

**GROUNDWATER MONITORING WELL REPAIRS AND
RE-SURVEY REPORT**

**PILGRIM POWER STATION
PLYMOUTH, MASSACHUSETTS**

Prepared for:

**Entergy Nuclear Operations, Inc.
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Plymouth, Massachusetts**

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**GROUNDWATER MONITORING WELL REPAIRS AND RE-SURVEY REPORT
PILGRIM POWER STATION
PLYMOUTH, MASSACHUSETTS**

1. BACKGROUND

As part of the Massachusetts Department of Environmental Protection (DEP) groundwater discharge permit, SE #2-389, groundwater sampling and groundwater level measurements are required twice a year for the three (3) groundwater monitoring wells located near the wastewater treatment plant (WWTP) at the Pilgrim Power Station. The approximate locations of these monitoring wells, MW-3, MW-5 and MW-6 are shown in Figure 1.

2. NEEDS FOR GROUNDWATER MONITORING WELL REPAIR

An inspection of these wells indicated the following:

- At MW-5, the flush mount road box was cracked and needed to be replaced.
- At MW-6, the top portion of the monitoring well riser was bent and needed to be replaced along with the damaged road box.

A detail of the proposed monitoring well repair is shown on Figure 2.

3. PLANNING FOR MONITORING WELL REPAIRS

On September 6, 2005, Science Applications International Corporation, Inc. (SAIC) submitted a proposal to Entergy outlining the work required to conduct the monitoring well repairs. After notice and concurrence of the DEP, Entergy issued a notice to proceed to SAIC on October 31, 2005. Since soil excavation was required during the repair of the monitoring wells, SAIC contacted MA Dig Safe to provide them with the location of the proposed areas of excavation. Dig Safe provided SAIC with the following list of surrounding utilities in the area to contact: N-Star Gas, N-Star Electric, Adelphia Cable, and Verizon. SAIC scheduled a site visit with each utility representative to mark any existing underground utilities in the areas of excavation. For each utility representative, SAIC faxed a completed Visitor Registrations Form to Entergy and coordinated a site arrival time with Entergy Personnel. Site visits had to be rescheduled several times since utility representatives were not arriving at security during their scheduled time.

SAIC retained Dragin Drilling, a union member shop, of Wareham, MA to repair the two monitoring wells.

On December 7, 2005, Stacie Ragusa and George Petersen of SAIC and Robert Quagliaroli of Dragin Drilling were escorted to the worksite by Ms. Katie Bienvenue of Entergy. Prior to the start of any work, two brief health and safety meetings were conducted. Ms. Bienvenue reviewed Entergy's Health and Safety Plan and provided everyone with emergency contacts and phone numbers. Mr. Petersen of SAIC reviewed the SAIC Hazard Assessment and Site Safety and Health Plan (SSHP). Ms. Ragusa remained onsite to supervise the work activities and to address all questions and concerns that emerged during the repair.

4. WORK DESCRIPTION

To remove the damaged road box at MW-5, Mr. Quagliaroli of Dragin Drilling cut the pavement with a jackhammer and hand-excavated the surrounding soil to a depth of approximately 3 ft below ground surface (bgs). The soil removed was re-used as back-fill material when the new, steel flush-mounted road box was installed. The asphalt cuttings were disposed of in a solid waste dumpster located in the employee parking area. In addition, Mr Quagliaroli constructed a 3 foot square concrete pad surrounding the repaired road box for MW-5. An anti-freeze agent was added to the cement mixture and the concrete pad was covered with a sheet of plastic to prevent the pad from freezing and cracking. An orange cone was placed in front of the monitoring well to prevent vehicles from driving over the newly repaired road box.

To expose and replace the damaged portion of the well riser at MW-6, Mr. Quagliaroli hand-excavated the surrounding soil to a depth of approximately 5 ft below ground surface (bgs). The new installed well riser was constructed with Schedule 40 1 1/2-inch PVC pipe. In addition, Mr. Quagliaroli installed a new, steel flush-mounted road box with a surrounding 3 foot square concrete pad for MW-6. To prevent the concrete from freezing and cracking, an anti-freeze agent was added to the cement mixture and the concrete pad was covered with a sheet of plastic. Asphalt cuttings were disposed of onsite in a solid waste dumpster. Approximately, 5.5 hours were required to repair the two monitoring well road boxes. Additional information is detailed in the attached Daily Record of Work Progress.

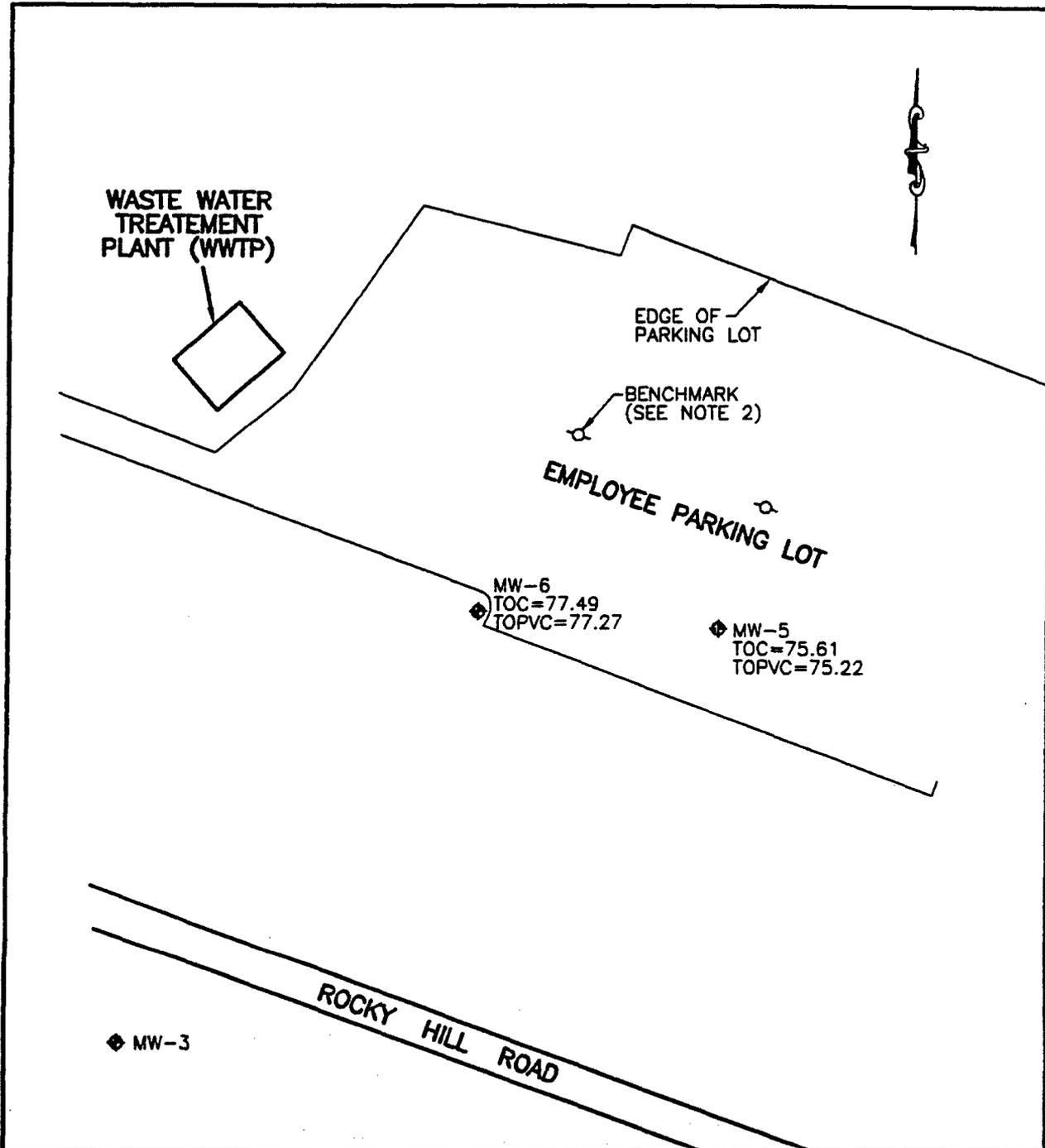
5. MONITORING WELL RE-SURVEY

On January 12, 2006, an SAIC environmental scientist met with a survey crew from SITEC Engineering, Inc. (SITEC) of New Bedford, Massachusetts to conduct re-surveying of the two repaired monitoring wells, MW-5 and MW-6. SITEC surveyed the elevation of the top of each road box cover and the top of the PVC riser (inside the cover) of each of those wells. The survey elevation was measured relative to a bench mark, existing site features and site grades. The bench mark (see Figure 1) is identified on the Boston Edison Company plan entitled "Site and Utility Plan", dated/revised June 20, 1990. Per the plan, the benchmark datum is equal to 80.22 National Geodetic Vertical Datum (NGVD) 1929 Datum. The location of the benchmark is the northerly bolt of a light pole base. The elevations of the monitoring wells are reference to MSL and shown below.

Well ID	Top of Casing (i.e., Road Box)	Top of PVC
MW-5	75.61	75.22
MW-6	77.49	77.27

6. CONCLUSION

The repair of the monitoring wells returned the well to service conditions and the well elevation survey was successful.



NOTES:

1. BASE PLAN DETAILS ARE BASED ON EXISTING SITE INFORMATION ON BOSTON EDISON DRAWING TITLED "SITE AND UTILITY PLAN", DRAWING NUMBER C-1186, REVISED 6/20/1990.
2. LOCATION OF MONITORING WELLS BASED ON BENCHMARK DATUM PROVIDED ON LORING H. JACOBS CO., DIVISION OF BOSTON SURVEY CONSULTANTS, INC., NORWELL, MA, DRAWING TITLED "AS BUILT LEACHING FACILITY, BOSTON EDISON CO., PILGRIM STATION NO. 600: UNIT 1, DATED MAY 17, 1982, JOB NO. J-507-22", BENCHMARK DATUM = 80.22 N.G.V.D. 1929 DATUM - NORTHERLY BOLT OF LIGHT POLE.
3. ELEVATIONS REFER TO MEAN SEAL LEVEL ELEVATION OF WELLS MW-5 AND MW-6 ARE BASED ON SURVEY CONDUCTED BY SITEC ENGINEERING, INC., ON JANUARY 13, 2006.
4. WELL COVER REPAIRS AT MW-5 AND MW-6 WERE COMPLETED BY DRAGIN DRILLING INC. ON DECEMBER 7, 2005.

LEGEND:

- ◆ MONITORING WELL
- LIGHT POLE
- TOC TOP OF CASING (ROADBOX)
- TOPVC TOP OF PVC

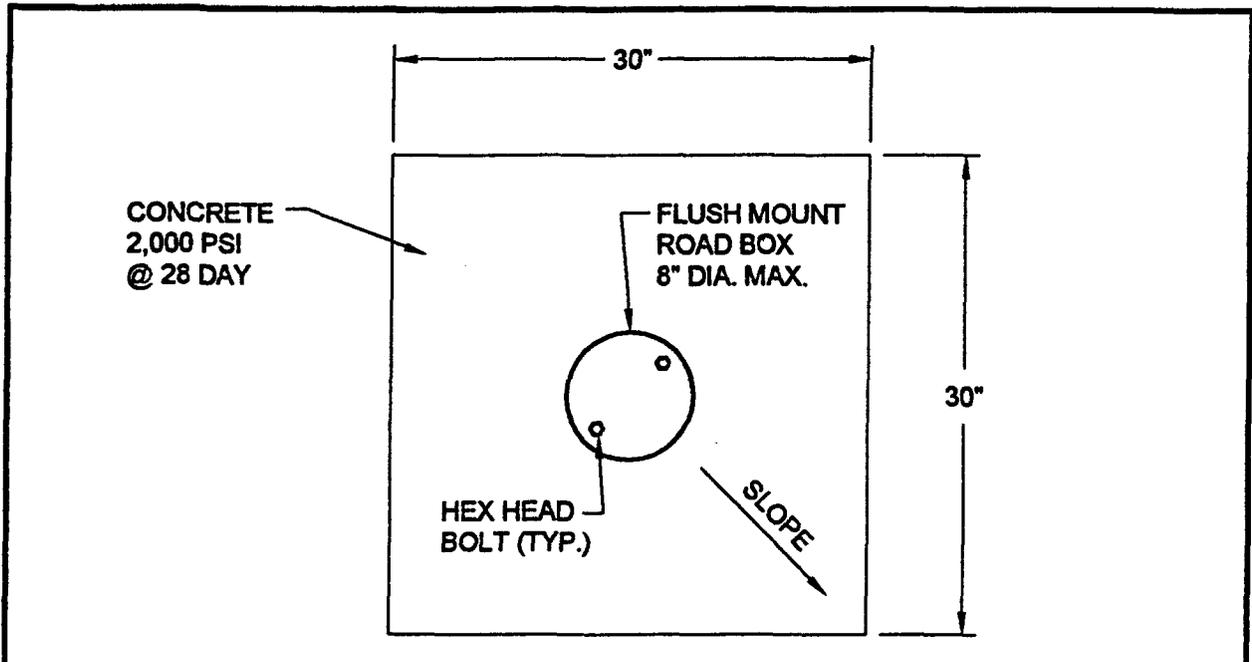


APPROXIMATE
SCALE: 1" = 100'

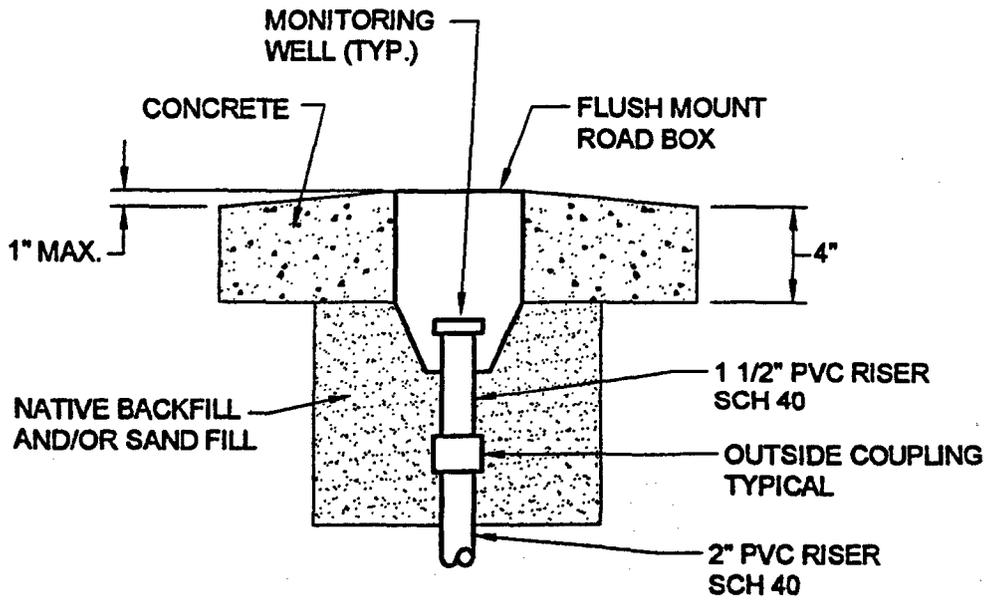


**FIGURE 1
SITE PLAN WITH
MONITORING WELLS
ENERGY**

DRAWN BY: WL	REV. NO./DATE: 2/13/2006	CAD FILE: ENT-SP.DWG
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PLAN VIEW



SECTION

LEGEND:



**FIGURE 2
FLUSH MOUNT ROAD BOX DETAIL
ENERGY**

NOT TO SCALE

DRAWN BY: WL	REV. NO./DATE: 2 2/13/06	CAD FILE: ENT-FBOX-2.DWG
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Field Inspection Daily Report

**INSPECTOR'S DAILY
RECORD OF WORK PROGRESS**

DATE: 12-7-05 DAY

S	M	T	W	TH x	F	S
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Project Title Repair monitoring well road boxes, MW-5, MW-6 Project No. 01-0827-00-9220-104

Feature _____

Contractor SAIC Engineering, Inc. Type of Work Repair MW Road boxes

WEATHER	Sun	Overcast x	Rain		Snow
TEMP.	1 to 32	32-50 x	50-70	70-85	85 up
WIND	Still	Moderate x	High	Report No	
HUMIDITY	Dry	Moderate x	Humid		

CONTRACTOR'S WORK FORCE (Indicate classifications, including Subcontractor personnel)

Mrs. Stacie Ragusa - SAIC Engineering, Inc.
Mr. George Petersen - SAIC Engineering, Inc.
Mr. Robert Quagliaroli - Dragin Drilling

EQUIPMENT IN USE OR IDLED (Identify which)

All equipment required to repair the monitoring wells were provided by the contracted driller, Dragin Drilling of Wareham, MA. All equipment/materials below were used.

- Cement and cement mixer
- Cones
- Plastic Covers
- Shovel
- Masonry hand tools
- jackhammer
- Buckets
- Anti-freeze cement additive

MATERIALS OR EQUIPMENT DELIVERED

Prior to the monitoring well repairs, Stacie Ragusa of SAIC met with Mr. Bob Maher of Entergy to deliver orange safety cones and white flags to mark the location of monitoring wells, MW-5 and MW-6. As required by MA Dig Safe regulations, the two areas of excavation at MW-5 and MW-6 were marked with white flagging so, that utility technicians could accurately locate and mark all underground utilities, if present.

All materials and equipment need to repair the MW road boxes were provided by the contracted driller, Dragin Drilling.

NON-CONFORMING MATERIALS OR WORK (Describe reason for non-conformance)

None

FIELD PROBLEMS (which could result in delay or claim)

None

QUANTITIES OF PAY ITEMS PLACES

Not Applicable

SUMMARY OF ACTIVITIES

SAIC Engineering was retained by Entergy for the repair of two monitoring wells, MW-5 and MW-6 at Pilgrim Nuclear Power Station located at 600 Rocky Hill Road, Plymouth, MA. The two monitoring wells are located near the wastewater treatment plant in the employee parking area. At MW-5, the flush mount road box was cracked and needed to be replaced. At MW-6, the top portion of the well riser was bent and needed to be replaced along with a damaged road box. It is believed that the two monitoring wells were damaged during snow removal activities.

Since the repair of the two monitoring wells required excavation around the damaged road boxes, SAIC contacted MA Dig Safe to notify the following local utilities in the area: N-Star Gas, N-Star Electric, Adelphia Cable, and Verizon. SAIC was required to send each utility representative to the site (except N-Star Gas) to mark any existing underground utilities in the proposed areas of excavation and coordinate all utility site visits with Entergy personnel. Coordinating/scheduling this effort took several days since utility representatives were not arriving as scheduled and site visits needed to be coordinated again.

SAIC solicited pricing bids from several qualified drilling firms to repair the two monitoring wells. Dragin Drilling of Wareham, MA was retained by SAIC Engineering to do the work. Upon arrival Ms. Katie Bienvenue of Entergy escorted Stacie Ragusa and George Petersen of SAIC Engineering and Mr. Robert Quagliaroli of Dragin Drilling to the work area. Prior to the start of any work, a brief health and safety meeting was conducted by Ms. Katie Bienvenue and Mr. George W. Petersen. Ms. Bienvenue reviewed Entergy's health and safety requirements and emergency points of contact at the facility and George Petersen reviewed SAIC's Site Safety Assessment Plan. A copy of the attendance record is attached. Stacie Ragusa remained onsite with Dragin Drilling for the duration of the monitoring well repairs.

At MW-6 the pavement was cut with a jackhammer and hand excavated to a depth of approximately 5 ft below ground surface (bgs) to uncover and replace the damaged portion of the monitoring well riser. The new installed well riser was constructed with Schedule 40 1 1/2" diameter PVC pipe. A new steel, flush mounted road box was installed and a 3-foot square concrete pad was constructed around the road box. At MW-5, the pavement was cut using a jackhammer and the soil was hand excavated to a depth of approximately 3 ft below ground surface (bgs). A new steel, flush mounted road box was constructed with a surrounding concrete pad. The repair of the two monitoring wells took approximately 5.5 hours.

TIME SCHEDULE

8:00 am	Departed for Entergy
8:50 am	Arrived at security
9:40 am	Mr. Robert Quagliaroli of Dragin Drilling arrived at security
9:45 am	Met with Ms. Katie Bienvenue of Entergy
9:55 am	A tailgate health and safety meeting was conducted by George Petersen of SAIC.
10:15 am	Mr. Quagliaroli began repairing MW-5
1:00 pm	Mr. Quagliaroli began repairing MW-6
3:30 pm	Repairs to the two monitoring wells were completed.
3:40 pm	Checked out with Security
4:30-4:40 pm	Arrived back at office. Copied and filed all documentation