Progress Energy

James Scarola
Senior Vice President and Chief Nuclear Officer
Progress Energy Carolinas, Inc.

Serial: NPD-NRC-2008-056 10CFR52.79
October 31, 2008

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

SHEARON HARRIS NUCLEAR POWER PLANT, UNITS 2 AND 3
DOCKET NOS. 52-022 AND 52-023
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 010 RELATED TO GROUNDWATER

Reference: Letter from Manny Comar (NRC) to James Scarola (PEC), dated September 18, 2008, "Request for Additional Information Letter No. 010 Related to SRP Section 02.04.12 for the Harris Units 2 and 3 Combined License Application"

Ladies and Gentlemen:

Progress Energy Carolinas, Inc. (PEC) hereby submits our response to the Nuclear Regulatory Commission's (NRC) request for additional information provided in the referenced letter. A response to each NRC request is addressed in the enclosure.

If you have any further questions, or need additional information, please contact Bob Kitchen at (919) 546-6992, or Garry Miller at (919) 546-6107.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 31, 2008.

Sincerely,

James Scarola

James Scarola

Enclosure

cc : U.S. NRC Director, Office of New Reactors/NRLPO
U.S. NRC Office of Nuclear Reactor Regulation/NRLPO
U.S. NRC Region II, Regional Administrator
U.S. NRC Resident Inspector, SHNPP Unit 1
Mr. Manny Comar, U.S. NRC Project Manager

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Shearon Harris Nuclear Power Plant Units 2 and 3
Response to NRC Request for Additional Information Letter No. 010 Related to SRP Section 02.04.12 for the Combined License Application, dated September 18, 2008

NRC RAI #	Progress Energy RAI #	Progress Energy Response
02.04.12-1	H-0048	Response enclosed – see following pages
02.04.12-2	H-0049	Response enclosed – see following pages
02.04.12-3	H-0050	Response enclosed – see following pages
02.04.12-4	H-0051	Response enclosed – see following pages

Attachments/Enclosures	Associated NRC RAI #	Pages Included
Figure 1	02.04.12-2	1 page
Figure 2	02.04.12-2	1 page
Figure 3	02.04.12-2	1 page
Figure 4	02.04.12-2	1 page
Figure 5	02.04.12-2	1 page
Figure 6	02.04.12-2	1 page
Figure 7	02.04.12-2	1 page
Figure 8	02.04.12-2	1 page

NCR Letter No.: HAR-RAI-LTR-010

NRC Letter Date: September 18, 2008

NRC Review of Final Safety Analysis Report

NRC RAI #: 02.04.12-1

Text of NRC RAI:

Provide a description of the process used to evaluate the conceptual site model of the subsurface environment. The description should include how this process was used as the basis for the calculation of the maximum water table elevation in FSAR Section 2.4.12, and how the most conservative conceptual model from the set of plausible conceptual models was applied to compute the maximum water table elevation. Staff also request that the applicant explain how the conservative assumptions employed in the conceptual site model compensate for observed spatial and temporal variability in hydrogeology (ie; fracture networks, diabase dikes, etc.) and the resulting uncertainty in describing the maximum water table elevation.

PGN RAI ID #: H-0048

PGN Response to NRC RAI:

The conceptual site model that was developed to characterize the maximum potential existing water table elevations beneath the site is not the result of a mathematical modeling analysis, but rather a composite representation of a variety of observations and boundary conditions that are collectively and conservatively considered to represent maximum potential water levels that presently exist beneath the site. Since the conceptual model presented in the FSAR is based on site-specific data collected at HAR, a set of plausible conceptual models was not developed.

During the initial phase of developing a subsurface groundwater elevation model for the site, a review of available information was performed to obtain documentation relating to the geology and associated aquifer systems that underlie the HAR site. The information that was reviewed included professional geologic and hydrogeologic reports, information published by local and state water resource agencies, research studies performed by local universities, and the results of historical subsurface investigations previously conducted at the existing HNP site. The purpose of that review was to identify an existing baseline of information that could be used to characterize the geology and hydrology of the site. In addition to the use of existing information, a comprehensive investigation of the HAR site was conducted to further characterize site hydrogeologic conditions. This information was used as a basis for the development of the conceptual hydrogeological model, with the intent of formulating a realistically conservative estimate of the maximum water table elevations that can exist beneath the site in its present configuration. The primary information that was used to formulate the conceptual site model is as follows:

1) **Seasonal Gauging Data:** Groundwater gauging data collected over a 1-year period in 2006 and 2007 were used to account for seasonal and long-term variations in the surficial and bedrock aquifers beneath the HAR site. Seasonal elevations representative of the highest recorded water levels during the 1-year period were used to characterize the elevation of the groundwater. As discussed in the response to RAI 02.04.12-4, a review of climatological records indicates that the year 2006 experienced the highest total annual

precipitation since 2000. Furthermore, the Raleigh area had above-average precipitation from September 2006 through January 2007, which would be conducive to above-average water levels within the surficial and bedrock aquifers at the HAR site. Based on this information, Progress Energy believes the groundwater elevations measured during the February 2007 gauging event are most likely to be conservative and representative of above-average water levels.

2) **Bounding Conditions Imposed by Surface Water:** The HAR and HNP sites are bordered by two reservoirs and associated water channels that essentially have static water level elevations in all directions except to the north. Bounding conditions to the north of the HAR site are driven by a naturally elevated potentiometric surface influenced by recharge from a topographic high. The reservoirs and potentiometric head to the north effectively establish bounding conditions that control subsurface groundwater levels in the immediate vicinity of the HAR site. These bounding conditions are constant and considered to be the most influential of the parameters that define groundwater levels beneath the site. Since these elevations are static and inherently included in the water level measurements that were made in 2006 and 2007, no adjustments to the observed water table elevations are believed to be necessary.

3) **Soil Permeability:** Surficial soil encountered at the HAR site consists primarily of dense clay that was formed in place by weathering of the parent bedrock. The soil has a low permeability that inhibits recharge to the aquifer. Given the low permeability of the soil, this parameter is not expected to have a significant impact on groundwater elevations beneath the site.

4) **Aquifer Recharge:** Aquifer recharge in the region occurs by percolation of precipitation through the overburden as described in FSAR Subsection 2.4.12.1.1. However, recharge rates are very low due to the low permeability of the soil and the fact that most of the precipitation is either returned to the atmosphere through evapotranspiration or flows overland to surface water discharge points as runoff. Because of the low permeability of the overburden, the amount of aquifer recharge in the area is not expected to represent a significant contributor to groundwater elevations beneath the site.

5) **Lack of Groundwater Users:** The number of groundwater users on or in the vicinity of the site is very limited and the impact of water use on groundwater levels beneath the HAR safety-related facilities is not expected to be significant. Therefore, no adjustment for groundwater use on subsurface water elevations is believed to be necessary.

The conceptual site model of groundwater elevations beneath the site is considered to be a conservative representation of the highest potential groundwater elevations that presently exist beneath the site. This model accounts for the spatial and temporal variability (including subsurface geologic features such as fracture networks and diabase dikes) in observed groundwater levels beneath the site and includes consideration of the bounding hydraulic heads imposed by the large surface water bodies surrounding the site, the elevated potentiometric head north of the site, the low permeability of the soil, the low recharge rates of the aquifer system, and the lack of any significant groundwater users in the area that could affect groundwater levels. The site model also accounts for the seasonal variation in groundwater levels by using water level measurements obtained during a wet season associated with an extended period of above-average precipitation, which is the only variable identified that is expected to have a time varying influence on groundwater levels beneath the site.

Associated HAR COL Application Revisions:

No COLA revisions have been identified associated with this response.

Attachments/Enclosures:

None.

NCR Letter No.: HAR-RAI-LTR-010

NRC Letter Date: September 18, 2008

NRC Review of Final Safety Analysis Report

NRC RAI #: 02.04.12-2

Text of NRC RAI:

Describe the impact that the changes in site conditions will have on the post-construction piezometric heads and provide sufficient detail to support this impact. Some of these changes may result in a decrease the piezometric head elevation relative to current conditions and other factors may result in increase in the piezometric head elevation. The factors that could result in changes to the piezometric head include (but are not restricted to) the following: increase in Main Reservoir pool elevation, site grading, backfill, stormwater drains, and changes in recharge.

PGN RAI ID #: H-0049

PGN Response to NRC RAI:

The development of the HAR site will effectively change the current site conditions, resulting in changes to groundwater elevations once construction is complete. The changes that are expected to have an impact on post-construction piezometric heads include the following:

1) The 20-foot increase of the Main Reservoir pool elevation from 220 to 240 feet NGVD29–The primary impact of this change will be a decrease in the hydraulic gradient from the Auxiliary Reservoir (pool elevation 252 feet NGVD29) to the Main Reservoir. Since the pool elevation of the Auxiliary Reservoir will not change, the decrease in hydraulic gradient across the HAR site will reduce groundwater velocities and associated transport times.

2) Mechanical redistribution of surficial soil and bedrock associated with construction–This will result in a reduction in soil permeability that will effectively decrease recharge to the surficial aquifer.

3) Increase in impervious surface area–Figure 1 illustrates proposed impervious areas of the developed site. The developed area of the HAR site will be approximately 178 acres, with about 55 acres of this area being impervious. Therefore, approximately 31 percent of the total HAR site area will be impervious to recharge. Figure 1 also shows the safety-related drainage area as defined by the dashed line. Of this area (approximately 111 acres), about 51 acres or 46 percent will be impervious. These impervious surfaces will eliminate direct recharge in those areas and, therefore, significantly reduce the potential for localized groundwater mounding beneath the safety-related structures.

4) The construction of a network of stormwater drainage ditches around and within the site–These drainage ditches will direct stormwater and intercepted groundwater away from the developed area of the HAR site. This is expected to reduce the potentiometric head associated with higher topographic elevations that currently exists to the north of the HAR site.

Figures 2 through 8 illustrate the estimated impact that the proposed stormwater drainage ditches will have on groundwater levels. Figures 2 and 3 are based on water level data collected from the surficial and bedrock aquifers during the wet season on February 28, 2007, when the highest groundwater levels were observed during a 1-year period. As illustrated on Figures 2 and 3, in the absence of the construction of the proposed drainage ditches, water level elevations greater than the safety-related groundwater elevation of 259 feet NGVD29 are located within the construction area for HAR 2 and HAR 3. Figure 4 illustrates the estimated maximum post-construction groundwater elevations. The estimated groundwater elevations were obtained by adjusting the February 28, 2007 potentiometric surface lines, using engineering judgment, to account for surface water pool elevation changes, topographical changes, and the addition of stormwater drainage ditches across the project site. Figure 4 illustrates the following:

- Potentiometric contour lines greater than 260 feet NGVD29 will be completely captured by drainage ditches.
- Potentiometric contour lines between 250 and 260 feet NGVD29 will be partially captured or affected by drainage ditches.
- Groundwater elevations in the vicinity of HAR 2 and HAR 3 are between 250 and 255 feet NGVD29.
- The direction of groundwater flow from HAR 2 and HAR 3 is to the east in the direction of the Main Reservoir.
- The gradient from HAR 2 and HAR 3 to the Main Reservoir is significantly reduced.

Figures 5, 6, 7, and 8 depict cross-sectional views of potential changes in water table elevation resulting from the construction of the stormwater drainage ditches and impervious areas on the site. Figure 5 shows the location of the cross-section reference line (line A-B in the figure). Figures 6 and 7 illustrate a cross-section of groundwater levels in the surficial and bedrock aquifers beneath the site using the water level data collected on February 28, 2007. The water level in the surficial aquifer is seen to intercept the safety-related elevation of 259 feet NGVD29 near HAR 2. Figure 8 shows the estimated post-construction groundwater elevations following the installation of the impervious structures and areas and the stormwater drainage ditches. As illustrated, after construction there is a significant decrease in groundwater levels in both the surficial and bedrock aquifers, with water levels approximately 5 feet lower than the safety-related elevation of 259 feet NGVD29. Additionally, Figure 8 illustrates the following:

- The post-construction HAR site surface is lower than the existing topography.
- The post-construction HAR site surfaces are graded to divert overland flow to multiple unlined drainage ditches, thus limiting standing water and reducing groundwater mounding effects. Unlined stormwater drainage ditches will be sloped at 0.5 vertical feet per 100 horizontal feet to facilitate off-site flow.
- The post-construction unlined stormwater drainage ditches effectively intersect the existing surficial and bedrock potentiometric surfaces.
- The post-construction unlined stormwater drainage ditches are expected to lower the existing groundwater elevation of 270 feet NGVD29 in the undisturbed area north of

the HAR site to an elevation of approximately 254 feet NGVD29 beneath HAR Units 2 and 3. This groundwater elevation is approximately 5 feet below the safety-related elevation of 259 feet NGVD29.

- The ground surface associated with the nominal grade elevation of 260 feet NGVD29 at HAR 2 and HAR 3 will be designed to be impervious to infiltration of precipitation. This will eliminate groundwater mounding in the vicinity of the safety-related structures and reduce groundwater variability and uncertainty.

Associated HAR COL Application Revisions:

No COLA revisions have been identified associated with this response.

Attachments/Enclosures:

Figure 1 - Site Drainage Map and Impervious Areas (Post-construction)

Figure 2 - Potentiometric Surface Lines Within the Surficial Aquifer as Measured on Feb. 28, 2007 and Post-construction Site Drainage Map

Figure 3 - Potentiometric Surface Lines Within the Bedrock as Measured on Feb. 28, 2007 and Post-construction Site Drainage Map

Figure 4 - Site Drainage Map and Estimated Potentiometric Surface Lines (Post-construction)

Figure 5 - Site Drainage Map and Cross-section Reference Line (Post-construction)

Figure 6 - Cross-section of Water Levels Within the Surficial Aquifer as Measured on February 28, 2007

Figure 7 - Cross-section of Water Levels Within the Bedrock as Measured on February 28, 2007

Figure 8 - Cross-section from A to B: Estimated Water Levels After Construction of HAR 2 and 3

NCR Letter No.: HAR-RAI-LTR-010

NRC Letter Date: September 18, 2008

NRC Review of Final Safety Analysis Report

NRC RAI #: 02.04.12-3

Text of NRC RAI:

Describe the recharge to the aquifer based on the post-construction environment. A number of different types of surfaces and grading are planned for the site including impervious surfaces and gravel surfaces which will have different recharge relative to the current conditions. Unlined stormwater drains may intersect the aquifers during high water table conditions or result in water loss during lower water table conditions. The natural soil will be removed in portions of the site for site grading and replaced for backfill in other places. Gravel covered parking lots (overlying the bedrock aquifer) will be used in other portions of the site. The recharge estimates under post-construction conditions should be compared to recharge estimates under current conditions that correspond to the 2006/2007 water level measurements collected at the site.

PGN RAI ID #: H-0050

PGN Response to NRC RAI:

Aquifer recharge in the region occurs by percolation of precipitation through the overburden as described in FSAR Subsection 2.4.12.1.1. However, most of the precipitation is either returned to the atmosphere through evapotranspiration or it flows off-site as surface runoff. The predominance of surface and near-surface deposits with extremely low permeability results in rapid runoff of the majority of precipitation. Previous studies conducted in the region indicate that an average of only 15 percent of precipitation in Wake County is typically recharged to the aquifer and, within the Triassic Basin where the HAR site is located, the recharge rate is typically less than about 6 percent. This indicates that the current soil and bedrock conditions at the site dictate that natural recharge to the aquifer occurs at a very low rate.

Post-construction site conditions will reduce the current recharge rate of the aquifer at the HAR site. Site changes that will have an impact on the recharge process and recharge rates will include the following:

1) Construction of the Facility–This will require the removal and stockpiling of surficial soil and bedrock during site grading activities. These stockpiles will eventually be used as fill for areas below the HAR site nominal grade. This fill material will be a mixture of on-site soil and bedrock and will require compaction for possible use as a foundation for some facility structures, parking areas, and laydown areas. Soil compaction will impact the natural soil structure through deformation and create conditions that will effectively reduce the amount of recharge to the aquifer.

2) Permanent Impervious Surfaces–The as-built facility will include a variety of impervious surfaces that will reduce recharge to the aquifer. These areas include buildings, structures, and paved surfaces such as roads and parking lots. The total area of the developed HAR site will be about 178 acres, of which approximately 55 acres (31 percent) will be impervious to recharge. Within the general area of the safety-related structures (approximately 111 acres), about 51 acres will be impervious. Therefore,

approximately 46 percent of the area in the vicinity of the safety-related structures will be impervious to recharge.

3) Impervious Areas Resulting from Construction Activities–Areas of the site that are used during the construction process (i.e., parking and office areas, laydown areas, etc.) will be covered with gravel and compacted for use during extended construction activities. Aside from the possible addition of overburden for landscaping after construction is complete, these areas will typically not be restored to their original state of permeability and, therefore, there will be a reduction in the potential for recharge in these areas.

4) Use of Stormwater Drainage Ditches Across the Site–A series of stormwater drainage ditches and conveyances will be constructed around and within the site to direct stormwater and intercepted groundwater away from the developed area of the HAR site, effectively reducing the amount of recharge to the surficial and bedrock aquifers.

Current site conditions (which correspond to 2006/2007 water level measurements) were made during a period of above-average precipitation from September 2006 through January 2007 for the Raleigh area and, as such, are considered to be more favorable for increased recharge rates than the proposed post-construction site conditions outlined above. Since the existing site is mostly undisturbed, forested land with a thick mulch layer, more infiltration of precipitation into the soil is expected to occur now than after the site is developed. The proposed location of HAR 2 is the only area of the plant site that is not forested, being topographically level and covered with grass. Recharge within this area is also expected to be higher now than during post-construction conditions because of slow overland flow and a lack of the type of impervious areas that will be constructed on the site. Therefore, current site conditions, when compared with post-construction site conditions, will have higher recharge estimates.

Associated HAR COL Application Revisions:

No COLA revisions have been identified associated with this response.

Attachments/Enclosures:

None.

NCR Letter No.: HAR-RAI-LTR-010

NRC Letter Date: September 18, 2008

NRC Review of Final Safety Analysis Report

NRC RAI #: 02.04.12-4

Text of NRC RAI:

Describe how the water level measurements collected during drought conditions in 2006/2007 may be representative relative to normal conditions. Describe the patterns of spatial and temporal variability in the water levels that are observed or expected in the surficial and Triassic bedrock wells in the area over a range of conditions (normal and most severe seasonal climatic variations for the period that has been historically reported) for both long and short term.

PGN RAI ID #: H-0051

PGN Response to NRC RAI:

Groundwater elevation measurements collected during four sampling events over a 1-year period in 2006 (August and November) and 2007 (February and May) were used to identify seasonal and annual variations in groundwater levels within the surficial and bedrock aquifers beneath the HAR site. Seasonal elevations representative of the highest recorded water levels during the period were used to characterize the maximum groundwater elevation for the HAR site conceptual model. These water levels correspond to the data collected during the February 28, 2007 gauging event.

Since no other historical data were available that could be used to characterize groundwater elevations across the site over a longer period, a review of historical precipitation data was performed to determine if the groundwater level measurements in 2006 and 2007 could be considered representative of average or above-average groundwater levels. As published by the National Weather Service, the average annual rainfall at Raleigh, North Carolina, for a period of record of 114 years is 44.55 inches/year. The following table shows the average annual precipitation observed at Raleigh, North Carolina, since the year 2000:

Year	Total Annual Precipitation (inches)
2000	39.34
2001	34.78
2002	47.34
2003	50.01
2004	47.05
2005	37.55
2006	53.69
2007	35.81

The year 2006 is seen to have the highest total annual precipitation since 2000. Climatological records available from the National Weather Service also indicate that the Raleigh area had above-average precipitation from September 2006 through January 2007, which would be conducive to above-average water levels within the surficial and bedrock aquifers at the HAR site. Therefore, groundwater elevations measured at the HAR site in late 2006 and early 2007 were not collected during drought conditions but rather during a period of above-average precipitation. Based on this information, Progress Energy believes the groundwater elevations measured during the February 2007 gauging event are most likely to be representative of average to above-average water levels.

Observed patterns of spatial and temporal variability in the water levels for the surficial and Triassic bedrock wells in the area beneath the HAR safety-related facilities are described in FSAR Subsection 2.4.12.2.2.

Patterns of spatial and temporal variability of water levels for the surficial and Triassic bedrock wells in the area beneath the HAR safety-related facilities after construction are not expected to be variable due to the water surface controls that will be in place. These controls include a large area of impermeable surfaces, a network of stormwater drainage ditches, and the Auxiliary and Main Reservoir pool elevations (as bounding conditions) as described in the response to NRC RAI 02.04.12-2.

Associated HAR COL Application Revisions:

No COLA revisions have been identified associated with this response.

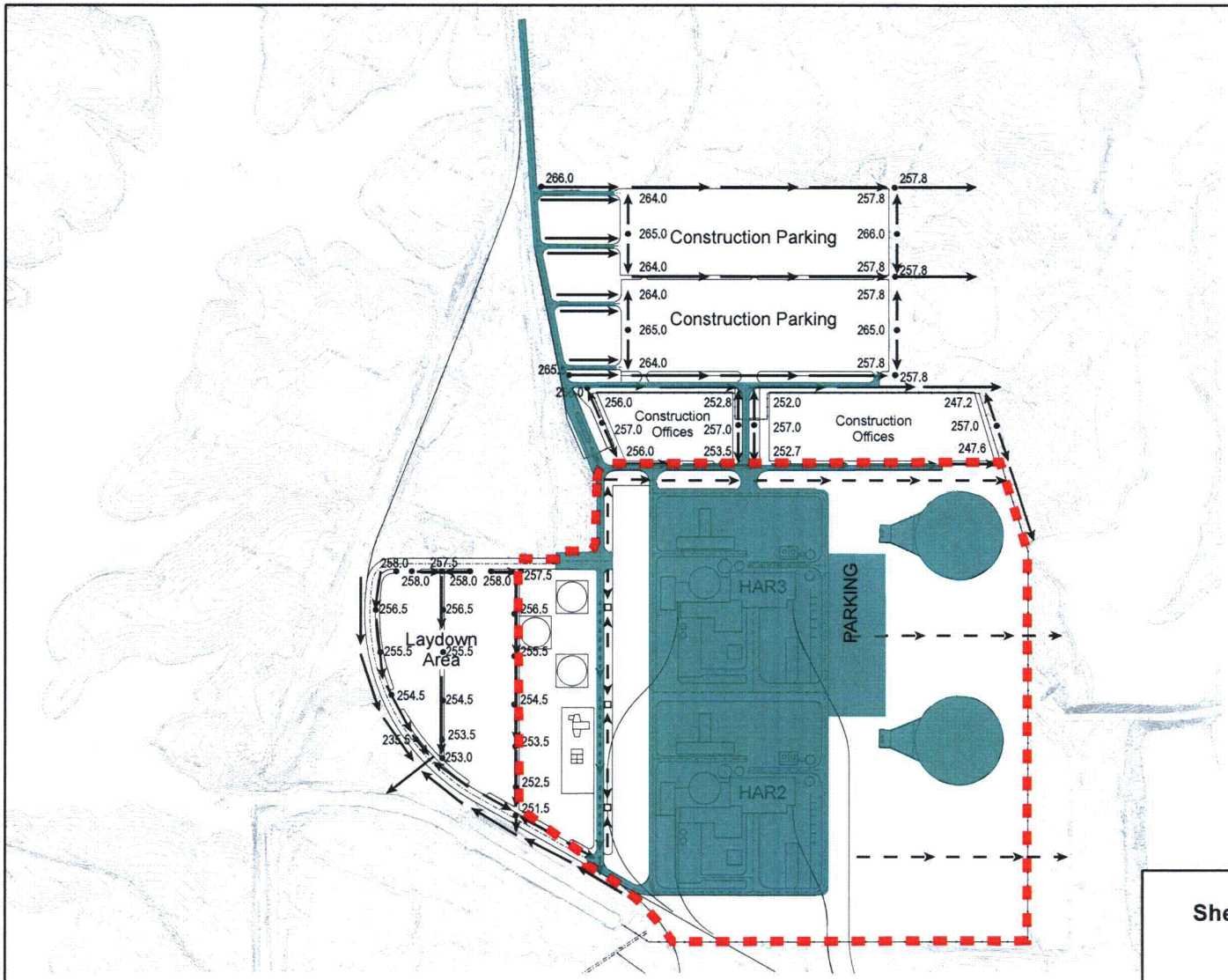
Attachments/Enclosures:

None.

List of Attachments:

(associated with NRC RAI # 02.04.12-2 [PGN RAI ID #H-0049])

1. Figure 1 - Site Drainage Map and Impervious Areas (Post-construction) [1 page]
2. Figure 2 - Potentiometric Surface Lines Within the Surficial Aquifer as Measured on Feb. 28, 2007 and Post-construction Site Drainage Map [1 page]
3. Figure 3 - Potentiometric Surface Lines Within the Bedrock as Measured on Feb. 28, 2007 and Post-construction Site Drainage Map [1 page]
4. Figure 4 - Site Drainage Map and Estimated Potentiometric Surface Lines (Post-construction) [1 page]
5. Figure 5 - Site Drainage Map and Cross-section Reference Line (Post-construction) [1 page]
6. Figure 6 - Cross-section of Water Levels Within the Surficial Aquifer as Measured on February 28, 2007 [1 page]
7. Figure 7 - Cross-section of Water Levels Within the Bedrock as Measured on February 28, 2007 [1 page]
8. Figure 8 - Cross-section from A to B: Estimated Water Levels After Construction of HAR 2 and 3 [1 page]



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LEGEND

- Direction of Surface Water Flow
- Direction of Piped Water Flow
- Ditch High Point
- Ditch Drop Inlet
- 266.0 Ditch Elevation (feet NGVD29)
- Impervious Area
- Safety-related Drainage Area

NOTES

1. HAR 2 and HAR 3 proposed nominal grade elevation is 260-feet NGVD29.
2. Area surfacing will consist of crushed stone in contractor parking, laydown areas, and equipment areas.
3. All plant roads and entrance roads will be asphalt paved.
4. Stormwater Drainage Ditches slope at 0.5 feet per 100 feet.

0 100 200
Meters

0 400 800
Feet

Progress Energy Carolinas

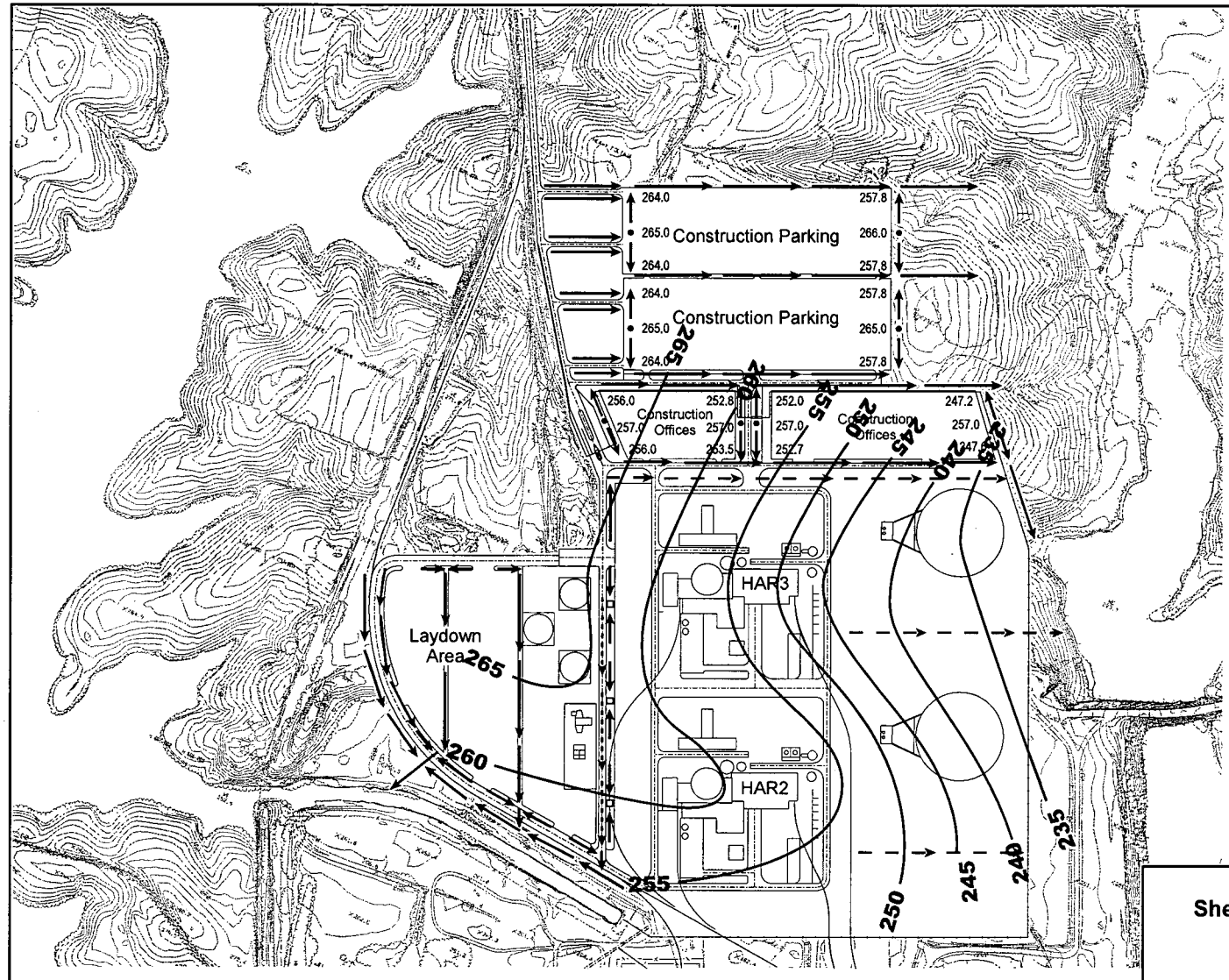
Shearon Harris Nuclear Power Plant Units 2 and 3

New Hill, North Carolina

Site Drainage Map and Impervious Areas (Post-construction)

FIGURE 1

Rev 0



LEGEND

- Direction of Surface Water Flow
- Direction of Piped Water Flow
- Ditch High Point
- Ditch Drop Inlet
- 266.0 Ditch Elevation (feet NGVD29)
- Equipotential Lines

NOTES

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Meters

0 400 800
Feet

Progress Energy Carolinas

Shearon Harris Nuclear Power Plant Units 2 and 3

New Hill, North Carolina

Potentiometric Surface Lines Within the Surficial Aquifer as Measured on February 28, 2007 and Post-construction Site Drainage Map

FIGURE 2

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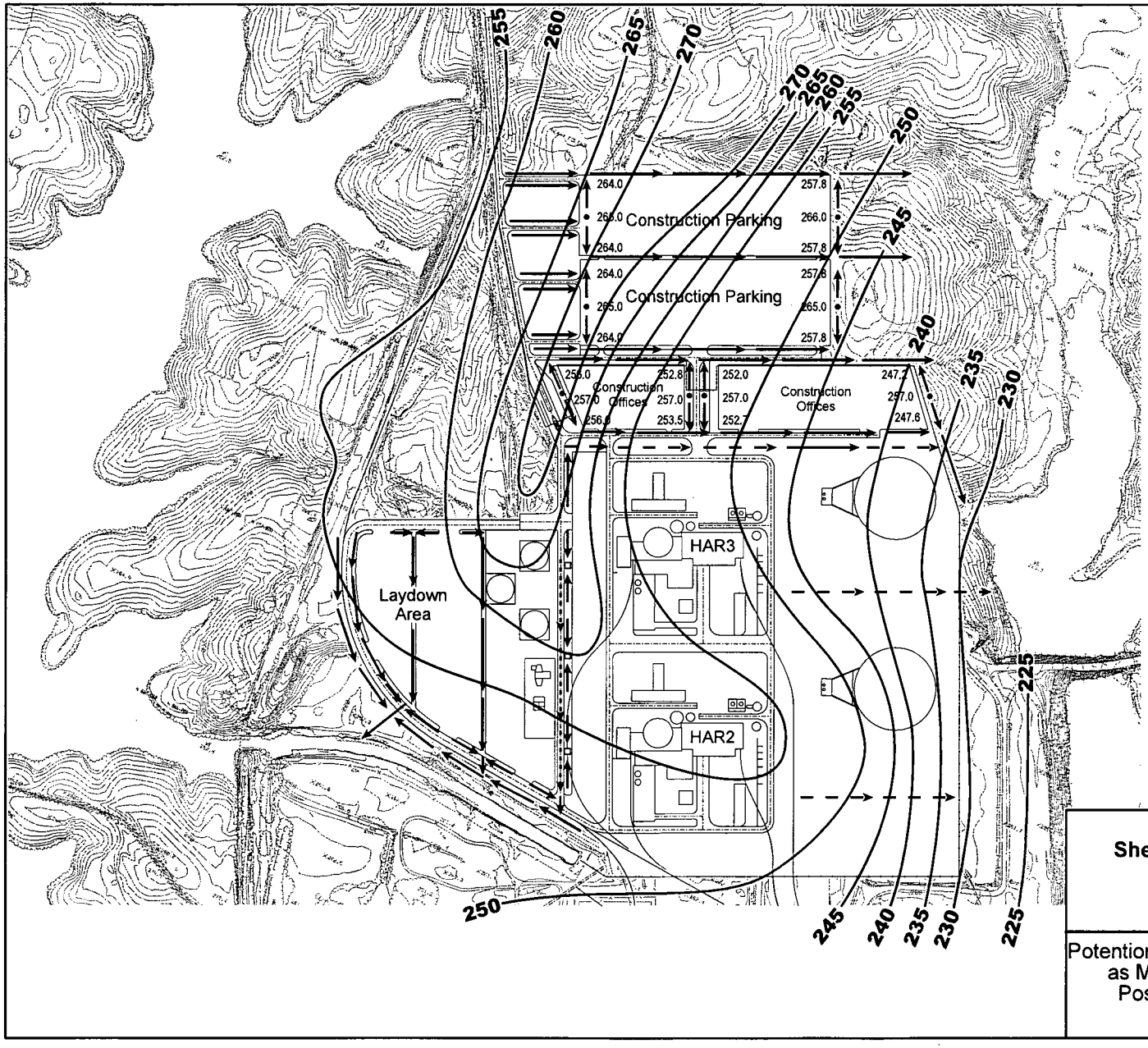

LEGEND

- Direction of Surface Water Flow
- Direction of Piped Water Flow
- Ditch High Point
- Ditch Drop Inlet
- 266.0 Ditch Elevation (feet NGVD29)
- Equipotential Lines

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0 100 200
Meters

0 400 800
Feet

Progress Energy Carolinas

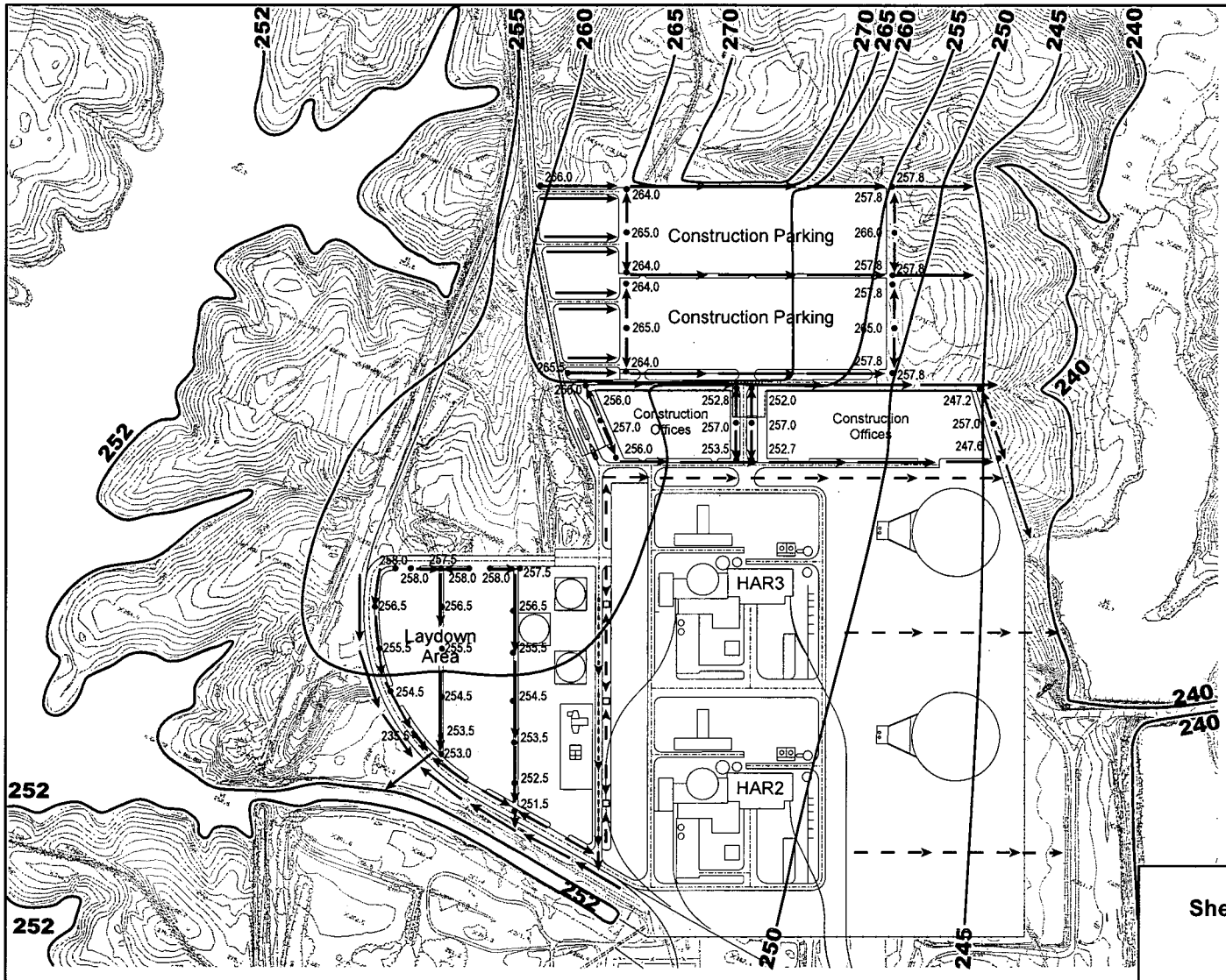
Shearon Harris Nuclear Power Plant Units 2 and 3

New Hill, North Carolina

Potentiometric Surface Lines Within the Bedrock as Measured on February 28, 2007 and Post-construction Site Drainage Map

FIGURE 3

Rev 0



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LEGEND

- Direction of Surface Water Flow
- Direction of Piped Water Flow
- Ditch High Point
- Ditch Drop Inlet
- 266.0 Elevation (feet NGVD29)
- Equipotential Lines

NOTES

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0 100 200
Meters

0 400 800
Feet

Progress Energy Carolinas

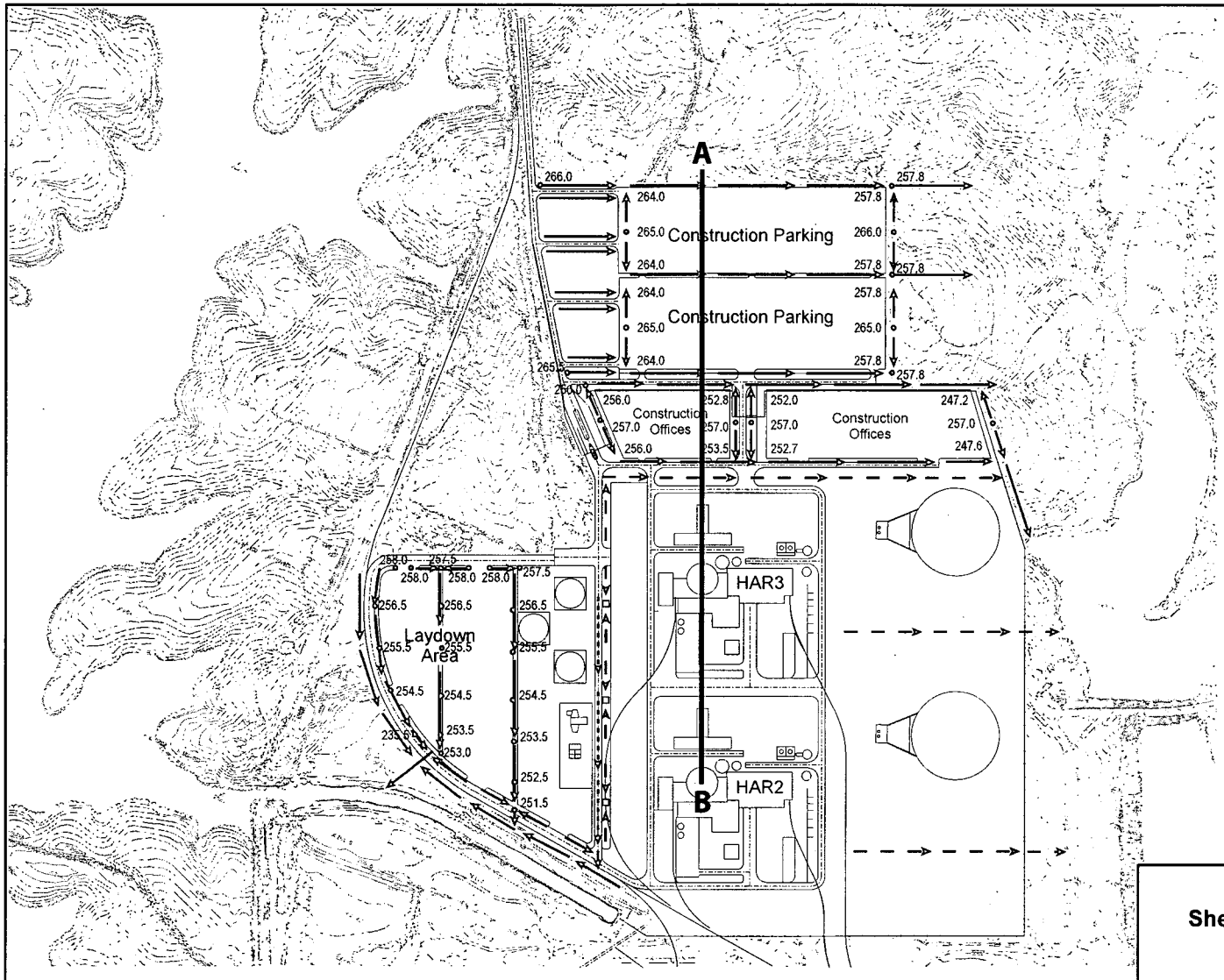
Shearon Harris Nuclear Power Plant Units 2 and 3

New Hill, North Carolina

Site Drainage Map and Estimated Potentiometric Surface Lines (Post-construction)

FIGURE 4

Rev 0



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LEGEND

- Direction of Surface Water Flow
- Direction of Piped Water Flow
- Ditch High Point
- Ditch Drop Inlet
- 266.0 Ditch Elevation (feet NGVD29)

NOTES

1. HAR 2 and HAR 3 proposed nominal grade elevation is 260-feet NGVD29.
2. Area surfacing will consist of crushed stone in contractor parking, laydown areas, and equipment areas.
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0 100 200
Meters

0 400 800
Feet

Progress Energy Carolinas

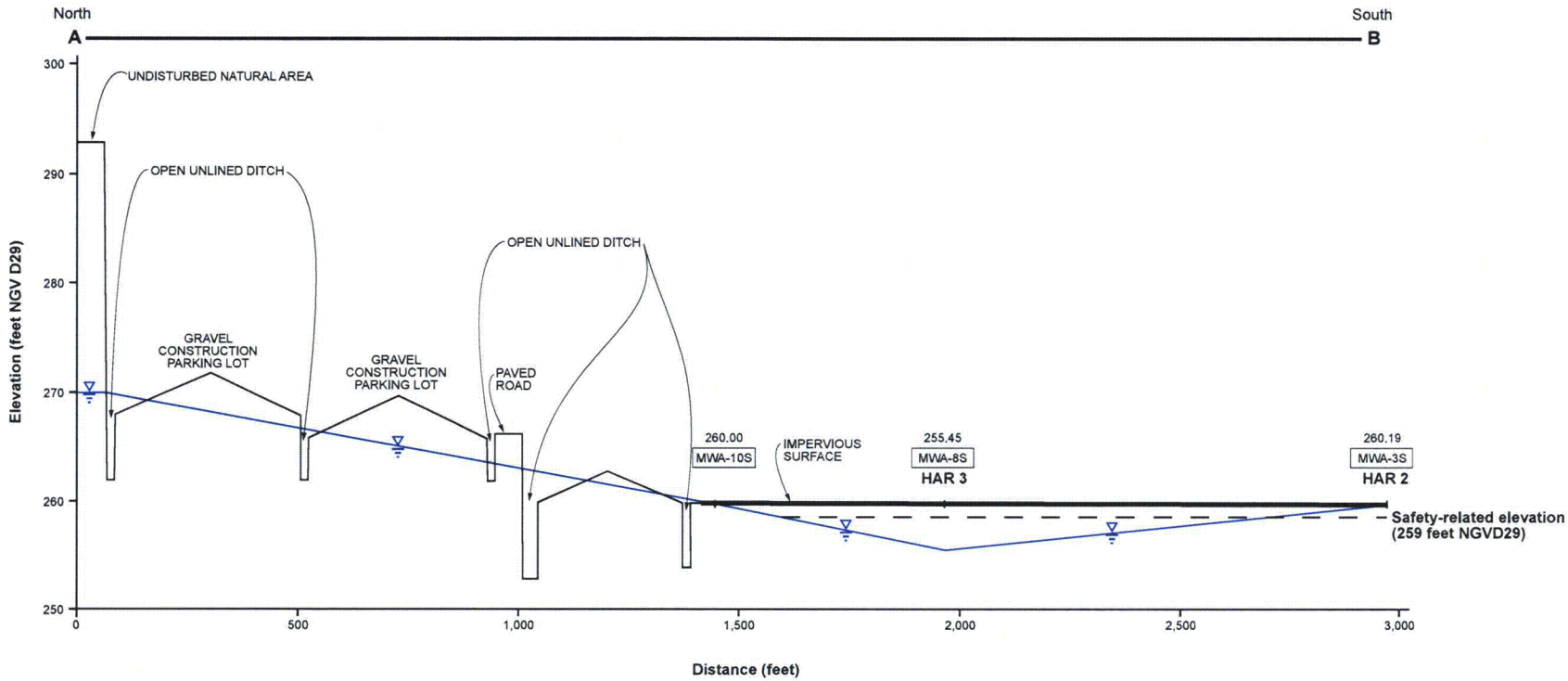
Shearon Harris Nuclear Power Plant Units 2 and 3

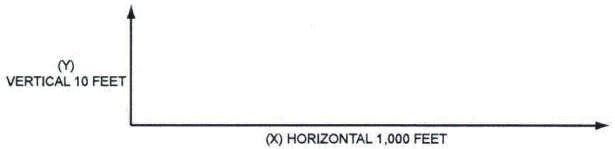
New Hill, North Carolina

Site Drainage Map and Cross-section Reference Line (Post-construction)

FIGURE 5

Rev 0





LEGEND

MWA-8S	Monitoring well screened in the surficial aquifer
255.45	Measured water level given in feet NGVD29
	Potentiometric Surface

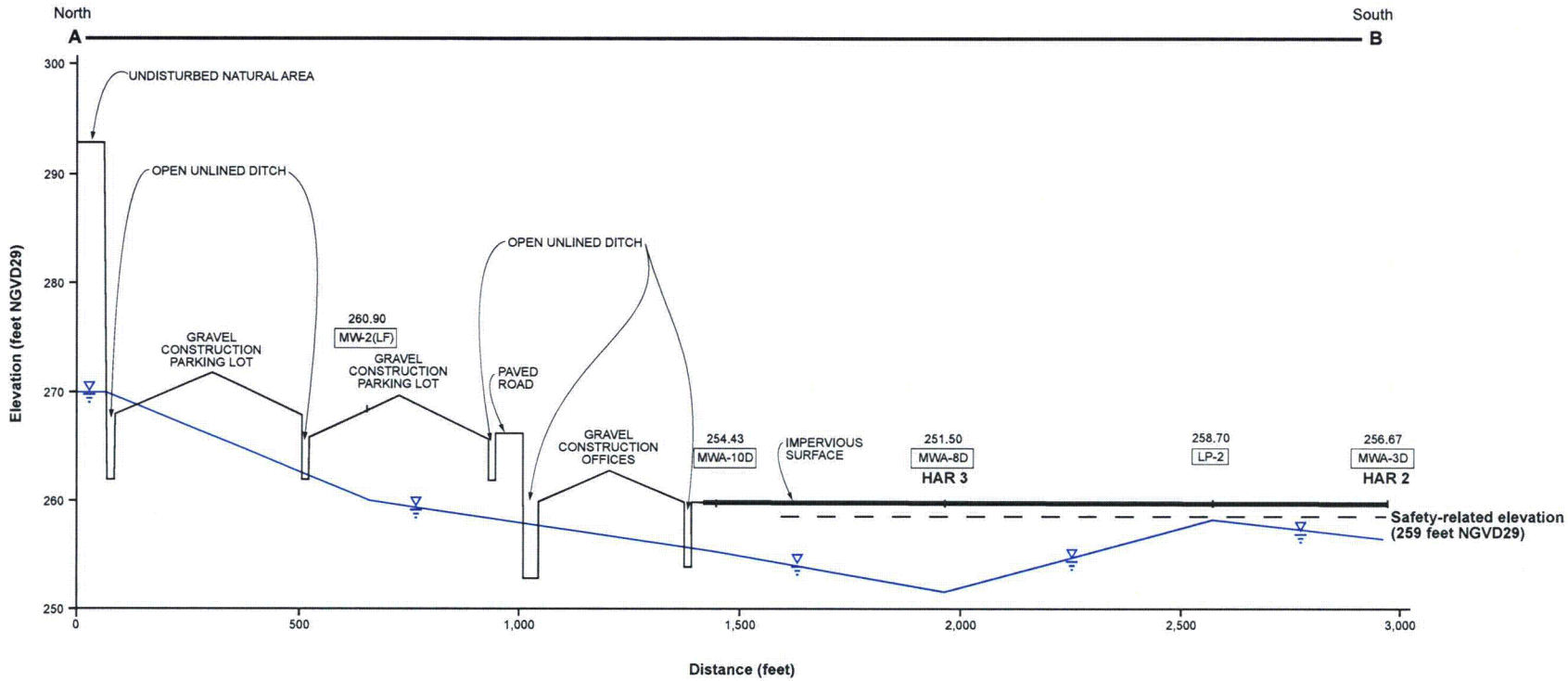
Progress Energy Carolinas
Shearon Harris Nuclear Power Plant Units 2 and 3

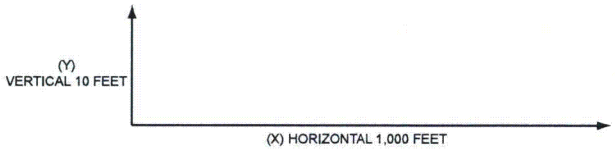
New Hill, North Carolina

Cross-section of Water Levels Within the Surficial Aquifer As Measured on February 28, 2007

FIGURE 6

Rev 0





LEGEND

MWA-8D	Monitoring well screened in the bedrock
251.50	Measured water level given in feet NGVD29
▽	Potentiometric Surface

Progress Energy Carolinas

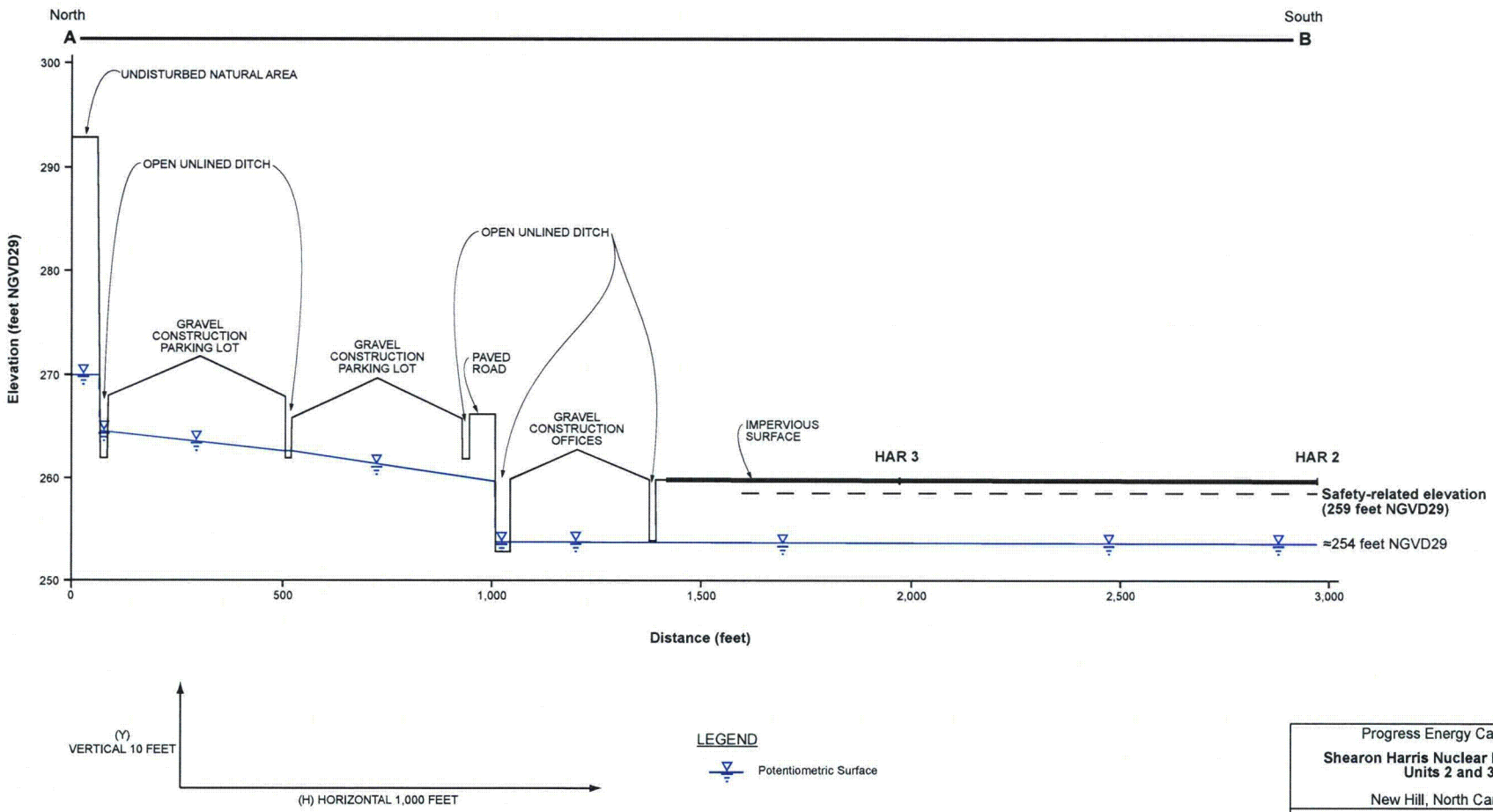
Shearon Harris Nuclear Power Plant Units 2 and 3

New Hill, North Carolina

Cross-section of Water Levels Within the Bedrock As Measured on February 28, 2007

FIGURE 7

Rev 0



LEGEND

Potentiometric Surface

Progress Energy Carolinas

Shearon Harris Nuclear Power Plant Units 2 and 3

New Hill, North Carolina

Cross-section from A to B: Estimated Water Levels After Construction of HAR 2 and HAR 3

FIGURE 8

Rev 0