

PPRP

Environmental Review of the Air Pollution Control Project at the Dickerson Generating Station

July 2010

**MARYLAND POWER PLANT
RESEARCH PROGRAM**



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John R. Griffin, Secretary
Maryland Department of Natural Resources

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Environmental Review of the Air Pollution Control Project at the Dickerson Generating Station

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**Maryland Department of Natural Resources
Power Plant Research Program
Annapolis, MD
July 2010**

FOREWORD

This report was prepared under the direction of John Sherwell and Susan Gray at the Maryland Department of Natural Resources, Power Plant Research Program (PPRP). Under the contract to PPRP, the following individuals were responsible for conducting the work associated with this environmental review:

- P. Diane Mountain and Robert W. Keating, Environmental Resources Management, Inc. (ERM), Annapolis, MD, under Contract # K00B0200092;
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- Peter D. Hall, Metametrics, Inc., Charlottesville, VA, under Contract # PR97-056-001; and
- Steve Schreiner and Steve Harriott, Versar, Inc., Columbia, MD, under Contract # K00B0200109.

The main body of this document, including Appendix A, was filed with the PSC in June 2007 as part of DNR's direct testimony in the Mirant Dickerson case (PSC Case No. 9087). Appendices B and C to this document provide additional materials relevant to the Mirant Dickerson licensing case:

- Agreement of Stipulation and Settlement, dated 22 June 2007;
- Proposed Order of Hearing Examiner, dated 11 July 2007, recommending that the PSC grant a Certificate of Public Convenience and Necessity (CPCN).

ABSTRACT

The Maryland Public Service Commission (PSC) granted a Certificate of Public Convenience and Necessity (CPCN) to Mirant Mid-Atlantic, LLC on 19 July 2007 to modify the Dickerson Generating Station in Montgomery County, MD. The proposed modifications include a wet flue gas desulfurization (FGD) system to reduce sulfur dioxide (SO₂), a new water treatment system, and associated enhancements. The project was proposed in response to Maryland's Healthy Air Act legislation, which requires steep reductions in nitrogen oxides (NO_x), SO₂, and mercury emissions for all coal-fired electric generating units in the state.

The Maryland Department of Natural Resources (DNR) Power Plant Research Program (PPRP), coordinating with other State agencies, prepared this environmental review of the Dickerson Air Pollution Control (APC) as part of the PSC licensing process, pursuant to Section 3-304 of the Natural Resources Article of the Annotated Code of Maryland. PPRP used the analysis of potential impacts to establish recommended license conditions for operating the modified facility, pursuant to Section 3-306 of the Natural Resources Article. PPRP's recommendations are made in concert with other programs within DNR as well as the Departments of Agriculture, Business and Economic Development, Environment, Planning, and Transportation, and the Maryland Energy Administration.

This report describes PPRP's evaluation of the potential environmental and socioeconomic impacts of the APC project, summarizes the results of this evaluation, and presents licensing conditions, which have been incorporated into the CPCN for the facility. This report was provided as an exhibit in Case 9087 and formed the basis for the recommendations made by the State agencies in the case. This document includes the following:

- The project description;
- A discussion of the existing environmental and socioeconomic conditions at the site and nearby; and
- An analysis of the potential air quality, surface and ground water, biological, socioeconomic, and noise impacts resulting from the project.

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1.0 INTRODUCTION

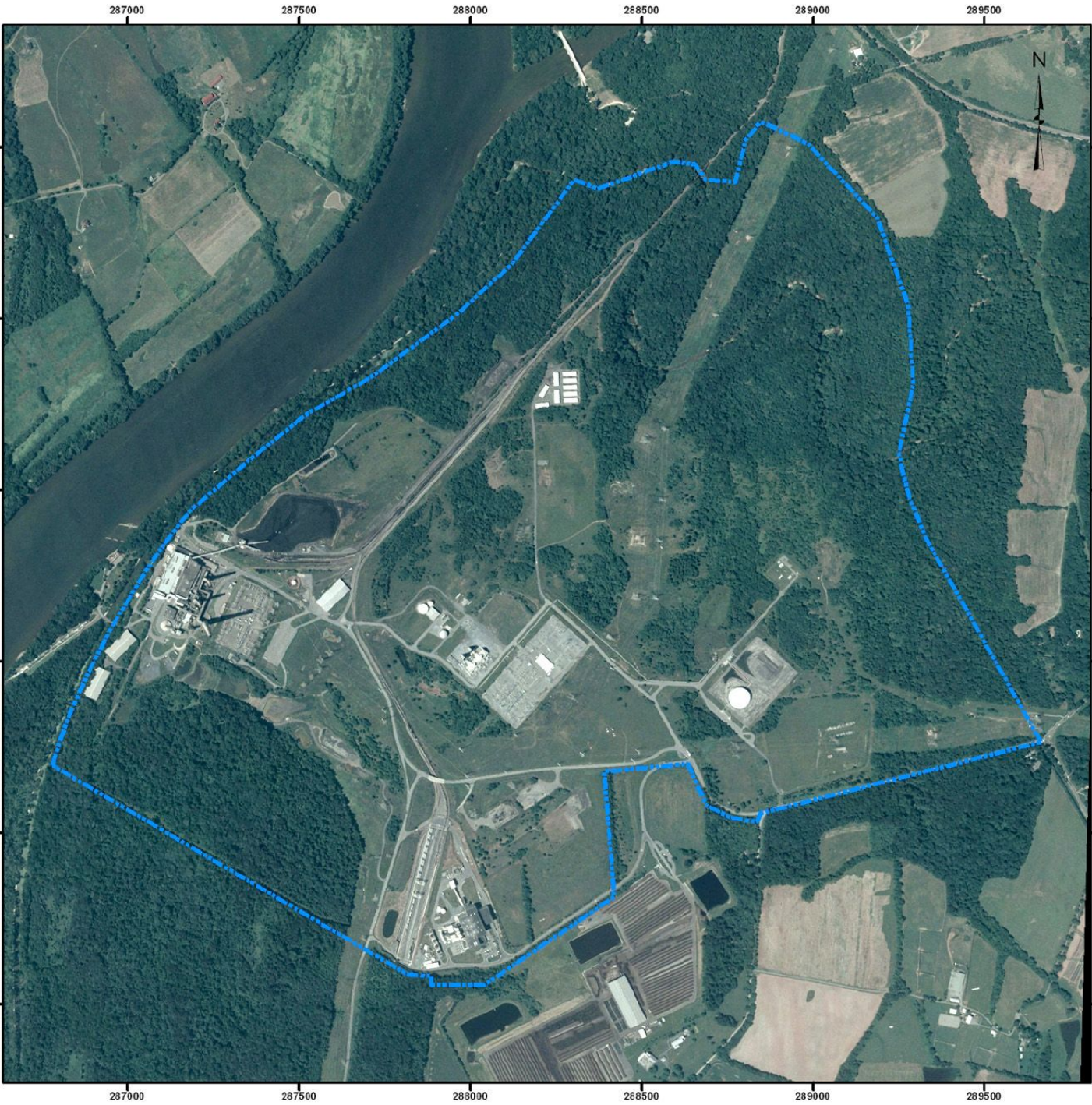
1.1 BACKGROUND

Mirant Mid-Atlantic, LLC has submitted an application to the Maryland Public Service Commission (PSC) to authorize the modification of the Dickerson Generating Station in Montgomery County, Maryland (see general location in Figure 1-1). The proposed modification would enable Mirant to install air quality control systems at the facility, which promise significant environmental benefits in the form of reduced air emissions.

The proposed modifications include a wet flue gas desulfurization (FGD) system to reduce sulfur dioxide (SO₂) a new water treatment system, and associated enhancements. The project is in response to Maryland's Healthy Air Act legislation, which requires steep reductions in nitrogen oxides (NO_x), SO₂, and mercury emissions for all coal-fired electric generating units in the state.

The Department of Natural Resources (DNR) Power Plant Research Program (PPRP), coordinating with other State agencies, performed this environmental review of the Dickerson project as part of the PSC licensing process. Before undertaking modifications of the facility, Mirant must obtain a Certificate of Public Convenience and Necessity (CPCN) from the PSC. PPRP's review is being conducted to evaluate the potential impacts to environmental and cultural resources associated with the proposed modification, pursuant to Section 3-304 of the Natural Resources Article of the Annotated Code of Maryland.

PPRP used the analysis of potential impacts as the basis for establishing initial recommended license conditions for operating the modified facility, pursuant to Section 3-306 of the Natural Resources Article. PPRP's recommendations are made in concert with other programs within DNR as well as the Departments of Agriculture, Business and Economic Development, Environment, Planning, and Transportation, and the Maryland Energy Administration. Appendix A of this report includes the initial recommended license conditions for the modified facility; Appendix B represents the final CPCN conditions agreed to by the parties in the licensing case.



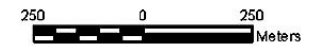
**Figure 1-1
Regional Site Location
Dickerson Station**

SITE LOCATION



LEGEND

 Property Boundary



REFERENCE

Projection: Transverse Mercator
Datum: NAD 27
Coordinate System: UTM Zone 18

1.2 *HEALTHY AIR ACT*

1.2.1 *Background on HAA and Federal Multi-pollutant Reduction Programs*

The Maryland Healthy Air Act (HAA) was signed into law in the spring of 2006. The HAA is a sweeping “multi-pollutant” air pollution control program requiring substantial reductions in emissions of nitrogen oxides (NO_x), sulfur dioxide (SO₂), and mercury from 15 coal-fired generating units at seven power plants in Maryland, including Dickerson Units 1, 2, and 3. The HAA also requires Maryland to participate in a multi-state program known as the Regional Greenhouse Gas Initiative (RGGI) to reduce emissions of pollutants, including carbon dioxide, that contribute to climate change.

The HAA regulates NO_x and SO₂ emissions based on a pollutant “cap-and-trade” program in which the State establishes annual, state-wide total tonnage emissions caps separately for NO_x and SO₂ and then allocates a portion of the annual state-wide caps to each of the 15 individual coal-fired power plant generating units subject to the HAA. Power plant owners can comply by reducing emissions at each unit to meet the unit’s cap, or can comply with the caps on a system-wide basis, by over-controlling emissions at some plants and trading the excess allowances to other HAA plants that the company owns and operates in Maryland. Table 1-1 identifies the HAA caps and reduction requirements in Maryland’s regulations implementing the HAA (COMAR 26.11.27).

Instead of a cap-and-trade program, the mercury provisions of the HAA require affected power plants to achieve percentage reductions in emissions of mercury from a baseline year. Plants may comply by a number of methods, but must achieve overall unit-by-unit reductions in mercury emissions of at least 80 percent for Phase 1 and 90 percent beginning in Phase 2 and thereafter.

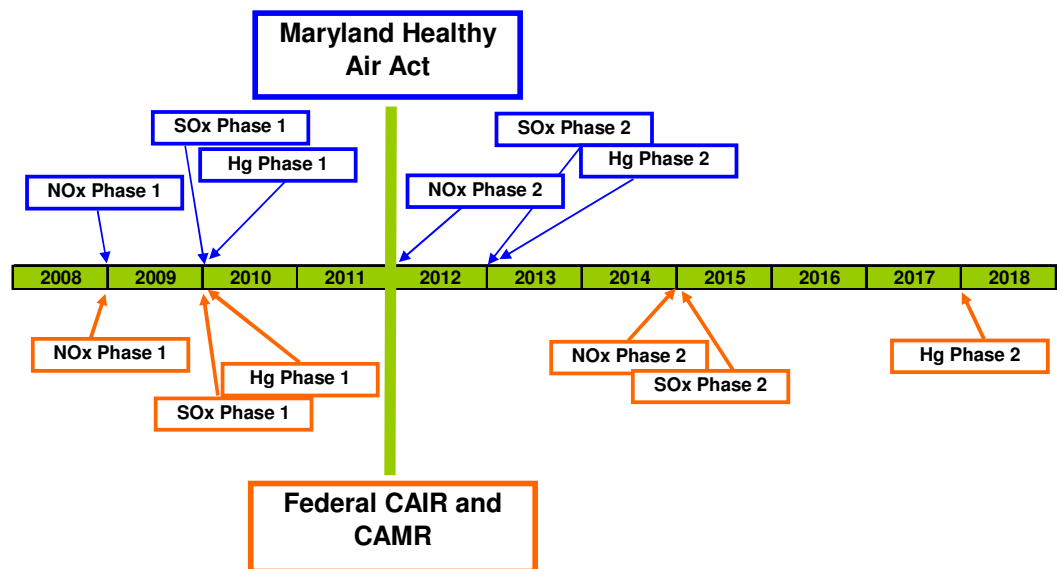
The U.S. Environmental Protection Agency (EPA) recently passed its own multi-pollutant regulations affecting power plants: the Clean Air Interstate Rule (CAIR), which regulates NO_x and SO₂ emissions, and the Clean Air Mercury Rule (CAMR), which regulates mercury emissions. Like the HAA, the Federal rules for NO_x and SO₂ are based on a cap-and-trade program, although the caps established for Maryland power plants by CAIR and CAMR are less stringent than those set by the HAA. In fact, the HAA is more stringent than the Federal regulations in several key ways:

- HAA requires greater pollutant reductions than CAIR.

- HAA reductions schedules are more aggressive than the Federal schedule.
- HAA prohibits the affected power plant from acquiring allowances from outside the State of Maryland.
- To date, there are no Federal programs regulating greenhouse gas emissions from power plants or other sources, while the HAA requires Maryland to participate in RGGI.

The coal-fired generating units in Maryland are subject to the HAA and the Federal CAIR/CAMR programs. Figure 1-2 illustrates the schedules for the State and Federal pollution control regulations.

Figure 1-2 Maryland HAA and Federal CAIR/CAMR Program Deadlines



Note: Hg = mercury

Table 1-1 Emissions Caps and Reduction Requirements in HAA Enabling Regulations (COMAR 26.11.27) in Tons

Generating Unit	NO _x (2009) Annual (tpy)	NO _x (2012) Annual (tpy)	NO _x (2009) Ozone Season (t/O ₃)	NO _x (2012) Ozone Season (t/O ₃)	SO ₂ (2010) Annual (tpy)	SO ₂ (2012) Annual (tpy)
<i>CONSTELLATION</i>						
Brandon Shores Unit 1	2,927	2,414	1,363	1,124	7,041	5,392
Brandon Shores Unit 2	3,055	2,519	1,449	1,195	7,347	5,627
C.P. Crane Unit 1	832	686	345	284	2,000	1,532
C.P. Crane Unit 2	894	737	385	317	2,149	1,646
Wagner Unit 2	673	555	278	229	1,618	1,239
Wagner Unit 3	1,352	1,115	583	481	3,252	2,490
CONSTELLATION TOTAL	9,733	8,026	4,403	3,630	23,407	17,926
<i>MIRANT</i>						
Chalk Point Unit 1	1,415	1,166	611	503	3,403	2,606
Chalk Point Unit 2	1,484	1,223	655	542	3,568	2,733
Dickerson Unit 1	672	554	311	257	1,616	1,238
Dickerson Unit 2	736	607	333	274	1,770	1,355
Dickerson Unit 3	698	575	314	259	1,678	1,285
Morgantown Unit 1	2,540	2,094	1,053	868	6,108	4,678
Morgantown Unit 2	2,522	2,079	1,048	864	6,066	4,646
MIRANT TOTAL	10,067	8,298	4,327	3,567	24,209	18,541
<i>ALLEGHENY</i>						
R. P. Smith Unit 3	67	55	27	22	161	124
R.P. Smith Unit 4	349	288	143	118	841	644

tpy= tons per year

t/O₃=tons during ozone season

1.2.2 *Project Schedules*

FGD system installations involve substantial construction projects. Mirant indicates in its CPCN application that it will need to initiate construction on the project in 2007 to complete the design, purchase, and installation of the air pollution control systems and be able to meet the HAA Phase 1 deadlines. Because of the aggressive HAA deadlines, and the size and complexity of the FGD project, Mirant has requested an expedited review of its application. It is expected that construction will last for 28 months.

1.3 *REPORT ORGANIZATION*

This report synthesizes the evaluations that PPRP has conducted related to Mirant's application for a CPCN for the proposed modifications. The information is organized into the following sections:

- Section 2 provides a description of the site, the existing facility, and proposed project.
- Section 3 describes the existing site conditions, including climatology, biological resources, the regional socioeconomic setting, and noise.
- Section 4 discusses the project's impacts on air quality and associated regulatory requirements.
- Section 5 presents other environmental impacts that the project will have on the surrounding area, in particular to ecological, socioeconomic, and cultural resources, and the acoustic environment.
- Section 6 discusses the project's water supply needs, proposed source, and associated impacts.
- Section 7 describes Mirant's proposed FGD by-product management and offsite disposition, and presents an evaluation of impacts.
- Sections 8 and 9 provide, respectively, a summary of issues and a list of references.

2.0 *PROJECT DESCRIPTION*

2.1 *SITE DESCRIPTION*

The site of the proposed modification is the existing Dickerson Generating Station located approximately one mile east of Dickerson, Maryland, and west of Maryland State Road 28 in Montgomery County. It is situated along the eastern boundary of the Potomac River, south of the Monocacy River (see Figure 2-1). Mirant acquired the electric generating station and approximately 800 acres of the Dickerson site from PEPSCO in 2000; PEPSCO retains ownership of equipment located on approximately 200 acres of the site.

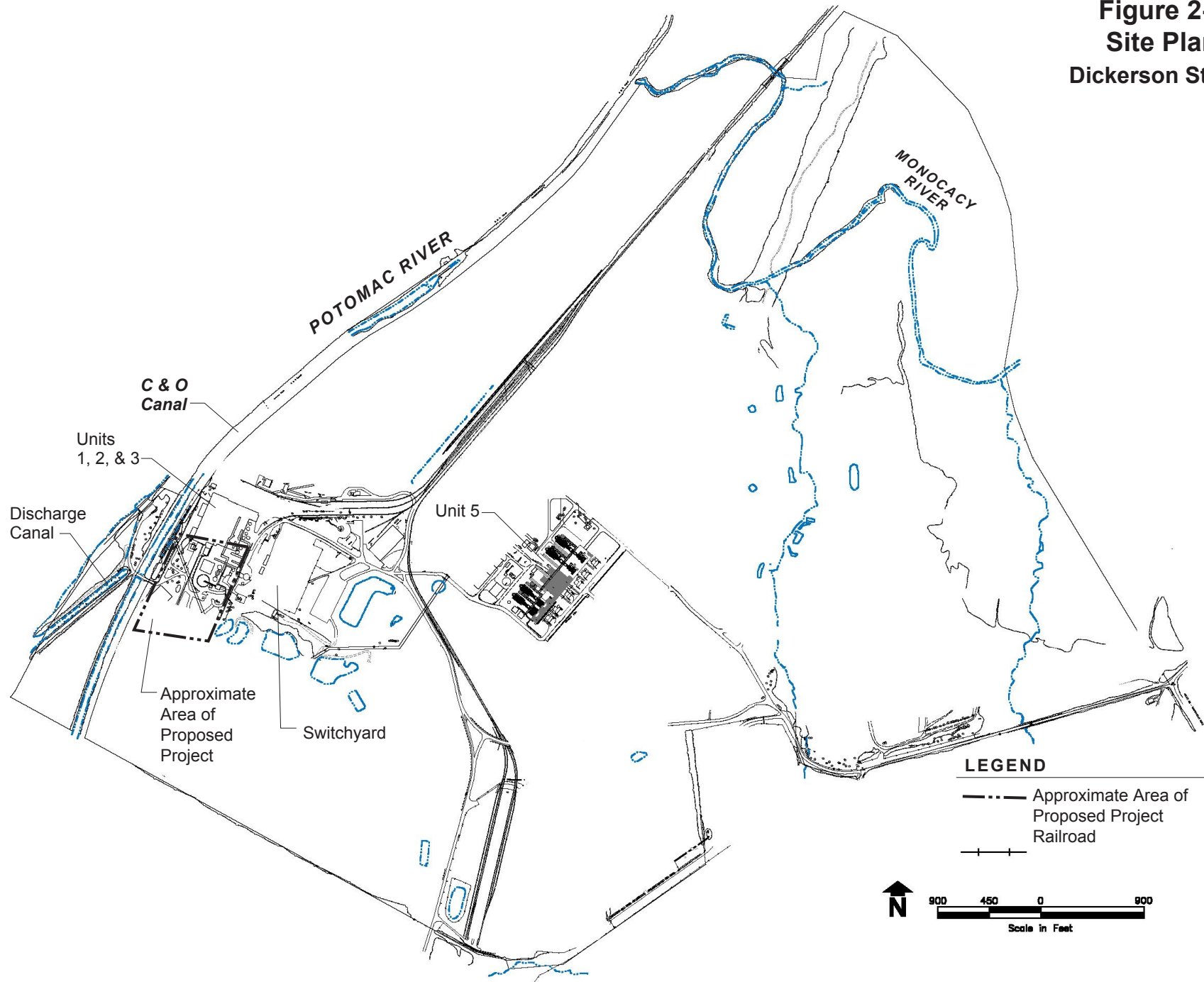
2.2 *EXISTING FACILITY*

The Dickerson Generating Station currently consists of three nominal 182-MW net coal-fired units, two nominal 147-MW net gas and oil-fired simple cycle combustion turbines (CTs), and one 13-MW black start and peaking turbine.

The coal-fired units designated as Units 1, 2, and 3, were constructed in the late 1950s and began operation in 1959, 1960, and 1962 respectively. The units are base-loaded steam electric units. Exhaust gases from these units exit a 700-foot high stack constructed in 1978. The two existing 400-foot high stacks, originally constructed, are used when the 700-foot high stack is under going maintenance. Condenser cooling is accomplished with once-through cooling water from the Potomac River. The once-through water circulation system discharges water back into the Potomac River at a rate of up to 285,000 gallons per minute or about 400 million gallons per day. Coal is delivered to the units by a CSX Transportation Corporation (CSXT) rail spur off the main line. Units 1, 2, and 3 are equipped with high-efficiency particulate control devices to minimize emissions of particulate matter. Low NO_x burners and separated overfire air have recently been installed on Units 1, 2, and 3 to limit NO_x emissions. By-product ash is stored in a facility adjacent to Dickerson.

The two simple cycle CTs, designated as Units H1CT and H2CT, are General Electric (GE) Frame 7F gas turbines. Units H1CT and H2CT began operation in 1992 and 1993, and are normally fired with natural gas from a Consolidated Natural Gas pipeline traversing the Dickerson site. A gas pressure reducing and heating station is located onsite and supplies the natural gas directly to the units. A 10 million gallon oil storage tank

Figure 2-1 Site Plan Dickerson Station



was installed with units H1CT and H2CT to supply distillate oil in the event that natural gas is not available, or is too expensive. Two 130-foot high stacks were installed to exhaust gases from units H1CT and H2CT. To control emissions of NO_x, water injection is used.

2.3 *PROPOSED PROJECT*

The proposed modification of Dickerson, also referred to as the Air Pollution Control (APC) project, consists of the installation of a wet FGD system and associated enhancements of the facility necessary for the operation of the systems. Operation of the FGD system will decrease SO₂ emissions substantially and will also reduce mercury emissions from Units 1, 2, and 3. Sulfuric acid mist (SAM) associated with the operations of the units will be controlled as part of the APC project by injection of a sorbent (sodium bisulfide).

A single FGD SO₂ absorber unit will serve the combined flue gas from Units 1, 2, and 3. The new FGD system will also include the following associated facilities:

- SAM reagent receiving, handling, and storage facilities;
- limestone receiving, handling, and storage facilities;
- limestone slurry preparation;
- gypsum byproduct storage, handling, and off-loading facilities;
- makeup water supply and makeup water treatment system;
- wastewater treatment systems for water treatment and scrubber wastewater;
- solid waste storage and handling system for scrubber and wastewater treatment solids; and
- single-flue, 400-ft exhaust stack.

The treated flue gases from all three units will be released to the atmosphere from the new single-flue, 400-ft stack, lined with fiberglass reinforced plastic. The stack will contain the majority of the continuous emissions monitoring systems.

Ancillary supporting systems will be added outside of the power generation area, including water supply, wastewater treatment, and materials handling systems for reagents, by products, and solid wastes.

2.3.1 *FGD System*

Operation of the wet FGD system requires input of a mixture of ground limestone and water (limestone slurry). The limestone slurry necessary for operation of the FGD system is prepared in ball mills by mixing limestone with water and grinding it to small particles to form limestone slurry. This is stored in a slurry storage tank prior to input into the FGD system.

The FGD system design includes a single 100-percent capacity SO₂ absorber for all three Dickerson units that is projected to reduce SO₂ emissions by about 92 percent from current levels. The absorber is designed to maximize contact between the gas and slurry droplets for efficient SO₂ removal. Gypsum (also known as calcium sulfate) is formed as a by-product when the limestone slurry reacts with SO₂ in the flue gas. This synthetic gypsum is potentially suitable for use in wallboard, cement manufacturing, and other alternative uses.

To control the accumulation of chloride salts within the water phase of the FGD system, a chloride purge stream (CPS) will be extracted from the FGD system and sent to the wastewater treatment system.

2.3.2 *Limestone Receiving, Handling, and Storage*

Approximately 190,000 tons of limestone will be delivered to the facility annually at 100 percent FGD system capacity (see Figure 2-2). Limestone will be delivered to the facility primarily by rail cars, with trucks as a backup (only in the event that rail service is interrupted for a time). The incoming rail cars will be 100 ton capacity, covered top, bottom discharge and will dump into a below grade hopper or hoppers. The system will be designed to unload a maximum of 20, 100-ton railcars in an 8-hour shift. It is expected that, on average, up to 40 rail cars per week of limestone will be unloaded. If trucks are used (only under emergency conditions), 20-ton capacity trucks will dump the limestone into a hopper. It is expected that on average, up to 180 trucks per week will be unloaded, if truck transport is required.

2.3.3 *Gypsum Handling, Storage, and Load-out System*

Up to a maximum of 310,000 tons of gypsum will be generated and removed from the site annually. Gypsum by-product created from the FGD process will be collected from two; 100-percent capacity vacuum belt filters (1 operating, 1 spare) in the FGD dewatering facility. Figure 2-3 provides a flow diagram for the movement of gypsum. The enclosed area

Figure 2-2 Process Flow Diagram Limestone Handling System Dickerson Station

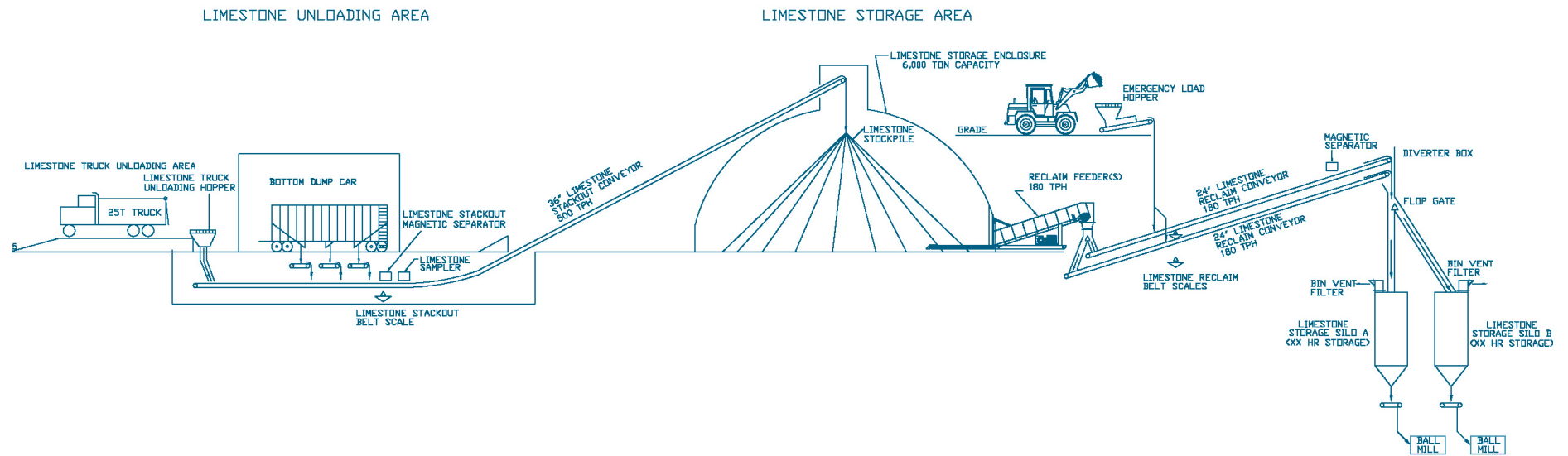
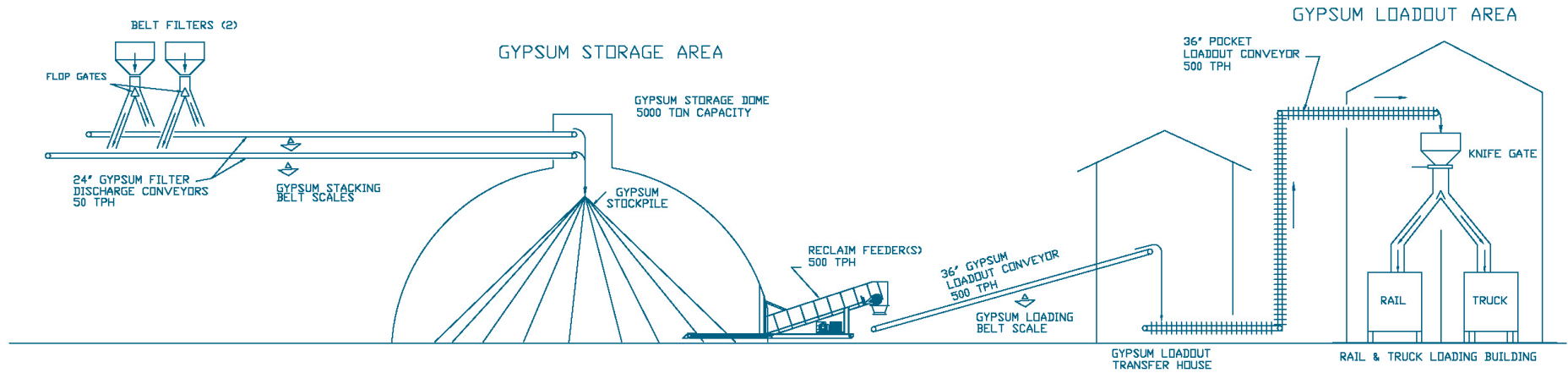


Figure 2-3 Process Flow Diagram Gypsum Handling System Dickerson Station



has a capacity of seven days of gypsum production storage, approximately 5,000 tons.

Gypsum will be transported offsite primarily by rail. The gypsum rail transport system has a capacity to load 20, 100-ton rail cars in one 8-hour shift. It is expected that on average up to 60 rail cars per week will be used for gypsum transport. Trucks may also be used if necessary, but only for emergency backup.

Mirant expects that by-product dewatering, on-site handling, off-site transport, and final disposition will be handled by a third party. The applicant estimates that a contract will be in place before summer 2007.

2.3.4 *Other Reagent Storage*

Wastewater Treatment Lime Silo

Hydrated lime will be utilized for pH control in the wastewater treatment system. Lime will be delivered onsite by bulk carrier truck and be pneumatically conveyed into the silo. The silo will be provided with a dust collector.

SAM Control System Reagent

A sodium bisulfide reagent will be used for SAM control. Reagent will be delivered onsite by bulk carrier truck and be pneumatically conveyed into the silo. The silo will be provided with a dust collector.

2.3.5 *Wastewater Treatment System*

The wastewater treatment system treats the chloride purge stream water that is drawn out of the FGD absorber and replaced with makeup water, to control chloride and suspended solids concentrations in the absorber vessel. The wastewater treatment system consists of physical/chemical unit processes to remove suspended solids and metals from the purge stream, and biological unit processes for biochemical oxygen demand (BOD) and nitrogen removal.

Physical/Chemical Wastewater Treatment

Suspended solids and metals removal is a two-stage process. Wastewater is continually pumped from the equalization tank to a reaction tank for

calcium sulfate desaturation and pH adjustment to between 8.5 and 9.2. Wastewater flows by gravity into a second tank, where sulfide reagent is added to form insoluble metal sulfides, which are removed by chemical precipitation. Wastewater then flows to a clarifier for removal of suspended solids. A coagulant and coagulant aid are added to improve solids flocculation and settling. Sludge from the clarifier is pumped to a thickener for concentration. Clarified water is treated with hydrochloric acid to reduce the pH to a concentration suitable for downstream biological treatment and for discharge.

Biological Wastewater Treatment

Wastewater is cooled and diluted. Biological treatment removes nitrogen and BOD. Wastewater flows to a biological sludge clarifier where the biological sludge is settled and pumped to the thickener for disposal or reactor use.

Sludge Handling

The sludge from the wastewater treatment system clarifiers and the water treatment system clarifier will be transferred to a sludge thickener for concentration. Thickened sludge will be pumped to filter presses for dewatering, resulting in an approximately 50 percent solids sludge cake. Sludge hoppers are loaded and trucked offsite to a landfill where the sludge is unloaded and placed for final disposal.

The average weight of sludge produced is 24,400 lb/day. At a sludge density of 70 pounds per cubic feet, the volume of sludge is 350 cubic feet per day. Based on a truck capacity of 6 tons, approximately two truck loads per day of solids will be produced.

2.3.6 Storm Water Management

Dickerson currently discharges site storm water runoff to the Potomac River under the plant's existing National Pollutant Discharge Elimination System (NPDES) permit. The existing Storm Water Pollution Prevention Plan (SWPPP) minimizes discharge of potential contaminants from plant storm water runoff. All storm water runoff from plant industrial areas is collected and treated in storm water detention basins prior to discharge to the river, and will continue to be so upon implementation of the APC project.

3.0 *EXISTING SITE CONDITIONS*

3.1 *WATER RESOURCES*

3.1.1 *Surface Water*

The Dickerson site is located on the Maryland shore of the Potomac River, approximately one mile below the confluence with the Monocacy River, the largest Maryland tributary to the Potomac. The Potomac River is relatively broad and flat in the vicinity of the Dickerson site, with an average depth of 3 to 4 feet. The Potomac River is designated as an American Heritage River. In the area of Dickerson, the Monocacy is typically less than 330 feet wide and less than 3 feet deep. The Little Monocacy River and several unnamed tributaries flow through the site. The Little Monocacy River flows under the C&O Canal and enters the Potomac River less than 1,000 feet downstream from the confluence of the Monocacy and Potomac Rivers.

The Potomac River serves as the primary water source for the Washington, D.C. metropolitan area. A great majority of the time, flow in the river is more than adequate to supply the needs of users, including a minimum flowby to support freshwater stream communities downstream of the Washington water suppliers' intake.

Water quality data from the U.S. Geologic Survey (USGS) for the Potomac River at Washington, D.C. indicates that since 1985 total phosphorus has decreased and nitrogen concentrations have stabilized (USGS 1998). Nutrient concentrations stabilized or decreased while the human population in the river basin increased by 44 percent from 1970 to 1990. USGS concluded, however, that water quality in the Potomac River will likely continue to be stressed by population growth and associated pressures well into the 21st century.

At present, water quality concerns in the section of the Potomac River near the Dickerson site primarily involve acid mine drainage (from upstream sources), agricultural and urban runoff, and industrial and domestic waste loading. Runoff and waste loading are the predominant sources of river impairment in the middle Potomac River basin. Although nutrient loading remains a water quality concern, long-term monitoring conducted in the basin indicates significant downward trends in nutrient concentrations in the river (Allegheny Energy 1999, USGS 1983, EPA 1979, USGS 1989, Chesapeake Bay Program 2000).

In PPRP's long-term benthic monitoring study conducted in the middle and upper Potomac River from 1983 to 1991, water quality was classified, based on dissolved oxygen concentrations, as good (6.0 to 7.9 mg/L) to excellent (8.0 to 9.5 mg/L), using the Interstate Commission on the Potomac River Basin's (ICPRB) water quality classification system (Versar 1992). More recent water quality data collected as part of DNR's fisheries surveys indicate continued good to excellent water quality in the Potomac River.

3.1.2 *Ground Water*

Ground water occurs under unconfined water table conditions in joints, fractures, and bedding planes of the shallow bedrock aquifer in the upland portion of the Dickerson site. Flow generally mimics surface topography, with recharge occurring in the upland area and ground water flowing eastward and westward toward discharge areas in the Little Monocacy River and Potomac River, respectively. The water table surface lies at a depth of 10 to 20 feet (PPRP 1987). Water resources data collected as part of the earlier Dickerson Station H licensing case in the mid-1980s indicate that the nearest ground water users are located about one mile north of the Dickerson site, with the Little Monocacy River lying between the site and those users.

3.2 *BIOLOGICAL RESOURCES*

3.2.1 *Vegetation and Land Cover*

3.2.1.1 *Upland Communities*

Upland vegetation at the Dickerson site includes infrequently maintained grasslands, mixed deciduous forest, and deciduous forest. The infrequently maintained grassland occupies 602 acres (59 percent of the site), deciduous forest occupies 212 acres (21 percent of the site), and mixed deciduous forest covers 147 acres (15 percent of the site).

Infrequently maintained grasslands occupy the southern, central, and most of the eastern portions of the site. The primary land use in these areas is transmission lines and road rights-of-way. These areas are periodically mowed and dominated by wiregrass (*Aristida dichotoma*), goldenrod (*Solidago sp.*), and foxtail grass (*Setaria sp.*), with an assortment of common weedy ruderal species, including various asters (*Aster spp.*), pasture thistle (*Cirsium discolor*), Queen Anne's lace (*Daucus carota*), and

broomsedge (*Andropogon virginicus*). Along the boundaries between grasslands and adjoining hardwood forests, red cedar (*Juniperus virginiana*), tulip poplar (*Liriodendron tulipifera*), black cherry (*Prunus serotina*), and a variety of shrubs and vines encroach upon the grasslands.

Mixed deciduous forest occupies level to gently sloping uplands on the Dickerson site. Dominant tree species in the overstory of the forest include Virginia pine (*Pinus virginiana*), red cedar, sycamore (*Platanus occidentalis*), tulip poplar, red oak (*Quercus rubra*), American elm (*Ulmus americanus*), and red maple (*Acer rubrum*). The subcanopy layer is dominated by flowering dogwood (*Cornus florida*), Virginia pine, red maple, and tulip poplar. The herbaceous groundcover is approximately 60 percent non-vegetated forest floor covered with leaf litter interspersed with species including the invasive species garlic mustard (*Alliaria petiolata*) and Japanese honeysuckle (*Lonicera japonica*).

The deciduous forest community at the Dickerson site is located along the steeply sloping bluffs adjacent to the Little Monocacy River, the tributary to the Little Monocacy River, the Potomac River, and the C&O Canal. The canopy in the deciduous forest is dominated by tulip poplar, chestnut oak (*Quercus montana*), mockernut hickory (*Carya tomentosa*), American elm, black cherry, and pignut hickory (*Carya glabra*). Subcanopy trees are predominately tulip poplar and mockernut hickory. Spicebush (*Lindera benzoin*), box elder (*Acer negundo*), and papaw (*Asimina trilobum*) are the three most common species in the shrub layer, with honeysuckle and mayapple (*Podophyllum peltatum*) as the most common herbaceous groundcover species.

3.2.1.2 Wetland Communities

The Dickerson site contains approximately 41 acres of wetland floodplain forest (4 percent of the total site area) and 13 acres of non-forested wetlands (1 percent of the total site area). Floodplain forest areas on the site lie between the C&O Canal and the Potomac River. These areas are periodically flooded by the Potomac River. Dominant canopy species include box elder, silver maple (*Acer saccharinum*), American elm, and mockernut hickory. The subcanopy contains primarily spicebush, box elder, and papaw. The shrub layer is sparsely vegetated with spicebush and box elder saplings. The dominant herbaceous species include garlic mustard and jewelweed (*Impatiens duthicae*).

Non-forested wetlands on the Dickerson site consist of seasonally flooded depressions, shallow marshes, shrub swamps, and open freshwater. The

seasonally flooded depressions are located along small drainages and poorly drained soils associated with overlying fly ash fill within the infrequently maintained grassland areas. They are predominantly vegetated with herbaceous species such as soft rush (*Juncus effusus*), barnyard grass (*Echinochloa crusgalli*), wicker microstegium (*Microstegium vimineum*), nutsedge (*Cyperus strigosus*), smartweeds (*Polygonum* spp.), and sedges of the genus *Carex*. Drier areas in the wetlands contain woody shrubs and small trees such as persimmon (*Diospyros virginiana*), silver maple, and red maple.

Shallow marshes and shrub marshes are found along sections of the C&O Canal and Potomac River. The shallow marshes contain wetland species such as Joe Pye weed (*Eupatorium fistulosum*), smartweeds, sedges, rushes, jewelweed, and cattail (*Typha latifolia*). The shrub marshes contain small red maples, speckled alder (*Alnus rugosa*), and swamp rose (*Rosa palustris*). Open freshwater areas on the Dickerson site consist of small ash settling ponds located near the existing plant. These manmade ponds are typically devoid of aquatic vegetation with the exception of floating plants such as duckweed (*Lemna* spp.).

3.2.2

Wildlife

The terrestrial vertebrate fauna of the area in the vicinity of the Dickerson site consists primarily of mammals, birds, reptiles, and amphibians characteristic of disturbed habitats, deciduous and mixed deciduous upland forests, and forested and non-forested wetlands. Up to 39 species of mammals could potentially occur in the vicinity of the site. The most commonly observed mammals include white-tailed deer (*Odocoileus virginianus*), Eastern cottontail (*Sylvilagus floridanus*), and white-footed mouse (*Peromyscus leucopus*). Other species on the site include house mouse (*Mus musculus*), short-tailed shrew (*Microsorex horyi*), least shrew (*Cryptotis parva*), meadow vole (*Microtus pennsylvanicus*), pine vole (*Pitymys pinetorum*), opossum (*Didelphis marsupialis*), raccoon (*Procyon lotor*), muskrat (*Ondatra zibethica*), gray fox (*Uryocyon cinereoargenteus*), red fox (*Vulpes vulpes*), and feral cat (*Felis domesticus*).

According to studies performed by Mirant at the time that the Dickerson expansion was being proposed, a total of 108 species of birds have been observed on the Dickerson site; 62 species are known or suspected to breed on the site. In the infrequently maintained grassy areas, 26 species of birds have been observed. The most common breeding bird in the grasslands was chipping sparrow (*Spizella passerine*). Thirty-four species were observed along the tributary to the Little Monocacy. The most

common species in these forests were rufous-sided towhee (*Pipilo erythrophthalmus*) and wood thrush (*Hylocichla mustelina*). Twenty-seven species were observed in the forests in the Little Monocacy Ravine; the most commonly observed were the tufted titmouse (*Parus bicolor*), Carolina wren (*Thryothorus ludovicianus*), wood thrush, northern cardinal (*Cardinalis cardinalis*), and red-bellied woodpecker (*Melanerpes carolinus*). The forested area along the C&O Canal provides ideal habitat for migratory birds and yielded a total of 40 bird species. Several species include Eastern kingbird (*Tyrannus tyrannus*), white-breasted nuthatch (*Sitta carolinensis*), brown creeper (*Certhia americana*), hermit thrush (*Catharus guttatus*), bluegray gnatcatcher (*Poliophtila caerulea*), and golden-crowned kinglet (*Regulus satrapa*). Surveys on the Potomac River in the vicinity of the Dickerson site yielded 21 species of birds, the most common being the Northern roughwinged swallow (*Stelgidopteryx serripennis*), tree swallow (*Tachycineta bicolor*), green-backed heron (*Butorides striatus*), Eastern kingbird, and mallard (*Anas platyrhynchos*).

Mirant indicated that a variety of turtles and frogs were also found in the wetland areas on the Dickerson site, including stinkpot (*Sternotherus odoratus*), Eastern mud turtle (*Kinosternon subrubrum*), common snapping turtle (*Chelydra serpentina*), Eastern painted turtle (*Chrysemys picta*), red-bellied turtle (*Chrysemys rubiventris*), red-eared turtle (*Chrysemys scripta elegans*), bullfrog (*Rana catesbeana*), green frog (*Rana clametans melanota*), Southern leopard frog (*Rana utricularia*), wood frog (*Rana sylvatica*), pickerel frog (*Rana palustris*), and spring peeper (*Hyla crucifer*). Snake species observed along the C&O Canal and the Potomac River include the northern ringneck snake (*Diadophis punctatus edwardia*) and northern water snake (*Nerodia sipedon*). The long-tailed salamander (*Eurycea longicunda*) and the northern two-lined salamander (*Eurycea bislineata*) were found in the Little Monocacy River. Several other reptiles and amphibians were found in the upland areas of the site, including:

- ground skink (*Scincella lateralis*)
- five-lined skink (*Eumeces fasciatus*)
- six-lined racerunner (*Cnemidophorus sexlineatus*)
- broad-headed skink (*Eumeces laticeps*)
- northern fence lizard (*Sceloporus undulatus*)
- eastern hognose snake (*Heterodon platyrhinos*)
- black racer (*Coluber constrictor*)
- eastern box turtle (*Terrapine carolina*)

- American toad (*Bufo americanus*)
- Fowler's toad (*Bufo woodhousii fowleri*)

3.2.3 *Threatened and Endangered Species*

A review for the presence of species of concern at the Dickerson site was performed by the Maryland DNR Wildlife and Heritage Division in the spring of 2001. The review by DNR identified two rare invertebrate species known to occur on the project site, Pizzini's cave amphipod (*Stygobromus pizzini*) and a species of isopod (*Caecidotea* sp. 4). In addition, four species of concern have occurred in the vicinity of the project site, the white trout lily (*Erythronium albidum*), Short's rockcress (*Arabis shortii*), roundtop amphipod (*Stygobromus* sp. 14), and the dickcissel (*Spiza americana*).

Pizzini's cave amphipod, the isopod species, and the roundtop amphipod are subterranean invertebrates collected outside of caves and underground streams. All three species are classified as highly rare in the State of Maryland. The white trout lily is listed as State-threatened. It is found in rich deciduous woods, often along stream banks and associated ravine slopes. According to the Wildlife and Heritage Division, a known occurrence of white trout lily was recorded along the Monocacy River near the C&O Canal, west of the Dickerson property boundary. Short's rockcress is an herbaceous species currently listed as State-threatened. It is found in wooded steep slopes with limestone outcrops. Short's rockcress has also been observed along the Monocacy River near the C&O Canal, west of the site boundary. The dickcissel is a small bird typically found in meadows, roadside edges and ditches, and oldfield habitats. Breeding populations of dickcissels are considered rare in the State of Maryland (their typical range is from central Ohio south to Georgia, and west across the Great Plains). Dickcissels have apparently never been observed on the Dickerson site; no historical records document their presence there.

3.2.4 *Aquatic Wildlife Resources*

The fish community in this section of the Potomac River is typical of warm water fish communities in large rivers in the Mid-Atlantic region, being dominated by cyprinids and centrarchids. A total of 42 species were reported, including 11 species of minnow and 10 species of sunfish. Spotfin shiner and bluntnose minnow were most abundant among minnows, while redbreast sunfish, smallmouth bass, and bluegill were the most abundant sunfish species. Other numerically dominant species

included the golden redhorse, channel catfish and northern hog sucker (the latter at Taylor's Landing). Smallmouth bass and channel catfish are two of the major species sought by recreational fishermen in this river region. Fish abundance varies widely from year to year, with reproductive success being strongly influenced by river conditions during the spawning season. Abundance of various species also varies considerably among sampling locations. Such differences are likely a result of differing habitat characteristics among sampling stations.

Fishery data for the Potomac River from 1979 to 1986 have shown no change in the relative proportions of the fish community during that time period. Proportions of sport, forage, and rough fish indicate a well-balanced fishery in the vicinity of the Dickerson facility. No fish species listed as threatened, endangered, or in need of conservation under federal or state law have been collected in the vicinity of the Dickerson site. This information is confirmed by a long-term study (Loos and Perry 2001) that examined fish distribution from 1979-2000 in relation to the thermal discharge at the Dickerson facility. Results of this study indicate that the thermal plume does not adversely affect the fish community in the vicinity of the facility. In fact, local enhancement may occur due to the increased prevalence of game and pan fishes in the impact region, especially during cold periods. These results show that the heated discharge has only a minor seasonal effect on the distribution of fishes in the immediate vicinity of the station and appears to have no adverse long-term effects on fish distribution in the area of the facility.

3.3 *REGIONAL SOCIOECONOMIC SETTING*

Montgomery County is located in Central Maryland, and is part of the Washington, D.C. metropolitan area. The Dickerson site is located in western Montgomery County within Planning Area 12: Little Monocacy Basin Dickerson – Barnesville, and is part of Community Based Planning Area 7 – Rural Area. Although the County as a whole has been affected by suburban sprawl from the Washington metropolitan area, the western part still retains a rural character throughout much of its area. The site is within the 93,000-acre Agricultural Reserve, and near the crossroads communities of Beallsville and Dickerson.

3.3.1 *Population Trends*

Montgomery County is Maryland's most populous county. In 2004, the population of Montgomery County was estimated to be 931,000, an

increase of 6.6 percent from 2000 (M-NCPPC 2005). Population is projected to grow at a rate of about 0.75 percent per year through the year 2020, to slightly more than one million. By comparison, Maryland's population is projected to grow at a rate of 0.7 percent annually between 2000 and 2020 (Maryland Department of Planning 2001).

Population is concentrated in the eastern part of the county, near job centers in Maryland, northern Virginia, and the District of Columbia. Gaithersburg is the largest incorporated city with a population of 52,613 (year 2000), followed by Rockville (47,388); they are the third and fifth largest cities in Maryland, respectively. Other major centers in the urban part of the county are Bethesda and Silver Spring.

The closest population center to the Dickerson site is Poolesville (5,151 in 2000). Since 1970, Poolesville has evolved from a small rural town with a strong agricultural base into a suburb of the Washington metropolitan area. Most of its residents work along the I-270 corridor, in Washington, DC or in northern Virginia. Resident opinion and constraints in sewage capacity and water supply have shaped a development plan that prescribes limited population growth for the foreseeable future (Poolesville Planning Commission 2005). As a result, housing prices have increased rapidly over the past decade.

The Dickerson Generating Station falls within census tract 7005.00, which is the largest in the area, but is one of the least populated. It includes the town of Poolesville, and the communities of Sugarland, Beallsville, Martinsburg and part of Dickerson. Other nearby communities are Comus, Thompsons Corner, Barnesville, Slidell, Bucklodge and Boyds, all of which are within five miles of the facility.

3.3.2 *Employment and Income*

Much of Montgomery County's employment is located in the I-270 and US 29 corridors. The county hosts more than 23,000 businesses and is a major center for high technology and government. The county is home to more than 60 percent of Maryland's biotechnology companies. The largest private sector employers in the county include Adventist Hospital, Giant Food, IBM (Federal Unit), and Marriott International. Several agencies of the federal government, including the National Institutes of Health, Food and Drug Administration, and the National Institute of Standards and Technology, have a major presence in Montgomery County.

In 2005, the total number of jobs in the county was projected to be 520,000 up from 479,800 (8.5 percent) in 2000. Population in the Dickerson area (Planning Areas 12,16,17,18) was 2,099 in 2005. Employment in the county is projected to reach 680,000 by 2030 (M-NCPPC 2006). Strong employment growth has kept the unemployment rate low, less than three percent in December 2004.

According to the 1997 census update survey of Montgomery County residents, nearly 60 percent worked in the county, while 31.6 percent commuted to Washington, D.C., or northern Virginia. In contrast, the number of employed residents in Poolesville and vicinity was about 4,400 in 1997 with more than 77 percent working in the county (Table 3-1). Most Poolesville and vicinity residents commute to North Bethesda, Rockville, Gaithersburg, and rural areas of Montgomery County.

Table 3-1 Breakdown of Employment Locations for Dickerson Area Residents

Planning Area	Total Employed	% in County	% Inside Beltway	% Outside Beltway	% Elsewhere in MD	% to DC	% to VA
Montgomery	464,115	57.9%	18.4%	39.5%	9.2%	23.6%	8.0%
Poolesville & Vicinity	4,430	77.2%	11.9%	65.3%	6.0%	9.1%	6.7%

Source: Montgomery County Department of Parks and Planning 1997

Communities near the Dickerson site host small retail and service establishments, which account for less than one-half percent of office and retail space in the county (Montgomery County Department of Parks and Planning 1997). With the exception of the existing Mirant facility and the adjacent Montgomery County Resource Recovery Facility (RRF), most jobs are located elsewhere in the county.

3.3.3 Land Use and Zoning

Montgomery County has experienced rapid land use change during the past several decades, transforming itself from a rural, agricultural county in the 1950s to a major residential and commercial center in the Washington metropolitan region. The county has zoning jurisdiction over most of the land within its borders. The county's general plan is based on a "wedges and corridors" concept, which specifies that development should follow

transportation corridors, while the areas between these corridors (the wedges) are preserved. In general, the county has successfully encouraged growth of jobs near transit centers and highways, although residential development has been considerably more dispersed (U.S. Department of Transportation 2001).

The Dickerson site is located within Montgomery County's 93,000 acre Agricultural Reserve, which was created in response to increasing development pressures on agricultural land. The Reserve was set aside to preserve farmland, open space, and wooded areas for recreation, and to help protect the environment. In 1973, the Montgomery County Council adopted the Rural Zone limiting development to a minimum of 5-acre lots in most of the undeveloped, upper one-third of the county. With continuing erosion of farmland and open space, the Council passed interim legislation in 1979 limiting development in a defined prime agricultural area to one dwelling per 25 acres, and directed the Planning Board to develop a permanent plan to preserve farmland.

In 1980, the Council approved the Functional Master Plan for the Preservation of Agricultural & Rural Open Space, which designated the Agricultural Reserve and rezoned it from the Rural Zone to the Rural Density Transfer (RDT) Zone, where development is limited to one dwelling per 25 acres. The RDT zone allows owners to sell the development rights from their properties to buyers who can apply those rights in areas of the county identified for development.

The Dickerson site is zoned RDT except for those areas hosting existing generating facilities, which are zoned Heavy Industrial. The site is outside Montgomery County's designated Priority Funding Areas associated with the State's Smart Growth program.

Preservation of rural land for agricultural use is a high priority in Montgomery County and there are five separate agricultural land preservation programs available to landowners.

- Montgomery County Agricultural Easement Program (AEP)
- Maryland Agricultural Land Preservation Foundation (MALPF)
- Maryland Environmental Trust (MET)
- Montgomery County Transfer of Development Rights Program (TDR)
- Montgomery County Rural Legacy Program (RLP)

Each program places an easement on the property to prevent future commercial, residential, or industrial development of the land. Table 3-2 lists the number of acres in protective easements in Montgomery County.

Table 3-2 *Protective Easements in Montgomery County*

	Total Land (acres)	1994 Agricultural Use	MALPF Easements 2001	MET Easements 2001	County Easements & TDRs 2001	Private Conserv. Easements 2001
Montgomery	316,27	104,800	2,305	2,122	46,227	80
%		33.1	0.7	0.7	14.6	<0.1
Maryland	6,212,8	2,289,100	128,032	49,479	75,296	21,700
%		36.8	2.1	0.8	1.2	0.3

Source: Maryland Department of Planning 2002.

Although the Agricultural Reserve is protected from residential encroachment through development restrictions, large-scale, land-intensive public projects threaten agriculture around Dickerson. The Montgomery County RRF adjacent to the Mirant property began operating in 1993 and was expanded in 1999 to host a yard waste composting facility and bagging operation. In 2004, the RRF received 640,000 tons of waste.

The Woodstock Equestrian Park, an 825-acre park on MD 28 west of Beallsville, opened in Spring 2006 and includes over 15 miles of equestrian and hiking trails. Future facilities may include outdoor riding rings, an indoor arena and a cross-country course. Montgomery County's Comprehensive Ten-Year Solid Waste Plan (2004-2013) includes a proposed landfill (designated as Site 2) located on 820 acres of land between Wasche Road and Martinsburg Road (Department of Public Works and Transportation 2004). A landfill permit for a 125-acre fill area on the site was issued in 1998, but the County currently has no plans to develop the site while out-of-county landfill options remain viable. The County's contract for out-of-state disposal of solid waste expires in 2012, with an option to 2017.

3.3.4 *Transportation*

There are approximately 3,000 miles of roads in Montgomery County. Major highways in the county include I-495 – the District of Columbia

beltway – and I-270, which provides service to the northwest. The county is also served by two branches of the Metrorail Red Line, which provides high-speed transit access to the District of Columbia. The MARC passenger rail system originating in Brunswick traverses Montgomery County from Dickerson to Silver Spring, with a final destination at Union Station in Washington.

The Dickerson site is served by MD 28, also known as Dickerson Road in the western part of the county. MD 28 is classified as a rural minor arterial from the Frederick County line through Beallsville. It is an undivided highway with no access controls and 12-foot lanes. The speed limit in the area ranges from 40 to 50 mph except in Beallsville, where the posted speed is 30 mph (SHA 2005). Access to the Dickerson site is via Martinsburg Road (CO 253), 2.1 miles east of the Frederick County line. The average annual daily traffic on MD 28 between Martinsburg Road and Beallsville was 5,525 in 2005 and the highway has experienced little traffic growth over the past five years.

There are no projects planned for western portions of MD 28 in Montgomery County in the State's Consolidated Transportation Program. MD 28, from the Frederick County line to MD 107, was resurfaced in 2004 (SHA 2006).

The Dickerson site is served by a spur from the CSX rail line. The spur also services the Montgomery County RRF, which is used to transport solid waste from the Transfer Station in Derwood and to dispose of RRF ash bypass waste and non-processible wastes.

3.3.5 Public Safety

Montgomery County is served by 19 fire departments responsible for direct fire suppression and emergency medical services. The Dickerson area is served by the Upper Montgomery County Volunteer Fire Department (Station 14) located in Beallsville. The entrance to the Dickerson site off MD 28 is less than three miles from Station 14.

Upper Montgomery County is served by the Montgomery County Sheriff's Office and the Maryland State Police. Both the Sheriff's office and State Police are located in Rockville. Emergency management is under the authority of the Fire Administrator in the Montgomery County Fire and Rescue Service, and the Local Emergency Planning Council for Hazardous Materials.

In Montgomery County, there are five major hospitals providing medical services to the public. The closest facility in the county is Shady Grove Adventist Hospital in Rockville, with a patient capacity of 563 hospital beds. The Dickerson site is also close to Frederick Memorial Hospital, a 248-bed facility located in Frederick.

3.3.6 *Recreation and Tourism*

Montgomery County manages a 30,000-acre park system that includes neighborhood parks with playgrounds, stream valley parks with trails and recreational areas, regional parks, and conservation parks that are retained in their natural state. Dickerson Regional Park abuts the Mirant property to the south. There are also more than 34 miles of trails in the county.

There are two state parks in Montgomery County. The Patuxent River State Park is located along the upper 12 miles of the Patuxent River in Howard and Montgomery Counties. The park contains 6,700 acres of natural areas and farmlands. A portion of the park is a state wildlands area. The 7,000-acre Seneca Creek State Park extends along 12 miles of the Seneca Creek near Gaithersburg. The C&O Canal National Park stretches along the Potomac River in Montgomery County from approximately milepost 5 to milepost 42 and abuts the Dickerson site.

The Montgomery County Heritage Area (MCHA) became a Certified Heritage Area (CHA) in 2004. Based on a vision for raising the profile of Montgomery County's heritage, fostering stewardship of historic buildings and sites and increasing heritage tourism by residents and visitors, the Montgomery County Heritage Area Management Plan defines heritage area boundaries around clusters based upon three interpretive themes: Quakers and the Underground Railroad, Farming History and Technological Innovation. The boundary for the Farming History cluster is essentially that for the Agricultural Reserve, while the Technological Innovation cluster includes resources along the Potomac River and C&O Canal and resources along the Metropolitan Branch of the B&O Railroad. The Dickerson site is therefore within or adjacent to both the Farming History and Technological Innovation clusters (Mary Means & Associates 2002).

Poolesville is a targeted investment zone (TIZ), a specific area within the CHA that is a priority for private investment. The Montgomery County Heritage Area Management Plan identifies Poolesville as the gateway to the Farming History Cluster and an example of a Maryland/Mid-Atlantic

agricultural village. The Plan envisions interpretive presentations, a heritage trail and other tourism initiatives for the town. The MARC station at Dickerson is included in the gateway network for the Technological Innovation Cluster.

3.4 NOISE

3.4.1 *Definition of Noise*

Noise generally consists of many frequency constituents of varying loudness. Three decibels (dB) is approximately the smallest change in sound intensity that can be detected by the human ear. A tenfold increase in the intensity of sound is expressed by an additional 10 units on the dB scale, a 100-fold increase by an additional 20 dB. Because the sensitivity of the human ear varies according to the frequency of sound, a weighted noise scale is used to determine impacts of noise on humans. The most commonly used frequency filter is the A-weighted decibel (dBA) scale, which weighs the various components of noise based on the response of the human ear. For example, the ear perceives middle frequencies better than low or very high frequencies; therefore, noise composed predominantly of the middle frequencies is assigned a higher loudness value on the dBA scale. Subjectively, a tenfold increase in sound intensity (10 dB increase) is perceived as an approximate doubling of sound. Typical A-weighted sound levels for various noise sources are shown in Table 3-3.

Noise monitoring is typically conducted continuously over a period of time to obtain a representative picture of the acoustic environment. The length of time required for noise monitoring, and the frequency of individual measurements, will vary depending upon a number of factors, including surrounding land use, time of day, the purpose of noise monitoring, the number of locations at which sound levels are being measured, and the capabilities of the monitoring equipment being used.

Ambient sound pressure levels can also be expressed in various ways. Quite often, noise levels are measured or reported as equivalent sound levels, L_{eq} , over a given time period. A one-hour L_{eq} , for instance, is the constant sound level that has the same energy content as the actual sound variations over a one-hour monitoring period. Monitoring of the ambient noise levels in a community is often reported as L_{eq} as well as L_{90} , the sound pressure level that is exceeded 90 percent of the time. The L_{90} is also called the “noise floor,” the minimum background noise level that is

Table 3-3 *Typical Sound Levels for Common Sources (dBA)*

Noise Source	Typical Sound Pressure Level
Lowest sound audible to human ear	10
Soft whisper in a quiet library	30-40
Light traffic, refrigerator motor, gentle breeze	50
Air conditioner at 6 meters, conversation	60
Busy traffic, noisy restaurant, freight train moving 30 mph at 30 meters	70
Subway, heavy city traffic, factory noise	80
Truck traffic, boiler room, lawnmower	90
Chain saw, pneumatic drill	100
Rock concert in front of speakers, sand blasting, thunder clap	120
Gunshot, jet plane	140

characteristic of that monitoring location. The difference between the L_{90} and the L_{eq} is an indication of the variability of noise at a given location.

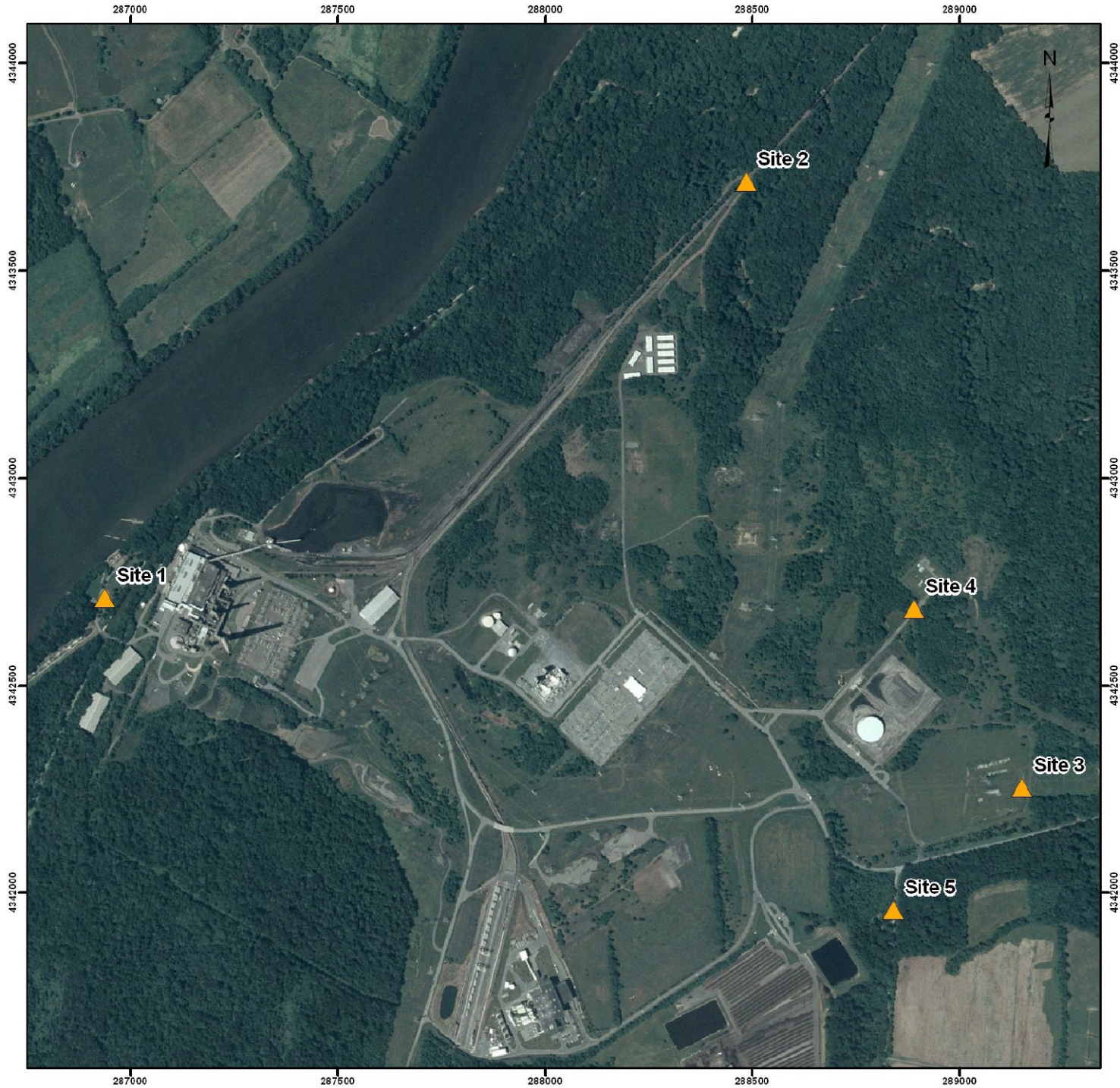
Because sound levels are expressed as relative intensities, multiple sound sources are not directly added. Rather, the total noise is primarily a result of the source of highest intensity. For example, two sources, each having a noise rating of 50 dBA, will together be heard as 53 dBA; a source of 65 dBA combined with a source of 85 dBA will result in a noise level of 85.1 dBA. As the intensity difference between the two sources increases, the effect of the lower sound source becomes negligible.

3.4.2 *Existing Noise Levels at the Site*

Mirant conducted ambient noise surveys in August of 2006 to characterize the existing acoustic environment in the area. Daytime and nighttime measurements were collected at six locations along the site boundary. Table 3-4 shows the results of these surveys; monitoring locations are illustrated in Figure 3-1.

Table 3-4 Baseline Ambient Sound Pressure Level Data for Mirant's Dickerson Power Plant

Site Number	Location	Date	Time	Sound Levels (dBA)				Comments/Notes
				L _{min}	L _{max}	L ₉₀	L _{eq}	
1	Near Water Intake	16-Aug-06	Day	54.4	68.2	54.7	59.2	Water intake noise
			Night	57.7	61.5	58.0	58.5	Insects, plant noise
2	Next to Railroad Entrance to Plant	16-Aug-06	Day	44.1	60.6	44.7	51.1	Air traffic, insect noise
			Night	44.0	48.7	44.6	45.8	Insect noise, air traffic
3	East Property Line	16-Aug-06	Day	37.7	47.6	38.2	40.6	Air traffic, insect noise
			Night	41.2	49.5	41.7	42.6	Insect noise, bird noise
4	By Gas Metering Station	16-Aug-06	Day	45.8	49.5	46.1	46.8	Insect noise
			Night	48.8	60.5	50.1	53.6	Insect noise
5	Nearest Resident	16-Aug-06	Day	43.3	48.8	43.7	45.5	MMRF Plant hum
			Night	54.9	71.9	55.6	58.9	Insect noise, MMRF plant hum



**Figure 3-1
Noise Receptor
Locations
Dickerson Station**

LEGEND

▲ Site Location

REFERENCE

Projection: Transverse Mercator
Datum: NAD 27
Coordinate System: UTM Zone 18

As shown in Table 3-4, the daytime L_{eq} sound levels at the monitoring locations ranged from 40.6 dBA at Site 3 to 59.2 dBA at Site 1. The nighttime L_{eq} sound levels ranged from 42.6 dBA at Site 3 to 58.9 at Site 5.

3.5 *CLIMATOLOGY AND AMBIENT AIR QUALITY*

3.5.1 *Climatology*

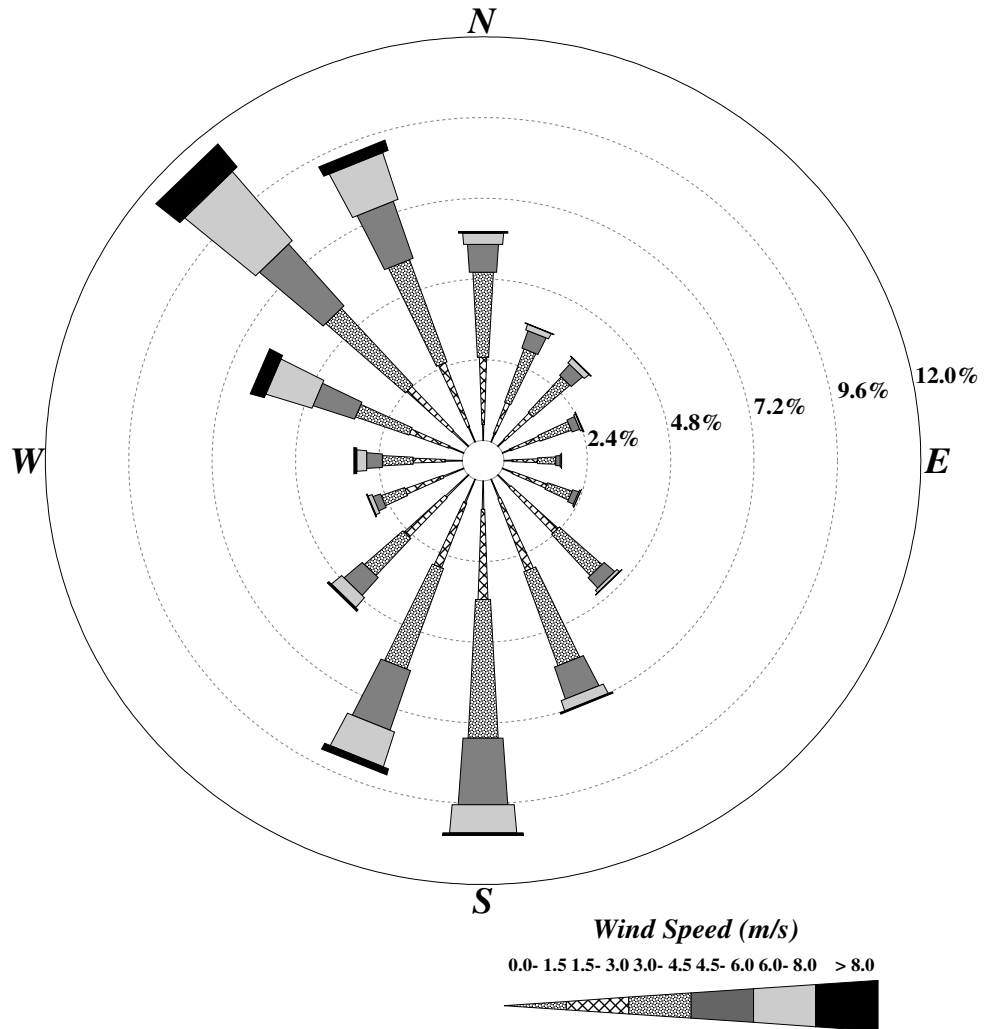
The discussion of climatology in the vicinity of the Dickerson plant is based primarily on data from Dulles International airport (IAD), which is the closest National Weather Service (NWS) station to the Dickerson site. The climate data cited in this section is from the Maryland State Climatologist Office Website, which is operated by the University of Maryland Department of Atmospheric and Oceanic Science. IAD is located approximately 12 miles west of the Dickerson facility, and is considered representative of the area.

The climate in the vicinity of the Dickerson site is temperate with four defined seasons. The annual mean temperature is approximately 55°F. The record minimum and maximum extreme temperatures range from a daily low of -18°F to a daily high of 104°F. Normal minimum and maximum temperatures are 22°F and 87°F, respectively. Lowest yearly temperatures tend to occur in January, while highest temperatures occur in July.

Precipitation is evenly distributed throughout the year. The mean annual precipitation is approximately 42 inches. This total has varied from as little as 30 inches to over 65 inches during the past 30 years.

The average annual wind speed at IAD is 6.3 miles per hour. Based on wind data at IAD from 1991-1995, prevailing winds are from the northwest. A wind rose of IAD wind measurements based on data from 1991 through 1995 is presented in Figure 3-2.

Figure 3-2 Wind Rose for Dulles International Airport (IAD), 1991-1995



3.5.2 Existing Ambient Air Quality Standards and Designations

Air Quality: Monitoring and Determining Attainment of Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) monitors concentrations of the “criteria” pollutants, NO_x, SO₂, particulate matter (PM), ozone, carbon monoxide (CO), and lead at various locations across the United States near ground level. If monitoring indicates that the concentration of a pollutant exceeds the National Ambient Air Quality Standard (NAAQS) in

any area of the country, that area is labeled a “nonattainment area” for that pollutant, meaning that the area is not meeting the ambient standard. Conversely, any area in which the concentration of a criteria pollutant is below the NAAQS is labeled an “attainment area” indicating that the NAAQS is being met.

The attainment/nonattainment designation is made by states and EPA on a pollutant-by-pollutant basis. Therefore, the air quality in an area may be designated attainment for some pollutants and nonattainment for other pollutants at the same time. For example, many cities are designated nonattainment for ozone, but are in attainment for the other criteria pollutants.

Since the late 1980s, the NAAQS for PM covered PM10, which represents PM less than 10 microns in diameter. In 1997, EPA revised the NAAQS for PM and added a standard for a new form of PM known as PM2.5, PM less than 2.5 microns in diameter. PM2.5, or “fine particulates,” are of concern because the particles small size allows them to be inhaled deeply into the lungs. In December 2004, EPA published its final designation of PM2.5 nonattainment areas.

EPA and states makes attainment designations based on air quality surveillance programs that measure pollutants in a network of nationwide monitoring stations known as the State and Local Air Monitoring Stations (SLAMS), National Air Monitoring Stations (NAMS), and Photochemical Monitoring Stations (PAMS) (EPA 1998). NAMS are a subset of the SLAMS focused on urban and multi-source areas. PAMS are also a subset of the SLAMS, and focus on areas of the county with ozone nonattainment issues. Appendix D of Part 58 of the Code of Federal Regulations establishes air quality monitoring network design specifications.

EPA’s six stated objectives for the monitoring network design for the SLAMS are (EPA 1998; pg 2-1):

- (1) to determine highest concentrations expected to occur in the area covered by the network;
- (2) to determine representative concentrations in the areas of high population density;
- (3) to determine the impact on ambient pollution levels of significant sources or source categories;
- (4) to determine general background concentration levels;

- (5) to determine the extent of Regional pollutant transport among populated areas, and in support of secondary standards; and
- (6) to determine the welfare-related impacts in more rural and remote areas (such as visibility impairment and effects on vegetation).

EPA further explains that SLAMS monitors are intended to be located so that the samples they collect are representative of air quality over the entire area they are intended to cover. The Agency has established “spatial scales of representativeness” to ensure that monitoring of specific pollutants is appropriate and representative. The scales of representativeness include microscale, middle scale, neighborhood scale, urban scale, and regional scale (EPA 1998). The scale takes into consideration such factors as local terrain, pollutant-specific criteria, and population density. EPA reviews the program annually to “...improve the network to ensure that it provides adequate, representative, and useful air quality data” (EPA 1998).

In summary, EPA and state air agencies have established a monitoring network designed to allow collection of monitoring data sufficient for EPA to determine ambient air quality of criteria pollutants. The monitoring data is used to determine background ambient concentrations of criteria pollutants, and to classify all areas of the county as attainment or nonattainment of the NAAQS.

3.5.3 *Local Air Quality*

The air quality in Montgomery County, which is designated as Area IV (COMAR 26.11.01.03) by ARMA, is currently in attainment for all criteria pollutants with the exception of ozone and PM_{2.5}. Because of the high levels of ozone historically found in Montgomery County during the ozone season (May-October), the County was formerly designated as “severe” for the 1-hour ozone NAAQS and is now designated “moderate” for the 8-hour ozone standard. Emissions of the two pollutants that are the primary precursors to ozone—volatile organic compounds (VOCs) and NO_x—are regulated more stringently in ozone nonattainment areas to ensure that air quality is not further degraded (i.e., the ambient air concentrations of ozone do not continue to increase as new sources of emissions are constructed).

PM_{2.5} is a newly regulated pollutant. Montgomery County (and several other counties in Maryland and other states) became a designated PM_{2.5} nonattainment area as of April 5, 2005. Although EPA has promulgated an ambient standard for PM_{2.5} and has designated PM_{2.5} nonattainment areas, there are no Federal or State implementing regulations for PM_{2.5}, as there

are for ozone. EPA published interim guidance for implementing PM2.5 nonattainment programs in a memorandum of September 2005. PPRP and MDE have used the interim guidance on PM2.5 for this case.

Figure 3-3 illustrates ambient air quality monitoring stations in and around Montgomery County, operated under the SLAMS network. The monitoring data are collected and maintained by EPA's AIRS database and is available from the EPA's website (www.epa.gov/air/data/). Table 3-5 presents the maximum ambient air concentrations for ozone and PM2.5 in Montgomery County since 2005.

Figure 3-3 *Location of Pollutant Monitoring Stations in and around Montgomery County*

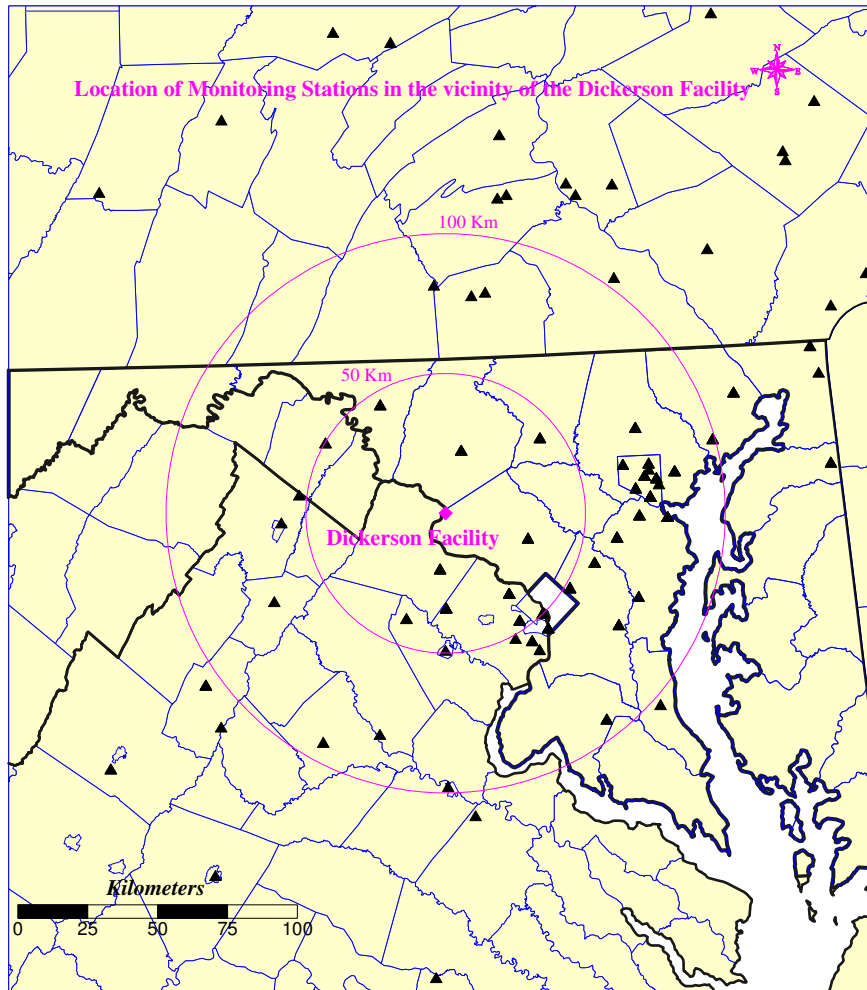


Table 3-5 Summary of Monitoring Data for Ozone and PM2.5 in Montgomery County

Pollutant	Averaging Period	Maximum Concentration
Ozone	1-hour	0.127 ppm
	8-hour	0.101 ppm
PM2.5	24-hour	38.0 $\mu\text{g}/\text{m}^3$
	Annual	13.6 $\mu\text{g}/\text{m}^3$

4.0 AIR QUALITY IMPACTS

4.1 IMPACT ASSESSMENT BACKGROUND AND METHODOLOGY

4.1.1 Overview

As part of the CPCN application process, PPRP, in conjunction with the MDE Air and Radiation Management Administration (ARMA), evaluates potential impacts to air quality resulting from emissions of projects to be licensed in Maryland. This evaluation consists of emissions investigations and other studies, including air dispersion modeling assessments, to ensure that impacts to air quality from the proposed projects are acceptable. PPRP and ARMA also conduct a complete air quality regulatory review for two purposes: 1) to assist in the impact assessment, because air quality regulatory standards and emissions limitations define levels to protect against adverse health, welfare, and environmental effects; and 2) to ensure that the proposed project will meet all applicable regulatory requirements.

4.1.2 Regulatory Considerations

In addition to the HAA and CAIR/CAMR requirements driving this project (see Section 2.3.1), the Dickerson FGD project will be subject to other air quality regulatory requirements.

The EPA has defined concentration-based National Ambient Air Quality Standards (NAAQS) for several pollutants, which are set at levels considered to be protective of the public health and welfare. Specifically, the NAAQS have been defined for six “criteria” pollutants—particulate matter (PM10 and PM2.5), SO₂, NO₂, CO, ozone, and lead. Air emissions limitations and pollution control requirements are generally more stringent for sources located in areas of the country that do not currently attain a NAAQS for a particular pollutant (known as “nonattainment” areas).

The Dickerson Generating Station is located in Montgomery County, Maryland. The air quality in Montgomery County, which is designated as Area IV (COMAR 26.11.01.03) by ARMA, is currently in attainment for all criteria pollutants with the exception of ozone and PM2.5. Because of the high levels of ozone historically found in Maryland during the ozone season (May-October), all of Montgomery County was formerly designated as “serious” nonattainment for the 1-hour ozone NAAQS and is now designated “moderate” nonattainment for the 8-hour ozone

standard. Emissions of the two pollutants that are the primary precursors to ozone—volatile organic compounds (VOCs) and NO_x—are regulated more stringently in ozone nonattainment areas to ensure that air quality is not further degraded (i.e., the ambient air concentrations of ozone do not continue to increase as new sources of emissions are constructed).

PM_{2.5} is a newly regulated pollutant. Montgomery County (and several other counties in Maryland and other states) became a designated PM_{2.5} nonattainment area as of April 5, 2005. Although EPA has promulgated an ambient standard for PM_{2.5} and has designated PM_{2.5} nonattainment areas, there are no Federal or State implementing regulations for PM_{2.5}, as there are for ozone. EPA published interim guidance for implementing PM_{2.5} nonattainment programs in a memorandum of September 2005. PPRP and ARMA have used the interim guidance on PM_{2.5} for this case.

Potential emissions from new and modified sources in attainment areas are evaluated through the Prevention of Significant Deterioration (PSD) program (COMAR 26.11.06.14). The goal of the PSD program is to ensure that emissions from major sources do not degrade air quality. Triggering PSD requires pollution control known as Best Available Control Technology (BACT) and additional impact assessments.

Potential emissions from new and modified sources in nonattainment areas are evaluated through the nonattainment New Source Review (NA-NSR) regulatory program (COMAR 26.11.17). The goal of the NA-NSR program is to allow construction of new emission sources and modifications to existing sources, while ensuring that progress is made towards attainment of the NAAQS. Triggering NA-NSR indicates that a project could adversely impact air quality, which means that impacts must be managed. NA-NSR requires that major sources limit emissions of affected pollutants through the implementation of the most stringent levels of pollution control, known as Lowest Achievable Emission Rate (LAER). In addition, NA-NSR requires pollutant “offsets” to be obtained for every ton of regulated pollutant emitted.

Because Dickerson is located in a nonattainment area for ozone and PM_{2.5} and an attainment area for the other pollutants, PPRP and ARMA assessed applicability with both NA-NSR and PSD to ensure that no adverse impacts would be caused by the proposed project. The results of these evaluations for the proposed project are discussed in Sections 4.3 (PSD program) and 4.4 (NA-NSR program).

Other federal and State air quality regulations may apply to the proposed project. These regulations apply either as a result of the type of emission

source that is to be constructed, reconstructed, modified, or as a result of a change of the pollutants to be emitted from the system. These regulations, discussed in Section 4.6, specify limits on pollutant emissions and impose recordkeeping and reporting requirements.

4.2 *PROPOSED PROJECT SOURCE CHARACTERIZATION*

Mirant is proposing to retrofit existing Dickerson Units 1, 2, and 3 with air pollution control (APC) equipment consisting of a wet FGD system, and a sorbent injection system for SO₂ and sulfuric acid mist (SAM) control. The APC train will be identical for Units 1, 2, and 3; the three units will share a single FGD absorber tower and a single, new 400-ft tall stack. Each unit will retain existing electrostatic precipitators and fabric filters for particulate matter control.

The facility's existing 700-ft stack currently serving Units 1, 2, and 3 will be re-lined and utilized as both a boiler protection device in order to prevent high vacuum excursions to the existing furnace and will serve as the primary stack during FGD system bypass for scheduled maintenance. The duration of scrubber maintenance is expected to coincide with the planned maintenance of one of the three units and will last for two weeks in a year, as indicated by Mirant in the response to DNR Data Request No. 1. The Dickerson facility also has two existing 400-ft stacks that are currently maintained and utilized as backup in the event the existing 700-ft stack requires maintenance. These two 400-ft stacks will be permanently decommissioned.

Other components of the control system as proposed include ancillary equipment including one quench pump, and a new material handling system for the transfer, handling, and storage of limestone, SAM control reagent, gypsum by-product, and solid wastes. A detailed description of the proposed system components is presented in the sections below. There will be no modifications planned to Dickerson's existing coal handling equipment as part of the proposed project.

4.2.1 *Pollution Control Equipment*

The APC system proposed to be installed as a part of this project includes:

- One limestone forced oxidation (LSFO) FGD system designed to reduce SO₂ by at least 92 percent, and the following associated facilities and equipment:
 - One FGD scrubber absorber for Units 1, 2, and 3;

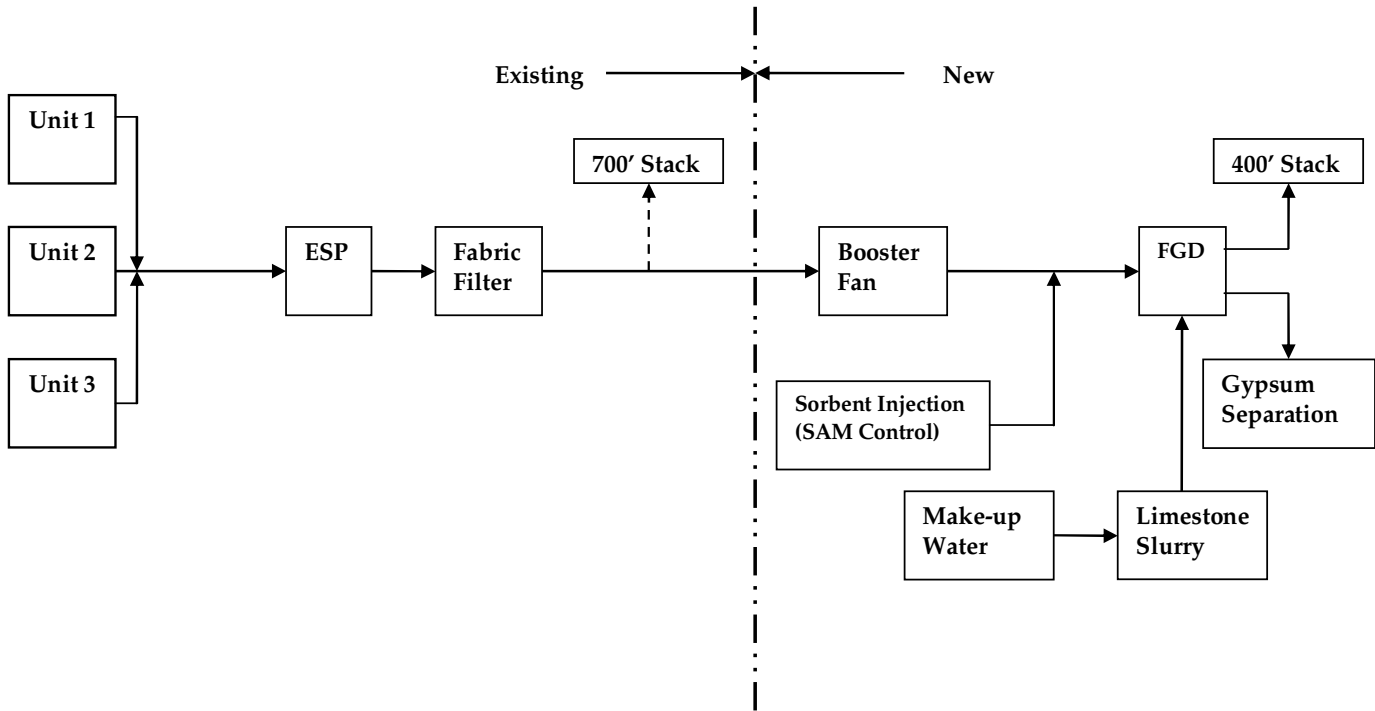
- Limestone receiving, handling, storage, and slurry preparation facilities (including the installation of two-wet horizontal ball mills); lime sorbent will be used to reduce SO₂ emissions from Units 1, 2 and 3 in the absorber;
 - Gypsum byproduct storage, handling, and off-loading facilities;
 - Makeup water supply and makeup water treatment system;
 - Wastewater treatment systems for FGD scrubber wastewater;
 - Solid waste storage and handling system for scrubber and wastewater treatment solids; and
 - A new, single-flue, 400-ft exhaust stack that will exhaust emissions from the FGD scrubber.
- Sorbent storage, handling, and injection system for reducing SAM emissions;
 - Upgrades to existing flue gas handling system to include:
 - Installation of new ductwork, and
 - Installation of new booster fans for each of Units 1, 2 and 3 to offset the pressure drop from the installation of the FGD system.

No changes in the existing coal railcar unloading or coal pulverizers are proposed with this project. A schematic of the process flow diagram for the existing and the proposed systems is provided as Figure 4-1.

4.2.1.1 *Proposed Pollution Control Train*

Figure 4-1 is a schematic showing both the existing and proposed flue gas trains. The equipment to the left of the vertical dashed line depicts the existing system (electric generating units to the existing stack). To the right of the dashed vertical line is the proposed APC system. The equipment to the right of the vertical dashed line is the equipment that is the subject of this CPCN, and is referred to as the Dickerson APC project.

Figure 4-1 Simplified Schematic of the Existing Flue Gas Train and Proposed APC Project for Dickerson Units 1, 2, and 3



4.2.1.2 Sorbent Injection – Sulfuric Acid Mist Control

Sulfur trioxide (SO₃) is formed as part of the coal combustion process within each unit. Through reaction of SO₃ with the water in the FGD system, SAM is formed. To minimize the formation of SAM, Mirant proposes to operate a sorbent injection system to reduce SO₃ prior to the FGD scrubber. The sorbent will be adsorbed and removed in the scrubber as part of the gypsum by-product. The sorbent selected for the Dickerson project will be calcium hydroxide (CaOH), and is projected to achieve a SAM control efficiency, when combined with the overall reductions associated with employing FGD technology, of 48.5 percent. This reduction is consistent with the Southern Generation Company guidance, which identifies on average a 47 percent control efficiency for installed wet FGD systems (Harrison *et al.*, 2005).

4.2.1.3 FGD

In LSFO FGD systems, as the flue gas enters a large vessel (spray tower or absorber), it is sprayed with a limestone slurry. The calcium in the slurry reacts with the SO₂ to form calcium sulfite or calcium sulfate, thereby removing the SO₂. The calcium sulfite in the spray tower absorber is nearly a hundred percent oxidized to form gypsum (calcium sulfate) by

bubbling compressed air through the sulfite slurry in the tower recirculation tank or in a separate vessel. It is Mirant's intention to sell the gypsum off-site to a wallboard manufacturer for beneficial reuse (see Section 7.0). The flue gas from the absorber will pass through a mist eliminator before exiting from either the existing 700-foot stack or the new 400-foot stack.

4.2.1.4 *Flue Gas Handling System*

The existing flue gas handling system will be upgraded as a part of this project. New booster fans will be installed for each unit to overcome the flow resistance associated with the additional FGD system ductwork, absorber, and stack. In addition, a new stack will be constructed for both Units 1, 2, and 3 combined. This new stack will be 400 feet high and 30 feet in diameter. The stack will be made of concrete and lined with fiber-reinforced plastic (FRP). Continuous emissions monitoring systems (CEMS) will be installed on the stack to monitor NO_x, SO₂, O₂ or CO₂, and flue gas flow. The existing stack, 700 feet in height, will be retained in place and will be used as the primary stack during periods of scrubber maintenance, and in emergency situations for preventing vacuum build-up in the furnace.

4.2.2 *Power Block Modifications*

The FGD project will require additional energy to operate equipment such as pumps, fans, conveyor belts, miscellaneous motors, and controls. Based on Mirant's response to DNR Data Request No. 1 (Question 1-11 dated December 22, 2006), the proposed systems are projected to consume approximately 2 percent of the gross rating of Units 1, 2, and 3 combined. Mirant also indicated in the same response that no upgrades are planned on any of the units to offset the parasitic load imposed by the proposed APC system. By not compensating for anticipated parasitic loads, a reduction in the gross rating of Units 1, 2, and 3 by approximately 11 MW per year will be experienced from the APC project. As Mirant has indicated, no increase in the gross rating is anticipated as a part of this project.

4.2.3 *Stack Emissions Characterization*

The APC project will substantially reduce SO₂ emissions as a result of Mirant's proposed installation of the FGD system and will result in reductions in mercury emissions. Overall, the APC project is projected to result in an increase in PM and PM₁₀ from the generating units, due to both the proposed changes in unit operations, and due to the proposed

sorbent that will be injected into the flue gas duct work for SAM control upstream of the FGD scrubber. During the sorbent injection process, SAM emissions chemically react with the sorbent to form calcium sulfate, which will be emitted in the form of particles (PM10 and PM2.5).

Mirant, as part of the APC project, proposes to operate at an average capacity factor of 74 percent once the project is installed. Dickerson Units 1, 2, and 3 have operated on average at a capacity factor of 73 percent (for calendar years 2004 and 2005) based on actual emissions certification data reported by Mirant. Therefore, unit operations are proposed to increase on average by approximately 1 percent of full capacity. As a result, the project will also result in a slight increase in NO_x, CO, VOC, PM, and SAM emissions above past actual emissions.

Mirant presented estimates of total suspended particulates (TSP), PM10, PM2.5, SO₂, NO_x, CO, VOC and SAM emissions from the APC project, along with the assumptions used to estimate emissions in its CPCN application and Responses to DNR Data Requests Nos. 1, 2, and 3. PPRP and ARMA used this information to verify emissions for each source and for the APC project.

Table 4-1 summarizes the projected short-term emission rates for the proposed APC project sources. Projected maximum annual emissions from the APC project are summarized in Table 4-2. Emissions are based on the following assumptions:

- No increase in coal throughput for the generating units as a part of this project; Mirant contends that the Dickerson Generating Station will secure coal contracts supplying coal with higher sulfur content by weight having no change in coal heating value (response to DNR Data Request 2-12);
- Use of worst-case coal resulting in 4.5 pounds of SO₂ per million British thermal units (lb/MMBtu) (i.e., approximately 2.9 percent sulfur) with an hourly heat input equal to 1,713 MMBtu per unit;
- FGD operation of 8,760 hours per year at a removal efficiency of 92 percent;
- NO_x emission rates of 0.34, 0.34, and 0.32 lb/MMBtu for Units 1, 2, and 3 respectively (based on 2-year average of past actual emission rates for 2004 and 2005);
- SAM emission rate of 0.033 lb/MMBtu (based on SO₂ emissions and reductions from the Southern Generating Company guidance

document) with an assumed 48.5 percent reduction of SAM using sorbent injection and FGD system;

- CO emission rates of 0.019, 0.020, and 0.019 lb/MMBtu for Units 1, 2, and 3 respectively (based on 2-year average of past actual emission rates for 2004 and 2005);
- VOC emission rates of 0.06, 0.06, and 0.06 lb/MMBtu for Units 1, 2, and 3 respectively (based on 2-year average of past actual emission rates for 2004 and 2005); and
- Hg emission rates of 5.37E-06, 8.36E-06, and 8.6E-06 lb/MMBtu for Units 1, 2, and 3, respectively (based on stack test data from Mirant for May 2003); no reduction in mercury emissions is shown in Tables 4-1 or 4-2 as mercury reductions from FGD scrubbers is highly variable depending on unit and process specific information.

Table 4-1 Dickerson APC Project Projected Worst Case Short-term Emissions

Emissions Unit	Total PM ^{2,5}	PM ¹⁰ ^{3,5}	PM ^{2.5} ^{4,5}	SO ₂	NO _x	CO	VOC	Hg	SAM
Unit 1	26.3 lb/hr	74.3 lb/hr	55.7 lb/hr	616.7 lb/hr	589.8 lb/hr	33.26 lb/hr	3.94 lb/hr	0.0092 lb/hr	41.36 lb/hr
	0.0154 lb/MMBtu	0.0434 lb/MMBtu	0.0325 lb/MMBtu	0.36 lb/MMBtu	0.344 lb/MMBtu	0.019 lb/MMBtu	0.06 lb/MMBtu	5.37E-06 lb/MMBtu	0.033 lb/MMBtu
Unit 2	26.1 lb/hr	74.0 lb/hr	55.5 lb/hr	616.7 lb/hr	587.9 lb/hr	33.61 lb/hr	3.94 lb/hr	0.0142lb/hr	42.06 lb/hr
	0.0152 lb/MMBtu	0.0432 lb/MMBtu	0.03238 lb/MMBtu	0.36 lb/MMBtu	0.343 lb/MMBtu	0.02 lb/MMBtu	0.06 lb/MMBtu	8.36E-06 lb/MMBtu	0.033 lb/MMBtu
Unit 3	25.9 lb/hr	73.8 lb/hr	55.4 lb/hr	616.7 lb/hr	549.8 lb/hr	33.31 lb/hr	3.94 lb/hr	0.0147lb/hr	42.06 lb/hr
	0.0151 lb/MMBtu	0.0431 lb/MMBtu	0.03235 lb/MMBtu	0.36 lb/MMBtu	0.321 lb/MMBtu	0.019 lb/MMBtu	0.06 lb/MMBtu	8.6E-06 lb/MMBtu	0.033 lb/MMBtu
Quench Pump (500 hp) ¹	0.4 g/bhp-hr	0.4 g/bhp-hr	NA	NA	7.8 g/bhp-hr	2.6 g/bhp-hr	0.5 g/bhp-hr	Negl.	Negl.
	0.44 lb/hr	0.44 lb/hr	NA	0.17 lb/hr	8.6 lb/hr	2.9 lb/hr	0.6 lb/hr		

¹ Specifications for this engine were not provided as Mirant has not selected a vendor at the time of PPRP's review; specifications from a comparable 500 hp unit (to be considered worst-case) were used for quantification purposes. NO_x emission shown for the quench pump include NMHC. Short-term emission rates for total NMHC + NO_x, CO, and PM correspond to NSPS Subpart III requirements for 500-hp engines having a displacement of less than 10 liters per cylinder; SO₂ and VOC emissions are based on vendor specifications .

² PM = EPA Method 5 portion, total filterable particulate.

³ PM₁₀ = EPA Method 201 + 202 portions, front half filterable + condensable particulate.

⁴ PM_{2.5} = EPA Method 202 portion, filterable + condensable particulate.

⁵ Emission estimates include particulate generated as a result of employing sorbent injection technology for controlling SAM.

Table 4-2 *Dickerson Projected Annual Emissions for Unit 1, 2 and 3 After Installation of the APC Project in Tons per Year (tpy)¹*

Emissions Unit	PM	PM10²	PM2.5²	SO₂	NO_x	CO	VOC	SAM	Hg
Unit 1	87.9	242.4	181.1	1998.8	1911.6	107.8	12.8	181.2	0.030
Unit 2	87.0	241.5	180.5	1998.8	1905.4	108.9	12.8	184.2	0.046
Unit 3	86.6	241.0	180.4	1998.8	1782.1	108.0	12.8	184.2	0.048
Total	261.5	724.9	542.0	5,996.4	5,599.1	324.7	38.3	549.6	0.124

1 Emissions based on future projected operation at 74% capacity factor.

2 Filterable plus condensable portions.

In addition to criteria pollutants, the electric generating units also emit Hazardous Air Pollutants (HAPs) such as heavy metals (e.g., arsenic, cadmium, chromium, etc.), hydrogen chloride, hydrogen fluoride, volatile organics and polycyclic aromatic hydrocarbons (PAHs). These emissions are estimated in Table 4-3 for Dickerson Units 1, 2, and 3, after implementation of the APC project, using emission factors from EPA’s AP-42. The emission rates for HAPs noted in Table 4-3 do not account for any removal through the FGD system. Typical FGD systems do reduce mercury to some degree, however it is unclear what level of removal is observed for this system. Maryland has Toxic Air Pollutants (TAPs) regulations that are applicable to all pollutants listed in COMAR 26.11.16.06 and 26.11.16.07. However, fuel burning equipment, which includes the units at Dickerson, is exempt from the TAPs regulations. Therefore, the emissions associated with TAPs are not estimated for the boilers.

Table 4-3 Estimated HAP Emissions from Dickerson Units 1, 2, and 3 After Installation of the APC Project in Tons per Year (tpy)

HAP	Units 1, 2 and 3		Diesel Quench Pump		Totals (tpy)
	(lb/Ton)	(tpy)	(lb/MMBtu)	(tpy)	
Acetaldehyde	5.70E-04	4.92E-01	7.67E-04	0.0110	5.03E-01
Acetophenone	1.50E-05	1.29E-02	-	-	1.29E-02
Acrolein	2.90E-04	2.50E-01	9.25E-05	0.0013	2.52E-01
Benzene	1.30E-03	1.12E+00	9.33E-04	0.0134	1.14E+00
Benzyl chloride	7.00E-04	6.04E-01	-	-	6.04E-01
Biphenyl	1.70E-06	1.47E-03	-	-	1.47E-03
Bis(2-ethylhexyl)phthalate (DEHP)	7.30E-05	6.30E-02	-	-	6.30E-02
Bromoform	3.90E-05	3.37E-02	-	-	3.37E-02
1,3 Butadiene	-	-	3.91E-05	0.000562	5.62E-04
Carbon disulfide	1.30E-04	1.12E-01	-	-	1.12E-01
2-Chloroacetophenone	7.00E-06	6.04E-03	-	-	6.04E-03
Chlorobenzene	2.20E-05	1.90E-02	-	-	1.90E-02
Chloroform	5.90E-05	5.09E-02	-	-	5.09E-02
Cumene	5.30E-06	4.57E-03	-	-	4.57E-03
Cyanide	2.50E-03	2.16E+00	-	-	2.16E+00
2,4-Dinitrotoluene	2.80E-07	2.42E-04	-	-	2.42E-04
Dimethyl sulfate	4.80E-05	4.14E-02	-	-	4.14E-02
Ethyl benzene	9.40E-05	8.11E-02	-	-	8.11E-02
Ethyl chloride	4.20E-05	3.63E-02	-	-	3.63E-02
Ethylene dichloride	4.00E-05	3.45E-02	-	-	3.45E-02
Ethylene dibromide	1.20E-06	1.04E-03	-	-	1.04E-03
Formaldehyde	2.40E-04	2.07E-01	1.18E-03	0.0170	2.24E-01
Hexane	6.70E-05	5.78E-02	-	-	5.78E-02
Isophorone	5.80E-04	5.01E-01	-	-	5.01E-01
Methyl bromide	1.60E-04	1.38E-01	-	-	1.38E-01
Methyl chloride	5.30E-04	4.57E-01	-	-	4.57E-01
Methyl ethyl ketone	3.90E-04	3.37E-01	-	-	3.37E-01
Methyl hydrazine	1.70E-04	1.47E-01	-	-	1.47E-01
Methyl methacrylate	2.00E-05	1.73E-02	-	-	1.73E-02
Methyl tert butyl ether	3.50E-05	3.02E-02	-	-	3.02E-02
Methylene chloride	2.90E-04	2.50E-01	-	-	2.50E-01
Naphthalene	1.30E-05	1.12E-02	8.48E-05	0.0012	1.24E-02
Phenol	1.60E-05	1.38E-02	-	-	1.38E-02
Propylene	-	-	2.58E-03	0.0371	3.71E-02
Propionaldehyde	3.80E-04	3.28E-01	-	-	3.28E-01
Styrene	2.50E-05	2.16E-02	-	-	2.16E-02
Tetrachloroethylene	4.30E-05	3.71E-02	-	-	3.71E-02
1,1,1-Trichloroethane	2.00E-05	1.73E-02	-	-	1.73E-02
Toluene	2.40E-04	2.07E-01	4.09E-04	0.0059	2.13E-01
Vinyl acetate	7.60E-06	6.56E-03	-	-	6.56E-03
Xylenes	3.70E-05	3.19E-02	2.85E-04	0.0041	3.60E-02
Antimony	1.8E-05	1.55E-02	-	-	1.55E-02
Arsenic	4.1E-04	3.54E-01	-	-	3.54E-01
Beryllium	2.1E-05	1.81E-02	-	-	1.81E-02
Cadmium	5.1E-05	4.40E-02	-	-	4.40E-02

Table 4-3 (continued)

HAP	Units 1, 2 and 3		Diesel Quench Pump		Totals (tpy)
	(lb/Ton)	(tpy)	(lb/MMBtu)	(tpy)	
Cobalt	1.0E-04	8.63E-02	-	-	8.63E-02
Lead	4.2E-04	3.63E-01	-	-	3.63E-01
Magnesium	1.1E-02	9.49E+00	-	-	9.49E+00
Manganese	4.9E-04	4.23E-01	-	-	4.23E-01
Mercury	8.3E-05	7.16E-02	-	-	7.16E-02
Nickel	2.8E-04	2.42E-01	-	-	2.42E-01
Selenium	1.3E-03	1.12E+00	-	-	1.12E+00
PAH (total)	2.08E-05	1.79E-02	-	-	1.79E-02
HCl	1.2	103.57	-	-	103.57
HF	0.15	12.95	-	-	12.95
Total HAPs	0.0092	137.01	0.0064	0.0915	137.10

4.2.4 *Material Handling Operations*

Material handling operations generate fugitive particulate matter from wind erosion of open material piles, material transfer, and release of road dusts from truck traffic (for delivery and pickup of materials and wastes).

Material handling operations for the APC project will include limestone delivery, unloading, transfer, storage and handling; gypsum transfer, storage, handling, and offloading for shipment offsite; SAM reagent unloading, storage and transfer; and wastewater sludge transfer and storage. Note that the ash generation rate from the existing ESPs and fabric filters will not increase because the gross rating of the units is not proposed to be increased in this project.

Mirant presented estimates of PM, PM10, and PM2.5 emissions from the APC project, along with the assumptions used to estimate emissions, in its CPCN application and Responses to DNR Data Requests Nos. 1, 2, and 3. Mirant has indicated that rail operations will be its primary mode of materials transport with truck operations as an emergency option. Although Mirant indicated that it would utilize different modes of transportation (rail and trucking), PPRP and ARMA determined that shipping and receiving material via trucking represents the worst-case emissions scenario, and would generate the most fugitive dust emissions. Therefore, to estimate emissions conservatively, PPRP and ARMA have assumed that all transportation for the APC project will be handled by truck.

Potential annual fugitive PM emissions from APC project material handling operations were independently calculated by PPRP and ARMA using EPA AP-42 emission factors, EPA’s Fugitive Dust Background Document (Section 2.3.1.3.3), information and assumptions provided by Mirant, and the following maximum, reported facility throughputs:

- limestone - 190,000 tpy
- gypsum - 310,000 tpy

Tables 4-4 through 4-6 list each of the fugitive dust sources proposed as part of Mirant’s APC project, the PM control methods to be employed, and the corresponding control efficiencies both proposed by Mirant and assumed by PPRP and ARMA for estimating emissions.

Table 4-4 *Mirant Dickerson Limestone Handling via Rail*

Fugitive Emission Sources	Control Method	Control Efficiency (%)
Transfer limestone from car bottom dumper to limestone unloading hoppers	Covered top bottom discharge below grade hoppers	99
Transfer limestone from unloading hoppers to belt feeders to limestone stackout conveyor	Enclosed conveyor and gallery	99
Transfer limestone from stackout conveyor to limestone storage pile	Enclosed pile storage	90
Transfer limestone from limestone storage to reclaim conveyor	Partially enclosed conveyor	70
Transfer limestone from reclaim conveyor to two limestone storage silos	Enclosed conveyor	90

Table 4-5 *Mirant Dickerson Limestone Handling via Truck*

Fugitive Emission Sources	Control Method	Control Efficiency (%)
Transfer limestone from truck dump to unloading hoppers	No controls	0
Transfer limestone from unloading hoppers to belt feeders to limestone stackout conveyor	Enclosed conveyor and gallery	90
Transfer limestone from stackout conveyor to limestone storage pile	Watering of pile as needed	90
Transfer limestone from limestone storage to reclaim conveyor	Partially enclosed conveyor	70
Transfer limestone from reclaim conveyor to two limestone storage silos	Enclosed conveyor	90

Table 4-6 *Mirant Dickerson Gypsum Handling via Truck*

Fugitive Emission Sources	Control Method	Control Efficiency (%)
Transfer gypsum from scrubber to discharge conveyors	Enclosed transfer and conveyor	95
Transfer gypsum from discharge conveyors to transfer house	Enclosed transfer house	90
Transfer gypsum from transfer house to storage pile	Enclosed storage pile	90
Transfer gypsum from storage pile to loadout conveyor	Partially enclosed building	70
Transfer gypsum from loadout conveyor to transfer house/loadout conveyor	Enclosed transfer house	90
Transfer gypsum from loadout conveyor to truck or rail	Enclosed	90

A summary of the material handling emissions is presented in Table 4-7. Based on Mirant’s Response to DNR’s Data Request No. 1, Question 1-19, the unloading and handling of SAM sorbent will not result in fugitive emissions as these operations are fully enclosed and conveyed using fully enclosed pneumatic conveyors. The pneumatic conveyor system is directly connected to the SAM sorbent storage silo, which is vented through a HEPA filter. Emissions from this storage silo are accounted for in Table 4-7.

Table 4-7 *Dickerson Projected Annual Emissions for Material Handling*

Emissions Unit	Emissions (tpy)		
	PM	PM10	PM2.5
Material Handling	15.69	4.69	0.70

The APC project also has the potential to emit small quantities of heavy metal HAPs/TAPs in the dust associated with the limestone material handling operations. The gypsum precipitated from the scrubber was assumed to have negligible HAP/TAP concentrations. The emissions presented in Table 4-8 are estimated using the PM10 emission rates from the material handling operations and the concentrations of the HAPs/TAPs found in the associated material. HAP/TAP concentration data for limestone was found in the *Trace Metals from Limestone During Flue Gas Desulfurization by Electric Utilities Chemistry Report*, dated March 26, 1997 (as cited in EPA, 2000).

Table 4-8 Projected HAPs/TAPs from Material Handling Operations including Maryland's TAPs Screening Analysis

Pollutant	Emission Increase (tpy) ¹		TLV		Screening Level ²			Allowable Emissions		Actual Emissions		Compliance Demon.?	
	PM/PM10	PM2.5	TWA (mg/m3)	STEL (mg/m3)	1-hour (ug/m3)	8-hour (ug/m3)	Annual (ug/m3)	lbs/hr	lbs/yr	lbs/hr	lbs/yr	with lbs/hr Std.	with lbs/yr Std.
(a) Class I TAPs													
Arsenic (HAP)	1.17E-05	1.76E-06	0.01	-	-	0.1	0.0012	3.58E-04	0.438	2.67E-06	0.023	Yes	Yes
Cadmium (HAP)	9.37E-06	1.41E-06	0.01	-	-	0.02	0.0036	7.17E-05	1.314	2.14E-06	0.019	Yes	Yes
Nickel (HAP)	9.37E-05	1.41E-05	1.5	-	-	1	0.0417	3.58E-03	15.219	2.14E-05	0.187	Yes	Yes
(b) Class II TAPs													
Barium	9.37E-03	1.41E-03	0.5	-	-	5	-	1.79E-02	-	2.14E-03	-	Yes	Yes
Chromium (HAP)	2.34E-03	3.51E-04	0.5	-	-	5	-	1.79E-02	-	5.35E-04	-	Yes	Yes
Cobalt (HAP)	2.34E-05	3.51E-06	0.02	-	-	0.2	-	7.17E-04	-	5.35E-06	-	Yes	Yes
Manganese (HAP)	5.15E-03	7.73E-04	0.2	-	-	2	-	7.17E-03	-	1.18E-03	-	Yes	Yes
Mercury (HAP)	4.69E-06	7.03E-07	0.025	-	-	0.25	-	8.96E-04	-	1.07E-06	-	Yes	Yes
Selenium (HAP)	3.75E-07	5.62E-08	0.2	-	-	2	-	7.17E-03	-	8.56E-08	-	Yes	Yes
Silver	4.69E-06	7.03E-07	0.01	-	-	0.1	-	3.58E-04	-	1.07E-06	-	Yes	Yes
Zinc	9.37E-04	1.41E-04	5	-	-	500	-	1.79E+00	-	2.14E-04	-	Yes	Yes
Total	1.78E-02	2.68E-03											

Notes:

1. Table 3-12 and 3-13 – EPCRA Section 313, Electricity Generating Facilities taken from “The Release of Trace Metals from Limestone During Flue Gas Desulfurization by Electric Utilities, Chemistry Report,” OPPT, March 26, 1997 (as cited in EPA, 2000).
2. Screening Level taken from MDE List of Screening Levels, May 2005.

The TAP emissions from material handling equipment are subject to Maryland’s TAP screening analysis, which is also provided in Table 4-8. The project will be in compliance with Maryland’s TAP requirements.

4.2.5 Wastewater Treatment System

The FGD system will require Mirant to install and operate a new wastewater treatment plant to treat the blowdown from the scrubber. The wastewater will consist of dissolved salts/ions that accumulate in the scrubber (e.g., metals, nitrates, etc.). These pollutants will be removed through chemical precipitation, filtration, biological treatment, and clarification. The wastewater is not expected to have significant levels of VOCs because at the high temperatures expected in the scrubber, they do not typically transfer from the gas phase to a liquid phase dissolved in water.

4.2.6 Quench Pump

One 500-hp diesel-fired quench pump will be installed to provide water in the event of a plant shutdown following an emergency or unusual event, and if power is unavailable from the reserve auxiliary transformer. Criteria pollutant emissions from the quench pump are presented in Table 4-9. Quench pump operations were assumed to be no more than 500 hours per year.

Table 4-9 Projected Annual Emissions from the Quench Pump (tons per year)

Emissions	PM	PM10	PM2.5	SO2	NMHC + NOx	CO	VOC
Quench Pump	0.11	0.11	0.11	0.04	2.15	0.72	0.14

Note: Mirant’s engine design has not been finalized; therefore, worst case emissions for NMHC + NOx, CO, and PM have been evaluated based on NSPS Subpart IIII required attainable emission rates for 500 hp engines having a displacement of less than 10 liters per cylinder. SO₂ and VOC emissions were estimated based on a comparable unit specification provided by vendor. Quench pump annual operation assumed to be 500 hours per year worst case.

4.2.7 Facility-wide Emission Summary

Table 4-10 presents the projected future emissions after implementation of the APC project.

Table 4-10 APC Project Emission Summary (tons per year)

Emissions Unit	PM	PM10	PM2.5	SO2	NOx	CO	VOC	SAM	Hg
Unit 1	87.9	242.4	181.1	1998.8	1911.6	107.81	12.77	181.16	0.030
Unit 2	87.0	241.5	180.5	1998.8	1905.4	108.93	12.77	184.24	0.046
Unit 3	86.6	241.0	180.4	1998.8	1782.1	107.98	12.77	184.24	0.048
Quench Pump	0.11	0.11	0.11	0.04	2.15	0.72	0.14	Negligible	Negligible
Material Handling	11.26	4.09	0.61	--	--	--	--	--	--
Total Project	272.87	729.1	542.72	5,996.43	5,599.2	324.75	38.33	549.64	0.124

4.2.8 Construction Emissions

The APC project will involve extensive and lengthy construction; Mirant estimates construction to take approximately 28 months. Air emissions will be generated from the operation of construction equipment at times over the period. Construction activities that could generate emissions will include ground excavation, grading, cut-and-fill operations, and the installation of the APC equipment. Minimal emission of VOC, CO, SO₂ and NO_x will be emitted from the construction equipment’s exhaust. Fugitive dust emissions will be produced from trucks traveling over the paved roads. Additional fugitive emissions may be generated from wind erosion of open excavation areas during construction. Emissions estimates were verified by PPRP and ARMA and are summarized in Table 4-11.

Construction emissions are not regulated in the same manner as those from stationary sources. However, if a project must obtain a license or permit from a federal agency, then emissions from construction activities would be quantified and included in the applicability determination under EPA’s general conformity rule (40 CFR 93). However, because this project does not require a federal permit or license, construction emissions are not regulated beyond the requirements for “reasonable precautions” identified in COMAR 26.11.06.03D. Mirant indicates that they will use control measures such as wet suppression to minimize fugitive dust from the land-based construction activities.

Table 4-11 *Projected Emissions Associated with Construction Activities*

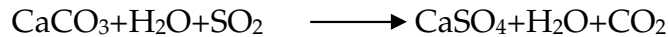
Pollutant	Total Emissions (tpy)
PM (TSP, PM10 & PM2.5)	1.96
NO _x	3.44
CO	3.32
VOC	0.38
SO ₂	0.21

4.2.9 *Greenhouse Gas Emissions*

Emissions of greenhouse gases (GHGs) are not yet regulated in Maryland; however, if Maryland decides to participate in the Regional Greenhouse Gas Initiative (RGGI), Maryland will be required to establish a GHG cap-and-trade program. Therefore, for informational purposes, PPRP independently evaluated carbon dioxide (CO₂) emissions expected from the APC project.

CO₂ from generating units are directly proportional to the amount of fuel burned. For 2005, Dickerson Units 1, 2, and 3 emitted 3,411,227 tons of CO₂ (EPA Clean Air Markets Data). The proposed Dickerson FGD project will not result in any increase in the rate of coal combustion from the boilers, because Mirant indicates that it will not attempt to recover generating capacity lost by operation of the FGD system.

In addition to combustion emissions of CO₂, the FGD system generates CO₂ when limestone slurry (CaCO₃+H₂O) reacts with the SO₂ emissions from the boiler to form calcium sulfate (CaSO₄) and CO₂:



The CO₂ emission increase is directly proportional to the reduction in SO₂ emissions. The projected decrease in SO₂ emissions from the project will be 32,267 tpy; the associated projected increase in CO₂ emissions from the FGD system will be 22,587 tpy. This is a small contribution to CO₂ (less than 0.7 percent) compared to the emissions from the coal combustion.

4.3 PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

4.3.1 PSD Applicability

The Dickerson facility is an existing major source as defined in PSD regulations (40 CFR 52.21). Therefore, any modifications at the facility must be evaluated to determine whether the resulting emissions changes would constitute a “major modification” under PSD. A major modification is defined in the PSD rule as:

“...any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase... of a regulated NSR pollutant ...; and a significant net emissions increase of that pollutant from the major stationary source..”

Source: 40 CFR Part 52.21(b)(2)(i), referenced in COMAR 26.11.06.14

The determination of whether a project is a major modification is a two-step process. The first step is to determine whether the project is a modification, and the second step is to determine whether the modification results in a significant emissions increase.

The Dickerson APC project was evaluated to determine: 1) whether the project constitutes a modification for any pollutants, and 2) whether any modifications are “significant” (above PSD applicability thresholds) and thus trigger PSD. In the PSD analysis, future projected emissions due to the project are compared with past actual baseline emissions to determine the net emissions increase from the project. If the net emissions increase for any of the applicable pollutants is above the significant levels, then PSD is triggered.

The PSD applicability analysis is conducted only for pollutants for which the air quality in the vicinity of the plant is designated attainment, which in Montgomery County includes SO₂, NO_x, PM/PM₁₀, and CO. The significance levels for these pollutants are:

- SO₂ – 40 tpy;
- NO_x – 40 tpy;
- CO – 100 tpy;
- PM – 25 tpy;
- PM₁₀ – 15 tpy; and

- SAM – 7 tpy.

The past actual baseline emissions for projects at utility sources are calculated as the maximum annual emissions over any 24-month period in the five years preceding the commencement of construction of the project. In this case, the 24-month period consisting of 2004 and 2005 was used in the analysis as the emissions were the highest during this period for Units 1, 2, and 3. The average capacity factor (i.e., ratio of the actual heat input capacity for the year to the maximum (design) capacity) for this time period was estimated to be 73 percent. Mirant has indicated in the application that in the future the units are expected to be operated at 74 percent capacity factor.

Per 40 CFR 52.21(b)(41)(c),

the projected actual emissions shall exclude any emission increase which could have been accommodated by an emission unit during the 24-consecutive months which was used in the baseline emission calculations, and that are unrelated to the project including increased utilization due to demand growth.

The maximum capacity factor for Units 1, 2, and 3 in the 24-month baseline period were 72 percent, 78 percent, and 77 percent, respectively. Therefore, any increases from the maximum operation levels achieved or accommodated in the past (during the 24-month baseline period) to the baseline average capacity factor of 73 percent shall be excluded from the net emission increase for the project. PPRP and MDE have made an adjustment accounting for the increase in emissions accommodated by Unit 1 (i.e. 72 percent to 73 percent capacity factor) in the past. An emissions increase was not observed from either Units 2 or 3, and therefore no correction was needed. The above mentioned corrections are shown in Table 4-12 below.

As indicated above, the past actual emissions were based on the average of emissions from 2004 and 2005. The emissions for NO_x and SO₂ were based on the Continuous Emissions Monitoring System (CEMS) data; the emissions for the remaining pollutants were based on heat input data in million British Thermal Units per year (MMBtu/yr) obtained from the CEMS database and the emission factors described in Section 4.2.3. The future projected emissions were based on same emission factors used for the past emissions and the future heat input using a capacity factor of 74 percent.

Table 4-12 summarizes the baseline emissions for Units 1, 2, and 3 (established based on the highest two-year average of past actual emissions in the past five years); future projected emissions, estimated as a result of the proposed project (see Table 4-10); and the net emissions increase compared to the applicable PSD significance thresholds.

SAM is an acidic liquid aerosol droplet that can be created and entrained in the exhaust from coal-fired boilers. The sulfur in the coal is oxidized in the boiler to form mostly SO₂, but there is some SO₃ that is also formed. The SO₃ can then react with water vapor to form liquid droplets of H₂SO₄, sulfuric acid. Although it is acidic, the wet FGD scrubber will not remove much SAM because it is a liquid particle, or aerosol.

One means of controlling SAM is through the use of a dry sorbent that can chemically react with the SAM and be removed by dry particulate control equipment. This is the technology proposed by Mirant for this APC project. The sorbent is proposed to be injected upstream of the FGD scrubber. Mirant estimates a 48.5 percent reduction in SAM with this sorbent injection.

As indicated in Table 4-12, the net emissions increase for the regulated pollutants do not exceed the significance thresholds, and therefore the APC project is not subject to PSD review. Potential emissions of other PSD regulated pollutants, including lead, total fluorides, total reduced sulfur, reduced sulfur compounds, hydrogen sulfide, beryllium, arsenic, asbestos, vinyl chloride, and radionuclides, chlorofluorocarbons (CFCs), and halons were not considered further as these pollutants are not impacted by the APC project.

VOC, NO_x, and PM_{2.5} are nonattainment pollutants and are evaluated in Section 4.4.

4.3.2 *NAAQS and PSD Increment Compliance Demonstration*

The NAAQS standards for criteria pollutants are standard ambient air concentrations established by EPA at levels intended to protect human health and welfare with an adequate margin of safety. The air quality analysis required for sources subject to PSD includes an evaluation of the impact of the new source's emissions on NAAQS attainment, and also includes an evaluation of the impact of the new source's emissions on applicable PSD increments. PSD increments are established by EPA as allowable incremental increases in ambient air concentrations due to new sources or major modifications in attainment areas, set at levels that are substantially less than the NAAQS. PSD increments cannot be exceeded

Table 4-12 PSD and NA-NSR Applicability Determinations

Past Actual Emissions (tpy) (2004-2005)					Future Projected Emissions (tpy)							Credit for Capacity factor Achieved in the Past (Baseline Period)				Net Emission Change (tpy)	Significant Emission rate (tpy)
Boiler Emissions					Boiler Emissions				Material handling	Quench Pump*	Total						
Pollutant	Unit 1	Unit 2	Unit 3	Combined	Unit 1	Unit 2	Unit 3	Combined				Unit 1	Unit 2	Unit 3	Combined		
SO ₂	12,125.4	13,187.8	12,950.3	38,263.5	1,998.8	1,998.8	1,998.8	5,996.35	-	0.04	5,996.39	-	-	-	-	-32,267.1	40
NO _x	1,790.8	1,950.4	1,790.8	5,532.0	1,911.6	1,905.4	1,782.1	5,599.2	-	2.15	5,601.3	61.7	-	-	61.7	7.6	40
PM	80.0	86.5	84.5	251.0	87.9	87.0	86.6	261.6	15.69	0.11	277.4	2.76	2.73	2.72	8.2	18.2	25
PM10	225.5	245.5	240.5	711.5	242.4	241.5	241.0	725.0	4.69	-	729.7	7.77	7.75	7.73	23.3	-5.1	15
PM2.5	169.0	184.0	180.5	533.5	181.1	180.5	180.4	542.0	0.70	-	542.7	5.83	5.81	5.80	17.4	-8.2	15
CO	101.0	111.5	108.5	321.0	107.8	108.9	108.0	324.7	-	0.72	325.4	3.48	3.52	3.49	10.5	-6.1	100
VOC	12.0	13.3	12.9	38.2	12.8	12.8	12.8	38.3	-	0.14	38.5	10.76	10.76	10.76	32.3	-32.1	50
SAM	173.6	188.8	185.4	547.9	181.2	184.2	184.2	549.6	-	-	549.6	-	-	-	-	1.8	7
Mercury	0.028	0.048	0.048	0.123	0.030	0.046	0.048	0.124	-	-	0.124	0.0	0.0	0.0	0.0	0.001	-

* Quench Pump emissions reported as NMHC + NO_x

1. The netting analysis excludes any increases in emissions from the boilers resulting from increase in capacity factor from 73% to 74% under 40 CFR 52.21(b)(41)).
2. PM, PM10, PM2.5, and CO emission are from Mirant's 2004/2005 Annual Certification Data (Table 6.2-2 of Mirant DNR Data Request Response #1); calculated emission rates based on this data were used to evaluate future projected emissions.
3. PM = EPA Method 5 portion, total filterable particulate
4. PM10 = EPA Method 201 + 202 portions, front half filterable + condensable particulate
5. PM2.5 = EPA Method 202 portion, filterable + condensable particulate

even if the NAAQS evaluation would allow for impacts from new sources that are greater than the PSD increments.

As discussed, the APC project will not trigger PSD, and so no increment impact analysis is required. However, there is a change in stack characteristics with the APC project; therefore, Mirant evaluated impacts to the NAAQS of the change in stack height on ambient air quality standards for NO_x, SO₂, PM10, and CO.

The emissions from Dickerson Units 1, 2, and 3 are currently emitted from a 700-foot stack. The good engineering practice (GEP) height for this stack is 400 feet. This is the grandfathered stack height for the three units, which originally exhausted to two 400-foot stacks prior to December 31, 1970.

PPRP and ARMA conducted independent modeling, as described in this section, to verify the applicant's results. The NAAQS for the criteria pollutants NO₂, SO₂, CO, lead, PM10, PM2.5, and ozone, defined by federal regulations (40 CFR 50), are shown in Table 4-13. The NAAQS for PM2.5 and 8-hour ozone are listed in the table for completeness; however, these standards are in the process of being implemented and are not evaluated further in this report.

Ozone, another criteria pollutant for which NAAQS have been defined, is not emitted directly from the Dickerson facility sources. Ozone is formed by reactions of VOCs and NO_x emissions (called "ozone precursors") from point sources in the presence of sunlight and in the presence of precursors emitted by other sources. Ozone is considered to be a regional pollutant, in that the effects of individual sources are not ordinarily distinguishable from the effects of literally thousands of ozone precursor sources. For this reason, modeling the impact of an individual source on ozone concentrations is not required and was not carried out for this project.

The significant impact levels (SILs) for these pollutants are also provided in the table. SILs have been established by EPA to serve as an initial evaluation of a proposed project's air quality impact. Additional analyses relative to attainment of the NAAQS and PSD increments are not required or necessary for PSD projects with predicted impacts less than the SILs. It should be noted that although the Dickerson APC project is not major for PSD for any criteria pollutant, the SILs are presented here and in the modeling results for completeness purposes.

Table 4-13 Ambient Air Quality Thresholds

Pollutant	Averaging Time	Primary NAAQS	Secondary NAAQS	PSD Increment	Monitoring <i>de minimis</i>	Significant Impact Level
NO ₂	Annual	100 (0.053 ppm)	100 (0.053 ppm)	25	14	1.0
SO ₂	Annual	80 (0.03 ppm)	—	20	—	1.0
	24-hr	365 (0.14 ppm)	—	19	13	5.0
	3-hr	—	1300 (0.5 ppm)	512	—	25.0
CO	8-hr	10,000 (9 ppm)	—	—	575	500
	1-hr	40,000 (35 ppm)	—	—	—	2000
PM ₁₀	Annual	50	50	17	--	1.0
	24-hr	150	150	30	10	5.0
PM _{2.5}	Annual	15	15	—	—	—
	24-hr	65	65	—	—	—
Lead	Calendar quarter	1.5	1.5	—	0.1	—
Ozone	1-hr	235 (0.12 ppm)	235 (0.12 ppm)	—	100 tpy VOC	—
	8-hr	156 (0.08 ppm)	156 (0.08 ppm)	—	—	—

ppm = parts per million

Source: 40 CFR 50; all values are shown in µg/m³ except as noted.

4.3.2.1 *NAAQS and PSD Increment Modeling: APC Project Sources Only*

Emissions from sources associated with the Dickerson APC project were modeled using the American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD), version 07026. The purpose of this initial modeling analysis was to determine impacts of the project relative to PSD increments and NAAQS for SO₂, NO_x, PM₁₀, and CO. AERMOD was promulgated as a regulatory dispersion model and included in the Guidelines for Air Quality Models (40 CFR Part 51, Appendix W) on November 9, 2005. As of December 2006, AERMOD has become the current regulatory model for use in regulatory dispersion modeling analyses.

The applicant used version 04300 of the AERMOD model. Since submission of the application, EPA has released a new version of AERMOD, version 07026. PPRP and ARMA have used the most recent versions of AERMOD and related processors in the air quality modeling analysis presented in the following sections.

Meteorological Data Representativeness

An air quality modeling analysis should be accompanied by an evaluation of the representativeness of the meteorological data used in the model. For this project, the applicant used surface and upper air data from Dulles International Airport (IAD) for the time period 1991-1995. PPRP and ARMA expanded on this period and added meteorological data from 1990 to the analysis.

PPRP and ARMA conducted analyses to understand and analyze the representativeness of the IAD surface meteorological data for the Dickerson facility site. The locations of the Dickerson site and IAD are presented in Figure 4-2. A wind rose for the period 1991-1995 for IAD surface data is presented in Figure 4-3. The Dickerson site is located approximately 30 km north of IAD. Based on visual inspection of the terrain and land use surrounding the two sites, it is noted that differences exist, but these are judged to be not significant enough to invalidate the use of the IAD meteorological data for the AERMOD modeling. No major terrain features are located in between the Dickerson site and IAD.

PPRP and ARMA concluded that the five-year data set from IAD airport is representative and suitable for use in an air quality modeling analysis for the Dickerson site.

Figure 4-2 Location of Dickerson and IAD

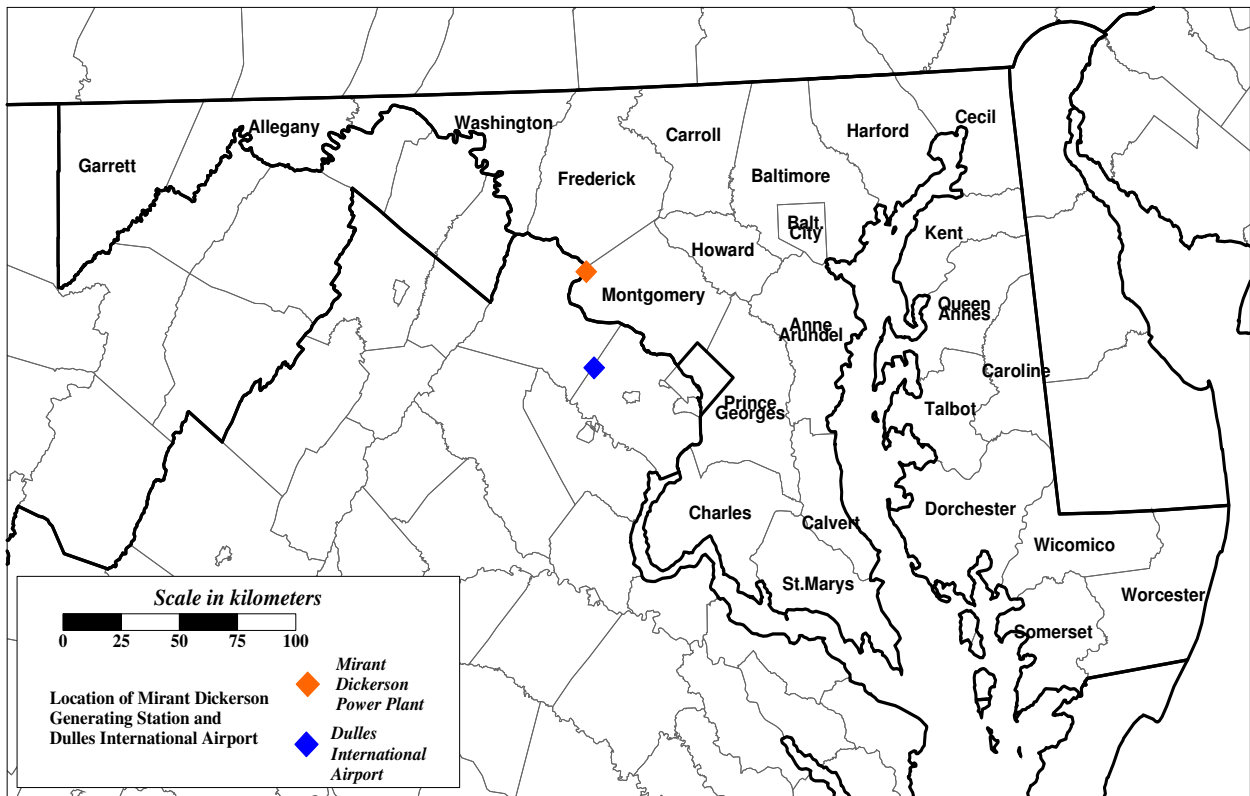
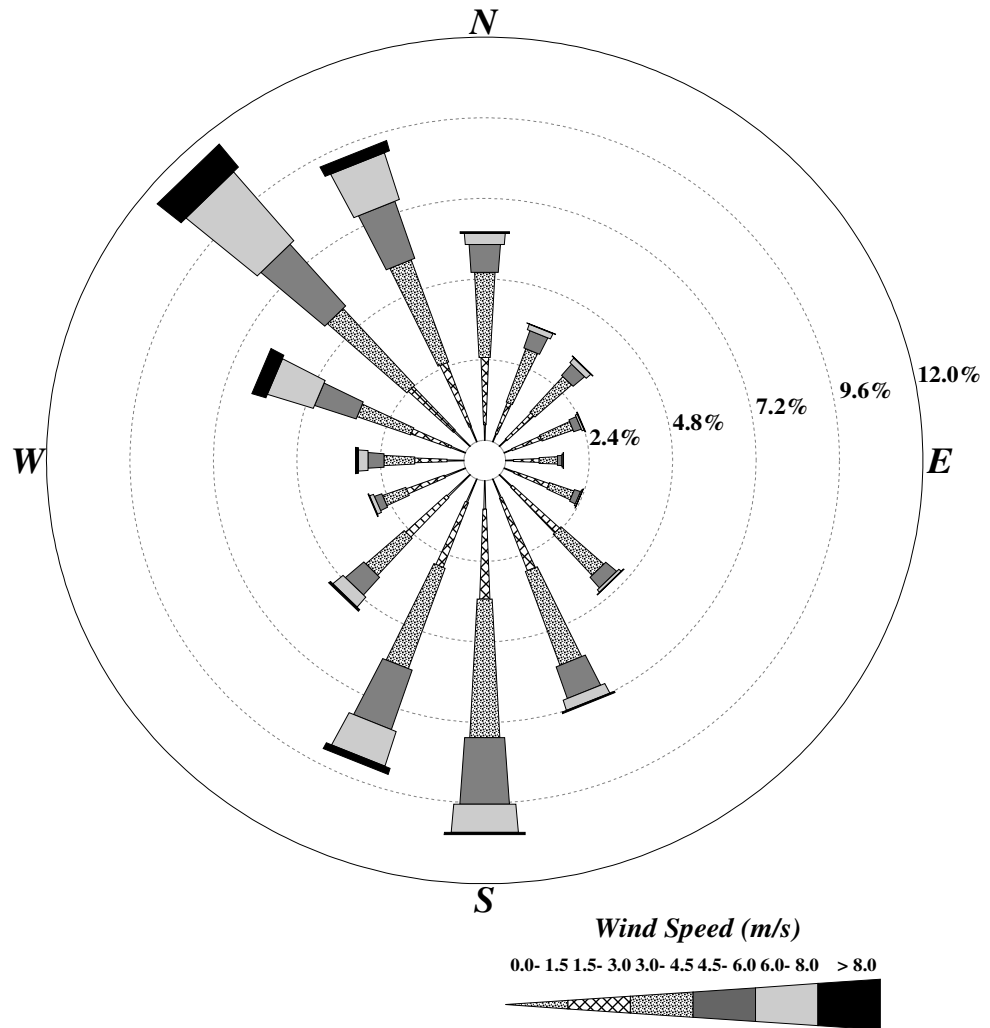


Figure 4-3 Wind Rose for Dulles International Airport (IAD), 1991-1995



Meteorological Data Processing

The surface and upper air data collected at IAD were processed by the applicant utilizing the AERMET (version 04300) program. AERMET is the recommended processor for developing inputs to AERMOD. AERMET requires, at a minimum, hourly NWS data and once-daily upper air sounding profiles. The processing program produces two files for input to AERMOD: a surface file containing calculated micrometeorological variables (heat flux, stability, and turbulence parameters) that represent the dispersive potential of the atmosphere, and a profile file that provides vertical profiles of wind speed, wind direction, and temperature. In the case of meteorological data files developed from NWS data, the profiles contain only one level (the surface level) and a meteorological interface

within AERMOD generates profiles of wind, temperature, and turbulence from the input data files. The Dickerson AERMET analysis used parameters for surrounding land characteristics (albedo, or reflectivity of the ground surface; bowen ratio, an indicator of surface moisture; and roughness length, an indicator of surface roughness) based on Tables 4-1 through 4-3 provided in the AERMET users guide. Land use characteristics provide important inputs to the AERMET preprocessor and to the AERMOD model. The capability of the atmosphere to simulate plume dispersion is simulated by AERMET and AERMOD through the use of scaling parameters such as the convective velocity scale, the friction velocity, and the Monin-Obukhov length scale. These parameters are in turn highly dependent on land characteristics. PPRP and ARMA conducted an independent analysis of land characteristics in the vicinity of Dickerson and IAD, which revealed similar characteristics to those used by the applicant. PPRP and ARMA reran AERMET using the newly released version 06341.

PPRP and ARMA have reviewed the meteorological data processing, and conclude that the AERMET processing conducted by the applicant was suitable to model the Dickerson facility using AERMOD version 04300.

Downwash

Aerodynamic downwash caused by buildings and structures in the vicinity of exhaust stacks can lead to an increase in ground level concentrations. Downwash effects are modeled within AERMOD by using algorithms derived from the ISCPRIME model. The algorithms contained in ISCST3 are known to have several deficiencies, most of which tend to make the predictions conservative (i.e., predict higher impacts than a more accurate model would predict). The ISCPRIME model was developed by the Electric Power Research Institute (EPRI) in response to a need to improve existing downwash models. The impacts of the project sources were modeled using AERMOD by the applicant.

AERMOD requires information about buildings and structures to be input in a prescribed format. Dickerson used EPA's Building Profile Input Program (BPIP) for this purpose. The BPIP program generates information on the location and size of buildings and structures relative to each stack, and AERMOD uses this information to calculate downwash effects.

BPIP also calculates the good engineering practice (GEP) stack height (i.e., the GEP formula stack height) for a given stack location. GEP is the height at which downwash effects are considered to be insignificant. The GEP

height as determined by BPIP for the new stack is 264 ft or 80.5 meters. The proposed new stack height will be 400 feet (121.92 meters). Note that the new stack will handle exhaust gases from all three coal-fired units, which were in existence prior to the GEP stack height grandfather date of December 31, 1970. The three boilers exhausted to two 400-foot stacks on the grandfather date. Consequently, Mirant can take credit for a grandfathered GEP stack height of 400 feet. Also, note that the existing 700 foot stack was modeled at 400 feet, since it was constructed after the grandfather date.

Source Characterization

The impacts of the new stack configuration on modeled SO₂, NO_x, PM₁₀, and CO concentrations were evaluated. Two emission scenarios were modeled in this analysis: the current (existing) and future scenario. The existing emissions were calculated as the maximum of the 2-year averages over five years preceding the project. The five years used in this analysis was for the period between 2001 and 2005. Different load conditions for the units (100 percent, 75 percent and 50 percent) were examined for the future emission scenario, because lower loads can result in lower plume heights, which in turn can result in higher predicted impacts even at the lower emission rates associated with the lower loads. The complete set of emission rates and stack parameters for these scenarios is shown in Tables 4-14 and 4-15, respectively, and is also listed in Mirant's CPCN application as Table 6.3-1. The location of stacks, superimposed on an aerial photograph of the Dickerson facility and vicinity, is shown in Figure 4-4.

Table 4-14 *Modeled Emission Rates – Future and Current Scenarios – Emissions for all Three Dickerson Units Combined*

(a) Future Scenario

Load Condition	CO		NO _x		SO ₂		PM10	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
100	100	439	1727	7566	1850	8103	223	978
75	75	329	1296	5675	1388	6077	167	733
50	50	219	864	3783	925	4052	112	489

(b) Current Scenario

	CO		NO _x		SO ₂		PM10	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Current	73	321	1263	5532	8736	38262	162	712

Table 4-15 Stack Parameters and Emission Rates Used in Modeling Analysis

(i) Current Scenario

(a) English Units

Load Condition	Stack Height (ft)	Diameter (ft)	Exit Velocity (ft/sec)	Temperature (deg F)	Flow (acfm)
100	400	25	60.7	180.59	1,786,856

(b) Metric Units

Load Condition	Stack Height (m)	Diameter (m)	Exit Velocity (m/s)	Temperature (K)	
100	121.92	7.62	18.50	355.70	-

(ii) Future Scenario

(a) English Units

Load Condition	Stack Height (ft)	Diameter (ft)	Exit Velocity (ft/sec)	Temperature (deg F)	Flow (acfm)
100	400	26.4	55	128	1,800,000
75	400	26.4	42.78	125	1,400,000
50	400	26.4	33.61	122	1,100,000

(b) Metric Units

Load Condition	Stack Height (m)	Diameter (m)	Exit Velocity (m/s)	Temperature (K)	
100	121.92	8.05	16.76	326.48	-
75	121.92	8.05	13.04	324.82	-
50	121.92	8.05	10.24	323.15	-

Figure 4-4 Location of Stacks Used in Modeling Analysis



Receptor Grid Development

PPRP and ARMA developed a receptor grid extending outwards in each direction from the Dickerson site up to a distance of 5 kilometers. Receptor spacing was set to 20 meters along the site boundary; 50 meters spacing from the site boundary to 0.5 kilometers; 100 meters from 0.5 kilometers to 2.5 kilometers; and 200 meters from 2.5 kilometers to 5 kilometers. Receptors were also placed at 100 meter intervals over Sugarloaf Mountain. The applicant also placed a fine resolution receptor grid over Sugarloaf Mountain.

A total of 5,332 receptors were analyzed in the model. Terrain elevations were assigned to each receptor, and a hill scale was calculated with the use of the program AERMAP. AERMAP is a companion program to AERMOD that utilizes digitized USGS digital elevation model (DEM) data files to assign elevations and hill scales to receptors. The hill scale assigned to each receptor is used by AERMOD to determine the appropriate terrain algorithm to use for the receptor. AERMOD calculates a critical dividing streamline height, based on the hill scale that divides the approach flow towards the hill into two parts: one that rises over the terrain obstacle, and one that passes around the side of the obstacle. Based on the plume height relative to the terrain and relative to the receptor, AERMOD calculates concentration contributions from different parts of the plume following the different flow regimes. The receptor elevations were assigned using 7.5-minute National Elevation Dataset (NED) digital elevation data files developed by United States Geological Survey (USGS). The NED files were reformatted into a DEM format prior to use in AERMAP.

Stack Height Evaluation and Source Only Modeling Analysis

Modeling conducted by the applicant used five years of meteorological data from 1991 through 1995 from IAD for pre- and post-project emissions. For the future scenario, emissions for different operating load conditions were used in the modeling analysis. For the current scenario, the baseline actual emissions were used in the modeling analysis.

PPRP and ARMA have evaluated the modeling methodology including the model used, the development and application of the meteorological database, the use and application of BPIP to determine downwash effects, the design of the receptor grid, and the actual model application. PPRP and ARMA's conclusion based on this evaluation is that the methodology is adequate to determine the impact of emissions from the Dickerson APC project.

Model results for all scenarios were presented in the Dickerson CPCN application. PPRP and ARMA conducted independent modeling of selected scenarios to verify the results reported by the applicant. Table 4-16 presents a summary of the modeling analysis conducted by PPRP and ARMA. The impacts of SO₂, NO₂, PM₁₀, and CO are less than the PSD increments and NAAQS for the respective pollutants.

The APC project results in an SO₂ emissions decrease. Emissions from the project result in increases in local maximum ambient impacts for NO_x, PM₁₀ and CO. The lower flue gas temperature due to cooling of the exhaust caused by the wet FGD system results in maximum impacts greater than those predicted using the existing stack height. The benefits derived by reducing emissions of PM₁₀ are offset locally by the increase in impacts due to the lower stack height and exhaust temperature. Overall, however, the impacts from the APC project do not exceed the ambient air quality standards and hence the impacts from the APC project can be considered insignificant. The increase in maximum impacts is localized and occurs close to the facility. Section 4.3.4 discusses the broader air quality benefits of the emissions reductions that will be achieved by this project.

Table 4-16 Summary of Modeling Results Using AERMOD (version 07026) (in µg/m³)

Pollutant	Averaging Period	Project Impacts			Air Quality Threshold			
		Current	Future	Net Impacts	SIL	PSD Increment	NAAQS	Monitoring Deminimis
SO ₂	Annual	15.71	4.27	-11.44	1	20	80	-
	24-Hour	135.62	35.04	-100.58	5	91	365	13
	3-Hour	561.83	148.77	-413.06	25	512	-	-
NO _x	Annual	2.27	3.99	1.71	1	25	100	14
PM ₁₀	Annual	0.29	0.52	0.22	1	17	50	-
	24-Hour	2.52	4.23	1.71	5	30	150	10
CO	8-Hour	2.36	4.03	1.67	500	-	10,000	575
	1-Hour	10.50	18.50	8.00	2,000	-	40,000	-

Notes:

1. A negative net impact indicates that there is a decrease in the future impacts from the project sources compared to the past impacts.

4.3.2.2 Summary and Conclusions

Based on the information provided in the Dickerson CPCN application, supplemented with independent analyses conducted by the State, PPRP and ARMA conclude that criteria pollutant impacts for the Dickerson APC project will not adversely affect the NAAQS or PSD increments for NO₂, SO₂, PM₁₀, and CO.

4.3.3

Air Quality Benefits from the APC Project

The proposed APC project, and other pollution control projects recently undertaken by Mirant, will result in a significant SO₂ emissions decrease. These reductions will result in anticipated improvements in air quality within Maryland, including benefits related to acid deposition, nutrient loading to the Chesapeake Bay, and reduced concentrations of sulfate aerosols that contribute to the current nonattainment status for PM_{2.5}. PPRP and ARMA have conducted additional air quality modeling to quantify the benefits of the projected emissions reductions to PM_{2.5} concentrations within the PM_{2.5} nonattainment area, acid deposition within Maryland, and nutrient loading to the Chesapeake Bay.

The model used for the benefits analysis was CALPUFF, a Lagrangian puff model that has been previously used in Maryland for addressing nutrient loading and secondary aerosol impacts. CALPUFF is an EPA guideline model that is capable of simulating the transport, dispersion, and atmospheric transformation of SO₂ and NO_x emissions, and the subsequent impacts on secondary aerosols as well as wet and dry deposition of sulfur and nitrogen containing species.

CALPUFF was run with a full calendar year (2002) of meteorological data based on the Penn State/NCAR mesoscale model (MM5) runs developed by the University of Maryland. A receptor grid was developed for the Dickerson facility that extended from the power plant to the edges of the Chesapeake Bay watershed (an area approximately 500 by 700 kilometers). The “before” and “after” stack and emissions configuration were modeled and the results processed to identify the maximum changes in impacts. The USGS Spatially Referenced Regressions on Watershed Attributes (SPARROW) model was used to calculate the mass nitrogen loading to the Chesapeake Bay due to deposition within the watershed and subsequent transport to the bay, and due to deposition directly on the bay waters.

APC project effects on secondary aerosol concentration, acidic deposition, and nutrient loading are summarized in tabular and graphic forms. Table 4-17 summarizes the overall predicted project benefits.

Figures 4-5 through 4-8 depict the spatial patterns of predicted benefits for sulfate aerosol - annual and 24-hr averages, sulfur and nitrogen deposition, respectively.

Table 4-17 Summary of APC Project Benefits

	Current Impact	Future Impact	Benefit
(a) Sulfate Aerosol (PM2.5) Concentrations; units are in $\mu\text{g}/\text{m}^3$			
Maximum Concentrations			
Annual Average	0.152	0.063	(0.09)
Maximum 24-hr Average	3.54	1.03	(2.52)
Average Concentrations within PM2.5 Nonattainment Area			
Annual Average	0.089	0.024	(0.06)
Maximum 24-hr Average	1.39	0.32	(1.07)
(b) Reduction in Nutrient (Sulfur) Deposition within Maryland (Nutrient Benefit)			
Total Sulfur Loading (kg)	2,922,299	502,144	(2,420,155)
(c) Nutrient (Nitrogen) Loading to the Chesapeake Bay			
Total Loading (kg)	56,757	25,855	(30,901)

Figure 4-5 APC Project Benefits: Annual Average Sulfate Aerosol

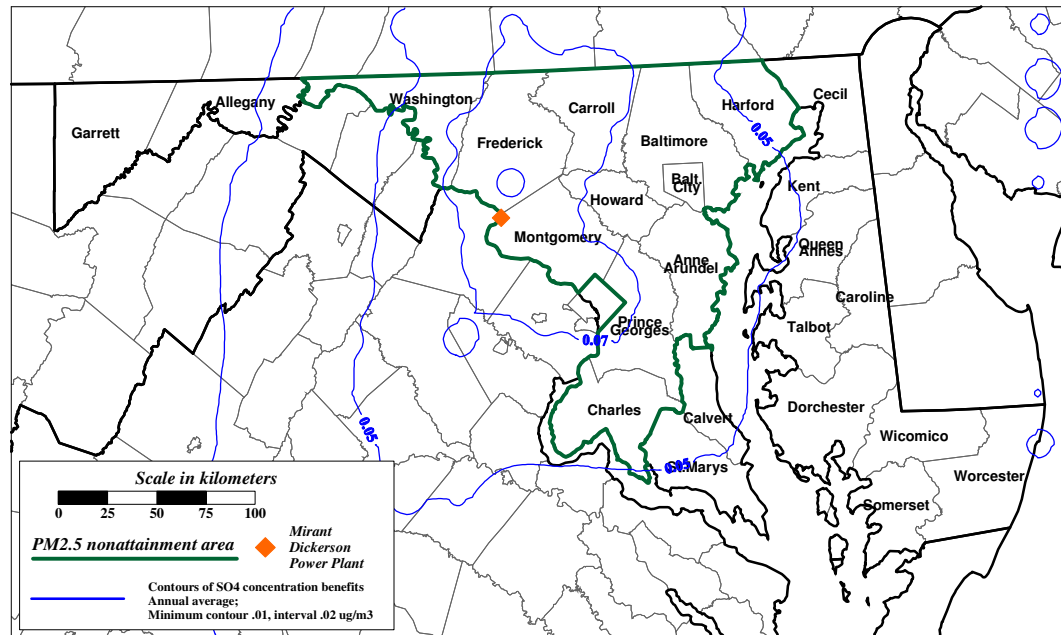


Figure 4-6 APC Project Benefits: 24-hour Average Sulfate Aerosol

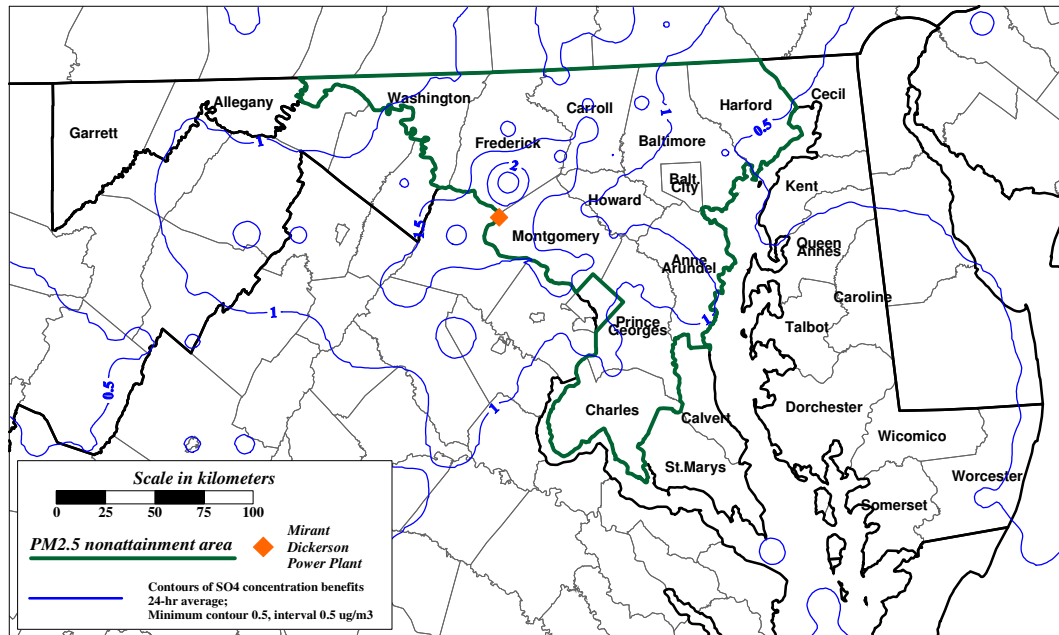


Figure 4-7 APC Project Benefits: Sulfur Deposition

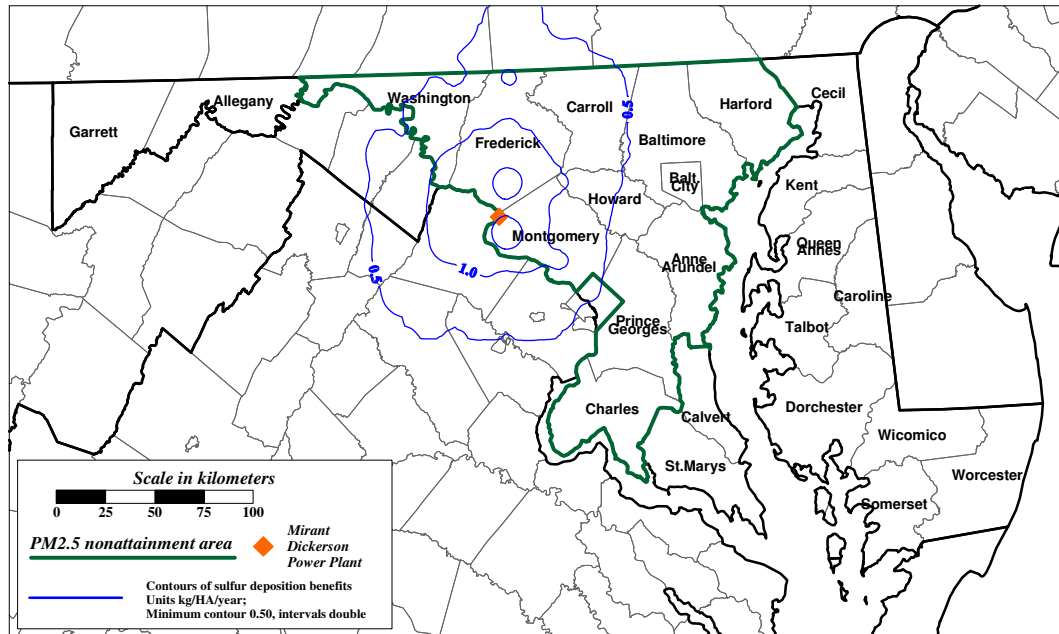
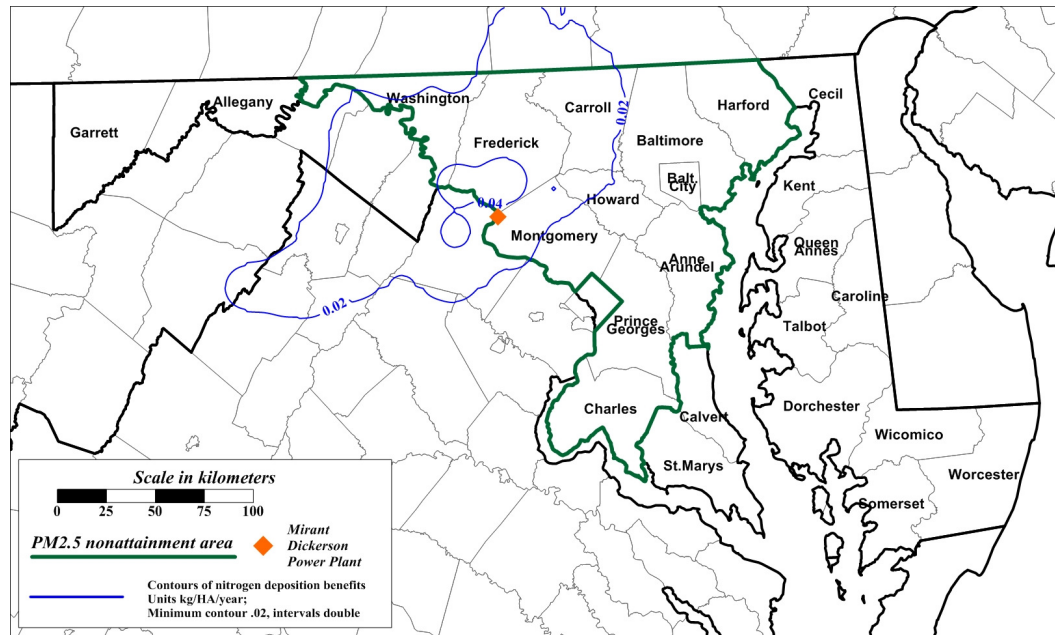


Figure 4-8 APC Project Benefits: Nitrogen Deposition



The benefits of the proposed emissions reductions have been quantified and appear to produce air quality improvements and reduced deposition and nutrient loading across a wide area. The beneficial effects of this project occur primarily within Maryland and the Chesapeake Bay.

4.4 NONATTAINMENT NEW SOURCE REVIEW (NA-NSR)

The Dickerson APC project was evaluated to determine whether: 1) the net emission increases of VOCs and/or NO_x are above the major source thresholds for ozone NA-NSR, which at the time of this project for a facility located in Montgomery County, is 25 tpy, or 2) the net emission increase of PM_{2.5} is above the interim guidance threshold of 15 tpy. As indicated in Table 4-10, the project will result in no change in VOC or NO_x emissions. The project will result in a slight increase in PM_{2.5} emissions from the project, but the increase will be below 15 tpy. As a result, the Dickerson APC project will not trigger NA-NSR.

4.5 PLUME ANALYSIS

The addition of an FGD system to control SO₂ emissions from Dickerson Units 1, 2, and 3 will result in an increased quantity of water vapor to be discharged through the new, 400-ft stack. The water vapor will result in a

visible plume when atmospheric conditions favor condensation into water droplets. CPSG conducted additional modeling to determine the expected physical size of visible plumes, and to determine if local fog and/or icing events due to the visible plume are possible.

Additional modeling was conducted by Mirant with CALPUFF, which has the capability of predicting fogging and icing events. The FGEMISS preprocessor was used to create a specialized input file for CALPUFF containing hourly information on plume water vapor content. The model was run to produce a data file containing information on hourly visible plume length and height as well as visible plume impacts at discrete receptors. Postprocessors were then applied to analyze the file produced by CALPUFF and to estimate visible plume height and length statistics, and to estimate the frequency of possible fogging and icing events locally.

Mirant's CALPUFF analysis predicted that no fogging or icing events would occur locally. The new stack height, combined with buoyant plume rise, appears to be sufficient to avoid these events.

PPRP and ARMA reviewed the methodology and execution of this analysis, and conducted an independent analysis using the Cartesian receptor grid developed for the AERMOD modeling analysis. PPRP and ARMA confirm that the application of CALPUFF in the fog mode predicts no fogging or icing events due to the visible water plume from the new stack.

4.6 *APPLICABLE REQUIREMENTS REVIEW*

Based on the source types and projected emissions, this section outlines the Federal, State, and local air quality requirements to which the Dickerson APC project will potentially be subject. These requirements are in addition to the PSD and NA-NSR requirements outlined in Sections 4.3 and 4.4.

4.6.1 *Federal Requirements*

PPRP and ARMA reviewed potentially applicable federal regulations for sources being modified in this project, including New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP).

4.6.1.1 *NSPS Subpart Y – Coal Preparation Plants*

Dickerson facility has existing coal preparation operations that are not subject to NSPS Subpart Y because the facilities pre-date the effective date of the standard. The proposed APC project does not include any modification or reconstruction of the coal handling operations; therefore, the NSPS requirements of 40 CFR 60, Subpart Y are not applicable at this time.

4.6.1.2 *NSPS Subpart OOO – Non-metallic Mineral Processing Plants*

Portions of the proposed APC project will be considered a Non-Metallic Mineral Processing Plant under NSPS Subpart OOO (Standards of Performance for Non-Metallic Mineral Processing Plants) due to the proposed installation of limestone sizing and screening equipment (i.e., ball mill and classifier), storage silos, and conveying equipment that will support the preparation of limestone slurry. By definition in 40 CFR 60.671, limestone is considered a non-metallic mineral, and the operation of the proposed grinding mill, storage silos and conveying equipment are all considered affected facilities under the rule. In addition, NSPS defines a non-metallic mineral processing plant as any combination of equipment used to crush or grind non-metallic minerals at power plants or other facilities (e.g., lime plants, steel mills, asphalt concrete plants, Portland cement plants) that may require the processing of non-metallic minerals.

Triggering NSPS Subpart OOO subjects the affected equipment to various PM emission limits, and monitoring, testing, and recordkeeping and reporting requirements. The affected storage silo vents and conveyor transfer points are subject to a PM limit of 0.05 g/dscm (0.022 gr/dscf) and a visible fugitive emissions limit of 10 percent opacity. The ball mills will be subject to a 15 percent opacity limit (40 CFR §60.672).

In addition, the affected equipment will need to comply with testing requirements under 40 CFR §60.675; recordkeeping and reporting requirements under 40 CFR §60.676; and continuous monitoring requirements under 40 CFR §60.674 (if a wet scrubber is operated to control the particulate emissions).

4.6.1.3 *NSPS Subpart IIII – Stationary Compression Ignition Internal Combustion Engines*

The proposed 500-hp emergency quench pump will be subject to the NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines. The engine meets the NSPS

definition of a fire pump engine because the pump provides thermal protection.

Applicability of NSPS Subpart III requires quench pumps to meet specific emissions limits (dependant on model year and engine displacement volume) and associated fuel, monitoring, compliance, testing, notification, reporting, and recordkeeping requirements (40 CFR §60.4200 *et seq.*), and related applicable provisions of 40 CFR §60.7 and §60.8. The applicable emission limitations would be based on the CI model year and the requirements of 40 CFR Part 60.4205.

4.6.1.4 *40 CFR Part 63, Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines*

The proposed 500-hp emergency quench pump will be subject to requirements of the Reciprocating Internal Combustion Engine (RICE) MACT (40 CFR 63, Subpart ZZZZ) if the engine has a “site rated” capacity of more than 500 brake horsepower (BHP), and is installed or located at a major HAP source (Dickerson is an existing major HAP source). Mirant has indicated in response to DNR Data Request No. 2 (question 2-8) that the quench pump as proposed will have a manufacture’s rated capacity of no more than 500-hp, and considering the manufacturer's design-rating tolerance-levels or fluctuations in output when operating at maximum load (typically observed to be +/- between 5-10 percent) PPRP has determined that if the quench pump, as proposed, will not exceed 500-hp on a “site rated basis” even when operating at maximum load, than the proposed quench pump will be exempt from Subpart ZZZZ requirements.

4.6.1.5 *40 CFR Parts 72 through 78, and Part 96 – Acid Rain Program and State Emissions Trading Program*

The new 400-ft stack will have NO_x, SO₂, O₂ or CO₂, and opacity CEMS installed and certified (based on the requirements of 40 CFR part 75), and will continue to be operated as per the requirements of the Phase II Acid Rain Permit (ORIS Code 1572) and NO_x Budget Permit.

4.6.1.6 *40 CFR 61, Subpart M – Asbestos NESHAP*

Mirant has indicated that they may demolish existing facilities as part of the APC project. If so, Mirant may be subject to the Asbestos NESHAP for these demolition activities if they include asbestos-containing materials. If so, Mirant will need to address the management, recordkeeping and reporting standards of 40 CFR 61.145 and Code of Maryland Regulations for asbestos demolition activities under COMAR 26.11.21.

4.6.2

State Requirements

In addition to facility-wide requirements to which the facility is already subject and the project-specific Federal requirements described in Section 4.6.1, the proposed APC project will be subject to the following State requirements:

- COMAR 26.11.01.10 —Requires Mirant to install a Continuous Emissions Monitoring system to monitor opacity from each boiler (to be installed in the new 400-ft common flue stack). As a result of this requirement, Mirant is also subject to the associated installation, certification, operating, monitoring, testing, and malfunction requirements, and as applicable, requirements in 40 CFR Part 60, 40 CFR Part 75, and 40 CFR Part 51, Appendix P, §3.3--3.8 or §3.9 as incorporated by reference;
- COMAR 26.11.03.19—Requires Mirant to update the existing Part 70 operating permit (No. 24-031-00019) for the Dickerson facility to include this CPCN and other associated APC project requirements (as applicable);
- COMAR 26.11.06.02(c)(2)—Because the Dickerson facility is located in Area IV, the facility may not cause or permit the discharge of fugitive or point visible emissions from any installations associated with the proposed APC project or buildings associated with the proposed APC project, other than water in an uncombined form, which is visible to human observers;
- COMAR 26.11.06.03B(2)(a) —Because the Dickerson facility is located in Area IV, the facility may not cause or permit to be discharged into the outdoor atmosphere from any project related confined source (i.e., the limestone, gypsum, and other related material storage silos, enclosed material transfer points, etc.) particulate matter in excess of 0.03 gr/SCFD (68.7 mg/dscm);
- COMAR 26.11.06.03C(1)—Prohibits Mirant at the Dickerson facility from causing or permitting emissions from an unconfined (fugitive) source without taking reasonable precautions to prevent particulate matter from becoming airborne;
- COMAR 26.11.06.03D(1)-(6)—Requires Mirant to take “reasonable precautions” to prevent particulate matter from becoming airborne from material handling activities;
- COMAR 26.11.06.12 Control of NSPS Sources—Prohibits Mirant from constructing, modifying, or operating, or causing to be constructed, modified, or operated, a New Source Performance

Standard sources as defined in COMAR 26.11.01.01C, which results or will result in violation of the provisions of 40 CFR 60;

- COMAR 26.11.09.03—When determining compliance with applicable particulate matter emission standards from Units 1, 2 and 3 (concentration requirement expressed as grains per standard cubic foot or milligrams per cubic meter of dry exhaust gas), Mirant facility shall correct to 50 percent excess air. In addition to determine compliance with a mass-based PM emission limit requirements expressed as pounds per million Btu (lb/MMBtu), shall be made in accordance with the procedures for determining particulate matter emission rates in 40 CFR Part 60 Appendix A, Method 19;
- COMAR 26.11.09.05(B)(2) through (B)(4)—Prohibits the discharge of emissions from the quench pump engine, when operating at idle, greater than 10 percent opacity, and when in operating mode (other than the idling), greater than 40 percent opacity, and in accordance with the exceptions as included in COMAR 26.11.09.05(B)(4);
- COMAR 26.11.09.06(B)(3)—Prohibits Mirant from discharging particulate matter into the atmosphere caused by the combustion of solid fuels in Units 1, 2, and 3 in excess of 0.03 gr/scfd (69 mg/dscm), corrected to 50 percent excess air;
- COMAR 26.11.09.07(A)(2)(b)—Which prohibits Mirant from burning distillate fuel oil in the quench pump with a fuel sulfur content greater than 0.3 percent by weight;
- COMAR 26.11.27—Requires Mirant to comply with the applicable emissions limitations for NO_x, SO₂ and mercury, and the monitoring and record keeping requirements contained in COMAR 26.11.27;
- COMAR 26.11.06.08—Prohibits Mirant from operating or maintaining a source in such a manner that a nuisance is created; and
- COMAR 26.11.06.09—Prohibits Mirant from causing or permitting the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created.

4.7

AIR IMPACT SUMMARY

Based on the information provided in the CPCN application, supplemented with independent analyses conducted by the State, PPRP and ARMA conclude that the Dickerson APC project will not trigger PSD or NA-NSR. In addition, criteria pollutant impacts for the Dickerson APC project will not adversely affect the NAAQS or PSD increments.

If designed and operated under the recommended licensing conditions (Appendix A), the Dickerson APC project will meet applicable State and Federal air quality requirements.

5.0 OTHER ENVIRONMENTAL IMPACTS

5.1 IMPACTS TO BIOLOGICAL RESOURCES

5.1.1 Aquatic Resources

There are four potential sources of impacts to nearby surface waters during facility operations. The first is due to direct disturbance of existing waters. Consistent with facility design and construction, no wetland areas or jurisdictional waters will be disturbed as a result of new facility operations. The second source of potential impacts from facility operations is due to direct discharge of process effluents. All process effluents generated by facility operations will be discharged to the Potomac River via the existing Dickerson discharge. The third source of potential impacts from facility operations is due to slight changes in storm water quantities and/or qualities discharged off-site. The facility will include a revised storm water pollution prevention plan (SWPPP) system designed and installed to ensure storm water quantities and quality is maintained within approved limits. Operating and maintenance procedures designed to ensure the continued effectiveness of this system will be established and strictly followed. Based on the SWPPP system and proper operations and maintenance of these facilities, no significant impacts to any surrounding surface waters are expected as a result of facility operations. The final source of potential impacts from facility operations is due to accidental spills of on-site chemicals, lubricants, or other potential contaminants. The facility will be designed to include revised spill contaminant and control features as developed under the revised overall SPCC plan. These procedures will be designed to minimize the opportunity for accidental spills, and to identify the appropriate procedures to be followed in case of an accidental spill.

Storm water and wastewater represent two potential discharges that may result in impacts to the Potomac River during operation of the new facility. No significant impacts to the Potomac River are expected to occur as a result of storm water runoff from the facility. The water supply source being proposed for the facility is expected to be from the existing cooling water discharge. Additional low-volume industrial process wastewater will be generated from the operation of the Dickerson FGD facility; the process effluents would discharge to the existing cooling water discharge and a revised NPDES permit for Dickerson for this additional effluent will be required.

Listed in Table 5-1 are the preliminary effluent levels from the FGD wastewater system after treatment, based on Mirant's application; final effluent levels will be determined after the wastewater treatment system is selected. Prior to dilution, nine of the effluent values exceed state chronic water quality criteria. These would be discharged to the cooling water discharge canal and be diluted about 4300:1 before reaching the Potomac River, so would not exceed effluent limits at the receiving water and would not result in toxic levels to biota in the river. Nevertheless, further evaluation of the effluent will be performed once a revised NDPES permit application is submitted to MDE by Mirant. (The dilution ratio is based on a discharge rate of 60 gallons per minute from the FGD system and the 2004 annual average cooling water withdrawal of 372 million gallons per day.)

Regarding the loading rate of mercury, about 2.6 pounds per year of this element would be discharged to the river, based on the concentration listed below and the effluent flow rate. This compares with a reduction in atmospheric mercury deposition of about 52 pounds per year to the Bay, by use of the scrubbers, yielding a net reduction in mercury loading to the Bay of about 49 pounds per year.

There should not be significant or measurable environmental effects from this additional effluent although additional treatment of the FGD effluent for nutrient control will also be required to meet water quality standards for Chesapeake Bay restoration goals.

Table 5-1 Comparison of Mineral Concentrations in FGD Effluent and Concentrations at the River

Parameter	FGD System Effluent	Concentration at River	Maryland Toxic Substances Water Quality Criteria+
TSS	30 mg/L	0.007 mg/L	--
BOD	20 mg/L	0.0047 mg/L	--
Total Nitrogen	4.0 mg/L	0.0009 mg/L	--
Aluminum	2.0 mg/L	0.0005 mg/L	--
Cadmium	30 µg/L	0.007 µg/L	.025 µg/L
Chromium VI	100 µg/L	0.0233 µg/L	11 µg/L
Copper	100 µg/L	0.0233 µg/L	9 µg/L
Iron	1.0 mg/L	0.0002 mg/L	--
Lead	100 µg/L	0.0233 µg/L	2.5 µg/L
Mercury	10 µg/L	0.0023 µg/L	0.77 µg/L
Nickel	100 µg/L	0.0233 µg/L	52 µg/L
Selenium	7500 µg/L	1.74 µg/L	5 µg/L
Silver	50 µg/l	0.0116 µg/L	3.2 µg/L
Zinc	100 µg/L	0.0233 µg/L	120 µg/L

+freshwater chronic criteria except for silver

5.1.2 *Vegetation and Land Cover*

The location of the proposed FGD is within an open, regularly maintained grassland parcel adjacent to the existing Dickerson generating units. Considering that the entire area proposed for construction of the FGD has been previously disturbed or developed, clearing and construction will not likely cause significant ecological impacts to the existing vegetation and land cover.

5.1.3 *Wetlands*

Because of the previously developed nature of the proposed Dickerson FGD site and the surrounding area, nontidal wetlands are not present. Therefore, there will be no impacts to nontidal wetlands from either the construction or operation of the project.

5.1.4 *Wildlife*

The existing developed nature of the site, including the proximity to the existing Dickerson generating units, and existing roadways, human presence, and lack of forested habitat, greatly reduce the quality of the area for wildlife habitat. No significant adverse impacts to wildlife resources will likely occur as a result of construction of the proposed FGD project.

5.1.5 *Threatened and Endangered Species*

No threatened or endangered species have been documented utilizing the portion of the Dickerson site that will be disturbed by the FGD project. No significant impacts to Federal or State-listed terrestrial plants or animals are anticipated.

5.2 *SOCIOECONOMIC AND CULTURAL IMPACTS*

5.2.1 *Employment and Income*

Construction of the FGD facility will create as many as 450 craft jobs during the peak construction period. Over the 28 month project schedule, an average of 232 construction workers is expected to be on-site. Mirant estimates that construction payrolls will total \$62.5 million over the construction period (all dollar estimates are in 2006 dollars). Using multipliers from the Department of Business and Economic Development

(DBED), construction employment and payrolls will generate an additional 616 person-years of indirect employment and \$57 million in indirect earnings over the same period.

Operation of the FGD facility will add 19 new employees to the Dickerson workforce and at least \$1.1 million in annual earnings. Indirect multiplier effects associated with operations employment and payrolls are estimated to be seven person-years of additional employment and more than \$457,000 in additional earnings annually.

Additional economic benefits are expected to result from purchases of goods and services during both construction and operation phases of the project. Mirant estimates that of its \$261 million investment, approximately \$198.5 million represents subcontracts and material and equipment costs, which would generate an additional \$142 million of sales in multiplier effects. Since some FGD components are specialized and not manufactured in Maryland, not all expenditures would be captured by Maryland industries. Operation of the FGD facility would also require purchases of limestone, water treatment chemicals, and waste disposal services.

5.2.2 *Population and Housing*

Dickerson is within the metropolitan Washington labor market and also within extended commuting distance of metropolitan Baltimore. In 2005 over 2.7 million people were employed in all occupations in the Washington-Arlington-Alexandria, DC-MD-VA-WV area (U.S. Department of Labor 2006), including over 555,000 in Montgomery and Frederick Counties. According to the U.S. Bureau of Labor Statistics (BLS), more than 29,000 were employed in construction and extraction occupations in Montgomery and Frederick Counties during 2005 (U.S. Department of Labor 2006).

Although labor market conditions and low unemployment could affect labor availability and hiring, most construction jobs are expected to be filled by construction workers living within daily commuting distance of the project. Thus, few effects on population and housing are anticipated from construction activities. Some construction workers with specialized construction skills may be recruited from outside the region. However, these workers are expected to travel to the area on a weekly basis and domicile in transient accommodation.

Mirant estimates that operation of the FGD facility will create 19 new on-site jobs. With permanent jobs, employees are expected to reside within daily commuting distance of the Dickerson facility. No adverse population or housing effects are expected from the minimal permanent employment gain at Dickerson.

5.2.3

Land Use

The FGD facility is a modification of Mirant's Dickerson Units 1, 2, and 3, and will be contiguous to existing generation assets. The power plant is located in Montgomery County within Planning Area 12: Little Monocacy Basin Dickerson – Barnesville, and is part of Community Based Planning Area 7 – Rural Area. The Dickerson site is zoned Rural Density Transfer (RDT) except for those areas hosting existing generating facilities, which are zoned I2 - Heavy Industrial. Land adjacent to the plant site is in the Agricultural Reserve and is predominantly zoned RDT. PPRP has recommended a licensing condition (Appendix A) requiring Mirant to design the facility in substantial conformity with the Montgomery County Zoning Requirements.

Neighboring lands are primarily agricultural, although the Montgomery County RRF, a waste-to-energy plant, is adjacent to the property to the south. A PEPCO transmission corridor borders the site to the west and a storage facility for coal byproducts is on the south side of Martinsburg Road. The site is adjacent to the Potomac River, the C&O Canal National Historic Park and the Dickerson Regional Park. The Monocacy Natural Resources Management Area is less than two miles to the north, in Frederick County, and the Woodstock Equestrian Park and Owens Local Park are less than three miles to the east. There is one residence opposite the Dickerson site on Martinsburg Road between MD 28 and the plant gate. A second residence is on Martinsburg Road past the entrance to the Dickerson site. The closest community is the unincorporated community of Dickerson. The crossroads community of Beallsville is approximately three miles east on MD 28 at the intersection of MD 109.

As the project area is already zoned I2 – Industrial, no direct land use impacts will result from construction activities or operation of the FGD system. No lands outside the Mirant property will be pre-empted from other uses. Because the construction workforce will commute to the site daily over a relatively short construction period, land use conversion, for example from existing to commercial use, is not anticipated. In other words, no indirect impacts on surrounding land uses are expected from the proposed modifications to the Dickerson facility.

5.2.4

Transportation

The FGD facility will be a major trip generator during peak construction activities, when more than 450 workers will be commuting to the project site for the day shift and up to 100 workers for the night shift. Local access to the proposed facility will be via Martinsburg Road, which intersects with MD 28 approximately one mile from the plant gate. Between MD 28 and the plant gate, Martinsburg Road is a paved, two-lane undivided minor road, with no shoulders. The posted speed limit is 35 miles per hour. Martinsburg Road meets MD 28 at an intersection signalized by flashing overhead traffic lights. There is a dedicated lane for westbound traffic on MD 28 turning onto Martinsburg Road. Through-traffic on MD 28 must negotiate a curve with a posted safe speed of 25 mph. Sightlines toward oncoming eastbound MD 28 traffic from left turning vehicles onto Martinsburg Road are restricted and the exit onto Martinsburg Road from the direction of Dickerson is in direct alignment with MD 28.

MD 28 will be the primary collector road for construction workers and O&M employees, connecting with I-270 in Rockville and US 15 in Point of Rocks. The Dickerson site is approximately 18 miles from I-270 in Rockville and 9.6 miles from the Virginia state line at Point of Rocks. The distance to Frederick City via MD 28 and MD 85 is approximately 14 miles. In the vicinity of Martinsburg Road, MD 28 is a two-lane, undivided highway with 12-foot lanes and a posted speed limit of 40 mph. The average annual daily traffic (AADT) on MD 28 in the segment between Dickerson and Beallsville was 5,525 in 2005, about three percent higher than the 2000 AADT (SHA 2005). MD 28 is a Maryland Scenic Byway from Beallsville to the Frederick County line, part of the C & O Canal Route. Other roads that could potentially be affected by increased traffic, primarily during construction, include MD 109 from Poolesville, MD 107 and Wasche Road from Whites Ferry, and MD 85 in Frederick County, which connects Frederick City to MD 28 near Tuscarora.

Mirant estimates that, on average, 232 construction workers will be employed on-site although the number may be as high as 450 during an approximately four-month peak construction period. Since some degree of car-pooling can be expected, the number of vehicle-trips generated by construction activities will probably be less than the number of workers. Construction at Dickerson will generate additional truck traffic on MD 28 and Martinsburg Road. During periods of large concrete pours, Mirant projects that up to 80 truck deliveries will occur daily. However, truck trips will be distributed throughout the day, and some oversize equipment may be delivered by rail.

Despite the additional traffic, major road segments servicing the Dickerson site will continue to provide acceptable levels of service, even during peak commuting hours. This conclusion is based upon a previous environmental review of a proposed construction project at Dickerson with similar trip generation characteristics.

Using an estimate of 1.2 workers per vehicle, the addition of FGD construction traffic to MD 28 would add about 375 vehicles to the morning and afternoon traffic flow on local roadways during the peak construction period. Most of the construction traffic would travel in the opposite direction of existing rush hour traffic if the labor force originates primarily from the Washington metropolitan area. Levels of service on local highway segments would decline because of an increase in traffic, but only slightly. A previous analysis of traffic on MD 28 eastbound for a construction workforce of 350, with no carpooling, predicted the level of service on the segment between Martinsburg Road and MD 109 would decline from "B" to "C." In other words, for a short period during the afternoon rush hour, speeds on MD 28 would be slightly lower because of the higher volume and decreased opportunity for vehicles to pass.

MD 109 from Beallsville to Barnesville Road will also be affected for a brief period in the afternoon by northbound traffic from MD 28, comprising construction traffic arriving from the west and commuters returning from the east. Because of rolling terrain and narrower lanes, motorists could experience minor delays along this segment from turning movements of vehicles in the traffic stream. However, the increased traffic volume and inconvenience it would cause will occupy only a small part of the peak traffic period in the area.

Most of the construction traffic will flow through the intersection of MD 28 and MD 109 in Beallsville. This is a simple four-leg signalized intersection with both highways having one lane in each direction. The intersection is controlled by a traffic-actuated signal with a cycle length (green-yellow-red) varying from 45 to 60 seconds during the afternoon peak period. In the late afternoon, the predominant traffic movement through the intersection is east-to-west through-traffic on MD 28. Other major movements are right turns from eastbound MD 28 onto southbound MD 109, and left turns from northbound MD 109 onto MD 28 west.

The addition of eastbound construction worker traffic on MD 28 could create delays at the intersection due to the increased left-turn demand in eastbound traffic on MD 28, against the predominant westbound through-traffic. This could lead to vehicle queues waiting to turn left, which could

also delay eastbound through traffic. If they occur, delays from queuing could be reduced by adjusting cycle lengths of the traffic signal or staggering shift schedules to moderate construction worker traffic leaving the Dickerson site in the afternoon.

In Montgomery County, a local area transportation review (LATR) is required if a proposed development is of sufficient size to have a measurable impact on a specific local area, where measurable traffic impact is defined as a development that generates 30 or more total weekday trips during the peak hour of the morning and/or afternoon peak period of adjacent roadway traffic (LATR 2004). As noted earlier, an average of 232 construction workers will be employed on-site, increasing to 450 during the peak construction period. Even with car-pooling, up to 375 passenger vehicles could be added to background traffic when construction employment levels are highest. PPRP has recommended a licensing condition (Appendix A) that requires Mirant to conduct a Traffic Impact Study in accordance with Montgomery County's LATR guidelines to determine if unacceptable peak-hour congestion will result from construction traffic at the Dickerson Generating Station, and to consult with the Montgomery County Department of Public Works and Transportation and the Maryland State Highway Administration to mitigate the effect, if necessary.

Another intersection of concern is the intersection of MD 28 with Martinsburg Road, a "T" intersection that contains a turning lane for westbound traffic on MD 28 exiting onto Martinsburg Road. Currently, the intersection operates with little or no delay to Martinsburg Road traffic and to traffic turning left onto Martinsburg Road from MD 28. The left turn lane on westbound MD 28 has a capacity of about six passenger cars to allow for the formation of a queue without delaying through-traffic. The geometry of the intersection is not a true "T" due to the alignment of MD 28, which curves sharply to the right (looking west). As a result, vehicles behind the first vehicle in the left-turn queue cannot anticipate oncoming traffic and prepare to turn. Mitigating this is a sharp curve on MD 28 that forces eastbound through-traffic to reduce its speed to 25 from 55 miles per hour, effectively increasing intersection capacity by reducing the critical gap needed by left turning vehicles to clear oncoming traffic. During the peak construction period, delays at the intersection of Martinsburg Road with MD 28 could occur in the morning peak period when construction workers traveling westbound on MD 28 turn onto Martinsburg Road against eastbound commuter and construction worker traffic. Left-turn queuing on MD 28 would also impede traffic attempting to turn left from Martinsburg Road onto MD 28. To reduce queuing at

this intersection PPRP has recommended a licensing condition (Appendix A) requiring Mirant to retain a Traffic Management Specialist to manually control vehicle movements.

Once operational, commuter traffic to Dickerson will decline since only 19 full time employees are projected to be added to the Mirant workforce. Mirant expects most deliveries of limestone to be via rail, which will also be used to transport the major FGD byproduct – gypsum – off site. Under this scenario, up to 40 rail cars of limestone per week will be delivered to Dickerson and up to 60 rail cars will transport gypsum off-site over the same period. Trucks will transport other reagents, fabric filter waste, sludge, and off-specification gypsum to or from the site.

While rail is the primary mode for transporting limestone and gypsum, Mirant has reserved the option of transporting these materials by truck as a backup. Transport of limestone or gypsum by truck would increase truck traffic on MD 28 and Martinsburg Road. Assuming 20-ton trucks, Mirant estimates that up to 180 trucks per week will be needed to supply the scrubbers with limestone, and up to 300 trucks per week will transport gypsum off-site. This would be a significant increase in truck traffic on MD 28, adding about 20 trucks per hour (coming and going) if operated five days per week and 10 hours per day. As a result, transport of limestone and gypsum by truck should be utilized only when the rail alternative is unavailable. PPRP has recommended licensing conditions (Appendix A) that permit Mirant to transport limestone and/or gypsum by truck only in the event of an emergency and only upon notification to the Montgomery County Department of Public Works and Transportation and the Maryland State Highway Administration. The conditions include provisions for identifying truck routes to minimize the impact of truck traffic on the public and for halting the trucking of limestone and/or gypsum when the emergency conditions no longer exist.

5.2.5 *Visual Quality*

The landscape around Dickerson consists of gently rolling terrain, with most of the surrounding land in cropland or forest. The coal-fired facility's tallest stack is visible from most directions, but rolling terrain affords only intermittent views of other structures at Dickerson and of the Montgomery County RRF. The regional landscape can be viewed from several recreational areas near the site including Dickerson Regional Park, the C&O Canal National Historic Park, and the Monocacy Natural Resources Area. However, many "far" views are obscured by terrain relief and foliage in summer months.

The Dickerson Generating Station is a prominent landscape feature looking southeast from the summit of Sugarloaf Mountain, from which the stacks of the generating units are clearly visible. Viewers on Sugarloaf tend to be directed toward the power plant because the only view of the Potomac River lies in that direction. The composting shed of the Montgomery County RRF is also visible from Sugarloaf, as is a large metal barn and outbuildings on MD 28 in the general direction of the Mirant facilities. The combustion turbine stacks (Station H) can be seen from the summit of Sugarloaf, but are less visible than those associated with the RRF or coal units.

From a visual perspective, construction activities could create temporary visual disturbances from wind-blown dust during earth moving activities, but these events will be minimized by good construction practices. As a result, the most visible element during construction other than the erection of structures is likely to be truck traffic entering or exiting the site, which will be similar to normal plant operations, albeit at a higher volume.

FGD structures will increase the industrial character of the Dickerson site by adding a scrubber building containing the air quality control system, a 400-foot stack, a limestone receiving and handling system, a gypsum storage, handling and load-out system, solid waste handling systems, and new water and wastewater treatment systems. Most of the new elements will be adjacent to existing structures and difficult to distinguish from other generation components.

While the most prominent of these modifications is the new stack, the structure itself will, at 400 feet, be shorter than the existing 700-foot stack. The absorbers, waste handling and water treatment systems will have lower profiles than the existing boiler buildings and, although partly visible from some perspectives, will not contrast with existing views. In summary, structural project elements will have no adverse effect upon the visual quality of the Dickerson site, itself.

Two operational elements, outdoor lighting and the steam plume from the new stack, will add to the visual setting of the Dickerson facility. Outdoor lighting is required on all new and modified project components to satisfy operational requirements, OSHA requirements for worker safety and FAA requirements for obstruction marking and lighting the new stack. The new stack will require strobe lighting, which already exists on the existing stacks. PPRP has recommended a licensing condition (Appendix A) requiring Mirant to use guidelines from the Illuminating Engineering

Society of North American in the design of outdoor lighting systems to minimize light pollution and light trespass from the project.

Because of the wet nature of exhaust gases from FGD absorbers, a water vapor plume from the new stack will be visible at nearly all times. Modeling simulations of the plume using the CALPUFF modeling system conducted by Mirant and PPRP suggest that the plume will usually be less than 400 meters high and 1,000 meters long.

Although the height of the plume would sometimes make it visible from distances beyond those from which Dickerson's tall stack can be seen, views would be partially obstructed by terrain relief and roadside vegetation. Views from Sugarloaf Mountain will be degraded. Over time, views from Sugarloaf have been compromised from many directions in addition to Dickerson. To the west, the Eastalco aluminum reduction facility in Buckeystown is clearly visible, as are quarrying operations in Lime Kiln. Views are also compromised by sprawling residential development around Buckeystown, Adamstown, and Frederick. Views to the east reveal rolling farmland containing some industrial structures such as communications and water towers, but mid-rise commercial office communities are also visible on the horizon. Expansion of the commercial and office corridor along MD 28 from Rockville is clearly evident from Sugarloaf Mountain. To a degree, the vapor plume is an unavoidable consequence of reduced pollutant loadings into the atmosphere that is difficult and expensive to mitigate.

5.2.6 *Fiscal Impacts*

Fiscal impacts from the project will be in the form of tax revenues and government expenditures on public services. During construction, revenues from taxes on construction worker wages, income taxes on indirect employment incomes, and sales taxes on consumption expenditures would accrue to Maryland and county coffers. Using Mirant's construction employment and income estimates, and indirect employment and income estimated from state multipliers, state income tax revenues attributable to the project over the construction period could approach \$4.2 million. If between \$25 and \$50 million in goods and services are purchased from Maryland firms, the sales tax revenue impact will range from \$3.8 to \$5.8 million if personal consumption expenditures of construction and indirect employment are included.

During construction, county tax revenues will accrue from personal income taxes on direct (construction) and indirect income, and will be

distributed among all counties where employed workers, both direct and indirect, reside. As most of the construction labor force is expected to be drawn from Montgomery, Frederick, and surrounding counties, the project will generate most local income tax revenues in these jurisdictions.

Income and sales tax revenues will continue to be generated by the project when it is operational, but at a lower level. With an additional O&M workforce of only 19, direct and indirect state income tax revenues are expected to be less than \$60,000 annually. Sales tax revenues will also accrue from Mirant's purchases of goods and services from Maryland firms and from personal consumption expenditures by direct (O&M) and indirect employment.

Property tax revenues paid by Mirant to Montgomery County will increase slightly after improvements to real property are made but, as the planned modification to Dickerson is a certified coal pollution control facility, a partial exemption of 95 percent applies to the assessed value of the personal property associated with the FGD system (Annotated Code of Maryland 2006). As a result, the modification will have only a minor impact on county property tax revenues. Mirant did not separate material and equipment cost from the total estimated project cost of \$261 million but, as the estimate includes \$62.5 million in craft labor costs and \$40 million in subcontracts, material and equipment costs will not exceed \$158.5 million. If the Maryland Department of Assessments and Taxation classifies all material and equipment cost as a pollution facility, annual property tax revenues to Montgomery County attributable to the FGD system would be no more than \$117 thousand in the first year of operation, declining to about \$44 thousand after 20 years.

Still, incremental state and county tax revenues from the project are expected to more than offset public expenditure costs, particularly since no population effects are anticipated either from construction or operation of the facility. Mirant will not require an extraordinary level of public services to undertake the modification to Dickerson nor to operate the scrubber.

5.2.7 *Security and Emergency Services*

The Mirant facility will rely upon county emergency services, such as fire and police, during both construction and operation. Dickerson is part of the 5th District Station - Germantown of the Montgomery County Department of Police (Police Beat 5N3). The 5th District covers an area of 295 square miles. Combined with the 6th District, there are approximately

175 sworn officers in the department. Between two and four officers patrol area 5N3 of the 5th District during the day. The average countywide 911 response time is slightly less than four minutes (Montgomery County Department of Police 2001).

Maryland State Police serve Montgomery County out of Barrack "N", located on Montrose Road in Rockville. State Police responsibilities are primarily directed to the interstate highways in the county, although they do provide support to the Montgomery County Department of Police. The Maryland State Police operate 15 medivac helicopters state-wide. In the event of a medical emergency at Dickerson, either Trooper 8, based in Norwood (Silver Spring), or Trooper 3 (Frederick County Airport) would respond.

The Montgomery County Department of Homeland Security (DHS) prepares for major threats to communities, commerce, and institutions in the county. It manages the county's unified response to disasters, and educates the public on emergency preparedness. DHS has drafted a Multi-Hazard Mitigation Plan for protecting Montgomery County communities from natural disasters and, through the Office of Emergency Management, manages hazardous materials use certification. An Integrated Contingency Plan for the Mirant facility is on file with Montgomery County.

The Dickerson area is in the fire response area of the Upper Montgomery County Volunteer Fire Department (Station 14). The fire response area comprises 6,000 people living in an area of 88.7 square miles. The department has 20 paid and 20 volunteer professionals on staff and a fleet of 15 vehicles including an ambulance, medic unit, rescue engine, and EMS vehicle. The station is approximately three miles from the Dickerson property.

The closest hospitals are Shady Grove Adventist Hospital in Rockville and Frederick Memorial Hospital in Frederick. Both provide comprehensive emergency services.

In summary, while service areas associated with emergency services serving the Dickerson site are typically the largest in Montgomery County due to the relatively low population density, existing county emergency services appear to be sufficient to service the proposed facility and community during construction and operation. PPRP has recommended a licensing condition (Appendix A) requiring Mirant to address site and

plant safety and security during construction and operation of the power plant.

5.2.8 *Cultural Impacts*

The Dickerson site is visible from Sugarloaf Mountain (elevation 1,282 feet), a monadnock located about five miles northeast of the site. Sugarloaf stands more than 800 feet above the farmland below. During the Civil War, the mountain was used as an observation point and signal station, and was reportedly occupied by Confederate forces in 1862-63. Sugarloaf Mountain was apparently the first choice of Interior Secretary Harold Ickes for a Presidential retreat in the 1930s, and his failure to secure it led to the subsequent selection of "Shangri-La" (now Camp David) in the Catoctin Mountains at Thurmont. Stronghold, Inc. manages the mountain land through a trust fund set up by Gordon Strong in 1947. Sugarloaf Mountain is designated as a Registered National Natural Landmark because of its geologic, historic, and scenic value, and is open to the general public.

The Town of Dickerson is a designated Historic District, and the Beallsville Historic District was placed under the county's Historic Preservation Ordinance in 1988. There are five historic sites within one mile of the Dickerson property and many within five miles. Most historical sites are residential structures that are still occupied and are not publicly accessible.

Four sites in the vicinity of the Dickerson Generating Station have been placed on the National Register of Historic Places. Hanover Farm House is located about four miles southeast on MD 28 in Beallsville. Annington is located about three miles southwest on Whites Ferry Road near Martinsburg. Chiswell's Inheritance is five miles southeast on MD 109 near Poolesville. North of Dickerson, the Johnson-Wolfe Farm in Comus was listed on the National Register in 2003. Other National Register properties in the area are Mount Nebo in Poolesville, Darnall Place, the Nathan Dickerson Poole House, Valhalla, and the Walker Prehistoric Village archaeological site. No sites listed on the National Register of Historic Places or Locally Zoned Historic Districts are located within one mile of the property.

The Allnutt Farm in Boyds has been designated a Maryland Century Farm. The C&O Canal National Historic Park lies between the Dickerson site and the Potomac River. After its designation as a National Historic Park in 1971, PEPCO restored a one-mile segment of the Canal adjacent to

the property. The Canal is listed on the National Register of Historic Places.

A segment of Martinsburg Road between the entrance to the Mirant property and Wasche Road is an historic concrete road typical of the early paved roads in the rural areas of Montgomery County. Many historic stone fences are found along the secondary roads of this part of Montgomery County. Martinsburg Road, Wasche Road, and West Hunter Road are designated rustic roads. The Montgomery County Code (Sec. 49-76) establishes the Rustic Road Program to “preserve as rustic roads those historic and scenic roadways that reflect the agricultural character and rural origins of the County.” Rustic roads are preserved through a permit review process that seeks to maintain certain physical features whenever any work is proposed within a rustic road right-of-way or adjacent properties. To protect these resources, PPRP has recommended a licensing condition requiring Mirant to instruct its contractors and employees to use MD 28 to Martinsburg Road as the primary means of access to the site.

There are two historic roadside markers along Maryland highways near the site. Less than a mile from the property on MD 28 is a marker for “Woodstock,” a farm owned by George Washington from 1794 until his death in 1799. A marker for Whites Ford is located on Whites Ferry Road at Martinsburg Road, indicating a Potomac River crossing about two miles to the northwest used by Robert E. Lee to enter Maryland in 1862, and by J. E. B. Stuart and Jubal A. Early, for their returns to Virginia in 1862 and 1864, respectively.

Whites Ferry is the only regularly operating ferry on the Potomac River and is the closest river crossing above the Capital Beltway in metropolitan Washington. The ferry has been operating in one form or another for almost 175 years. Vehicles are transported across the river on the General Jubal Early, which is the only cable-guided fresh water ferry along the East Coast.

Several recreational areas are located within five miles of the site. The C&O Canal National Historic Park contains a picnic area, boat ramp, and campsites north and south of the site. The Dickerson Whitewater Course is an artificial whitewater course in the existing outflow canal of the Dickerson Generating Station. Built in 1991 to simulate the 1992 Olympic course in La Seu d'Urgell, Spain, it is the only year-round, warm water artificial training course in the United States. The course is open to actively training and racing slalom competitors, who must register with

the Bethesda Center of Excellence, a U.S. Whitewater Canoe & Kayak Team Training Center. The Dickerson Regional Park, owned by Montgomery County, is adjacent to the southern boundary of the Mirant property and provides access across the C&O Canal National Historic Park to warm water fishing areas in the Potomac River. Mirant's Dickerson property is one mile southeast of the Monocacy Natural Resources Management Area.

The Dickerson Generating Station is within or adjacent to two Montgomery County Heritage Area clusters that thematically present Farming History and Technological Innovation. Two Heritage Montgomery sites are within three miles of the Dickerson site. The Monocacy Confederate Chapel and Cemetery dates from 1747. The cemetery contains the remains of fallen Confederate soldiers. The C&O Canal at Monocacy Aqueduct is a 500-foot, seven-arched aqueduct crossing the Monocacy River that has recently been restored.

For its CPCN application for Station H in the mid-1980s, PEPCO conducted an extensive survey for cultural resources on the Dickerson property (Karell Archeological Services 1989). No archaeological sites were found although one is adjacent to the property along the C&O Canal towpath. The survey identified 11 historic sites on the Dickerson property, of which only two are considered historically significant. One, the Benjamin and Charles Shreve Farm (18MO293), is a rectangular foundation built of fieldstone and is believed to date from the earliest occupation of the site, estimated to be the mid-19th century. The site is eligible for nomination to the National Register of Historic Places. The other site, Shreve House (18MO295), contains the ruins of a stone residence and other structures from an early 19th-century farm, possibly built around 1835. The site contains artifacts from the 19th to mid-20th century and has been recorded as a Montgomery County historic site. It has been recommended for nomination to the National Register of Historic Places.

Examination of preliminary drawings for the proposed FGD project facilities suggests that construction and staging areas associated with the new facilities will not disturb the two properties of historic significance on the Dickerson site. No construction activities are expected to occur in the vicinity of the Benjamin and Charles Shreve Farm ruins. However, to ensure these historic resources will not be disturbed, PPRP is recommending a licensing condition (Appendix A) that will require Mirant to establish protection zones for both historic sites by erecting

temporary protective fencing during construction and otherwise prohibit contractors from using this zone for any purpose.

In addition, PPRP has recommended a licensing condition (Appendix A) requiring Mirant to submit to Maryland Historical Trust (MHT) a copy of training programs or guidelines provided to Mirant inspectors or contractors to identify and/or protect unforeseen archeological sites that may be revealed during construction of the power plant and associated facilities. If such archeological sites or relics are identified in the project area, Mirant, in consultation with and as approved by MHT, will develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of the properties adversely affected by the project.

Archaeological and historical resources outside the property boundaries would not be directly impacted by project construction, although aesthetic values associated with properties near roads used by construction workers and delivery vehicles will be periodically diminished by externalities associated with increased traffic volume. The most severe impacts will occur during the peak construction period when construction activity at the site will be most intense.

Except for intermittent visual impacts associated with the facility's vapor plume, construction and operation of the facility will have no adverse effect on nearby recreational or public facilities.

Whether localized visual impacts from the vapor plume will influence heritage tourism in Montgomery County or would contravene the goals of the Montgomery County Heritage Area Management Plan is unclear. Where vistas are degraded in publicly-owned lands, scenic and rustic roads and special events venues, the heritage tourism experience could be less satisfying for visitors. In a competitive market for tourist dollars, this could have economic development implications. But the plan also recognizes the compromised settings in which many of the county's heritage resources currently exist and the underlying strength of the Montgomery County economy. Scenic resources is but one of many components of a heritage program that also includes heritage activities, themed days and tours, and historical exhibits and interpretation. That two heritage clusters associated with the plan have been overlaid upon existing facilities of a distinctly industrial character mitigates the impact to a certain extent. The adverse effect is further lessened by the reduced geographic scope of the plume and restricted opportunities to see it due to vegetation and terrain. Finally, healthier air from scrubber operations

should be considered an offset to visual impacts from the vapor plume in the context of the Montgomery County Heritage Area Management Plan.

5.3 *NOISE IMPACTS*

PPRP has utilized information provided by the applicant to conduct an independent evaluation of potential noise impacts that operation of the proposed facility could have on nearby receptors. The objective of our analysis was to determine whether the facility, as proposed, will operate in compliance with applicable State regulations.

5.3.1 *Evaluation Methodology*

The applicant provided PPRP with source noise data from the major components of the proposed facility. Using the source noise estimates, PPRP prepared screening-level estimates of the sound pressure levels that would result at various receptors surrounding the Dickerson site when the proposed plant is operating at full load. Sound pressure levels at varying distances were calculated using the following formula (Kurze and Beranek 1988):

$$L_p = L_w + DI - 20 \log(r) - A_e - 11$$

where:

L_w is the source sound power level in dB

DI is a source directivity factor (we assumed hemispherical spreading, $DI = 3$)

r is the distance from the source to the receptor location in meters

A_e is the excess attenuation due to absorption in air, conservatively assumed to be zero

Noise impacts were estimated for five receptor locations, chosen to represent the maximum potential impact with respect to noise from the proposed modification. All of the receptors we considered correspond to locations where Mirant monitored ambient noise levels, as discussed in Section 3.4. Figure 3-1 shows the location of the five receptor locations.

- Receptor 1 lies on the Mirant property, between the C&O Canal Historic Park and the Potomac River. It is near the water intake for the existing once-through cooling system.

- Receptor 2 is at the northern property boundary closest to the power block.
- Receptor 3 lies at the eastern property boundary.
- Receptor 4 is located by the gas metering station.
- Receptor 5 is on the southern property boundary where Martinsburg Road takes a turn southbound away from the plant site (nearest residence to the proposed FGD system).

5.3.2 Summary of Regulatory Requirements

Maryland State noise regulations specify maximum allowable noise levels, shown in Table 5-2 (COMAR 26.02.03). The maximum allowable noise levels specified in the regulations vary with zoning designation and time of day. The noise limit for residential areas is 55 dBA (A-weighted decibel scale) during nighttime hours and 65 dBA during daytime hours.

Table 5-2 Maryland’s Maximum Allowable Noise Levels (dBA) for Receiving Land Use Categories

	Zoning Designation		
	Industrial	Commercial	Residential
Day	75	67	65
Night	75	62	55

Source: COMAR 26.02.03

Note: Day refers to the hours between 7 AM and 10 PM; night refers to the hours between 10 PM and 7 AM.

The State regulations provide certain exemptions for specified noise sources and noise generating activities. For example, motor vehicles on public roads are exempt from Maryland noise regulations; however, while on industrial property, trucks are considered part of the industrial source and are regulated as such. The regulations also allow for construction activity to generate noise levels up to 90 dBA during daytime hours, but the nighttime standard may not be exceeded during construction.

Montgomery County has established a numerical noise ordinance, provided in Montgomery County Code of Ordinances; Part II Local Laws,

Ordinances, Resolutions, etc.; Chapter 31B Noise Control; Section 5 Noise Level and Noise Disturbance Violations, shown in Table 5-3.

Table 5-3 *Montgomery County’s Maximum Allowable Noise Levels (dBA) for Receiving Land Use Categories*

Receiving Land use Categories	Day of Week	Time	Sound Level Limit (dBA)
Non-Residential Noise Areas	Weekdays	7 a.m. – 9 p.m.	67
		9 p.m. – 7 a.m.	62
	Weekends	9 a.m. – 9 p.m.	67
		9 p.m. – 9 a.m.	62
Residential Noise Areas	Weekdays	7 a.m. – 9 p.m.	65
		9 p.m. – 7 a.m.	55
	Weekends	9 a.m. – 9 p.m.	65
		9 p.m. – 9 a.m.	55

Note: Daytime is from 7 a.m. to 9 p.m. on weekdays and 9 a.m. to 9 p.m. on weekends;
 Nighttime is from 9 p.m. to 7 a.m. on weekdays and 9 p.m. to 9 a.m. on weekends.

The Montgomery County noise ordinance also contains noise limitations for pure tones, which are defined as a prominent discrete tone, and impulsive noise, which is defined as a short burst of acoustical energy. For prominent discrete tones and impulsive noise, the noise limitations are 5 dBA lower than those shown in Table 5-3.

The Montgomery County noise limits are numerically identical to those of Maryland for residential areas. However, the longer time period established for the nighttime period (9 p.m. vs. 10 p.m.) makes the noise limits established by Montgomery County more stringent. For non-residential areas, the Montgomery County noise limits are numerically identical to the Maryland noise limits for commercial areas and more restrictive than the Maryland noise limits for industrial areas.

5.3.3

Estimates of Noise Emissions

Table 5-4 presents a summary of PPRP’s calculations. These estimates are conservative (that is, tending to over-estimate impacts) in that they only consider distance spreading. The analysis ignores the effect of molecular absorption in the atmosphere, which would reduce noise levels propagating over distance. The estimates also do not account for noise reductions that would be caused by any natural barriers (such as vegetation) between the noise sources and the receptors.

Table 5-4 *Calculated A-Weighted Noise Created by Each Noise Source at Each Receptor*

Source	Component's Sound Power Level (dB)	Site 1	Site 2	Site 3	Site 4	Site 5
Booster Fans (4)	123.6	73.88	54.08	52.73	54.18	53.84
Rail Unloading (2)	81.6	2.94	11.31	10.28	11.52	11.44
Truck Unloading (2)	81.6	2.94	10.60	9.61	10.82	10.77
Limestone Conveyor (3)	81.2	3.91	12.58	11.50	12.76	12.65
Gypsum Conveyor (3)	81.2	3.91	12.58	11.50	12.76	12.65
TOTALS		73.88	54.08	52.73	54.18	53.84

It should be noted also that the sound power levels for each noise-emitting component of the proposed project, shown in Table 5-4, are also conservative estimates. The booster fans in particular, which contribute all of the noise impacts predicted in this analysis, are likely to be less noisy than the characteristics assumed here. Because Mirant has not yet selected specific equipment for the project, the applicant did not have vendor information on noise emissions available, so instead it relied on generic estimates that do not include any noise mitigation features.

Under the recommended licensing conditions in Appendix A, Mirant will be required to install equipment that will comply with the State and County noise limits. Prior to construction of the FGD system, Mirant will have to submit an updated noise analysis demonstrating that it expects to be in compliance.

6.0 WATER SUPPLY

6.1 WATER REQUIREMENTS

The scrubber at the Dickerson power plant will need water primarily for makeup in the wet FGD. A mixture of water and ground limestone is sprayed into the flue gas inside the FGD vessel. Water lost from the hot flue gases through evaporation or discharge will be replenished using makeup water to maintain the appropriate water quality in the limestone slurry.

Mirant calculated two daily water use rates for the air pollution control system:

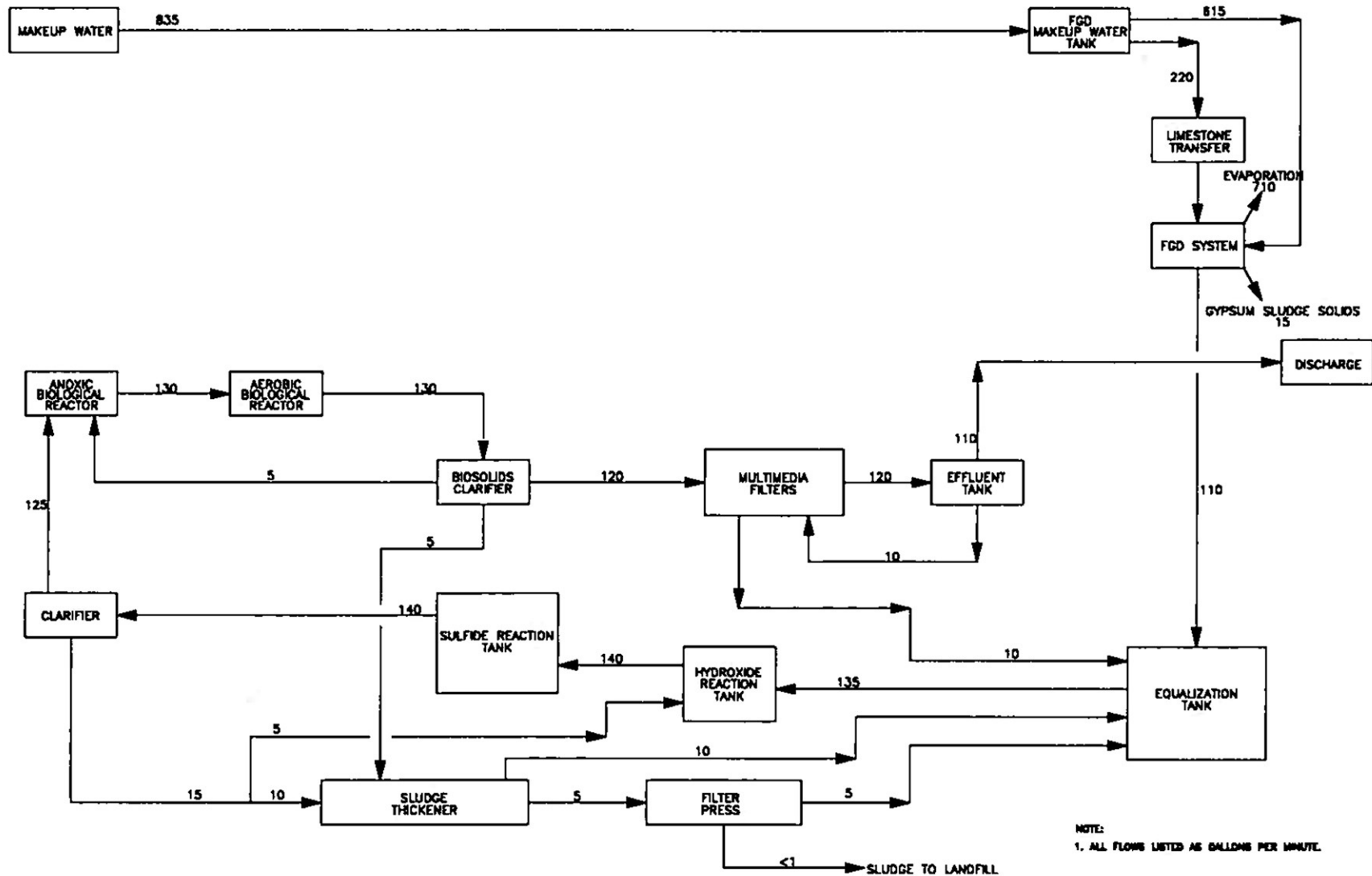
- **Average Daily Use.** The annual average water requirement is estimated to be 867,000 gallons per day (rounded to 870,000).
- **Maximum Daily Use.** The maximum daily water use is estimated to be 1,220,000 gallons. This estimate was calculated with the FGD system operating at peak load for 24 hours from all three generating units.

The water will be withdrawn either from the existing discharge canal, which returns water used in cooling processes to the Potomac River, or from an internal re-circulating line within the plant itself. For low river flow conditions, the water source will be supplemented from the 7,000,000 gallon on-site pond storage. A preliminary water balance for the FGD system is included in Figure 6-1.

The difference between the amount of water withdrawn and the amount of water returned to the source represents the facility's "consumptive" use of water. An estimated 85 percent of the water in the scrubbers is consumptively lost through evaporation out of the stack. A small amount of the water, estimated at about two percent, is incorporated into the gypsum by-product. Over the course of the year, the average consumptive use for the scrubber will be 780,000 gallons per day, with a maximum consumptive use of 1,060,000 gallons per day.

As discussed in further detail in Section 6.4, Mirant has proposed to provide 7,000,000 gallons of water storage in an on-site pond for

**Figure 6-1
Water Balance for
FGD System**



NOTE:
1. ALL FLOWS LISTED AS GALLONS PER MINUTE.

use during Potomac River low flow conditions. On days when the Interstate Commission of the Potomac River Basin Section for Cooperative Water Supply Operations orders a release of water from Jennings Randolph or Little Seneca reservoirs, or other upstream storage facilities, Mirant will obtain any required water in excess of 1,000,000 million gallons per day (mgd) of maximum daily consumptive use from the on-site storage pond.

The pond will need to be filled with river water during days when consumptive water use in the scrubber is less than 1 mgd or low flow conditions in the river do not exist. Filling the pond represents an additional use under the appropriation for the scrubber. Therefore, Mirant's requested annual average water requirement of 870,000 gallons per day was increased by 20,000 gallons per day to 890,000 to provide additional appropriations to fill the pond (7,000,000 gallons/365 days).

6.2 *MARYLAND APPROPRIATIONS*

Potomac River water will be withdrawn from an intake structure constructed in the existing discharge canal, which discharges the once-through cooling water from the existing coal-fired units. There would be no new intake on the Potomac River, and no increase in the amount of water withdrawn from the river. However, there will be an increase in the consumptive use of the river water. Therefore, the withdrawal of water from the Potomac River to supply the scrubber unit requires a new appropriation issued by the Maryland PSC through this CPCN proceeding. The appropriation would be in accordance with MDE's regulations in COMAR 26.17.06.

The State of Maryland has a statutory requirement to conserve and protect the water resources of the State and to control the appropriation and use of surface and ground water. Although the PSC is the actual permitting authority for the facility's water appropriations, MDE's statutes and regulations, as administered by the Water Management Administration (WMA), are used to guide the State's decision regarding water appropriations. The Potomac River is located wholly within the boundaries of Maryland's state line with Virginia, and therefore Maryland controls the appropriations from the river.

Maryland water allocations are guided by the common law doctrine of reasonable use. This doctrine provides all landowners the opportunity to make reasonable use of the water associated with their property,

limited only by the rights of other landowners and the assurance that the use will not harm the water resources of the State. Additionally, the use of the water needs to be beneficial, which means that the use of water is: 1) necessary; 2) non-wasteful; 3) reasonably non-damaging to the resource and other users; and 4) in the best interest of the public.

COMAR 26.17.06.05A states that MDE WMA will grant an appropriation for a beneficial use if three conditions are met:

1. The requested appropriation is reasonable in relation to the anticipated level of use;
2. The requested appropriation does not have an unreasonable impact on the State's water resources; and
3. The requested appropriation or use does not have an unreasonable impact on other users of the resource.

Maryland has also promulgated regulations governing consumptive use of surface water resources in the Potomac River Basin (COMAR 26.17.07). Consumptive use is defined in COMAR 26.17.07.01.B. as "that portion of a water withdrawal which, as a result of evaporation, interbasin diversions, or other means, is not returned to the source to be available for subsequent use." Under these requirements, new nonresidential users consuming more than 1 mgd must provide upstream storage to augment the river flow during low-flow conditions (i.e., "certain periods" specified by MDE WRA), or reduce their consumptive water use to levels of 1 mgd or less during those times. The regulations also specify the amount of augmentation storage that must be secured to avoid the potential for curtailment of water withdrawals during low-flow periods, depending upon the size and location of the withdrawal. Mirant has proposed not to construct upstream augmentation storage, and instead has elected to reduce the facility's consumptive water use to levels of 1 mgd when necessary, and supplement their water use from an on-site 7,000,000 gallon pond.

The consumptive use regulations are intended to implement water use limitations mandated under the Potomac River Low Flow Allocation Agreement. These water use restrictions are to be implemented when the U.S. Army Corps of Engineers declares a "restriction stage," and mandatory restrictions are implemented for the Washington metropolitan area.

6.3 AVAILABILITY OF WATER SUPPLY

6.3.1 *Potomac River Flow*

The U.S. Geological Survey (USGS) operates a gauging station near the U.S. Highway 15 Bridge at Point of Rocks. Although upstream of the Dickerson site, this is the nearest gauging station located on the Potomac. There are 107 years of river stage data for this location. The USGS has reported the following key statistics relative to flow at the Point of Rocks gauging station:

- The lowest 7-day average flow for a 10 year recurrence interval (which corresponds to 10 percent chance of occurring for a given year; 7Q10) for the gauging station was 556 MGD (860 cfs) (based on flows from 1895 to 1979);
- The mean flows for this location were 6,050 MGD (9,362 cfs) for the 1895-1979 reporting period, and 6,380 MGD (9,870 cfs) from 1979 to 1999; and
- The historic minimum discharge at Point of Rocks was 342 MGD (530 cfs) measured on September 11 and 12, 1966.

Note that the Monocacy River discharges to the Potomac between the Point of Rocks gauging station and Dickerson. The annual mean stream low in the Monocacy River, as measured at the USGS Jug Bridge gauging station near Frederick, has ranged from 220 to 1,400 MGD between 1929 and 2001. Therefore, flows at Dickerson are somewhat higher than at Point of Rocks.

Most of the residents of the Washington, D.C., metropolitan area rely on the Potomac River as their primary source of drinking water. Generally, water supply withdrawals from the Potomac River are a small fraction of the river's flow. Average flow of the river at Little Falls over a year is about 7,000 mgd; average summer demand by the Washington area water suppliers that withdraw from the River is about 500 mgd (7 percent of the average daily river flow) (ICPRB, 2000).

6.3.2 *Potomac River Use*

The majority (approximately 90 percent) of the metropolitan area's population relies on water furnished by three Washington metropolitan area water suppliers:

- The Washington Aqueduct Division of the U.S. Army Corps of Engineers (Aqueduct) serving the District of Columbia and portions of Virginia;
- The Fairfax County Water Authority (FCWA) serving parts of northern Virginia; and
- The Washington Suburban Sanitary Commission (WSSC) serving the Maryland suburbs.

The three Washington water suppliers provide treated water either directly to customers or through wholesale suppliers. The natural flow in the Potomac River supplies approximately 75 to 80 percent of the water supply withdrawals in the metropolitan area, with the remainder supplied by FCWA's Occoquan Reservoir and WSSC's Patuxent reservoirs. The Potomac is the sole source of supply for the Aqueduct.

6.4

COMPLIANCE WITH CONSUMPTIVE USE REQUIREMENTS

Mirant needs to comply with consumptive use associated with the operation of the scrubber and two existing combustion turbines (CTs). The existing three steam generating units at Dickerson utilize up to 400 mgd for once-through cooling. Consumptive use associated with the once through cooling system for Units 1, 2 and 3 was established before January 1985, and is therefore exempt from the low flow augmentation requirements. Based on Mirant's response to DNR Data Request 3-4, maximum daily consumptive use for the scrubber and CTs is provided below.

- The FGD system operating at peak load for 24 hours from all three generating units would consume an estimated 1.06 million gallons.
- Two existing CTs at the facility use water injection to control NOx emissions; these units consume a maximum of about 0.4 mgd.
- The CTs operating slightly in excess of 60 percent of the operating hours for a 24 hours period would consume an estimated 0.26 million gallons.

Consequently, on certain days, the facility's post-1985 consumptive use has the potential to reach 1.32 million gallons.

Mirant indicated in the response to DNR Data Request 1-45 their proposed approach for compliance with the Potomac River consumptive use requirements. In the event of a Potomac River low flow condition, Mirant has agreed to limit post-1985 Potomac River water consumption to 1.0 mgd for the FGD scrubber and the combustion turbines. An existing on-site water storage pond, with a capacity of 7,000,000 gallons, will be used to supplement the water supply during periods of Potomac River low flow to ensure generation will not be curtailed. This pond was originally built for the wet particulate scrubbers that were in service between 1978 and 2003. As these scrubbers are no longer in use, the pond is available to provide supplemental water.

As described in Mirant's response to DNR Data Request No. 3-5 and Attachment B to 3-5, Mirant conducted an analysis to determine the adequacy of the on site storage pond to supplement the water supply for the scrubber and CTs. They first determined the peak actual annual generation at Dickerson station for the past five years, selecting 2004 as the peak year for the purposes of calculating potential future water usage. Preliminary FGD scrubber water balances showed that the scrubber was expected to consume 88 gallons per megawatt-hour generated. The existing combustion turbines, furthermore, were expected to consume 8643 gallons per hour at full load. Total water usage was then calculated for each day. Figure 6-2 shows the results of this analysis.

Finally, the pond inventory was evaluated assuming a low river flow condition for the entire year, coupled with 2004 daily generation, which was a peak generation year at Dickerson, and includes the operation of both the wet FGD and combustion turbines. Note that the assumption of a low river flow condition for the entire year is a very conservative assumption given previous Potomac River flow conditions. For each day, the water consumption associated with the generation amount was used to determine the quantity of water withdrawn from or replenished to the pond, while not exceeding one million gallons of withdrawal from the river on any day.

Figure 6-3 shows the resulting water inventory of the pond, and the cumulative impact of both withdrawal and replenishment. The figure shows that pond storage drops below 2,000,000 gallons before it is replenished through a reduction in peak generation at the end of winter. The pond is drawn down to under 3,000,000 gallons during peak summer demand, but is replenished during the late fall and early winter months.

Figure 6-2

Dickerson Station Total Water Usage FGD and Combustion Turbines (assuming 2004 generation)

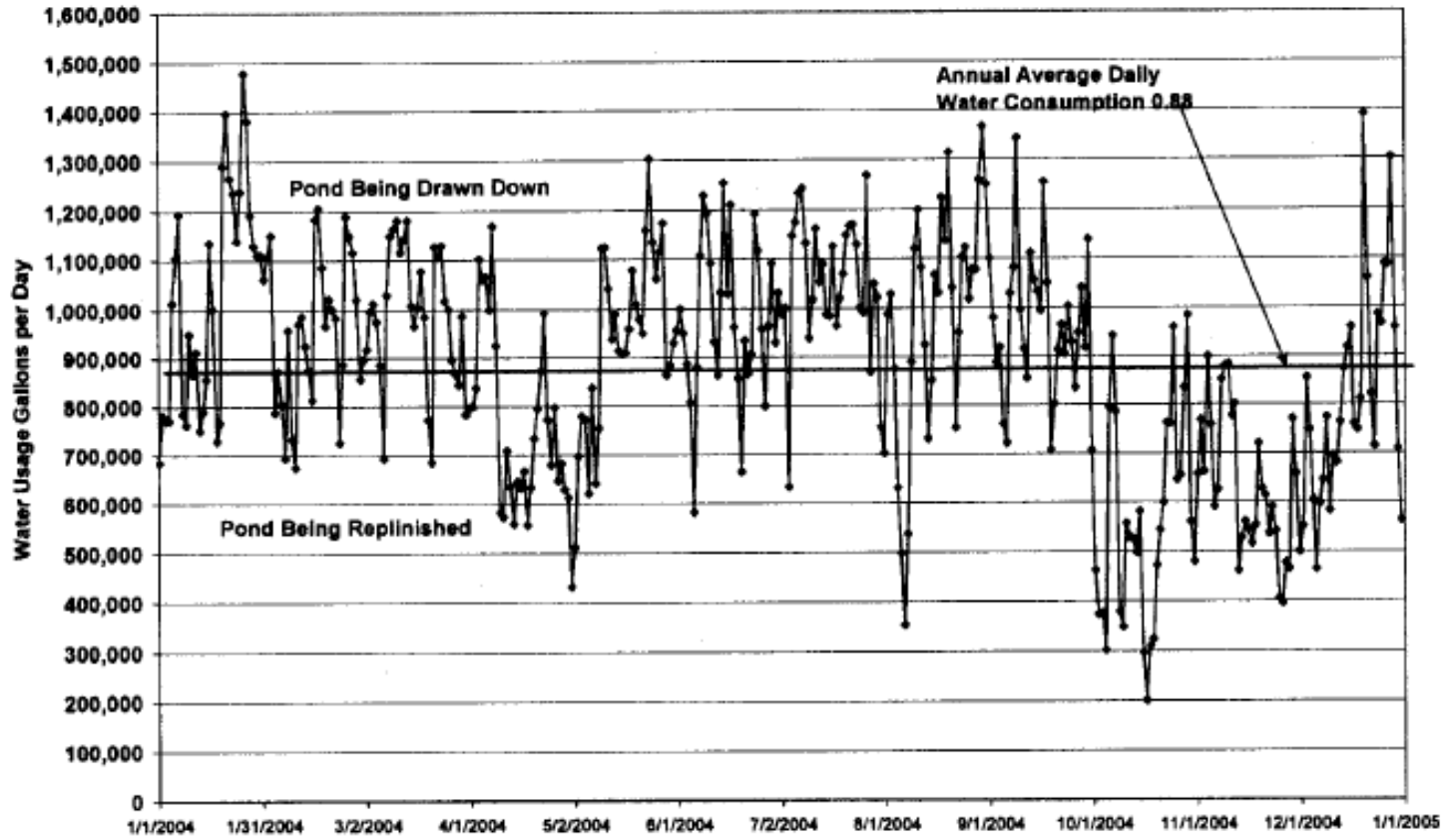
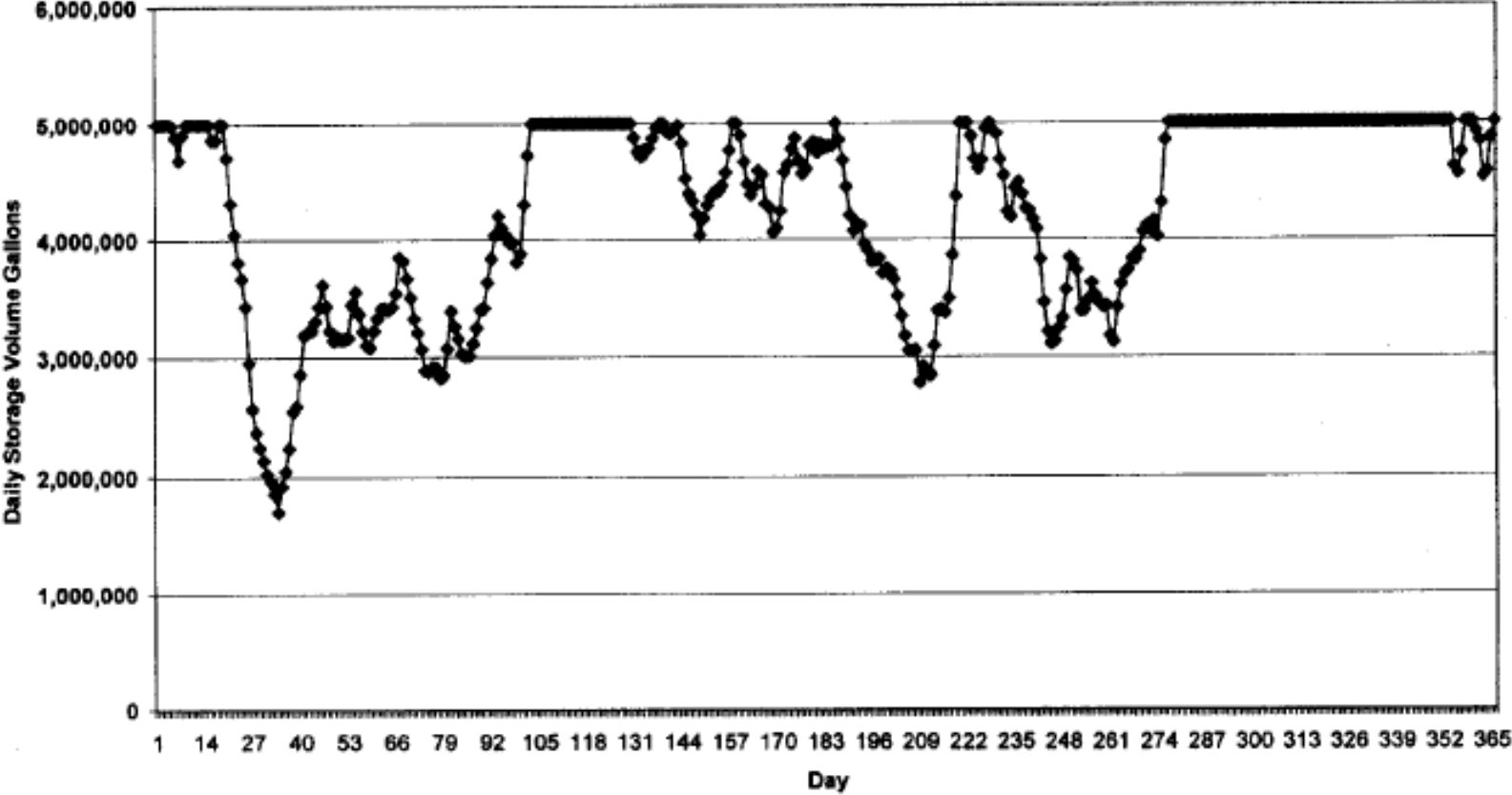


Figure 6-3 Dickerson Low Flow Water Storage to Supplement all Water Consumption >1.0mgd



Following completion of the analysis, Mirant determined from borings in the pond that the actual pond capacity is approximately 7,000,000 gallons vs. the 5,000,000 gallons shown in Figure 6-3.

The analysis shows that Mirant will have adequate water storage capacity to supplement water usage during a low river condition, without exceeding one million gallons of river water withdrawal on any day.

6.5 IMPACT ASSESSMENT

Mirant’s proposed withdrawal will have a minimal effect on the amount of water in the Potomac River. A comparison of Mirant’s proposed maximum daily consumptive withdrawal of 1.32 mgd for both the scrubber and existing CTs to the mean and low daily flows at the Point of Rocks gauging station is shown in the table below.

Table 6-1 Mirant’s Maximum Daily Consumptive Withdrawal Compared to River Flow at Point of Rocks

Flow Conditions at the Point of Rocks Gauging Station	River Flow (mgd)	Mirant Maximum Consumptive Withdrawal (mgd)	Percent of River Flow
7Q10	556	1.32	0.24
1895-1979 Mean Flow	6,050	1.32	0.022
1979-1999 Mean Flow	6,380	1.32	0.021
Historic Minimum Flow	342	1.32	0.39
Minimum Daily Mean Flow in 2002	498	1.32	0.27

The information in Table 6-1 shows that Mirant’s proposed withdrawal would have no measurable effect on the amount of water available to downstream users of the Potomac River during normal and minimum flows.

During low flow conditions, Mirant must meet regulatory requirements under COMAR 26.17.07 regarding consumptive withdrawals from the Potomac River. Under these regulations, Potomac River users that choose not to provide a specified quantity of upstream augmentation

storage are required to reduce consumptive use to less than 1 mgd during certain low-flow periods. Mirant has agreed in the response to DNR Data Request 1-45 to curtail the post-1985 facility consumptive use to less than 1 mgd. As part of the licensing conditions for the scrubber, MDE WMA is recommending that this regulatory requirement be met. Additionally, MDE WMA is directing Mirant to begin their curtailments when releases from the water supply storage portion of Jennings Randolph or releases from the Little Seneca reservoirs, or another future upstream storage facility, are made by the ICPRB Section for Cooperative Water Supply Operations.

Mirant has agreed to provide 7,000,000 gallons of water storage in an on-site pond for use during Potomac River low flow conditions. On days when the ICPRB Section for Cooperative Water Supply Operations orders a release of water from Jennings Randolph or Little Seneca reservoirs, or other upstream storage facilities, to provide for low flow augmentation, Mirant will obtain any required water in excess of 1 mgd of maximum daily consumptive use from the on-site storage pond. Mirant will convey pond water into the scrubber while reducing the amount of water withdrawn from the discharge canal or re-circulating water line. As part of the licensing conditions for the scrubber, MDE WMA is recommending that this requirement be met.

Mirant's curtailment when releases from the reservoirs are made will ensure that Mirant will not consume water that has been released from upstream reservoirs to meet demand in the Washington metropolitan area during a drought emergency period. This will further ensure that the proposed Mirant facility will have no significant adverse effect on the adequacy of the existing reservoir system to meet the water supplier's needs.

7.0 FGD BY-PRODUCT MANAGEMENT

7.1 GENERATION, MANAGEMENT AND DISPOSITION

7.1.1 Gypsum By-product

7.1.1.1 Generation

A slurry of pulverized limestone and water is sprayed into the flue gas inside the FGD absorber vessel during operation of the scrubber. The FGD system creates a calcium sulfate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) or gypsum by-product through the reaction of flue gas SO_2 , limestone (CaCO_3), and forced oxidation air (O_2). The primary components of the gypsum by-product sludge are listed in Table 7-1.

Table 7-1 Components of Gypsum By-product

Constituent (wt%)	Percent
Calcium sulfate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)	95.0
Calcium sulfite ($\text{CaSO}_3 \cdot 0.5\text{H}_2\text{O}$)	1.0
Quartz (SiO_2)	1.0
Fly ash	1.0
Iron Oxide (Fe_2O_3)	0.8

Mirant estimates that the gypsum by-product will be generated at a rate of 310,000 tpy at an assumed 100 percent capacity factor. Based on a 74 percent capacity factor (highest in last 5 years), an estimated 229,000 tpy of gypsum by-product would be generated (Mirant response to DNR Question 1-32). The generation rate for the gypsum by-product will be up to 6,000 tons per week, or about 900 tons per day.

Mirant is planning to contract with a third party to manage the gypsum by-product. This third party will be responsible for recycling the by-product as a replacement for natural gypsum. The most likely use for the gypsum will be for the manufacture of wallboard. A certain percentage of the gypsum by-product could be considered to be off-

specification if it does not meet the specifications of the end user. The industry average is five percent of the total volume of gypsum could be considered off-specification. Therefore, the estimated generation rate for the off-specification gypsum is five percent of the total generation, and thus would range from 12,000 to 16,000 tons per year.

7.1.1.2 *Management*

Gypsum cake from the belt filters will be conveyed to an enclosed onsite storage building for subsequent transportation off-site. Mirant's proposed gypsum handling system is described below.

- Gypsum will be conveyed to the dewatering facility where it will be mechanically dewatered to approximately 90 percent solids using a vacuum belt filter.
- The dewatered gypsum will be moved from the dewatering facility to the gypsum storage pile via a single conveyor.
- Gypsum will be stored on a concrete pad (Mirant Response to DNR Data Request 1-38) in an enclosed storage area to protect the gypsum by-product from precipitation. The enclosed area has a capacity of seven days of gypsum production storage, or approximately 6,000 tons.
- Gypsum will be reclaimed from the storage area via a belt conveyor that transports the gypsum to the rail and truck loading building.

Mirant expects to transport the gypsum to the third party via either 100-ton rail cars, or 20-ton trucks. It is expected that up to 60 rail cars or 300 trucks per week will be used for gypsum transport.

7.1.1.3 *Disposition*

Mirant stated in their responses to DNR Data Requests 1-33 and 1-34 that it intends to enter into a contractual agreement with a third party to operate and maintain the gypsum management system and to transport and deliver the gypsum by-product to end users. The third party will be responsible for disposition of 100 percent of the gypsum and off-specification gypsum, either as replacement for existing virgin gypsum in a beneficial use application, such as wallboard manufacturing or cement manufacturing, or placement in a landfill.

Mirant indicated during the 15 February 2007 cross examination of Mr. Robert U. Patrick, that Mirant does not have any current plans to procure an off-site location, and design, construct and operate a landfill

for disposition of the gypsum by-products. However, in the event that Mirant's future needs change and they do require a dedicated landfill, PPRP recommends a license condition requiring Mirant to obtain a solid waste permit from MDE to design, construct and operate an industrial waste landfill to dispose of gypsum, off-specification gypsum, or other non-hazardous solid waste (discussed in Section 7.1.2 below), and ensure compliance with all applicable requirements set forth in COMAR 26.04.07.19 and .20, and any applicable county requirements.

Mirant has indicated that their current schedule is to complete their negotiations with the third party by the end of the first quarter 2007 (Mirant Response to DNR Data Request 1-33). Mirant did not provide detailed information indicating where the third party will send the gypsum by-product. This information is necessary to ensure that Mirant has identified an adequate means for the disposal of plant-generated wastes. Mirant did indicate during the 15 February 2007 cross examination of Mr. Robert U. Patrick, that Mirant will contractually obligate the third party to comply with applicable environmental laws and regulations in the event that the by-product is used or land disposed. PPRP recommends a license condition requiring Mirant to make available to PPRP and the PSC the contract with the third party for review, and that the contract require the third party to specify where the gypsum and off-specification gypsum by-product is being used or disposed of, and specify that acceptance of the by-product obligates the third party to manage the by-product so as to comply with all applicable requirements set forth in COMAR 26.04.07.19 and .20, and any applicable local requirements.

The potential exists that the third party determines that not all of the gypsum and off-specification gypsum material can be accepted. Therefore, PPRP recommends a license condition requiring Mirant to notify the PSC and PPRP of any change in the proposed plan to provide 100 percent of the gypsum and off-specification gypsum to the third party, and provide the PSC and PPRP with alternate plans for disposition of these materials for review at least 120 days in advance of implementing an alternate disposition plan.

7.1.2 *Other Solid Wastes*

7.1.2.1 *Generation*

Solid waste generated from the scrubber operations will include wastewater treatment sludge. The sludge will be generated by removal

of solids from the absorber, removal of inorganic constituents by the physical/chemical wastewater treatment system, and removal of solids by the biological wastewater system. Chlorides and inert suspended solids build up in the FGD absorber, and the system is designed to remove the suspended solids in a side stream clarifier. Sludge from the side stream, coupled with sludge generated from the clarifiers, is transferred to a thickener for concentration. The thickener pumps transfer sludge to filter presses for dewatering.

Assuming that the sludge is dewatered to greater than 50 percent solids, the average weight of sludge produced from the three sources will be 24,000 pounds per day (12 tons per day or 4,400 tons per year). At a density of 70 pounds per cubic foot, the volume of sludge generated daily will be 350 cubic feet per day. Based on a six ton capacity of a truck, there will be two truck loads of sludge produced daily.

7.1.2.2 *Management and Disposition*

Mirant stated in Section 3.5.2 of their CPCN application that the dewatered sludge will be collected in sludge storage hoppers located inside the FGD building. The sludge hoppers are filled and trucked offsite to a landfill for final disposal. A commercial landfill is expected to accept non-hazardous industrial solid waste, and comply with federal and state laws and regulations.

PPRP recommends a license condition requiring Mirant to make the contract with a commercial landfill available for review by PPRP and the PSC to ensure an adequate means for disposal for solid waste is in place. The license condition defines solid waste as the waste from the wastewater treatment plant, and gypsum or off-specification gypsum by-product not accepted by the third party. PPRP also recommends a license condition requiring notification to the PSC and PPRP if the plan to dispose of the solid waste at a commercial landfill changes.

7.2 *IMPACT EVALUATION*

Mirant committed in the application to store the gypsum by-product and solid wastes in a manner that will not impact surface or ground water quality. Onsite surface and ground water quality will be protected using the following approaches:

- **Gypsum.** The active pile will be under an enclosure and constructed on concrete, and thus will be sheltered from the elements.

- **Wastewater Treatment Sludge.** The sludge will be stored in hoppers located inside the building, and thus will be sheltered from the elements.

Gypsum by-product from the proposed FGD system that is beneficially used by the third party in the manufacture of wallboard, or for other commercial uses, will not impact ground water quality because it will not be placed on the ground. Further, a recommend license condition requires gypsum or off-specification gypsum by-product not accepted by the third party be sent to a commercial landfill.

Solid waste generated by the project that is sent to commercial landfills is not expected to impact ground water quality because the commercial landfills are constructed and operated in accordance with federal and state solid waste laws and regulations. State regulations for non-hazardous solid waste landfills require the construction and operation of leachate collection and treatment systems, which if operated as designed, prevent ground water quality impacts.

8.0 *SUMMARY*

8.1 *AIR QUALITY*

Based on the information provided in the CPCN application, supplemented with independent analyses conducted by the State, PPRP and MDE-ARMA conclude that criteria pollutant impacts for the Dickerson project will not adversely affect the NAAQS or PSD increments.

If designed and operated in accordance with the recommended licensing conditions (Appendix A), the air quality control project will meet applicable State and Federal air quality requirements.

8.2 *BIOLOGICAL RESOURCES*

The site of the proposed new FGD system at the Dickerson power plant is within an area that has been disturbed for many years by anthropogenic activities (i.e., clearing, construction, soil disturbance, mowing, etc.). Significant natural communities are not present on the FGD site; it is currently a developed area directly adjacent to the existing Dickerson facilities. The developed nature of the site has lessened its habitat potential for wildlife.

Given these factors, construction and operation of the Dickerson FGD project would likely not pose any negative impacts to biological resources.

8.3 *SOCIOECONOMIC IMPACTS*

Construction of the FGD facility will create as many as 450 craft jobs during the peak construction period. Over the 28-month project schedule, an average of 232 construction workers are expected to be on-site. Mirant estimates that construction payrolls will total \$62.5 million over the construction period. Operating the FGD facility will add another 19 employees to the Dickerson workforce and add at least \$1.1 million in annual earnings. These 19 permanent employees will have no adverse effects on housing or population concerns in the area. Additional economic benefits are expected to result from the purchases of goods and services during both construction and operation phases of the project.

Mirant intends to mitigate potential effects of construction worker traffic through shift scheduling and other measures if needed. Additional truck traffic would also be generated by construction and operation of the proposed facility, but it is not projected to affect levels of service on nearby road segments or intersections. Mirant proposes that most deliveries of limestone, in addition to coal, would be via rail. Rail would also be used to transport the major FGD byproduct – gypsum – off site. The recommended licensing conditions in Appendix A include provisions to minimize impacts of truck traffic as well as construction worker commuting.

8.4 NOISE

PPRP conducted an independent evaluation of potential noise impacts from operation of the modifications proposed for Dickerson on surrounding receptors. Based on conservative assumptions and calculation methods, the analysis showed a potential noise exceedance at one receptor location (along the C&O Canal near the existing water intake for the facility). Prior to construction, Mirant will be required to submit an updated noise evaluation once equipment has been selected. The actual equipment to be installed must be able to comply with applicable noise limits at the facility boundary, as required by State and County noise regulations.

8.5 WATER SUPPLY

The proposed FGD system will need water primarily for makeup in the FGD. The source of the water will be the existing discharge canal into the Potomac River. Mirant will also utilize an existing on-site water storage pond to supplement water withdrawals during periods of low flow in the river. During such times, Mirant will be limited to withdrawing 1 mgd in compliance with Maryland consumptive use regulations for the Potomac River.

Mirant will be limited to an annual average withdrawal of 890,000 gpd, with a maximum of 1.2 mgd. This is a small appropriation compared to the available flow in the river, and is not expected to adversely impact any other water users.

8.6

BY-PRODUCT MANAGEMENT

The proposed air pollution control system will generate gypsum by-product as well as solid waste. Mirant is planning to provide the gypsum by-product to a third party who will be responsible for recycling the gypsum by-product as a replacement for natural gypsum. The most likely use for the gypsum will be for the manufacture of wallboard. A certain percentage of the gypsum by-product could be considered to be off-specification if it does not meet the specifications of the end user.

Mirant will be required to allow PPRP and the PSC access to the site to view the applicant's agreement with the third party that is transporting the by-product off site and that is responsible for its ultimate disposition. The agreement must include assurances of environmental compliance. The applicant will also have to inform the State if the plan to beneficially reuse 100 percent of the by-product changes for any reason.

The licensing conditions will also require Mirant to obtain a separate permit if the company decides to directly dispose of any solid wastes, and to comply with all applicable state and local disposal regulations in that case.

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Appendix A
Letter of Recommendation and Initial Recommended
Licensing Conditions, PSC Case No. 9087



STATE OF MARYLAND

March 19, 2007

The Chairman
Public Service Commission
6 St. Paul Center
Baltimore, Maryland 21202

Re: Case No. 9087

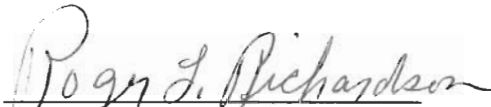
Dear Mr. Chairman:

In accordance with Section 3-306(b) of the Natural Resources Article and the process described in Section 7-207 and 7-208 of the Public Utility Companies Article, we are enclosing our preliminary recommendation in Case Number 9087 on behalf of the Departments of Natural Resources, Environment, Agriculture, Transportation, Business and Economic Development, and Planning and the Maryland Energy Administration. Our recommendation and proposed conditions relate to the application for a Certificate of Public Convenience and Necessity (CPCN) for Mirant Mid-Atlantic, LLC (Mirant) to modify the Dickerson Generating Station in Montgomery County, Maryland.

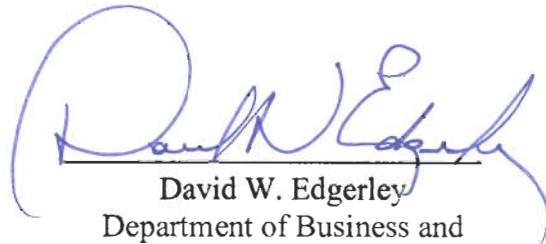
As set forth more fully in Mirant's application, the modification is to install sulfur dioxide emission control equipment known as wet flue gas desulfurization (FGD) and associated control equipment. The project will provide significant air quality benefits to the State and the mid-Atlantic region as a whole.

Based on our review of the application and associated environmental information available to date, we have concluded that the site is suitable and that the plant can be modified and operated in accordance with all applicable environmental regulations provided that the attached recommendations are incorporated as conditions to the CPCN. Our preliminary evaluation of the environmental impacts associated with the proposed facility is summarized in the document titled "Environmental Review of the Proposed Air Pollution Control Project at the Dickerson Generating Station," which has been supplied as an exhibit in this proceeding. At the conclusion of the hearing process and close of the record these conditions will be final. Should these recommendations need to be modified, we will provide our final recommendation and conditions for the project.

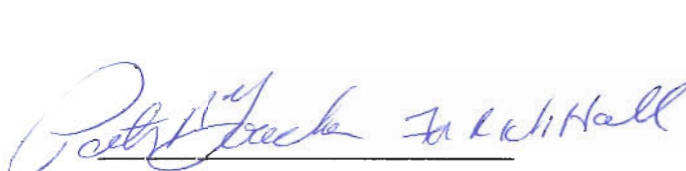
Sincerely,



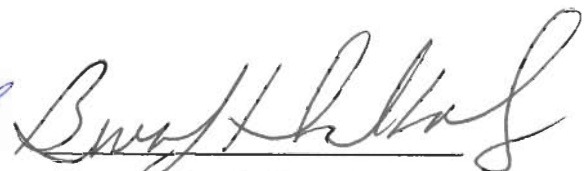
Roger L. Richardson
Department of Agriculture




David W. Edgerley
Department of Business and
Economic Development



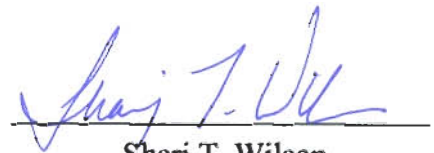
Richard E. Hall
Department of Planning



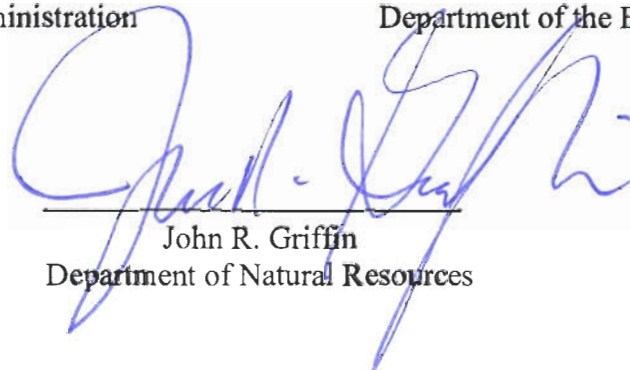
John D. Porcari
Department of Transportation



The Director
Maryland Energy Administration



Shari T. Wilson
Department of the Environment



John R. Griffin
Department of Natural Resources

Recommended CPCN Licensing Conditions

Case No. 9087

Mirant Mid-Atlantic, LLC

Dickerson Generating Station Air Pollution Control Project

General

1. Except as otherwise provided for in the following provisions, the application for the Certificate of Public Convenience and Necessity (CPCN) is considered to be part of this CPCN for the Dickerson Facility Air Pollution Control (APC) Project. The application consists of the original application received by the Maryland Public Service Commission (PSC) on November 3, 2006, the amended application received December 22, 2006, and subsequent amendments provided in testimony filed by Mirant on January 3, 2007. Construction of the facility shall be undertaken in accordance with the CPCN application and subsequent amendments. If there are any inconsistencies between the conditions specified below and the application, the conditions in this CPCN shall take precedence; if CPCN conditions incorporate federal or state laws through paraphrased language, where there is any inconsistency between the paraphrased language and the actual state or federal laws being paraphrased, the applicable federal or state laws shall take precedence.
2. If any provision of this CPCN shall be held invalid for any reason, the remaining provisions shall remain in full force and effect and such invalid provisions shall be considered severed and deleted from this CPCN.
3. Representatives of the Maryland PSC shall be afforded access to the Dickerson facility at any reasonable time to conduct inspections and evaluations necessary to assure compliance with the CPCN. Mirant shall provide such assistance as may be necessary to conduct such inspections and evaluations by representatives of the PSC effectively and safely.
4. Representatives of the Maryland Department of the Environment (MDE) and the Montgomery County Department of Environmental Protection shall be afforded access to the Dickerson facility at any reasonable time to conduct inspections and evaluations necessary to assure compliance with the CPCN requirements. Mirant shall provide such assistance as reasonably may be necessary to conduct such inspections and evaluations effectively and safely, which may include but need not be limited to the following:
 - a) inspecting construction authorized under this CPCN;

- b) sampling any materials stored or processed on site, or any waste, or discharge into the environment;
- c) inspecting any monitoring or recording equipment required by this CPCN or applicable regulations;
- d) having access to or copying any records required to be kept by Mirant pursuant to this CPCN or applicable regulations;
- e) obtaining any photographic documentation and evidence; and
- f) determining compliance with the conditions and regulations specified in the CPCN.

Air Quality

I. General Air Quality Requirements

- 5. MDE Air and Radiation Management Administration (ARMA) shall have concurrent jurisdiction with the PSC to enforce the air quality conditions of this CPCN.
- 6. For air permitting purposes, the Dickerson APC Project shall include installation and operation of a wet flue gas desulfurization (FGD) system on Dickerson Units 1, 2, and 3; sorbent injection equipment for removal of sulfuric acid mist (SAM); a single flue gas stack; limestone receiving, handling, and storage facilities; limestone slurry preparation facilities; gypsum by-product storage, handling, and loading facilities; wastewater treatment system for scrubber wastewater; solid waste storage and handling systems for scrubber and wastewater treatment solids; upgrades to the flue gas handling system to include new ductwork and two new booster fans; and one nominal 500-hp diesel engine-driven quench pump for providing water for safe plant shutdown following unit trip.
- 7. In accordance with COMAR 26.11.02.04B, the air quality provisions expire if, as determined by ARMA:
 - a) Construction is not commenced within 18 months after the date of issuance of a final CPCN;

- b) Construction is substantially discontinued for a period of 18 months or more after it has commenced; or
 - c) Construction is not completed within a reasonable period of time after the issuance of a final CPCN.
8. Mirant shall construct a single exhaust stack that will serve the APC Project for Units 1, 2 and 3 with a nominal vertical height of 400 feet above ground level. During periods of maintenance, Mirant will utilize the existing 700-foot stack at the Dickerson plant for flue gas emissions from the APC project. The two existing 400-foot stacks shall be rendered inoperable.
9. All requirements pertaining to air quality that apply to Mirant shall apply to all subsequent owners and/or operators of the facility. In the event of any change in control or ownership, Mirant shall notify the succeeding owner/operator of the existence of the requirements of this CPCN pertaining to air quality by letter and shall send a copy of that letter to the PSC and ARMA.

II. Applicable Air Quality Regulations

10. The Dickerson facility is subject to all applicable federally enforceable State air quality requirements including, but not limited to, the following regulations:
- a) COMAR 26.11.01.10 – Requires Mirant to install Continuous Opacity Monitoring (COM) systems to monitor opacity and Continuous Emissions Monitoring (CEM) systems to monitor SO₂, NO_x and either O₂ or CO₂ from each boiler; and to meet applicable CEM installation, certification, operating, monitoring, testing, and malfunction requirements in 40 CFR Part 60, 40 CFR Part 75, or 40 CFR Part 51, Appendix P, §3.3-3.8 or §3.9 as incorporated by reference;
 - b) COMAR 26.11.03.19 – Requires Mirant to update the existing Part 70 Operating Permit (No. 24-031-00019) to include applicable APC Project requirements;
 - c) COMAR 26.11.06.02C(2) – Prohibits Mirant from causing or permitting the discharge of emissions from any installation or building (i.e., confined non-fuel-burning equipment sources), other than water in an uncombined form, which are visible to human observers. The visible emissions standard do not apply to emissions during startup and process modifications or adjustments, or occasional cleaning of control equipment, if: (a) the visible emissions are not greater than 40% opacity; and (b) the visible emissions do not occur for more than 6 consecutive minutes in any 60-minute period;

- d) COMAR 26.11.06.03B(2)(a) – Prohibits Mirant from discharging into the outdoor atmosphere from any non-fuel burning confined source (i.e., the limestone, gypsum, and other material storage silos, enclosed material transfer points, etc.), particulate matter in excess of 0.03 grains per dry standard cubic feet (gr/SCFD) (68.7 mg/dscm);
- e) COMAR 26.11.06.03C(1) – Prohibits Mirant from causing or permitting emissions from an unconfined source without taking reasonable precautions to prevent particulate matter from becoming airborne;
- f) COMAR 26.11.06.03D – Prohibits Mirant from causing or permitting any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. For the unloading, loading and transfer of the materials included in the Dickerson APC Project (limestone, gypsum, sorbent to control sulfuric acid mist emissions, and hydrated lime in wastewater treatment plant operations), these reasonable precautions shall include, but not be limited to, the following when appropriate as determined by the control officer:
 - i) Use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.
 - ii) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dusts.
 - iii) Installation and use of hoods, fans, and dust collectors to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting of buildings or other similar operations.
 - iv) Covering, at all times when in motion, open-bodied vehicles transporting materials likely to create air pollution. Alternate means may be employed to achieve the same results as would covering the vehicles.
 - v) The paving of roadways and their maintenance in clean condition.
 - vi) The prompt removal from paved streets of earth or other material which has been transported there by trucks or earth

moving equipment or erosion by water.

- g) COMAR 26.11.06.12 – Prohibits Mirant from constructing, modifying, or operating, or causing to be constructed, modified, or operated, a New Source Performance Standard source as defined in COMAR 26.11.01.01C, which results or will result in violation of the provisions of 40 CFR 60;
 - h) COMAR 26.11.09.03 – When determining compliance with applicable particulate matter emission standards from the boiler stacks (concentration requirement expressed as grains per standard cubic foot or milligrams per cubic meter of dry exhaust gas), Mirant shall correct to 50 percent excess air. In addition, when determining compliance with a mass-based particulate matter emission limit expressed as pounds per million Btu (lb/MMBtu), CPSG shall use the procedures for determining particulate matter emission rates in 40 CFR Part 60 Appendix A, Method 19;
 - i) COMAR 26.11.09.05B(2) through B(4) – Prohibits the discharge of emissions from the quench pump engine, when operating at idle, greater than 10 percent opacity, and when in operating mode, greater than 40 percent opacity. Exceptions: (i) limitations when operating at idle do not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system; (ii) limitations when operating at idle do not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods: engines that are idled continuously when not in service: 30 minutes and all other engines: 15 minutes; (iii) limitations when in idle and operating modes do not apply while maintenance, repair, or testing is being performed by qualified mechanics;
 - j) COMAR 26.11.09.06(B)(3) – Prohibits Mirant from discharging particulate matter into the atmosphere caused by the combustion of solid fuel in Units 1, 2 and 3 in excess of 0.03 gr/dscf, corrected to 50% excess air;
 - k) COMAR 26.11.09.07A(2)(b) – Prohibits Mirant from burning distillate fuel oil in the quench pumps with a sulfur content greater than 0.3 percent;
 - l) COMAR 26.11.27 – Requires Mirant to comply with the applicable emissions limitations for NO_x, SO₂ and mercury, and the monitoring and recordkeeping requirements contained in COMAR 26.11.27.
11. The Dickerson facility is subject to all applicable State-only enforceable air quality requirements including, but not limited to, the following regulations:

- a) COMAR 26.11.06.08 – Prohibits Mirant from operating or maintaining a source in such a manner that a nuisance is created.
- b) COMAR 26.11.06.09 – Prohibits Mirant from causing or permitting the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created.

III. New Source Performance Standard (NSPS) Requirements

- 12. The equipment at Dickerson identified in Tables 1a, 1b, and 2 are subject to NSPS 40 CFR 60, Subpart OOO–Standards of Performance for Non-metallic Mineral Processing Plants (40 CFR §60.670) and the associated notification and testing requirements of 40 CFR §60.7, §60.8 and §60.11 whose requirements include, but are not limited to the following:
 - a) Mirant shall not cause to be discharged into the atmosphere gases from any transfer point along the belt conveyor systems, or any other stack, particulate matter in concentrations greater than 0.022 gr/dscf or opacity that is greater than seven percent;
 - b) Mirant shall not cause to be discharged into the atmosphere from any transfer point along the belt conveyor system or from any other affected facility any fugitive emissions which exhibit greater than 10 percent opacity. If the transfer point is totally enclosed in a building or enclosure, then there are no fugitive emissions allowed from the building unless they are directed through a vent, which is limited by Condition a);
 - c) Mirant shall not cause to be discharged into the atmosphere from any crusher, at which a capture system is not used, fugitive emissions which exhibit greater than 15 percent opacity;
 - d) Mirant shall not cause to be discharged into the atmosphere from any baghouse that controls emissions from only an individual enclosed storage bin, stack emissions which exhibit greater than 7 percent opacity.
- 13. The 500-horsepower diesel engine-driven quench pump at the Dickerson facility is subject to NSPS 40 CFR 60, Subpart IIII–Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR §60.4205) and the associated fuel, monitoring, compliance, testing, notification, reporting, and recordkeeping requirements (40 CFR §60.4200 *et seq.*), and related applicable provisions of 40 CFR §60.7 and §60.8.

IV. Operational Restrictions and Limitations

14. Mirant shall:

- a) Install, maintain and operate the new limestone, gypsum, unloading, storage, transfer and distribution equipment and systems with associated particulate matter control methods listed in Tables 1a-b and Table 2 in accordance with vendor recommendations and best management practices, and in such a manner as to ensure full and continuous compliance with all applicable regulations;
- b) At least 60 days prior to the initial startup date, prepare and submit to the PSC and ARMA a Best Management Practices (BMP) Plan for the new limestone, gypsum, SAM control sorbent, hydrated lime transfer, storage and distribution equipment listed in Tables 1a-b and Table 2 that contains an explanation of the reasonable precautions that will be used to prevent particulate matter from this equipment from becoming airborne. The Plan shall include a description of the types and frequency of inspections and/or preventative maintenance (PM) that will be conducted. In addition, Mirant shall define the associated records that will be maintained to document inspections and PMs have been conducted as proposed;
- c) At least 60 days prior to replacing, eliminating or in any manner changing any of the particulate control systems listed in Tables 1a-b and Table 2, Mirant shall submit a request to ARMA to amend the facility's BMP Plan. The request shall specify the proposed changes in emissions control systems; shall demonstrate that changes will not result in any increases in any pollutants; and shall update Tables 1a-b and 2 of this CPCN. Mirant shall be authorized to make the changes proposed in the written request unless ARMA denies the request within 30 days of the receipt of the request.

V. Testing

15. Within 60 days of the initial start-up date, Mirant shall provide ARMA with a Performance Test Plan. The Plan shall describe:

- a) The proposed methods for conducting the initial performance test that will demonstrate compliance with the NSPS Subpart OOO and IIII. The Test Plan shall comply with the requirements of §60.8 and §60.11, and any other applicable standards;
- b) The proposed methods for testing SAM and SO₂ emissions from Dickerson Units 1, 2, and 3.

16. Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of the APC Project, Mirant shall conduct performance tests outlined in Mirant's Performance Test Plan.
17. In accordance with COMAR 26.11.01.04A, Mirant may be required by ARMA to conduct additional stack tests to determine compliance with applicable air quality requirements.

VI. Monitoring

18. Mirant shall operate continuous emissions monitoring systems (CEMS) for SO₂, NO_x, and either oxygen or CO₂ as required, under 40 CFR Part 75, and continuous opacity monitoring systems (COMS) for Dickerson Units 1, 2 and 3.
19. At least 30 days prior to the anticipated date of start-up of any portion of the APC Project, Mirant shall provide MDE-ARMA with a continuous emissions monitoring plan for mercury for Dickerson Units 1, 2 and 3.

VII. Recordkeeping and Reporting

20. Mirant shall submit to ARMA and U.S. EPA written reports of the results of all performance tests conducted to demonstrate compliance with the standards set forth in applicable NSPS within 60 days of completion of the tests.
21. Final results of the stack tests required by this CPCN must be submitted to ARMA within 60 days after completion of the test. Analytical data shall be submitted to ARMA directly from the emission testing company.
22. Mirant shall furnish written notification to ARMA and EPA of the following events for the limestone unloading and handling system and the quench pump:
 - a) the date construction commenced within 30 days after such date;
 - b) the anticipated startup date, not more than 60 or less than 30 days prior to such date;
 - c) the actual startup date within 15 days after such date; and
 - d) the anticipated date of compliance stack testing at least 30 days prior to such date.
23. Mirant shall furnish written notification to ARMA and PPRP of the following events for all portions of the Dickerson APC project:

- a) the date construction commenced within 30 days after such date;
 - b) the anticipated startup date, not more than 60 or less than 30 days prior to such date; and
 - c) the actual startup date within 15 days after such date
24. All records and logs required by this CPCN shall be maintained at the facility for at least 5 years after the completion of the calendar year in which they were collected. These data shall be readily available for inspection by representatives of ARMA.
25. All air quality notifications and reports required by this CPCN shall be submitted to:

Administrator, Compliance Program
Air and Radiation Management Administration
1800 Washington Boulevard
Baltimore, Maryland 21230

26. All notifications and reports required by 40 CFR 60 Subpart OOO and Subpart IIII and 40 CFR 63, unless specified otherwise, shall be submitted to:

Regional Administrator, US Environmental Protection Agency
Region I
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

VIII. Miscellaneous

27. Mirant is subject to the National Emission Standard for Asbestos under 40 CFR 61, Subpart M, specifically the standards for demolition and renovation of 40 CFR 61.145, and COMAR 26.11.21 for demolition activities, as applicable, of asbestos containing materials that occur to construct the FGD project.
28. Informational copies of the reports required regarding change of ownership, major milestones, stack test protocols, and stack testing results, as described in Conditions 9, 14b, 14c, 15, 19, 20, 22, and 23 shall be sent to the Power Plant Research Program at:

Power Plant Assessment Division
Department of Natural Resources
Tawes State Office Building, B-3

580 Taylor Avenue
Annapolis, Maryland 21401

Water Appropriation

29. This CPCN authorizes Mirant to appropriate and use surface waters of the State. Appropriation means a withdrawal, movement, or diversion of water from its source of natural occurrence. The appropriation will be tracked under MDE Water Management Administration (WMA) permit number MO2006S011(01). The surface water appropriation will be subject to the following conditions:
- a) *Allocation.* The surface water withdrawal granted by this appropriation is limited to a daily average of 890,000 gallons on a yearly basis and a maximum daily withdrawal of 1,220,000 gallons. Consumptive use is limited to 87 percent of these values, or a daily average of 780,000 gallons and a maximum daily consumptive use of 1,060,000 gallons. The daily average allocation includes an additional 20,000 gallons to account for replenishment of the 7,000,000 gallons of on-site storage.
 - b) *Use.* The water is to be used to supply the flue gas desulfurization scrubber, and to supply 7,000,000 gallons of storage in an on-site pond to comply with the consumptive use regulations.
 - c) *Source.* The water shall be withdrawn from the Potomac River.
 - d) *Location.* The point of withdrawal shall be located at the existing discharge canal of the once-through cooling system or from a re-circulating water line at the Dickerson Generating Station in Montgomery County, Maryland.
30. *Initiation of Withdrawal.* Mirant shall notify MDE WMA by certified mail when withdrawals for the uses specified in this appropriation have been initiated. This appropriation shall expire if water withdrawal is not commenced within two years after the effective date of issuance of the CPCN. The time limit may be extended for good cause, at the discretion of MDE WMA, upon written request to MDE WMA prior to the expiration of the two-year period. Withdrawal associated with plant construction qualifies as initiation.
31. *Change of Operations.* Mirant shall report any anticipated change in appropriation, which may result in a new or different withdrawal, quantity, source, or place of use of water, to MDE WMA by submission of a new application.

32. *Triennial Review.* MDE WMA shall review the appropriation every three years (triennial review). Mirant will be queried every three years regarding water withdrawal under the terms and conditions of this appropriation. Failure to return the triennial review query will result in suspension or revocation of this appropriation.
33. *Appropriation Renewal.* This appropriation will expire twelve years from the date that the CPCN was issued. In order to renew the appropriation, Mirant shall file a renewal application with MDE WMA no later than 45 days prior to the expiration. MDE WMA may at any time (including triennial review or when a change application is submitted) revise any condition of this appropriation or add additional conditions concerning the character, amount, means and manner of the appropriation, which may be necessary to properly protect, control and manage the water resources of the State. Condition revisions and additions will be accompanied by issuance of a revised appropriation.
34. *Right of Entry.* Mirant shall allow authorized representatives of MDE WMA and the Public Service Commission staff access to the facility to conduct inspections and evaluations necessary to assure compliance with the conditions of this appropriation. Mirant shall provide such assistance as may be necessary to effectively and safely conduct such inspections and evaluations.
35. *Appropriation Suspension or Revocation.* MDE WMA may suspend or revoke this appropriation upon violation of the conditions of this appropriation, or upon violation of any regulation promulgated pursuant to Title 5 of the Environment Article, Annotated Code of Maryland (1996 replacement volume) as amended.
36. *Non-Transferable.* This appropriation is only transferable to a new owner if the new owner acquires prior authorization to continue this appropriation by filing a new application with MDE WMA. Authorization will be accomplished by issuance of a new appropriation permit by MDE WMA.
37. *Drought Period Emergency Restrictions.* If MDE WMA determines that a drought period or emergency exists, Mirant may be required under MDE WMA's direction to stop or reduce water withdrawal from the Potomac River. Any cessation or reduction of water withdrawal must continue for the duration of the drought period or emergency, or until MDE WMA directs Mirant that water withdrawal under standard appropriation conditions may be resumed.

38. *Consumptive Use Restrictions.* On days when the Interstate Commission of the Potomac River Basin Section for Cooperative Water Supply Operations orders a release of water from Jennings Randolph or Little Seneca reservoirs to provide for low flow augmentation, Mirant shall restrict maximum daily consumptive use associated with the scrubber operation and combustion turbine units to 1,000,000 gallons per day or less to comply with the provisions of COMAR 26.07.02B.
39. *Pond Storage.* Mirant shall provide a minimum of 7,000,000 gallons of water storage in an on-site pond for use during Potomac River low flow conditions. On days when the Interstate Commission of the Potomac River Basin Section for Cooperative Water Supply Operations orders a release of water from Jennings Randolph or Little Seneca reservoirs to provide for low flow augmentation, Mirant shall obtain any required water in excess of 1,000,000 million gallons per day of maximum daily consumptive use from the on-site storage pond. Mirant shall convey pond water into the scrubber while reducing the amount of water withdrawn from the discharge canal or re-circulating water line.
40. *Monitoring.* Mirant shall conduct the following monitoring activities in support of the surface water appropriation:
 - a) *Flow Measurement.* Measure all water withdrawn under this appropriation by a method approved by MDE WMA.
 - b) *Withdrawal Reports.* Submit to MDE WMA, semi-annually (July-December, no later than January 31 and January-June, no later than July 31), water withdrawal records. These records shall show the total quantity of water withdrawn each month under this appropriation, and the total quantity of water consumed.
41. *Construction Dewatering.* Mirant shall obtain a permit from MDE WMA for temporary dewatering during construction if the dewatering exceeds 10,000 gallons per day or 30 calendar days, including intermittent periods of non-pumping. The permit application for temporary dewatering during construction must be submitted to MDE six months in advance of the initiation of dewatering.

Water Discharge

42. The CPCN is not an authorization to discharge wastewater to waters of the State. Mirant shall obtain a revised discharge permit from MDE under the National Pollutant Discharge Elimination System (NPDES) for the Dickerson facility.

43. As directed by MDE WMA, Mirant shall revise its Stormwater Pollution Prevention Plan, incorporating best management practices to prevent runoff of contaminated stormwater from the proposed facility whenever there is a change in design, construction operation, material inventory or handling, or maintenance which may have a significant effect on pollution discharge potential or when the plan proves to be ineffective.

Terrestrial and Aquatic Ecology

44. Construction and operation of the Dickerson FGD facility shall be undertaken in accordance with this CPCN and shall comply with all applicable local, State, and Federal regulations, including but not limited to the following:
 - a) Nontidal Wetlands - COMAR 26.23.01 applies to activities conducted in nontidal wetlands.
 - b) Tidal Wetlands - COMAR 26.24.01 applies to activities conducted in tidal wetlands. Joint Permits for activities in tidal wetlands are made to the U.S. Army Corps of Engineers and MDE.
 - c) Waterway Construction - COMAR 26.17.04 applies to activities in State waterways.
 - d) Water Quality and Water Pollution Control - COMAR 26.08.01 through COMAR 26.08.04 applies to discharges to surface water and maintenance of surface water quality.
 - e) Erosion and Sediment Control - COMAR 26.09.01 applies to the preparation, submittal, review, approval, and enforcement of erosion and sediment control plans.
 - f) Forest Conservation - Maryland's Forest Conservation regulations, COMAR 08.19.01 through 08.19.06, applies to the development of local forest conservation programs, and the preparation of forest conservation plans.
45. All portions of the FGD and appurtenant facilities footprints disturbed during construction shall be stabilized immediately after the cessation of construction activities, followed by seed application, in accordance with the best management practices presented in the MDE document 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control, and as approved by Montgomery County. In wetlands and wetland buffers, seed application shall consist of the following species: annual ryegrass (*Lolium multiflorum*), millet (*Setaria italica*), barley (*Horedum* spp.), oats (*Uniola* spp.),

and/or rye (*Secale cereale*). Other non-persistent vegetation may be acceptable, but must be approved by MDE WMA. Kentucky 31 fescue shall not be used in wetlands or buffers.

By-Product Handling

46. Mirant shall secure the necessary agreement with the third party to accept 100 percent of the gypsum and off-specification gypsum by-product generated by Mirant. The agreement with the third party will specify where the gypsum and off-specification gypsum by-product is being used or disposed of, and will specify that acceptance of the by-product by the third party obligates the third party to manage the by-product so as to comply with all applicable requirements set forth in COMAR 26.04.07.19 and .20, and any applicable local requirements. Representatives of the Maryland PSC and PPRP shall be afforded access to the Dickerson generating facility at any reasonable time to inspect the agreement with the third party to accept 100 percent of the gypsum and off-specification gypsum by-product generated by Mirant. Mirant shall notify the Maryland PSC and PPRP of any change in the proposed plan for the third party to accept 100 percent of the gypsum and off-specification gypsum by-product at least 120 days in advance of implementing an alternate by-product management plan.
47. Mirant shall secure all necessary agreements with solid waste disposal facilities to accept 100 percent of the solid waste generated. Solid waste will include the waste from the wastewater treatment plant, and gypsum or off-specification gypsum by-product not accepted by the third party. Representatives of the Maryland PSC and PPRP shall be afforded access to the Dickerson generating facility at any reasonable time to inspect the agreements with solid waste disposal facilities to accept 100 percent of the solid waste generated. Mirant shall notify the Maryland PSC and PPRP of any change in the proposed plan to dispose of 100 percent of the solid waste at solid waste disposal facilities at least 120 days in advance of implementing an alternate solid waste disposal plan.
48. The CPCN is not authorization to design, construct and operate an industrial waste landfill. Mirant shall obtain a permit from MDE Waste Management Administration if Mirant determines the need to design, construct and operate an industrial waste landfill to dispose of gypsum or off-specification gypsum by-product, or other non-hazardous solid waste. If construction of a new industrial waste landfill is pursued, Mirant shall obtain the permit, and design, construct and operate the landfill so as to comply with all applicable requirements set forth in COMAR 26.04.07.19 and .20, and any applicable local requirements.

Noise Impacts

49. Mirant shall design and operate the air pollution control project in a manner that complies with Maryland noise regulations and with Montgomery County ordinances related to noise levels.
50. No less than 12 months prior to the start of operation of the air pollution control project at Dickerson, Mirant shall submit an updated noise analysis demonstrating that the actual equipment to be installed will be operated in compliance with Maryland noise regulations and with Montgomery County ordinances related to noise emissions. The analysis shall be submitted to the PSC, PPRP and Montgomery County for review and approval.

Cultural Resources

51. Mirant shall establish Archeological Protection Zones for the Benjamin and Charles Shreve Farm and the Shreve House in order to protect these historic resources from inadvertent damage from construction activities. Mirant shall erect temporary protective fencing around the sites during construction.
52. Prior to construction, Mirant shall submit to the Maryland Historical Trust (MHT) a copy of training programs, or guidelines provided to Applicant inspectors or contractors, to identify and/or protect unforeseen archeological sites that may be revealed during construction of the project. If such relics are identified in the project area, Mirant, in consultation with and as approved by MHT, shall develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of the properties adversely affected by the project.

Traffic

53. During construction, Mirant shall retain a Traffic Management Specialist to manually control vehicle movements at the intersection of Martinsburg Road with MD 28.
54. Prior to construction, Mirant shall conduct a Traffic Impact Study in accordance with the Local Area Transportation Review (LATR) Guidelines of the Montgomery County Planning Board, as approved and adopted July 1, 2004, to determine if an unacceptable weekday peak-hour level of congestion will result from construction worker and truck traffic generated by construction activities at the Dickerson Generating Station. In situations where an unacceptable peak-hour level of congestion will exist, Mirant, in consultation with Transportation Planning staff, the Montgomery County Department of Public Works and

Transportation (DPWT) and the Maryland State Highway Administration (SHA), shall use these procedures to develop recommendations for specific intersection improvements, or other enhancements that would mitigate the transportation impact in these areas of local congestion. Mirant shall submit the recommendations to PPRP and the PSC for review and approval prior to the start of construction of the facility modifications.

55. Mirant shall instruct its contractors and employees to use MD 28 to Martinsburg Road as the primary means of access to the site, and to avoid using the portion of Martinsburg Road to the south of the main plant entrance as an alternate route to the facility.
56. Except in an emergency condition, including but not limited to, stoppage of rail deliveries for any reason to the Dickerson Generating Station, by acts of God, labor disputes, strikes, embargoes, shortage of supplies, fires, explosions, floods, insurrection, riots, breakdowns of or damage to plants, mines, equipment or facilities, acts of the public enemy, Mirant will not truck limestone to its Dickerson Generating Station. In the event an emergency exists, Mirant shall notify in writing the PSC Engineering staff, the Maryland State Highway Administration and the Montgomery County Department of Public Works and Transportation regarding the institution of truck activity. The company shall contact SHA's Motor Carrier Division 410-582-4564 or SHA's District 3 offices at 301-513-7300 or 800-749-0737, seventy-two (72) hours prior to commencing the trucking of limestone to the Dickerson Generating Station. Mirant shall consult with the Maryland State Highway Administration and the Montgomery County Department of Public Works and Transportation to identify truck routes and operating procedures that minimize the impact of truck traffic on the public. The trucking of limestone to the Dickerson Generating Station shall cease when the emergency conditions no longer exist.

In the event Mirant elects to transport limestone by truck to the Dickerson Generating Station for any reason other than an emergency event, Mirant shall seek modification of this CPCN.

57. Except in an emergency condition, including but not limited to, stoppage of rail deliveries for any reason to the Dickerson Generating Station, by acts of God, labor disputes, strikes, embargoes, shortage of supplies, fires, explosions, floods, insurrection, riots, breakdowns of or damage to plants, mines, equipment or facilities, acts of the public enemy, Mirant will not truck gypsum byproduct from its Dickerson Generating Station. In the event an emergency exists, Mirant shall notify in writing the PSC Engineering staff, the Maryland State Highway

Administration and the Montgomery County Department of Public Works and Transportation regarding the institution of truck activity. The company shall contact SHA's Motor Carrier Division 410-582-4564 or SHA's District 3 offices at 301-513-7300 or 800-749-0737, seventy-two (72) hours prior to commencing the trucking of gypsum byproduct from the Dickerson Generating Station. Mirant shall consult with the Maryland State Highway Administration and the Montgomery County Department of Public Works and Transportation to identify truck routes and operating procedures that minimize the impact of truck traffic on the public. The trucking of gypsum byproduct from the Dickerson Generating Station shall cease when the emergency conditions no longer exist.

In the event Mirant elects to transport gypsum byproduct by truck from the Dickerson Generating Station for any reason other than an emergency event, Mirant shall seek modification of this CPCN.

Emergency Preparedness and Security

58. Mirant shall provide to PPRP and the PSC copies of its security procedures, in particular those procedures addressing site and plant safety and security during construction and operation of the power plant. The procedures should address issues such as how Mirant plans to control vehicle and construction worker access and protect any vulnerable assets from being threatened from outside the perimeter of the property. The procedures should also identify how local, State, and Federal agencies would be coordinated in the event of a large-scale emergency. Security procedures should consider the effects of any proposed measures on the surrounding community and public property, and mitigate adverse effects to the maximum extent possible.

Visual Quality

59. Mirant shall utilize guidelines from the Illuminating Engineering Society of North America as applicable in the design of outdoor lighting systems to minimize light pollution and light trespass.

Land Use

60. Mirant shall design the facility in substantial conformity with the Montgomery County Zoning Requirements.

Table 1a - Mirant Dickerson Limestone Handling via Rail

Fugitive Emission Sources	Control Method
Transfer limestone from car bottom dumper to limestone unloading hoppers	Covered top bottom discharge below grade hoppers
Transfer limestone from unloading hoppers to belt feeders to limestone stackout conveyor	Enclosed conveyor and gallery
Transfer limestone from stackout conveyor to limestone storage pile	Enclosed pile storage
Transfer limestone from limestone storage to reclaim conveyor	Partially enclosed conveyor
Transfer limestone from reclaim conveyor to two limestone storage silos	Enclosed conveyor

Table 1b - Mirant Dickerson Limestone Handling via Truck

Fugitive Emission Sources	Control Method
Transfer limestone from truck dump to unloading hoppers	No controls
Transfer limestone from unloading hoppers to belt feeders to limestone stackout conveyor	Enclosed conveyor and gallery
Transfer limestone from stackout conveyor to limestone storage pile	Watering of pile as needed
Transfer limestone from limestone storage to reclaim conveyor	Partially enclosed conveyor
Transfer limestone from reclaim conveyor to two limestone storage silos	Enclosed conveyor

Table 2 – Mirant Dickerson Gypsum Handling via Truck

Fugitive Emission Sources	Control Method
Transfer gypsum from scrubber to discharge conveyors	Enclosed transfer and conveyor
Transfer gypsum from discharge conveyors to transfer house	Enclosed transfer house
Transfer gypsum from transfer house to storage pile	Enclosed storage pile
Transfer gypsum from storage pile to loadout conveyor	Partially enclosed building
Transfer gypsum from loadout conveyor to transfer house/loadout conveyor	Enclosed transfer house
Transfer gypsum from loadout conveyor to truck or rail	Enclosed

Appendix B
Agreement of Stipulation and Settlement

**BEFORE THE
PUBLIC SERVICE COMMISSION
OF MARYLAND**

IN THE MATTER OF THE APPLICATION)	
OF MIRANT MID-ATLANTIC, LLC)	
FOR A CERTIFICATE OF PUBLIC)	
CONVENIENCE AND NECESSITY AUTHORIZING)	CASE NO. 9087
THE MODIFICATION OF THE DICKERSON)	
GENERATING STATION IN MONTGOMERY)	
COUNTY, MARYLAND)	

**AGREEMENT OF
STIPULATION AND SETTLEMENT**

Mirant Mid-Atlantic, LLC (“Mirant Mid-Atlantic”), the Power Plant Research Program (“PPRP”) of the Department of Natural Resources (“DNR”), acting on behalf of a number of interested State agencies, the Staff of the Public Service Commission of Maryland (“Staff”), and the Office of the People’s Counsel (“OPC”) (collectively, the "Settling Parties"), by their undersigned counsel, agree as follows:

BACKGROUND

On November 3, 2006, Mirant Mid-Atlantic filed with the Public Service Commission of Maryland (the "Commission"), pursuant to Section 7-205 of the Public Utility Companies Article, an Application for a Public Certificate of Convenience and Necessity (“CPCN”) for Authority to Modify the Dickerson Generating Station (“Dickerson” or “the Plant”) in Montgomery County, Maryland (the “Application”). Specifically, Mirant Mid-Atlantic proposed to modify Dickerson by installing pollution control technologies on Dickerson Units 1, 2, and 3 for the control of emissions of SO₂ and mercury (the “Project”). Mirant Mid-Atlantic seeks approval of the Project in order to comply with Maryland’s recently enacted Healthy Air Act (“HAA”) (Chapter 23, 2006 Md. Laws (Senate Bill 154, House Bill 189)). The Application

included a description and environmental assessment of the Project. The matter was docketed as Case No. 9087, delegated to the Hearing Examiner Division, and assigned to Chief Hearing Examiner Bryan G. Moorhouse. On January 3, 2007, Mirant Mid-Atlantic filed the testimony of Mr. Mark E. Green and Mr. Kennard F. Kosky in support of its application. On February 13, 2007, Mirant Mid-Atlantic also filed the testimony of Mr. Robert U. Patrick in support of its application. A hearing for examination of Mirant Mid-Atlantic's direct testimony was held on February 15, 2007.

PPRP, acting in concert with the Maryland Department of the Environment ("MDE") and other interested State agencies, conducted an environmental review of the impacts of the proposed Project and developed a set of conditions recommended to ensure the construction and operation of the proposed modification will meet or exceed the requirements of applicable environmental statutes and regulations and pose no undue detrimental impacts on the surrounding community. On March 19, 2007, PPRP, acting on behalf of the State agencies, filed with the Commission an Environmental Review of the Project, its supporting testimony, and a draft of recommended conditions. Also on March 19, 2007, a letter on behalf of DNR and MDE was filed indicating those agencies' view that the "project will provide significant air quality benefits to the State and the mid-Atlantic region as a whole" and that the "site is suitable and that the plant can be modified and operated in accordance with all applicable environmental regulations provided the Certificate incorporates the attached recommendations as conditions to the CPCN." An adjudicatory hearing on PPRP's supporting testimony and a hearing for public comment were held on April 17, 2007.

The Settling Parties have engaged in settlement negotiations to determine the final recommended licensing conditions. As a result of these settlement negotiations, the Settling

Parties agreed to enter into this “Agreement of Stipulation and Settlement” (“Agreement”) and to incorporate the Final Recommended Licensing Conditions (“Final Recommended Conditions,” attached hereto as “Exhibit A”) into the CPCN. The Final Recommended Conditions include the final recommendations of PPRP, Staff, and the OPC. Mirant Mid-Atlantic agrees to accept the Final Recommended Conditions if adopted in the form attached and the Settling Parties agree not to seek further Commission review of those Final Recommended Conditions in these proceedings. All of the Settling Parties are in agreement that the issuance of a CPCN for the Project, subject to the Final Recommended Conditions, will be in the public interest. The Settling Parties are also in agreement that the period for appealing from a proposed order approving this Agreement and recommending a CPCN incorporating the Final Recommended Conditions should be shortened to 7 days.

AGREEMENT

NOW, THEREFORE, the Settling Parties do hereby stipulate and agree as follows:

1. The Settling Parties recommend that the Commission issue a CPCN for the Project, subject to the Final Recommended Conditions set forth in Appendix A. The Settling Parties stipulate and agree that the issuance of a CPCN that incorporates the Final Recommended Conditions will be in the public interest and will serve the public convenience and necessity. In making this recommendation, the Settling Parties have taken into account each and all of the factors and considerations listed in Section 7-207(e) of the Public Utility Companies Article of the Maryland Code and the information contained in PPRP’s Environmental Review and supporting testimony.
2. The Settling Parties stipulate and agree that the construction and operation of the Project in accordance with the Final Recommended Conditions would meet or exceed the

requirements of all currently applicable environmental laws and regulations, including those relating to noise abatement and the control of air and water pollution.

3. The Settling Parties agree not to seek further review by the Commission if the Final Recommended Conditions are adopted as the conditions to the CPCN and waive any otherwise applicable appeal rights.

4. The Settling Parties recognize and agree that the provisions of the Final Recommended Conditions are interrelated and that those provisions, taken as a whole, constitute a comprehensive scheme for the mitigation of any adverse environmental effects and other adverse impacts that might otherwise result from the construction or operation of the Project. The provisions of the Final Recommended Conditions are interdependent, in that a change or addition made to address a concern in one aspect (*e.g.*, air pollution) could well have an unanticipated adverse effect or other unintended consequence with respect to another aspect (*e.g.*, water usage or pollution). The Settling Parties accordingly agree, and enter into this Agreement with the understanding that the Final Recommended Conditions should be accepted by the Commission without further change, addition, or other alteration of any kind.

5. The Settling Parties view the Final Recommended Conditions and this Agreement as a package, with all of the parts interrelating to each other. If the Final Recommended Conditions are changed, supplemented, or rejected by the Commission, this Agreement shall be deemed withdrawn and shall not constitute any part of the record in this proceeding or be used for any other purpose whatsoever. In the event the Commission determines not to accept and approve the Final Recommended Conditions and this Agreement in their entirety, the Settling Parties respectfully request that the Commission provide the Settling Parties an opportunity (i) to negotiate a modified Agreement to address the Commission's concerns or a contested settlement

agreement representing the terms of settlement that remain acceptable to some of the Parties, or (ii) to withdraw their support for this Agreement, to prepare and file briefs, and to proceed with further litigation of these issues.

6. This Agreement represents a compromise for the purposes of settlement and shall not be regarded as a precedent with respect to any future case. No Settling Party necessarily agrees or disagrees with the treatment of any particular item, any procedure followed, or the resolution of any particular issue in agreeing to this Agreement other than as specified herein, except that the Settling Parties agree that the resolution of the issues herein, taken as a whole, is in the public interest.

7. No Settling Party shall be deemed to have approved, accepted, agreed, or consented to any principle underlying or supposed to underlie any of the matters provided for in this Agreement, nor shall approval of this Settlement constitute in any respect a determination by the Commission as to the merits of any of the contentions or allegations which might be made by any of the Parties in the absence of settlement.

8. The discussions that produced this Agreement have been conducted on the understanding that all offers of settlement and discussions relating thereto are and shall be privileged and confidential, shall be without prejudice to the position of any party or participant presenting any such offer or participating in any such discussions, and are not to be used in any manner in connection with this proceeding or otherwise.

9. This Agreement may be executed in any number of identical counterparts, each of which when executed and delivered shall be an original, but all such counterparts shall constitute but one and the same instrument. Delivery by any party or its respective representatives of telecopied (counterpart) signature pages shall be as binding an execution and delivery of this

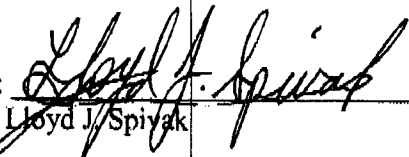
Agreement by such party as if the other parties had received the actual physical copy of the entire Agreement with an ink signature from such party.

10. The Settling Parties agree that the period for appealing from a proposed order approving this Agreement and recommending a CPCN incorporating the Final Recommended Conditions should be shortened to 7 days pursuant to Section 3-113(d)(2) of the Public Utility Companies Article of the Maryland Code.

WHEREFORE, the Settling Parties have caused their signatures to be affixed to this Agreement through and by their respective counsel.

Respectfully submitted,

STAFF OF THE MARYLAND PUBLIC SERVICE COMMISSION

By: 
Lloyd J. Spivak

MIRANT MID-ATLANTIC, LLC

By: _____
Deborah E. Jennings
DLA Piper US LLP

MARYLAND DEPARTMENT OF NATURAL RESOURCES
POWER PLANT RESEARCH PROGRAM

By: _____
Brent A. Bolea

OFFICE OF PEOPLE'S COUNSEL

By: _____
Michael C. Flannery

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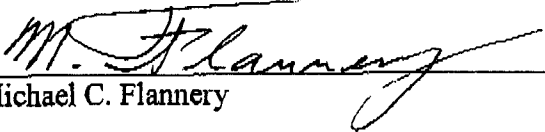
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Michael C. Flannery

Recommended CPCN Licensing Conditions

Case No. 9087

Mirant Mid-Atlantic, LLC

Dickerson Generating Station Air Pollution Control Project

General

1. Except as otherwise provided for in the following provisions, the application for the Certificate of Public Convenience and Necessity (CPCN) is considered to be part of this CPCN for the Dickerson Facility Air Pollution Control (APC) Project. The application consists of the original application received by the Maryland Public Service Commission (PSC) on November 3, 2006, the amended application received December 22, 2006, and subsequent amendments provided in testimony filed by Mirant on January 3, 2007. Construction of the facility shall be undertaken in accordance with the CPCN application and subsequent amendments. If there are any inconsistencies between the conditions specified below and the application, the conditions in this CPCN shall take precedence; if CPCN conditions incorporate federal or state laws through paraphrased language, where there is any inconsistency between the paraphrased language and the actual state or federal laws being paraphrased, the applicable federal or state laws shall take precedence.
2. If any provision of this CPCN shall be held invalid for any reason, the remaining provisions shall remain in full force and effect and such invalid provisions shall be considered severed and deleted from this CPCN.
3. Representatives of the Maryland PSC shall be afforded access to the Dickerson facility at any reasonable time to conduct inspections and evaluations necessary to assure compliance with the CPCN. Mirant shall provide such assistance as may be necessary to conduct such inspections and evaluations by representatives of the PSC effectively and safely.
4. Representatives of the Maryland Department of the Environment (MDE) and the Montgomery County Department of Environmental Protection shall be afforded access to the Dickerson facility at any reasonable time to conduct inspections and evaluations necessary to assure compliance with the CPCN requirements. Mirant shall provide such assistance as reasonably may be necessary to conduct such inspections and evaluations effectively and safely, which may include but need not be limited to the following:
 - a) inspecting construction authorized under this CPCN;

- b) sampling any materials stored or processed on site, or any waste, or discharge into the environment;
- c) inspecting any monitoring or recording equipment required by this CPCN or applicable regulations;
- d) having access to or copying any records required to be kept by Mirant pursuant to this CPCN or applicable regulations;
- e) obtaining any photographic documentation and evidence; and
- f) determining compliance with the conditions and regulations specified in the CPCN.

Air Quality

I. General Air Quality Requirements

- 5. MDE Air and Radiation Management Administration (ARMA) shall have concurrent jurisdiction with the PSC to enforce the air quality conditions of this CPCN.
- 6. For air permitting purposes, the Dickerson APC Project shall include installation and operation of a wet flue gas desulfurization (FGD) system on Dickerson Units 1, 2, and 3; sorbent injection equipment for removal of sulfuric acid mist (SAM); a single flue gas stack; limestone receiving, handling, and storage facilities; limestone slurry preparation facilities; gypsum by-product storage, handling, and loading facilities; wastewater treatment system for scrubber wastewater; solid waste storage and handling systems for scrubber and wastewater treatment solids; upgrades to the flue gas handling system to include new ductwork and two new booster fans; one emergency 265-hp diesel fire pump; and one nominal 500-hp diesel engine-driven quench pump for providing water for safe plant shutdown following unit trip.
- 7. In accordance with COMAR 26.11.02.04B, the air quality provisions expire if, as determined by ARMA:
 - a) Construction is not commenced within 18 months after the date of issuance of a final CPCN;

- b) Construction is substantially discontinued for a period of 18 months or more after it has commenced; or
 - c) Construction is not completed within a reasonable period of time after the issuance of a final CPCN.
8. Mirant shall construct a single exhaust stack that will serve the APC Project for Units 1, 2 and 3 with a nominal vertical height of 400 feet above ground level. During periods of maintenance, Mirant will utilize the existing 700-foot stack at the Dickerson plant for flue gas emissions from the APC project. The two existing 400-foot stacks shall be rendered inoperable within 6 months of when the APC Project and new exhaust stack become operational.
9. All requirements pertaining to air quality that apply to Mirant shall apply to all subsequent owners and/or operators of the facility. In the event of a transfer of control to an entity which is not affiliated with Mirant, or a change in ownership of the Facility, Mirant shall notify the succeeding owner/operator of the existence of the requirements of this CPCN pertaining to air quality by letter and shall send a copy of that letter to the PSC and ARMA.

II. Applicable Air Quality Regulations

10. The Dickerson facility is subject to all applicable federally enforceable State air quality requirements including, but not limited to, the following regulations:
- a) COMAR 26.11.01.10 – Requires Mirant to install Continuous Opacity Monitoring (COM) systems to monitor opacity and Continuous Emissions Monitoring (CEM) systems to monitor SO₂, NO_x and either O₂ or CO₂ from each boiler; and to meet applicable CEM installation, certification, operating, monitoring, testing, and malfunction requirements in 40 CFR Part 60, 40 CFR Part 75, or 40 CFR Part 51, Appendix P, §3.3-3.8 or §3.9 as incorporated by reference;
 - b) COMAR 26.11.03.19 – Requires Mirant to update the existing Part 70 Operating Permit (No. 24-031-00019) to include applicable APC Project requirements;
 - c) COMAR 26.11.06.02C(2) – Prohibits Mirant from causing or permitting the discharge of emissions from any installation or building (i.e., confined non-fuel-burning equipment sources), other than water in an uncombined form, which are visible to human observers. The visible emissions standard do not apply to emissions during startup and process modifications or adjustments, or occasional cleaning of control equipment, if: (a) the visible emissions are

not greater than 40% opacity; and (b) the visible emissions do not occur for more than 6 consecutive minutes in any 60-minute period;

- d) COMAR 26.11.06.03B(2)(a) – Prohibits Mirant from discharging into the outdoor atmosphere from any non-fuel burning confined source (i.e., the limestone, gypsum, and other material storage silos, enclosed material transfer points, etc.), particulate matter in excess of 0.03 grains per dry standard cubic feet (gr/SCFD) (68.7 mg/dscm);
- e) COMAR 26.11.06.03C(1) – Prohibits Mirant from causing or permitting emissions from an unconfined source without taking reasonable precautions to prevent particulate matter from becoming airborne;
- f) COMAR 26.11.06.03D – Prohibits Mirant from causing or permitting any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. For the unloading, loading and transfer of the materials included in the Dickerson APC Project (limestone, gypsum, sorbent to control sulfuric acid mist emissions, and hydrated lime in wastewater treatment plant operations), these reasonable precautions shall include, but not be limited to, the following when appropriate as determined by the control officer:
 - i) Use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.
 - ii) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dusts.
 - iii) Installation and use of hoods, fans, and dust collectors to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting of buildings or other similar operations.
 - iv) Covering, at all times when in motion, open-bodied vehicles transporting materials likely to create air pollution. Alternate means may be employed to achieve the same results as would covering the vehicles.
 - v) The paving of roadways and their maintenance in clean condition.

- vi) The prompt removal from paved streets of earth or other material which has been transported there by trucks or earth moving equipment or erosion by water.

- g) COMAR 26.11.06.12 – Prohibits Mirant from constructing, modifying, or operating, or causing to be constructed, modified, or operated, a New Source Performance Standard source as defined in COMAR 26.11.01.01C, which results or will result in violation of the provisions of 40 CFR 60;

- h) COMAR 26.11.09.03 – When determining compliance with applicable particulate matter emission standards from the boiler stacks (concentration requirement expressed as grains per standard cubic foot or milligrams per cubic meter of dry exhaust gas), Mirant shall correct to 50 percent excess air. In addition, when determining compliance with a mass-based particulate matter emission limit expressed as pounds per million Btu (lb/MMBtu), CPSG shall use the procedures for determining particulate matter emission rates in 40 CFR Part 60 Appendix A, Method 19;

- i) COMAR 26.11.09.05B(2) through B(4) – Prohibits the discharge of emissions from the quench pump engine, when operating at idle, greater than 10 percent opacity, and when in operating mode, greater than 40 percent opacity. Exceptions: (i) limitations when operating at idle do not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system; (ii) limitations when operating at idle do not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods: engines that are idled continuously when not in service: 30 minutes and all other engines: 15 minutes; (iii) limitations when in idle and operating modes do not apply while maintenance, repair, or testing is being performed by qualified mechanics;

- j) COMAR 26.11.09.06(B)(3) – Prohibits Mirant from discharging particulate matter into the atmosphere caused by the combustion of solid fuel in Units 1, 2 and 3 in excess of 0.03 gr/dscf, corrected to 50% excess air;

- k) COMAR 26.11.09.07A(2)(b) – Prohibits Mirant from burning distillate fuel oil in the quench pumps with a sulfur content greater than 0.3 percent;

- l) COMAR 26.11.27 – Requires Mirant to comply with the applicable emissions limitations for NO_x, SO₂ and mercury, and the monitoring and recordkeeping requirements contained in COMAR 26.11.27.

11. The Dickerson facility is subject to all applicable State-only enforceable air quality requirements including, but not limited to, the following regulations:
 - a) COMAR 26.11.06.08 – Prohibits Mirant from operating or maintaining a source in such a manner that a nuisance is created.
 - b) COMAR 26.11.06.09 – Prohibits Mirant from causing or permitting the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created.

III. New Source Performance Standard (NSPS) Requirements

12. The equipment at Dickerson identified in Tables 1a, 1b, and 2 are subject to NSPS 40 CFR 60, Subpart OOO–Standards of Performance for Non-metallic Mineral Processing Plants (40 CFR §60.670) and the associated notification and testing requirements of 40 CFR §60.7, §60.8 and §60.11 whose requirements include, but are not limited to the following:
 - a) Mirant shall not cause to be discharged into the atmosphere gases from any transfer point along the belt conveyor systems, or any other stack, particulate matter in concentrations greater than 0.022 gr/dscf or opacity that is greater than seven percent;
 - b) Mirant shall not cause to be discharged into the atmosphere from any transfer point along the belt conveyor system or from any other affected facility any fugitive emissions which exhibit greater than 10 percent opacity. If the transfer point is totally enclosed in a building or enclosure, then there are no fugitive emissions allowed from the building unless they are directed through a vent, which is limited by Condition a);
 - c) Mirant shall not cause to be discharged into the atmosphere from any crusher, at which a capture system is not used, fugitive emissions which exhibit greater than 15 percent opacity;
 - d) Mirant shall not cause to be discharged into the atmosphere from any baghouse that controls emissions from only an individual enclosed storage bin, stack emissions which exhibit greater than 7 percent opacity.
13. The 500-horsepower diesel engine-driven quench pump and the 265-horsepower diesel fire pump at the Dickerson facility is subject to NSPS 40 CFR 60, Subpart IIII–Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR §60.4205) and the associated fuel,

monitoring, compliance, testing, notification, reporting, and recordkeeping requirements (40 CFR §60.4200 *et seq.*), and related applicable provisions of 40 CFR §60.7 and §60.8.

IV. Operational Restrictions and Limitations

14. Mirant shall:

- a) Install, maintain and operate the new limestone, gypsum, unloading, storage, transfer and distribution equipment and systems with associated particulate matter control methods listed in Tables 1a-b and Table 2 in accordance with vendor recommendations and best management practices, and in such a manner as to ensure full and continuous compliance with all applicable regulations;
- b) At least 60 days prior to the initial startup date, prepare and submit to the PSC and ARMA a Best Management Practices (BMP) Plan for the new limestone, gypsum, SAM control sorbent, hydrated lime transfer, storage and distribution equipment listed in Tables 1a-b and Table 2 that contains an explanation of the reasonable precautions that will be used to prevent particulate matter from this equipment from becoming airborne. The Plan shall include a description of the types and frequency of inspections and/or preventative maintenance (PM) that will be conducted. In addition, Mirant shall define the associated records that will be maintained to document inspections and PMs have been conducted as proposed;
- c) At least 60 days prior to replacing, eliminating or in any manner changing any of the particulate control systems listed in Tables 1a-b and Table 2, Mirant shall submit a request to ARMA to amend the facility's BMP Plan. The request shall specify the proposed changes in emissions control systems; shall demonstrate that changes will not result in any increases in any pollutants; and shall update Tables 1a-b and 2 of this CPCN. Mirant shall be authorized to make the changes proposed in the written request unless ARMA denies the request within 30 days of the receipt of the request.

V. Testing

15. Within 60 days of the initial start-up date, Mirant shall provide ARMA with a Performance Test Plan. The Plan shall describe:

- a) The proposed methods for conducting the initial performance test that will demonstrate compliance with the NSPS Subpart OOO and IIII. The Test

Plan shall comply with the requirements of §60.8 and §60.11, and any other applicable standards;

- b) The proposed methods for testing SAM and SO₂ emissions from Dickerson Units 1, 2, and 3.
16. Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of the APC Project, Mirant shall conduct performance tests outlined in Mirant's Performance Test Plan.
 17. In accordance with COMAR 26.11.01.04A, Mirant may be required by ARMA to conduct additional stack tests to determine compliance with applicable air quality requirements.

VI. Monitoring

18. Mirant shall operate continuous emissions monitoring systems (CEMS) for SO₂, NO_x, and either oxygen or CO₂ as required, under 40 CFR Part 75, and continuous opacity monitoring systems (COMS) for Dickerson Units 1, 2 and 3.
19. At least 30 days prior to the anticipated date of start-up of the FGD system, Mirant shall provide MDE-ARMA with a continuous emissions monitoring plan for mercury for Dickerson Units 1, 2 and 3.

VII. Recordkeeping and Reporting

20. Mirant shall submit to ARMA and U.S. EPA written reports of the results of all performance tests conducted to demonstrate compliance with the standards set forth in applicable NSPS within 60 days of completion of the tests.
21. Final results of the stack tests required by this CPCN must be submitted to ARMA within 60 days after completion of the test. Analytical data shall be submitted to ARMA directly from the emission testing company.
22. Mirant shall furnish written notification to ARMA and EPA of the following events for the limestone unloading and handling system and the quench pump:
 - a) the date construction commenced within 30 days after such date;
 - b) the anticipated startup date, not more than 60 or less than 30 days prior to such date;
 - c) the actual startup date within 15 days after such date; and

- d) the anticipated date of compliance stack testing at least 30 days prior to such date.
23. Mirant shall furnish written notification to MDE-ARMA and PPRP of the following events for all portions of the Dickerson APC project:
- a) the date construction commenced within 30 days after such date;
 - b) the anticipated startup date, not more than 60 or less than 30 days prior to such date; and
 - c) the actual startup date within 15 days after such date
24. All records and logs required by this CPCN shall be maintained at the facility for at least 5 years after the completion of the calendar year in which they were collected. These data shall be readily available for inspection by representatives of ARMA.
25. All air quality notifications and reports required by this CPCN shall be submitted to:

Administrator, Compliance Program
Air and Radiation Management Administration
1800 Washington Boulevard
Baltimore, Maryland 21230

26. All notifications and reports required by 40 CFR 60 Subpart OOO and Subpart IIII and 40 CFR 63, unless specified otherwise, shall be submitted to:

Regional Administrator, US Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

VIII. Miscellaneous

27. Mirant is subject to the National Emission Standard for Asbestos under 40 CFR 61, Subpart M, specifically the standards for demolition and renovation of 40 CFR 61.145, and COMAR 26.11.21 for demolition activities, as applicable, of asbestos containing materials that occur to construct the FGD project.
28. Informational copies of the reports required regarding change of ownership, major milestones, stack test protocols, and stack testing results, as described in

Conditions 9, 14b, 14c, 15, 19, 20, 22, and 23 shall be sent to the Power Plant Research Program at:

Power Plant Assessment Division
Department of Natural Resources
Tawes State Office Building, B-3
580 Taylor Avenue
Annapolis, Maryland 21401

Water Appropriation

29. This CPCN authorizes Mirant to appropriate and use surface waters of the State. Appropriation means a withdrawal, movement, or diversion of water from its source of natural occurrence. The appropriation will be tracked under MDE Water Management Administration (WMA) permit number MO2006S011(01). The surface water appropriation will be subject to the following conditions:
- a) *Allocation.* The surface water withdrawal granted by this appropriation is limited to a daily average of 890,000 gallons on a yearly basis and a maximum daily withdrawal of 1,220,000 gallons. Consumptive use is limited to 87 percent of these values, or a daily average of 780,000 gallons and a maximum daily consumptive use of 1,060,000 gallons. The daily average allocation includes an additional 20,000 gallons to account for replenishment of the 4,500,000 gallons of on-site storage.
 - b) *Use.* The water is to be used to supply the flue gas desulfurization scrubber, and to supply 4,500,000 gallons of storage in an on-site pond to comply with the consumptive use regulations.
 - c) *Source.* The water shall be withdrawn from the Potomac River.
 - d) *Location.* The point of withdrawal shall be located at the existing discharge canal of the once-through cooling system or from a re-circulating water line at the Dickerson Generating Station in Montgomery County, Maryland.
30. *Initiation of Withdrawal.* Mirant shall notify MDE WMA by certified mail when withdrawals for the uses specified in this appropriation have been initiated. This appropriation shall expire if water withdrawal is not commenced within two years after the effective date of issuance of the CPCN. The time limit may be extended for good cause, at the discretion of MDE WMA, upon written request to MDE WMA prior to the expiration of the two-year period. Withdrawal associated with plant construction qualifies as initiation.

31. *Change of Operations.* Mirant shall report any anticipated change in appropriation, which may result in a new or different withdrawal, quantity, source, or place of use of water, to MDE WMA by submission of a new application.
32. *Triennial Review.* MDE WMA shall review the appropriation every three years (triennial review). Mirant will be queried every three years regarding water withdrawal under the terms and conditions of this appropriation. Failure to return the triennial review query will result in suspension or revocation of this appropriation.
33. *Appropriation Renewal.* This appropriation will expire twelve years from the date that the CPCN was issued. In order to renew the appropriation, Mirant shall file a renewal application with MDE WMA no later than 45 days prior to the expiration. MDE WMA may at any time (including triennial review or when a change application is submitted) revise any condition of this appropriation or add additional conditions concerning the character, amount, means and manner of the appropriation, which may be necessary to properly protect, control and manage the water resources of the State. Condition revisions and additions will be accompanied by issuance of a revised appropriation.
34. *Right of Entry.* Mirant shall allow authorized representatives of MDE WMA and the Public Service Commission staff access to the facility to conduct inspections and evaluations necessary to assure compliance with the conditions of this appropriation. Mirant shall provide such assistance as may be necessary to effectively and safely conduct such inspections and evaluations.
35. *Appropriation Suspension or Revocation.* MDE WMA may suspend or revoke this appropriation upon violation of the conditions of this appropriation, or upon violation of any regulation promulgated pursuant to Title 5 of the Environment Article, Annotated Code of Maryland (1996 replacement volume) as amended.
36. *Non-Transferable.* This appropriation is only transferable to a new owner if the new owner acquires prior authorization to continue this appropriation by filing a new application with MDE WMA. Authorization will be accomplished by issuance of a new appropriation permit by MDE WMA.
37. *Drought Period Emergency Restrictions.* If MDE WMA determines that a drought period or emergency exists, Mirant may be required under MDE WMA's

direction to stop or reduce water withdrawal from the Potomac River. Any cessation or reduction of water withdrawal must continue for the duration of the drought period or emergency, or until MDE WMA directs Mirant that water withdrawal under standard appropriation conditions may be resumed.

38. *Consumptive Use Restrictions.* On days when Mirant receives email or other notification from the Interstate Commission of the Potomac River Basin (ICPRB) that the ICPRB Section for Cooperative Water Supply Operations is ordering a release of water from Jennings Randolph or Little Seneca reservoirs to provide for low flow augmentation, or has other reason to believe that the ICPRB is ordering such a release from Jennings Randolph or Little Seneca reservoirs, Mirant shall restrict maximum daily consumptive use associated with the scrubber operation and combustion turbine units to 1,000,000 gallons per day or less to comply with the provisions of COMAR 26.17.07.02B. Mirant shall be responsible for providing the ICPRB with a current functional email address, telephone number and address for the appropriate Mirant contact person or persons. Mirant shall be responsible for promptly updating contact information with ICPRB whenever Mirant's contact person(s) or his/her contact information changes, or as is otherwise necessary in order to maintain seamless contact between ICPRB and Mirant.
39. *Pond Storage.* Mirant shall store 4,500,000 gallons of water in on-site ponds for use during Potomac River low flow conditions. When notified in accordance with Condition 38, Mirant shall obtain any required water in excess of 1,000,000 million gallons per day of maximum daily consumptive use from the on-site storage ponds. Mirant shall convey pond water into the scrubber while reducing the amount of water withdrawn from the discharge canal or re-circulating water line.
40. *Monitoring.* Mirant shall conduct the following monitoring activities in support of the surface water appropriation:
 - a) *Flow Measurement.* Measure all water withdrawn under this appropriation by a method approved by MDE WMA.
 - b) *Withdrawal Reports.* Submit to MDE WMA, semi-annually (July-December, no later than January 31 and January-June, no later than July 31), water withdrawal records. These records shall show the total quantity of water withdrawn each month under this appropriation, and the total quantity of water consumed.

41. *Construction Dewatering.* Mirant shall obtain a permit from MDE WMA for temporary dewatering during construction if the dewatering exceeds 10,000 gallons per day or 30 calendar days, including intermittent periods of non-pumping. The permit application for temporary dewatering during construction must be submitted to MDE six months in advance of the initiation of dewatering.

Water Discharge

42. The CPCN is not an authorization to discharge wastewater to waters of the State. Mirant shall obtain a revised discharge permit from MDE under the National Pollutant Discharge Elimination System (NPDES) for the Dickerson facility.
43. As directed by MDE WMA, Mirant shall revise its Stormwater Pollution Prevention Plan, incorporating best management practices to prevent runoff of contaminated stormwater from the proposed facility whenever there is a change in design, construction operation, material inventory or handling, or maintenance which may have a significant effect on pollution discharge potential or when the plan proves to be ineffective.

Terrestrial and Aquatic Ecology

44. Construction and operation of the Dickerson FGD facility shall be undertaken in accordance with this CPCN and shall comply with all applicable local, State, and Federal regulations, including but not limited to the following:
 - a) Nontidal Wetlands - COMAR 26.23.01 applies to activities conducted in nontidal wetlands.
 - b) Tidal Wetlands - COMAR 26.24.01 applies to activities conducted in tidal wetlands. Joint Permits for activities in tidal wetlands are made to the U.S. Army Corps of Engineers and MDE.
 - c) Waterway Construction - COMAR 26.17.04 applies to activities in State waterways.
 - d) Water Quality and Water Pollution Control - COMAR 26.08.01 through COMAR 26.08.04 applies to discharges to surface water and maintenance of surface water quality.
 - e) Erosion and Sediment Control - COMAR 26.09.01 applies to the preparation, submittal, review, approval, and enforcement of erosion and sediment control plans.

- f) Forest Conservation - Maryland's Forest Conservation regulations, COMAR 08.19.01 through 08.19.06, applies to the development of local forest conservation programs, and the preparation of forest conservation plans.
45. All portions of the FGD and appurtenant facilities footprints disturbed during construction shall be stabilized immediately after the cessation of construction activities, followed by seed application, in accordance with the best management practices presented in the MDE document 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control, and as approved by Montgomery County. In wetlands and wetland buffers, seed application shall consist of the following species: annual ryegrass (*Lolium multiflorum*), millet (*Setaria italica*), barley (*Horedum* spp.), oats (*Uniola* spp.), and/or rye (*Secale cereale*). Other non-persistent vegetation may be acceptable, but must be approved by MDE WMA. Kentucky 31 fescue shall not be used in wetlands or buffers.

By-Product Handling

46. Mirant shall secure all necessary agreements with users or resellers of gypsum to accept 100 percent of the gypsum and off-specification gypsum by-product generated by Mirant at Dickerson, provided, however, that should Mirant be unable to secure agreement(s) for acceptance of 100 percent of the gypsum and off-specification gypsum, Mirant shall dispose of the unclaimed portion in accordance with Condition 47. Representatives of the Maryland PSC and PPRP shall be afforded access to the Dickerson generating facility at any reasonable time to inspect the agreement(s). Mirant shall notify the Maryland PSC and PPRP of any change in the proposed plan for acceptance of 100 percent of the gypsum and off-specification gypsum by-product at least 120 days in advance of implementing an alternate by-product management plan.
47. Mirant shall secure all necessary agreements with solid waste disposal facilities to accept 100 percent of the solid waste generated or provide an alternative plan for disposition of the solid waste that meets all statutory and regulatory requirements and is acceptable to the Maryland PSC after review by MDE and PPRP. Solid waste will include the waste from the wastewater treatment plant, and gypsum or off-specification gypsum by-product not accepted by the third party. Representatives of the Maryland PSC and PPRP shall be afforded access to the Dickerson generating facility at any reasonable time to inspect the agreements with solid waste disposal facilities to accept 100 percent of the solid waste generated. Mirant shall notify the Maryland PSC and PPRP of any change in the proposed plan to dispose of 100 percent of the solid waste at solid waste

disposal facilities at least 120 days in advance of implementing an alternate solid waste disposal plan.

48. The CPCN is not authorization to design, construct and operate an industrial waste landfill. Mirant shall obtain a permit from MDE Waste Management Administration if Mirant determines the need to design, construct and operate an industrial waste landfill to dispose of gypsum or off-specification gypsum by-product, or other non-hazardous solid waste. If construction of a new industrial waste landfill is pursued, Mirant shall obtain the permit, and design, construct and operate the landfill so as to comply with all applicable requirements set forth in COMAR 26.04.07.19 and .20, and any applicable local requirements.

Noise Impacts

49. Mirant shall design and operate the air pollution control project in a manner that complies with Maryland noise regulations and with Montgomery County ordinances related to noise levels.
50. No less than 12 months prior to the start of operation of the air pollution control project at Dickerson, Mirant shall submit an updated noise analysis demonstrating that the actual equipment to be installed will be operated in compliance with Maryland noise regulations and with Montgomery County ordinances related to noise emissions. The analysis shall be submitted to the PSC, PPRP and Montgomery County for review and approval.

Cultural Resources

51. Mirant shall establish Archeological Protection Zones for the Benjamin and Charles Shreve Farm and the Shreve House in order to protect these historic resources from inadvertent damage from construction activities. Mirant shall erect temporary protective fencing around the sites during construction.
52. Prior to construction, Mirant shall submit to the Maryland Historical Trust (MHT) a copy of training programs, or guidelines provided to Applicant inspectors or contractors, to identify and/or protect unforeseen archeological sites that may be revealed during construction of the project. If such relics are identified in the project area, Mirant, in consultation with and as approved by MHT, shall develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of the properties adversely affected by the project.

Traffic

53. During construction, Mirant shall retain a Traffic Management Specialist to manually control vehicle movements at the intersection of Martinsburg Road with MD 28 during morning and evening peak traffic periods and at times of anticipated large deliveries.
54. Prior to construction (not to include site grading, demolition, and relocation of existing underground utilities), Mirant shall conduct a Traffic Impact Study in accordance with the Local Area Transportation Review (LATR) Guidelines of the Montgomery County Planning Board, as approved and adopted July 1, 2004, to determine if an unacceptable weekday peak-hour level of congestion will result from construction worker and truck traffic generated by construction activities at the Dickerson Generating Station. In situations where an unacceptable peak-hour level of congestion will exist, Mirant, in consultation with Transportation Planning staff, the Montgomery County Department of Public Works and Transportation (DPWT) and the Maryland State Highway Administration (SHA), shall use these procedures to develop recommendations for specific intersection improvements, or other enhancements that would mitigate the transportation impact in these areas of local congestion. Mirant shall submit the recommendations to PPRP and the PSC for review and approval prior to the start of construction of the facility modifications.
55. Mirant shall instruct its contractors and employees to use MD 28 to Martinsburg Road as the primary means of access to the site, and to avoid using the portion of Martinsburg Road to the south of the main plant entrance as an alternate route to the facility.
56. Except in an emergency condition, including but not limited to, stoppage of rail deliveries for any reason to the Dickerson Generating Station, by acts of God, labor disputes, strikes, embargoes, shortage of supplies, fires, explosions, floods, insurrection, riots, breakdowns of or damage to plants, mines, equipment or facilities, acts of the public enemy, Mirant will not truck limestone to its Dickerson Generating Station. In the event an emergency exists, Mirant shall notify in writing the PSC Engineering staff, the Maryland State Highway Administration and the Montgomery County Department of Public Works and Transportation regarding the institution of truck activity. The company shall contact SHA's Motor Carrier Division 410-582-4564 or SHA's District 3 offices at 301-513-7300 or 800-749-0737, seventy-two (72) hours prior to commencing the trucking of limestone to the Dickerson Generating Station. Mirant shall consult with the Maryland State Highway Administration and the Montgomery County Department of Public Works and Transportation to identify truck routes and

operating procedures that minimize the impact of truck traffic on the public. The trucking of limestone to the Dickerson Generating Station shall cease when the emergency conditions no longer exist.

In the event Mirant elects to transport limestone by truck to the Dickerson Generating Station for any reason other than an emergency event, Mirant shall seek modification of this CPCN.

57. Except in an emergency condition, including but not limited to, stoppage of rail deliveries for any reason to the Dickerson Generating Station, by acts of God, labor disputes, strikes, embargoes, shortage of supplies, fires, explosions, floods, insurrection, riots, breakdowns of or damage to plants, mines, equipment or facilities, acts of the public enemy, Mirant will not truck gypsum byproduct from its Dickerson Generating Station. In the event an emergency exists, Mirant shall notify in writing the PSC Engineering staff, the Maryland State Highway Administration and the Montgomery County Department of Public Works and Transportation regarding the institution of truck activity. The company shall contact SHA's Motor Carrier Division 410-582-4564 or SHA's District 3 offices at 301-513-7300 or 800-749-0737, seventy-two (72) hours prior to commencing the trucking of gypsum byproduct from the Dickerson Generating Station. Mirant shall consult with the Maryland State Highway Administration and the Montgomery County Department of Public Works and Transportation to identify truck routes and operating procedures that minimize the impact of truck traffic on the public. The trucking of gypsum byproduct from the Dickerson Generating Station shall cease when the emergency conditions no longer exist.

In the event Mirant elects to transport gypsum byproduct by truck from the Dickerson Generating Station for any reason other than an emergency event, Mirant shall seek modification of this CPCN.

Emergency Preparedness and Security

58. Mirant shall provide the PPRP and the PSC with access to Mirant's security procedures, in particular those procedures addressing site and plant safety and security during construction and operation of the power plant. The procedures should address issues such as how Mirant plans to control vehicle and construction worker access and protect any vulnerable assets from being threatened from outside the perimeter of the property. The procedures should also identify how local, State, and Federal agencies would be coordinated in the event of a large-scale emergency. Security procedures should consider the

effects of any proposed measures on the surrounding community and public property, and mitigate adverse effects to the maximum extent possible.

Visual Quality

59. Mirant shall utilize guidelines from the Illuminating Engineering Society of North America as applicable in the design of outdoor lighting systems to minimize light pollution and light trespass.

Land Use

60. Mirant shall design the facility in substantial conformity with the Montgomery County Zoning Requirements.

Table 1a - Mirant Dickerson Limestone Handling via Rail

Fugitive Emission Sources	Control Method
Transfer limestone from car bottom dumper to limestone unloading hoppers	Covered top bottom discharge below grade hoppers
Transfer limestone from unloading hoppers to belt feeders to limestone stackout conveyor	Enclosed conveyor and gallery
Transfer limestone from stackout conveyor to limestone storage pile	Enclosed pile storage
Transfer limestone from limestone storage to reclaim conveyor	Partially enclosed conveyor
Transfer limestone from reclaim conveyor to two limestone storage silos	Enclosed conveyor

Table 1b - Mirant Dickerson Limestone Handling via Truck

Fugitive Emission Sources	Control Method
Transfer limestone from truck dump to unloading hoppers	No controls
Transfer limestone from unloading hoppers to belt feeders to limestone stackout conveyor	Enclosed conveyor and gallery
Transfer limestone from stackout conveyor to limestone storage pile	Watering of pile as needed
Transfer limestone from limestone storage to reclaim conveyor	Partially enclosed conveyor
Transfer limestone from reclaim conveyor to two limestone storage silos	Enclosed conveyor

Table 2 – Mirant Dickerson Gypsum Handling via Truck

Fugitive Emission Sources	Control Method
Transfer gypsum from scrubber to discharge conveyors	Enclosed transfer and conveyor
Transfer gypsum from discharge conveyors to transfer house	Enclosed transfer house
Transfer gypsum from transfer house to storage pile	Enclosed storage pile
Transfer gypsum from storage pile to loadout conveyor	Partially enclosed building
Transfer gypsum from loadout conveyor to transfer house/loadout conveyor	Enclosed transfer house
Transfer gypsum from loadout conveyor to truck or rail	Enclosed

Appendix C
Proposed Order of Hearing Examiner

ORDER NO. 81516

IN THE MATTER OF THE APPLICATION	*	BEFORE THE
OF MIRANT MID-ATLANTIC, LLC FOR A		PUBLIC SERVICE COMMISSION
CERTIFICATE OF PUBLIC CONVENIENCE	*	OF MARYLAND
AND NECESSITY FOR AUTHORITY TO		
MODIFY THE DICKERSON GENERATING	*	
STATION IN MONTGOMERY COUNTY,		
MARYLAND.	*	_____
		CASE NO. 9087
_____	*	_____

PROPOSED ORDER OF HEARING EXAMINER

Appearances:

Deborah E. Jennings and F. William Dubois, for Mirant Mid-Atlantic, LLC.

Brent Bolea, for the Power Plant Research Program of the Maryland Department of Natural Resources.

Michael Flannery, for the Office of People's Counsel.

Lloyd J. Spivak, for the Staff of the Public Service Commission of Maryland.

On November 3, 2007, Mirant Mid-Atlantic, LLC ("Mirant" or "Applicant") filed with the Commission an Application for a Certificate of Public Convenience and Necessity ("CPCN") for authority to modify the Dickerson Generating Station ("Dickerson" or "the Plant") in Montgomery County, Maryland. Mirant proposes to modify Dickerson by installing pollution control technologies on Dickerson Units 1, 2, and 3 for the control of emissions of SO₂ and mercury (the "Project"). Mirant seeks approval of the Project in

order to comply with Maryland's recently enacted Healthy Air Act ("HAA")¹

The Application was delegated to the Hearing Examiner Division, and a pre-hearing conference was held on November 21, 2006, notice of which was published in a newspaper of general circulation throughout Montgomery County. At the pre-hearing conference, the Office of People's Counsel ("OPC"), the Power Plant Research Program of the Department of Natural Resources ("PPRP"), and the Commission's Staff entered appearances as parties, and a procedural schedule was developed.

Hearings in this matter were conducted on February 15, 2007 and April 17, 2007 in Poolesville, Maryland, including an evening hearing also held on April 17, 2007 in Poolesville, Maryland. Notice of the hearings was published in the four successive weeks preceding the hearings in a county newspaper.

At the hearing, Mirant presented testimony from Robert U. Patrick, the company's Director of Engineering Services. Mr. Patrick testified that the Project involves the installation of a wet Flue Gas Desulfurization ("FGD") system and related facilities in three base-loaded steam electric units at the Dickerson Generating Station in Montgomery County, Maryland. According to Mr. Patrick, the installation of the FGD system and related equipment will substantially reduce SO₂ and mercury emissions. The Project will require construction and installation of the following

¹ Chapter 23, 2006 Md. Laws (Senate Bill 154/House Bill 189).

components: limestone receiving, handling, and storage facilities; limestone slurry preparation facility; gypsum byproduct storage, handling, and off-loading facilities; new makeup water system and makeup water treatment system; wastewater treatment systems for water treatment and scrubber wastewater; solid waste storage and handling system for scrubber and wastewater treatment solids; and may include a new, single-flue, 400 foot exhaust stack.

Mr. Patrick further testified that the project will have no significant impact on the physical environment, wetlands, ecology or biology of the area because the Project is wholly located within the existing Dickerson Generating Station site on previously altered terrestrial systems. Mr. Patrick concluded that the Project will satisfy all environmental and regulatory requirements and any negative impacts will be minor.

Kennard F. Kosky, a Principal for Golden Associates, Inc., testified as a consultant retained by Mirant on the air quality aspects of Mirant's application. According to Mr. Kosky, the Project will have a significantly positive impact on air quality. Mr. Kosky asserts that the installation of the FGD and related equipment is expected to reduce SO₂ emissions by 38,229 tons and also reduce mercury emissions. Mr. Kosky concludes that the significant reductions in SO₂ and mercury will decrease air pollution and aid Maryland in achieving attainment of National Ambient Air Quality Standards.

Dr. John Sherwell, Administrator of Atmospheric Sciences with PPRP, testified as the PPRP Project Manager for review of the

Application. He also coordinated review of the Project for interested State agencies. According to Dr. Sherwell, the HAA requires coal-fired generators in the State to reduce emissions of NO_x, SO₂, and mercury by substantial amounts in two phases beginning in 2009. Dr. Sherwell believes this Project will help Mirant comply with the SO₂ and mercury emission components of the HAA. He states that the Dickerson Generating Station is currently equipped with low NO_x burners, combustion modifications in the form of separated overfire air ("SOFA"), and computer optimized operations of NO_x control. Currently, the SOFA is only operated during the ozone season; however, to comply with the HAA, in the future the NO_x controls will need to operate all year long.

Dr. Sherwell further testified that the emission reductions that the proposed Project is to achieve will result in substantial environmental benefit in Maryland and the mid-Atlantic region. Specifically, the FGD will substantially reduce emissions of SO₂ from the Dickerson facility, and as a co-benefit, the FGD will also remove a fraction of the mercury, a known neurotoxin, in the flue gas.

Dr. Sherwell indicated that PPRP's evaluation of the proposed Project includes an assessment of potential impacts to air quality, noise, terrestrial, ecological, ground water, surface water, socioeconomic, aesthetic, and cultural resources. Dr. Sherwell presented a draft Environmental Review Document of the Project containing the analyses of the various State agencies, indicating the Project will comply with all applicable regulatory

standards. A letter of recommendation, signed by the Secretaries of the affected agencies was submitted. Dr. Sherwell recommended that a CPCN be issued for Mirant's planned modification subject to the conditions proposed in the letter of recommendation.

S. Craig Taborsky, an Electric Generation/Transmission Engineer with the Commission Staff, testified regarding the effect that the proposed Project will have on the reliability and stability of the electric system in Maryland. Mr. Taborsky concluded that the Project proposes modifications to the Dickerson coal-fired generation plant designed to improve the emissions profile. According to Mr. Taborsky, the modifications will not adversely affect the electrical reliability and stability of the grid. Mr. Taborsky recommends that the CPCN be granted subject to any conditions proposed by the State agencies.

As noted previously, on April 17, 2007, an evening hearing for the purpose of receiving public comment was held. Only one residential customer appeared at the evening hearing, and he did not want to make any comments for the record.

On June 22, 2007, the Applicant filed an Agreement of Stipulation and Settlement ("Settlement Agreement") which recommends granting the CPCN with proposed conditions agreed upon by all parties to the case. The Settlement Agreement is signed by Mirant, PPRP, OPC, and Staff ("Settling Parties"), and notes that Mirant agrees to accept the Final Recommended Conditions. The Settling Parties agree that the issuance of a CPCN that incorporates the Final Recommended Conditions will be in the public interest and

will serve the public convenience and necessity. Additionally, the Settling Parties indicate that they have taken into account each and all of the factors and considerations listed in Section 7-207(e) of the Public Utility Companies Article of the *Maryland Annotated Code* and the information contained in PPRP's Environmental Review and supporting testimony. The Settling Parties also agree not to seek further review by the Commission if the Final Recommended Conditions are adopted as the conditions to the CPCN and waive any otherwise applicable appeal rights. Finally, the Settling Parties agree to an expedited appeal period of seven days.

Upon consideration of the record in this proceeding, I find that the Application of Mirant Mid-Atlantic, LLC for a Certificate of Public Convenience and Necessity for modification of its Dickerson Generating Station to install pollution control technologies on Dickerson Units 1, 2, and 3 for the control of emissions of SO₂ and mercury should be granted as being in the public interest, subject to the Final Licensing Conditions agreed by the parties which are attached hereto and incorporated herein as Appendix I. The record is uncontested that the proposed Project will greatly reduce major emissions of SO₂, and also reduce mercury as required by the Healthy Air Act. All parties also agree that operation of the Project in accordance with the Final Recommended Conditions will result in meeting or exceeding the requirements of all currently applicable environmental laws and regulations,

including those relating to noise abatement and control of air and water pollution.

In addition, the record reflects that all parties support the granting of the CPCN with agreement to 60 licensing conditions. These include specified conditions as to inspections, air quality, new source performance standard requirements, operational restrictions and limitations, monitoring, recordkeeping and reporting, water appropriation, water discharge, terrestrial and aquatic ecology, by-product handling, noise impacts, cultural resources, and emergency preparedness and security, which conditions will be accepted pursuant to the agreement of the parties. Accordingly, in considering the record as a whole, I find the Settlement Agreement of the parties shall be accepted, with the final conditions as agreed by the parties also accepted according to the Agreement of Stipulation and Settlement.

Finally, the parties have agreed to an expedited appeal period of seven days. As I find the Application should be granted as being in the public interest, and as all parties are in agreement for an expedited order and appeal period, I find the appeal period shall be the minimum seven-day period as provided in Section 3-113(d)(2)(ii) of the Public Utility Companies Article.

IT IS, THEREFORE, this 11th day of July, in the year Two Thousand Seven,

ORDERED: (1) That the Agreement of Stipulation and Settlement filed on June 22, 2007, is hereby accepted as a fair and reasonable resolution of this proceeding.

(2) That the Application of Mirant Mid-Atlantic, LLC for a Certificate of Public Convenience and Necessity authorizing the modification of Dickerson Units 1, 2, and 3 is hereby granted in accordance with the findings of this Order, including the Final Licensing Conditions which are incorporated herein as part of this Order granting the CPCN.

(3) That this Proposed Order will become a final order of the Commission on July 19, 2007, unless before that date an appeal is noted with the Commission by any party to this proceeding as provided in Section 3-113(d)(2) of The Public Utility Companies Article, or the Commission modifies or reverses the Proposed Order or initiates further proceedings in this matter as provided in Section 3-114(c)(2) of The Public Utility Companies Article.

Bryan G. Moorhouse
Chief Hearing Examiner
Public Service Commission of Maryland