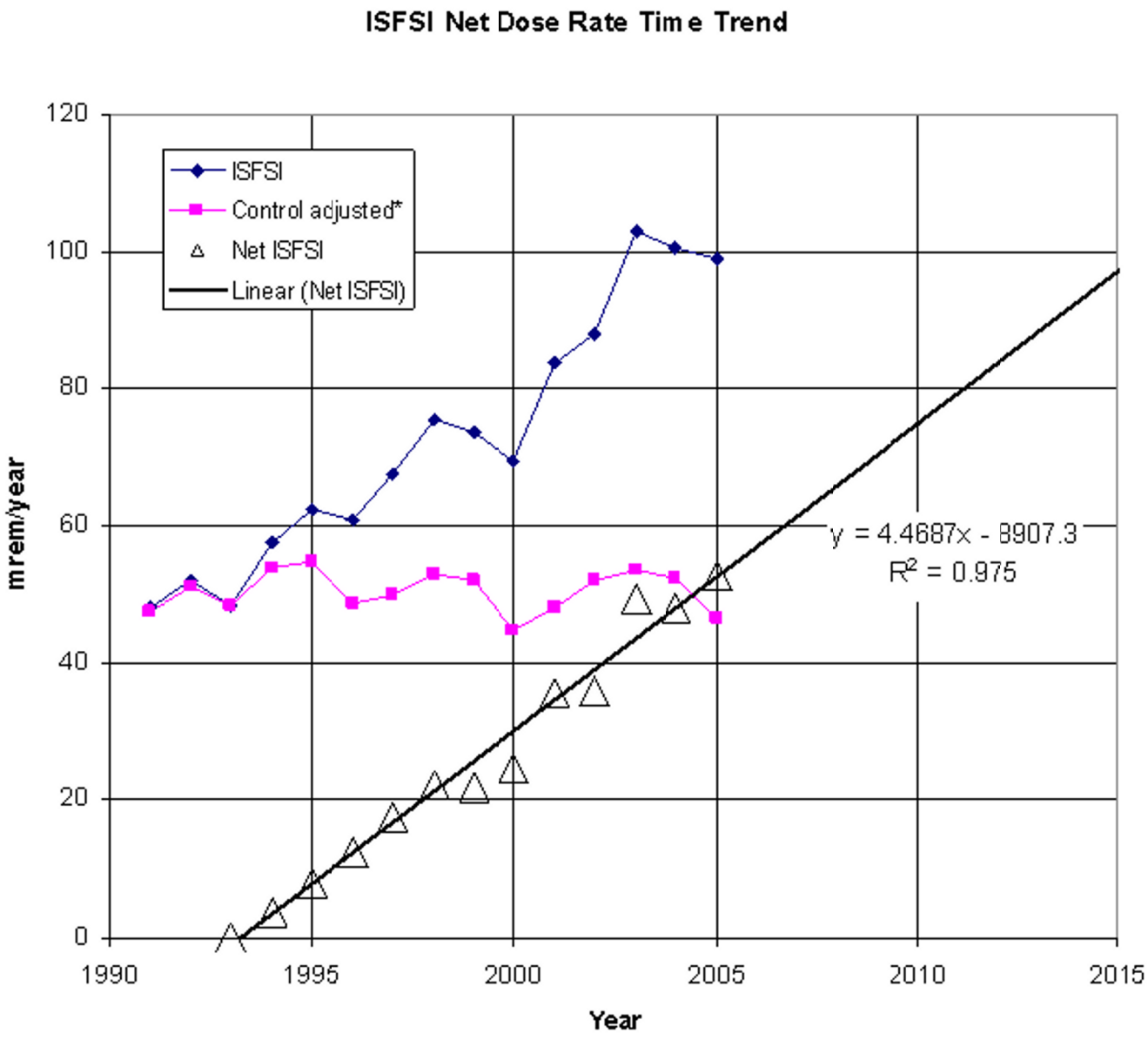

FIGURE 4.5-10 **Rev. 2**

{ANNUAL GAMMA NET ISFSI DOSE RATE}

CCNPP UNIT 3 ER

CCNPP Interim Resin Storage Area showing Site Grid overlaid on an Aerial Photograph. The locations of TLDs RPDR05 thru 12 shown in red.

FIGURE 4.5-11 **Rev. 2**

{RESIN AREA TLD LOCATIONS}

CCNPP UNIT 3 ER

4.6 MEASURES AND CONTROLS TO LIMIT ADVERSE IMPACTS DURING CONSTRUCTION

In general, potential impacts will be minimized through compliance with applicable Federal, **{**Maryland**}**, and local laws and regulations enacted to prevent or minimize adverse environmental impacts that may be encountered such as air emissions, noise, storm water pollutants, and spills. Principal among these will be the National Pollutant Discharge Elimination System (NPDES) Construction General Permit and the Corps of Engineers 404 Permit to minimize sediment erosion and protect water quality. The Site Resource Management Plan will address affected site lands and waters. Also included will be required plans such as a Storm Water Pollution Prevention Plan (SWPPP) and associated Best Management Practices (BMPs) as well as administrative actions **{**such as a Traffic Management Plan.**}**

Table 4.6-1 lists the potential impacts associated with the construction activities described in Sections 4.1 through 4.5 and 4.7. The table identifies, from the categories listed below, which adverse impact may occur as a result of construction activities and its relative significance rating (i.e., [S]mall, [M]oderate, or [L]arge) following implementation of associated measures and controls. Table 4.6-1 also includes a brief description, by ER Section, of each potential impact and the measures and controls to minimize the impact, if needed.

- Erosion and Sedimentation
- Air Quality (dust, air pollutants)
- Wastes (effluents, spills, material handling)
- Surface Water
- Groundwater
- Land Use
- Water Use and Quality
- Terrestrial Ecosystems
- Aquatic Ecosystems
- Socioeconomic
- Aesthetics
- Noise
- Traffic
- Radiation Exposure
- Other (site specific (i.e., non-radiological health impacts))

Based on existing site conditions, **{**in-place CCNPP Units 1 and 2 programs and procedures**}**, as well as the measures and controls proposed, the potential adverse impacts identified from the construction of **{**CCNPP Unit 3**}** are anticipated to be SMALL, if any, **{**for all categories evaluated except: (1) surface waters, which is expected to be MODERATE and require mitigation due to the impact of wetlands and wetland buffers; (2) traffic, which is expected to be MODERATE but manageable with the implementation of a Traffic Management Plan.**}**

{Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 1 of 10)

ER Reference Section	Potential Impact Category and Description															Proposed Measures and Controls or Mitigating Circumstances
	Erosion/Sediment (ES)	Air Quality (AQ)	Wastes (WS)	Surface Water (SW)	Groundwater (GW)	Land Use (L)	Water Use & Quality (W)	Terrestrial Ecosystems (TE)	Aquatic Ecosystems (AE)	Socioeconomic (S)	Aesthetics (A)	Noise (N)	Traffic (T)	Radiation Exposure (R)	Other (site specific) (O)	
4.1 Land Use Impacts	S	S	S	M	-	S	-	S	S	-	-	-	-	-	-	
4.1.1 The Site and Vicinity	Clearing, grading, excavation, and re-contouring. (ES)(AQ)(L)(TE)															Comply with NPDES Construction General Permit, including EPA effluent limitations.
	Disturbance (temporary and permanent) of wetlands and streams in vicinity. (SW)(AE)															Use site Resource Management Plan and BMPs to protect resources such as wetlands and streams in vicinity.
																Comply with individual Corps of Engineers 404 Permit.
																Comply with Maryland Non-Tidal Wetlands Protection Act permit.
																Restore wetlands and wetland buffers temporarily disturbed during construction.
																Construct new wetlands.
	Soil stockpiling and disturbance to natural drainage channels. (L)(ES)															Implement Storm Water Pollution Prevention Plan (SWPPP), including sediment and erosion control.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 2 of 10)

ER Reference Section	Potential Impact Category and Description	Proposed Measures and Controls or Mitigating Circumstances
4.1.1 The Site and Vicinity (Cont.)	Removal of existing trees and vegetation. (WS)(TE)	Use site Resource Management Plan and comply with BMP requirements; on-site land is not used for farmland nor is it considered prime or unique.
		Unmerchantable trees and slash will be chipped and spread as wood chips, or disposed of at an offsite landfill.
		Acreage will be restored following construction to the extent possible.
	Construction of temporary and permanent structures. (AQ)(L)(TE)	Construction footprint would be wholly contained on an existing dedicated nuclear power plant site.
	Release of fuels, oils, or other chemicals. (WS)(TE)(AE)	Implement Spill Prevention Control and Countermeasures (SPCC) Plan.
4.1.2 Transmission Corridors and Off-site Areas	The existing transmission lines have sufficient capacity to carry the total output of existing CCNPP Units 1 and 2, as well as CCNPP Unit 3; as a result, there will be no new off-site transmission lines or rights-of-way disturbance. (L)(TE)	Use existing transmission corridor maintenance policies and practices to protect terrestrial and aquatic ecosystems.
4.1.3 Historic Properties (and Cultural Resources)	Disturbance of archaeological resources. (L)	Perform Phase II Cultural Resource Survey.
		In consultation with the SHPO, develop plan and procedures to manage identified/unidentified historic/cultural resource.
		Take appropriate actions (e.g., stop work) following discovery of potential historic/cultural resource.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 3 of 10)

ER Reference Section	Potential Impact Category and Description															Proposed Measures and Controls or Mitigating Circumstances
	Erosion/Sediment (ES)	Air Quality (AQ)	Wastes (WS)	Surface Water (SW)	Groundwater (GW)	Land Use (L)	Water Use & Quality (W)	Terrestrial Ecosystems (TE)	Aquatic Ecosystems (AE)	Socioeconomic (S)	Aesthetics (A)	Noise (N)	Traffic (T)	Radiation Exposure (R)	Other (site specific) (O)	
4.2 Water-Related Impacts	S	-	S	M	S	S	S	-	S	-	-	-	-	-	-	
4.2.1 Hydrologic Alterations	Erosion, sediment, and storm water runoff (from on-site building, utilities, and road construction activities). (ES)(SW)(GW)(W)															Implement Storm Water Pollution Prevention Plan (SWPPP), including sediment and erosion control, as part of the NPDES Construction General Permit requirements.
	Chesapeake Bay turbidity/sediment effects (from dredging, refurbishment of the shoreline unloading facility, and installation of the Intake and Discharge Structures). (WS)(SW)(W)(AE)															Comply with Corps of Engineers 404 Permit requirements.
	Temporary increase in groundwater withdrawal. (GW)(W)															Comply with existing Groundwater Water Appropriations and Use Permit Withdrawal Limit.
																Use off-site water supply.
																Install Desalinization Plant.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 4 of 10)

ER Reference Section	Potential Impact Category and Description	Proposed Measures and Controls or Mitigating Circumstances
4.2.1 Hydrologic Alterations (Cont.)	Temporary dewatering activities. (GW)(W)	Comply with COMAR 26.17.06 for dewatering activities or obtain Water Appropriation and Use Permit, as needed.
		Comply with individual Corps of Engineers 404 Permit.
		Comply with BMP requirements.
		Monitor perched water levels.
	Disturbance of wetlands and streams in vicinity. (SW)(AE)	Use site Resource Management Plan and BMPs to protect resources such as wetlands and streams in vicinity.
		Comply with Maryland Non-Tidal Wetlands Protection Act permit.
		Comply with individual Corps of Engineers 404 Permit.
		Restore wetlands and wetland buffers temporarily disturbed during construction.
		Construct new wetlands.
	Shift of the Surficial aquifer recharge area(s). (GW)	Monitor perched water levels.
4.2.2 Water Use Impacts	Temporary increase in groundwater withdrawal. (GW)(W)	Comply with existing Groundwater Water Appropriations and Use Permit Withdrawal Limit.
		Use off-site water supply.
		Install Desalinization Plant.
	Reduction in available pervious (infiltration) areas. (GW)(W)	Install bio-retention ditches to allow runoff to infiltrate.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 5 of 10)

ER Reference Section	Potential Impact Category and Description	Proposed Measures and Controls or Mitigating Circumstances
4.2.2 Water Use Impacts (Cont.)	Temporary dewatering activities. (GW)	Comply with COMAR 26.17.06 for dewatering activities or obtain Water Appropriation and Use Permit, as needed.
		Comply with individual Corps of Engineers 404 Permit.
		Comply with BMP requirements.
	Disturbance of wetlands and streams in vicinity. (SW)(AE)	Use site Resource Management Plan and BMPs to protect resources such as wetlands and streams in vicinity.
		Comply with Maryland Non-Tidal Wetlands Protection Act permit.
		Comply with individual Corps of Engineers 404 Permit.
		Comply with BMP requirements
		Restore wetlands and wetland buffers temporarily disturbed during construction.
		Construct new wetlands.
	Construction of new impoundments and modification of existing impoundments. (L)(AE)	Use site Resource Management Plan and BMPs to protect resources such as wetlands and streams in vicinity.
	Release of fuel, oils, or other chemicals. (WS)(AE)	Implement Spill Prevention, Control, and Countermeasures (SPCC) Plan.
	Temporary increase in sediment and silt. (ES)(W)	Implement Storm Water Pollution Prevention Plan (SWPPP), including sediment and erosion control, as part of the NPDES Construction General Permit requirements.
	Temporary increase in turbidity. (ES)(W)	Comply with Corps of Engineers 404 Permit requirements.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 6 of 10)

ER Reference Section	Potential Impact Category and Description															Proposed Measures and Controls or Mitigating Circumstances
	Erosion/Sediment (ES)	Air Quality (AQ)	Wastes (WS)	Surface Water (SW)	Groundwater (GW)	Land Use (L)	Water Use & Quality (W)	Terrestrial Ecosystems (TE)	Aquatic Ecosystems (AE)	Socioeconomic (S)	Aesthetics (A)	Noise (N)	Traffic (T)	Radiation Exposure (R)	Other (site specific) (O)	
4.3 Ecological Impacts	S	-	-	-	-	-	S	S	S	-	S	-	-	-	-	
4.3.1 Terrestrial Ecosystems	Loss of vegetation (i.e., oaks, hickories, mountain laurel and showy goldenrod) and existing habitat for important fauna (i.e., white-tailed deer and scarlet tanager and other forest-interior dwelling species (FIDS)), as well as forest cover. (TE)															Use site Resource Management Plan and BMPs to protect resources.
																To the extent practicable, design construction footprint to account for CBCA and other important habitat, including bald eagles nests.
																If any bald eagles' nest is located within the construction area, the Maryland Department of Natural Resources and U.S. Fish and Wildlife service will be contacted to determine the required mitigating actions.
																Minimize cooling tower lighting, as practicable and allowed by regulation.
																Create new habitats (i.e., unforested uplands to ultimately generate a mixed deciduous forest).
																Maintain remaining unforested upland as old field habitat.
																Acreage will be restored following construction to the maximum extent possible.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 7 of 10)

ER Reference Section	Potential Impact Category and Description	Proposed Measures and Controls or Mitigating Circumstances
4.3.1 Terrestrial Ecosystems (Cont.)	Disturbance (temporary and permanent) of wetlands and streams in vicinity. (ES)(AE)(A)	Use site Resource Management Plan and BMPs to protect resources such as wetlands and streams in vicinity.
		Comply with Maryland Non-Tidal Wetlands Protection Act Permit.
		Comply with BMP requirements.
		Comply with individual Corps of Engineers 404 Permit.
	Temporary disturbance of Chesapeake Bay Critical Area (CBCA). (AE)(A)	Preserve aesthetically outstanding tree clusters, as practical; harvest merchantable timber; use or recycle other woody material, as appropriate; develop reforestation plan.
	Limited mortality of wildlife (e.g., avian collisions with man-made structures.) (TE)(AE)	Use site Resource Management Plan and BMPs to protect resources.
4.3.2 Aquatic Ecosystems	Disturbance (temporary and permanent) of wetlands and streams in vicinity; however, on-site wetlands are not substantively distinguishable from other wetlands in the site vicinity and streams within the construction zone contain no rare or unique aquatic species. (SW)(ES)(AE)(A)	Use site Resource Management Plan and BMPs to protect resources.
		Implement Spill Prevention, Control, and Countermeasures (SPCC) Plan.
		Comply with Maryland Non-Tidal Wetlands Protection Act Permit.
		Comply with individual Corps of Engineers 404 Permit.
		Comply with BMP requirements.
		Restore wetlands and wetland buffers temporarily disturbed during construction.
		Construct new wetlands.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 8 of 10)

ER Reference Section	Potential Impact Category and Description	Proposed Measures and Controls or Mitigating Circumstances
	Temporary sediment and silt buildup. (ES)(AE)	Implement Storm Water Pollution Prevention Plan (SWPPP), including sediment and erosion control and the construction of new impoundments, as appropriate.
	Temporary turbidity increase. (ES)(AE)(W)	Comply with Corps of Engineers 404 Permit requirements.
	Limited mortality of fish (i.e., resulting from sedimentation). (AE)	Comply with BMPs, including intercepting and retaining sediment before it reaches streams.
4.4 Socioeconomic Impacts	Erosion/Sediment (ES): - Air Quality (AQ): S Wastes (WS): S Surface Water (SW): - Groundwater (GW): - Land Use (L): - Water Use & Quality (W): - Terrestrial Ecosystems (TE): - Aquatic Ecosystems (AE): - Socioeconomic (S): S Aesthetics (A): S Noise (N): S Traffic (T): M Radiation Exposure (R): - Other (site specific) (O): -	
4.4.1 Physical Impacts	Equipment and non-routine noise. (N)	Comply with applicable MDE noise limits.
		Comply with applicable OSHA noise-exposure limits.
	Air emissions (fugitive emissions and exhaust emissions) increase. (AQ)(WS)	Comply with applicable EPA and MDE air quality regulations.
		Implement routine vehicle/equipment inspection and maintenance program.
	Local and regional traffic increase. (AQ)(T)	Install new site perimeter and access road.
		Conduct Phase 2 Traffic Impact Analysis (TIA).
		Develop Traffic Management Plan using Phase 2 TIA results.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 9 of 10)

ER Reference Section	Potential Impact Category and Description	Proposed Measures and Controls or Mitigating Circumstances
	The site is aesthetically altered due to CCNPP Units 1 and 2. Additional temporary impacts due to the visibility of construction activities. (A)	No mitigating measures required, because local residences and road traffic have limited visibility of site due to heavily wooded area.
4.4.2 Social and Economic Impacts	Influx of large construction work force. (S)	Small aggregate socioeconomic impacts anticipated, mitigation not required.
	Public services need (housing, schools, land use) increase. (S)	Small aggregate socioeconomic impacts anticipated; mitigation not required.
	Spending and tax revenue increase. (S)	Large beneficial impact to county property tax revenues; small beneficial impact for other types of tax revenues. No mitigating measures or controls required.
4.4.3 Environmental Justice Impacts	No disproportionate adverse impacts to minority or low-income populations. (S)	No mitigating measures or controls required
4.5 Radiation Exposure to Construction Workers	Erosion/Sediment (ES) - Air Quality (AQ) - Wastes (WS) - Surface Water (SW) - Groundwater (GW) - Land Use (L) - Water Use & Quality (W) - Terrestrial Ecosystems (TE) - Aquatic Ecosystems (AE) - Socioeconomic (S) - Aesthetics (A) - Noise (N) - Traffic (T) - Radiation Exposure (R) S Other (site specific) (O) -	
	ISFSI and Interim Resin Storage Area direct radiation exposure. (R)	Total Effective Dose Equivalent (TEDE) from all exposures has been determined to be below limits set in 10 CFR 20.1301.
		Implement ALARA practices at construction site.

Table 4.6 - 1 Summary of Measures and Controls to Limit Adverse Impacts During Construction
(Page 10 of 10)

ER Reference Section	Potential Impact Category and Description															Proposed Measures and Controls or Mitigating Circumstances
	CCNPP Units 1 and 2 gaseous effluents exposure. (R)															Implement ALARA practices at construction site.
	CCNPP Units 1 and 2 liquid effluents exposure. (R)															Implement ALARA practices at construction site.
4.7 Non-Radiological Health Impacts	Erosion/Sediment (ES)	Air Quality (AQ)	Wastes (WS)	Surface Water (SW)	Groundwater (GW)	Land Use (L)	Water Use & Quality (W)	Terrestrial Ecosystems (TE)	Aquatic Ecosystems (AE)	Socioeconomic (S)	Aesthetics (A)	Noise (N)	Traffic (T)	Radiation Exposure (R)	Other (site specific) (O)	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S	
	Risk to workers from accidents and occupational illnesses. (O)															Implement site-wide Safety and Medical Program, including safety policies, safe work practices, as well as general and topic-specific training.

4.7 NONRADIOLOGICAL HEALTH IMPACTS

4.7.1 PUBLIC HEALTH

Members of the public can potentially be put at risk by construction of a new power generation unit and associated new transmission lines. Nonradiological air emissions and dust can migrate offsite through the atmosphere to nearby residences or businesses. Noise can also propagate offsite. The increase in traffic from commuting construction workers and deliveries can result in additional air emissions and traffic accidents. Section 4.4.1, "Physical Impacts, addresses these potential impacts to the public from construction activities.

4.7.2 OCCUPATIONAL HEALTH

Construction of a new power generation unit and associated transmission lines would involve risk to workers from accidents or occupational illnesses. These risks could result from construction accidents (e.g., falls and burns), exposure to toxic or oxygen-replacing gases, and other causes.

During construction of **{**CCNPP Unit 3**}, {**Constellation Generation Group and UniStar Nuclear Operating Services**}** will provide a safety and medical program with associated personnel to promote safe work practices and respond to occupational injuries and illnesses. The safety and medical program will utilize an industrial safety manual providing a set of work practices with the objective of preventing accidents due to unsafe conditions and unsafe acts. These safe work practices address hearing protection, confined space entry, personal protective equipment, respiratory protection, heat stress, electrical safety, excavation and trenching, scaffolds and ladders, fall protection, chemical handling, storage, and use, and other industrial hazards. The safety and medical program provides for employee training on safety procedures. Site safety and medical personnel are provided to handle construction accidents and occupational illnesses.

Contractors, including construction contractors, will be required to review all safety policies/safe work practices applicable to their work with site personnel. The contractors will be required to comply with site safety, fire, radiation, security polices, procedures, safe work practices, and federal and state regulations.

The Bureau of Labor Statistics maintains records of a statistic known as total recordable cases (TRC), which are a measure of annual work-related injuries or illnesses that include death, days away from work, restricted work activity, medical treatment beyond first aid, and other criteria. The **{**2005**}** nationwide TRC rate published by the Bureau of Labor Statistics for utility system construction is **{**5.6**}** per 100 workers **{**(BLS, 2005a)**}**. The same statistic for the **{**State of Maryland is 6.3**}** per 100 workers **{**(BLS, 2005b)**}**. **{**Constellation Generation Group and UniStar Nuclear Operating Services**}** have calculated the TRC incidence for the proposed construction site. Using the monthly employment numbers and the national and **{**Maryland**}** TRC rates, monthly TRCs were estimated from which an average monthly rate was developed. The average monthly rate was then used to calculate the annual average TRCs over the 68 months of pre-construction and construction activities, the estimates are as follows:

	TRC Incidence	**TRC Incidence**
	Based on US Rate	**Based on {MD} Rate**
Average Annual	**{**154**}**	**{**174**}**

The Bureau of Labor Statistics published **{**2005**}** statistics for fatal occupational injuries **{**(BLS, 2005c)**}** and average employment **{**(BLS, 2005a)**}** that were used to calculate the nationwide

annual rate of fatal occupational injuries for utility system construction. Using monthly construction employment predictions and the calculated rate **{**0.027%**}**, it is estimated that **{**4**}** construction deaths could occur over the pre-construction and construction period of 68 months. **{**Constellation Generation Group and UniStar Nuclear Operating Services**}** will require all construction contractors and subcontractors working at the construction site to comply with all safety procedures in order to prevent and/or minimize the number of deaths, injuries, and illness during the construction of **{**CCNPP Unit 3**}**. Even with effective safety procedures, construction work carries the risk or injury, illness, and death. However, it is not expected that the construction of a new nuclear power generation facility will result in more construction deaths than other similarly sized non-nuclear heavy construction projects.

4.7.3 REFERENCES

BLS, 2005a. Table 1, Incidence rates of nonfatal occupational injuries and illnesses by industry and case types, 2005, Bureau of Labor Statistics, Website: http://www.bls.gov.iif/oshwc/osh/os/ostb1619.pdf, Date accessed: February 27, 2007.

BLS, 2005b. Table 6, Incidence rates of nonfatal occupational injuries and illnesses by industry and case types, 2005, Maryland, Bureau of Labor Statistics, Website: http://www.bls.gov.iif/oshwc/osh/os/pr056md.pdf, Date accessed: February 27, 2007.

BLS, 2005c. Table A-1, Fatal occupational injuries and even or exposure, All United States, 2005, Bureau of Labor Statistics, Website: http://www.bls.gov.iif/oshwc/cfoi/cftb0205.pdf, Date accessed: March 5, 2007.