NP-12-0025
July 5, 2012

10 CFR 52, Subpart A

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Exelon Nuclear Texas Holdings, LLC
Victoria County Station
Early Site Permit Application
Environmental Report – Response to ER RAI Letter No.11
Docket No. 52-042

References: (1) USNRC letter to Ms. Marilyn C. Kray, Environmental Request for Additional Information Letter No.11, Related to Nonradiological Health Impacts for the Victoria County Station Early Site Permit Application, dated May 24, 2012

Exelon is responding to the following questions contained in NRC Request for Additional Information (RAI) letter No.11 (Reference 1):

- NRH 4.4.1-1 (eRAI No.6455)
- NRH 4.4.1-2 (eRAI No.6455)
- NRH 5.3.4.1-1 (eRAI No.6455)
- NRH 5.3.4.1-3 (eRAI No.6455)

Exelon's responses to the above-referenced RAIs constitute a complete response to NRC RAI Letter No.11.

The RAI responses comprise Attachments 1-4. Regulatory commitments are summarized in Attachment 5.

If additional information is required, please contact Joshua Trembley at (610) 765-5345.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 5th day of July, 2012.

Respectfully,

Marilyn C. Kray
Vice President, Nuclear Project Development

Attachments:

(1) NRH 4.4.1-1 (eRAI No.6455)
(2) NRH 4.4.1-2 (eRAI No.6455)
(3) NRH 5.3.4.1-1 (eRAI No.6455)
(4) NRH 5.3.4.1-3 (eRAI No.6455)
(5) Summary of Commitments

cc: USNRC, Director, Office of New Reactors/NRLPO
USNRC, Project Manager, VCS, Division of New Reactor Licensing
USNRC, Environmental Project Manager, VCS, Division of New Reactor Licensing
USNRC Region IV, Regional Administrator
Argonne National Laboratory, Project Manager, VCS
EDMS

NRH 4.4.1-1 (eRAI No.6455):

NRC Request:

ESRP Section 4.4.1 directs the staff to review the physical impacts of construction-related activities on the community. Existing gas/oil wells are mentioned multiple places in the environmental report (ER) but potential impacts to the construction workers from these wells are not discussed. Discuss impacts to construction workers from existing oil and gas wells on the Victoria County Station (VCS) site.

Response:

Existing oil and gas wells on the VCS site have the potential to release gases which could have adverse effects on construction workers during well plugging activities and plant construction. The primary gas of concern with potential to leak from an oil/gas well is hydrogen sulfide - a naturally occurring component of oil and natural gas (methane). Carbon dioxide and nitrogen also have the potential to leak from improperly capped/plugged or open wells (EPA, 2008). Properties of these gases are listed below:

Table 1: Gaseous Threats from Abandoned and Operating Oil and Gas Wells

Gas	Flammability Limits	Toxicity Limit
Hydrogen Sulfide	4% - 44% (NIOSH, 2012)	100 ppm (Immediately Dangerous to Life and Health [IDLH]) (NIOSH, 2012)
Methane	5% - 15% (CHRIS, 1999)	Asphyxiant (CHRIS, 1999)
Carbon Dioxide	Not flammable (NIOSH, 2012)	40,000 ppm (IDLH) (NIOSH, 2012)
Nitrogen	Not flammable (CHRIS, 1999)	Asphyxiant (CHRIS, 1999)

However, any release of these gases would not be confined; therefore, it is not anticipated that construction workers will be exposed to concentrations of gas at toxic/asphyxiating limits due to dissipation into the ambient air. Furthermore, Best Management Practices (BMPs) will be used to minimize the potential threat to construction workers. BMPs to minimize exposure to construction workers could include, but not be limited to: pre-job training to educate construction workers regarding proper procedures for performing grading or other activities in the vicinity of an oil or gas well; establishment of an ambient monitoring program; and emergency response procedures and corrective action upon detection of a leaking oil or gas well. Additionally, as described in Subsection 4.4.1.1.1 of the ER, construction workers and onsite personnel will receive training and personal protective equipment to minimize the risk of potentially harmful exposures. A worker awareness training program could include, but not be limited to: educating construction workers regarding the potential dangers from exposure to flammable and toxic gases; proper use of hydrogen sulfide detection methods; and proper use and maintenance of personal protective equipment. Emergency first-aid care will be available at the construction site and offsite locations. Regular health and safety monitoring will be conducted during construction activities.

Additionally, Statewide Rule 36 of the Texas Railroad Commission was established to protect the public from the hazards of hydrogen sulfide; the rule consists of training, notification, and reporting information. The map included in Section I of Rule 36 shows that Victoria County is not located in an area of major hydrogen sulfide production in the state of Texas (RRC, 2012). Exelon would comply with the requirements in Rule 36 to ensure exposure to hydrogen sulfide from construction near oil and gas wells does not pose a health threat to workers. Therefore, it is not anticipated that there would be health related impacts to construction workers from existing oil and gas wells on the VCS site.

References:

CHRIS, 1999. United States Coast Guard, *Chemical Hazards Response Information System (CHRIS),* June 1999.

EPA, 2008. United States Environmental Protection Agency, *Oil and Gas at a Glance 1996-2005*, published 2008. Available online at: http://www.epa.gov/sectors/pdf/2008/oil_gas.pdf, Accessed June 13, 2012.

NIOSH, 2012. National Institute for Occupational Safety and Health, *NIOSH Pocket Guide to Chemical Hazards,* available online at: http://www.cdc.gov/niosh/npg/ npgsyn-a.html , Accessed June 11, 2012.

RRC, 2012. Texas Railroad Commission, *Statewide Rule 36 – Hydrogen Sulfide Safety*, available online at: http://www.rrc.state.tx.us/forms/publications/swr36/index.php, Accessed June 13, 2012.

Associated ER revisions:

There are no ER changes associated with this response.

NRH 4.4.1-2 (eRAI No.6455):

NRC Request:

ESRP 4.4.1 requires evaluating impacts associated with noise generated during construction activities. ER Section 2.7.7 includes a table of estimated long-term equivalent sound pressure levels from different phases of construction at three distances but it is not clear why these three distances were selected. Provide a list of locations that are vulnerable to noise impacts. Provide the distances from the proposed construction activity to the nearest sensitive areas and associated noise impacts.

Response:

The table in ER Section 2.7.7 provides estimated long-term equivalent sound pressure levels for three different noise monitoring locations during the six phases of construction (excavation, concrete pouring, steel erection, mechanical, cleanup, and steam (or air) blows for pipe cleaning) defined in a comprehensive construction noise study titled, *Power Plant Construction Noise Guide* (Bolt Beranek and Newman, 1977). The northern location (NSR-1), western boundary (NSR-2) and eastern location (NSR-5) are located approximately 6,800 feet, 3,900 feet and 10,000 feet away from the center of the power block, respectively. ER Section 2.7.7 identifies NSR-1, NSR-2, and NSR-5 as background noise monitoring locations for existing plant conditions. These locations were also used to estimate the noise level from construction activities concentrated in the power block area to the respective site boundaries described above. Most of the construction activities presented in the *Power Plant Construction Noise Guide* will occur within the power block; therefore, it was designated as the acoustic center for each construction phase. When all receptor locations are at greater distances compared to the distances between the construction locations, as is the case for the VCS site, it is appropriate to designate the construction locations with a single, integrated source that represents all the component source locations. (Bolt Beranek and Newman, 1977)

An additional evaluation was performed to determine the noise level at the nearest sensitive receptors. The nearest receptors, including nearest residences, identified for the assessment of radiological dose impacts from normal operation in ER Section 5.4 were used to determine the sensitive areas for the associated noise impacts (See ER Figure 6.2-6). The sensitive receptors nearest the site are labeled on ER Figure 6.2-6 as CND-02, CND-07, CND-08, CND-10, CND-12 and CND-15.

In order to provide the associated noise impacts at the sensitive receptors from construction activities within the power block area, estimated noise levels from concrete pouring, steel erection, mechanical, clean up and steam (or air) blows for pipe cleaning were estimated at CND-02 and CND-07 from the closest edge of the power block area and are provided in Table 1.

Unique to the VCS site, not included in the *Power Plant Construction Noise Guide,* will be construction activities associated with the construction of the cooling basin and the relocation of the pipeline as shown in ER Figure 4.1-1. Note that ER Figure 4.1-1 was revised in Exelon's response to RAI TE-5, submitted via letter NP-12-0024, dated June 11, 2012. Additionally, some construction activities are expected to occur north of the power block area. To determine impacts associated with construction of the cooling

basin, estimated noise levels at CND-08, CND-10 and CND-12, were determined from the nearest VCS site boundary. To determine impacts associated with the relocation of the pipeline, construction noise levels were estimated at CND-15 and, for conservatism, at an additional sensitive receptor, PR-1, from the closest pipeline construction area. The PR-1 receptor represents the closest structure at Paradise Ranch. PR-1 is located just east of monitoring receptor NSR-5. To determine impacts associated with construction activities north of the power block area, estimated noise levels at CND-02 and CND-07 from the nearest site boundary were determined. Table 1 provides the approximate noise levels at the nearest sensitive receptors surrounding the VCS site.

The estimated noise levels in Table 1 are based on the comprehensive construction noise study (Bolt Beranek and Newman, 1977). The sound levels estimated are representative of composite construction noise including equipment, processes and other typical sound sources at construction sites. Estimated sound pressure levels for cooling basin and pipeline construction were based on composite contour sound-level values representative of the power plant excavation phase. Peak and attenuating noise levels expected for power plant excavation are comparable to peak noise levels expected from operation of individual construction equipment as shown in ER Table 3.9-2.

Table 1: Associated Noise Impacts Due to Construction at the VCS site

Receptor Location[(a)]	Construction Phase	Estimated Long-Term Sound Pressure Level, LA_{eq}	Distance
CND-02	Excavation	55 dBA	2,690 feet[(b)]
	Concrete Pouring	41 dBA	6,570 feet[(c)]
	Steel Erection	45 dBA	6,570 feet[(c)]
	Mechanical	40 dBA	6,570 feet[(c)]
	Cleanup	35 dBA	6,570 feet[(c)]
	Steam (or Air) Blows for Pipe Cleaning	85 dBA	6,570 feet[(c)]
CND-07	Excavation	40 dBA	6,750 feet[(b)]
	Concrete Pouring	31 dBA	10,880 feet[(c)]
	Steel Erection	35 dBA	10,880 feet[(c)]
	Mechanical	30 dBA	10,880 feet[(c)]
	Cleanup	25 dBA	10,880 feet[(c)]
	Steam (or Air) Blows for Pipe Cleaning	75 dBA	10,880 feet[(c)]
CND-08	Cooling Basin Construction Activities	45 dBA[(d)]	5,790 feet[(b)]
CND-10	Cooling Basin Construction Activities	60 dBA[(d)]	1,680 feet[(b)]
CND-12	Cooling Basin Construction Activities	50 dBA[(d)]	3,620 feet[(b)]
CND-15	Pipeline Construction Activities	52 dBA[(d)]	3,100 feet[(e)]
PR-1	Pipeline Construction Activities	65 dBA[(d)]	1,100 feet[(e)]

[(a)] Potential VCS nearest receptor locations (ER Figure 6.2-6).
[(b)] Distance is measured from sensitive receptor to the VCS site boundary.
[(c)] Distance is measured from the sensitive receptor to the edge of the power block.
[(d)] Sound pressure levels are estimated for cooling basin and pipeline construction activities based on the contour sound-level values for power plant excavation (Bolt Beranek and Newman, 1977). Expected excavation noise levels are comparable to peak noise levels expected from operation of individual construction equipment as shown in ER Table 3.9-2.
[(e)] Distance is measured from the sensitive receptor to the closest pipeline construction area.

There are no established noise ordinances for Victoria County according to Texas Commission on Environmental Quality (TCEQ) and the Victoria County Health Department. Also, as reported in NUREG-1437, there are no Federal regulations for public exposures to noise. When noise levels are below the levels that result in hearing loss, impacts have been judged primarily in terms of adverse public reactions to noise.

The Department of Housing and Urban Development (24 CFR12 51.101(a)(8)) uses day-night average sound levels of 55 dBA, recommended by the Environmental Protection Agency (EPA) as guidelines or goals for outdoors in residential areas (EPA 1974). However, noise levels are considered acceptable if the day-night average sound level outside a residence is less than 65 dBA. Noise at the sensitive receptors would remain below 65 dBA for all phases of construction except for the steam blow phase. It is anticipated that the duration of a steam blow would last less than 15 minutes. The Occupational Safety and Health Administration's (OSHA) regulations found in 29 CFR Part 1910.95, occupational noise exposure, states that exposure to continuous stead-state noise is limited to a maximum of 115 dBA for a duration of 15 minutes or less. In addition, to account for multiple steam blows performed per day, the permissible exposure limit for noise is 90 dBA, as an eight hour time-weighted average. (OSHA 2008) Table 1 shows that steam (or air) blows for pipe cleaning is within OSHA permissible limits at the nearest sensitive receptor. Based on the estimated noise levels determined for the proposed construction, there would be no health related impacts at the sensitive receptor areas nearest the VCS site.

References:

Bolt Beranek and Newman, 1977. Bolt, Beranek, and Newman, Incorporated. *Power Plant Construction Noise Gude,* Report No. 3321, prepared for Empire State Electric Energy Research Corporation, New York, New York, May 1977.

EPA, 1978. U.S. Environmental Protection Agency. Protective Noise Levels: Condensed Version of EPA Levels Document. November 1978.

OSHA 2008. Occupational Safety and Health Standards. Occupational Noise Exposure Part 1910.95. December 2008.

Associated ESPA Revisions:

ER Section 2.7.7 will be revised, as follows, in a future ESP revision:

During the construction phase of the new units, noise will be generated from construction equipment and site traffic. The construction noise will be associated with building the units, the site infrastructure, and the construction of the cooling basin. Based on a comprehensive construction noise study conducted for the Empire State Electric Energy Research Corporation by Bolt, Beranek, and Newman (Bolt Beranek and Newman May 1977), in a report titled *Power Plant Construction Noise Guide*, the noise associated with construction is divided into six different phases: excavation; concrete pouring; steel erection; mechanical; cleanup; and steam-blow. The last phase may not be applicable to the construction and startup of nuclear units. The long-term average A-weighted equivalent sound pressure levels, LAeq, are listed in the table that follows as a function of distance for each of these phases. These sound pressure levels were estimated at the northern location (NSR-1), western boundary (NSR-2) and eastern location (NSR-3) monitoring receptors. The nearest residences, identified for the assessment of radiological dose impacts from normal operation in Section 5.4 were used as the sensitive receptors and areas for the associated noise impacts (See Figure 6.2-6). The noise impacts associated with sensitive receptors are presented in Section 4.4.1.2.

~~Mobile construction equipment will be used to construct the cooling basin. Residences near the construction site will experience short-term higher noise levels when construction equipment is working nearby. Estimates of long-term equivalent sound pressure levels were made for various distances from the construction area.~~

The first paragraph in ER Section 4.4.1.1.2 will be revised, as follows, in a future ESP revision:

4.4.1.1.2 Buildings

Construction activities would not impact offsite buildings because of the distance to any such structures. As stated previously, the nearest residence is approximately 1.5 miles from VCS. Table 3.9-2 presents data on attenuated noise levels expected from operation of construction equipment. Noise levels attenuate with distance. As described in Subsection ~~2.7.7~~ 4.4.1.2, the long-term equivalent sound pressure levels from construction activities were estimated at the closest sensitive receptors~~residences to the north and east, as well as at the western boundary of the site~~. Excluding steam/air blows for pipe cleaning, the maximum estimated noise level at the closest northern location is ~~40~~ approximately 55 dBA, the maximum at the closest western receptor ~~boundary~~ is ~~50~~ approximately 60 dBA and the maximum at the closest eastern receptor is approximately 65 dBA. There are two unoccupied residences on site that will be removed during construction.

Although there are historical structures located within 10 miles of the site (Subsection 2.5.3), none are located adjacent to the VCS site. The closest historical landmark is one-half mile to the south of the proposed site. No impacts due to vibration or shocks from construction activities would be expected at this location.

Any effects of physical impacts to buildings from construction activities will be SMALL and not warrant any mitigation.

The third paragraph in ER Section 4.4.1.2 will be revised, as follows, in a future ESP revision:

4.4.1.2 Predicted Noise Levels

As presented in Section 2.2, Victoria County is predominantly rural and characterized by agricultural land, forest land, and rangeland. Areas that are subject to farming are prone to seasonal noiserelated events such as planting and harvesting. As presented in Subsection 2.7.7, background noise measurements were conducted at select locations around the site. The noise levels ranged from 30 to 55 dBA, except at the location near U.S. Highway 77, where noise levels were approximately 60 dBA.

Table 3.9-2 identifies expected noise levels in the immediate vicinity (peak noise levels) and at various distances from a variety of construction tools and equipment that might be used. Construction workers would use hearing protection in accordance with good construction practices. As described above, noise levels attenuate quickly with distance. The noise from a dump truck or jackhammer can be as high as 108 dBA in the immediate vicinity, and only 88 dBA 50 feet away (Table 3.9-2).

No major roads, public buildings, recreational areas, or residences are located within the exclusion area. ~~As described in Subsection 2.7.7, the~~ The long-term equivalent sound pressure levels from construction activities were estimated at the closest receptors ~~residences to the north and east, as well as at the western boundary of the site~~ surrounding the site. The majority of the construction activities will occur within the vicinity of the power block. However, construction activities related to the cooling basin and the relocation of the pipeline, as shown in Figure 4.1-1, will extend past the power block. Residences near the construction site will experience short-term higher noise levels when construction equipment is working nearby. The sensitive noise receptors nearest the site are labeled on Figure 6.2-6 as CND-02, CND-07, CND-08, CND-10, CND-12 and CND-15. Sound pressure levels at these sensitive receptors from construction activities are estimated and provided in Table 4.4-25. The associated noise levels from construction activities within the power block area, including concrete pouring, steel erection, mechanical, clean up and steam (or air) blows for pipe cleaning were estimated at CND-02 and CND-07 from the closest edge of the power block. Excavation activities are expected to occur north of the power block, therefore, estimated noise levels from excavation were estimated at CND-02 and CND-07 from the nearest site boundary. As indicated, construction activities associated with the cooling basin and the relocation of the pipeline will occur away from the power block. The noise levels have been estimated at sensitive receptors, CND-08, CND-10 and CND-12, from the nearest VCS site boundary to account for cooling basin construction. Also, noise levels have been estimated at CND-15 and, for conservatism, at an additional sensitive area, PR-1, from the closest pipeline construction area. The PR-1 receptor represents the closest structure at Paradise Ranch. PR-1 is located just east of monitoring receptor NSR-5 shown in Figure 2.7-16. ~~The maximum estimated noise level at the residences is 40 dBA and the maximum at the western boundary is 50 dBA. The background noise levels at U.S. Highway 77 were measured at approximately 60 dBA. The noise from construction activities at the residences and at U.S. Highway 77 would be similar or lower than the background noise levels.~~ As shown in Table 4.4-25, noise at the sensitive receptors would remain below 65 dBA for all phases of construction except for the steam blow phase. It is anticipated that the duration of a steam blow would last less than 15 minutes. The Occupational Safety and Health Administration's (OSHA) regulations found in 29 CFR Part 1910.95, occupational noise exposure, states that exposure to continuous steady-state noise is limited to a maximum of 115 dBA for a duration of 15 minutes or less and the permissible exposure limit for noise is 90 dBA, as an eight hour time-weighted average. As reported in NUREG-1437 and referenced in NUREG-1555, noise levels below 65 dBA are considered of small significance.

Table 4.4-25 will be added to ER Section 4.4, as follows, in a future ESP revision:

Table 4.4-25
Associated Construction Noise Impacts At Sensitive Receptors

Receptor Location[a]	Construction Phase	Estimated Long-Term Sound Pressure Level, LA_{eq}	Distance
CND-02	Excavation	55 dBA	2,690 feet[b]
	Concrete Pouring	41 dBA	6,570 feet[c]
	Steel Erection	45 dBA	6,570 feet[c]
	Mechanical	40 dBA	6,570 feet[c]
	Cleanup	35 dBA	6,570 feet[c]
	Steam (or Air) Blows for Pipe Cleaning	85 dBA	6,570 feet[c]
CND-07	Excavation	40 dBA	6,750 feet[b]
	Concrete Pouring	31 dBA	10,880 feet[c]
	Steel Erection	35 dBA	10,880 feet[c]
	Mechanical	30 dBA	10,880 feet[c]
	Cleanup	25 dBA	10,880 feet[c]
	Steam (or Air) Blows for Pipe Cleaning	75 dBA	10,880 feet[c]
CND-08	Cooling Basin Construction Activities	45 dBA[d]	5,790 feet[b]
CND-10	Cooling Basin Construction Activities	60 dBA[d]	1,680 feet[b]
CND-12	Cooling Basin Construction Activities	50 dBA[d]	3,620 feet[b]
CND-15	Pipeline Construction Activities	52 dBA[d]	3,100 feet[e]
PR-1	Pipeline Construction Activities	65 dBA[d]	1,100 feet[e]

[a] Potential VCS nearest receptor locations (ER Figure 6.2-6).
[b] Distance is measured from sensitive receptor to the VCS site boundary.
[c] Distance is measured from the sensitive receptor to the edge of the power block.
[d] Sound pressure levels are estimated for cooling basin and pipeline construction activities based on the contour sound-level values for power plant excavation (Bolt Beranek and Newman 1977). Expected excavation noise levels are comparable to peak noise levels expected from operation of individual construction equipment as shown in ER Table 3.9-2.
[e] Distance is measured from the sensitive receptor to the closest pipeline construction area.

ER Section 5.3.4.2 will be revised, as follows, in a future revision:

5.3.4.2 Noise Impacts

The proposed VCS units would produce noise from the operation of pumps, cooling towers, transformers, turbines, generators, switchyard equipment, and loudspeakers. The highest levels of noise from VCS would be associated with the operation of the mechanical draft cooling towers. Noise from the mechanical draft cooling towers would be attenuated by the distance to the VCS site boundary. The exclusion area boundary is greater than 4000 feet in all directions from the power block reference point, and ~~the nearest full-time residence is approximately 4.5 miles from the site~~ there are no sensitive receptors located within the exclusion area boundary. The noise level generated by the cooling towers would be about 52 dBA at 400 feet from the towers and would be even lower at the exclusion area boundary. This noise level would be consistent with the existing background noise levels at the site. As reported in NUREG-1437 and referenced in NUREG-1555, noise levels below 65 dBA are considered of small significance. In addition, there are no applicable state or local noise regulations for unincorporated areas of Victoria County, where VCS is located. Thus, the impacts due to noise would be SMALL and would not warrant mitigation.

NRH 5.3.4.1-1 (eRAI No.6455):

NRC Request

ESP EIS 4.8-1

NRH 5.3.4.1-1 ESRP Section 5.3.4 directs the staff to review the human health impacts associated with the plant's cooling system. ER Section 5.3.4.1 states that the maximum temperature of the effluent would be 100 °F. ER Section 5.3.2 states that Segment 1803 of the Guadalupe River (where the blowdown would occur) has been assigned a site-specific, absolute maximum temperature criterion of 93° F. Provide an explanation of how liquid discharges at 100° F as noted in Section 5.3.4.1 (and others) would meet the state regulation that the liquid discharge temperature be less than 93° F.

Response

ER Subsection 5.3.2, Discharge Systems, describes proposed cooling basin blowdown discharges as follows:

> "Cooling basin blowdown would be pumped from the cold side of the cooling basin, where the condenser cooling and blowdown pumps would be located, to the Guadalupe River via a 48-inch-diameter blowdown discharge line. The blowdown line would terminate in a shoreline surface diffuser designed to promote mixing with the receiving water and rapidly disperse waste heat (Figure 3.4-4). Blowdown flows are expected to range between 0 and 40,000 gpm (Table 3.3-1). A range of approximately 7000 gpm to 40,000 gpm (the design maximum) was evaluated."

The CORMIX Version 5.0 model was used to simulate the temperature distribution in the Guadalupe River downstream of the discharge (blowdown diffuser). CORMIX is an EPA-supported mixing zone model that emphasizes the role of boundary interactions to predict steady-state mixing behavior and plume geometry. It is widely used and recognized as a state-of–the-art tool for discharge mixing zone analyses. ER Subsection 5.3.2.1, Thermal Discharges and Other Physical Impacts, discusses thermal modeling of VCS cooling basin blowdown discharges to the Guadalupe River in detail and concludes:

> "The thermal distribution resulting from discharging maximum (40,000 gpm) and 7Q10/7 (7053 gpm) blowdown flow into 623.84 cfs of river flow are presented in Table 5.3.2-1. The maximum (7053 gpm) blowdown flow into the 7Q10 river flow of 110 cfs is also presented. Two cases are presented: Max-ΔT for the largest discharge temperature excess over ambient (16.17°F) and Max-T for the maximum blowdown discharge temperature (100°F). The Max-ΔT case corresponds to the largest discharge excess temperature over ambient and thus the largest excess temperature isotherms. Even for the most restrictive case (7Q10/7 discharge flow into 7Q10 river flow with maximum ΔT), the downstream plume distances are within the typical TCEQ mixing zone extent of 300 feet. No more than 40 percent of the river cross-section would be impacted by the plume temperatures (ΔT of 5°F or temperature of 93°F) of interest."

As discussed in ER Section 5.3.2, the Texas Commission on Environmental Quality (TCEQ) mixing zone regulations referenced in the above-excerpted paragraph are located at Texas Administrative Code, Title 30, Part I, Section 307. The 5°F general criterion for freshwater streams is codified at 30 TAC 307.4(f)(1), while the 93°F segment-specific requirement for Segment 1803 of the Guadalupe River can be found in Appendix A of Section 307.10 (as cross-referenced from 307.4(f)(4)).

Provisions for mixing zones are described at 307.8(b). The referenced subsection states that a reasonable mixing zone is allowed at the discharge point of permitted discharges into surface water in the state and that maximum temperature differentials as established in §307.4(f) do not apply within mixing zones (307.8(b)(1)(D)). Note that Section 307 does not indicate what constitutes "a reasonable mixing zone". The typical TCEQ mixing zone value of 300 feet described in ER Subsection 5.3.2.1 is obtained from TCEQ RG-194, Procedures to Implement the Texas Surface Water Quality Standards (TCEQ 2003), as follows:

> ***"Perennial streams and rivers.*** Mixing zones for discharges into perennial streams or rivers are expressed in the permit in terms of longitudinal stream distance. The typical mixing zone extends 300 feet downstream and 100 feet upstream from the discharge point. Mixing zones may not preclude passage of free swimming or drifting aquatic organisms to the extent that aquatic life use is significantly affected."

References:

TCEQ 2003. Texas Commission on Environmental Quality, RG-194, Procedures to Implement the Texas Surface Water Quality Standards, January 2003. p.40. Available at: http://www.tceq.texas.gov/publications/rg/rg-194.html, accessed July 2, 2012.

Associated ESPA Revisions:

There are no ESPA revisions associated with this response.

NRH 5.3.4.1-3 (eRAI No.6455):

NRC Request

NRH 5.3.4.1-3 ESRP Section 5.3.4 directs the staff to review the human health impacts associated with the plant's cooling system. Has the Texas Department of State Health Services been contacted concerning the incidence of etiological agents in Texas within Segment 1803 of the Guadalupe River? State agencies may be able to provide more recent data than the Centers for Disease Control on waterborne disease and outbreaks. The latest data provided in ER Section 5.3.4.1 is from 2008 (i.e., four years old). Provide documentation of any correspondence with the Texas Department of State Health Services in support of the evaluation of etiological agents in the vicinity of the discharge from the VCS units into the Guadalupe River.

Response:

Exelon checked the website of the Texas Department of State Health Services regarding incidences of Primary Amebic Meningoencephalitis (PAM) in Texas (TDSHS 2012) and found that there were no cases within the state in 2009 and 2011, but that there was one case each in 2008 and 2010. This represents the most up-to-date information available.

Next, Exelon contacted the Texas Department of State Health Services regarding incidences of infectious disease exposure to the Guadalupe River in Victoria County. Marilyn Felkner, DrPH, responded as follows:

> Neither the 2008 nor the 2010 PAM case were residents of Victoria County, nor based on our patient information, did they have exposure to recreational water in Victoria County. For other etiological agents, while we do have disease incidence based on county of residence, the database does not routinely include information on water exposures. You may wish to contact the Victoria County Health Department for information specific to their jurisdiction. Their number is 361-578-6281.

Finally, Exelon contacted the Victoria County Health Department to inquire if there were any infectious diseases from water exposure in Victoria County, most specifically with respect to the Guadalupe River.

Bain C. Cate, M.D., of the Victoria City-County Health Department responded that the Department does not monitor the incidence of waterborne diseases and that the Texas Department of State Health Services is the appropriate resource.

From these contacts, Exelon concludes that information gained subsequent to the submission of the VCS ER does not indicate any occurrence of PAM along Segment 1803 of the Guadalupe River. There is no record available to Exelon of any other water-borne diseases from Guadalupe River exposure.

Exelon notes that Information Need NR-3a requested information about causes and health impacts of *Karenia brevis*. Exelon provided a response in letter NP-12-0016, April 9, 2012, ML12103A265.

References:

TDSHS (Texas Department of State Health Services) 2012. "Primary Amebic Meningoencephalitis" available online at http://www.dshs.state.tx.us/idcu/disease/primary_amebic_meningoencephalitis/, accessed on June 4, 2012.

Associated ESPA Revisions:

There are no ESPA revisions associated with this response.

ATTACHMENT 5

SUMMARY OF REGULATORY COMMITMENTS

(Exelon Letter to USNRC No. NP-12-0025, dated July 5, 2012)

The following table identifies commitments made in this document. (Any other actions discussed in the submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.)

COMMITMENT	COMMITTED DATE	COMMITMENT TYPE	
		ONE-TIME ACTION (Yes/No)	Programmatic (Yes/No)
ER Subsections 2.7.7, 4.4.1.1, 4.4.1.2, and 5.3.4.2 will be updated in a future revision of the ESPA. Additionally, Table 4.4-25 will be added to ER Section 4.4. [NRH 4.4.1-2 (eRAI No.6455) response]	March 31, 2013	Yes	No