                | WW          | 3/12/2007       | GW-031207-NT-VB-11-1 |
| BDWW-145 | 699 ± 116       | < 187       |                | WW          | 3/13/2007       | GW-031307-SP-BL-06   |
| BDWW-145 | -10 ± 92        | < 187       |                | WW          | 3/13/2007       | GW-031307-SP-BL-19R  |
| BDWW-145 | -17 ± 92        | < 187       |                | WW          | 3/13/2007       | GW-031307-SP-VB-5-2  |
| BDWW-145 | 55 ± 95         | < 187       | Duplicate/1456 | WW          | 3/13/2007       | GW-031307-SP-VB-5-2  |
| BDWW-145 | -3 ± 92         | < 187       |                | WW          | 3/13/2007       | GW-031307-SP-BL-21   |
| BDWW-145 | 10319 ± 285     | < 187       |                | WW          | 3/13/2007       | GW-031307-SP-MW-145D |
| BDWW-146 | -6 ± 92         | < 187       |                | WW          | 3/13/2007       | GW-031307-SP-VB-4-1  |
| BDWW-146 | 275 ± 102       | < 187       |                | WW          | 3/13/2007       | GW-031307-SP-S-8D    |
| BDWW-146 | 1482 ± 138      | < 187       |                | WW          | 3/13/2007       | GW-031307-SP-S-7D    |

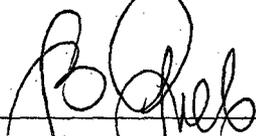
cc: T. Meents

Sincerely,



E. Saar  
 Program Coordinator

APPROVED BY \_\_\_\_\_

  
 Bronia Grob, M.A.  
 Laboratory Manager

SAMPLES WILL BE RETAINED THIRTY DAYS AFTER ANALYSIS

**Environmental, Inc.****Midwest Laboratory**

An Allegheny Technologies Company  
 700 Landwehr Road \* Northbrook, IL 60062-2310  
 Phone (847) 564-0700 \* Fax (847) 564-4517

LABORATORY REPORT NO.:

8004-100-2696

DATE:

08-31-07

SAMPLES RECEIVED:

08-20-07

TYPE OF REPORT

COMPLETE

Mr. Patrick Boyle  
 Exelon Nuclear  
 4300 Winfield Road  
 Warrenville, IL 60555

Below are the results of the tritium analyses performed on fifty-seven water samples and 3 duplicates collected at Braidwood Station.

If you have any questions or comments, please feel free to contact me.

| Sample #  | Tritium (pCi/L) | LLD (pCi/L) | Remarks        | Sample Type | Collection Date | Location Name        |
|-----------|-----------------|-------------|----------------|-------------|-----------------|----------------------|
| BDWW-5501 | 170 ± 84        | < 152       |                | WW          | 8/14/2007       | GW-081407-NT-VB-11-1 |
| BDWW-5502 | 106 ± 81        | < 152       |                | WW          | 8/14/2007       | GW-081407-NT-BL-27   |
| BDWW-5503 | 72 ± 79         | < 152       |                | WW          | 8/14/2007       | GW-081407-NT-VB-9-1  |
| BDWW-5504 | 1357 ± 128      | < 152       |                | WW          | 8/14/2007       | GW-081407-NT-VB-7-1  |
| BDWW-5505 | 92 ± 80         | < 152       |                | WW          | 8/14/2007       | GW-081407-NT-VB-6-1  |
| BDWW-5506 | 144 ± 82        | < 152       |                | WW          | 8/14/2007       | GW-081407-NT-BL-23   |
| BDWW-5507 | 72 ± 79         | < 152       |                | WW          | 8/14/2007       | GW-081407-NT-BL-24   |
| BDWW-5508 | 138 ± 82        | < 152       |                | WW          | 8/14/2007       | GW-081407-NT-BL-25   |
| BDWW-5509 | 100 ± 80        | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-BL-21   |
| BDWW-5510 | 170 ± 84        | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-VB-4-1  |
| BDWW-5511 | 78 ± 79         | < 152       | Duplicate/5510 | WW          | 8/15/2007       | GW-081507-JL-VB-4-1  |
| BDWW-5512 | 126 ± 82        | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-BL-22   |
| BDWW-5513 | 174 ± 84        | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-DN-1    |
| BDWW-5514 | 19 ± 76         | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-DN-1D   |
| BDWW-5515 | 248 ± 87        | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-DN-3    |
| BDWW-5516 | 112 ± 81        | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-DN-3D   |
| BDWW-5517 | 272 ± 88        | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-DN-2    |
| BDWW-5518 | 106 ± 81        | < 152       |                | WW          | 8/15/2007       | GW-081507-JL-DN-2D   |

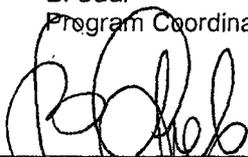
cc: T. Meents

Sincerely,



E. Saar  
 Program Coordinator

APPROVED BY



Bronia Grob, M.A.  
 Laboratory Manager

SAMPLES WILL BE RETAINED THIRTY DAYS AFTER ANALYSIS

**Environmental, Inc.**

**Midwest Laboratory**

An Allegheny Technologies Company  
700 Landwehr Road \* Northbrook, IL 60062-2310  
Phone (847) 564-0700 \* Fax (847) 564-4517

LABORATORY REPORT NO.:

8004-100-2706

DATE:

10-04-07

SAMPLES RECEIVED:

09-24-07

TYPE OF REPORT

COMPLETE

Mr. Patrick Boyle  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

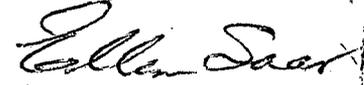
Below are the results of the tritium analyses and two recounts performed on six water samples collected at Braidwood Station.

If you have any questions or comments, please feel free to contact me.

| Sample #  | Tritium (pCi/L) | LLD (pCi/L) | Remarks | Sample Type | Collection Date | Location Name      |
|-----------|-----------------|-------------|---------|-------------|-----------------|--------------------|
| BDWW-6373 | 272 ± 120       | < 182       |         | VWV         | 9-20-2007       | GW-092007-JH-DN-1  |
| BDWW-6373 | 293 ± 119       | < 178       | Recount | VWV         | 9-20-2007       | GW-092007-JH-DN-1  |
| BDWW-6374 | 37 ± 112        | < 182       |         | VWV         | 9-20-2007       | GW-092007-JH-DN-1D |
| BDWW-6375 | 450 ± 124       | < 178       |         | VWV         | 9-20-2007       | GW-092007-JH-DN-2  |
| BDWW-6375 | 495 ± 128       | < 182       | Recount | VWV         | 9-20-2007       | GW-092007-JH-DN-2  |
| BDWW-6376 | 139 ± 116       | < 182       |         | VWV         | 9-20-2007       | GW-092007-JH-DN-2D |
| BDWW-6377 | 187 ± 117       | < 182       |         | VWV         | 9-20-2007       | GW-092007-JH-DN-3  |
| BDWW-6378 | 172 ± 114       | < 178       |         | VWV         | 9-20-2007       | GW-092007-JH-DN-3D |

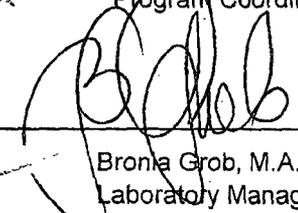
cc: T. Meents

Sincerely,



E. Saar  
Program Coordinator

APPROVED BY \_\_\_\_\_



Brona Grob, M.A.  
Laboratory Manager

SAMPLES WILL BE RETAINED THIRTY DAYS AFTER ANALYSIS